ENVIRONMENTAL TAXES ON INDUSTRIES IN INDONESIA: DEVELOPING A FRAMEWORK FOR SUSTAINABILITY

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LIST OF ACRONYMS

BOD = Biochemical Oxygen Demand

BTA = Border Tax Adjustments

CAC = Control and Command

COD = Chemical Oxygen Demand

CPO = Crude Palm Oil

CPCB = Central Pollution Control Board

DIY = Daerah Istimewa Yogyakarta – Special Province of Yogyakarta

DoE = Department of Environment

EIA = Environmental Impact Assessments

EPB = Environmental Protection Bureau

EQA = Environmental Quality Act

GDP = Gross Domestic Product

GHG = Green House Gas

IEA = International Energy Agency

LPG = Liquefied Petroleum Gas

MBI = Market Based Instrument

NCEF = National Clean Energy Fund

OECD = Organization for Economic Cooperation and Development

POME = Palm Oil Mill Effluent

PPP = Polluter Pays Principle

SPCB = State Pollution Control Board

VAT = Value Added Taxes

ABSTRACT

In recent years, developed countries as well as developing countries have resorted to the use of environmental taxes to manage pollution. However, the actual design of environmental taxes differs among countries due to different underlying rationales and experiences. Indonesia as a developing country, has also experimented with these taxes since 1997 to address some of the challenges of environmental degradation that it has been grappling with. In spite of this, the coverage of environmental tax legislations and the actual contribution of environmental taxes in practice still remain unclear. This study critically evaluates these issues with a view to exploring possible ways for developing a comprehensive framework of such taxes to manage pollution from industries in Indonesia. The reduction of pollution from industrial activities would likely contribute to environmental sustainability. The significance of the study lies in the fact that the coverage of environmental tax laws in Indonesia and the role of environmental taxes in practice have not been examined by other scholars.

This thesis uses a mixed method approach to conduct the analysis. The approaches are based on the normative and empirical methods. It therefore relies on analysing data from primary and secondary documents as well as data from interviews and survey questionnaires with relevant stakeholders. This thesis consists of six chapters. Chapter 1 is the introductory chapter and identifies the gaps in the literature and poses questions that inform the research undertaken in this thesis. It also sets out an outline of the relevant chapters. Chapters 2 and 3 provide the knowledge context for the analysis by discussing the nature and use of pricing instruments in managing environmental degradation. Findings from the analysis are discussed in Chapters 4 and 5. The final chapter is Chapter 6 and it provides a summary of findings as well as propositions of the framework for sustainability in Indonesia.

Keywords: *environmental taxes, industries, environmental degradation, framework, sustainability*

STATEMENT OF CANDIDATE

The work presented in this thesis has not been submitted for a higher degree to any other university or institution. The source of information used and the extent to which the work of others has been utilised is acknowledged in the thesis. Ethics Committee approval has been obtained (Protocol Number: 5201200565(D)).

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CHAPTER 1

INTRODUCTION

1.1. Background of Study

One of the earliest proponents of the notion of environmental taxes was the European economist, A.C. Pigou, who in 1920 defined them as instruments to address negative externalities that emerge from economic activities such as environmental pollution and degradation.[1] Clearly, the purpose of an environmental tax is to promote and ensure the management of environmental problems. Many scholars (e.g. Gunnar S. Eskeland & Shantayanan Devarajan, Richard Morgenstren, Andrew J. White) admitted that the first concept of environmental taxes established by A.C. Pigou was the first-best instrument since taxing actual damages had been taken into account.[2] However, the difficulties in monitoring actual environmental performances make the concept far from popular[3] and mostly end up being theoretical approaches.[4] Despite the unpopularity of Pigouvian taxes, environmental taxes have been important in recent years. A growing use of indirect environmental tax levies on fuels and vehicles, for example, has been found in developed and developing countries.[5]

In the Indonesian context, the concept of an environmental tax is not new to the regulatory discourse. The concept was enshrined in Law Number 4 of 1982 on

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[1] Thomas Prugh, Robert Costanza, John Cumberland, Herman E. Daly, Robert Goodland and Richard B. Norgaard, *Natural Capital and Human Economic Survival* (CRC Press, LLC., second edition, 1999), 121.

[2] See eg, Gunnar S. Eskeland and Shantayanan Devarajan, 'Taxing Bads by Taxing Goods: Pollution Control with Presumptive Charges' (The World Bank, 1996) 10; Richard Morgenstren, 'Environmental Taxes: Dead or Alive?' (Discussion Paper 96-03, Resource for the Future, 1995); Andrew J. White, 'Decentralised Environmental Taxation in Indonesia: A Proposed Double Dividend for Revenue Allocation and Environmental Regulation' (2007) 19(1) *Journal of Environmental Law* 46.

[3] White, above n 2.

[4] Mikael Skou Andersen, 'The Use of Economic Instruments For Environmental policy – A Half Hearted Affair' (*IISD <International Institute for Sustainable Development> Website.* 1995) <http://www.iisd.ca/consume/skou.html> 1.

[5] Morgenstren, above n 2, 9. Morgenstren provides the IMF survey on the use of indirect environmental taxes in OECD and non OECD countries. The survey found that indirect environmental taxes have been used in 20 of the 23 non OECD countries and in 19 of the OECD countries surveyed.

Environment. Article 8 of this Law empowered the Indonesian government to use a tax policy as an instrument for managing environmental degradation. Even though the Law has been substantially amended twice since its original enactment[6], the idea of environmental taxes remains important to the Indonesian Government.

Further possibilities in applying environmental taxes in Indonesia were considered in 2006.[7] Environmental taxes were proposed by the Indonesian Department of Finance in the amendment of Law Number 34 of 2000 on Local Taxes and Charges. It empowered local governments to use their authority to establish local regulations[8] in implementing environmental taxes. However, the issue of using taxes to address environmental degradation has been a contentious one, as evidenced from parliamentary debates. Some parliamentarians considered the concept of environmental taxes to be an effective instrument to preserve the environment, whilst others were of the view that the concept had severe limitations in practice. The latter pointed to the unclear subject and applicable tax rates, and the issue of earmarking. The subject of the tax proposed by Department of Finance was industries whose annual turnover exceeded 300 million rupiahs (approximately US$ 34,000). Industries in this category were subject to a maximum tax rate of 0.5 percent of their total production costs.[9] No clear explanation was provided about the relationship between the annual turnover and the pollution

[6] Law Number 23 of 1997 on Environmental Preservation was the first amendment of Law Number 4 of 1982. The first amendment is replaced by Law Number 32 of 2009 on Environmental Protection and Preservation which was enacted on 3 October 2009.

[7] See the Jakarta Post, 'Government Plans Uniform Environmental Tax in Regions', *the Jakarta Post website*, 5 November 2006 <http://www.thejakartapost.com/news/2006/05/11/govt-plans-uniform-environmental-tax-regions.html>. It is noted that the environmental tax has been purported to be a part of the government's effort to improve the business climate in regions by substituting most of environmental taxes and charges. Moreover, a portion of revenues from the environmental tax will be recycled back to companies for building and maintaining waste treatment facilities.

[8] The power to establish local regulations has given to the local government by Law Number 32 of 2004 on Regional Government and Law Number 33 of 2004 on Fiscal Balance. Those Laws govern local autonomy which transfers certain responsibilities from Central to Local Government including preservation of the environment. To finance their responsibilities, Local Governments need a lot of money. One source of revenue is from local taxes and charges. Law Number 34 of 2000 on Local Taxes and Charges has been enacted to support a greater demand of autonomy by providing certain taxes and charges which can be collected in provincial and district/city levels. This Law also governed that to be effectively implemented local taxes and charges should be governed in local regulations on taxes or on charges. In 2006, a need to amend Law Number 34 of 2000 has been identified since it raised many criticisms both in content and in implementation.

[9] Hukumonline, 'RUU Pajak dan Retribusi Daerah: Pemerintah Ngotot Pajak Lingkungan Masuk' [Bill of Local Taxes and Charges: Government Insisted on Regulating Environmental Tax], *Hukumonline website*, 26th May 2006 <http://new.hukumonline.com/berita/baca/hol14900/pemerintah-ngotot-pajak-lingkungan-masuk->.

emitted by industries. Industries whose annual turnover was below 300 million rupiahs could also emit large quantities of pollutants and were not subject to the environmental tax. Therefore, this approach reflected unfair tax treatment among industries in Indonesia. The maximum tax rate imposed on production costs was also an issue of great concern. It was criticised as being excessive and having the potential of not only increasing the cost of doing business in Indonesia, but of undermining its international competitiveness as well. This concern was based on the fact that the maximum profit made by businesses only ranged from one percent to four percent of total production costs.[10] Added to this was the fact that as most Indonesian businesses were exposed to illegal charges in most regions of the country, it increased the overall impost of conducting business, thus making it difficult for businesses to compete in local and international markets.

These concerns led to the Indonesian government reassessing its approach to the imposition of environmental taxes. In September 2009, the government enacted Law Number 28 of 2009 on Local Taxes and Charges (made effective in January 2010), which made fundamental changes by introducing new instruments, such as additional categories of local taxes and charges. Of interest is the fact that this law did not make provision for the so-called "environmental tax" as proposed by the Department of Finance. Environmental taxes under this regime have taken the form of local taxes which have a close connection to the environment, such as the motor vehicle tax, fuel tax, water tax, and mining/exploration taxes. These are the categories of tax bases to which environmental taxes have been widely applied in most Organization for Economic Cooperation and Development (OECD) countries.[11] Although as a developing country, Indonesia has already recognised and introduced such taxes in its Law on Local Taxes and Charges, Indonesian people barely understand the function of those taxes other than revenue-raising.

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[10] Ibid.

[11] Organisation for Economic Co-operation and Development (OECD), *The Political Economy of Environmentally Related Taxes* (OECD, 2006) 25-46. It is noted that 375 types of environmental taxes have been currently applied in all OECD member countries. A great number of those taxes have related to energy products (150 taxes), motor vehicles (125 taxes) and waste (50 taxes).

In theory, the function of taxes covers a wide range of purposes ranging from revenue-raising to being a tool for social engineering. Environmental taxes are more suited to the latter function as their main objective is to alter environmentally harmful behaviour. From the Indonesian experience, however, it is unclear as to whether the imposition of environmental taxes has been successful in raising revenue, or in altering environmentally harmful behaviour, such as discouraging polluting activities.

In spite of the potential advantages that environmental taxes offer, their flipside also raise far-reaching issues in relation to implementation. These include the fear of a loss of competitiveness, the impact on income distribution and increased administrative costs – matters that have been a major concern in developed countries,[12] whereas some difficulties arising from the imposition of environmental taxes in developing countries have pointed more to deficiencies in tax administration and weaker law enforcement.[13] Moreover, developed and developing countries have different political, economic and social backgrounds, and these backgrounds have a significant influence on government policies and their implementation, including environmental tax policies.

In the context of Indonesia, White recommended the implementation of environmental taxes at the local government level.[14] The potential advantages of implementing these instruments range from generating more revenue to motivating the use of clean technologies, and even further increasing compliance to environmental regulations such as command and control mechanisms.[15] The potential benefits outlined are achievable when the scope of the environmental taxes has been carefully delineated. A better concept of an environmental tax is needed as different countries have different policies and approaches in addressing issues arising either from the scope of the taxes

[12] Ibid 67 – 149. Chapter 4 – Chapter 8 in *The Political Economy of Environmental Taxes* discussed some obstacles that have been faced by most member OECD countries in the imposition of environmental taxes. Some lessons can be drawn from their experiences and can be used to mitigate the negative impacts arising from the imposition of environmental taxes.
[13] White, above n 2.
[14] Ibid.
[15] Ibid. The potential advantages arising from the imposition of an environmental tax referred to the meaning of "double dividend". The improvement of the environment is said to be the first dividend, while the second dividend refers to a reduction of excess burden. Further, White presented the actual case study of fuel tax in Indonesia since 1997 which is indicated as the first momentum of the imposition of the environmental tax and can be used to predict the outcome of another environmental tax in the local government level.

themselves or from their imposition. Few studies have been undertaken into the impact of environmental taxes in Indonesia, particularly in the context of the issues raised above. Therefore, the present research will examine and analyse the issues which will contribute to providing an effective framework for environmental taxes in Indonesia.

1.2. Significance of the Study

Despite numerous studies on environmental taxes in developed countries over recent decades, their findings only serve as groundwork to the concept of environmental taxes in developing countries. In the context of Indonesia, very few studies have been undertaken in the development and application of environmental taxes on industries. The coverage of environmental tax legislations and the role of environmental taxes in practice have not been explored by other scholars. The scarcity of information on those areas will be filled by the present research. The findings will contribute to the scarcity of the literatures and, even provide realistic policy recommendations in managing the environment in Indonesia.

1.3. Research Aim

The aim of this study is to develop a framework for sustainability by using tax instruments as one part of the overall environmental policy agenda in Indonesia. Environmental taxes can provide a cost-effective environmental gain compared to other environmental instruments, but in Indonesia their ability to manage the environment is yet to be fully explored. Therefore the study has two auxiliary purposes to achieve the aforementioned aim. First, the study examines the design of environmental taxes, focusing on the evaluation of relevant laws and regulations which cover environmental tax policies. This examination is important as design failures would likely undermine the effectiveness of tax instruments in altering polluters' behaviours. Second, using interviews and survey questionnaires, the study intends to find the actual contribution of environmental taxes to improve the environmental outcomes in Indonesia. Evidence

produced from this approach will be analysed to assist the writer in formulating a reasonable framework for environmental management in Indonesia.

1.4. Research Questions

There are two main research questions in this thesis in order to achieve the research aim. Each main question is followed by sub questions:

1. Does the coverage of Indonesian local taxes and charges adequately address environmental protection issues?

    - What categories of environmental related tax bases are covered by Indonesian local taxes and charges?

    - Do the base and the rate of existing environmental taxes in Indonesia closely relate to relevant externalities?

    - Do Indonesian environmental taxes represent a clear environmental protection measure?

2. To what extent does the role of environmental taxes contribute to improved environmental outcomes in Indonesia?

    - What is the underlying rationale of existing environmental taxes in Indonesia?

    - Is revenue from environmental taxes higher than has been targeted?

    - Are revenues from environmental taxes earmarked towards specific environmental goals?

    - What obstacles are encountered in implementing environmental taxes?

    - Are there any real benefits (environmental gains) associated with the imposition of environmental taxes?

- What is the perspective of stakeholders (industries) toward the imposition of environmental taxes in the region?

1.5. Methods of the Study

1.5.1. Type of Research

This research uses a combination of qualitative and quantitative research methods. John W. Creswell describes this combination as 'mixed methods research' in which the researcher uses both qualitative and quantitative data to develop 'the best understanding of research problems'.[16] In the context of the present research, the use of mixed methods is considered to be well-suited to obtain a clear and comprehensive picture of environmental taxes in Indonesia. As mentioned, the present research employs both normative and empirical approaches. The normative approach leads to the use of qualitative methods in which secondary data will be gathered through library research. Exploring, examining and analysing existing laws and regulations, relevant books, journals and articles will provide a firm ground of the concept and understanding deficiencies on the given legislations. To confirm findings in the normative approach, the research will turn to the experiences of environmental taxes in practice (an empirical approach). This leads to the use of qualitative and quantitative methods concurrently to gather primary data from participants. In this case, data will be integrated in data analysis stages. Therefore, well-validated results for developing a better framework of environmental taxes in Indonesia can be accomplished.

1.5.2. Data Collection Method

Data for this study are collected through library and field research. The library research is undertaken in Indonesia and Australia to gather secondary data. This is done by

[16] John W. Creswell, *Research Design: Qualitative, Quantitative and Mixed Methods Approaches (*Sage Publication, 2nd Edition, 2003) 18.

collecting and analysing selected laws and regulations such as the Law on Local Taxes and Charges and Environmental Laws, books, articles and other documents that are relevant to the research questions. An essential part of the research is based on a critical review of the literature in order to find relevant information for the analysis in the thesis. The information will also form the basis for developing the data collection instrument.

The primary data in this research is collected through a field research. This research uses a combination of qualitative and quantitative research methods. The qualitative aspect of this research involves gathering data through interviews. The interviews are conducted to obtain a comprehensive understanding of the underlying rationale and role of environmental taxes. It also uncovers general experiences associated with the imposition of the taxes. The question lists will be semi-structured and used to assist the researcher to explore and to portray participants' views and opinions.[17] The respondents of the interviews are officers at the Directorate General of Fiscal Balance in the Indonesian Ministry of Finance, in their role as local-tax policymakers; the Local Association of Industries as the representative of the business community in Indonesia; and local-tax officers in the Local Revenue and Finance Bureau in three selected regions in the Special Province of Yogyakarta as the enforcers of local taxes as well as Industrial, Trade and Cooperative officers.

The quantitative aspect of the research is used concurrently with the qualitative research. Survey questionnaires are distributed to the owners/CEOs of industries as data collection methods to discover the level of awareness of industry toward the regulatory framework and waste management practices as well as their general perspective and experiences in the imposition of environmental taxes in the region. Having a clear understanding of the level of awareness of industry is important in establishing whether the environmental management policies and practices are effective in influencing industries' environmental performances. This assists the researcher to determine the function of the regulatory system as a 'command and control' (CAC) instrument in managing the environment. Meanwhile, the survey will also investigate the effectiveness of environmental taxes as a market based instrument by delving into their

[17] Ibid 153.

implementation in practice and the expectation of industries towards this instrument. The findings are crucial in formulating a more rigorous regime of environmental instruments in improving environmental outcomes in the region. In addition, the findings assist the writer to provide a realistic policy recommendation to manage the environment in Indonesia.

In the quantitative research phase involving survey questionnaires, the Special Province of Yogyakarta (*Daerah Istimewa Yogyakarta – DIY*) is used as a representative sample of other regions in Indonesia which implement environmental taxes at the province and district/city levels. According to data from the Indonesia Central Statistics Bureau in 2004, most industries in Indonesia are concentrated in Java, including in the Special Province of Yogyakarta. Industries to be surveyed in this phase of the research are based on the area where they are located. Yogyakarta, Sleman and Bantul are the city/districts in Special Province of Yogyakarta where a significant number of industries are found. At first, approximately twenty (20) industries are determined to be a sample of each of the above city/districts. The criteria used are based on the types of industries (big, medium, small and micro), operational sectors and resources used (which might emit pollution). The owners/CEOs of industries in those selected city/districts who are willing to participate in this research will either complete the questionnaire or appoint staff/an employee in the industry to complete the questionnaire - a task that will take approximately 20 minutes of their time. However, most of the selected industries, specifically big-sized industries, refused to participate in the survey. This fact led the researcher to increase the number of industrial participants by using the same criteria as mentioned but with a bigger proportion in small and medium sized industries. From 100 questionnaires distributed in Yogyakarta, Sleman and Bantul, 76 completed questionnaires were returned, showing a response rate of over 50 percent.

1.5.3. Data Analysis

The primary data from interviews is first transcribed and translated with assistance from professional transcription and translation services.[18] However, the scope of their services is limited to transcribing and translating per se and does not include any data analysis. After receiving the transcription and translation of interview data, the researcher checks the result and makes necessary corrections of a text. The second step is to use coding in order to identify themes or categories. Themes are analysed based on each individual experience and is followed by an interpretation of the data.

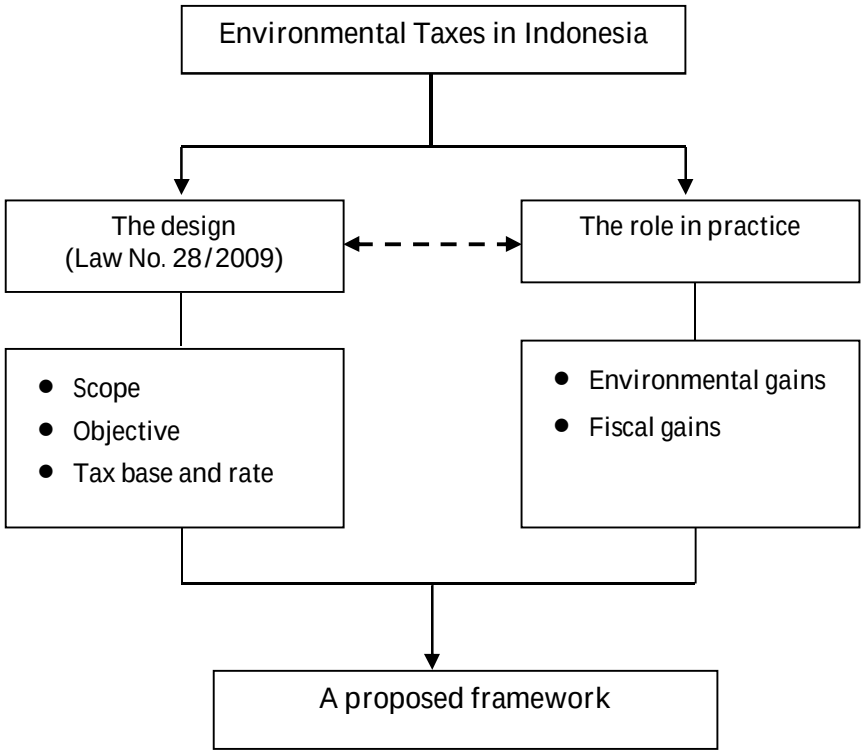
The other data collected through the survey is also analysed by coding and calculating the responses to obtain the score. This process is repeated for other questions in the survey. Afterwards the analysis moves into descriptive summaries of the findings. The integration of data begins in interpretation stages. The findings from quantitative research are used to support the findings from qualitative research by providing numerical values of the framework.

1.6. Scope and Limitation of the Study

As outlined in the research questions, this study focuses on the examination of laws pertaining to environmental taxes to understand deficiencies in the design of such taxes. The flaws in the design might weaken the effectiveness of tax instruments in altering polluters' behaviours. Therefore, the study also seeks evidence on the role of environmental taxes in achieving environmental gains. Findings from the analysis undertaken in this study will assist the researcher to develop a framework as an informed basis for policymakers in designing tax instruments for managing environmental degradation in Indonesia.

[18] The writer used the professional transcription and translation services from the Center for Translation (CENTRA) of LIA School of Foreign Languages (STBA), Yogyakarta, Indonesia.

Figure 1. The Scope of Study



As environmental management in Indonesia is ceded to local governments, this study narrows the scope of the research to fiscal laws that cover environmental taxes at local levels. Therefore, a normative approach of this study is limited to the examination of Law No. 28 of 2009, specifically on provisions related to taxes which have environmentally relevant tax bases. The study also uses an empirical approach to uncover the actual contribution of environmental taxes in the field. This approach relies on primary data from interviews and survey questionnaires. These data collection methods were conducted between September and November in 2012. In this regard, the empirical data in this study should be seen in context of this time period.

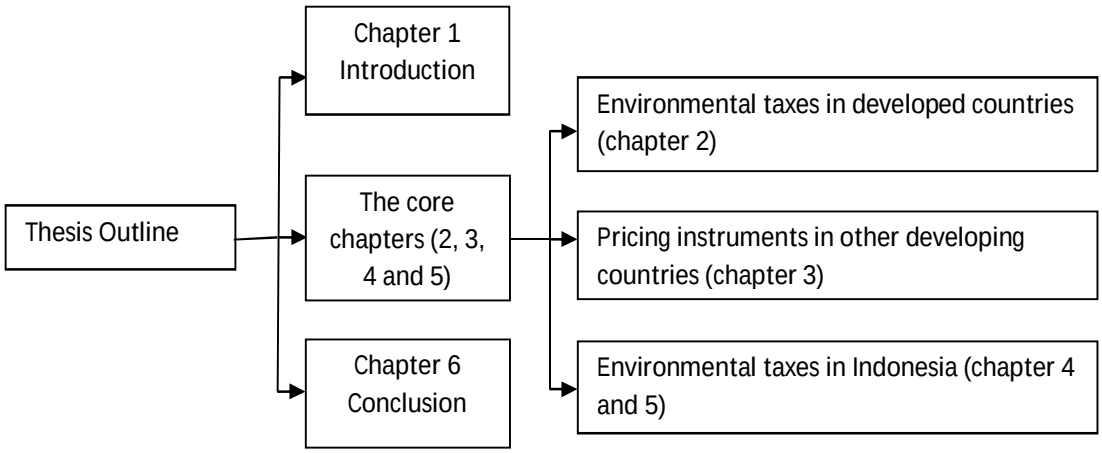
The empirical research was conducted primarily in the Special Province of Yogyakarta to obtain perspectives from local tax officers and stakeholders in the imposition of environmental taxes. Interviews with relevant institutions were accomplished without difficulty. However, gathering data through survey questionnaires to industries was more problematic, which constrained the research. The initial plan to distribute questionnaires to 60 (sixty) targeted industries in the Special Province of Yogyakarta

failed. Most declined to participate in the study due to a false perspective toward the purpose of the research. Some industries remained sceptical despite further explanation and assurance that the information gathered through survey questionnaires will be used for academic purposes only. To overcome this problem, the number of questionnaires was increased to 100 (one hundred) which were randomly distributed to industries in the Special Province of Yogyakarta. Information from Industrial, Trade and Cooperative offices either in the province or in the three selected districts/city assisted the researcher to locate industries that generate a great deal of pollution. The questionnaire was administered to 100 selected industries and most of them asked the researcher to collect the completed questionnaire by the agreed date and time. This might lead to bias in responses that were beyond the control of the researcher as the written responses relied largely on the participants' knowledge and opinion towards the issues. In spite of this problem, data from survey questionnaires provide a basis for understanding the relevance of environmental taxes to the environment as well as the effect of such taxes in altering polluters' behaviours from the perspective of the industry.

1.7. Outline of Thesis

All aforementioned issues related to environmental taxes in Indonesia will be discussed in the six chapters of the thesis. The chapters of this thesis are divided into three parts covering introduction, cores and conclusion. The first (introduction) and the third (conclusion) parts are presented in chapter 1 and chapter 6, while the core chapters are portrayed by chapters 2 to 5. The core chapters aim to discuss the use of environmental taxes as a policy instrument to manage the environment in developed and developing countries, and to narrow it down to Indonesia's experiences in implementing these taxes. The nature of experiences of implementing environmental taxes in developed and developing countries is discussed in chapters 2 and 3, whereas chapter 4 and 5 cover the discussion on the policy design and role of these taxes in Indonesia based on the research questions of this study. An outline of the chapters is specified as follows:

Figure 2. Thesis Outline



Chapter 1 provides a background to the study pertaining to environmental taxes in Indonesia. This begins with a brief discussion on the concept of environmental taxes in the Indonesian regulatory system and moves into presenting the unclear conditions arising from its scope and its imposition that should be resolved. Following that, the aim of the study is clearly stated in this chapter. Furthermore, this chapter also outlines the research problems that should be investigated and examined.

Chapter 2 presents a review on the nature of experiences of implementing environmental taxes in OECD countries. The review will cover the concept of environmental taxes, its implementation, and issues arising from various approaches in implementing such taxes. The importance of this review is to provide knowledge and an understanding of the relevant problems experienced by developing countries. Although developed and developing countries differ in policies, it is important to highlight that there is an international consensus on the concept and scope of environmental taxes. As the concept is universally accepted, it provides a firm foundation for addressing the research questions in the core chapters of this thesis (chapters 4 and 5).

Chapter 3 explores the experiences of Malaysia, China and India as other developing countries related to the implementation of pricing instruments to address industrial pollution. This chapter covers pollution issues arising from industrial activities in these countries, strategies to address these issues through the use of pricing instruments, and also challenges in implementation. Looking close at the experiences of these countries

will be important in comparing and contrasting strategies to improve the use of environmental taxes in Indonesia. The lessons extrapolated will provide the basis for recommending the design of a more effective scheme for Indonesia.

Chapter 4 is intended to review fiscal laws and regulations pertaining to environmental taxes in Indonesia. It addresses the first main research question, namely, whether the coverage of Indonesian environmental tax legislation adequately addresses environmental protection issues. The examination and analysis of this question is based on a normative approach which relies heavily on primary documents (laws and regulations) and secondary sources (relevant books, articles and industry publications).

This chapter is divided into three main parts. The first part discusses the regulatory instruments relating to environmental management in Indonesia. The discussion in this part of the thesis will provide knowledge on the development of environmental laws, its legal effects as well as its connection with other relevant laws such as laws on local taxes and charges. This analysis is important to ascertain whether environmental law provides the legal basis to use taxes as a measure to address environmental problems in Indonesia. The second part of the thesis examines the current policy of environmental taxes in Indonesia. It is preceded with a discussion on the development of the law concerning environmental taxes and is followed by a review of the scope, base and rate of these taxes. This review aims to reveal deficiencies in the laws being evaluated. The third part of this chapter focuses on the presence of subsidy in fuel taxes which may weaken the effectiveness of fuel taxes in altering behaviours.

Chapter 5 takes a different approach from chapter 4. This chapter presents a case study in the imposition of environmental taxes in Special Province of Yogyakarta as one of regions in Indonesia. It aims to address the second main research question with regard to the role of environmental taxes in improving environmental outcomes in practice. The methodology that is used for this purpose is based on an empirical approach. Reliance is therefore placed on a critical analysis of data from the field research that the researcher undertook in 2012. Interviews and survey questionnaires were conducted with relevant stakeholders to uncover the actual contribution of such taxes to the environment. The main analysis in this chapter is divided into two parts. The first part is focused on data

analysis from interviews, while the findings from survey questionnaires are discussed thoroughly in the second part of the chapter. Prior to the data analysis, this chapter begins with a brief description of the Special Province of Yogyakarta to better understand the characteristics of the research site. It includes information on the growth of industries in this region and the impact of their activities to the environment.

Chapter 6 is a concluding chapter. It highlights the findings from the previous chapters and underlines lessons learnt from the imposition of environmental taxes in developed and developing countries, principally Malaysia, China and India. This is followed by a summary of Indonesia's experiences in the use of environmental taxes to address industrial pollution. It reveals that the environmental taxes in the 2009 Law are not properly designed. The base and rates are defective in that they do not reflect relevant externalities, leading to ineffectiveness in practice. This is evidenced by the small contribution that environmental taxes have made to the improvement of environmental outcomes in the region. Hence, this chapter presents a general proposition that improvement in the design and implementation of environmental taxes in Indonesia is required. It also provides an alternative solution that might be best-suited to the current condition of Indonesia.

CHAPTER 2

THE NATURE OF ENVIRONMENTAL TAXES

2.1. Introduction

Environmental taxes have continued to play a role in mitigating environmental degradation in recent years. The unique features of environmental taxes have resulted in many countries using them as part of their overall tax policy. In developed countries, the use of these taxes in their environmental policies is much more rigorous. It is marked by vast and comprehensive literature on environmental taxes either covering the concept or the practical implementation of these instruments. The OECD is an economic organisation in the developed world which undertakes extensive research and study concerning the application of environmental taxes to address a wide range of environmental problems. As a result, the OECD offers a benchmark for the concept of environmental taxes which is worthy of consideration. Available evidence in the use of environmental taxes in OECD member countries is also documented to capture the capacity of these taxes to achieve environmental gains. This recorded experience may also provide lessons for developing countries so as to minimise the difficulties that might emerge in the implementation of such taxes.

Since this thesis focuses on the imposition of environmental taxes in Indonesia, it is important to first understand the theory behind the concept and practice of these taxes. As mentioned, developed countries have had a longer experience in the imposition of environmental taxes and have benefited from numerous reports, studies and documentation in this field. Therefore, this chapter aims to evaluate the concept, practical application and challenges in the imposition of environmental taxes in OECD countries by using relevant literatures. The evaluation on the concept will provide an understanding of the environmental taxes' characteristics which differ from other pricing instruments, such as levies and charges. Certain parameters in the concept environmental taxes are crucial for the basis of classification of such taxes in the next chapters. Despite differences in cultural, social, political and administrative backgrounds,

the practical application of environmental taxes in OECD countries may present a groundwork that gives certain direction for the imposition of such taxes in developing countries, including Indonesia. However, this chapter does not intend to detail in depth the experiences in the use of environmental taxes in each OECD member country. The discussion will only cover the prevalent types of environmental taxes that have been introduced, the revenue generated from them and the issues that have arisen. This will be followed by an analysis of mixed-instruments as a current strategy to enhance the achievement of environmental gains.

2.2. The Concept of Environmental Taxes

A discussion on the concept of environmental taxes dates back to 1920 when A.C. Pigou, in his book "The Economics of Welfare", proposed correcting negative externalities from economic activities by use of taxes. In this regard, the environment is one externality that suffers most from the harmful effect of production or consumption because they do not take into account external costs. The ignorance on the harmful effects on the environment is a major concern of the Pigouvian framework as "...the environment of one generation can produce a lasting result, because it can affect the environment of future generations".[19] To solve the problem, Pigou offered a framework to impose taxes that reflect the full social costs of production or consumption of goods and services. This framework is known as Pigouvian taxes or the Welfare theorem.

In 1960, the Welfare theorem was challenged by Ronald Coase, Professor Emeritus at University of Chicago Law School. In his paper "The Problem of Social Cost", Coase claimed that the Welfare theorem is undesirable and incorrect.[20] Coase preferred the use bargaining approaches to fix negative externalities that will lead to efficient outcomes. However, Joseph Farrell opposed the Coase theorem on the basis that it was unconvincing and overoptimistic. Farrell argued that the theorem is only applicable in

[19] A.C. Pigou, *The Economic of Welfare* (London, Macmillan, 4th edition, 1962) 113.
[20] Ronald Coase, 'The Problem of Social Cost' (1960) *The Journal of Law and Economics* 26-28.

special cases not involving many people to coordinate and negotiate,[21] and therefore its real world application is limited. He stated that:

> I began by noting that the popular simple view of the Coase theorem is a tautology: that if bargaining and negotiation are perfect (that it, produce perfect outcomes) then the outcomes are perfect. Actually, negotiation is far from perfect, even in the simplest situations…And it is especially imperfect in the hardest problems – those with private information – where we are most in need of good systems for resolving the conflict.[22]

Likewise, Najma Rajah and Stephen Smith assert that a bargaining approach may only be efficient in a "small-number of cases". However, to achieve an efficient result the approach requires public intervention, which are usually 'command and control' instruments in nature.[23] Rajah and Smith further notice that the latest policy discussions in Europe have moved forward in favour of prospective incentive instruments, such as Pigouvian taxes and tradable permit schemes.[24]

As one of environmental policies, Pigouvian taxes are seen to reflect the Polluter Pays Principle (hereinafter: PPP). This principle has been recognised as a basic feature of environmental policy and has been defined as follows:

> This principle means that the polluter should bear the expenses of carrying out the above mentioned measures decided by public authorities to ensure that the environment is in an acceptable state. In other words, the cost of these measures should be reflected in the cost of goods and services which cause pollution in production and/or consumption. Such measures should not be accompanied by subsidies that would create significant distortions in international trade and investment.[25]

The above definition clearly illustrates a link between the PPP and Pigouvian taxes. The concept of cost internalisation is first introduced in the Welfare theorem and continuous to be reflected in the PPP. Cost internalisation means that all external costs caused by production or consumption should be internalised by the polluter. In this case, the polluter should take the responsibility for his or her economic activities which may affect

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[21] Joseph Farrell, 'Information and The Coase Theorem' (1987) 1(2) *The Journal of Economic Perspectives* 114.
[22] Ibid 125.
[23] Najma Rajah and Stephen Smith, 'Using Taxes to Price Externalities: Experiences in Western Europe' (Annual Review Energy Environment, 1994) 477. Examples of public intervention are legal restrictions on emissions, location, or technology.
[24] Ibid.
[25] Organisation for Economic Co-operation and Development (OECD), *Environmental Principles and Concepts* (OECD, 1995) 12.

the environment. However, the PPP requires that subsidies should not be taken into account in internalising the external costs. The primary purpose of this requirement is to avoid distortions in international trade and investment. The PPP not only focuses on cost allocation but is also considered to promote fairness in international trade. The latter characteristic of PPP sounds advantageous since the non-subsidy concept is used to advocate fairness, but it is hard to understand the need to disregard subsidies in every way. Both Candice Stevens and Jean Phillipe Barde state that subsidies as a form of financial assistance are necessary in certain circumstances.[26] During economic transition in developing countries is a perfect example which illustrates the actual need for financial assistance to manage pollution.[27] In this case, subsidies may help polluters in developing countries to act immediately in managing pollution problems and at the same time avoid economic disruption. To achieve the proper use of a subsidy, Stevens emphasises a need for further studies to determine specific criteria to exclude from the non-subsidy principle. Thus, the wrong use of subsidies for exclusively helping certain industries can be avoided.

It is worth noting from above discussion that the non-subsidy principle should be waived in certain situations to ensure the application of pollution control. Although the non-subsidy concept is a part of the PPP, it does not mean that imposing it without considering various factors is acceptable. If the only reason is fairness, a further question that may arise as to whether the non-subsidy principle can ensure that full fairness is achieved. According to Sanford E. Gaines, relying solely on the PPP to attain full equity is problematic since every country has different environmental standards. Compliance costs with environmental standards are also influenced by numerous factors ranging from geographic location to fuel source.[28] It is not possible for the PPP to get rid of the factors, and accordingly this principle depends completely on governments to anticipate

[26] Candice Stevens, 'The OECD Guiding Principles Revisited' (1993) 23 *Environmental Law Review* 610-611 and Jean-Philippe Barde, 'Economic Instruments in Environmental Policy: Lessons from the OECD Experience and Their Relevance to Developing Economies' (Research Programme on: Environmental Management in Developing Countries, 1994) 6.
[27] Ibid.
[28] Sanford E. Gaines, 'The Polluter-Pays Principle: From Economic Equity to Environmental Ethos' (1991) 26 *Texas International Law Journal* 470.

the impact of affecting factors in competitiveness.[29] In fact, the PPP provides fundamental characteristics that should be embedded in environmental policies. Most environmental policies, including Pigouvian taxes, seem to be embracing this principle to shape the goal of a better environment. On the other hand, the PPP requires policy instruments to be implemented. Thus, it is reasonable to assume that the PPP and Pigouvian taxes as a root of environmental taxes complement one another.

The evolution of Pigouvian taxes continued in the 1990s. Although the title of the tax instrument is often different – it sometimes called ecological taxes, environmental taxes or even green taxes, the existing schemes remain Pigouvian taxes in nature. In the 1990s a number of OECD countries such as Nordic countries, the Netherlands and the United States introduced eco-taxes to deal with environmental problems.[30] Barde argued that protecting the environment by using tax instruments can be done by two methods. The first is introducing new eco-taxes as previously mentioned. The second method is restructuring existing taxes, such as applying tax differentiation on unleaded gasoline.[31] Those two methods are known as 'green tax reform' which has been increasingly taken into account in OECD countries for more than 15 years to make tax systems more environmentally friendly.[32]

The movement towards green tax reform has raised a double dividend theory among a number of economists. A double dividend theory proposes two kinds of benefits that can be achieved in the implementation of environmental taxes, as described by David Pearce in the following:

> While most taxes distort incentives, an environmental tax corrects a distortion, namely the externalities arising from the excessive use of environmental services. A carbon tax would be set on the basis of the carbon content of fossil fuels. Given the widespread use of these fuels, any tax would inevitably be revenue-raising, even though the tax works best if it is avoided through the introduction of low or zero carbon technologies.

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[29] Ibid. Gaines further states that an anticipation of the impacts is given through subsidies to ensure the competitiveness among businesses in world markets.
[30] Ibid 15. Eco-taxes are taxes imposed on products that may create pollution as a result of production, consumption or disposal. Examples of these are taxes on fuels, fertilizers, or pesticides.
[31] Jean-Phillipe Barde, 'Environmental Taxation: Experience in OECD Countries' in Timothy O'Riordan (eds), *Ecotaxation* (Earthscan Publication Limited, UK, 1997) 230.
[32] Organisation for Economic Co-operation and Development (OECD), *Environmentally Related Taxes in OECD Countries: Issues and Strategies* (OECD, 2001) 33.

> Governments may then adopt a fiscally neutral stance on the carbon tax, using revenues to finance reductions in incentive - distorting taxes such as income tax, or corporation tax. This 'double dividend' feature of a pollution tax is of critical importance in the political debate about the means of securing a 'carbon convention'.[33]

Based on the above view, the first benefit of environmental taxes is to correct negative externalities, whereas the second benefit is the use of tax revenues to reduce other distortionary taxes. Although the double dividend theory is attractive, it has raised a debate among economists.

Paul Ekins fully supports the double dividend theory as it is easily achieved. Ekins believed that the implementation of environmental taxes not only provides a double dividend but further creates multiple dividends, such as creating job opportunities and improving resource use efficiency.[34] Peter Bohm has a slightly different opinion. Although he agrees that the double dividend is possible to achieve, Bohm underlined that careful measures should be taken into account to ensure that the double dividend occurs.[35] Failure to do so will result in increased distortions caused by the imposition of environmental taxes.[36] Different to Ekins and Bohm, Don Fullerton and Gilbert E. Metcalf argue that 'the validity of double dividend hypothesis cannot be settled as a general matter',[37] and that the evaluation of each green tax reform should be treated separately. In certain conditions, a green tax reform may achieve dual benefits, such as an improvement in the environment and a reduction of certain distortionary taxes, while other green taxes may produce different results, including increasing the burden of tax system.[38]

A further empirical study on a double dividend has been carried out by Benoit Bosquet in 2000. He reviewed evidence for a double dividend by using 139 modelling simulations from 56 countries on the impact of carbon tax shift. The findings demonstrate that a

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[33] David Pearce, 'The Role of Carbon Taxes in Adjusting to Global Warming' (1991) 101 *The Economic Journal* 940.
[34] Paul Ekins, 'On the Dividends from Environmental Taxation' in Timothy O'Riordan (eds), *Ecotaxation*, (Earthscan Publication Limited, UK, 1997) 158.
[35] Peter Bohm, 'Environmental Taxation and The Double Dividend: Fact or Fallacy' in Timothy O'Riordan (eds), *Ecotaxation*, (Earthscan Publication Limited, UK, 1997) 121.
[36] Ibid.
[37] Don Fullerton and Gilbert E. Metcalf, 'Environmental Taxes and The Double Dividend Hypothesis: Did You Really Expect Something for Nothing?' (National Bureau of Economic Research (NBER) Working Paper No. 6199, 1997) 35.
[38] Ibid.

reduction in carbon emissions is indicated by 84% of simulations, while 73% of simulations signify an employment gain as a second dividend.[39] The revenue recycling mode and time horizon appear to have a greater influence in achieving the second dividend. A recycling of tax revenue through cutting social security contributions creates more job opportunities than revenue-recycling through reductions in personal income taxes.[40] In terms of the time horizon, it was suggested that using long-term simulations up to or more than 10 years may predict a negative outcome on employment.[41] In spite of these positive findings, Bosquet warned that the impact of environmental taxes may not conform to the results of the simulations based on the following rationale:

> First, no model is capable of accurately predicting the impact of an elaborate package or reflecting all the subtleties of an economy. Second, all models of economic impact are ex ante studies. Ex post interpretation is notoriously difficult because of the existence of myriad confounding factors and the small size of environmentally motivated changes relative to other factors (Mors, 1995; OECD, 1997a, c). Third, given the error margins involved in assumptions, the size of some of the predicted gains and losses may not be correct.[42]

The preceding discussion on the concept of double dividend among theorists illustrates a lack of consensus on the realisation of a second dividend. The improvement of the environment as the first dividend has a greater probability than the second one. The latter depends on the success of the first since the revenue from environmental taxes will be used to reduce other distortionary taxes. However, a successful indicator of environmental taxes in practice is decreasing the revenue generated by these types of taxes. As a consequence, the government should employ any method that it can to ensure the second dividend occurs. This is a difficult task for the government since failure to choose a proper method will increase the existing tax burden.

Aside from the theoretical and empirical views of a double dividend, it is important to discuss the definition of environmental taxes in order to develop a clear conceptual framework and to avoid any misconception with other similar economic instruments such as charges and fees. In 2001, the European Commission (Eurostat), the OECD and

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[39] Benoit Bosquet, 'Environmental Tax Reform: Does it Work? A Survey of The Empirical Evidence' (2000) 34 *Ecological Economics* 23-24.
[40] Ibid 25.
[41] Ibid.
[42] Ibid 30.

the International Energy Agency (IEA) attempted to provide a definition of environmental tax for statistical framework purposes. Eurostat defined an environmental tax as "a tax whose tax base is a physical unit (a proxy of it) of something that has a proven, specific negative impact on the environment".[43] The focus of this definition is clearly on the impact of a physical unit on the environmental consequences of products and activities. In this definition, fiscal motivation seems to be disregarded.

In the same year (2001), the OECD modified that definition in its use of the term "environmental taxes" in a report entitled Environmentally Related Taxes in OECD ccountries. The following definition was used:

> Therefore for the purpose of this report, an environmentally related tax is defined as any compulsory, unrequited payment to general government levied on tax-bases deemed to be of particular environmental relevance. Taxes are unrequited in the sense that benefits provided by government to taxpayers are not normally in proportion to their payments.[44]

It is clear that the OECD definition is consistent with the Eurostat definition. The motivation of an environmental tax is to change behaviour, and this is done by placing a reasonable price on products and activities that are deemed to damage the environment. However, in a legal sense the OECD definition of environmental taxes is much more comprehensive. The definition includes the main elements of a tax in legal terms, which are compulsory and unrequited payments. The term 'compulsory' indicates that people cannot avoid their obligation to pay taxes.[45] Moreover, Annette Weier highlighted that the term 'compulsory' may not have to be construed as a legal meaning.[46] A payment in the form of a license fee, for example, may be considered a tax if the term 'compulsory' is given a practical meaning.[47] In practical circumstances, it may be true that the term 'compulsory' covers a wide range of payments such as taxes, charges, levies and fees. However, the term 'compulsory' cannot stand on its own. If it is used alone without considering other elements, a legal definition of taxes is not firmly formed. Essentially, it

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[43] European Commission, 'Environmental Taxes: A Statistical Guide' (Office for Official Publications of the European Communities, Luxembourg, 2001) 9.
[44] See OECD, 2001, above n 32, 15.
[45] Annette Weier 'Legal Definitions of Taxation Terms – Implications for the Design of Environmental Taxes and Charges' (the 50th Annual Conference of the Australian Agricultural and Resource Economics Society (AARES) Conference, Sydney, 8–10 February 2006) 2.
[46] Ibid.
[47] Ibid.

will be difficult to differentiate whether a payment should be regarded as a tax, charge or fee. Thus, it will be necessary to include other elements of taxes to avoid a misleading meaning.

On the other hand, the term 'compulsory is better interpreted in a legal way. This leads to a meaning that signifies juridical pressure to force people to pay taxes. People will be bound by the law to comply with their obligation to pay taxes. However, any act of taxation needs to have a legitimate basis, which refers to the basic principle of taxation that no tax can be imposed without the authority of a law.[48] Generally, a basic principle of taxation can be found in the constitution of a country. The constitution as the highest level of legislation authorises that a law/an act is a form of legislation to govern tax. When a tax is regulated in subsidiary legislations such as a decree, it will be seen as unlawful and does not have a firm legal binding. Gite Heij provides an example of a weak legal foundation in creating a poverty tax by using a decree in Indonesia around 1996.[49] Even though it can be argued that the poverty tax had a valid legal status, its implementation in Indonesia was far from successful in obliging people to pay it.

The term 'compulsory' should be considered in conjunction with the term 'unrequited' payment. In general, 'unrequited' means 'unreturned' or 'unreciprocated'. A payment will be classified as a 'tax' when it is not a payment for the government's services. In other words, a taxpayer will not receive any direct benefits from his or her payment to government. A tax is different from a fee or charge, as they represent examples of 'requited' payments. Fees and charges are similar terms used by the OECD to label payments for services.[50] In this context, a link between payments and the (direct) benefits provided is a condition to determine that a payment can be seen as a fee or charge. An example of fees and charges is waste collection and treatment, as a link

[48] Frans Vanistendael, 'Legal Framework for Taxation' in Victor Thuronyi, *Tax Law Design and Drafting (*IMF, Washington D.C., 1998) 16-17.

[49] Gite Heij, 'The Definition of Tax' (2001) *Asia-Pacific Tax Buletin*75-76. In her paper, Heij clarified some limitations of tax elements in a legal sense. She stated that a term 'compulsory' points to a great emphasis on the validity of taxes. A tax will be legally binding when it is governed by a law. Moreover, a law provides a strong legal basis for an imposition of a tax.

[50] See OECD, 2001, above n 44 and OECD, 2006, above n 11. No change has been made in the OECD Report 2006 regarding the definition of environmentally related taxes, fees and charges. The OECD defines fees and charges as "*Requited* compulsory payments to the government that are levied more or less in proportion to services provided (e.g. the amount of wastes collected and treated)".

between payment and a service rendered is found in the level of waste that it collected and treated.

Looking at the OECD definition of an environmental tax, the key characteristics of an environmental tax can be described. It explicitly includes the main features of a tax in a legal definition and it may also provide a practical definition too. Terms such as compulsory, unrequited payments and relevant environmental tax bases can be used to determine whether a payment constitutes an environmental tax. Additionally, a feature of relevant environmental tax bases may capture all taxes which fall under 'a linkage' requirement. Barde describes a linkage as a closer connection between the payment of tax and the environmental impact.[51] Thus, it may be reasonable to assume that all taxes which have environmental tax bases[52] can be considered environmental taxes. In fact, the OECD reported that a significant number of environmental tax bases in OECD countries have been found in taxes related to energy products, motor vehicles and waste. This leads to an assumption that the OECD attempts to set a cluster of environmental tax bases for guidelines purposes. Furthermore, a range of environmental tax bases might be valuable to determine the need for clear scope in relation to environmental taxes.

However, the concept of environmental taxes has been criticised by Kalle Maatta, a Professor of Law and Economics in Finland, as having definitional issues which leads to the unclear scope of environmental taxes. Maatta stated that the work of the OECD in providing the concept of an environmental tax cannot resolve the issue yet.[53] The OECD only set some parameters for the concept of environmental taxes, and no precise

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[51] See Barde, above n 31, 235. Barde stated as follows:

> "Ideally, the amount of tax paid should reflect the environmental-damage cost caused by the taxed product or activity. This will not be possible in practice, but nevertheless, the closer the link between the tax paid and the environmental impact, the greater its effectiveness…The determination of the basis of the tax raised so called 'linkage' issues. In case of an emission tax, the payment should be linked with the externality – i.e., the quantity of polluting emissions".

[52] See OECD, 2001, above n 32, 24. In this report, the OECD explains the difference between taxes and tax bases. A Tax base is described as 'the base on which a given tax is levied'. This definition becomes quite clear in the following example: "A given tax is levied on one or several tax-bases, with (often) varying tax rates. For example, in the case of a "Tax on mineral oils", separate tax rates could be levied on the tax-bases "leaded petrol", "unleaded petrol", "diesel with normal sulphur content", "diesel with low sulphur content, etc…".

[53] Kalle Maatta, *Environmental Taxes: An Introductory Analysis* (Edwar Elgar Publishing Limited, 2006) 15.

definition of the concept has emerged in OECD publications.[54] To support his view, Maatta identified that some OECD surveys only covered a discussion on either taxes that have environmental purposes or taxes that have essential environmental outcomes. Moreover, the OECD strived to only provide general definitions of the concept, with Maatta presenting an example of a general definition of environmental tax provided by the OECD in 1980. In fact, the OECD published a comprehensive body of work in the field of environmental taxes in 2001 and 2006. The definition of an environmental tax has been developed largely in line with the trend of environmental taxes that have been implemented in OECD countries. Although an environmental tax is still defined in a general sense, its concept is clear in terms of its legal meaning as explained previously.

It is difficult to create a precise definition of taxation itself because as a concept it covers many areas of study and policy. The term 'tax' has various definitions in its application and a relevant definition of tax in such areas will only include a trivial component of tax in its general sense.[55] Similar difficulty is also found in defining an environmental tax. An exact definition of an environmental tax may be feasible to achieve, but it will limit the use of the tax depending on its purpose and its area of focus. Moreover, some important features of taxation which would ideally be included in the definition of an environmental tax may not be appropriate. For instance, the definition of an environmental tax provided by Eurostat mentioned in above does not comprise some important elements of tax, such as being compulsory and unrequited payments.

Alternatively, a much broader concept of environmental taxes has been established by the OECD. The concept attempts to capture the key features of an environmental tax which satisfies both a legal and practical definition. In a practical sense, the definition of an environmental tax is quite achievable since it has been developed based on the contemporary experience of its use as a tax instrument in OECD member countries. A definition that portrays the real world application of environmental taxes will be useful in reflecting its challenges and strategies. Moreover, the OECD concept of an

[54] Ibid.

[55] Heij, above n 49, 79. Heij noted in her article that 'realistically, it seems impossible to develop a workable definition of the term tax that covers all the different aspect of this term. However, it is important to be aware of the differences in order to realize that whatever tax definition is selected, it will only cover a small part of the large and complex area of tax, and it is inevitable that a significant part will be excluded.'

environmental tax attempts to provide a flexible notion which can be used as a starting point in designing an environmental tax in developed countries. One issue that relates to this broader concept is defining the scope of the tax. However, this concept accommodates a range of taxes that may fall under a label of an environmental tax. Such taxes will be labelled environmental taxes if they satisfy the requirements which are explicitly mentioned in the OECD definition. One important requirement is having environmentally relevant tax bases. In this case, the OECD has classified the relevant tax bases found in most member countries, which have taken form in energy products, motor vehicles and waste-related taxes. Only a small number of environmental taxes have been levied on far-reaching tax bases, other than three categories above.[56] Those categories may not satisfy the need of a definite scope, but they may facilitate defining the coverage of environmental taxes.

With respect to establishing a clear scope, Maatta discussed some approaches that can be taken into account. Examining legislations is considered to be the proper way of defining the scope of environmental taxes, as the application of environmental taxes has largely been governed in legislations.[57] Thus, its scope will be clearly identified when a tax has the clear title of 'an environmental tax' under legislation. However, Maatta recognised that this is not a rational method to define scope because countries may differ in their application of the concept. Another approach is related to 'the specific environmental objective'.[58] In this context, the scope will be easily to recognise if an environmental tax has a clear goal that it is supposed to achieve. Again, Maatta realised that the use of this approach has a difficulty in regulating a specific purpose of environmental taxes in law. It is common for a law to cover a broader objective rather than a definite one.

The two approaches to define a clear scope of environmental taxes have their own weaknesses which may lead to confusion as to which approach is best. Both approaches fail to accommodate a need to establish a precise scope of environmental taxes. On the other hand, the two approaches may be useful to enhance the quality of environmental

[56] See OECD, 2006, above n 11, 26 – 27. It is reported that 40 out of 375 environmentally related taxes has been levied on a wide range of tax bases such as hazardous chemicals and an extraction on certain natural resources. A detail database of tax bases other than energy products and transports can be found in this report.
[57] Maatta, above n 53, 16.
[58] Ibid.

tax legislation. It can be helpful for legislators in preparing environmental tax legislation to take into account its prescribed weaknesses. At this stage, it is reasonable to rely on the concept of environmental taxes provided by the OECD for analytical purposes. This concept offers an acceptable and consistent definition of environmental taxes among various countries. In addition, the concept provides the key features of environmental taxes which can be used to determine the coverage of taxes.

2.3. The Use of Environmental Taxes

In the early 1990s there was momentum in environmental taxes becoming an important approach in addressing negative environmental externalities in OECD member countries.[59] Although the factors listed below are reasons for the increased use of any economic instrument, it is reasonable to assume that the momentum in environmental taxes in the 1990s was for the same motives:

1) The often limited performance of direct regulations which are costly and difficult to enforce;
2) The move toward 'deregulation' or regulatory reform in various areas of intervention;
3) The search for economically more efficient policy instruments;
4) The search for revenue either for the general budget or financing specific environmental programmes;
5) The need for an effective 'integration' between economic and environmental policies;
6) The new policy context created by the Brundtland Report and the Rio Conference, to the extent that economic instruments are an essential condition for a sustainable development.[60]

The recent development of the use of environmental taxes has been elaborated on in OECD reports and databases. OECD reports and databases have been updated continuously in line with the development. In regard to the use of environmental taxes, the OECD noted that 375 environmental taxes have been applied in OECD member countries. Out of those, 150 taxes are levied on energy products, 125 taxes on motor

[59] Barde, 1994, above n 26, 15.
[60] Barde, 1997, above n 31, 224. Barde noted that 6 (six) main reasons have been identified in driving the use of economic instruments in 1990s. One of economic instruments that have been widely used in OECD countries is environmental taxes and charges. Thus, those 6 (six) reasons would also include a general rationale of environmental taxes in practice.

vehicles and 50 taxes that are waste related.[61] The remaining 40 taxes are levied on a wide range of environmental tax bases, such as 'taxes on hazardous chemicals' and 'taxes on extraction of certain natural resources'.[62] In this case, the OECD attempts to categorise environmental taxes on the ground of the imposed tax base. The three categories with the highest number of taxes are easy to use in determining the coverage of environmental taxes, whereas the categories comprising the rest of the taxes are less so. As discussed in section 2.2 of this chapter, categorisation is interrelated with the definition of environmental taxes. The rest category of environmental taxes found in OECD countries can be said to accomplish with the provided definition of environmental taxes. Therefore, all taxes that have relevant environmental tax bases other than energy product, vehicles and waste related taxes will fall under the 'rest' category.

A different approach has been taken by Eurostat who clearly distinguished the coverage of environmental taxes in a much clear manner. Eurostat determined 4 (four) groups of taxes which fall under its definition, namely energy taxes, transport taxes, pollution taxes and resources taxes.[63] Energy taxes include taxes on energy products and CO_2 emissions, while transport taxes cover the ownership and use of motor vehicles. Taxes on measured emission to air and water, management of solid waste and noise are included in the category of pollution taxes. CO_2 taxes have been put in the energy taxes bracket rather than the pollution bracket for several reasons, including:

> First of all, it is often not possible to identify CO_2-taxes separately in tax statistics, because they are integrated with energy taxes, e.g. via differentiation of mineral oil tax rates. In addition, they are partly introduced as a substitute for other energy taxes and the revenue from these taxes is often large compared to the revenue from the pollution taxes. This means that including CO_2-taxes with pollution taxes rather than energy taxes would distort international comparisons. If they are identifiable, CO_2-taxes should be reported as a separate category next to energy taxes.[64]

Meanwhile, the Eurostat last group of environmental taxes are resources taxes, which cover resource extraction, including taxes on water abstraction, extraction of raw

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[61] See OECD, 2006, above n 11, 26. In this report, waste related taxes refer to 'certain products that can cause particular waste management' or to 'various forms of final waste disposal' such as on incineration and/or landfilling.
[62] Ibid. More detail types of 40 remaining environmental taxes can be read in Table 2.1 provided by the OECD report in 2006.
[63] European Commission, above n 43, 11-12.
[64] Ibid.

materials and forestry.[65] However, taxes on raw materials extraction do not include taxes on oil and gas extraction. The reason behind this exclusion mainly relates to analytical difficulties, as comparing resource tax revenues and time series among OECD countries is problematic.[66] Different tax systems and the highly unpredictable fluctuations in oil and gas prices are hindrances that influence comparability.[67]

In regard to the coverage of environmental taxes, the above discussion illustrates the discrepancy in the last category of tax bases. The Eurostat definition limits taxes that should be included in the resource tax bracket while the OECD takes into account all taxes in the last group that do not fit into the three primary categories. The wording of 'a broad spectre of tax bases'[68] in an OECD report in 2006 strengthens this view. Although the OECD provides the examples of taxes on 'various hazardous chemical materials' and 'the extraction of certain natural resources like sand and gravel',[69] this does not mean that they narrow the coverage of the fourth category. However, it is questionable whether taxes on oil and gas extraction will fall under the last category as no further information has been provided. If the reference to 'a broad spectre of tax bases' is taken at face value, it is quite obvious that taxes on oil and gas extraction are included in the last category. On the other hand, further examples given after this wording may indicate that the coverage of the fourth category is restrictive. Taxes on 'certain natural resources' might be a sign that taxes on oil and gas extraction are excluded in this context. It is quite problematic to determine the scope of the fourth category considering the contradictory nature of both pieces of evidence (the wording and the example). For analytical purposes, it will be better to depart from the OECD's definition of environmental taxes. The relevancy of environmental tax-bases as a firm feature of environmental taxes confirms that taxes on oil and gas extraction are included in its coverage. Additionally, a new OECD report in 2010 does not signify a restriction toward

[65] Ibid 10 and 13.
[66] Ibid.
[67] Ibid.
[68] OECD, 2006, above n 56.
[69] Ibid.

the scope, and the only tax that is excluded from environmental taxes is value added taxes (VAT).[70] Yet, no definitive piece of information has been provided in this matter.

Regarding the VAT, Eurostat has a similar view in excluding it from the scope of environmental taxes. Two reasons for this exclusion are as follows:

a. VAT is a tax levied on all products (with few exceptions). It is deductible for many producers, but not for households. Thus, it has no influence on relative prices in the same way that the other environmentally related tax bases do;

b. Revenue data for VAT is often not available by product. Environment-related revenues would have to be estimated using information on VAT rates combined with estimates of the total sales of the products and taking account of exemptions and deductibility of the VAT.[71]

The above reasons illustrate the difficulty in analysing the revenue derived from VAT. In fact, VAT may contain environmentally related tax-bases., and this proposition has been discussed in Eurostat reports. Eurostat provided some examples where VAT is regarded as an environmental tax, including VAT levied on transport fuels.[72] In this case, VAT is imposed on the mineral oil tax which will be included in a fixed calculation of the mineral oil tax. However, Eurostat remain of the view to omit VAT in the scope of environmental taxes based on practicalities.

In terms of revenue derived from environmental taxes, the OECD provides revenue databases across member countries which are updated regularly. The most recent report in 2010 covers some trends in the revenue raised through environmental taxes as a proportion of total gross domestic product (GDP), tax revenue and different tax-bases. All estimated revenue from environmental taxes in OECD countries are for the years 1996, 2002 and 2008. Based on this report, the average amount of revenue raised from environmental taxes in OECD countries is quite small, ranging from 1% to 2% of GDP.[73] However, countries such as Netherlands, Denmark and Turkey have above average revenue from environmental taxes, which accounted for more than 3% of their GDP in

[70] Organisation for Economic Co-operation and Development (OECD), *Taxation, Innovation and The Environment* (OECD, 2010) 33.
[71] European Commission, above n 43, 11.
[72] Ibid.
[73] See OECD, 2010, above n 70.

2008.[74] In contrast, Mexico and United States have the lowest percentage of revenue raised from environmental taxes, being less than 1% of GDP in 2008.[75]

A similar trend is also evident when analysing revenue generated from environmental taxes as a proportion of total tax revenue. Overall, there has been a slight decline in revenue from environmental taxes across OECD countries in 2008. The share of revenue from environmental taxes is on average between 6% and 8% of total tax revenue.[76] In spite of this trend, a few clear differences in total tax revenue among member countries appeared. An obvious example of a significant difference is shown by a comparison of Turkey and Mexico. Turkey had the highest percentage of total tax revenue generated from environmental taxes, which accounted for almost 15% in 2008,[77] whereas Mexico's total share was approximately minus 8% in the same year.[78]

A decrease trend in the amount of revenue from environmental taxes may lead to the question whether this can be used to indicate a green responsiveness to the tax system in that country. At first glance, it might be arguable that the lower the revenue derived from an environmental tax, the more responsive the tax has been in restricting production and consumption of certain goods. In terms of responsiveness, Stephen Smith expressed the view that the responsiveness of a tax is better determined over the long run[79] since revenue outcomes can vary over time. When demand and supply of certain goods in the long run are greater, the environmental tax can be concluded as being less effective. Smith further stated that the long run prediction of revenue outcome from

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[74] Ibid.
[75] Ibid.
[76] Ibid 34.
[77] Ibid. The report noted some reasons why Turkey has the highest percentage of total tax revenue from environmental taxes as follows:

> "This approach is part of a larger tax reform in Turkey to raise additional revenue from consumption and less from other sources, such as income and corporate taxes. Higher fuel taxes have been a deliberate part of their national development plans which seek development in a more sustainable manner, resulting in some of the highest motor fuel prices among OECD countries".

[78] Ibid. A minus share of total tax revenue in Mexico was due to a quick swift of oil prices. In addition, Mexico has "a unique structure of a fuel tax "that operates conversely to the changes. A relatively low oil price in 2002 has resulted a quite high rate of fuel tax, but oil prices had gone up considerably by 2008. As a result of the increase, the fuel tax rate worked effectively by showing a negative percentage of tax revenue.
[79] Stephen Smith, 'Taxation and the Environment' in Michael P. Devereux, *The Economics of Tax Policy* (Oxford University Press, New York, 1996) 243. The long run situation in this case has a meaning "when taxpayer patterns of production and consumption can be freely adjusted" to the imposition of environmental taxes.

environmental taxes is unlikely to be accurate. The accuracy of a prediction is influenced by many factors, such as the size and timing of the environmental tax effect. Moreover, Smith also stressed the need to consider the overall economic climate and economic activity level in the country, as this will have an effect on demand and revenue. For example, Smith noted that the demand for polluting goods may escalate when an economy grows, which would counter the effect of an environmental tax wholly or partially.

In line with Smith's view, the OECD underlines the fact that a declining trend in revenue raised from environmental taxes is not necessarily a sign of the "environmental friendliness" of the overall tax system in the country.[80] Several important reasons have been provided to support this view. Firstly, whether or not an environmental tax is well designed will not necessarily be reflected in the level of revenue raised.[81] For example, a tax that includes the application of a lower rate without considering the real level of environmental damage may generate substantial revenue, even though it will not automatically initiate a significant change in behaviour. In contrast, better designed environmental taxes undertaken by a number of countries have not always raised significant revenue. Secondly, in some countries there has been a greater emphasis on the use of other instruments in dealing with environmental problems.[82] However, although these instruments may produce similar outcomes, they do not generate revenue that environmental taxes are designed to do and the spending cost in implementing the instrument is much higher than the cost of implementing an environmental tax. A third and final reason highlighted by the OECD is that 'the role of structural differences across countries may vary revenue outcome'.[83]

Many legal theorists may have different interpretations regarding 'the environmental friendliness' of a country's tax system. In their analysis, they will return to the purpose of establishing an environmental tax. From a legal perspective, every tax has a main purpose, either revenue raising or changing behaviours. A clear explanation of tax purposes have been delivered by Kalle Maatta and Santoso Brotodihardjo. Maatta

[80] OECD, 2010, above n 70, 35.
[81] Ibid.
[82] Ibid.
[83] Ibid.

distinguished fiscal and regulatory taxes to discuss the purpose of environmental taxes. Fiscal taxes have a primary purpose of generating revenue, whereas a purpose of regulatory taxes is to change behaviours.[84] This means that regulatory taxes offer an ideal concept in designing environmental taxes since revenue is not the primary consideration. Unfortunately, the concept is only ideal in the theory of legal policy-making as the purpose of regulatory taxes is often vague in practice.

Likewise, Brotodihardjo divided the purpose of tax into 'budgeter' and 'regulerend'. Brotodihardjo used a term 'budgeter' to describe the primary purposes of taxes as revenue raising and a term 'regulerend' to explain another primary purpose of taxes as a tool of social engineering. He stated that since the nineteenth century the primary purpose of taxes has shifted from 'budgeter' to 'regulerend', and even modern countries have turned to the use of 'regulerend' as the major function of their tax systems.[85] He further said that in practice, when the legislators take into account 'regulerend' as the primary purpose of tax legislation, the revenues of taxes have become of secondary importance.[86]

Looking at Maatta and Brotodihardjo's views, the main purpose of environmental taxes should be altering behaviours. This means a successful indicator of environmental taxes can be measured through less revenue. Obviously, this justification may lead to the thought that the overall tax system of a country has exhibited environmental responsiveness. The above conclusion may be accurate in the context of quick analysis; however, the justification will be too narrow to some extent. First, using a tax purpose to determine the effect of an environmental tax is too elusive. The purpose of a tax may be found in the legislation implicitly or explicitly. However, a problem sometimes arises when the purpose is undeclared, and it often leads to confusion in practice whether it is

[84] Maatta, above n 53, 96 -97. Maatta noted that "the legal nature of regulatory taxes is obscured, in effect, because they may be used for a revenue purpose that is to finance, in particular, a reduction of income taxes. On the other hand, there is a threat that certain new regulatory taxes, especially incentive environmental taxes would go the way of alcohol and tobacco taxes: they become primarily revenue sources rather than mechanisms to change the conduct of regulates".

[85] Santoso Brotodihardjo, 'Pengantar Ilmu Hukum Pajak' *[An Introduction of Taxation Law]* (PT Eresco Bandung, 1995) 206.

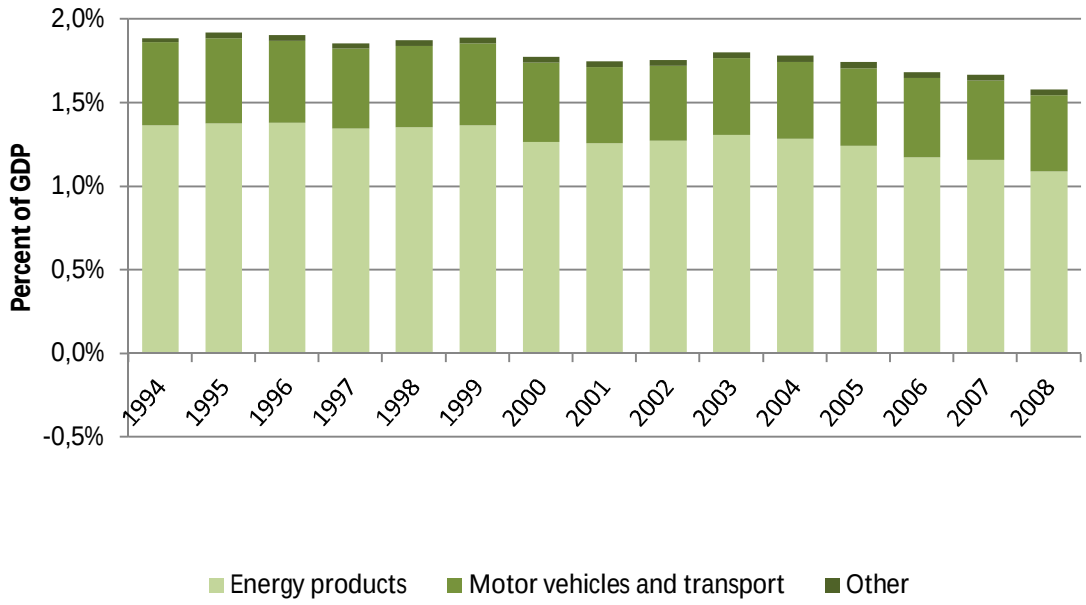
[86] Ibid. To strengthen his opinion, Santoso cited Adolph Wagner's opinion (Law Professor in Berlin) who stated that the less revenue the tax collectors get, the more successful are the taxes that play a role as a tool of social engineering.

revenue raising or altering behaviours. In the end, it depends on a legal interpretation which is mostly different in many ways. Second, a tax-purpose based theory is only good as a theory, and when it comes to practical implications, many influential factors should be taken into account. As discussed by Smith and the OECD, various factors from the tax rate to structural differences may play a part in determining the outcome of tax instruments in managing the environment. Therefore, an approach that combines tax purpose based theory and various other factors is worth considering. This will lead to a reliable outcome in establishing the 'environmental friendliness' of existing environmental taxes.

Leaving aside the discussion of environmental friendliness, it is important to note of the major sources of revenues from the category of environmental tax bases in OECD countries. Based on the OECD database in 2010 shown in Figure 3, substantial revenue sources of environmental taxes are derived from two categories of tax bases, namely energy products and motor vehicles. The composition of revenues for the last 14 years has not changed considerably. Energy products are still a dominant source of revenues in OECD countries which account for about 67% of total environmental tax revenues, while the 'other'[87] category of tax bases is quite small in generating revenues.

[87] Compared to the OECD report in 2006, the report in 2010 classifies environmental tax bases into 3 (three) categories which are energy products, motor vehicles and others. The last category covers a wide range of environmental tax bases including waste related tax bases which previously had been categorized in a separate bracket based on the use of environmental taxes in OECD countries. No substantial differences have been made in the analysis of revenue composition. Waste related tax bases and a wide range of tax bases still hold the least source of revenues, both in 2006 and in 2010.

Figure 3. Composition of Revenue generated from Environmental Taxes in OECD countries



Source: OECD/EEA database on instruments for environmental policy

In the case of energy products, significant revenues have been generated by taxes on motor fuels over decades. The OECD noted that at first these kinds of taxes have mostly been used to raise revenue. In this point, when raising revenue becomes a main purpose, the effect of motor fuel taxes on the environment is questionable. One parameter that should be taken into account is the rate of the tax.[88] The government should set a high rate on an environmental tax that leads to a greater environmental outcome. However, it is difficult in practice to establish the optimum rate of tax on fuels since different countries have different backgrounds and policies that may influence the determination of it.

The experiences of OECD countries showed that a discrepancy in tax rate on motor fuels continues to exist.[89] Higher tax rates on petrol and diesel have been found in several European countries, such as the United Kingdom and Turkey. On the contrary, Canada and USA are countries with the smallest rates of tax on petrol and diesel. As discussed

[88] See Barde, 1997, above n 31, 236.
[89] OECD, 2010, above n 70, 38.

before, the effect of environmental taxes can be signified by having a higher rate of tax. Example of this can be drawn from Turkey's experience in the imposition of motor fuel taxes. Turkey applied a higher level of tax rate on petrol than on diesel or liquefied petroleum gas (LPG), which encouraged consumers to drive diesel or LPG-fuelled vehicles.[90] As a result, the total consumption of petrol in Turkey has decreased considerably. This leads to a conclusion that motor fuel taxes in Turkey are sufficiently high to alter consumer's behaviours.

The determination of an optimal level of tax rate on motor fuels is somewhat problematic. Several impacts from the use of fuels should be taken into consideration. The need for a government to raise revenue, rectifying negative externalities from fuel usage, the cost of accidents and congestion are some features that should be integrated when determining the unit rate of fuels.[91] Based on the calculation of tax rates on petrol performed by Lin and Prince in 2009,[92] the OECD assumed that the unit rate on petrol in some European countries may possibly exceed the optimal level. However, the OECD did not provide further information as to whether surpassing the ideal tax rate on fuels may drive the target groups to manage their emissions. They only provided one example with the higher rate on petrol and the rate differentiation on fuels in the case of Turkey. Although Turkey's experience cannot be generalised, it is worth learning how the fuel tax policy in Turkey can stimulate the consumption of less polluting vehicles.

Taxes on motor vehicles are the second category of tax bases that generate major revenues for OECD countries. The main types of motor vehicle taxes are *one-off* and *recurrent*. The first type refers to a tax that is imposed at the initial sale or registration of a motor vehicle, while *recurrent* taxes are levied periodically in a given year to allow the owners to continuously use their motor vehicle.[93] Based on OECD member experiences, taxes on motor vehicles have a similar effect to motor fuel taxes in driving consumer behaviours. It is noted in the report that both *one-off* and *recurrent* taxes on motor

[90] Ibid. It is reported that the number of LPG-fuelled vehicles increased from 800,000 to over 1.8 million between 2003 and 2007.
[91] Ibid 39. Detailed explanation of the calculation of fuel tax rates can be found in Box 2.3. OECD report in 2010.
[92] Ibid. The OECD provided that Lin and Prince calculated the optimal level of tax rate on petrol by incorporating some features such as global and local pollution, congestion, accidents and oil dependence. They found that the optimal level of petrol tax is USD 0.36 per litre excluding sales tax.
[93] OECD, 2010, above n 70, 40.

vehicles use various environmental criteria to determine the rate of taxes. An example of the determination of a *one-off* tax rate has been shown in Norway. CO_2 emission, vehicle weights and engine power are a number of criteria that sets the rate of tax in Norway.[94] These criteria aim encourage consumers to switch their preferred vehicles to less polluted ones.[95]

In the case of *recurrent* taxes, most criteria used to set the rate of tax are CO_2 emissions and the fuel efficiency of the vehicle. These criteria are not that different from *one-off* taxes. According to the OECD report in 2010, some member countries apply progressive rates either for *one-off* taxes or for *recurrent* taxes on carbon emissions of motor vehicles. Higher carbon emission intensities will lead to higher rates of taxes on motor vehicles.[96] Examples for higher *recurrent* taxes are found in the Netherlands, Norway and Portugal. In those three countries, the amount of recurrent taxes on vehicles that emitted 380 g CO_2/km was considerably higher, and accounted for over EUR 300 per tonne.

Obviously, the OECD findings on the imposition of motor vehicle taxes are valuable. Despite no further examples on the real effect of motor vehicle taxes, it is sufficient to assume from the report that motor vehicle taxes have also played a significant role in altering behaviours. Along with various criteria in setting the right price, the progressivity of the rate has a meaningful part in ensuring an appropriate tax burden among car owners due to the environmental damages caused by carbon emissions. This structure may enhance the possibility of achieving environmental gains since the higher rate will be in accordance with the increase of emissions.

Another category of environmental tax bases in OECD countries has been put in the 'other taxes' bracket. This category attempts to cover an ample of pollutants ranging from hazardous chemicals to waste. In a previous OECD report in 2006, waste was put in the separate brackets, while 'other' brackets contained a broad variety of tax bases such

[94] Ibid 41.
[95] OECD, 2006, above n 11, 37.
[96] OECD, 2010, above n 70, 43. The OECD provided a clear figure on the total CO_2 component of motor vehicles (petrol driven vehicles) taxes either *one-off* or *recurrent*. The figure showed the progressivity of taxes is in line with the increasing carbon emission from motor vehicles. It is noted that "vehicles with emission intensities of 380 g CO_2/km have a significantly higher implicit carbon price than those vehicles emitting at a rate of 100 g CO_2/km".

as hazardous chemicals and natural resources extractions. No further explanation has been provided for the differences. The obvious hint in placing 'waste' into the 'other taxes' bracket is the revenue derived from waste related taxes. The revenue is relatively small, similar to the revenue from 'other taxes' brackets. Thus, it is reasonable to assume that the inclusion of waste related taxes into the 'other taxes' category is acceptable. Furthermore, it also does not disrupt the purpose of the analysis, especially the effect of revenues from environmental taxes.

Although the revenue from other tax bases in OECD countries is quite insignificant compared to energy products and motor vehicles, the impact on the environment cannot be set aside due to fewer substitutes products.[97] Less close substitution is caused by the characteristic of these taxes which are levied on the actual pollutant.[98] For instance, some OECD countries impose taxes on nitrogen oxide emission. The imposition is based on the reason that nitrogen oxide emission can damage the environment and people's wellbeing. Generally, the tax rate on nitrogen oxide emission in OECD countries is relatively low. Only Sweden, Norway and the state of New South Wales in Australia have higher tax rate on nitrogen oxide.[99] However, no further information is available on whether taxes on nitrogen oxide emission have a direct impact on the consumption patterns. The experience of Sweden may bring a clearer picture of revenue earmarking on nitrogen oxide taxes, as it has been reported that the revenue has been recycled back to the energy producers.[100]

In terms of revenue earmarking, it is worth noting that the revenue from most environmental taxes in OECD countries are allocated for specific purposes. [101] This means environmental purposes are not the only target for earmarking. Occasionally, budget earmarking is likely to be put on other purposes. For example, revenue from motor fuel taxes has been allocated to maintain or construct roads.[102] However, there are a couple of important arguments from economists on the issue of earmarking that are worth noting.

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[97] Ibid 44.
[98] Ibid.
[99] Ibid 46.
[100] Ibid.
[101] See OECD, 2006, above n 61. It is reported that "about 75 of the earmarked taxes are levied on energy products (including 50 motor fuel taxes levied at the state level in the United States), 15 are levied on motor vehicles while 20 are waste related taxes".
[102] Ibid.

First, the allocation of revenue from a tax to specific environmental purposes would make an earmarked tax, in contrast to the typical environmental taxes that are preferred by economists.[103] Second, the conventional wisdom of public economists is that earmarking may lead to inefficient fiscal decision making.[104]

Despite the above arguments, it is clear from OECD member experiences that earmarking is still considered as the preferred idea in the imposition of environmental taxes. The reasoning behind the earmarking of some environmental taxes in OECD countries is not always clear. Although experience has shown that some earmarked taxes still exist, the report suggests that the revenues from environmental taxes should not be used to fund a particular purpose. The revenues should go to the general government budget and be used to increase general expenditures in other matters or to keep a constant tax burden by reducing other taxes. It is important to note from the report that environmental taxes may have a capacity to serve a need for 'double dividend' gains. As discussed in the previous section, the first dividend is the improvement of the environment, whereas the second is to make a reduction in tax distortions. However, the theoretical framework on the existence of a double dividend is uncertain. In practice, a number of governments attempt to realise the double dividend by implementing revenue-neutrality.[105] To obtain greater public support, the second dividend has been announced at the same time as the introduction of a new environmental tax.[106] An example of this was the introduction of the Climate Change Levy in the United Kingdom (UK). When introducing the levy, the UK

[103] See Barde, 1997, above n 31, 238; Smith, above n 79.

[104] Ibid. Smith further explained inefficiency in fiscal decision making as follows:

> "This view of earmarking, however, depends on assumptions about the underlying political and administrative process that may be unrealistic. Earmarking is contrasted unfavourably with a situation where taxes and public expenditures are set 'optimally' as the outcome of a process which sets taxes so as to minimize the costs of taxation and allocates expenditures across particular headings so as to maximize the overall benefit of public spending. In practice, political decisions about taxation and public spending may reflect a wider range of pressures...In these circumstances, public support for new taxes may be weakened by the concern that the revenues could be diverted to undesired purposes. Earmarking of a new environmental tax to some popular expenditure heading may then be a strategy which would generate greater political support for the measure than if the revenues were simply to be allowed to augment the general resources of government".

[105] OECD, 2001, above n 32, 51-52.

[106] OECD, 2010, above n 70, 142.

government also announced a reduction of employers' social security contribution rates by 0.3 percent.[107]

On the other hand, a number of mechanisms such as exemption, refund, rate reduction and tax ceilings are incorporated in many environmental taxes due to a wide range of social and economic issues.[108] Over 1,150 exemptions and 175 refund mechanisms have been found in environmental taxes in OECD countries.[109] The introduction of those tax mechanisms aims to alleviate certain problems that may arise from the imposition of environmental taxes.[110] However, there is concern over the impact of these mechanisms on competitiveness and distributional fairness. These two crucial impacts will be elaborated in the next section of this chapter. In the case of exemption mechanisms, it is worth noting a concluding remark from the OECD that the effectiveness and the efficiency of environmental taxes can be enhanced by reducing the use of exemption and other tax mechanisms.[111] Conversely, the two issues concerning competitiveness and distributional impacts may hinder the adjustment.

2.4. Issues Arising from the Use of Environmental Taxes

In spite of having many advantages, environmental taxes have some limitations in practice. Many scholars have recognised a wide range of obstacles in the imposition of environmental taxes in OECD countries. Barde categorised 5 (five) main issues that may hinder the application of environmental taxes, namely: technical issues, political issues, distributive implications, institutional issues and international trade.[112] However, Barde did not discuss those issues in depth, and this may limit the lessons that can be learnt from his work. For instance, in the case of technical issues, Barde only declares a single issue related to the difficulty in formulating and in implementing efficient rates of environmental taxes. The lack of further information may lead to confusion. The political as well as institutional issues were discussed in similar ways to technical issues. In terms

[107] Ibid.
[108] OECD, 2006, above n 11, 43; OECD, 2010, above n 70, 53.
[109] Ibid.
[110] Ibid.
[111] OECD, 2010, above n 108.
[112] Barde, 1994, above n 26, 20-21.

of political issues, three major concerns have been highlighted which are a mistaken concept of pollution taxes, resistance of industries to be taxed and fear of loss in bargaining power, whereas institutional issues cover only one problem related to the capacity of institutions in monitoring and enforcing environmental taxes.

On the other hand, Don Fullerton et al. exposed some obstacles in a straightforward manner without classifying them in groups as did Barde. Those obstacles are geographically-varying damage, incompatibility with firm decision-making structures, damaging avoidance activities, distributional effects and concerns about international competitiveness.[113] Unlike Barde, Fullerton et al. explains each obstacle in sufficient details, making them easier to understand. For example, geographically-varying damage has been referred to as the difficulty for environmental taxes to apply the same rate to all sources. When the rate of tax is imposed separately to each source, it will give rise to political lobbying by the firm. Alternatively, the uniform rate may be applied to all sources because some types of environmental taxes, such as environmental taxes on pollution-related input, may not be able to distinguish the location.

At first glance, only two similar issues have been discussed by Barde and Fullerton et al., distributional impacts and competitiveness issues. In fact, some obstacles that have been declared by Fullerton et al. are included in the categorisation provided by Barde. For instance, Fullerton et al. discussed the difficulty of implementing the rate of environmental taxes under the title of geographically-varying damage. This discussion is similar to the technical issues mentioned by Barde. Thus, it is reasonable to integrate the geographically-varying damage issues in the technical bracket since it provides a brief description related to the problem of implementing the rate of environmental taxes.

OECD reports in 2006 and in 2010 identified a number of challenges that may not be different to the previously mentioned issues. Four challenges were considered to be the main shortcomings in the implementation of environmental taxes in OECD countries. These challenges are distributional concerns, competitiveness, tax administration and

[113] Don Fullerton, Andrew Leicester and Stephen Smith, 'Environmental Taxes' (National Bureau of Economic Research (NBER) Working Paper 14917, 2008) 4-5.

public acceptance issues.[114] It is worth noting that the OECD not only discusses the major issues with environmental taxes, but also suggests methods to address the specified obstacles. This section will rely heavily on the information provided by the OECD in relation to the mentioned issues and techniques to overcome them.

The first issue in the implementation of environmental taxes is the impact on income distribution. Most studies in European countries seem to have similar views on the regressive impact of environmental taxes. Barde briefly underlined that the introduction of environmental taxes tends to have a potential regressive impact on low income groups.[115] One example given was that energy taxes have a severe effect on low income households due to the sensitivity of this group to the price of products. More information on the income regressivity of certain taxes has been provided by E.J. Symons et al. in 2002. They investigated the effect of CO_2 or energy taxes on households in France, Italy, Germany, Spain and the UK. The overall findings suggested that pollution taxes may have different effects on income distribution in European countries.[116] In France and Spain, the application of CO_2 taxes is regressive, while in Italy the tax has a neutral effect.[117] On the contrary, the progressive effect of the tax has been shown in the case of the UK.[118]

A study by Mette Wier et al. on the effect of CO_2 taxes in Denmark highlighted the most common result of regressivity in OECD countries. Their evidence showed that the application of CO_2 taxes in Denmark is likely to be regressive. They noted that the effect of direct CO_2 taxes on households is more regressive than indirect CO_2 taxes. This is due to differences in consumption patterns as mentioned in the conclusion:

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[114] See OECD, 2006, above n 11, 17 – 21; OECD, 2010, above n 70, 143 – 146.
[115] See Barde, 1994, above n 26, 20.
[116] E.J. Symons, S. Speck, and J.L.R. Proops, 'The Distributional Effects of Carbon and Energy Taxes: The Cases of France, Spain, Italy, Germany and UK' (2002) *European Environment 12* 211.
[117] Ibid.
[118] Ibid. The following conclusion may provide a clear picture of the overall result:

> "A tax on energy use, or CO_2 emissions, will raise the price of consumption goods in direct relation to the intensity of that good. Consumers therefore face an increased tax burden from consumption. This will vary according to the proportion of total expenditure allocated to each good and will differ across the income distribution. The paper estimated the increase in tax burden using the Eurostat Family Budget household consumption data based on surveys carried out in 1988 and a comparable German data set. The results do not show similar patterns emerging. In Germany, France, and slightly in Spain, the imposition of the taxes was regressive. This was not the case for the UK and Italy. The results were driven by the expenditure category of weights of total expenditure for different equivalent expenditure groups".

> Household consumption patterns, and thus CO_2 tax payments, vary considerably with both household income and urbanity, making high income households pay more taxes due to their higher consumption of leisure activities and communication, private transport, and travel. On the other hand, low-income households suffer from high tax payments due to their relatively high consumption of food and public transport and rural households suffer from high tax payments due to their relatively high demand for heating, electricity and transport.[119]

Meanwhile, a report from the OECD in 2006 confirmed the regressivity of environmental taxes by gathering data from numerous studies on income distribution impacts in member countries.[120] In this case, energy taxes are one example of environmental taxes that have significant impacts on low income households. It was noted that households relying upon the use of energy in daily consumption.[121] On the other hand, energy is "one of the largest sources of pollution", which can generate substantial tax revenue.[122] The inevitable consequence is that low income households, which usually have a greater need for energy, will pay a greater share of their income in tax.

From a legal perspective, distributional impacts of environmental taxes seem to be incompatible with the principle of equality. Vanistendael stated that under this principle, equal treatment in taxation should be imposed to all persons in equal circumstances. Vanistendael further explained that the principle of equality has two meanings: procedural and substantive. Procedural equality requires that the "law must be applied completely and impartially, regardless of the status of the person involved", whereas substantive means that "persons in equal circumstances should be treated equally".[123] Looking at the definition of the equality principle, the imposition of environmental taxes should satisfy both its procedural and substantive meanings. In the context of the substantive meaning, it allows different treatments for people who are not in the equal positions; however, it also requires a rational basis for discrimination.[124] As previously discussed, some environmental taxes, especially energy taxes, are regressive in that they

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[119] Mette Wier, Katja Birr-Pedersen, Henrik Klinge Jacobsen & Jacob Klok, 'Are CO_2 taxes regressive? Evidence from the Danish experience' (2005) *Ecological Economics 52* 249.
[120] OECD, 2006, above n 11, 134 – 136.
[121] OECD, 2010, above n 70, 143.
[122] Ibid.
[123] Vanistendael, above n 48, 19.
[124] Ibid. Vanistendael (1998) provides an example of a rational basis for unequal treatment among taxpayers. Higher-income taxpayers will pay more than lower income taxpayers on the basis that the tax payment will increase in line with the increased amount of the income. This is also done with the application of graduated rates.

place a higher tax burden on low income households than high income households. This is somewhat contrary to the substantive meaning of the equality principle. Low and high income households are clearly not in the same circumstance considering their discrepancy in wealth. Therefore, low income households should be treated differently since their energy usage usually comprises a greater proportion of their total expenditure

Addressing the distributional impact of environmental taxes should be on the agenda of governments since the regressive effect will increase inequality and at the same time reduce public acceptance of such taxes. The OECD noted that there are two methods to lessen the impact of income distributions, namely mitigation and compensation. Mitigation is used as an '*ex-ante* measure' to ease the tax burden by setting a lower tax rate, while compensation as an '*ex-post* measure' refers to the method that is used without having an effect on existing tax structures or rates.[125] However, the OECD suggested that mitigation is not a good choice of method since it will reduce the effectiveness of environmental taxes in practice. Conversely, compensation may serve a better method to balance the needs of managing the environment as well as reducing distributional impacts of environmental taxes. A similar view was expressed by Wier et al that compensatory measures are extensively used in most OECD countries to alleviate the tax burden especially for low income households. Examples of compensation measures are 'the introduction of special green allowance' or 'the reduction of other types of taxation'.[126] The experiences of OECD countries showed that the reduction of other taxes is widely used to reduce the regressive impacts of environmental taxes.[127] This can be seen in the case of tax reform in Denmark in 1998. A reduction in personal income taxes for lower and medium income households was introduced to off-set the increase rates of energy and petrol taxes. The tax reduction had a greater benefit on the redistribution of income among all lower income households.[128]

[125] OECD, 2001, above n 32, 88 – 89.
[126] Wier et al, above n 119.
[127] OECD, 2006, above n 11, 141.
[128] Ibid. In this report, it is worth noting that the tax reduction policy in Denmark brought a loss in income tax revenues. The revenue loss in 2002 was DKK 10 billion, but at the same time the total revenue from green taxes and property taxes had recovered the loss by gaining over DKK 10 billion.

Competitiveness is another crucial issue in the imposition of environmental taxes. The fear of the negative impacts of environmental taxes on energy-intensive industries has held back the acceptance of such taxes. This concern has been framed on economic and environmental grounds as stated by Paul Ekins and Stefan Speck in the following:

> 1. Economic. If environmental policy produces negative impacts on competitiveness it will be associated with corporate, sectoral or national economic decline, which will make its introduction politically difficult or impossible.
>
> 2. Environmental. If domestic 'dirty' (environmentally-intensive) industry declines, to be replaced by a growth in foreign 'dirty' industry, overall environmental impacts may not change. If the environmental effect was local, then a cleaner domestic environment will have been bought at the cost of a loss of competitiveness (and gain in foreign competitiveness will entail a worse environment there). If the environmental effect was global (e.g. greenhouse gas emissions), then loss of national competitiveness will have brought no environmental gain at all.[129]

Apart from this concern, it is very important to consider the definition of competitiveness itself, and the policies that can lessen the impact on it. Having regard to the concept of competitiveness is also considered important by the OECD and other scholars. This is on the grounds that competitiveness at the firm level is interrelated with competitiveness at the sectoral or national level. The OECD categorised competitiveness into different levels, including individual firms and sectors and the whole economy of a country. At the level of firms, competitiveness means that one company is competitive if it can produce better and cheaper goods or services than others.[130] On the other hand, at the national level, competitiveness is much more complex, and according to the OECD involves "correcting for market failure provides an improvement in the overall economic outcome, and what represents increased cost for one firm, sector or industry may lead to reduced costs for others".[131] The two aspects of competitiveness mentioned by the OECD may appear mutually exclusive, but in fact they are interconnected on the basis that firms' performances in generating sufficient shares will determine national outcomes. Better outcomes will be derived when competitive firms have a wider chance to trade internationally.

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[129] Paul Ekins and Stefan Speck, *Competitiveness and Exemptions From Environmental Taxes in Europe (*Environmental and Resource Economics 13, Kluwer Academic Publishers, 1999) 386.

[130] OECD, 2006, above n 11, 68.

[131] Ibid 69. An example of the above concept is "the introduction of higher energy taxes when the revenue is recycled through lowering social security contributions. In this case the competitiveness of labour intensive production will improve".

According to Dieter Hesse the concept of competitiveness is indefinable. Commonly, it has been applied at two different levels, firms and countries. At the firms' level, competitiveness refers to the satisfactory performances of firms in achieving profit and market share from their products or services, while at the national level competitiveness refers primarily to successful performance in international markets and the ability to maintain constant economic growth and income per capita.[132] These general definitions have been used by Hesse to underline the real issue of competitiveness. Hesse mentioned that failure to achieve favourable policies in doing business at the firm level will influence the economic growth in the medium and longer term.[133] Additionally, this also will affect average income growth.

Ekins and Speck provide a general definition of competitiveness as "the ability of a national economy, or a productive sector, to sell its goods and services in domestic and world markets".[134] In addition, Ekins and Speck underline an important point that 'being competitive' will bring benefits to either national or sectoral incomes. Based on this point of view, it is clear that competitiveness at the firm level is correlated to national and sectoral economic growth. This leads to the assumption that imposing environmental taxes to manage the environment may disrupt competitiveness, as outlined by Ekins and Speck in the following:

> If a country's firms are not generally competitive, then its share of world exports will decline, a weak exchange rate will limit the possibility to import and income growth will be below average. Although the economy will restructure so that new firms or sectors take the place of those in decline, reductions in the competitiveness of important economic sectors will be marked by significant bankruptcies and job losses, possible exchange rate adjustments and a reduction in economic activity. The new activities may not be as productive as those they replace. There may be substantial transition costs and, perhaps, a higher equilibrium rate of unemployment. Economic restructuring could be very painful and politically unpopular. Potentially affected businesses are clearly concerned by this possibility, politicians share their concern, and exemptions from environmental taxes are the result.[135]

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[132] Dieter Hesse, 'Environmental Policy and International Competitiveness in a Globalizing World: Challenges for Low-Income Countries in the UNECE Region' *(*Discussion Papers United Nations Economic Commission for Europe, November 2007) 2.
[133] Ibid.
[134] Ekins and Speck, above n 127, 386 – 387.
[135] Ibid.

Obviously, the OECD and other scholars agree that environmental taxes do affect competitiveness. A further concern has been placed on the 'leakage' issue.[136] In this case, the relocation of production will occur when no similar environmental taxes are applied in alternative places.[137] The relocation will have a wider effect on international competitiveness when production has been transferred to other countries. This will contribute to global pollution levels, which will continue to affect a given country.[138]

The OECD noted two approaches to minimise the impact of international competitiveness as a result of the introduction of environmental taxes. The first approach is to provide exemptions to the most energy-intensive industries.[139] This is the most common approach in OECD countries to alleviate the tax burden on certain industries from environmental taxes. The Netherlands is one example of an OECD country that applies the exemption strategy for the use of electricity above 10,000,000 kWh.[140] An enterprise will be exempted from the Dutch energy tax if an agreement on energy-efficiency has been concluded.

The second approach outlined by the OECD is border tax adjustments (hereinafter: BTAs). The OECD defines BTAs as follows:

> "...any fiscal measures which put into effect, in whole or in part, the destination principle (i.e. which enables exported products to be relieved of some or all of the tax charged in the exporting country in respect of similar domestic products sold to costumers on the home market and which enable import sold to costumers to be charged in the importing country in respect of similar domestic products)".[141]

From the above definition, it is clear that BTAs are used to counterbalance the impact of competitiveness internationally. In this case, exported products will be exempted, but at the same time taxes will be imposed on imported products which are produced in

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[136] See OECD, 2006, above n 11, 69 and OECD, 2010, above n 70, 144.

[137] Ibid.

[138] OECD, 2006, above n 11, 69. The OECD describe the 'leakage' problem as follows:

> "In the case of taxes levied on 'local' pollutants, the loss of competitiveness, as evidenced by the relocation, may be judged to be worthwhile – because of the resulting local environmental improvement. However, when the pollutants concerned contribute to global problems, the loss of competitiveness in the country imposing the tax results in little or no local environmental improvement, as the country continues to suffer from the pollution even though the activities that produce it have moved abroad".

[139] Ibid 91.

[140] Ibid.

[141] Ibid 93.

exporting countries. The OECD noted that all countries have experiences in the use of BTAs on fossil fuels. The same tariff has been levied on imported fossil fuels as tariff on the domestic fuel tax.[142] However, the application of BTAs is somewhat problematic. In terms of technical concerns, synchronising various policy instruments in any given country with policies in importing countries as well as establishing the amount of a tariff for a number of 'import codes' is very challenging.[143] Furthermore, the use of BTAs is said to endanger progress in global trade liberalisation.[144]

However, the use of BTAs is becoming insignificant due to growing international co-ordination. By coordinating policies, the leakage problem has been reduced significantly.[145] Without a doubt, this method has been recognised as an effective approach to deal with the impact of international competitiveness. A Swiss case on heavy goods vehicle road use fees illustrates the coordination method that diminishes the competitiveness challenge. The policy was applied in 2001 and was imposed a fee on all heavy goods domestic and foreign vehicles that used Swiss roads.[146] To achieve its purpose, a bilateral agreement with the EU was concluded. Although there are some challenges[147] in construing the agreement, the OECD highlights the importance of 'cross border agreements' to be put into practice. As argued by the OECD, carbon leakage would account for only 1.7% of total emissions in 2050 if all countries to the Kyoto Protocol act together to minimise the problem.[148]

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[142] Ibid 92.

[143] OECD, 2010, above n 70, 145.

[144] See Ibid. and OECD, 2006, above n 140. The OECD report in 2010 does not elaborate on the possibility of BTAs instrument irritating the trade. However, the previous report in 2006 also underlines a similar issue of trade obstruction related to the application of BTAs. It is noted as follows:

> "The imposition of taxes on imports or exemption/rebating of taxes on exports are obviously a barrier to trade, so they do come within the scope of the multilateral trading system, as they do raise trade law concerns. If a government generally imposes an energy tax but then exempts particular industries, such exemption could be treated as a specific subsidy that is actionable under the 1994 Agreement on Subsidies and Countervailing Measures (1994 ASCM). Similarly, if an exemption is targeted at export-oriented industries, it could be perceived as a prohibited export subsidy under the 1994 ASCM".

[145] See OECD, 2010, above n 70, 144.

[146] See OECD, 2006, above n 11, 119.

[147] Ibid 121. The challenges in Swiss and EU bilateral agreements include the technical aspects such as the calculation of fees and weight limits. Additionally, the agreement also faces a challenge in the case of Switzerland that is unable to verify "a broad unit measuring mileage mandatory for foreign vehicles". Therefore, an additional system should be arranged to meet Switzerland's needs.

[148] OECD, 2010, above n 145.

The third problem that may hinder the application of environmental taxes is the issue of administrative costs. The discussion of this issue is very crucial since environmental taxes have been imposed in various tax-bases which are difficult to monitor and administer.[149] This may lead to increasing costs for governments to manage their existing tax collection system. If this is the case, the application of environmental taxes may challenge a good tax administration as one of the principles of taxation in the area of public finance.[150] This principle aims to develop a good tax which is low cost in calculating or administering for governments and taxpayers as well as discouraging tax avoidance.[151] A core message of this principle is that administrative costs of such taxes should be less than possible targeted revenues. Thus, the need for an adaptable method is essential to avoid difficulties in administering such taxes.

Based on the experiences of OECD countries, administrative burdens can be reduced by using certain techniques. First, developing new technology in administering taxes may reduce the costs of implementation.[152] This can be learnt from The Netherlands' experience in proposing the road pricing scheme.[153] The scheme uses the satellite tracking system that can trace every vehicle in the country and impose vehicle taxes based on distance measurements.[154] Second, determining the tax-collecting system whether at the source or at a certain level of the supply chain is considered a good method to alleviate administrative costs.[155] The OECD underlines that it will be most efficient to collect taxes at a certain level of the supply chain when the type of pollutant does not have a direct effect on the level of pollution. For instance, motor fuel taxes will be easier to collect at the refinery or wholesaler than individual consumers.[156] On the

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[149] See Fullerton et al, above n 113, 6; OECD, 2006, above n 11, 146 – 149; OECD, 2010, above n 70, 145 – 146.

[150] Richard K. Vedder and Lowell E. Gallaway, 'Some Underlying Principles of Tax Policy' (paper for Joint Economic Committee, Washington D.C., 1998) 4 – 5.

[151] Ibid.

[152] OECD, 2010, above n 70, 146.

[153] Ibid.

[154] See Transport Consultancy, 'Dutch Road Pricing Trial', n.d. <http://www.trl.co.uk/consultancy/multi_modal_journey/intelligent_transport_systems/our_capabilities/road_user_charging/dutch_road_pricing_trial.htm>.

[155] OECD, 2010, above n 152.

[156] Ibid. The OECD illustrated as follows:

> "Carbon emissions, for example, have a direct correlation to the type of fuel used; the manner in which the fuel is combusted (for a given fuel consumption) does not affect CO_2 emissions, unless carbon capture and storage is used (which is unlikely for small and mobile sources of carbon, such

other hand, the experience of Ireland in the imposition of a plastic bag levy demonstrates a different scheme that can keep administrative costs at reasonable levels.[157] The scheme involves a large number of points of sale which distribute the full levy to the costumers. Although a modest increase in administrative costs cannot be avoided, the existing tax-collection scheme is in the right place since it can discourage consumers from using plastic bags.

The last issue arising from the implementation of environmental taxes is gaining public acceptance. In fact, this issue is a common obstacle in the introduction of all new taxes. The unpopularity of taxes stems from the distrust of the public as to where the money goes. Additionally, the fact that taxes do not provide direct benefits in return makes the scepticism worse. In the context of environmental taxes, the OECD highlights two general findings based on the PETRAS project in the mid-1990s that hamper the introduction of such taxes. Lack of trust from public toward the use of the revenue and lack of understanding the objective of the scheme are believed to defy the environmental tax reforms.[158] The experience of environmental tax reform in Germany and Denmark ascertained the need for overall insight toward the scheme. The public in Germany and Denmark did not fully understand the idea of reduction on other taxes using the revenue from environmental taxes.[159] The OECD reported that Germany and Denmark people were fully aware of paying energy taxes, but a similar awareness was not evident in the associated reduction in social insurance taxes.

Based on the above findings, the OECD suggests some approaches to ease the public acceptance issue. First, developing a common understanding on the overall scheme is crucial.[160] This can be done by providing accurate information of the scheme to the public through all types of media instruments such as publication and databases. Furthermore, embracing various stakeholders in preparing the scheme will enhance the possibility of approval from the public. Secondly, a gradual phasing in of environmental taxes will

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as vehicles). Therefore taxing motor fuel at the refinery or wholesaler is much easier than monitoring the emissions from individual vehicles".

[157] See OECD, 2006, above n 11, 152.

[158] OECD, 2006, above n 11, 152; OECD, 2010, above n 70, 146.

[159] Ibid.

[160] Ibid.

increase acceptability.[161] A gradual approach also applies to the policy of increasing the rate of existing taxes, to expand the implementation and to introduce progressive taxes.[162] This can be drawn from the experience of Finland in increasing the rate of the CO_2 tax as well as in broadening its application. It is noted in an OECD report in 2006 that Finland imposed CO_2 taxes with the rate of FIM 24.5 per tonne of carbon in 1990 and limited its application to heat and electricity production. With a gradual approach, the CO_2 tax in Finland was increased to FIM 374 per tonne in 1998 as well as widening its implementation to transport and heating fuels.[163] Similar suggestions have also been put forward by Barde. In this case, Barde emphasises a need for 'proper timing' to improve the public acceptance towards the implementation of environmental taxes. A proper timing has been elaborated as follows:

> First, a pre-announcement allows stakeholders to take at an early stage appropriate measure, such as emission abatement technology, changes in production methods and input mix. Secondly, a progressive and carefully planned and announced increase in the tax level avoids brutal disruptions and enables industry to plan its investment strategy.[164]

The lesson learnt from those above approaches is that having a good tax policy as well as good preparation to implement it is a must. Good preparation includes introducing a new tax policy years ahead as stated by the OECD and Barde and at the same time transferring all information to the public will increase the chance of such policy being accepted. Furthermore, maintaining the flow of information to the public in the years after will garner public support when a policy adjustment is necessary, such as increasing the rate of taxes.

2.5. Environmental Taxes Used in Combination with Other Instruments

The prior discussion indicates that environmental taxes have some limitations in practice. Those issues prove that environmental taxes as a market based instrument are far from being perfect. Employing environmental taxes as a single instrument to address

[161] OECD, 2006, above n 11, 153.
[162] Ibid 154.
[163] Ibid 153.
[164] Barde, 1997, above n 31, 237.

environmental problems is often misleading.[165] Every instrument has positive and negative points, and no single instrument might perform sufficiently well in dealing with all environmental circumstances.[166] To support their opinion, Neil Gunningham and Darren Sinclair provide further examples of the strengths and weaknesses of an environmental policy instrument. High dependability and predictability are advantages of command and control regulation, but it also has disadvantages of being inflexible and inefficient.[167] On the other hand, a good feature of economic instruments is efficiency; however, it is also seen as unreliable.[168] Unreliability is also found in other instruments, such as information-based strategies, voluntarism and self-regulation being their shortcomings, while being non-coercive, unobtrusive as well as cost-effectiveness seem to be good values of those instruments.[169]

A more recent study by Lawrence H. Goulder and Ian W.H. Parry in 2008 indicates similar findings to Gunningham and Sinclair. In their review of instrument choice to control pollution, Goulder and Parry conclude that no single instrument performs best in all aspects, and each instrument has strengths and weaknesses. In terms of cost-effectiveness, emissions taxes or auctioned allowances prevail; however, they fail to perform well in terms of political feasibility and income distribution.[170] In contrast, direct regulatory policies and tradable allowance systems have the opposite features as emission taxes or auctioned allowances.[171]

Goulder and Parry further state that most instrument choice analyses have preferred to use environmental taxes or auctioned allowances to address negative externalities. The rationale to choose incentive-based instruments has been based more on a cost-effectiveness basis and other aspects such as administrative and institutional issues have been disregarded.[172] Instead of falling into the same conclusion as most analyses, Goulder

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[165] Neil Gunningham and Darren Sinclair, 'Regulatory Pluralism: Designing Policy Mixes for Environmental Protection' (1999) 21(1) *Law and Policy* 50.
[166] Ibid.
[167] Ibid.
[168] Ibid.
[169] Ibid.
[170] Lawrence H. Goulder & Ian W.H. Parry, *Instrument Choice in Environmental Policy* (Oxford University Press on behalf of the Association of Environmental and Resource Economists, 2008) 166.
[171] Ibid.
[172] Ibid 171.

and Parry suggest formulating a new policy instrument that can integrate cost-effectiveness and distributional goals, which may enhance political outcomes.[173] Although it is not explicitly stated, this suggestion seems to raise the idea of combining various policy instruments to achieve a better result in dealing with environmental problems. A sign of this is integrating a policy instrument that has a good virtue in maintaining cost-effectiveness with an instrument that is best in achieving distributional goals. However, integration between one instrument and another should be analysed carefully since the effects of combination may be unexpected.

What has been suggested by Goulder and Parry are not new ideas. Barde recognised the concept of 'mixed systems' in OECD countries around 1990. The concept of 'mixed systems' refers to the use of economic instruments in combination with other policy instruments such as direct regulations.[174] In his paper, Barde noted that economic instruments have different roles when combined with other instruments. Sometimes, economic instruments perform as the foundation of the policy, but in other situations economic instruments function to provide additional incentive mechanisms.[175] Based on Barde's view, it seems that economic instruments do not play a key role in rectifying environmental problems. Economic instruments exist to supplement regulations in another policy instrument. Nonetheless, Barde believes that the function of economic instruments will get stronger in the future as a number of countries tend to use these instruments over other ones.[176] Unfortunately, Barde provides insufficient information on how to enhance the role of economic instruments as the pre-eminent choice. He states in one sentence that introducing new economic instruments as well as imposing higher rates of existing ones may improve the capacity of these instruments in upcoming years.[177] This view may be true when economic instruments are treated as a single instrument, but it will be different when mixed-instruments are involved. How to increase the performance of economic instruments while they interact with other instruments is still unclear.

[173] Ibid.
[174] Barde, 1994, above n 26, 15.
[175] Ibid.
[176] Ibid.
[177] Ibid.

Referring back to Gunningham and Sinclair, they also recognise the growing importance of mixed-instruments in managing the environment. In this case, Gunningham and Sinclair take the further step of identifying potential effects of mixed-instruments, either positive or negative. According to Gunningham and Sinclair, there are 4 (four) possible combinations of policy instruments:

1) Mixes that are inherently complementary;
2) Mixes that are inherently incompatible;
3) Mixes that are complimentary if sequenced; and
4) Mixes, complementary or otherwise, that are essentially context specific.[178]

In the context of environmental taxes in combination with other instruments, the effects could be positive or negative or even context-specific based on Gunningham and Sinclair's findings. The positive effects can be derived when environmental taxes combine either with information strategies or command and control regulation. Information and environmental taxes are well-suited. Environmental taxes as one market based mechanism require sufficient information to induce changes in behaviours while information strategies need other instruments to augment their reliability.[179]

Similarly, the OECD also highlights mutual collaboration between environmental taxes and information based mechanisms by providing relevant examples. The first example is related to the improvement of residential energy efficiency. Introducing a tax on domestic electricity use in combination with an energy-efficiency labelling system on appliances will encourage awareness of economic participants in buying appliances with

[178] Gunningham and Sinclair, above n 165, 53. Mixes that are inherently complementary have a meaning that the combination of instruments will improve the efficiency and effectiveness of these instruments, while mixes that are inherently incompatible refer to counterproductive or sub optimal results in efficiency and effectiveness. Furthermore, mixes that are complimentary if sequenced tend to avoid impractical outcomes when incompatible combinations apply concurrently. Sequencing can be done by keeping certain instruments aside when other instruments have been applied. However, if other instruments fail to satisfy the given target, the instrument that was put on hold will take over the implementation. The last combination is mixes with context-specific outcomes. This combination relies on the specific circumstances such as the current political and cultural backgrounds. Therefore, it will be difficult to predict the outcome whether compatible or incompatible. Furthermore, to analyse which instruments are compatible or incompatible with other instruments, Gunningham and Sinclair divide the policy instruments into 5 (five) main categories which are (1) command and control regulations; (2) economic instruments; (3) self-regulation; (4) voluntarism; and (5) information strategies.
[179] See Ibid 55.

related labels and at the same time increase the relevant price elasticity.[180] Another example shows that a mixed-instrument between environmental taxes and information strategies may bring a direct private benefit for consumers, such as lower operating costs when they use products with energy-efficiency labels.[181]

Environmental taxes are also compatible with command and control regulation in certain circumstances. Gunningham and Sinclair stated that command and control instruments will be complemented with environmental taxes in the situation where they are directed at different parts of an environmental problem. An example of this was the national phase out of leaded petrol and the application of fuel price differentiation in Australia.[182] In this example, Gunningham and Sinclair underline the different target of two environmental policies. Command and control instruments are aimed at the vehicle manufacturers since it involved a particular industrial process in constructing catalytic converters for vehicles pre-1986, while environmental taxes (pollution taxes) are aimed at consumers to drive behavioural changes.[183] In other situations, command and control instruments will work in combination with environmental taxes when they take the form of compulsory reporting and monitoring provisions.[184] The provisions require governments (or a third party) to accurately measure and control the amount of emission. Without these provisions, environmental taxes are unlikely to function effectively. The OECD also recognises the mutual compatibility between environmental taxes and CAC instruments. A number of governments in OECD countries apply these instrument-mixes. To address local air pollution problems, many governments in OECD countries combine SO_2 taxes with regulations on sulphur content in fuels.[185]

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[180] OECD, 2006, above n 11, 164.
[181] Ibid.
[182] Gunningham and Sinclair, above n 165, 59. See also, The Environment Protection Authority, *Regulatory Impact Statement on the proposed Protection of the Environment Operations (Clean Air– Motor Vehicles and Motor Vehicle Fuels) Regulation 2002* (Environment Protection Authority, Sydney, 2002) 3 – 6. The Environmental Protection Regulations 1999 governs the termination of leaded petrol by 1 January 2002 to diminish lead emission. In this case, pre-1986 vehicles are required to either use an alternative fuel or have to rebuild the engine by using catalytic converters that allow the vehicle to use unleaded petrol. Alongside this regulation, the federal government is considering phasing in price differentials on fuels in the form of pollution taxes. This tax policy makes leaded petrol become more expensive than unleaded petrol.
[183] Ibid.
[184] Ibid 60.
[185] OECD, 2001, above n 32, 40.

Counterproductive mixes occur when environmental taxes are combined with command and control instruments which are aimed at the same parts of environmental problems, self-regulation and liability rules.[186] The rationales behind this are the inflexibility of firms to make preferences for their environmental performances and redundancy in nature. The underlying principle of environmental taxes as an economic instrument is to set a price that encourages economic actors to respond to it, and then allow the market to adjust the instrument,[187] while command and control regulations exist to direct a prescribed technology in the production process (technology mandate) or to ensure firms' outcomes to meet certain standards (performance standards).[188] When environmental taxes and command and control regulations are combined to tackle the same environmental problem, the regulation instrument will undermine the economic instrument by restricting free abatement choices.[189]

The inflexibility of choice also occurs in the case of combining self-regulation and environmental taxes. The concept of self-regulation is similar to the regulations concept. Gunningham and Sinclair state that "self-regulation involves an industry-level organization (as opposed to the government or individual firms) setting rules and standards (codes of practice) relating to the conduct of firms in the industry".[190] Therefore, individual firms are obliged to stick to the given rules and standards which means preventing environmental taxes to expand the cost differences in pollution abatement.[191] In addition, counter-productiveness in the form of redundancy will occur when environmental taxes are combined with liability rules. In this context, Gunningham and Sinclair place liability rules in the third category of economic instruments. A liability rule means that "firms can be held financially responsible for previous cases of

[186] Gunningham and Sinclair, above n 165, 61.
[187] Dieter Helm, 'The Assessment: Environmental Policy – Objectives, Instruments, and Institutions' (1998) 14(4) *Oxford Review of Economic Policy* 11.
[188] See Goulder and Parry, above n 170, 157-258; Gunningham and Sinclair, above n 186.
[189] Ibid. Gunningham and Sinclair (1999) provide a brief example to explain the problem. Enforcing the performance standards which set the level of energy efficiency for firms and at the same time applying carbon taxes will lessen the role of taxes as one economic instrument. The implementation of performance standards will then limit the choice of firms to reduce their pollution levels.
[190] Gunningham and Sinclair, above n 165, 54.
[191] Ibid 63.

environmental harm".[192] Based on this meaning, it is obvious that combining the same category of economic instruments will have a redundant effect in practice.

To avoid counterproductive results in mixed-instruments, it is suggested combining the instruments in sequence. Gunningham and Sinclair include this in the third category of mixed-instruments. The probability of it having a positive result is greater than applying combined instruments simultaneously. For instance, sequencing self-regulation and economic instruments, such as environmental taxes, is deemed to be more visible. In this case, self-regulation will be enforced first; however, when it fails to accomplish the prescribed rules and standards, environmental taxes will be imposed to replace the role of self-regulation.[193]

The last effect of mixed instruments is context specific. This means that the effect of mixed-instruments cannot be specified as either positive or negative.[194] As previously noted, the outcome will rely heavily on specific contexts such as political and cultural circumstances. Combining environmental taxes and voluntarism is a context-specific example in practice.[195] The positive outcome will be derived when voluntarism is used without intervening with free choice in the market to undertake the lowest abatement cost.[196] In this context, voluntarism works to complement environmental taxes by encouraging firms to search for additional environmental improvements. However, if voluntarism acts as command and control regulation or self-regulation by obstructing market choices, the outcome will be counterproductive.

Similarly, the OECD also recognised another counterproductive effect of mixed instruments. This is due to the application of tax exemptions in response to the

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[192] Ibid 54.

[193] Ibid 67. An illustration of sequencing mixed-instruments can be derived from the New Zealand experience in dealing with greenhouse gas emissions from industry. In this case, industry agrees to follow a self-regulated standard of reducing 5 percent greenhouse gas emissions, but prior to the implementation of self-regulation the government announced to application of a broad-based carbon tax if the self regulation fails to meet the given target.

[194] Ibid.

[195] Ibid., Gunningham and Sinclair (1999) noted the concept of voluntarism as:

> "the individual firm undertaking to do the right thing unilaterally, without any basis in coercion. Commonly, voluntarism is initiated by government and may involve the government playing the role of coordinator and facilitator. At the general level this category embraces voluntary agreements between governments and individual businesses that are a means of achieving improvements in behaviour which go beyond the regulated requirements".

[196] Ibid 68.

willingness of some firms to undertake a particular abatement measure.[197] The tax exemption is given in the form of full or lower tax rates being applied to certain firms or sectors. However, this policy may undermine the achievement of environmental targets. In addition, the possibility of higher administrative costs may be greater due to the application of tax relief.[198] The burden to calculate the level of tax reduction will be put on the firms involved and public authorities. It is also noted that if voluntarism is used as command and control regulations, which forces firms to use a higher abatement cost, the reduction of emissions may not be as effective as using ordinary prices.[199] Unfortunately, the OECD does not clearly explain why voluntarism in this context cannot achieve effective results in emission reductions compared to the use of tax instruments. The reason of this may relate to Gunningham and Sinclair's views that using voluntarism as command and control regulation may obstruct the market choices to abate pollution at the least cost. This means cost-effectiveness in abating pollution may not be achieved. In addition, economic instruments provide incentives to induce polluters to shift their behaviours. By using voluntarism, the incentive will be reduced significantly. Consequently, firms will not undertake environmental improvements to the extent expected.

The above discussion on mixed instruments highlights some important messages. First, environmental taxes are infrequently used alone to address environmental problems, and so are other instruments. The underlying rationale of combining environmental taxes with other instruments is due to maximising the capacity of each instrument to abate pollution. The fact that every instrument has strengths and weaknesses may drive a number of countries to consider the application of mixed instruments in the future. This strategy may underpin the strengths of each instrument as well as may lessen the weaknesses. Second, prior to creating mixed instruments governments should consider various effects of the combination. It is dangerous to combine different instruments without having knowledge of the potential impact that may arise as to whether they are compatible or incompatible. Thus, it is necessary to select more constructive combinations to avoid ineffective and inefficient mechanisms. In the case of

[197] OECD, 2006, above n 11, 165.
[198] Ibid 166.
[199] Ibid.

environmental taxes, these instruments will be complemented by either most forms of information or command and control regulations in certain circumstances.

2.6. Conclusion

In developed countries, the concept of environmental taxes has been developed to a large extent. The latest definition of these taxes from the OECD provides several important features that can be used for categorisation. Compulsory, unrequited payment and having environmentally relevant tax bases could be used as parameters to include such taxes into environmental tax brackets. This concept actually covers all types of environmental taxes from direct (emission taxes) to indirect ones (product/input/output taxes). However, the practice of OECD countries exhibits the fact that the use of indirect environmental taxes dominate. A total of 375 environmental taxes are in operation with approximately half of these instruments being levied on energy products. The initial purpose of indirect environmental taxes, such as fuel and motor vehicles taxes, is to generate revenue, but these taxes are then used to address specific environmental issues – for instance, reducing carbon emissions. Although the outcome of environmental taxes to the environment is somewhat unclear, developed countries, specifically the European countries, continue to use these tax instruments to reduce environmental problems.

Meanwhile, the experiment of environmental taxes in OECD countries has shown a decrease trend of revenues raised from environmental taxes. However, it is arguable that a decrease trend of environmental tax revenues is interrelated to altering behaviours. From an economic perspective, a decrease trend does not necessarily signify the effect of environmental taxes on behaviours. Structural differences across countries and overall economic circumstances are factors that influence the revenue outcome. In spite of this revenue trend, environmental taxes in the category of fuel taxes and motor vehicle taxes do have sufficient impacts on behaviours. Those taxes have proven to stimulate changes in the consumption patterns from polluted products to less polluted one. Unfortunately, many pitfalls with environmental taxes exist in reality. Most OECD countries deal with the issues of income distribution, competitiveness, administration costs and public

acceptance. Accurate strategies for each obstacle are required to improve the effectiveness of environmental taxes in practice, but a better strategy is to mutually combine environmental taxes with other instruments. This strategy is advantageous to achieve an optimum work of each instrument as well as being easily adapted to specific situations, such as in developing countries.

CHAPTER 3

IMPLEMENTING ENVIRONMENTAL POLICIES THROUGH PRICING MECHANISM IN DEVELOPING COUNTRIES

3.1. Introduction

The previous chapter has discussed environmental taxes as a specific pricing mechanism in dealing with environmental problems in OECD countries. Several important tax aspects, including the concept and the issues arising from the implementation of environmental taxes, may provide a firm basis of discussion toward environmental policy options in developing countries. However, not all experiences from OECD countries in the use of environmental taxes should simply be applied to developing countries since there are many differences between developed and developing countries, including social, economic and political. These factors may lead to differences in the implementation of various pricing mechanisms for managing the environment.

This chapter aims to examine the range of pricing mechanisms as well as the challenges from their imposition in developing countries. Highlighted in this chapter are the experiences of Malaysia, China and India in the use of pricing mechanisms, as these three countries have experimented with strategies to deal with industrial pollution. An analysis in this case relies greatly on data from publicly-available papers and articles in these countries within the time frame between 1970 and 2013. Findings on the pricing mechanisms are contrasted with the concept of fees, charges and taxes as discussed in chapter 2 to determine which instruments are more likely to be effective. From this point, a reasonable conclusion on the common pattern of pricing instruments in developing countries is drawn upon from a theoretical-based study. Importantly, the chapter also covers an analysis on the purpose and the challenges in the implementation of pricing policies that may improve understanding on the actual objective and the effects of policy in practice. The abovementioned areas of discussion are expected to be a useful foundation for the discussion of environmental taxes in Indonesia.

3.2. Malaysia

3.2.1. Effluent Fees for addressing Palm Oil Mill Effluent Problem

Malaysia is the world's second largest exporter of palm oil after Indonesia.[200] The production of palm oil in this country has increased exponentially over the last 40 years. In 1960 palm oil production was 92,000 tones,[201] but has increased rapidly to approximately 16.5 million tonnes in 2010.[202] Despite the increased production of palm oil contributing to the rise in economic growth in Malaysia, it also creates adverse impacts to the environment. The operational processes in palm oil mills generate waste in the form of palm oil mill effluent (hereinafter: POME).[203] This effluent constitutes 'water, oil, suspended solid, dissolved solid and sand'.[204] As palm oil mills are generally located on watercourses, the discharge of POME has polluted the water streams in Malaysia.[205] The water pollution caused by POME severely affects surrounding communities and biodiversities. Between the 1970s and 1980s, the impact was critical to fish population and drinking water supplies as the output of biochemical oxygen demand (hereinafter: BOD) increased significantly as a result of the increasing number of palm oil mills.[206] Since then, the Malaysian government attempted to combat POME pollution problems. In this case, a mixed-instruments approach involving license fees, effluent standards and research and development subsidies has been used to manage the load of BOD from POME.[207] The licensing fees levied on POME discharge represent the pricing mechanism that is used by the Malaysian government to manage the pollution.

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[200] Ali Huddin Ibrahim, Irvan Dahlan, Moh Nordin Adlan and Arezoo Fereidonian Dasti, 'Comparative Study on Characterization of Malaysian Palm Oil Mill Effluent' (2012) 2(12) *Journal of Chemical Science* 1.
[201] Department of Environment Malaysia, 'Industrial Processes and The Environment (Handbook No. 3): Crude Palm Oil Industry' (Department of Environment Malaysia, 1999) 5.
[202] Ibrahim et al, above n 200.
[203] Yahaya S. Madaki and Lau Seng, 'Pollution Control: How Feasible is Zero Discharge Concepts in Malaysia Palm Oil Mills' (2013) 02(10) *American Journal of Engineering Research (AJER)* 244.
[204] Ibrahim et al, above n 200, 2.
[205] Department of Environment Malaysia, above n 201, 7.
[206] See Vinish Kathuria, 'Controlling Water Pollution in Developing and Transition Countries – Lessons from Three Successful Cases' (2006) *Journal of Environmental Management 78* 406-407; Vinish Kathuria, and Nisar A. Khan, 'Environmental Compliance versus Growth: Lessons from Malaysia's Regulations on Palm Oil Mills' (2002) *Economic and Political Weekly* 3994; Khalid Abdul Rahim, 'Why Pollution Standards are Preferred by Industries: Pragmatism and Rent-seeking Behaviour' (1996) *The Environmentalist 16* 50.
[207] Ibid.

A licensing system as a pricing mechanism was introduced under the Environmental Quality (Prescribed Premises) (Crude Palm Oil) Regulations in 1977.[208] The license fee comprised two parts of payments to the Malaysian government. The first was an annual processing fee of M$100 and the second was an effluent-related fee.[209] The key parameter of the second fee was the concentration of BOD in the effluent.[210] If the concentration of BOD exceeded the given standard, an excess fee was imposed equal to ten times the license fee.[211] The following is the regulatory standard for discharging POME in watercourses[212] that should be obeyed by the industry:

[208] Kathuria and Khan, above n 206, 3995. The Environmental Quality Act (EQA) passed in 1974 is the umbrella of several pollution control regulations including the 1977 Crude Palm Oil Regulations and the 1978 Raw Natural rubber Regulations. Those mentioned regulations require certain industry premises to apply for licences to be able to function and to attach effluent discharge standards.
[209] Ibid.
[210] Kathuria, above n 206, 408. The fee for discharges on land was M$ 0.05 per tonne of BOD concentration and M$ 10 per tonne for discharges into watercourses.
[211] Ibid.
[212] Regulation 3 Amendment of Second Schedule, Environmental Quality (Prescribed Premises) (Crude Palm Oil) (Amendment) Regulation 1982, Lawnet Percetakan Nasional Malaysia Berhad.

Table 1. Effluent Discharge Standard for Crude Palm Oil Mills

Parameters	Limits According to Period of Discharge					
	1-7-1978 – 30-6-1979	1-7-1979 – 30-6-1980	1-7-1980 – 30-6-1981	1-7-1981 – 30-6-1982	1-7-1982 – 31-12-1983	1-1-1984 and thereafter
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Biochemical Oxygen Demand (BOD) 3-day, 30°C; mg/l	5000	2000	1000	500	250	100
Chemical Oxygen Demand (COD); mg/l	10000	4000	2000	1000	-	-
Total Solids; mg/l	4000	2500	2000	1500	-	-
Suspended Solids; mg/l	1200	800	600	400	400	400
Oil and Grease; mg/l	150	100	75	50	50	50
Ammonia Cal Nitrogen; mg/l	25	15	15	10	150*	100*
Total Nitrogen; mg/1	-	-	-	-	300*	200*
pH	5.0 – 9.0	5.0 – 9.0	5.0 – 9.0	5.0 – 9.0	5.0 – 9.0	5.0 – 9.0
Temperature °C	45	45	45	45	45	45

Source: Environmental Quality (Prescribed Premises) (Crude Palm Oil) (Amendment) Regulation 1982

*Value of filtered sample

Looking at the licensing fee term, it is important to ascertain the type of this pricing instrument and whether it meets the characteristic of taxes or charges. Vinish Kathuria and Nissar A. Khan recognised that a license fee of POME is a 'pollution tax', while Khalid Abdul Rahim used a term 'effluent fees' to describe this kind of pricing instrument. However, neither Kathuria and Khan or Rahim provided a clear justification for why they categorised a licensing fee as a tax or even simply as a fee. In fact, a tax and fee are

different terms when labelling an impost. This also leads to different legal implications of an environmental impost.

As previously discussed in chapter 2, the definition of environmental taxes, fees and charges indicates some important characteristics that should be embedded in each type of an impost. It will be labelled as an environmental tax if an impost satisfies 3 (three) important characteristics which are compulsory, unrequited payment and having relevant environmental tax bases.[213] On the other hand, an impost will fall under the category of fees and charges if it represents requited payments for services provided.[214] In this case, the term of a fee has similar characteristics as a charge. Therefore, those terms can be used interchangeably.

Based on the concepts of taxes, fees and charges, a licensing fee of POME may appear either as a fee and charge or a tax. The two-part license fee exhibits two different characteristics of pricing instruments. As mentioned in the previous paragraph, the first part is a processing fee. The industry must pay this fee every year to receive an operating license. It is clear in this case that a link between the payment and benefits provided exists.[215] Therefore, it is reasonable to assume that the first part of the licensing system is fees or charges since it meets the characteristic of requited payment or payment for services.

Conversely, the second part of the license fee may be considered as a tax. The nature of the second fee is close to the characteristics of an environmental tax. Compulsory, unrequited payment and having relevant environmental tax bases seem to be found in the second license fee. In terms of being compulsory, the second fee that is part of licensing system of POME has been governed in 1977 the by crude palm oil (CPO) regulation. This means that the licensing fee has a legitimate basis to require the industry to oblige in paying it. However, the term compulsory should be read alongside

[213] See Chapter 2 (Section 2.2.).
[214] Ibid.
[215] Weier, above n 45, 4. Weier stated as follows:

> "It appears that license fees may be considered as fees for service, rather than as taxes, where holding the license confers clear benefits to licensees (including access to a limited resource) and where the license fees bear a reasonably close relationship to either the costs of administering the licensing system and associated regulatory framework, or to the value of the benefits received by licensees".

unrequited payment criteria to be labelled as a tax. The second fee may not appear to be a payment for government services. This fee is a basic payment for discharging effluent to a watercourse or land or both below the given standard. If it exceeds the given standard, the industry must pay an excess fee at a rate ten times the basic fee. It is obvious that the industry will not receive any direct benefits from its payment to the government.

The last feature of having relevant environmental tax bases is an important aspect to determine whether a tax should be categorised as an environmental tax or not. Referring to the OECD's definition, a tax base is "the base on which a given tax is levied".[216] Examples of this are taxes on mineral oil and taxes on leaded or unleaded petrol.[217] In the case of an environmental tax base, a linkage criterion between the payment and the externality will determine the basis of the tax.[218] Barde stated "a closer the link between the tax paid and the environmental impact, the greater its effectiveness".[219] Looking at the licensing system of POME in Malaysia, it seems that the second fee is an environmental tax. The fee includes an excess fee that is imposed on the concentration of BOD discharge. Apparently, the BOD load in this case has been considered as an environmental tax base since it represents the quantity of discharge pollutants. This tax base can be said to have a close connection with the amount of pollution that may sufficiently provide a strong incentive signal to the taxpayer to reduce the emission.

The above analysis indicates that the licensing fee of POME contains two types of government imposts. For common usage, it is acceptable to use either a term of charges/fees or a term of taxes since it does not necessarily imply the actual legal implications of certain imposts. This fee may be recognised as an effluent fee, pollution charge or pollution tax. Although it sometimes leads to confusion, the different use of terms cannot be easily avoided in practice. Countries may describe a certain impost differently as either a charge/fee or tax. For example, the OECD provides different meanings of taxes, fees and charges based on the experiences of OECD countries in the use of those instruments. However, the term pollution taxes in developed countries, for

[216] OECD, 2001, above n 32, 24.
[217] Ibid.
[218] Barde, 1997, above n 31, 235.
[219] Ibid.

instance, may appear differently in developing countries. Robert C. Anderson noticed that developing countries use the term environmental fees, charges and taxes interchangeably.[220] Sometimes, they use the term charge to describe an impost on products or fees to label payments for damaging activities to the environment.[221] If this is the case, Weier suggested a consensus be developed to assure similar meaning of terms among countries.[222]

Aside from terminology differences, the use of an effluent fee together with effluent standards demonstrates a quite encouraging result in controlling pollution from POME. It is reported that the licensing system of POME has stimulated palm oil industries to manage POME so as to meet the provided standard.[223] The pollution load from palm oil mills into watercourses has steadily reduced from 563 tons per day in 1978, to 58 tons per day in 1981 and to 5 tons per day in 1989.[224] The reduction of the pollution load is mainly due to stringent effluent standards which progressively apply to palm oil industries as seen in Table 1 (particularly for BOD load). This standard is backed up by a harsh penalty of license revocation if palm oil industries do not obey the BOD discharge requirement.[225] As a result, palm oil industries have made significant efforts to comply with the standard instead of paying the effluent fee.

3.2.2. The Function of Palm Oil Mill Effluent (POME) Fees

The term 'function' refers to a purpose, aim or goal to be achieved. It should be made as clear as possible to avoid confusion. In terms of pricing instruments, there is also a need to determine its primary goal explicitly to maximise its potential. As discussed in chapter 2, either revenue raising or altering behaviour should appear as the primary function of such pricing instruments. Ideally, the main goal of an environmental pricing instrument

[220] Robert C. Anderson, 'Incentive-Based Policies for Environmental Management in Developing Countries' (Resource for the future Issue Brief 02-07, 2002) 4.
[221] Ibid.
[222] Weier, above n 45, 1.
[223] Kathuria, above n 206, 407 – 408.
[224] J.C. Igwe and C.C. Onyegbado, 'A Review of Palm Oil Mill Effluent (POME) Water Treatment' (2007) 1(2) *Global Journal of Environmental Research* 57.
[225] Kathuria, above n 223.

should be altering behaviour as it provides an incentive to reduce pollution. In this case, the revenue of such pricing instruments is less important.

Regarding the licensing fee of POME, it is worth identifying the main purpose behind the creation of this instrument. Kathuria and Khan noted that "the regulations were designed to serve two purposes: (a) raising revenue through licensing; and (b) ensuring guaranteed reduction in BOD discharge by a minimum amount through standards".[226] On the other hand, Rahim (1996) only highlighted one goal, that being controlling pollution from palm oil effluent.[227] Two different views on the purpose raise the question of the main focus of this fee and the possibility of a double dividend.

To examine the main function of this fee, it will be necessary to look closely at the relevant Act and Regulations.[228] The Environmental Quality (EQ) Act 1974 with its amendments is a federal legislation to prevent and control pollution as well as to improve the quality of the environment. A subsidiary legislation of this Act which applies to the palm oil industry is EQ (Prescribed Premise) (Crude Palm Oil) Regulations 1977. This regulation governs the imposition of a licensing fee of POME based on effluent standards. However, no explicit function of imposing licensing fees has been included under that regulation. This function in fact can be derived from the EQ Act 1974 as the umbrella of the 1977 Regulation. In the preamble of the EQ Act, the purpose of this legislation is clearly stated as follows: "An Act relating to the prevention, abatement, control of pollution and enhancement of the environment, and for purposes connected therewith".[229] Apparently, the focus of this legislation is to reduce pollution as well as to manage the environment. There is no sign of another purpose. Hence, the primary function of licensing fees of POME appears to be altering behaviours by encouraging mills to manage their pollution.

Regarding double dividend issues, the possibility might be wide open. The fee of POME may have two purposes as stated by Kathuria and Khan. The primary purpose of reducing the pollution can be the first dividend and revenue-raising as another function

[226] Kathuria and Khan, above n 206, 3996.
[227] Rahim, above n 206.
[228] See Malaysian Environmental Quality Act, 1974 (Act 127) and Environmental Quality (Prescribed Premises) (Crude Palm-Oil) Regulations, 1977.
[229] Ibid.

of the fee may serve as the second dividend. Looking at the first dividend, it is likely to be achievable as designed in the legislation. This was proven by the fair response of palm oil industries toward the implementation of the licensing system. Although it was far from the expectation of the Department of Environment (hereinafter: DoE), the daily discharge of BOD declined slightly in 1978.[230] In the subsequent years, the result was much better with an 85 per cent reduction in the daily BOD load discharge.[231] As a matter of fact, the better outcome of this scheme was provoked by stringent and binding standards from the DoE.[232] This means that the control and command (CAC) instrument took a bigger role in the successful implementation of the licensing scheme. Thus, the first dividend of the scheme, which is the reduction of pollution, has been achieved by employing the mixed instrument approach between CAC and pricing instruments.

The second dividend refers to the use of revenue from pricing instruments to reduce other distorting taxes such as taxes on labour or capital. As discussed in chapter 2, the second dividend is difficult to achieve since revenue will decrease from time to time. It is noted that most OECD countries have greater experience with budget earmarking than double dividends. This means that the revenue from certain pricing instruments is allocated for specific purposes, e.g. maintaining roads. In the case of the licensing fee of POME, the revenue generated has been used to fund the waiver system.[233] It is a type of exemption system in which the fee will be waived in full or in part when the mill undertakes the research or treats effluent disposal as regulated.[234] However, there is no further information on how the revenue supports the work of the waiver system and whether it is recycled back to industries to do the research on effluent treatments or it is used to help the Malaysian government to establish the research institute to facilitate the development of treatment technology. Aside from how the system works, it can be assumed that the second dividend does not appear in this case. It seems to perform a

[230] Kathuria and Khan, above n 206. It is reported that the expectation of the DoE in the reduction of pollution per CPO mills was higher than the reality. In the first year of the scheme, it was supposed to decline more than 90% from 220 to 25 tonnes.
[231] Ibid.
[232] See Rahim, above n 206; Kathuria and Khan, above n 206; David O'Connor, *Applying Economic Instruments in Developing Countries: from Theory to Implementation* (Cambridge University Press, 1998) 97. In this case, the DoE announced that the violation against the standards provided would result in licence cancellation and even shutting down the operation of mills.
[233] Ibid.
[234] Regulation 17, Environmental Quality (Prescribed Premises) (Crude Palm-Oil) Regulations, 1977.

similar case of revenue earmarking in developed countries. The allocation of the revenue is clearly put towards a particular purpose other than reducing tax distortion.

3.2.3. Challenges in the Implementation

The imposition of the POME fee was not problem-free. Concern has been put on the effectiveness of the fee of POME to address the water pollution problem in Malaysia. The first year implementation of this policy (1977 – 1978) demonstrated ineffective results, and many mills more willingly paid the excess fee than meet the standards.[235] Therefore, the revenue from the first year of implementation was quite significant, accounting for M$2.8 million in 1978.[236] In terms of revenue-raising, the policy was successfully implemented. In fact, it contradicted the primary purpose of the policy as governed in the legislation, which was altering the behaviour of mills.

As previously noted, the effectiveness of pricing instruments requires the function of pricing bases and rates. The pricing bases should represent a closer link between the payment and the externality, whereas the pricing rate should be set as high as possible to achieve the goal. In this case, the effluent fee for palm oil mills meets the base criteria by placing BOD discharge as the key parameter. In terms of the rate, it is arguable whether it was set equal to the marginal damage cost as per a Pigouvian tax. Kathuria and Khan stated that "these license fees were set arbitrarily at levels that were believed to be high enough to reduce palm oil discharge".[237] This means that the rates of the fee were not set sufficiently high and equal to the marginal damage cost. Although setting a high level of rates is difficult in practice, it is better to create the pricing instrument that ensures a decreased trend in revenue periodically.

The DoE, in fact, did not take any action to increase the rate of the licensing fee. They chose to make the effluent standards more stringent and obligatory, which threatened non-complying palm oil industries with harsh sanctions from suspending the license to

[235] Kathuria and Khan, above n 206.
[236] Ibid.
[237] Ibid.

shutting down the industry.[238] As a result, the motivation to obey the standards appeared to rise significantly in the years ahead.[239] Clearly, the DoE put an emphasis on the effluent standards as control and command (CAC) instruments rather than the licensing fee as pricing instruments. It appears that the licensing fee exists to supplement the effluent standards.

Effluent standards for POME have not been adjusted since 1984. To date, the DoE still imposes a BOD concentration limit of 100 mg/l for most palm oil industries in Malaysia.[240] In some sensitive areas, however, the standard is much more stringent. Palm oil industries in these areas (e.g. Sabah and Serawak) must meet a BOD requirement of 20 mg/l to discharge into watercourses.[241] The DoE even requires a zero discharge of a BOD concentration in very sensitive areas.[242] These latest effluent standards have driven some palm oil industries to collaborate with research institutions and manufacturing companies to obtain advanced POME treatment technologies so that the BOD required limit can be achieved.[243] However, the survey conducted by Madaki and Seng between 2012 and 2013 found that many palm oil industries are still reluctant to adopt advanced technologies despite the need to meet 20 mg/l or zero effluent standards.[244] The reasons are varied from costly technologies to insufficient incentives.[245] This issue could be a hurdle in achieving a reduction of effluent discharge from palm oil industries. Proper government support is needed to encourage further research in developing more effective and affordable treatment technology.

[238] O'Connor, above n 232.
[239] Ibid.
[240] Madaki and Seng, above n 203, 244.
[241] Ibid.
[242] Ibid.
[243] Ibid 249.
[244] Ibid 248.
[245] Ibid.

3.3. China

3.3.1. Pollution Levy System

Among developing countries, China has the most rapid economic growth. The growth rate has averaged 10 percent annually over the last 30 years.[246] However, China's economic growth brings a downside to the environment. Severe pollution to air and water are the major environmental problems in China that affects the quality of the environment, and people's health and lives. Industry is believed to be the main cause of these environmental pollutions,[247] which was already recognised since the beginning of the modern industrialisation era in China (1960).[248] Environmental problems caused by industrial pollution have increased significantly since that time. It was reported that industrial air pollution has increased 1.5 times between 1991 and 2006 as a result of the increase of SO_2 emission, mainly from coal combustion, while wastewater emission increased 60 percent during the same period.[249] Moreover, industrial solid waste dumped into land and water has also showed an increase trend from 1996 to 2001.[250] These pollution problems continue to exist up to now as the target to reduce major pollutants in China had not been met.[251]

In the 12th Five-Year Plan, the Chinese government set an action plan on environmental protection for the period 2011 – 2015. The plan covers major pollutant reduction by 2015 (8% for sulphur dioxide and chemical oxygen demand and 10% for ammonia nitrogen and nitrogen dioxide) and climate change mitigation.[252] In response to the issue of climate change, the government of China has also considered levying a carbon tax as

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[246] Yanhong Jin and Liguo Lin, 'China's Provincial Industrial Pollution: The Role of Technical Efficiency, Pollution Levy and Pollution Quality Control' (2013) 2.
[247] Ibid. See also, Daozhong Zou, *The Application of Economic Instruments for Preventing and Controlling the Industrial Pollution in China* (A Thesis for Master of Science Degree in Environmental Science, Lund University, 1998) 10 -11.
[248] Junjie Zhang, 'Delivering Environmentally Sustainable Economic Growth: The Case of China' (Asia Society, 2012) 4.
[249] Jintao Xu and Haipeng Zhang, *Environmental Policy in China: Gaps, Innovation and Future Directions* (China Environment Yearbook 1992 – 2007, 2007) 2 – 3.
[250] Ibid.
[251] Isabel Hilton, 'Introduction in China's Green Revolution: Energy, Environment and the 12th Five-Year Plan' <http://www.chinadialogue.net/UserFiles/File/PDF_ebook001.pdf> 5.
[252] Ibid 13.

an environmental policy instrument to reduce carbon emissions.[253] At the current stage, the focus of the Chinese government is proposing an environmental tax on heavy polluters which levies on discharges of sulphur dioxide, sewage and other contaminants.[254] It is expected to take into effect in 2014.[255] This environmental tax could be used to discourage polluting industries in China so as to reduce severe impacts of pollution to people and the environment.

In fact, China has also experimented with the use of a pricing mechanism to manage industrial pollution since the 1970s. China's pricing mechanism is said to be a comprehensive one in terms of a developing country as it is imposed on water and air pollution, solid waste and noise.[256] Many researchers have labelled this mechanism differently. David O'Connor, Daozhong Zou and Yun Ping recognised it as a pollution charge, while Hua Wang and David Wheeler and Anderson labelled the mechanism as a pollution levy system. Apparently, charges or levies are the most common term to describe China's pricing instruments. However, those terms are relatively different in meaning, which may lead to confusion for theoretical purposes. It is therefore important to discuss the legal nature of the pollution levy system in China.

Weier and the OECD agreed that the term 'levy' is generally used to cover both taxes and fees/charges.[257] In this case, a levy might appear as a tax or it might exist as a fee/charge depending on its characteristics. Thus, labelling the mechanism as pollution levy system is acceptable. Furthermore, it does not have any differences with the label pollution charge system since a charge has been included in that term. An important question may be raised about the legal nature of the China's pollution levy as to whether it is a tax or a charge/fee.

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[253] Yan Yan, 'China Mulls Tax on Carbon Emission', 16 January 2012 <http://www.rsc.org/chemistryworld/News/2012/January/china-considers-carbon-tax greenhouse-emissions.asp>.

[254] Sophie Song, 'China to Debut Environmental Tax to Address Smog Problem, Replacing Ineffective Pollution Charges', 1 May 2014 <http://www.ibtimes.com/china-debut-environmental-tax-address-smog-problem-replacing-ineffective -pollution-charges-1560933>.

[255] Ibid.

[256] See Hua Wang and David Wheeler, 'Endogenous Enforcement and Effectiveness of China's Pollution Levy System' (Development Research Group, World Bank, 1999) 5; Yun Ping, 'The Pollution Charge System in China: An Economic Incentive?' (ACFEC research report, 2003)1; O'Connor, above n 232, 96.

[257] See Weier, above n 45, 4 – 5; OECD, 2001, above n 32, 15.

As discussed previously, a tax and charge/fee have different characteristics. The important key element to distinguish a tax and charge/fee is the payment and whether it is requited or unrequited. When the payment of an impost is unreturned, it will be categorised as a tax, but an impost will fall under a charge/fee category when the payment is made for the service rendered. In the context of the China's pollution levy system, it is necessary to look at the substance of the levy to determine its relevant characteristics. Although the levy system covered 4 (four) pollutions as mentioned before, only the water levy pollution has been discussed in-depth by most researchers (e.g. Economic Analysis Team IGES, Ping, Dasgupta et al,Wang and Wheeler, O'Connor, Zou). Thus, the water levy pollution will be the main focus of analysis on the legal nature of this impost.

The pollution levy system in China has been based on Law of Environmental Protection. It began in 1979 with a trial version and was promulgated in 1989.[258] Article 28 of the Environmental Protection Law 1989 states that:

> Enterprises and institutions discharging pollutants in excess of the prescribed national or local discharge standards shall pay a fee for excessive discharge according to state provisions and shall assume responsibility for eliminating and controlling the pollution. The provisions of the Law on Prevention and Control of Water Pollution shall be complied with where they are applicable.
>
> The income derived from the fee levied for the excessive discharge of pollutants must be used for the prevention and control of pollution and shall not be appropriated for other purposes. The specific measures thereof shall be prescribed by the State Council.[259]

Based on the above article the levy was imposed on the pollution discharge that exceeded the applicable standards. This provision of the Environmental Protection Law became a guideline for several environmental works and legislations.[260] One of them is the Law on Prevention and Control of Water Pollution (1984) for managing water quality in China. It is worth noting that the water pollution levy of this law consists of a two-part

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[258] See Zou, above n 247, 25; Wang and Wheeler, above n 256, 6; Economic Analysis Team, 'Water Pollution Control in China: Review of laws, regulations and policies and their implementation' (Institute for Global Environmental Strategies (IGES), 2009) 8.

[259] Environmental Protection Law of the People's Republic of China 1989-12-26 <http://english.mep.gov.cn/Policies_Regulations/laws/environmental_laws/200710/t20071009_109928.htm >.

[260] Economic Analysis Team, above n 258, 9 -10.

policy. The first is a basic fee of discharge and the second is the excess fee for discharge exceeding the standards.[261] A basic fee in this case is imposed on the volume of wastewater discharged.[262]

The water pollution levy in China may appear to be a tax. The levy seems to have tax characteristics similar to the effluent fee of POME in Malaysia. The levy is paid for discharging effluents above the prescribed standards. In addition, the payment of the second part of levy is not for the service provided. However, unlike in Malaysia, the levy is not operated in conjunction with the processing fee. It is automatically applied to firms that dispose pollutants to water discourse as governed in legislations. Without a doubt, there is no charge characteristic in this levy as occurred in the licensing system of POME in Malaysia.

Zou had a different perspective toward the legal nature of the levy. He stated that "generally speaking, although they are used nationwide, taxes have not taken the main part in the pollution levy system due to their relatively narrow definition. Moreover, they are primarily conducted by the tax authorities and the tax revenues are much less than that from the pollution charges".[263] Zou seems not to consider the pollution levy a tax based his views on the definition, the enforcers of the policy and the revenues generated. In fact, determining the nature of an impost should refer to their own legal characteristics as to whether it is a tax or charge/fee. The characteristics of an impost sometimes can be derived from the provided definition in legislations. Unfortunately, Zou does not explore further the intended definition. In addition, no definition of taxes or fees/charges can be found either in the Environmental Protection Law (1989) or in the Water Pollution Prevention and Control Law (1984). The laws simply use the term 'fee' to describe the levy.

Despite his view, Zou recognised the theoretical differences between a tax and charge. He also admitted the difficulties in distinguishing both of them in practical use since taxes

[261] Article 15 of Water Pollution Prevention and Control Law (1984) in China governed as follows: "Enterprises and institutions discharging pollutants into a water body shall pay a discharge fee as provided for by the state. If the discharge of pollutants exceeds the limits set by national or local standards, they shall pay a fee for excess discharge according to state provisions".
[262] See Ping, above n 256; Wang and Wheeler, above n 256.
[263] Zou, above n 247, 23.

and charges have been operated in the same way. Yet, his view remains the same that the pollution levy should stay within the scope of charges/fees. If the government of China would like to consider the application of environmental taxes in the future, the scheme should not overlap with the pollution levy.[264] This is due to the reason that the pollution levy will include all pollutants and target groups in its future application.[265] Therefore, future environmental taxes should be directed to a particular environmental problem.[266]

In fact, the pollution levy in China is deemed to be a tax based on the previous analysis. Although the label appears differently in practical use, an interchangeable term is acceptable. However, whether the levy can be categorised as an environmental tax is in question. A certain feature that should be proven is having environmental tax bases. In the case of the licensing system in Malaysia, the environmental tax base can be found in the provided regulation. It is clearly identified that the key parameter of the fee is the concentration of BOD discharge. Unlike in Malaysia, the Law on Prevention and Control of Water Pollution (1984) in China as a subsidiary legislation does not specify the parameter of discharge. The parameter has been established by the State Council and other national administrative authorities to support the implementation of several laws on pollution control in China.[267] Due to limited access to the given standard, the parameter of discharge can be derived from several journals that discussed the pollution levy in China. BOD, COD and TSP (total suspended particulates) concentration seem to be the parameter to determine the total levy.[268] Obviously, the water pollution levy can be categorised as an environmental tax since it also meets the characteristic of having environmental tax bases.

As an environmental tax, it is required to have a clear coverage. The experience of OECD countries showed that the coverage of environmental taxes has been determined by the imposed tax bases. Eurostat has classified environmental tax bases in 4 (four) groups as

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[264] Ibid 37.
[265] Ibid.
[266] Ibid. Learning from OECD's experience, Zou suggested that the coverage of environmental taxes should consider: a) the introduction of taxes that has a specific environmental goal and has been labelled explicitly as environmental taxes and b) the modification of existing taxes in an environmental friendly manner. Examples of point a) are CFCs products and a chlorinated solvent product tax, while an example of point b) is a coal tax.
[267] Economic Analysis Team, above n 258, 10.
[268] See Wang and Wheeler, above n 256, 11; Zou, above n 247, 28.

previously mentioned in chapter 2. This classification can be used to ascertain the coverage of the pollution levy in China. As the legal nature of taxes has been embedded in this levy, it can be assumed that the levy will fall under the coverage of pollution taxes. This category covers water and air pollution, management of solid waste and noise. Unlike the licensing system of POME in Malaysia, the pollution levy system includes all the above effluents. Although the water pollution levy appears to be the foremost subject among researchers, other pollution levies also play a significant role in managing the environment in China. Thus, it can be said that the coverage of the pollution levy in China is comprehensive.

3.3.2. The Function of Pollution Levy System

The main purpose of the pollution levy system in China is similar to the licensing system of POME in Malaysia. It is aimed to improve the environmental quality in China by managing 4 (four) industrial pollutions such as water and air pollution, solid waste and noise. This purpose not only governed the supreme legislation but also can be found in subsidiary laws on pollution management. Article 1 of Environmental Protection Law stated that "this Law is formulated for the purpose of protecting and improving People's environment and the ecological environment, preventing and controlling pollution and other public hazards, safeguarding human health and facilitating the development of socialist modernization".[269] In accordance with the Environmental Protection Law (1989), the Law on Prevention and Control Water Pollution as the subsidiary law contained the same wording as follows: "This Law is formulated for the purpose of preventing and controlling water pollution, protecting and improving the environment, safeguarding human health, ensuring the effective use of water resources and facilitating the development of socialist modernization".[270]

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[269] Environmental Protection Law of the People's Republic of China 1989-12-26 <http://english.mep.gov.cn/Policies_Regulations/laws/environmental_laws/200710/t20071009_109928.htm >.

[270] Article 1 of the Law of the People's Republic of China 1984-05-11 <http://english.mep.gov.cn/Policies_Regulations/laws/environmental_laws/200710/t20071009_109915.htm >.

The above provisions indicate a clear goal the pollution levy is supposed to achieve. Theoretically, when the primary function of such pricing instruments is intended to manage the pollution, the instrument will work to encourage altering behaviours by providing the incentive through market signals. In this case, the revenue generated will be less important. This means a decrease trend of revenue will emerge in the long term of the pricing instrument's implementation. Looking back at the purpose of the pollution levy in China, the instrument should be able to accomplish the goal as it firmly governed in legislations. Ideally, the revenue generated by the levy represented a decline trend in more than 20 years of its implementation. Unfortunately, the enforcement of the levy did not correspond to the function of altering behaviours. Many researchers found that a number of industries chose to pay the levy instead of complying with the standard.[271] This was due to a low level of levy rates that only provided insubstantial incentives for industries to reduce the pollutant discharges.[272]

In spite of the weak incentive, it has been claimed that the levy system is a fairly effective instrument in managing pollution in China. Based on the provincial-level data, Wang and Wheeler found that the intensity of air and water pollution has significantly decreased for the period 1987 – 1993 in all provinces.[273] They also noticed that the areas where the highest intensity of pollution existed were most responsive to the levy.[274] This positive impact was due to community pressure on industries for taking further pollution control in those polluted areas.[275] Similarly, Susmita Dasgupta et al highlighted that community pressure has given rise to the field inspections that ensure the industries comply with the provided standards. In this case, the regulators will take any legal action for non-compliance by bringing the case to the court and penalise them if proven guilty.[276]

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[271] See Ping, above n 256, 6 – 7; O'Connor, above n 232, 96; Wang Jinnan, 'The Development of Pollution Charge in China' *(*Chinese Academy for Environmental Planning, Beijing, n.d.); Susmita Dasgupta, Benoit Laplante, Nlandu Mamingi, and Hua Wang, 'Inspections, Pollution Prices, and Environmental Performance: Evidence from China' (2001) 36 *Ecological Economics* 490; H. Keith Florig, Guodong Sun, and Guojun Song, 'Evolution of Particulate Regulation in China—Prospects and Challenges of Exposure-Based Control' (2002) *Chemosphere 49* 1169.

[272] Economic Analysis Team, above n 258, 19.

[273] Wang and Wheeler, above n 256, 11 -12.

[274] Ibid.

[275] Ibid. See also, Hua Wang, 'Pollution Charge, Community Pressure and Abatement Cost: An Analysis of Chinese Industries' (Development Research Group, World Bank, 2000) 20.

[276] Dasgupta et al, above n 271, 492.

It is obvious from the above discussion that the effectiveness of the levy is not determined by the application of a single instrument per se. There is a closer link between community pressure, the regulators' inspections and the levy. An external force from the community on industrial pollution has been proven to be effective to drive governments to carry out greater field inspections and this led to successful implementation of the levy. This combination is almost similar to the theory of mixed-instruments that developed rapidly in OECD countries. As discussed in chapter 2, the effect of mixed-instrument taxes can be positive or negative depending on the compatibility of instruments. Economic instruments are much more compatible with information-based instruments and control and command (CAC) instruments.[277]

In the case of pollution levy in China, it seems that the effect of combination is positive. The levy and the CAC instrument with a focus on compulsory monitoring provisions are compatible in nature. However, it is worth to note that the work of this combination has been intensified by external pressure from the community. This pressure is categorised as an informal mechanism that forces the polluting industries to abate pollution.[278] The mechanism not only worked in the absence of formal regulation, but it also worked in the presence of regulatory standards.[279] When formal regulations exist, there are two approaches that can be used by the community.[280] The first approach is reporting industries that violate the legal standard and the second is to force regulators to stiffen monitoring and enforcement.[281] The pollution levy in China has shown a similar practice to an empirical study done by Sheoli Pargal et al on the existence of informal regulations. This is also supported by findings from Wang and Wheeler in 1999 and Wang in 2000 that community pressure plays an important role to ensure the effectiveness of formal regulations (CAC and Market Based Instrument (MBI)) in addressing the pollution in China.

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[277] Gunningham and Sinclair, above n 178.
[278] Wang, above n 275; Sheoli Pargal, Hemamala Hettige, Manjula Singh, and David Wheeler, 'Formal and Informal Regulation of Industrial Pollution: Comparative Evidence from Indonesia and the US' (The World Bank, 1997) 1.
[279] Ibid.
[280] Ibid.
[281] Ibid.

Although the above approach has been proven to have a successful result in achieving the main function of the pollution levy, the low level of levy rates has raised concern among researchers. As mentioned before, the low rates did not reflect incentives to alter polluter's behaviours and this resulted in the non-compliance of industries to the legal standard discharges. In this case, an adjustment of the levy is the most important agenda for the government of China. In 2003, reform has been undertaken by the enactment of the Administrative Regulations on Pollution Discharge Levy.[282] The basic differences between the new and the former levy policy is the coverage of the emitted pollutant, the levy base and the price of the levy. The coverage in the new policy is more extensive than the former, covering all discharged pollutants (approximately 100 listed pollutants) by the industries.[283] Furthermore, the levy base has been changed from the concentration of pollutant to total mass of pollutant as well as the price has been adjusted from a low level to full rates.[284]

At first glance, the changes of the levy policy brought an assumption that the function of altering behaviours is the foremost goal not only in theory but also in nationwide practice. In this case, revenue is of secondary importance as the full cost of the levy has been imposed to direct incentives for reducing industrial pollution in China. In fact, the revenue from the new policy is not that different from the previous one in terms of generating elevated amounts of money. The levy has been reported to have raised revenue of about 14 bbillion Yuan RMB in 2006, almost three times higher than that in 1996.[285] Unfortunately, there is no further information provided whether the rise in revenue has been triggered by the increased rate of the levy. In theory, the higher level of rate imposed, the more effective the levy is to stimulate changing behaviours. This was proven by the experience of Turkey in the implementation of motor fuel taxes as previously discussed in chapter 2.

It is worth noting that China's pollution levy recognised revenue earmarking as has occurred in most OECD countries. According to Article 28 of the Environmental Protection Law 1989, the revenue from the levy must be used for the prevention and

[282] Economic Analysis Team, above n 258, 19.
[283] Jinnan, above n 271, 3.
[284] Economic Analysis Team, above 282.
[285] Ibid.

control of pollution. Similar provisions have also been found in the subsidiary laws, such as Article 15 of Water Pollution Prevention and Control Law. In this case, the larger share of revenue (about 80 percent) has been allocated for a pollution source control subsidy.[286] This subsidy goes to industries to support the proposed pollution abatement project.[287]

Prior discussion in chapter 2 recommended that earmarking should not be taken as an option to allocate the revenue for specific purposes since it would be contrary to a core characteristic of environmental taxes as well as lead to inefficiency of fiscal decision making.[288] As a matter of fact, the earmarking of pollution levy in China has raised significant concern. Ping stated that earmarking brings industrial behaviour problems in China in terms of the payment of the levy. The industries tend to pay the levy as it is refundable for about 80% of the levy paid.[289] The procedure seems too simple to get the refund. The industries are required to submit the proposal for its pollution treatment project without a comprehensive understanding on the efficacy of the proposed project.[290] As a result, the operation of the pollution treatment project is far from the expectation.[291] Thus, it can be said that the earmarking of the levy appears to weaken the incentive for reducing industrial pollution in China. This is contrary in a fundamental way to typical environmental taxes, particularly the polluter pays principle (PPP) embedded in those kinds of pricing instruments. The PPP does not allow subsidies to exist in the pricing instruments that may distort trade and investments. Although the non-subsidy principle should not be allowed to be part of the pricing system, it does not mean a subsidy cannot be used in special circumstances, such as in developing countries. However, the full consideration of related factors should be taken into account for it to be effectively implemented.

[286] See Wang and Wheeler, above n 256, 5; Ping, above n 256.
[287] Ibid.
[288] See Chapter 2 (Section 2.3.).
[289] Ping, above n 256, 4-7.
[290] Ibid.
[291] Ping (2003) asserted that the industries did not realise the operational cost of pollution treatment is much higher than the payment of the levy. In the end, no more than 1/3 of industrial treatment facilities have functioned frequently.

3.3.3. Challenges in the Implementation

The long experiences in the imposition of pricing mechanisms do not guarantee its implementation will be free of problems. This is the case in the implementation of the pollution levy in China. It faces a wide range of hindrances that hamper the effectiveness of the levy. Unlike in Malaysia, a number of challenges have been discussed in-depth by many researchers (e.g. Economic Analysis Team IGES, Tilt, Ping, and Zou). Although their approaches to examining the problems arising from the implementation might be different, their findings are almost the same.

In his thesis, Zou categorised 6 (six) problems that limit the use of the levy to deal with industrial pollutions, including conceptual, legal, institutional, information, valuation and man power problems.[292] Although the categorisation seems comprehensive, the last two problems (valuation and man power) are unnecessary to be differentiated from institutional problems. This is due to similar aspects that triggered the problems. A key point of the valuation and man power problems is the capacity for policy makers to manage the levy. The valuation problem highlights the inability of policy makers to measure the degree of risk and outcomes of the levy, while the man power problem emphasises the lack of skills and expertise to design and to implement the levy.[293] In fact, the deficiencies in the capacity of policy makers have already been discussed in institutional problems. Zou underlined that the weaknesses of institutional structures and capacity in implementing the levy limit its effectiveness. The structure is too complex since it involved various levels of governments with different mandates that led to difficulties in synchronising the policies.[294] Furthermore, a weak institutional capacity worsened the situation by having powerless authority towards 'local protectionism'.[295] The last point is crucial in demonstrating the similarity of discussion in valuation, man power and institutional issues.

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[292] Zou, above n 247, 29 -32.
[293] Ibid.
[294] Ibid.
[295] According to Zou, the local protectionism referred to people who shielded the main industrial polluters from being compliant with environmental legislations. This is due to the role of polluters as the primary economic donors for the locals. Therefore, their existence is protected even by the local governments.

It is worth noting that the conceptual, legal and the information problems also played a big part in constraining the effectiveness of the levy. The conceptual problems refer to the misconception of governments in China on the work of the levy as a pricing instrument. This fallacy is indicated by failures in formulating the levy rate, failures in setting up a proper subsidy, and inaccuracy in establishing the scope and coverage of the levy.[296] From a legal perspective, Zou identified that a time interval in the enactment of environmental legislations and weak administrative penalties may hold back the effective application of the levy.[297] Unfortunately, there is no further discussion provided on the relevance of the time lag of environmental legislations with their effectiveness. As a matter of fact, the time interval between the first trial in 1979 and the promulgation of the environmental protection law in 1989 is not too wide to have hampered its effectiveness. As previously discussed, the research done by Wang and Wheeler showed a significant decline of air and water pollution for the period 1987 to 1993 in almost all provinces in China due to the application of the levy.[298] However, this decrease was actually achieved through a combination of the levy and the community pressure. If the time lag of environmental legislations refers to the reform of the pollution levy in 2003, it might be true that a long gap in reforming the levy may influence its effectiveness.

The last problem to discuss is the lack of information in the imposition of the levy. Zou asserted that "the environment-relative information is not collected and transferred in time".[299] However, he does not clarify what kinds of the environment-relative information should be provided and to whom the information should be directed at. It might be assumed from the following discussion that the information should include the extent of environmental problems so that the costs and benefits of such actions can be evaluated.[300] Presumably, this information might be directed to the policy-makers in China to deliver a sufficient level of information about the pollution levy, including the benefits provided to the public. Learning from the experiences of developed countries, information may enhance public acceptance towards the pricing instruments as well as

[296] Ibid. In terms of the scope and the coverage of the pollution levy, Zou pointed out that it should be adjusted as the specific pollutant become extensive and the levy is only imposed on specific industries such as state owned units.
[297] Ibid.
[298] Wang and Wheeler, above n 256, 11.
[299] Zou, above n 292.
[300] Ibid.

improve the effectiveness in altering behaviours. In this case, policy makers should transfer all information of the pricing instruments through a range of media. Importantly, an intensive approach of information dissemination should be performed to maintain good results.

Unlike Zou, other researchers have not discussed the challenges in such a straightforward manner. They do not categorise them into certain brackets of problems that are easy to evaluate. Ping evaluated the problems of the levy by questioning the effectiveness of the pollution levy system in China. This prompted the author to analyse the performance of several relevant institutions. There are 5 (five) sectors that closely engaged in the application of the levy, including enterprises, the local environmental protection bureau (EPB), industrial bureau, local financial bureau and local banks.[301] Ping found that the implementation problems have been driven mostly by the institutional behaviours of each sector, especially those of enterprises and the EPB.[302] The behaviours of those two sectors largely influenced the effectiveness of the levy. In terms of enterprises, non-compliance tended to be a common behaviour. This has been worsened by the behaviour of the EPB in allowing industries to have a privileged condition to comply with the levy, such as tolerating a bargaining system in the implementation of the levy and providing exemptions of interest for late payment.[303] Obviously, this problem can be regarded as the lack of institutional capacity to enforce the levy. Thus, it can be included in the bracket of institutional problems as categorised by Zou.

Bryan Tilt, Mark Wang et al and the Economic Analysis Team IGES also recognised the institutional problems that arose from the implementation of the levy. Tilt discussed this problem through the use of a pollution enforcement case study in rural Sichuan. According to Tilt, the EPB as the enforcement bureau have a wide range of enforcement measures, such as performing inspections and monitoring, imposing the levy and bargaining with the industries.[304] When those measures fail, the closure of industries

[301] Ping, above n 256, 3 – 10.
[302] Ibid.
[303] Ibid.
[304] Bryan Tilt, 'The Political Ecology of Pollution Enforcement in China: A Case of Sichuan's Rural Industrial Sectors' (2007) *The China Quarterly 192* 919 – 926.

under the EPB jurisdiction can occur.[305] In the case of rural Sichuan, the EPB rarely carried out its inspection and monitoring responsibilities. These measures were only performed when public complaints on industrial pollution were lodged. Based on this finding, it can be said that the capacity of the EPB to do its duty is in doubt. Their performance has been mainly provoked by external pressure from the public. In this context, Tilt pointed out that the institutional problems within the EPB, such as limited funding, equipment, expertise and manpower may restrain the enforcement of the pollution system.[306]

Similar to Tilt, Wang et al also studied the implementation gap of the water pollution levy in rural industries in China. In their paper, Wang et al primarily discussed the deficiencies of the institutional structure and capacity in the implementation of the water pollution levy. Insufficient staff to perform inspections and monitoring triggered non-compliance from rural industries to discharge wastewater in accordance with the standards.[307] Disobedience was also due to the fact that the levy has been refundable to industries up to 80 percent.[308] Moreover, support from the local governments towards industries exacerbated the enforcement of the levy, leading to the following two features of the levy collection system:

> The first is collection by negotiation. The amount that the EPB finally collects is the result of a negotiation between the two sides rather than based on officially set fees. Sometimes, local government officials give instructions for the fee to be collected. However, the EPBs are typically weak agencies within the local bureaucracy, so they often end up on the losing side of such a negotiation. The second feature is collection by relationship. At the local level, the levy is often collected on the basis of personal relations between the local bureaucracy and enterprises. If EPB officials have a personal relationship with the heads of enterprises, small fees are levied. In the absence of personal ties, enterprises are charged larger fees.[309]

Those findings are consistent with the previous discussion. The structure and capacity of the EPB is insufficient to impose the levy. Negotiation and preferential treatment are also important factors that need to be addressed to efficiently implement the pollution levy.

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[305] Ibid 926.
[306] Ibid.
[307] Mark Wang, Michael Webber, Brian Finlayson, Jon Barnett, 'Rural Industries and Water Pollution in China' (2008) *Journal of Environmental Management 86* 653 – 654.
[308] Ibid.
[309] Ibid 655.

Likewise, the Economic Analysis Team IGES assessed the implementation of the pollution levy system as being in the 'not good' category.[310] This is due to the low rate of the levy and the lack of capacity of the EPB to enforce it. As mentioned before, the low rate provides no incentive for industries to reduce their pollution. Although it has been reformed in 2003 which has generated substantial revenue, the expenditure for pollution subsidies was considerable and cannot counterbalance the income generated from the levy.[311] Furthermore, income generated from the levy is not only given back to industries in the form of subsidies, but it is also allocated to the EPB. This allocation has given rise to disbelief about the actual use of the revenue, with a strong suspicion of corruption.[312]

Based on the above analysis, there are two major problems that hinder the effectiveness of the pollution levy system in China. The first is the conceptual problem, which refers to the implementation of low levy rates, while the second is related to institutional problems in the form of institutional capacity to implement the levy. These problems need to be resolved immediately so that the impact of industrial pollution on people and the environment could be reduced. In spite of these problems, the pollution levy has generated a significant amount of revenue. In 2013, the levy generated nearly 21.61 billion Yuan (USD 3.52 billion) from a total of 431,100 polluters.[313] Compared to the figure in 2012, this represents a 5.2% increase in total revenue and a 22.2% increase in the number of polluters affected by the levy.[314] Although the figure represents a positive outcome of the levy, the environmental situation in China is still critical. Heavy air and water pollution is still prevalent. This means that the pollution levy in China failed to sufficiently alter polluters' behaviours as industries tend to discharge pollutants and pay the levy rather than to take any measures to reduce pollution. The Chinese government has reportedly taken a step to address this problem by proposing a new environmental tax on heavy polluters in 2013 to replace the pollution levy system.[315] At the time of writing this thesis, the bill of this tax is still under review in China's legislature. Indeed, the step taken by the Chinese government to propose an environmental tax can be seen

[310] Economic Analysis Team, above n 258, 31.
[311] Ibid 19.
[312] Ibid.
[313] Song, above n 254.
[314] Ibid.
[315] Ibid.

as a constructive development for managing the environment. The proposed tax would be an important and useful instrument to induce changes in polluters' behaviours.

3.4. India

3.4.1. Water Cess and Clean Energy Cess

India has experienced remarkable economic growth in recent years. This development has mainly been driven by industrial expansion and urbanisation.[316] However, this rapid economic growth has inevitably caused serious problems for the environment. Air pollution, water pollution, land degradation and deforestation are key environmental issues in India that need to be addressed.[317] If these issues are left uncontrolled, the impact on people's health and the environment would be severe.

Among other types of pollution, air and water pollution are particularly concerning. The Central Pollution Control Board (CPCB) of India reported that there has been an increase in ambient level of air pollutants, particularly for fine particulate matters (PM_{10}), in almost all Indian cities between 2008 and 2010.[318] Vehicular growth, rapid industrial growth and the use of diesel generators are part of the cause in the increase of air pollution levels in India.[319] This condition has been worsened by the rise of energy demand from fossil fuels with approximately 60% of India's energy generated from coal.[320]

Likewise, the quality of water sources in India is at risk. This is due to the growth of population, urbanisation and industrialisation.[321] It is reported that the quality of surface water sources (e.g. rivers, lakes, ponds and wetlands) has suffered from pollution loads

[316] Organisation for Economic Co-operation and Development (OECD), *Environmental Compliance and Enforcement in India: Rapid Assessment* (the OECD Program of Environmental Co-operation with Asia jointly produced with the AECEN (Asian Environmental Compliance and Enforcement Network), 2006) 7.
[317] Ibid. and see also, Ministry of Environment and Forests, Government of India, 'Report to the People on Environment and Forest 2009 – 2010' *(*Ministry of Environment and Forests, Government of India, 2010) 7 – 16.
[318] Ibid.
[319] Ibid.
[320] OECD, above n 316.
[321] Ministry of Environment and Forests, Government of India, 2010, above n 317, 9.

dumped by industrial units.[322] Significant increases in water use for many purposes such as irrigation, drinking and industrial use have added to the crisis.[323] The CPCB has identified severely polluted stretches in 150 rivers in India based on the water quality data in the period 2002 – 2008.[324] This shows that water sources in India have been severely contaminated, rendering them unsafe for water intake and other uses.

Recognising the risk of air and water pollution to people's health and the ecosystem, the Indian government has implemented a number of policies and legal measures. Most of them are based on command and control (CAC) instruments. To address air pollution, the Indian government has enacted the Air (Prevention and Control of Pollution) Act of 1981 and the Environment (Protection) Act of 1986 (EPA), while key legislations for water pollutions are the Water (Prevention and Control of Pollution) Act 1974 and the Water (Prevention and Control of Pollution) Cess Act of 1977.[325] The 1981 Air Act and the 1986 Environment (Protection) Act authorise the central and state pollution control boards to establish and enforce various emission standards for industrial units discharging into air.[326] Similarly, the 1974 Water Act provides for the prevention and abatement of water pollution. It empowers the state pollution control boards to set and enforce effluent standards for discharges into water bodies.[327] The 1977 Water Cess Act requires industries to pay fees for water abstraction.[328] The water cess in this case could be seen as a pioneer in the use of pricing instruments in India to manage the consumption of water sources. To date, this water cess remains in force despite many challenges. This issue will be further discussed in sub section 3.4.3.

A major breakthrough in the use of pricing instruments to manage the environment in India happened in mid-2010. The Indian government proposed a clean energy cess as a strategy to promote clean energy.[329] This cess is levied on coal for 50 rupees (US$ 1)/ton

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[322] Ibid.
[323] Ibid.
[324] Ibid.
[325] OECD, above n 316, 9; Ministry of Environment and Forests, Government of India, above n 317, 8 – 10.
[326] Ibid.
[327] Ibid.
[328] Ibid.
[329] Krittivas Mukherje, 'India Eyes Millions in Green Funds from Coal', *Reuter* (online), 26 February 2010 <http://www.reuters.com/article/2010/02/26/us-india-coal-climate-idUSTRE61P36D2010022>.

either produced in or imported to India.[330] The energy demand from fossil fuel products in India is very high and accounted for more than 96% of total energy needs.[331] As mentioned, coal as a fossil fuel product contributed to about 60% of the total demand.[332] The environmental impacts of coal are many. The series of activities involved in coal, from mining to final usage, generates adverse impacts on human health and the environment. For example, coal combustion in power plants produces numerous toxic pollutants including CO_2 emissions which contribute to climate change.[333] Extreme change in climate can cause flooding, heat waves and severe storms.[334] People are also vulnerable to cardiovascular and respiratory problems.[335] These consequences of climate change significantly increase health and environmental costs. Therefore, it is important to take further steps to ensure that polluters are accountable for the environmental damage costs caused by their polluting activities. In this regard India has taken a step in the right direction by implementing a clean energy cess on coal.

As previously discussed, pricing instruments encompass taxes and fees or charges. Although these instruments have similar effects in influencing polluters' behaviours by internalising environmental damage costs, the legal nature of taxes and fees or charges is different. From a legal perspective, it is important to meet legal definition of taxes and fees or charges so as to avoid dispute and potential invalidation of the instrument.[336] Aside from these legal implications, the distinctive features of taxes or fees/charges could be useful for classification purposes, which eventually have an effect on the design of such pricing instruments.

In relation to water cess and clean energy cess, it is uncertain whether these instruments fall within the category of environmental taxes or fees/charges. As discussed in chapter 2, the OECD has defined the characteristics of taxes and fees/charges. The key distinction between them is placed on the feature of requited or unrequited payment. The unrequited payment characteristic belongs to taxes. This means that the government will

[330] Ibid.
[331] OECD, above n 325.
[332] Ibid.
[333] Martha Keating, 'Cradle to Grave: The Environmental Impacts from Coal' *(*Clean Air Task Force, Boston, MA, 2001) 3 – 5.
[334] Ibid 7.
[335] Ibid.
[336] Weier, above n 45, 1.

not provide goods or services to the payers in return for their payment. On the contrary, the payment will be treated as fees/charges when it is made for goods or services provided by the government.

Regarding water cess, many researchers on water pollution costs in India simply categorise this cess as an economic instrument, but do not classify it as either a tax or a fee/charge.[337] The water cess can be categorised as a tax or a fee/charge depending on its relevant characteristics. As mentioned, the basis of classification is placed on the payment characteristic as to whether it is unrequited or requited. In the context of water cess, it is important to look at the provisions of the legislation to determine the nature of the payment. Article 3 of Section 2 of the Water Cess Act 1977 governs as follows:

> The cess under sub-section (1) shall be payable by--
>
> (a) every person carrying on any specified industry; and
>
> (b) every local authority,
>
> and shall be calculated on the basis of water consumed by such person or local authority, as the case may be, for any of the purposes specified in column (1) of Schedule II, at such rate, not exceeding the rate specified in the corresponding entry in column (2) thereof, as the Central Government may, by notification in the Official Gazette, from time to time, specify.[338]

It is clear from the above provision that the water cess has been imposed on industries or local bodies for the use of water not only for processing purposes but also for domestic purposes with the maximum rate provided in Schedule II. However, the maximum rate will be different if industries or local bodies that consume the water for their purposes do not comply with the environmental standards as governed in Article 3 of Section 2A.[339] The following table explains the category of purposes for water consumption and the maximum rate imposed on each purpose:

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[337] See Divya Datt, 'Green Budget Reform in India: Opportunities and Challenges' (2002) <http://www.teriin.org/ee/pdf/background.pdf> 16; Bishwanath Goldar, Smita Misra, and Badal Mukherji, 'Water Pollution Abatement Cost Function: Methodological Issues and An Application to Small-Scale Factories in An Industrial Estate in India' (2001) *Environment and Development Economics* 6 111 – 112; Aparna Sawhney, 'A Review of Market Based Instruments for Pollution Control: Implication From India' (A Background Paper for the Task Force Report, Environmental Policy Cell, National Institute of Public Finance and Policy, 1997) 21.

[338] The Water Cess Act 1977 (India) art. 3 s 2.

[339] The Water Cess Act 1977s 2A stated:

Table 2. Water Cess Rates Based on the Consumption Purposes

Purpose for which water is consumed	Maximum rate under sub-section (2) of section 3	Maximum rate under Sub-section (2A) of Section 3
1. Industrial cooling, spraying in mine pits or boiler feeds	Five paise* per kilolitre	Ten paise Per kilolitre.
2. Domestic purpose	Two paise per kilolitre	Three paise per kilolitre.
3. Processing whereby water gets polluted and the pollutants are – easily biodegradable; or non – toxic; or both non-toxic and easily bio degradable.	Ten paise per kilolitre	Twenty paise per kilolitre.
4. Processing whereby water gets polluted and the pollutants are not easily biodegradable; or toxic; or both toxic and not easily biodegradable.	Fifteen paise per kilolitre	Thirty paise per kilolitre.

Source: Schedule II of the Water (Prevention and Control of Pollution) Cess (Amendment) Act 2003.
* 1 Indian Rupee equals to approximately 0.02 US Dollars based on a conversion per 27 April 2012. 1 Indian Rupee equals to 100 paise.

The preceding facts highlight additional characteristics of water cess regulation in India. It is imposed on the volume of water consumption and is payable at specific rates. For industrial purposes, the rate will be double when the pollutant discharge in the water exceeds the standards. In this case, the CPCB is the institution that sets the effluent standards, whereas the enforcer of the standards, including the water cess ones, is under the supervisory oversight of the State Pollution Control Board (SPCB).[340] For the purposes of measuring water use, the SPCB requires industries/local bodies to attach meters in the prescribed premises.[341] Thus, the cess will be calculated on the basis of the quantity of water consumed indicated by the meters.

"Where any person carrying on any specified industry or any local authority consuming water for domestic purposes liable to pay cess fails to comply with any of the provisions of section 25 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974) or any of the standards laid down by the Central Government under the Environment (Protection) Act, 1986, cess shall be payable at such rate, not exceeding the rate specified in column (3) of Schedule II, as the Central Government may, by notification in the Official Gazette, from time to time specify".

[340] See Chapter IV Article 16 and 17 of The Water Act 1974.
[341] Article 4 of The Water (Prevention and Control of Pollution) Cess Act 1977 No. 36 of 1977.

The characteristics of the water cess in India are different from the licensing fee of POME in Malaysia and the pollution levy system in China. The water cess meets the key feature of a fee/charge. The payment of water cess is requited due to the reason that the payers receive a direct benefit from the amount paid. The industries/local bodies pay the cess in exchange for water supply provided by the government. Revenue generated from the cess has been used to support the function of the pollution boards to manage water pollution.[342]

In the case of clean energy cess, this instrument is considered a 'coal tax' or a 'carbon tax' on coal in many articles.[343] Perhaps, the label of coal taxes is given by virtue of the objective of this instrument to combat climate change. However, it is important to clarify whether the clean energy cess incorporates the characteristics of tax instruments. This cess is regulated under Section 83 of the Finance Act 2010.[344] It is levied on coal produced in or imported to India at a nominal rate 50 rupees per tonne.[345] It appears that the clean energy cess falls within the tax category as it satisfies the characteristic of unrequited payment. No services or goods are rendered for the payment of this cess.

This clean energy cess also can be categorised as an environmental tax as this cess has an environmentally relevant tax base. Levying a tax on coal reflects a relevant environmental externality. As previously discussed, coal's production and consumption has severe impacts on the environment. Various pollutants from coal are highly toxic which affects the quality of air, water and even land. These pollutants also contribute to global warming. Coal production in India was estimated to have reached 570 million tonnes for the period 2010 – 2011.[346] This production is in line with the high energy demand for coal. To reduce this energy dependency and to combat climate change, the

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[342] Preamble of The Water (Prevention and Control of Pollution) Cess Act, 1977 No. 36 of 1977.
[343] See Mukherje, above n 329; Shailesh, 'Carbon Tax: An Indian Perspective', 1 February 2011 <http://greencleanguide.com/2011/02/01/carbon-tax-an-indian-perspective/>; Damandeep Singh, 'India Commits to Low-Carbon Development by Imposing Coal Tax' (1 April 2010) <http://blogs.worldwatch.org/revolt/india-coal-tax/>; Ben Barber, 'Indian Coal Tax Nets $850 Million for the Environment', *Huffingtonpost* (online), 6 May 2013 <http://www.huffingtonpost.com/ben-barber/indian-coal-tax-nets-850-_b_3380696.html>; Ministry of Environment and Forests, Government of India, 'India: Taking on Climate Change – Post Copenhagen Domestic Actions' (Ministry of Environment and Forests, Government of India, 2010) 2.
[344] Ministry of Finance Government of India Notification No. 6/2010 – Clean Energy Cess.
[345] Mukherje, above n 329; Shailesh, above n 343; Singh, above n 343; Barber, above n 343; Ministry of Environment and Forests, Government of India, above n 343.
[346] Mukherje, above n 329.

Indian government has imposed a tax on coal which basically meets the base characteristic of environmental taxes.

3.4.2. The Function of the Water Cess and the Clean Energy Cess

The function of the water cess in India is explicitly governed in the legislation. It can be found in the preamble of the Water Cess Act 1977 which states that it is:

> an Act to provide for the levy and collection of a cess on water consumed by persons carrying on certain industries and by local authorities, with a view to augment the resources of the Central Board and the State Boards for the prevention and control of water pollution constituted under the Water (Prevention and Control of Pollution) Act, 1974.[347]

Based on this provision, it appears that the water cess has a primary function of being a revenue generating instrument. Revenue raised from this charge goes to the central government to support activities of the pollution control boards in managing water pollution in India. In this case, the central government returns 80% of the revenue to the SPCB as the enforcer of legislation at the state level.[348]

The primary purpose of this charge is markedly different to the pollution control schemes in Malaysia and China. The schemes in Malaysia and China are designed to protect and improve the environment rather than raise revenue. For this reason, revenue is not the main focus of the schemes and in the long run should be decreased gradually. Ideally, the primary purpose of every type of pricing instrument should be directed to improve the quality of the environment. This function should be clearly defined at the outset so as to avoid confusion in practice. The focus of pricing instruments to protect the environment will eventually improve public acceptance towards any scheme.

The water cess in India has the feature of being a user charge. The World Bank noted that a user charge could have a positive effect on the environment by way of increasing the price to fully recover operating costs or setting a charge that reflects pollution loads or

[347] The Preamble of The Water Cess Act 1977.
[348] OECD, above n 316, 15; A. Maria, 'The Cost of Water Pollution in India' (the Conference on Market Development of Water & Waste Technologies through Environmental Economics, Delhi, 30th – 31st October 2003) 3.

water usage.[349] However, the water cess scheme in India does not meet this requirement provided by the World Bank. The rate of the water cess has been said to be too low to recover the costs of collective treatment plants.[350] Although the cess rate was adjusted in 2003, it is still considered to be insignificant to encourage industries to achieve sufficient water efficiency in their processing. Even in less polluted processing, such as industrial cooling and spraying, the new rate is regarded as two or three times lower than water processing costs.[351] Thus, it can be assumed that the adjusted cess rate fails to delineate proper costs for managing water consumption in India.

Despite the low cess rate, the scheme provides a rebate system to cess payers. This system appears to encourage industries to invest funds in water conservation programs.[352] However, the refund of the cess payment is not automatically awarded. Industries should meet certain conditions with respect to the quantity of water consumed and the pollutant discharge standards. In fact, it is reasonable to provide a rebate for industries as it can enhance public support toward the cess scheme. This system is similar to the waiver system in Malaysia and the subsidy mechanism in China. O'Connor stated that a rebate system can reduce the resistant effect of the pricing instrument in practice. When the pricing instrument is introduced as an incentive mechanism, it is necessary to design a proper rebate for industries that contributes to quality environmental programs.[353] It is noted that the rebate can be fully refundable if the charge is levied proportionally to emission.[354] In the case of the water cess, the rebate does not appear to be a full or partial waiver scheme as the waiver/subsidy systems in Malaysia and China. The Indian government only provides a small share of rebate to the cess payee, accounting for 25% of the total payment. Unfortunately, no further information on the rationale behind the low proportion of the cess rebate is provided. It

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[349] World Bank, 'Environmental Fiscal Reform: What should be done and How to achieve it' (The World Bank Organization, Washingthon DC, USA, 2005) 33 – 34.

[350] Datt, above n 335, 27; Sawhney, above n 335.

[351] Centre for Science and Environment India, 'Cheapest Pickings', 15 February 2004. <http://www.cseindia.org/dte-supplement/industry20040215/cheapest-picking.htm>.

[352] See Article 7 of The Water Cess Act 1977. This provision governs a rebate for the cess payers as follows:

> "Where any person or local authority, liable to pay the cess under this Act, installs any plant for the treatment of sewage or trade effluent, such person or local authority shall from such date as may be prescribed, be entitled to a rebate of twenty five per cent of the cess payable by such person or, as the case may be, to the local authority".

[353] O'Connor, above n 232, 106.

[354] Ibid.

is also questionable as to whether the rebate that is incorporated in the water cess has been effective in stimulating industries to install equipment for water treatment. In this case, there is no sufficient evidence to prove the effectiveness of the rebate system in practice.

Having regard to the rebate, it appears that the revenue from the water cess is not entirely given back to industries. As previously mentioned, a large proportion of revenue from the cess is returned to the SPCB to fund its operations. According to the Water Act 1974, the SPCB has a wide range of responsibilities, including:

a. to arrange a comprehensive program regarding prevention and control of water pollution in the State;
b. to advise the State Government on any water pollution related issues;
c. to organize training programs related to prevention, control or abatement of water pollution;
d. to perform assessment of water quality (inspection, survey and monitoring);
e. to develop effective systems of sewage/effluent treatment;
f. to enforce environmental standards prescribed by the CPCB and to develop it in accordance with the State conditions.[355]

The above responsibilities reflect the enormous environmental responsibilities that the SPCB has as the enforcer of the legislation at the state level. There is no doubt that the SPCB needs sufficient financial support to perform its functions effectively. Apparently, the revenue from the water cess has been allocated to sustain the SPCB's activities. Thus, it can be assumed that revenue earmarking in the case of the water cess in India is not similar to those in developed countries or even in Malaysia and China. The cess revenue is not designed to be earmarked for specific environmental purposes. Instead, it aims to facilitate the local government to carry out programs related to the improvement of water quality in India.

The clean energy cess in India seems to have similar objectives to the water cess. It is primarily used to generate revenue for financing and promoting clean energy initiatives.[356] The revenue from the clean energy cess is designated to the National Clean

[355] See Chapter IV Article 17 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974); OECD, above n 316, 11.
[356] Mukherje, 2010, above n 329; Shailesh, above n 343; Singh, above n 343; Barber, above n 343; Ministry of Environment and Forests, Government of India, above n 343.

Energy Fund (NCEF).[357] The establishment of the NCEF in this case is viewed as the Indian government's strategy to reduce dependency of fossil fuels and shift to the use of clean energy technologies. This strategy is also seen as a response of India to contribute in global initiatives to fight climate change.

Revenue from the clean energy cess is likely to increase in the foreseeable future. This is due to the fact that India's power generation is coal-based, accounting for 54.7% of total need.[358] This proportion is predicted to increase during the period 2012 – 2017.[359] The high demand of coal leads to increasing revenue from the clean energy cess. It is reported that in just two years of implementation, the cess has generated considerable revenue. In the fiscal year 2010 – 2011, it has generated 1,066 billion rupees (US$180.59 million).[360] This number increased in the fiscal year 2011 – 2012 to 3,249 billion rupees (US$550.40 million) and is expected to raise a further 3,864 billion rupees (US$654.58 million) in 2012 – 2013.[361] By raising substantial revenue, the NECF would be able to finance research and projects in clean energy technologies. The disbursement of funding is done by Plan Finance II Division of the Department of Expenditure at Ministry of Finance.[362]

As an environmental tax, the clean energy cess should have a capacity to induce changes in polluters' behaviours. To achieve this purpose, an environmental tax should be designed properly by internalising relevant externalities into the market price. In theory, the effectiveness of this tax will ultimately result in a decrease in the amount of revenue. Therefore, the revenue from an environmental tax would be treated as being of secondary importance. However, the clean energy cess in India presents a different notion from the ideal concept of an environmental tax. The Indian government levies this cess simply for the purpose of raising revenue to fund clean energy technologies. This policy might be useful to encourage research in clean energy sectors, but it would

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[357] Ibid.
[358] Ruchira Singh and Utpal Baskar, 'India Likely to Raise Coal Tax Issue with Australia, Indonesia', 10 November 2011 <http://www.livermint.com/Politics/NvnZrPsITCb6hZUSIwH3zH/India-likely-to-raise-coal-tax-issue-with-Australia-Indonesia.html>.
[359] Ibid.
[360] Centre for Budget and Governance Accountability (CBGA), 'Framework and Performance of National Clean Energy Fund (NCEF)' (Policy Brief 1, Centre for Budget and Governance Accountability, July 2012) 1.
[361] Ibid.
[362] Ibid.

unlikely alter polluters' behaviours to reduce coal consumption. The clean energy cess in this case does not yet reflect the Polluters Pay Principle (PPP). It is therefore doubtful whether the imposition of the clean energy cess in India will reduce the effect of pollutants from coal to the environment. As the function of the cess is mainly revenue raising, the success of this instrument relies widely on the efficient use of the fund toward environmental investment in clean energy sectors.

3.4.3. Challenges in the Implementation

The application of the water cess in India has encountered similar obstacles to those found in Malaysian and Chinese legislation that have been examined in this chapter. In the case of India, the conceptual and institutional problems appear dominant. The first problem refers to technical difficulties in capturing a whole concept of pricing instruments. This includes the difficulty of formulating an effective rate and the difficulty in establishing an appropriate subsidy. Another crucial problem is related to the institutional capacity of the implementing institution. Failure to develop the institutional capacity may erode the effective implementation of the pricing instrument.

The conceptual problem with the water cess is indicated by the failure to establish a proper threshold for the rate. As previously discussed, the cess rate is too low to have a significant incentive effect.[363] Industries may choose to pay the charge rather than to reduce the consumption of water. This is proven by data on the number of industries in several states in India that paid the water cess in 2001 – 2002. Gujarat, Maharashtra and Tamil Nadu represent three states in India where several industries were found to prefer paying the water cess than to undertake any innovation.[364] On the other hand, this fact appears to be a successful story in achieving the prescribed purpose of the water cess. In this case, its revenue-raising feature is perceived as a financing device to support environmental expenditures undertaken by the SPCB. This is in line with the objective of

[363] Datt, above n 350; Sawhney, above n 350.
[364] Central Pollution Control Board Prevention and Control of Pollution (PCP) India, 'Cess Related Matters' n.d. <http://www.cpcb.nic.in/divisionsofheadoffice/pcp/other_information.pdf >.

a user charge that intends to fund the environmentally related services provided by the government.[365]

However, it is doubtful that the cess revenue as a part of the SPCB's budget has been properly utilised. The OECD reported that the financial situation of SPCBs is different in every state in India. Some of them have substantial financial resources, including an excessive amount of revenue from the water cess, while others rely significantly on grant funding from the government.[366] The problem lies with the expenditure patterns of SPCBs. Substantial expenditures (around 60 – 70% from the budget) have been allocated to administrative matters such as salaries.[367] As a result, insufficient funding holds back the SPCBs ability to perform its environment related functions effectively.

The rebate mechanism in the water cess system is another crucial point that may trigger ineffective environmental management. Although the rebate is designed to alleviate the burden on charge/fee payers, it is widely criticised as being in conflict with the Polluter Pays Principle (PPP). Under this principle, several types of subsidies, including the rebate and refund system, are not acceptable as they distort international trade and investments as previously discussed in chapter 2. However, subsidies can be used in transition periods when such pricing instruments have been imposed and cause economic as well as political obscurities.[368] As a type of subsidy, the cess rebate may assist industries in India to meet the prescribed effluent standards and to limit water consumption by installing equipment for sewage treatment. Yet, the rebate proportion is not as great as those in Malaysia and China to help industries to perform the pollution abatement projects.

Essentially, it is not an easy task to properly measure the share of subsidy for industries. All inherent costs such as operating and maintaining costs should be taken into account. The case of the refund system in China can serve as a valuable lesson. A substantial proportion given to industries may drive higher levels of compliance as occurred in China, but in the end the expected outcome will be disappointing. Most of the installed

[365] Robert N Stavins, 'Experience with Market-Based Environmental Policy Instruments' *(*Discussion Paper 01–58 Resource For The Future, 2001) 12.
[366] OECD, above n 316, 15.
[367] Ibid.
[368] Barde, 1994, above n 26.

equipment for pollution abatement in China has been neglected since its operating and maintenance costs end up being higher than paying the levy. It raises the question of whether a small proportion of the subsidy as in the cess rebate in India may be more effective. However, sufficient data does not exist to further analyse this kind of subsidy. One important point to make is that the subsidy should be removed gradually when the transition period has passed as it does not correspond with the PPP and may lead to economic inefficiency.

An institutional problem has been recognised as one of the fundamental weaknesses that hinder the effective implementation of the water cess. Datt observed that a lack of structure, insufficient funding, and lack of expertise were the major concerns in the environmental management system in India.[369] In this case, the same problem has been encountered in the water cess, and it seems that those deficiencies are interrelated to each other. Insufficient funding leads to the limitation of training opportunities that should be provided to build the capacity of the institution to perform their functions. Further, this financial constraint limits the opportunity of organisations such as the CPCB and the SPCB to develop their technical skills as well as expand their interdisciplinary knowledge in economic, legal and management studies.[370]

Similar conclusions were arrived at by the OECD in its 2006 rapid assessment of environmental enforcement in India. Certain key challenges in the enforcement of environmental policies, including institutional aspects, were highlighted by the OECD. According to the OECD, institutional arrangements and capacity are weak. This weakness is due to insufficient coordination between the CPCB and SPCBs, insufficient human and technical capacity as well as inadequate funding.[371] In terms of coordination, it is unsatisfactory as a result of dual lines of command received by the SPCBs from the CPCB and the state governments.[372] The CPCB provides technical directions to the SPCB in performing their functions, while state governments provide administrative guidance and funding.[373] It does not necessarily have to be a problem since the direction provided

[369] Datt, above n 337, 20 – 26.
[370] Ibid.
[371] OECD, above n 316, 14 – 15.
[372] Ibid.
[373] Ibid.

by those agencies is different. However, the OECD noted that the SPCBs are in a difficult position when the CPCB suggest a program that is not successfully executed because of unresponsive approval from the state government.

A significant shortage of staff in the SPCBs is critical in the poor enforcement of environmental policies in India. There is a need to have more technical staff with broader expertise in legal and policy aspects.[374] The lack of comprehensive policy on the SPCBs' staffing structure and the lack of procedural as well as technical trainings have made the situation worse.[375] These shortcomings are related to the financial constraints encountered by the SPCBs. As previously mentioned, the SPCBs' funding is from state government grants. In this case, the revenue from the water cess is included in the provided grants and refundable over 80% to the SPCB. The actual problem is the expenditure pattern in which most funding goes to salary expenses.[376] Thus, the SPCBs expenditure in infrastructure and training is quite small in proportion.

These issues remain the same in 2010. A presentation by the Ministry of Environment and Forests in India revealed that institutional obstacles have reached a critical stage. It was noted that the lack of training programs, an absence of institutionalised training protocols and insufficient interagency coordination led to the capacity deficiency.[377] They recommended empowering capacity by providing intensive training programs for the SPCBs.[378] In the case of the water cess, there is a need to streamline the scheme. The reform covered the netting of receipts and setting a provision for budgetary allocation.[379] However, the proposed restructuring program does not confront the conceptual issue as previously discussed. It does not touch on revising the cess rate or even redesigning the whole concept of the water cess. Thus, addressing the cess related issues, including the conceptual ones, are not simple. It requires strong will and initiative from all stakeholders to strive for the use of pricing instruments in dealing with environmental problems. A potential solution is the use of mixed-instruments. Combining a pricing

[374] Ibid.
[375] Ibid.
[376] Ibid.
[377] The Ministry of Environment and Forests, Government of India, 'Environmental Regulation in India: Issues and Challenges' (The Ministry of Environment and Forests, Government of India, power point presentation, 2010).
[378] Ibid.
[379] Ibid.

instrument and CAC instrument is a typical mix that has been successfully implemented in developed countries since they are compatible in nature. This approach might be adapted to the conditions in developing countries that rely considerably on CAC instruments.

Unlike the water cess, the implementation of the clean energy cess has not yet encountered many problems. No written criticism has been found in any media or reports concerning the introduction of this cess in 2010. Perhaps the proposed revenue use from the cess has smoothed the imposition process. As mentioned, the cess revenue is directed towards the National Clean Energy Fund (NCEF) and is used to finance research, projects and development in clean energy sectors. The establishment of the NCEF that is linked to the clean energy cess has evidently increased public acceptability towards the cess scheme. The NCEF in this case seems to meet 'the urgent need' of clean energy technologies in India.[380]

Despite the problem-free introduction of the clean energy cess scheme, the operation of the NCEF has raised some criticism. The Centre for Budget and Governance Accountability found that the utilisation of funds from the NCEF was relatively low to achieve the stated objective. It is estimated that at least 80% of the NCEF is not yet utilised to fund projects that promote clean energy technologies.[381] This is due to the fact that most of the proposed projects that sought funding from the NCEF were considered to possess a 'lack of quality and innovativeness'.[382] Instead of focusing on the development of clean energy, the fund was used to support projects that did not link to the objective of the NCEF.[383] For example, a project proposed by the Ministry of Environment and Forests for remediation of hazardous waste dumpsites has received the NCEF funding.[384] This allocation would potentially weaken the focus and the performance of the NCEF in the long run.[385]

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[380] Rita Pandey, Sanjay Bali and Nandita Mongia, 'Promoting Effective Utilisation of National Clean Energy Fund' (A Sakti Sustainable Energy Foundation Supported Initiative, 2013) 9.
[381] Centre for Budget and Governance Accountability (CBGA), above n 360, 3.
[382] Ibid 2.
[383] Ibid.
[384] Ibid.
[385] Ibid.

The manner of the Inter-Ministerial Group (IMG) for administering the NCEF has also been criticised. In the proposal appraisal process, the IMG provides the final review and approval of proposed projects.[386] In this case, the IMG allows seeking assistance from technical experts to review the project proposals and to monitor the funded projects.[387] However, the mandate given to the IMG has not been undertaken yet.[388] In addition, a framework for the monitoring and evaluation of projects funded by the NCEF has not been developed.[389] This may contribute to the ineffectiveness of the funded projects in practice.

Several recommendations have been proposed to enhance the effectiveness of disbursement and administration of the NCEF. It is strongly advised that the NCEF should only be utilised to realise its objective to promote clean energy technologies.[390] In doing so, it is important to involve various stakeholders, e.g. research institutes and industry, to undertake research and development within clean energy sectors.[391] A proactive approach should be carried out to attract the interest of these stakeholders to actively participate in the research.[392] These actions require 'adequate and dedicated staffing with appropriate expertise' within the Ministry of Finance.[393] It is recommended to set up 'the governing, steering and executive arms of the NECF' to assist in administering clean energy funds in an appropriate manner.[394] By having sufficient institutional capacity, the administration of the NCEF could be improved and its objectives achieved.

3.5. Conclusion

As with any developing country, Malaysia, China and India face significant environmental problems. Controlling pollution from industries has been regarded as the focal point for

[386] Ibid 1.
[387] Ibid.
[388] Ibid 4.
[389] Ibid.
[390] Pandey et al, above n 380, 75.
[391] Centre for Budget and Governance Accountability (CBGA), above n 381.
[392] Ibid.
[393] Pandey et al, above n 380, 86.
[394] Ibid.

improving environmental quality in these three countries. The use of pricing instruments to address industrial pollution has been promoted since the 1970s. Malaysia introduced a licensing system for managing water pollution, while China experimented with a comprehensive pollution levy system which covers air pollution, wastewater discharges, noise, solid waste and radioactive waste. During the same period, India used the water cess as the first green pricing instrument to tackle water pollution. In 2010, there was a breakthrough in the imposition of pricing instruments in India. The clean energy cess that is levied on coal was implemented. Using OECD parameters for a classification basis, the licensing system in Malaysia, the pollution levy system in China and the clean energy cess in India fall within the category of environmental taxes (effluent taxes), while the water cess in India is a type of user charge. Unlike in OECD countries, the term used to label pricing instruments is largely interchangeable between taxes, fees/charges and levies. Although the purpose of taxes and fees/charges are the same in altering polluters' behaviours, this interchangeably practice is somewhat problematic when it comes to the legal implications of such pricing instruments.

The experiences of Malaysia, China and India in the use of pricing instruments provide valuable lessons. First, the pricing instruments in these three countries do not aim to replace the function of regulatory instruments. The presence of pricing instruments is more likely to supplement the environmental policy for controlling industrial pollution. Secondly, the primary function of pricing instruments in the three countries was clearly specified at the outset. Effluent taxes in Malaysia and China aim to achieve a better quality of environment, while the user charge in India intends to raise revenue for financial resources of the government. It is worth noting that despite the objective of the clean energy cess in India being mainly to generate revenue, the utilisation of revenue is targeted to fund research and development in clean energy technologies. This allocation aims to ensure the deployment of appropriate clean energy in India which will reduce pollution domestically and also contribute to global efforts in combating climate change.

However, the pricing instruments in Malaysia, China and India have faced several challenges in their implementation. Conceptual and institutional problems have been found to hinder the effectiveness of these instruments in practice. The conceptual issue refers to the case of setting a low rate in effluent taxes in Malaysia and China and the

user charge in India, whereas the lack of institutional structure and capacity appears to be the main constraint in China and India, particularly in the implementation of the pollution levy and the water cess. In the case of the clean energy cess in India, the problem is linked to the utilisation and administration of the NCEF. It has been criticised as failing to meet the objective of the NCEF in promoting clean energy.

There is a greater need to restructure the current design of those pricing instruments in Malaysia, China and India to improve their effectiveness. Despite the need of policy reform, Malaysia and China have already moved forward to combine existing effluent taxes with control and command (CAC) instruments. The effect of this instrument mix is clearly positive in reducing industrial pollution. However, environmental pollution in China has reached an alarming level in recent years which has driven the Chinese government to propose a nationwide environmental tax on heavy polluters to be levied on discharges of sulphur dioxide, sewage and other contaminants. This proposed tax will replace the pollution levy system and be in force by the end of the 12th five year plan (2011 – 2015). The step taken by the Chinese government to introduce an environmental tax on heavy polluters will provide an important lesson in utilising taxes as a policy instrument to address pollution from industries.

CHAPTER 4

ENVIRONMENTAL TAXES IN INDONESIA: A NORMATIVE REVIEW ON RESPECTIVE LAWS AND REGULATIONS

4.1. Introduction

The purpose of this chapter is to review the fiscal laws covering environmental taxes in Indonesia. It addresses the first main research question, namely, whether the coverage of Indonesian environmental tax legislation adequately addresses environmental protection issues. A response to this question is important to provide an understanding of deficiencies in the laws being evaluated. However, the analysis in this chapter is limited to the coverage of environmental tax legislation. It does not fully capture the implementation of policies in practice as this will be discussed in the next chapter of the thesis (chapter 5). As discussed in previous chapters, there is an urgent need to ensure that environmental taxes are well designed so as to be effectively implemented in practice. The design of these instruments differs between countries depending on the specific circumstances and characteristics of the country. The OECD offers a guideline for designing environmental taxes which basically include two key elements: the tax base and the tax rate.[395] The function of these two features would likely determine the effectiveness of environmental taxes in altering polluters' behaviours. This guideline could be used as a parameter to assist in the implementation of environmental taxes in developing countries.

In the Indonesian context, as environmental management is within the authority of local governments, the evaluation of laws is directed to Law on local taxes and charges (Law No. 28 of 2009). This law covers provisions related to environmental taxes which are imposed at local levels. The focus of analysis is therefore placed on environmental taxes' provisions by using the OECD's guideline to determine the extent to which they conform to it. This discussion will be preceded by identification and classification of

[395] OECD, 2010, above n 70, 95 – 122.

environmental taxes in the Law that is enforced in Indonesia. An inventory of environmental taxes and their classification is necessary to assist the readers of this thesis in recognising the types of taxes being discussed. A fuel subsidy issue will also be presented in the end of this chapter to portray a factor that weakens the effectiveness of fuel taxes as environmental taxes in altering polluters' behaviours.

However, before discussing the law covering environmental taxes in Indonesia, this chapter begins with a brief overview of environmental laws in Indonesia. It is important to highlight the hierarchy, impact of decentralisation and the preventive measures in environmental management law in Indonesia. The discussion on these issues gives a clear illustration to the readers as to the function of environmental law in the management of the environment as well as the legal correlation between environmental laws and laws on local taxes and charges. As Indonesia has undergone decentralisation programs, the central power over environmental management has been shifted to local governments which have certainly had an impact on existing environmental law, including its environmental protection measures. Therefore, any related environmental measures such as tax instruments should correlate with provisions in environmental law which brings about legal harmonisation.

4.2. A Brief Overview of Environmental Law

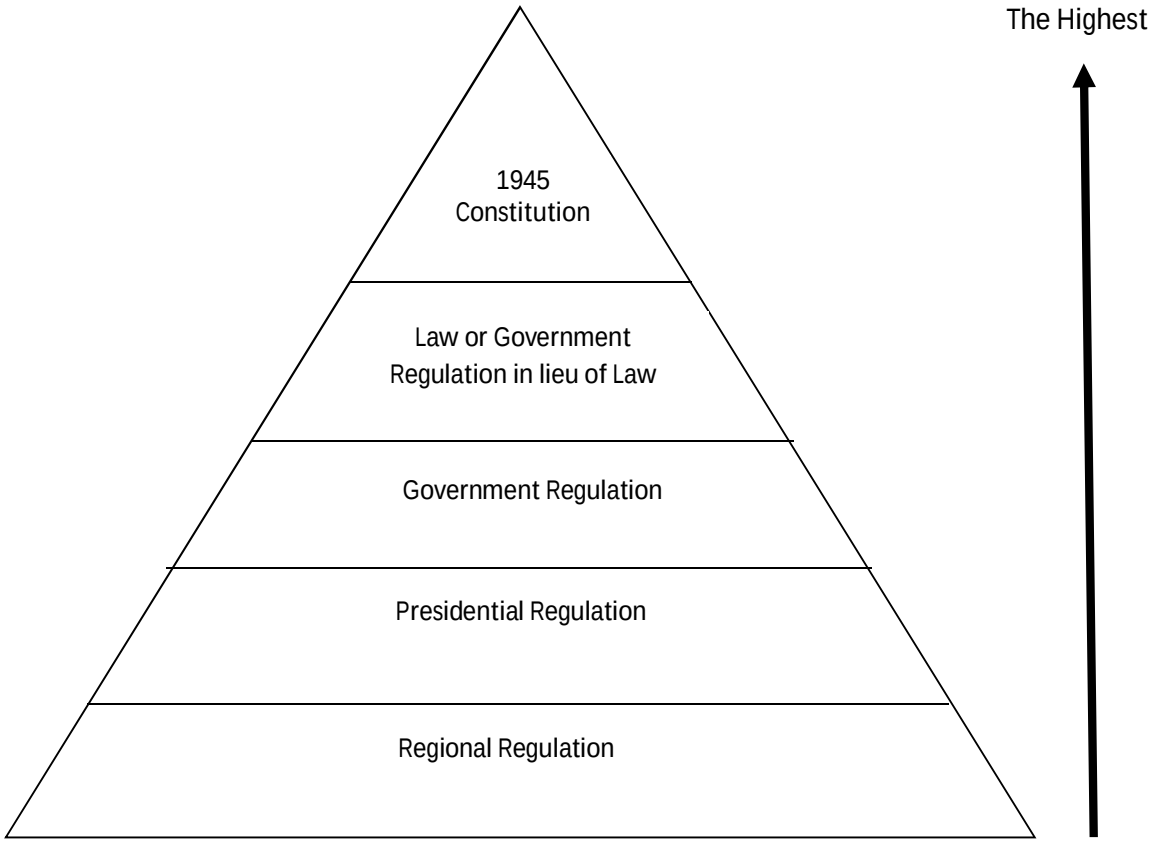
Before evaluating Indonesia's experience with market based instruments, it is important to adequately acknowledge a regulatory instrument relating to environmental management. A brief discussion of the existing environmental law will provide an understanding of its legal structure, its development under decentralisation and its measures in environmental protection.

4.2.1. Hierarchy of Environmental Law

Indonesia has many forms of legislations ranging from Laws to Local Regulations. However, the government has to take into account the hierarchy of legislations when it

comes to policy development. Under Law No. 10 of 2004 on the Formulation of Laws and Regulations, an official hierarchy of laws has been established as follows:

Figure 4. Hierarchy of Laws and Regulations in Indonesia



Source: adapted from Article 7 of Law No. 10 of 2004

It is clear from the above figure that the 1945 Constitution has the highest status among other forms of legislation while regional regulation has the lowest. The lower or the lowest legislation cannot supersede either the higher or the highest one. In the policy-making process, it is crucial to consider that the content of proposed policy do not contradict upper legislations. Basically, contents of the lower legislation should be

consistent with that of the higher one.[396] Whenever there is a conflict between any two pieces of legislation, the one higher in the hierarchy prevails.

Having regard to environmental laws in Indonesia, they are in the second tier of the hierarchy. The second tier of legislation must reflect the spirit of the 1945 Constitution, ranging from human rights to economic matters. [397] Furthermore, Law No. 10 of 2004 requires that several government affairs, including the environment, be regulated in the form of Law (*Undang-Undang*). Unfortunately, the 1945 Constitution does not explicitly stipulate environmental management. However, its management can be derived from two different provisions in the Constitution, namely Article 28H (1) and Article 33.

Article 28H (1) is regulated under the human rights chapter of the Constitution. It states that "every person shall have the right to live in physical and spiritual prosperity, to have a home and to enjoy a good and healthy environment, and shall have the right to obtain medical care".[398] Based on this provision, the right to have a good and healthy environment leads to the justification for government services relating to environmental management. Another constitutional provision that implicitly governs the state's responsibility to the environment is Article 33. It asserts that "the land, the water and the natural resources within are properties that shall be managed under the powers of the State and should be used for the greatest benefit of the people".[399] The article goes on to provide that "the national economy shall be conducted on the basis of economic democracy upholding the principles of togetherness, efficiency with justice, continuity, environmental perspective, self-sufficiency, and keeping a balance in the progress and unity of the national economy".[400]

The effect of these constitutional provisions is that the Indonesian government must implement its constitutional mandate in managing vital resources through a suite of laws and policies. In fact, there are a number of Laws that are related to environment and

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[396] See Article 8 – 14 of the *Undang-Undang No. 10 Tahun 2004 tentang Pembentukan Peraturan Perundang-undangan* [Law No. 10 of 2004 concerning the Formulation of Laws and Regulations} (Indonesia).
[397] Ibid art 8 (a) - 8(b).
[398] Article 28H (1) of *Undang-Undang Dasar Negara Republik Indonesia Tahun 1945 Amandemen I – IV* [the 1945 Constitution Amendment I - IV] (Indonesia).
[399] Ibid art 33 (3).
[400] Ibid art 33 (4).

natural resources management. A World Bank report in 2009 highlighted several pieces of legislation that reflected Indonesia's commitment to managing its environment and natural resources. The pieces of legislation included the Law on the Environment, the Law on Basic Forestry, the Law on Mining 2009, the Law on Marine & Coastal Resources 2007, the Law on Energy, the Law on Fisheries, the Law on Management of Water Resources and the Law on Toxic Wastes 1997. In spite of their sheer number and far-reaching scope, these laws have been criticised as being inconsistent at times and often overlapping.[401]

Since 1997 laws relating to the environment and natural resources have been overhauled. Indonesia's law on environmental protection was amended twice.[402] Indonesia's first Law on the Environment enacted in 1982 was replaced in 1997 with Law No. 21 of 1997 concerning the Environmental Management. The latter amendment sought to rectify several shortcomings in the previous 1982 environmental law and empowered the Ministry of Environment to establish policies at the central level as well as to set environmental standards.[403] However, the effort of resolving the flaws in the previous environmental law did not work well. One of the reasons was related to the enforcement capacities of the Ministry of Environment. As a coordinator of law and policy making processes, the Ministry of the Environment did not have any operational powers over environmental policies and standards.[404] Even though the Ministry of Environment has established the national Environmental Impact Agency to coordinate the enforcement of environmental policies and standards, it did not have an effective power to do so.[405] This situation was exacerbated by the enactment of decentralisation laws in 1999 (Law No. 22 of 1999 and Law No. 25 of 1999). These laws shifted the function of environmental management from the central government's authority to local governments' authority. In this case, the 1997 environmental law was not parallel to the decentralisation laws since it did not accommodate the function of local governments

[401] Josef Leitmann et al, 'Investing in a More Sustainable Indonesia: Country Environmental Analysis' (CEA Series, East Asia and Pacific Region, World Bank, 2009) 28.
[402] See above n 6 and accompanying text.
[403] Leitmann et al, above n. 401; Adriaan Bedner, 'Consequences of Decentralization: Environmental Impact Assessment and Water Pollution Control in Indonesia' (2010) 32 *Law and Policy Journal* 41.
[404] Ibid.
[405] Bedner, above n 403.

over the environmental management.[406] It took almost 12 years to amend the 1997 environmental law. In 2009, the government of Indonesia enacted Law No. 32 of 2009 concerning Environmental Protection and Management to recognise changes in relations and authority between central and local governments over environmental management.

Other Laws relating to the environment were enacted in the period 2008 – 2009. They are the Law on Waste Management (No. 18/2008) and the Law on the Ratification of Stockholm Convention on Persistent Organic Pollutants (No. 19/2009). The enactment of those two pieces of legislation gave effect to the constitutional provision that deals with people's right to have a good and healthy environment as discussed previously. To ensure the implementation of the above mentioned laws (the 2009 environmental law, the waste management law and the persistent organic pollutant law), it is essential to stipulate implementing regulations as required by Laws either in the form of government/presidential regulation or other forms of regulation outside the hierarchy, such as ministerial decree and circulars. Table 3 sets out some of these laws and implementing regulations related to the environment and waste management:

[406] Leitmann et al, above n 401, 26.

Table 3. Number of Legislation on Environmental and Waste Management in Indonesia

The State Gazette (*Lembaran Negara*)	Year of Promulgation							
	2013	**2012**	**2011**	**2010**	**2009**	**2008**	**2007**	**2006**
Law (*Undang-Undang*)	0	0	0	0	2	1	0	0
Government Regulation (*Peraturan Pemerintah/PP*)	0	2	0	0	0	1	0	0
Presidential Regulation (*Peraturan Presiden/Perpres*)	0	0	0	0	0	0	0	0
Regional Regulation (Peraturan Daerah/Perda)	0	0	0	0	0	0	0	0
Ministerial Decree/Circulars (Peraturan Menteri/Surat Edaran)	0	22	17	17	34	17	12	13

Source: adapted from Documentation Network and Legal Information at Ministry of the Environment the Republic of Indonesia.

Environmental protection and management law (No. 32 of 2009) requires a number of implementing regulations (particularly in the form of government regulation) with the purpose of clarifying the enforcement mechanism. In fact, nearly half of the provisions in Law No. 32 of 2009 require further clarification in the form of Government Regulation and Ministerial Decree. Moreover, Article 126 of the 2009 environmental law instructs that the implementing regulations as directed by the Law should be established by a maximum one year since the promulgation of the Law. Unfortunately, since 2012 only one government regulation that relates to environmental protection and management law has been issued.[407] This situation might disrupt the implementation and enforcement of environmental norms in practice. However, it is worth noting that the 2009 environmental law authorises that the implementing regulations of the previous

[407] *Peraturan Pemerintah No. 27 Tahun 2012 tentang Izin Lingkungan* [Government Regulation No. 27 of 2012 concerning Environmental License] (Indonesia) has been enacted in February 2012 to replace *Peraturan Pemerintah No. 27 Tahun 1999 tentang Analisis Mengenai Dampak Lingkungan/AMDAL* [Government Regulation No. 27 of 1999 concerning Environmental Impact Assessment] (Indonesia).

law (No. 23/1997) remain effective following the enforcement of Law No. 32 of 2009 so far as they do not contravene with the law or have not been replaced by new ones.[408] In the meantime, it is acceptable to rely on the previous implementing regulations as directed by the law. However, it is important that the issuance of the new implementing regulations as required by the law is undertaken within the given time frame so as to ensure that the operation of environmental rules and standards is in line with the latest environmental management law and the spirit of decentralisation in Indonesia.

4.2.2. The Impact of Decentralisation on Environmental Management Law

Indonesia's rapid decentralisation began in 2001 under Law No. 22 of 1999 on Regional Government and Law No. 25 of 1999 on Fiscal Balance. The underlying rationale of these laws was to prevent potential frictions between some regions in Indonesia, which could have brought about the disintegration of Indonesia as a nation.[409] Those laws proposed that the central government cede greater control to the regions, mostly to districts and city levels, over all functions of government with the exception of foreign affairs, defence, justice, debt and financial management, and religion.[410] These changes meant that districts and city governments had a greater role in implementing government functions autonomously and were directly responsible to the local parliament rather than the provincial government as the first tier of a local government. One specific function that must be performed by districts and city governments is environmental management.[411]

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[408] Article 124 of the *Undang-Undang No. 32 Tahun 2009 tentang Perlindungan dan Pengelolaan Lingkungan Hidup* [Law No. 32 of 2009 concerning Environmental Protection and Management] (Indonesia).

[409] See Simon Butt, 'Regional Autonomy and Legal Disorder: The Proliferation of Local Laws in Indonesia' (2010) 32 *Sydney Law Review* 177 - 178; Rachmad Erland Danny Darmawan, 'The Practices of Decentralization in Indonesia and its Implication on Local Competitiveness' (The Netherlands: University of Twente Enschede, 2008)24; Anwar Shah and Theresa Thompson, 'Implementing Decentralized Local Governance: A Treacherous Road with Potholes, Detours and Road Closures' (World Bank Policy Research Working Paper 3353, 2004) 3 – 4; James Cassing, 'Indonesia in Transition: Will Economic Prosperity Accompany Democracy' (2002) IX(1) *Spring 2002* 103 – 104.

[410] See Article 7 of the *Undang-Undang No. 22 Tahun 1999 tentang Pemerintahan Daerah* [Law No. 22 of 1999 concerning Regional Government] (Indonesia).

[411] Ibid art 11 (2). This Article governed several functions that are under authority of districts and municipalities. These are public works, health, education and culture, agriculture, communication, industry and trade, investment, environment, land, cooperation and labour.

Shifting powers and funds in environmental management to local governments did not necessarily initiate the revision of Law No. 23 of 1997 on Environmental Management. Even though it has been criticised as having a centralist view of environmental management as well as being in conflict with some provisions of the 1945 Constitution,[412] the 1997 environmental law was still put into practice alongside the 1999 decentralisation laws. Decentralisation laws have been subjected to a lot of criticism[413] after its implementation. As a result, Law No. 32 of 2004 on Regional Government and Law No. 33 of 2004 on Fiscal Balance were enacted to replace their predecessor laws (Law No. 22 of 1999 and Law No. 25 of 1999). The reason for enacting these 2004 decentralisation laws was to enhance the effectiveness of the laws related to good governance and to ensure the clarity of responsibilities between local governments.

Unlike the previous decentralisation laws, Law No. 32 of 2004 defines a range of obligatory functions that must be performed by provincial as well as districts and city governments, while Law No. 33 of 2004 provides principles of revenue sharing between the central and the local governments as a consequence of the transfer of functions. The functions that should be performed by local governments include development planning,

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[412] See Bedner, 2009, above n 403, 41 – 42 and Naoyuki Sakumoto, 'Chapter VII: Development of Environmental Law and Legal Reform in Indonesia' in Naoyuki Sakumoto and Hikmahanto Juwana, *Reforming Laws and Institutions in Indonesia: An Assessment* (Institute of Developing Economies, Japan External Trade Organization, 2007) 205 – 206. In his paper, Bedner stated that Law No. 23 of 1997 was not different with Law No. 4 of 1982 in terms of assigning a greater authority in environmental management to the central government. It noted that the 1997 environmental law increased the power of the Ministry of the Environment to make laws and policies in sectors, particularly forestry, mining and industries. Furthermore, the State Minister has gained power under the 1997 environmental law to supervise and to investigate environmental cases in those sectors by appointing independent investigators. Regarding contradictory problems, Sakumoto pointed that there was a constitutional gap between the 1997 environmental law and the 1945 Constitution. After being amended four times, the provisions related to environmental rights in the 1945 Constitution have been expanded. The added environmental related provisions, such as Article 28 F and 28 H, represent democratisation that only highlighted the rights of every person toward the environment but does not assign the obligations as appears in the 1997 environmental law.

[413] See Butt, above n 409, 180; Shah and Thompson, above n 409, 25 – 33; Bambang Brodjonegoro, The Indonesian Decentralization after law Revision' (Department of Economics, University of Indonesia, Jakarta, Indonesia, unpublished paper)1 – 6. Some major flaws in the 1999 decentralisation laws have been highlighted. Butt noted that the 1999 decentralisation laws seemed to maintain the central government's power over sub-provincial policy and lawmaking. The law had provided limited lawmaking powers to provincial government as well as limited powers to exercise decisions of districts/municipals governments. Meanwhile, Shah and Thompson pointed out that the flaws in the 1999 decentralisation laws were neglecting the bottom up accountability, weaknesses in designing fiscal equalisation as well as deficiency in operational capacity of local governments. Similarly, Brodjonegoro asserted in his paper that the revision of 1999 decentralisation laws were due to significant loopholes both in the laws and in the implementation ranging from lack of clarity in the assignment of functions to insufficient capacities of the central and local governments to deliver better services in a decentralised environment.

public order, public infrastructure, health, education and allocation of human resources, social issues, labour, small and medium enterprises, environmental management, land affairs, public administrative affairs and investment.[414] In this regard, environmental management remains within the competence of local governments both at a province and district/city level. This means the authority of the Ministry of Environment towards environmental management has diminished as it only performs a coordination function among departments and ministries.[415]

However, it is worthwhile to note that Law No. 23 of 1997 on Environmental Management remained on the statute books as a basic environmental law in Indonesia when the enactment of amended decentralisation laws took place in 2004. As discussed previously, the 1997 environmental management law contains significant shortcomings that did not reflect the spirit of regional autonomy. Legal provisions that ensure the relationship and the division of powers over environmental management between the central and the local governments should be presented in the environmental law without leaving aside its main purpose. Thus, instead of paralysing the practice of decentralisation, the existence of environmental laws should operate in harmony with decentralisation laws and policies.

In fact, Law No. 23 of 1997 has recognised deconcentration and decentralisation in its provisions (Article 12 and 13). Deconcentration is described as 'administrative decentralization' in which the central government transfers tasks and authorities in certain areas to 'lower levels of the central government' at regional offices.[416] In the area of environmental management, the 1997 environmental law allowed sub national governments to perform their functions on behalf of the central government. This meant that the central government still retained a greater control on environmental

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[414] Article 13 (1) and Article 14 (1) of the *Undang-Undang No. 32 Tahun 2004 tentang Pemerintahan Daerah* [Law No. 32 of 2004 on Regional Government] (Indonesia).

[415] Budi Widianarko, 'Democratization, Decentralization and Environmental Conservation in Indonesia' (the 9th Asia-Pacific NGO Environmental Conference (APNEC9) and the 30th anniversary of Japan Environmental Conference (JEC), Kyoto, 2009) 3.

[416] See Article 1 the *Undang-Undang No. 32 Tahun 2004 tentang Pemerintahan Daerah* [Law No. 32 of 2004 on Regional Government] (Indonesia); Vito Tanzi, *Pitfalls on the Road to Fiscal Decentralization* (Carnegie Endowment for International Peace Washington, DC, 2001)425 - 426; Ehtisham Ahmad and Ali Mansoor, 'Indonesia: Managing Decentralization' *(*IMF Working Paper, 2002) 7; Sri Probo Sudarmo and Brasukra G. Sudjana, 2009, 'The Missing Link: The Province and its Role in Indonesia's Decentralization' (UNDP Policy Issues Paper, 2009) 6;Bedner, above n 403.

management by utilising its branch's staff at local levels. Even though a further provision in Law No. 23 of 1997 provided a right for local governments to control and manage their own welfare (read: decentralisation), the scheme remained on paper. In this case, deconcentration was a preferable mechanism that was used to manage the environment.[417] In this circumstance, it can be assumed that the 1997 environmental law did not accommodate the legal authority of local governments towards the environment as mandated by the decentralisation laws.

Decentralisation has certainly had an impact on the environmental law in 2009. Shortcomings in the 1997 environmental law have been acknowledged. To address these, Law No. 32 of 2009 concerning Environmental Protection and Management was enacted. This piece of environmental legislation appears to strengthen democracy and decentralisation principles as governed by Law No. 32 of 2004. Through this law, the central government provides a greater autonomy to local governments in managing the environment. The scope of authority over environmental management seems wider than the previous law. In the 2009 environmental law, local governments are involved in planning, utilising, protecting, maintaining, monitoring and enforcing the law at their level. These authorities are further elaborated in the tasks and responsibilities chapter of the 2009 environmental law. The central government is largely responsible for setting up national policies, norms, standards, procedures and criteria in managing the environment, while the provinces and districts/city governments are responsible for comprehensive tasks that range from developing local policies, monitoring and controlling environmental impacts, performing environmental impact assessments to implementing law enforcement at the province or district/city level.[418]

The 2009 environmental law not only brought changes in the hierarchy and distribution of functions between the central and the local governments, but it also introduced additional provisions as to environmental permits as well as severe administrative and criminal penalties for any environmental violation under the law. These changes ensured

[417] Bedner, above n 403, 42.
[418] Article 63(1), 63(2) and 63(3) of the *Undang-Undang No. 32 Tahun 2009 tentang Perlindungan dan Pengelolaan Lingkungan Hidup* [Law No. 32 of 2009 concerning Environmental Protection and Management] (Indonesia).

that the law acted as a preventive and repressive instrument to protect the environment from excessive destruction. In spite of its benefits, decentralisation practice could lead to detrimental effects toward the environment. Many argue that local elites may use a reason of increasing their revenue as justification to exploit natural resources and environment at local levels.[419] Hence, setting up stricter environmental requirements and harsher penalties in the law represent a good signal from government in strengthening the instrument of environmental protection.

4.2.3. Preventive Measures in the Environmental Law

Although serving the same purpose with Law No. 32 of 2009, the predecessor laws (1997 and 1982) failed to prevent environmental degradation from happening. A number of environmental problems have increased from the first enactment of environmental law to present.[420] In fact, the two previous environmental laws have regulated such measures to manage the environment. Areas covered by the previous laws were environmental impact assessment (EIA), emission standards, incentives as well as licensing.[421] Unfortunately, these particular measures did not have a significant effect on the environment as several problems in the implementation hindered their effectiveness. Further, the fact that Indonesia had undergone a decentralization program exacerbated the problems. An example of this was in the implementation of environmental impact assessment at local levels. Insufficient capacities as well as the reluctance of local

[419] Bedner, above n 403, 40; Widianarko, above n 415, 4.
[420] See Widianarko, above n 415, 4 -7; Leitmann et al, above n 401, 9 – 14; Gunilla Ölund Wingqvist and Emelie Dahlberg, 'Indonesia Environmental and Climate Change Policy Brief' (A desk Study of Sida, University Gothenburg, 2008) 3 – 5; World Bank, 'Indonesia: Environment at a Glance 2008' (The World Bank Organization. 2008) <http://siteresources.worldbank.org/INTEEI/Data/21836378/IDN08.pdf>1 -2; Thomas Sunaryo, 'Environmental Problems in Indonesia: A Review' (Australian Institute of Criminology Conference, Canberra, 1992) 48 – 50.
[421] See Article 7, 8, 15 and 16 of the *Undang-Undang No. 4 Tahun 1982 tentang Ketentuan-Ketentuan Pokok Pengelolaan Lingkungan Hidup* [Law No. 4 of 1982 concerning Basic Principles on Environmental Management] (Indonesia); Carrol Warren and Kylie Elston, *Environmental Regulation in Indonesia (*University of Western Australia Press, 1994)18 – 29; Article 10e, 14, 15, 18 – 21 of the *Undang-Undang No. 23 Tahun 1997 tentang Pengelolaan Lingkungan Hidup* [Law No. 23 of 1997 concerning Environmental Management] (Indonesia); Sakumoto, above n 412, 216 – 217.

governments to conduct environmental impact assessment have been viewed as the main culprits.[422]

The 2009 environmental law also contains measures that are expected to bring any improvements in protecting and managing the environment. Some measures are not that different from those in the previous environmental laws, but its coverage has much more detailed. Measures covered included environmental impact assessments (EIA/*AMDAL (Ina)*), environmental management effort (*Ina: UKL*) and environmental monitoring effort (*Ina: UPL*), environmental quality standards, environmental audits, and licensing. In addition, new measures such as environmental permits, environmental risk analysis and economic instruments were introduced in Law No. 32 of 2009 to broaden preventive action in environmental management. The table below highlights changes in the preventive measures from the first environmental law to Law No. 32 of 2009:

[422] Leitmann et al, above n 401, 27; Bedner, above n 403, 48; Widianarko, above n 415, 7.

Table 4. Preventive Measures in Indonesia's Environmental Laws

Preventive Measures	Law No. 4 of 1982 (The first Indonesia's Environmental Law)	Law No. 23 of 1997 (The first amendment of 1982 Environmental Law)	Law No. 32 of 2009 (The second amendment)
Strategic environmental assessment (*Kajian Lingkungan Hidup Strategis – KLHS*)	-	-	✓
Spatial planning	-	✓	✓
Environmental quality standard	✓	✓	✓
Environmental damages standard	✓	✓	✓
Environmental impact assessment	✓	✓	✓
environmental management effort (*UKL*) and environmental monitoring effort (*UPL*)	-	✓	✓
Licensing	✓	✓	✓
Economic instrument	✓ (under incentive and disincentive provision)	✓ (under incentive and disincentive provision)	✓
Environmental risk analysis	-	-	✓
Environmental audit	-	✓	✓
Environmentally-based legislation	-	-	✓
Environmentally-based funds	-	-	✓

Source: Law No. 4 of 1982, Law No. 23 of 1997 and Law No. 32 of 2009

Law No. 32 of 2009 embraces a wide range of measures that place responsibility on both governments and businesses to carry out efforts to maintain environmental sustainability. Under this law the government has to implement certain measures such as strategic environmental assessment and spatial planning to ensure an integration of sustainability development principles in their policies and programs. Businesses are required to undertake various measures ranging from environmental impact assessments to environmental audits as their activities may have a significant impact on the environment. The interpretation and implementation of these measures largely

depend on the issuance of implementing regulations to the law. However, up to now very few implementing regulations have been released.

With respect to industrial pollution, the 2009 environmental law still takes into account the use of environmental impact assessments as one of the foremost measures to prevent damage to the environment. This measure is directed at entities that engage in businesses and/or activities that are likely to have a significant adverse impact on the environment. The criteria for businesses or activities that require environmental impact assessments are provided for in Article 23 (1) of the law. If the businesses or activities do not meet the criteria, the entities are obliged to provide environmental management effort and environmental monitoring effort. Micro and small businesses, however, are exempted from the statutory requirement of undertaking environmental impact assessments or environmental management effort and environmental monitoring effort. Instead, they are required to prepare environmental management and monitoring statements pursuant to Article 35. It is therefore reasonable to assume that the law ensures that entities do not avoid their responsibility by setting up sufficient measures for every level of business and/or activity.

In addition to the obligation to undertake the abovementioned measures, an entity is required by the law to obtain an environmental permit. This measure was first introduced in Law No. 32 of 2009 and makes it mandatory to obtain other business permits. The Minister of the Environment, governors, and regents/mayors are the relevant authorities empowered to issue and revoke environmental permits. The annulment of an environmental permit brings about the termination of a business permit that allows the entity to conduct business activities. Likewise, if there are any changes in its business activities, entities must renew their environmental permit in accordance with its purpose. In addition, a security fund must be provided by an environmental permit holder to guarantee a recovery source when the related activity causes damage to the environment. The law governs that this fund should be deposited in the government bank which is appointed by the relevant authorities. The provisions on the security fund sound promising as a means to promote environmental rehabilitation, but it is still unclear in terms of its allocation and administration as well as any contradiction with

other environmental funds.[423] The law itself provides that further provision on the security fund will be determined by government regulation. However, to date this type of implementing regulation has not been established to clarify several matters relating to the security fund.

It is worth noting that environmental impact assessments, environmental management effort, environmental monitoring effort as well as environmental permits are interrelated measures. An environmental permit will be issued alongside the issuance of environmental feasibility decisions (*Keputusan Kelayakan Lingkungan Hidup*) as a result of environmental impact assessments or a recommendation for environmental management effort and environmental monitoring effort (*Rekomendasi UKL-UPL*).[424] Thus, a business and/or an activity cannot be established without accomplishing the abovementioned measures. This is different from previous environmental laws in which an entity could obtain a business permit after successfully fulfilling an environmental impact analysis or environmental management effort and environmental monitoring effort. There was no further requirement such as an environmental permit to be utilised as another preventive layer in managing the environment. Relying upon one measure per se may not have had a significant effect in encouraging entities to abate their pollution. Even worse was that there was a tendency of the authority to take sides on behalf of businesses that led to the failure of environmental impact assessment as preventive measures.[425]

In response to the problems, provisions on preventive measures have been developed and strengthened in the 2009 environmental law. Not only should entities obtain an environmental permit as part of its licensing measures, but also undertake an

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[423] See Dewi Savitri Reni, '2011 Indonesian Law Review: Environmental Protection & Management', *SSEK Indonesian Legal Consultants* (26 January 2012) <http://blog.ssek.com/index.php/2012/01/2011-indonesian-law-review-environmental-protection-management/>. In her article, Reni highlighted several matters in relation to a security fund that should be clarified. Her concern was 'the amount of funds to be earmarked, the security of the funds while placed under government management, and on whether the fund will be tax deductible'. She also underlined the possibility of incoherency regulations as to another environmental fund provision in the mining, as well as the oil and gas, legislations.

[424] Article 36 (2) of the *Undang-Undang No. 32 Tahun 2009 tentang Perlindungan dan Pengelolaan Lingkungan Hidup* [Law No. 32 of 2009 concerning Environmental Protection and Management] (Indonesia) and Article 47 (2) of the *Peraturan Pemerintah No. 27 Tahun 2012 tentang Izin Lingkungan* [Government Regulation No. 27 of 2012 concerning Environmental License] (Indonesia).

[425] Bedner, above n 403, 47 - 48; Widianarko, above n 415, 4 – 7.

environmental risk analysis. This measure is directed at businesses and/or activities that may have an adverse effect on people and the environment. Further details on environmental risk analysis were to be established in government regulations. Yet, an implementing regulation on this particular measure has not been issued since the enactment of Law No. 32 of 2009.

Aside from this, Law No. 32 of 2009 brought and renewed provisions on environmental audits from the previous environmental law. The law requires entities to carry out environmental audits regularly if their activities are likely to have a significant adverse impact on the environment and/or in the event that non-compliance to the law is suspected. If an entity fails to do so, the Ministry of Environment can perform an environmental audit or can appoint an independent third party to perform an audit with all expenses borne by the entity. Furthermore, the law regulates entities which already have business permits under the previous environmental law (1997). If they have not undertaken environmental impact assessments, they are required to do so within two years after the enactment of Law No. 32 of 2009. However, the law does not provide clarification as to legal consequences of an existing business permit which an entity has already obtained. Presumably, the consequences will rely on an audit outcome as to whether it should be revoked or renewed under the environmental permit provisions.

Another breakthrough in Law No. 32 of 2009 is in relation to economic instrument provisions. In this regard, the law recognises and explicitly governs the use of economic instruments in managing the environment. Unlike previous environmental laws (1982 and 1997),[426] the economic instrument referred to in the 2009 law is a far-reaching term. It contains not only incentives and disincentives, but also takes into account economic instruments in the development processes as well as environmental funding mechanisms. Incentive and disincentive mechanisms refer to the use of economic instruments to encourage or discourage any activities that are likely to have an impact

[426] Law No. 4 of 1982 and Law No. 23 of 1997 have also recognised the use of economic instruments in environmental management. However, these laws did not explicitly regulate this kind of measures. Article 8 of Law No. 4 of 1982 only stipulated the authority of government to undertake certain approaches to encourage environmental management. In its elucidation, taxes as an example can be used as incentive and disincentive mechanism to prevent environmental degradation. The first amendment of the 1982 environmental law was much alike to its economic instrument provisions. This measure has been implied in the elucidation of Article 10e of Law 23 of 1997. It came as an example of preventive measures that can be utilised in environmental management.

either positive or negative on the environment. The approach of using economic instruments in development processes aims to incorporate environmental factors into economic activities, while environmental funding mechanisms emphasises an approach to the financial sources of environmental management. Apparently, the government would like to embrace various types of economic instruments in the law as has been elaborated on Article 43 of Law No. 32 of 2009. However, economic instrument provisions need to be refined in a government regulation as it requires technical guidelines in each type of approach. The implementing regulation as mandated by the law has not yet been issued at the time of writing this thesis.

In general, the above measures have been developed to slow down environmental degradation that may occur as a result of production and/or consumption activities. Many of the preventive measures are based on command and control mechanisms that prescribe specific rules such as environmental quality standards that entities must comply with. Failure to do so attracts legal consequences in the form of administrative and/or criminal penalties. The penalties for any violations against any provisions in Law No. 32 of 2009 are much harsher than those in the previous environmental law. An annulment of environmental permits as a part of administrative penalties may lead to shutting down an existing business and/or activity, while criminal penalties not only capture a violation against prescribed standards but also impose penalties on wrongdoing related to environmental permits done by government officials. These changes seem sufficient to assure better environmental management at the forefront, but the experience of law enforcement in Indonesia brings into question future outcomes. It has been noted that law enforcement in Indonesia remains weak.[427] Corruption, misconduct of authority as well as complicated legal requirements in terms of providing physical evidence are some contributing factors to poor enforcement.[428]

The shortcomings discussed above have been acknowledged as one of the key challenges in the regulatory approach towards environmental management. Further, effective law enforcement is often costly due to administrative and procedural requirements.[429] This

[427] Leitmann et al, above n 401, 26 - 28; Bedner, above n 403, 48.
[428] Leitmann et al, above n 401, 27.
[429] Anderson, above n 220, 2.

has led to an increasing recourse to economic instruments as one of the strategies to abate pollution. In the case of Indonesia, economic instruments have been accommodated in the 2009 environmental law. Economic instruments not only purport to prevent environmental degradation but can also provide appropriate responses for dealing with various environmental problems that cannot be addressed by regulatory instruments (an example being pollution from small industrial sources).

4.3. The Current Policy of Environmental Taxes in Indonesia

This section is intended to review the policy underlying environmental taxes in Indonesia. The review is primarily based on local tax legislations as well as related publicly available papers and articles. First, a discussion is initiated by analysing the evolution of environmental taxes under the law on local taxes and charges to highlight the policy's changes which may affect the authority of local governments to implement such taxes. It is then followed by classifying environmental taxes under Law no. 28 of 2009 to understand the extent that these taxes address environmental problems at local levels. The analysis goes further to determine the types of environmental taxes which represent a closer linkage with relevant environmental externalities. The end of this section also covers another relevant issue concerning the fossil fuel subsidy which may counteract the imposition of fuel taxes in altering polluters' behaviours.

4.3.1. The Development of Environmental Taxes Policy

As discussed previously, Indonesia has introduced economic instruments in its environmental laws. One of the environmental instruments highlighted in the laws (particularly the 2009 environmental law) is taxation.[430] This instrument can be used to discourage polluters' behaviours so as to reduce pollution to acceptable levels. It can be

[430] Although taxation is not explicitly mentioned as one type of economic instrument in provisions of Indonesia's environmental laws, the elucidation of Article 8 Law No. 4 of 1982, as well as Article 10e Law No. 23 of 1997, highlighted the use of tax policy in environmental management as incentive and/or disincentive measures. Unlike the predecessor environmental laws, Law No. 32 of 2009 clearly stipulates in Article 43(3) (b) the use of environmental taxes, charges and subsidies as the form of incentive and disincentive measures. Furthermore, the elucidation of this provision provides examples of environmental taxes that can be implemented as incentives and/or disincentives at local levels. These are ground water taxes, fuel taxes and swallows' nests taxes.

interpreted that the environmental law provides a legal base to utilise taxes, charges and subsidies as preferential measures in preventing environmental degradation. In this context, local governments have a greater role to implement these measures at the local level to back their actions in managing the environment. In fact, the recognition of environmental taxes an economic instrument begun in 1997 when the government implemented fuel taxes at local levels.[431] The provision of this tax was found in law on local taxes and charges which was mainly enacted to support regional autonomy in Indonesia. In fact, this Law also covers other local taxes which may represent the characteristics of environmental taxes. The amendment of the law on local taxes and charges in 2000 and 2009 may bring about significant changes in the prescribed local taxes and the taxing policy of local governments. It is therefore important to understand whether the amendment of the Law still accommodates the types of local taxes that can be used as disincentive measures for polluting products or activities. A discussion of the evolution of environmental taxes in Indonesia can be divided into three stages based on legislative changes in law on local taxes and charges:

(1) Stage 1: The enactment of Law No. 18 of 1997

The first legislation on local taxes and charges in the regional autonomy era was Law No. 18 of 1997. This law was enacted to achieve the primary purposes of simplifying the local tax system and generating local tax revenues.[432] These objectives were in line with the enactment of Law No. 5 of 1974 that dealt with the Basic Provisions for Regional Government which sought to address the demands for decentralisation from many regions in Indonesia. Under the basic law on regional government, regions in Indonesia had greater authority to manage their own functions and provide better services for local people. Thus, regions are expected to have sufficient local revenues to finance all local government functions. One local revenue source is local taxes and charges.

[431] White, above n 2.
[432] The elucidation of the *Undang-Undang No. 18 Tahun 1997 tentang Pajak dan Retribusi Daerah* [Law No. 18 of 1997 concerning Local Taxes and Charges] (Indonesia).

Prior to the enactment of Law No. 18 of 1997, local governments in Indonesia relied on Law No. 11 of 1957 (*Undang-Undang No. 11 Drt Tahun 1957*) concerning Basic Provisions for Local Taxes and Law No. 12 of 1957 (*Undang-Undang No. 12 Drt Tahun 1957*) concerning Basic Provisions for Local Charges. However, these two previous laws on local taxes and charges contained many drawbacks, including higher administrative costs, overlapping with other types of taxes or charges, unfairness as well as being ineffective in practice.[433] This situation was exacerbated by the fact that the legal bases of local tax collection had been established in many different laws which led to complexity in understanding existing regulations.

Although the amendments to local tax legislations took more than 20 years since the stipulation of regional autonomy in 1974, the 1997 law on local taxes and charges brought significant changes. The law assigned local taxing power to both provincial and districts/municipals governments over certain types of taxes. Provincial governments had been appointed to impose three types of local taxes, namely motor vehicle taxes, taxes on the transfer of motor vehicle ownership and fuel taxes. In contrast, districts/municipal governments had taxing powers over six types of local taxes, namely taxes on hotels and restaurants, entertainment, advertisements, street lighting, type C mining and on the utilisation of ground and surface water.

It is worth noting that several local taxes in the 1997 Law corresponded to the features of environmental taxes that are widely used in OECD countries to manage the environment. Despite its primary function being to support regional autonomy, Law No. 18 of 1997 acknowledged environmental preservation as another inherent purpose in the imposition of a local tax. Fuel taxes, for example, have been introduced not only to generate local tax revenues specifically for districts/municipalities, but also to finance road maintenance and development.[434] Further examples of this type of charge are the type C mining charge as well as the ground and surface water charge. Both have been reorganised to be included under the classification of taxes since these charges basically had tax characteristics and there was government concern towards environmental preservation on water and

[433] Ibid.
[434] Ibid.

type C mining.[435] These examples confirm the government's awareness of environmental issues and its proactive response by regulating local taxes which had relevant environmentally tax-bases.

Law No. 18 of 1997 further stipulated that the government could create other types of local taxes in addition to the prescribed local taxes by fulfilling the following conditions:

a. It should have the character of a tax, and not a user charge;
b. The object of the tax and the tax base should not conflict with the public interest;
c. It should have adequate revenue potential;
d. It should not have adverse economic impact;
e. It should take into account the fairness and the ability to pay principles
f. It should preserve the environment.[436]

One of the above criteria of a new local tax was related to environmental sustainability. This means that a new local tax should be neutral in its environmental impact and its imposition should not harm the environment.[437] Apparently, this criterion was regulated to prevent any likely damage to the environment as a result of improper tax policy. The provision to create a new local tax can be used by local governments to establish environmentally friendly taxes as a way of managing the environment.[438] However, no available data can be found to demonstrate the eagerness of local governments in Indonesia to propose a new environmentally friendly tax as provided in the 1997 Law. This might be related to the requirement that a new local tax should be stipulated under government regulations. It means that the authority to pass a bill of a new local tax rested with the central government, which certainly limited the creativity of local governments to propose a new tax scheme. This condition remained the same until the decentralisation laws (Law No 22 and No. 25 of 1999) were enacted in response to unsatisfactory outcomes of regional autonomy. One year after the enactment of the 1999

[435] Ibid.
[436] Ibid art 2(3).
[437] The elucidation of Article 2 (3f) of the *Undang-Undang No. 18 Tahun 1997 tentang Pajak dan Retribusi Daerah* [Law No. 18 of 1997 concerning Local Taxes and Charges] (Indonesia).
[438] Barde, above n 31, 230. Barde stated that there are two ways to green taxes, namely "restructuring existing taxes in an environmentally friendly manner and introducing new ecotaxes". The later approach has been used in most OECD countries to deal with particular environmental challenges such as a sulphur tax in France to tackle sulphur emissions by industry.

decentralisation laws, the amendment of the 1997 law on local taxes and charges came into effect.

(2) Stage 2: The enactment of Law No. 34 of 2000

Law No. 34 of 2000 which amended Law No. 18 of 1997 on Local Taxes and Charges came into effect in December 2000 to complement the implementation of Law No. 22 and 25 of 1999. This amendment was important due to the limitation on the number of local taxes and charges which can be used by local governments to generate their own sources of revenue. As has been previously discussed, the 1997 law on local taxes and charges established 3 (three) types of taxes for provincial government and 6 (six) types of taxes for districts levels. Furthermore, under law No. 18 of 1997 there was a statutory limitation for local governments in creating a new scheme for local taxes in the form of central government approval. The risk to be removed and/or merged with other regions due to the incapability of a region to implement the decentralisation program may also have been a factor that triggered the demand to make improvements on the 1997 law on local taxes and charges.[439]

It is worth noting that there were no significant changes in Law No. 34 of 2000 in relation to the types of local taxes for both provincial and districts/city governments. Under the 2000 law, taxes on the utilisation of ground and surface water had been reassigned to provincial governments, while taxes on hotels and restaurants were still allocated to district/city governments with a small change in the form of separating them into two types of taxes: a hotel tax and a restaurant tax. Furthermore, a parking tax was established in the 2000 law as a new type of local tax that could be utilised to raise revenue at district/city level. Overall, provinces

[439] Article 6 of Law No. 22 of 1999 concerning Regional Government stipulated that regions which are not capable of implementing regional autonomy could be removed and/or could be merged with other regions. In this circumstance, the capacity of regions to support their expenditures was very crucial as all functions of governments - with an exception on foreign affairs, defence and security, fiscal and monetary affairs, judicial system and religion - as well as finances to perform the functions have been transferred to local governments. As a matter of fact, before decentralisation, local governments in Indonesia relied on subsidies from the central government to finance their expenditures because of having insufficient own-source revenues. Therefore, local governments must have initiative to increase their revenues. One of them was generating own-source revenue through local taxes and charges.

had the authority to impose four types of taxes that concerned motor vehicles, the transfer of motor vehicle ownership, fuel and the utilisation of water, whereas districts/cities had power over seven types of taxes related to hotels, restaurants, entertainment, advertisements, street lighting, type C mining and parking. Revenues from provincial taxes on motor vehicle and the transfer of motor vehicles ownership had to be shared with district/city governments at a minimum level of 30% as well as a minimum 70% on taxes concerning fuel and utilisation of water. Unfortunately, the law did not clarify the purpose of tax revenue sharing and whether it should be targeted at specific environment related functions. Presumably, in line with the spirit of decentralisation the revenues from these kinds of environmental taxes should be used to boost district/city revenues to fund their expenditures.

Unlike Law No. 18 of 1997, the 2000 law on local taxes and charges enabled local governments to create their own local taxes and charges through local regulations. In this case, the district/city government had a greater authority to create both new taxes and charges, while the provincial government only retained a power to create new charges. However, the right to create a new scheme of taxes had to satisfy certain conditions which were largely similar to the requirements under the predecessor law. The provisions to create a new tax in fact brought a wider opportunity to establish a tax instrument to accompany local taxes for the purpose of environmental management at the local level. This scheme provided far-reaching advantages from generating local revenues to restoring negative impacts on the environment.[440] Essentially, it was a good idea to encourage local governments to use their authority to create a new environmental tax as it led to additional benefits that were correlated with their functions in managing the environment.

However, it seems that the focus of local governments in establishing new taxes and charges at that time were merely for revenue purposes. This led to an erroneous interpretation that local governments had a complete discretion to enact local regulations that dealt with a new tax or charge without considering standards under the 2000 amendment law on local taxes and charges. A study by Blane D. Lewis

[440] White, above n 2, 43.

(2003) sampled 231 districts/municipalities and found that there were an estimated 942 new taxes and charges issued by district/city governments during the fiscal year 2001.[441] From these numbers, the central government only reviewed about 43% of them and rejected 28% of those reviewed due to substandard reasons for the taxes and charges as prescribed by Law No. 34 of 2000.[442] The study also revealed that over 40% of new taxes and charges were imposed on goods or products within the primary sector, including agriculture, livestock, fisheries, forestry and mining.[443] Another 20% were applied to services, while the remainder were spread out over the distribution sector (trade and transportation), secondary sector (manufacturing and construction) and government administration.[444] The distribution of new local taxes and charges specifically imposed on goods or products in the abovementioned primary sectors may lead to the notion of the greening of local taxes. As previously discussed, introducing taxes on goods or products that are likely to discharge emissions is an approach that moves towards an ecologically aware policy. Yet, no further data was available in this case to determine whether the new scheme of taxes can be categorised as environmental ones.

Apparently, the central government failed to control the bulk of local regulations that dealt with new taxes and charges. The law provided that the central government had the power to cancel a new tax or charge within a period of one month if it did not satisfy the prescribed standards. However, it was difficult to exercise that power as there was a significant increase in the number of provinces and districts/cities in Indonesia within 2 years after decentralisation, from 26 to 30 provinces and from 290 to 348 districts/cities respectively.[445] As a consequence,

[441] Blane D. Lewis, 'Tax and Charge Creation by Regional Governments Under Fiscal Decentralization: Estimates and Explanations' (2003) 39(2) *Bulletin of Indonesian Economic Studies* 179.
[442] Ibid 187.
[443] Ibid 181-182.
[444] Ibid.
[445] Bambang Brodjonegoro, 'Fiscal Decentralization in Indonesia' (The Institute of Economics and Social Research, The Graduate Program of Economics, University of Indonesia, Jakarta, Indonesia, 2003) 1.

there were many local regulations on new taxes and charges which were found to have contradicted existing law.[446]

The central government was not the only one that had been accused of having insufficient control over the excessive number of new schemes of local taxes and charges. Local government were also identified as having by-passed the entire review system of new schemes of revenue sources created by their own authorities.[447] To counteract this criticism, local governments used the excuse of having insufficient local revenues, arguing that even if intergovernmental transfers had been added together, it was still inadequate to perform their mandated functions.[448] It was predicted that the creation of new taxes and charges at local levels would result in a significant increase in local own-source revenues. Although data from one study between the 2000 and 2001 fiscal years demonstrated an aggregate increase in the amount of own-source revenues from provincial and district/city governments, it was still not clear whether the revenue growth was actually from the imposition of the new local taxes and charges.[449] Supposedly, the increase of own-source revenues that resulted from the creation of new taxes and charges would remain a small proportion of the total local budgets.[450] Thus, it might be reasonable to assume that the establishment of new taxes and charges under decentralisation was not sufficiently important in terms of generating local revenues.

An open list of taxes under Law No. 34 of 2000, if used properly, would offer better opportunities to both generate local revenues and provide a fiscal instrument to manage the environment as one of the local government's functions. Revenue generated from new taxes and charges are not completely bad as it can be used for specific purposes, such as financing environment-related programs. Evidently, the focus of local governments under decentralisation was far from being on the

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[446] World Bank, 'Decentralizing Indonesia' (The World Bank Regional Public Expenditure Review for Indonesia, 2003).
[447] Lewis, above n 441, 178.
[448] Ibid.
[449] Blane D. Lewis, 'Some Empirical Evidence on New Regional Taxes and Charges in Indonesia' (Research Triangle Institute, North Carolina, USA, 2003)13.
[450] Ibid.

environment. As previously mentioned, the establishment of new local taxes and charges based on Law no. 34 of 2000 was to generate local revenues. Therefore, the use of tax instruments to support local governments' function in managing the environment was relied on existing local taxes in the 2000 law. Some local taxes at the provincial and district/city levels had similar characteristics to environmental taxes in OECD countries. Unfortunately, local governments were not permitted to determine the rates of taxes, which were considered the instrument with the most revenue raising potential. Law No. 25 of 1999 as well as Law No. 34 of 2000 already set the maximum percentage of prescribed local taxes which should be followed by the local governments. From an environmental perspective, the rates of taxes should reflect the cost of environmental damage to ensure their effectiveness.[451] This means that the government should determine the appropriate rate of a tax so that the environmental purpose can be achieved. Therefore, discretion for the local government to determine the rate of a tax is a crucial issue in this context.

Although decentralisation laws were amended in 2004 (Law No. 32 and No. 33 of 2004), the 2000 law on local taxes and charges remained in effect. In fact, Law No. 34 of 2000 which amended Law No. 18 of 1997 was not compatible with the 2004 amendment laws. It should have been adjusted with the policy of regional autonomy under the 2004 amendment laws since the law on local taxes and charges is a fundamental legislation to direct local revenue that is generated. However, the amendment of Law No. 34 of 2000 was not taken into consideration until 2009 when Law No. 28 of 2009 came into force.

(3) Stage 3: The enactment of Law No. 28 of 2009

In September 2009, legislation covering local taxes and charges (Law No. 28 of 2009) was enacted. Several reasons for the enactment of Law No. 28 of 2009 were highlighted in the legislation. First, the 2000 Law provided open-listed taxes and charges for local governments to impose. However, the opportunity to create a new

[451] Barde, 1997, above n 31, 234.

scheme of local taxes and charges in fact did not cover local expenditures as expected. Second, almost every new tax and charge that had been promulgated by local governments had a negative impact on investment. The creation of new taxes and charges resulted in a high cost economy due to duplication with central imposts as well as constraining the flow of goods and services between regions. Third, the lack of control over the new scheme of taxes and charges also contributed to the failure of Law No. 34 of 2000. As mentioned, supervision from the central government was ineffective in ensuring that local regulations concerning new taxes and charges met the prescribed standards. This was due to the absence of sanctions under the law for non-complying regions and insufficient repressive control systems. In this case, local regulations on new taxes and charges could be enforced directly without approval from the central government. Fourth, the 2000 law on local taxes and charges did not support regional autonomy in Indonesia. Under this law, regional tax bases were very limited and provinces did not have the mandate to determine the rates of taxes, which brought difficulties in meeting local expenditure requirements. The final reason related to Law No. 32 and No. 33 of 2004 (the amendment of the 1999 decentralisation law), which provided greater authority to local governments over local taxes and charges. In this case, local governments were empowered to extend the base of local taxes as well as to determine the rates of taxes.

Apparently, the 2009 law on local taxes and charges was designed to fix the flaws in the previous law. In doing so, Law No. 28 of 2009 offered a closed list of local taxes that could be imposed by local governments. This meant the law restricted the authority of local governments to create new schemes of local taxes and charges outside the prescribed taxes as previously governed in Law No. 34 of 2000. Similar to predecessor laws (1997 and 2000), the 2009 law on local taxes and charges regulated different types of local taxes for provinces and districts/cities. In the current law, provincial governments retain the authority to impose taxes on motor vehicles, the transfer of motor vehicle ownership, fuel, the utilisation of surface water and cigarettes. For district/city governments, there are eleven types of local taxes:

a. Hotel Tax;
b. Restaurant Tax;
c. Entertainment Tax;
d. Advertising Tax;
e. Street Lighting Tax;
f. Tax on Non-Metal Mineral and Rock;
g. Parking Tax;
h. Ground Water Tax;
i. Tax on Swallows' Nests;
j. Rural and Urban Land and Building Tax;
k. Tax for Acquiring Right on Land and Building.[452]

As can be seen from the abovementioned list of local taxes, the basis of local taxes has been expanded. The previous law (No. 34 of 2000) governed four types of taxes for provincial governments and seven types of taxes for district/city governments. Several types of local taxes remain the same in the 2009 law, but their scope has been extended. One example is the inclusion of government-owned vehicles as a taxable object for the motor vehicle tax.[453] In addition, there are four new types of local taxes in Law No. 28 of 2009. Two of them, the cigarette tax for provincial governments and the tax on swallows' nests for district/city governments, are completely new. However, two other taxes, namely the rural and urban land and building tax as well as the tax for acquiring rights on land and building, have previously been categorised as central taxes but are now delegated to district/city governments.

Having regard to the rates of taxes, the 2009 law has already set up maximum rates of taxes that can be imposed by local governments. The discretion to determine tax rates has been given to local governments but with a maximum limit as provided by the law. It seems that the law attempts to prevent over-creativity of local governments in establishing rates that may lead to a heavy tax burden. This

[452] Article 2(2) of the *Undang-Undang No. 28 Tahun 2009 tentang Pajak Daerah dan Retribusi Daerah* [Law No. 28 of 2009 concerning Local Taxes and Charges] (Indonesia).
[453] The elucidation of the *Undang-Undang No. 28 Tahun 2009 tentang Pajak Daerah dan Retribusi Daerah* [Law No. 28 of 2009 concerning Local Taxes and Charges] (Indonesia).

assumption is in line with the provision in Law No. 33 of 2004 that governs restrictions for regions that increase their own source revenue by way of:

a. establishing local regulations on revenue sources that causes high cost economy; and

b. establishing local regulations on revenue sources that restrains the mobility of people, goods and services among regions as well as import/export activities.[454]

Although the legal adjustment in the area of local taxes and charges has been accomplished, the 2009 law has not escaped criticism. Simon Butt and Nicholas Parsons argue that the 2009 Law lets down the organisations which protested against Law No. 34 of 2000 as causing a high cost economy.[455] This refers to the reason that the overt purpose of the 2009 Law is revenue-raising by sustaining the authority of local governments to generate and to increase their own revenues from local taxes and charges, or from imposing new charges.[456] As Butt and Parsons point out, the 2009 Law allows the central government to create a new category of user charges outside the prescribed local charges. The creation of new user charges should satisfy certain criteria as elaborated in Article 150 of the Law and it requires stipulation under government regulations (*Peraturan Pemerintah*). However, these requirements are not that different with those in the predecessor Laws. The central government has the power to issue government regulations concerning the new scheme of charges. Presumably, local governments in this case may also be able to propose a new charge to the central government as they are the ones who more intimately know the needs of locals toward the scheme. In addition, the probability of the central government using its power to expand the categories of charges is small without understanding the local capacity. Evidently, Butt and Parsons noted that government regulations concerning the new scheme of charges have not been

[454] Article 7 of the *Undang-Undang No. 33 Tahun 2004 tentang Perimbangan Keuangan antara Pemerintah Pusat dan Pemerintahan Daerah* [Law No. 33 of 2004 concerning Fiscal Balance] (Indonesia).
[455] Simon Butt and Nicholas Parson, 'Reining in Regional Governments? Local Taxes and Investment in Decentralized Indonesia' (2012) 34 *Sydney Law Review* 95.
[456] Ibid 98.

stipulated as yet. The list of charges would likely be expanded if the authority to create new scheme of charges had been shifted to local governments.[457]

The prohibition on local governments to create new schemes of taxes under the 2009 Law means that the opportunity to establish new environmental taxes has been missed. The only way to use tax instruments for environmental measures lies in the prescribed list of local taxes both for provinces and districts/cities. As mentioned, environmental characteristics have been found in some prescribed local taxes. Importantly, the 2009 Law determines the proportion of certain tax revenues to be allocated to fund related activities or facilities. For example, some revenue from cigarette taxes must be allocated to finance public health/medical services and enforcement of law by the authorised apparatus. This condition represents the central government's effort to discourage activities that are likely to have an impact on the environment. It means some local taxes can clearly be used as disincentives to cause environmental damage. Therefore, it is reasonable to assume that the 2009 Law not only contains revenue-raising purposes but also explicitly includes the provision of using local taxes as preventive environmental measures.

4.3.2. The Scope of Environmental Taxes in the 2009 Law

Defining the scope of environmental taxes in the 2009 Law is somewhat problematic. This is because the 2009 Law was enacted to address flaws in the previous law and support the decentralisation program in Indonesia. Thus, at first glance an environmental motivation might not be attributed to the tax and charge instruments as local revenue sources. In fact, local taxes in the 2009 Law do have environmental characteristics as found in OECD countries. Although no specific approaches have been established in determining the scope of environmental taxes, experiences from OECD as well as developing countries in the implementation of such taxes can be used as parameters.

[457] Ibid 103.

As discussed previously, Law No. 28 of 2009 provides a list of taxes for both provincial and district/city governments. However, not all prescribed taxes can be classified in the category of environmental taxes. The OECD provides a guideline to determine whether taxes can be categorised as environmental taxes.[458] As discussed previously in this thesis, one important feature of environmental taxes is having environmentally relevant tax-bases. In terms of tax-bases, the OECD has classified them into four broad categories, namely energy products, motor vehicles, waste related taxes and others. Taxes on energy products encompass a wide range of production and consumption of energy/power such as fuels and electricity, while motor vehicle taxes cover the ownership and use of motor vehicles. The third category is mostly related to taxes on waste related management or final disposal of waste, whereas the final category attempts to capture a broad variety of environmental tax-bases that are not included in the first, second and third brackets.

Using the OECD basis of classification, most of prescribed provincial taxes in Law No. 28 of 2009 can be identified as environmental taxes. From the five taxes at the province level, four of them fall within the criteria of environmental taxes, including fuel taxes, motor vehicle taxes, taxes on the transfer of motor vehicle ownership and surface water taxes. Taxes on motor vehicles and the transfer of motor vehicle ownership may fall under the bracket of motor vehicle related tax-bases, while taxes on fuel can be regarded as taxes on energy products. The last provincial tax, the one on the utilisation of surface water, may be included in the 'other' tax bracket due to its typical tax-base that affects the quality of the environment but it cannot be categorised into energy products, motor vehicle or even waste related taxes. The base of these taxes must be relevantly linked to externalities caused by the taxed products or activities. The release of carbon emissions from the use of fuels clearly has an adverse impact on the environment. The imposition of fuel taxes in this case is correlated with this environmental externality. As motor vehicles use fuel products, the combustion of fuel contributes to air pollution at the local level. The more people use vehicles, the more pollutant that is released. Motor vehicle related taxes (motor vehicle taxes and taxes on the transfer of motor vehicles) could be used to reduce vehicles' consumption of fuel. Meanwhile, taxes on surface water are

[458] See Chapter 2 (Section 2.2.).

levied to address the depletion of water resources generated by excessive utilisation of this natural resource.

Unlike provincial taxes, not all district/city taxes can be labelled as environmental ones. From the eleven types of taxes, only four of them seem to have environmental characteristics. The street lighting tax can be categorised into energy products as their bases relates to consumption or utilisation of electric power. The three other taxes, namely the groundwater tax, the tax on non-metal mineral and rock as well as the tax on swallows' nests are typical environmental taxes that fall under the 'other' tax category. Despite the label of a tax, the street lighting tax is actually levied on the consumption of electricity. In Indonesia, fuel products are basically used for electricity generation. In this case, higher electricity demand would likely produce more pollutant. Taxes on electricity consumption are linked to this externality. Similar to surface water taxes, the rest of the environmental taxes at the district/city level are applied to ensure the sustainability of natural resources in the long run. Over exploitation of ground water, minerals and swallows' nests would drain resources and damage the environment.

The use of tax and charge instruments for the purpose of environmental management is common in developing countries. However, its classification in the context of developing countries is not as specific as that found in OECD countries. However, it can be drawn from the experiences of developing countries in the application of economic instruments. Many researchers noted that the most frequent type of tax and charge instruments used in developing world is emission/effluent charges as well as product taxes/tax differentiation.[459] Similarly, the World Bank has classified indirect environmental taxes or charges in much the same manner.[460] There are two common types of these instruments, namely product and input taxes or charges as well as emission taxes or charges. It is worth noting that there is a distinction between a 'tax' and a 'fee/charge' in terms of requited or unrequited payments as discussed in previous chapters. In fact, the

[459] See Anderson, above n 220, 3 – 4; O'Connor, above n 232, 96 – 98; J.D. Bernstein, 'Chapter 6 Economic Instruments in Water Pollution Control' in Richard Helmer and Ivanildo Hespanhol, *A Guide to the Use of Water Quality Management Principles* (United Nations Environment Programme (UNEP) and The World Health Organization (WHO), 1997).
[460] World Bank, 2005, above n 349, 36 – 39.

term of taxes and charges/fees has been used interchangeably in practice.[461] This is due to these instruments have the same expected effects as to changing behaviours.[462] Sometimes an impost has been labelled a 'charge' or a 'fee' even it has tax characteristics. However, this has led to a problem in identifying the legal implications of such pricing instruments when there is a conflict between the payers and governments.

Aside from the conceptual problem, the basis of classification has been put on direct and indirect pollutants. An emission tax is levied on actual pollutants, such as on solid, liquid and gaseous discharges, while a product (input) tax is imposed on the inputs and products that are likely to have negative effects on the environment.[463] However, several researchers have argued that a product tax may offer a stronger incentive to induce lower pollution compared to an emission tax.[464] A product tax may only serve as an instrument to induce the lower consumption of certain products. Although having less incentive effects in reducing pollution, a product tax has several benefits in terms of less monitoring and enforcement costs as well as being easier to collect.[465] Although a product tax may serve as an alternative to an emission tax/charge, it should meet certain conditions as highlighted by O'Connor: "a product (or input) tax may be a suitable substitute for an emission/effluent charge, viz., where (i) consumption of the taxed product is closely correlated with pollution levels, (ii) the price elasticity of demand for the product is high, and (iii) substitutes are less polluting".[466] These criteria are found in tax differentiation of leaded and unleaded gasoline (e.g. in Thailand, Taiwan and the Philippines) in which the imposed tax successfully induced the consumption of leaded products to lower levels.[467]

It seems the above classification does not cover such criteria to determine whether a levy can be categorised into the term an 'environmental tax'. It simply differentiates environmental taxes into two categories that are commonly used in developing countries. However, it is worth noting that the World Bank distinguished between a user

[461] Anderson, above n 220, 4; World Bank, 2005, above n 349, 33.
[462] Ibid.
[463] World Bank, 2005, above n 461.
[464] Anderson, above n 459; O'Connor, above n 459.
[465] Ibid.
[466] O'Connor, above n 459.
[467] Anderson, above n 464; O'Connor, above n 464.

charge and a tax by referring to the OECD concept of environmental taxes. As mentioned, the concept has three main characteristics, which are compulsory, unrequited payments to the government and levied on an environmentally relevant tax base.[468] Although the concept is quite broad, it represents parameters to involve such levies into the term 'environmental taxes'. In this case, the basis of the tax is an important factor to limit the category of taxes relating to the environment. Therefore, it can be said that the OECD concept of environmental taxes is universally used for classification purposes.

Referring to the OECD concept of environmental taxes, there are at least eight indirect environmental taxes in the 2009 Law that fall under three categories of tax bases, namely: energy products, motor vehicles and others. At a glance, the scope is sufficient to capture activities that may likely have an adverse impact on the environment. However, none of the abovementioned environmental taxes is directly imposed on actual emission. Most of them have characteristics as product (input) taxes as discussed in previous paragraphs. Although these kinds of taxes may weaken the incentive effect, their presence is still important to encourage taxpayers to reduce the consumption of inputs or products that are linked to pollution.

As this thesis focuses on the application of environmental taxes on industry, it is worth to shape the scope by identifying who the actual taxpayers are. The 2009 Law clearly delineated the term 'taxpayers' into two categories, either private individual or entity.[469] The term 'entity' is defined:

> Entity shall mean a group of people and/or capital that constitutes a unity, whether doing business or not doing business covering, limited liability companies, partnership companies, other companies, state owned entities (BUMN) or regional entities (BUMD), with any name and in any form, firms, joint ventures, cooperatives, pension funds, associations, groups, foundations, mass organizations, socio-political organizations, or other organizations, institutions and other forms of entities including collective investment contracts and permanent business entities.[470]

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[468] See Chapter 2 (Section 2.2.).

[469] See Article 1 Point 10 of the *Undang-Undang No. 28 Tahun 2009 tentang Pajak Daerah dan Retribusi Daerah* [Law No. 28 of 2009 concerning Local Taxes and Charges] (Indonesia). The term 'taxpayer' can be derived from provided definition of a local tax as follows: "local tax shall mean obligatory contribution to the Region ***owed by private individuals or entities*** of enforced nature based on the Law, without receiving direct compensation and used for the needs of the Region mostly for the welfare of the people".

[470] Ibid art 11 point 11.

As industry refers to an economic production of goods or services, it is reasonable to assume that the term 'industry' can be included into the above definition of entity. A closer look at each environmental tax should be taken into account to determine whether the provided taxes are directed to industrial taxpayers. Eight types of environmental taxes in the 2009 Law, namely: motor vehicle taxes, tax on transfer of motor vehicle ownership, fuel taxes, surface and ground water taxes, street lighting taxes, taxes on non-metal mineral and rock as well as swallow nests' taxes are targeted at both individuals and entities.[471] This indicates that the scope of environmental taxes for industry in the 2009 Law is still wide-ranging provided that the impact of environmental problems being addressed is relatively limited to local levels (provinces and districts/cities). In the wider context of Indonesia, fuel taxes could be the prime candidate of pricing instruments to address environmental damages caused by polluting activities. This is because fuels are an essential commodity to drive economic growth. Every level of stakeholders (e.g. industry) relies on the use of fuels in its everyday activities. However, there are environmental damages caused by the combustion of fuels. In this case, taxes levied on fuel products are one of the policy instruments that can reduce externalities linked to the use of fuels.

However, it is questionable whether the above-mentioned environmental taxes, including fuel taxes, sufficiently address environmental protection issues. In this context, a further consideration should be put on the base as well as the rate of each environmental tax. These factors are critical to achieve effectiveness in practice. Ideally, environmental taxes should have a purpose that relates to the environment. In most cases, the environmental objective should clearly be defined at the outset.[472] Where a primary goal is related to the environment, the policy design of such taxes should be able to cause behavioural changes either in consumption and/or production patterns.[473] To enhance the chance of environmental taxes altering behaviours, there are two parameters, namely: the base and the rate of the tax that must be designed properly. A further discussion of these two crucial factors will be provided in the next section of this

[471] Ibid art 4, 10, 17, 22, 53, 58, 68 and 73.
[472] Maatta, above n 53; OECD, 2001, above n 32, 24; Barde, 1997, above n 31, 235.
[473] Ibid.

chapter to ascertain whether the base and rate of taxes in the 2009 law correlate as close as possible to the externality.

4.3.3. The Determination of Environmentally Relevant Tax Bases under the 2009 Law

As previously discussed, the base and rate of taxes are two important parameters to determine whether an environmental tax represents a clear environmental protection measure. In theory, these parameters should be set to equal the environmental damage cost caused by polluting activities.[474] However, this is not possible in practice as the determination of tax bases and rates is often influenced by many factors, such as political and social ones, which sometimes results in compromise.[475] It is therefore suggested that a sensible step be taken by determining the base and rate of such taxes as close as possible to the environmental impact or externality.[476] For example, taxing CO_2 emission could be done by levying a tax either directly on emissions generated in the production processes or on inputs to polluting activities or final products linked to the pollution.[477] This approach would contribute to the effectiveness of environmental taxes in altering polluters' behaviours.

A number of taxes in Law no. 28 of 2009 exhibit relevant environmental tax bases as identified in the earlier sub-section. However, it is still questionable whether the bases on which the taxes are levied and the imposed rate reflect environmental externalities as accurately as possible. The importance of analysing this issue is to understand the insufficiency in the design of environmental taxes in the 2009 Law which may prevent the capacity of these taxes to achieve cost-effective environmental gains in practice. However, the analysis in this sub-section does not delve further into how to set up a good tax base and an optimal tax rate as it is beyond the purpose of this study.

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[474] See Barde, 1997, above n 31, 235; OECD, 2006, above n 11; OECD, 2010, above n 70.
[475] Ibid.
[476] Barde, 1997, above n 31, 235 – 236; OECD, 2001, above n 32.
[477] See OECD, 2010, above n 70, 139; World Bank, 2005, above n 349, 36 – 38.

Law no. 28 of 2009 in fact provides provisions as to how the base is determined and the level of rate that should be imposed for each environmental tax. From eight types of environmental taxes in the 2009 Law which apply to industries, only a few of them represent related environmental externalities. The 2009 Law clearly sets the base of taxes on motor vehicles, surface water and ground water to reflect environmental damages associated with relevant activities, while the rest of the environmental taxes in the Law[478] are far from being levied on related externalities. A clear example can be found in Article 5 (1) of Law No. 28 of 2009 concerning the base of motor vehicle taxes. This provision regulates that a motor vehicle tax is levied by taking into account vehicle characteristics as follows:

> The tax base for the imposition of tax on motor vehicle shall be the result of the multiplication of 2 (two) main elements:
> a. the sale value of motor vehicle;
> b. the weight relatively reflecting the extent to which the relevant motor vehicle causes damage to roads and environmental pollution.[479]

It is worth noting that the 2009 Law also contains a new provision that elaborates the prescribed weight into a coefficient with a value 1 (one) or more than one to illustrate the impact of motor vehicle usage to the environment.[480] When the calculation of motor vehicle weight is equal to one, it means that the impact is still within the limits of acceptance. In contrast, the impact of motor vehicle usage is considered over the limit if the coefficient is larger than one. The weight itself has been calculated on the basis of the wheel pressure, the type of fuel and the type, use, manufacturing year and engine characteristics of motor vehicles.[481]

As can be seen from the above paragraph, the calculation of weight represents some factors related to vehicles that are expected to fairly establish the environmental impact as a result of motor vehicle usage. Obviously, the determination of the weight as one element of the motor vehicle tax-base is linked with the externality. Although it seems the linkage is not as strong as the emission tax – placing the base of tax on quantity or

[478] They are fuel taxes, tax on transfer of motor vehicle ownership, street lighting tax, swallow nests' tax and tax on non-metal mineral and rock.
[479] Article 5(1) of the *Undang-Undang No. 28 Tahun 2009 tentang Pajak Daerah dan Retribusi Daerah* [Law No. 28 of 2009 concerning Local Taxes and Charges] (Indonesia).
[480] Ibid art 5(3).
[481] Ibid art 5(8).

quality of emissions – the base of the motor vehicle tax in this case should be sufficient to influence the consumption or use of motor vehicles.

Similarly, the base of surface and ground water taxes[482] is also determined by taking into account a number of factors which represent environmental characteristics, such as the quality of water and level of damages to the environment caused by the removal and/or usage of water.[483] It seems the determination of the basis of surface and ground water taxes is closely linked to environmental externalities which are likely to reflect the impact of the activities to the environment. Added to this is the fact that the 2009 Law also authorises local governments to modify the factors that are used to set the base of these taxes so as to ensure the protection and management of water resources in the region.[484] The local governments in this case may include all environmental factors as directed by the 2009 Law in setting up the base which could increase an acquired water value. This determination may stimulate taxpayers to utilise surface and ground water in a more responsible manner.

Despite their rationale as revenue generating instruments, taxes on motor vehicles and water resources (surface and ground water) also exhibit a political will of the Indonesian government to protect the environment at local levels. Although Law no. 28 of 2009 does not provide a statutory limitation concerning the use of the taxed products or activities, levying taxes on input to or output from a polluting activity (such as the use of motor vehicles) represents an implied concern of the government for the environment. By setting the base of motor vehicle, surface water and ground water taxes in line with relevant externalities, the government ensures that the imposition of these taxes can help to reduce environmental impacts generated from the use of motor vehicles or the

[482] Surface water is described as "all available water found on ground surface excluding seawater whether at sea or on land" (Article 1 point 18 of Law No. 28 of 2009), while ground water means "water found in layers of ground or rocks below ground surface" (Article 1 point 34 of Law No. 28 of 2009). The object of surface water and ground water taxes is similar which are the removal and/or the use of surface or ground water with the following exceptions:

a. *removal and/or use of Surface Water or Ground Water for basic household needs, irrigation for people's farming and fisheries, with due observance to the preservation of the environment and the statutory regulations; and*
b. *other removal and/or use of Surface Water or Ground Water as promulgated by Regional Regulation.*

[483] See Article 23(2) and Article 69(2) of the *Undang-Undang No. 28 Tahun 2009 tentang Pajak Daerah dan Retribusi Daerah* [Law No. 28 of 2009 concerning Local Taxes and Charges] (Indonesia).

[484] Ibid art 23(3) and art 69(3).

utilisation of water resources. In this case, the users of motor vehicles and water resources are faced with options in their activities either to limit consumption or switch to less polluting products (in the case of motor vehicles). Otherwise, they have to pay the imposed tax on their activities. This political consideration actually corresponds to Law No. 32 of 2009 concerning environmental protection and management. The Law provides an authority to governments specifically at local levels to use taxes as one policy instrument for environmental management. Tax instruments could be applied to ensure that environmentally sustainable practices are in place by discouraging pollution or polluting activities.

However, the determination of the base of other environmental taxes in Law No. 28 of 2009 is unclear compared to motor vehicle, surface water and ground water taxes. Provisions in the 2009 Law pertaining to the base of taxes on the transfer of motor vehicles ownership, fuel, street lighting, non-metal mineral and rocks as well as swallows' nest only highlights 'the sale value' of taxed products or activities.[485] Unfortunately, no further clarification on the factors used to determine the base of such taxes is found in these provisions. For example, levying tax on fuel is based on the sale value of each type of fuel products, such as gasoline, diesel and gas. However, the provisions on fuel taxes do not elaborate any environmental components in setting up the base of the tax. This is actually in contrast with the practice of developed countries in determining the base of fuel taxes. Because the use of fuel products is recognised to have a significant environmental impact, developed countries tend to set the base by taking into account negative externalities generated from the use of fuel products, such as CO_2 emission, congestion and climate change.[486] Coupled with setting up the right tax rate, fuel taxes in developed countries have a significant impact on consumer' behaviours regardless of its political considerations (such as CO_2 reduction, revenue-raising, road maintenance and development).[487]

This is different from the determination of environmental taxes in Law No. 28 of 2009. Most of these taxes (fuel taxes, taxes on transfer of motor vehicles ownership, street

[485] Ibid art 11, 18, 54, 59 and 74.
[486] See OECD, 2006, above n 11, 31 - 33; OECD, 2010, above n 70, 38 – 39.
[487] Ibid.

lighting taxes, tax on non-metal-mineral and rocks, swallows' nest taxes) are based on a vague linkage with negative externalities. No environmental factors are explicitly presented in determining the sale value of each tax. Encapsulating relevant environmental impacts of taxed products/activities is necessary to ensure producers and consumers take into account the impact cost in their economic decisions. A lax linkage in setting up the base of such taxes may contribute to the ineffectiveness of environmental taxes in the 2009 Law to reduce pollution. This could be counterproductive with the function of environmental taxes as highlighted in Law No. 32 of 2009 concerning environmental protection and management. The Law authorises that taxes (including a number of local taxes in Law No. 28 of 2009) can be used to discourage activities that are likely to have adverse impacts on the environment. Fuel taxes, groundwater taxes and the tax on swallows' nests are examples provided by this Law which aim to reduce environmental impacts caused by the use of fuels, the utilisation of water or the exploitation of nests of swallow birds from *collocalia* species. Unfortunately, this function may be weakened by the fact that the base of these taxes far from correspond to externalities.

Similar to the tax base, the rate of environmental taxes should also be set to reflect environmental impacts associated with taxed activities/products. The valuation of the tax-rate by incorporating any impacts to the environment is important to ensure that the level of such taxes is sufficient to achieve environmental goals. The OECD noted that the rate of environmental taxes could be 'optimal' if it is determined by not only incorporating environmental impacts per se, but also taking into account social impacts of relevant activities.[488] This consideration is drawn from a study of the optimal rate of tax on petrol for the US state of California.[489] The rate of a petrol tax should be set to reflect environmental externalities, such as pollution from petrol combustion as well as non-environmental impacts such as congestion, accidents and oil dependence.[490] In practice, most OECD countries such as the United Kingdom determine the rate of environmental taxes based on environmental characteristics of the taxed products or

[488] OECD, 2010, above n 70, 39 – 40.
[489] Ibid.
[490] Ibid.

activities.[491] For example, the rate of the fuel tax is calculated on the basis of the sulphur content of the fuel products which result in rate differentiation between diesel and petrol. A similar scheme is also presented in determining the rate of motor vehicle taxes. The valuation of the rate incorporates all relevant features that impact the environment, such as fuel efficiency, the CO_2 emission intensity, engine power and the weight of the vehicle.[492] The effect of setting up the right tax base and rate is quite significant in altering consumers' behaviours as highlighted in the case of fuel taxes in Turkey and the United Kingdom and in the case of motor vehicle taxes in many OECD countries (Norway, Ireland and Portugal).[493]

In the context of environmental taxes in Law no. 28 of 2009, it is difficult to identify whether the rate of such taxes is properly set to reflect environmental externalities. The Law only sets out the minimum and maximum rate for each environmental tax without specifying environmental features used in determining such rates. However, it is worth noting that there have been significant changes in the rate of several environmental taxes in the 2009 Law compared to previous laws in 1997 and 2000. Fuel taxes and motor vehicle related taxes exhibit increasing rates which are almost double the previous rates in 1997 and 2000, while a slight increase in the rate is presented by the tax on non-metal mineral and rock. The remaining taxes (surface water taxes, ground water taxes and street lighting taxes) remain the same at the nominal rates over the period 1997 – 2009.

A major change is seen in the rate of motor vehicle taxes. The Indonesian government has introduced progressivity for the second and subsequent ownership of private motor vehicles with the lowest being 2% and the highest being 10%. This progressive rate aims to limit the consumption of motor vehicles.[494] Overconsumption of motor vehicles leads to the increase of environmental and social impacts, such as air pollution and

[491] OECD, 2006, above n 11, 32 – 38.
[492] Ibid.
[493] Ibid.
[494] Tempo, 'Pajak Progresif Belum Mampu Kurangi Pembelian Kendaraan' [Progressive Taxes on Motor Vehicles Fail to Limit Vehicles' Consumption], *Tempo* (online), 13 February 2011 <http://www.tempo.co/read/news/2011/02/13/090313189/Pajak-Progresif-Belum-Mampu-Kurangi-Pembelian-Kendaraan>.

congestion.[495] The scheme of progressive rates on the motor vehicle tax has raised great concern among automotive industries.[496] They have stated that the imposition of a progressive tax would likely to affect economic growth as well as increase unemployment.[497] However, it turns out that the initial imposition of the progressive scheme in 2011 did not induce changes in consumers' behaviours.[498] For example, a number of motor vehicles operating in Jakarta (the capital city of Indonesia) are still high, accounting for over 1800 units per day.[499] Presumably, the failure of the progressive rate to discourage consumption of motor vehicles is a sign that the rate does not encapsulate any impacts associated with the use of motor vehicles as occurred in OECD countries. As a consequence, the level of the tax is not sufficient to alter behaviours.

Similar to motor vehicle taxes, the maximum rate of a tax on the transfer of motor vehicle ownership for general usage (non-public and public) has increased significantly. The increase rate for first delivery is double from 10% in the previous law to 20% in the 2009 Law. The intention to increase the rate of this tax appears to be to cap the growth of motor vehicles in Indonesia. Coupled with the progressive tax on motor vehicles, the rate of tax on the transfer of motor vehicle ownership might be sufficient to stimulate consumers to reduce the consumption of motor vehicles. The tax on the transfer of motor vehicle ownership is quite similar to one-off motor vehicle taxes in OECD countries ('levied on the initial or subsequent sale or import into the country').[500] The imposition of this one-off type of tax in OECD countries could provide 'a sticker shock effect' for consumers which will eventually affect the level of vehicle ownership.[501] To have this effect, several OECD countries such as Norway and Denmark set the base and rate of one-off taxes by incorporating environmental features (fuel efficiency and CO_2 emission).[502] This is different from the tax on transfer of motor vehicle ownership in Indonesia. The

[495] Ibid.
[496] Tempo, 'Hatta: Pajak Progresif Bentuk Keadilan' [Hatta: Progressive Taxes Represent Equality], *Tempo* (online), 4 December 2010 <http://www.tempo.co/read/news/2010/12/04/087296693/Hatta-Pajak-Progresif-Bentuk-Keadilan>.
[497] Ibid.
[498] Tempo, 2011, above n 494.
[499] Ibid.
[500] OECD, 2010, above n 70, 40.
[501] Ibid.
[502] Ibid 41 – 42.

base is determined on the sale value of motor vehicles without further explanation on the criteria used. This also occurs in setting up the rate of this tax. As mentioned, the 2009 Law only provides the maximum rate of tax on the transfer of motor vehicles which can be levied by local governments. The absence of environmental criteria in determining the base and rate may bring about the consequence that this tax will not be effective in practice. It is reported that the increasing rate of tax on the transfer of motor vehicle ownership and the progressive tax on motor vehicles in several regions in Indonesia has not had a significant effect.[503] Consumers are still purchasing new cars regardless of the imposition of motor vehicle related taxes.[504] This means that the level of tax on the transfer of motor vehicles and on motor vehicles is too low to discourage consumers in purchasing vehicles.

The tax rates on fuel products in Indonesia also exhibits significant changes. The previous laws in 1997 and 2000 set the rate of fuel taxes at 5% and no adjustment was undertaken in this period. The latest amendment of the law on local taxes and charges in 2009 brought about an increase in the rate of fuel taxes. The level of the rate in the 2009 Law is multiplied to the maximum of 10%. This rate has been set uniformly to cover all types of fuels (gasoline, diesel and gas) for motor vehicles. However, it is not mandatory that the increased rate of fuel taxes be applied to public transport. In this case, the 2009 Law allows local governments to set lower rates of fuel taxes for public transport (at least 50% lower than the aforementioned maximum rate – Article 19 (2) of Law No. 28 of 2009). This policy may influence the choice of transport being utilised, particularly between private and public transport. If public transport is more cost-effective than using private vehicles, consumers would be more likely to rely on the use of public transport. As a result, the use of fuels from private vehicles would lessen and the impact of fuel combustion on the environment would decrease. At the time of writing, the rate

[503] Adi Ginanjar Maulana, 'Otomotif: Tarif Bea Balik Nama Naik' [Otomotive: The Rate of Tax on Motor Vehicle Ownership is Increasing], 27 May 2013 <http://bandung.bisnis.com/read/20130527/63532/369331/otomotif-tarif-bea-balik-nama-naik>.
[504] Ibid.

differentiation policy has not yet been applied since it depends on the readiness of local governments to differentiate the fuel users for private vehicles and public transport.[505]

It is worth noting that the increase in the rate of fuel taxes reflects revenue raising motivation rather than an environmental one. There is no sign that the rate is determined on the basis of multiple externalities as a result of fuel consumption such as air pollution, congestion as well as road damage. Additionally, the level of the tax rate is the same for different types of fuels (gasoline, diesel and gas), which does not result in altering user behaviours to consume less polluted products. In fact, most OECD countries and some developing countries, such as Thailand, the Philippines and Taiwan, have differentiated rates based on fuel characteristics. For example, the tax rate for petrol in some OECD countries such as Turkey is higher than diesel and liquid petroleum gas (LPG) which encourages users to switch to diesel and LPG-fuelled vehicles,[506] while Thailand and the Philippines have imposed a tax differentiation strategy between leaded and unleaded gasoline which has influenced consumption patterns.[507] A loose linkage to externalities in setting up the base and rate of fuel taxes in Indonesia is getting worse as evidenced by the fact that the government continues to use subsidies to stabilise the price of fuels for domestic users.[508] Fuel subsidies have been criticised as encouraging overconsumption and the inefficient use of fuel as an energy product.[509] It is therefore reasonable to assume that the use of fuel taxes as a fiscal policy instrument in Indonesia has not yet reflected the correct price signal to change behaviours.

Based on the above discussion, it appears that most environmental taxes in the 2009 Law do not reflect environmental externalities generated from the taxed products or activities. The base of such taxes is not explicitly linked to the pollutant or activities causing environmental damage. This also occurs in setting up the tax rate which basically does not encapsulate any negative externalities to the environment. From eight types of environmental taxes that apply to industries and individuals, only motor vehicle taxes, surface water taxes and ground water taxes are explicitly levied to relevant

[505] Elucidation of Article 19(2) of the *Undang-Undang No. 28 Tahun 2009 tentang Pajak Daerah dan Retribusi Daerah* [Law No. 28 of 2009 concerning Local Taxes and Charges] (Indonesia).
[506] OECD, 2010, above n 70, 38.
[507] Anderson, above n 459; O'Connor, above n 459.
[508] Leitmann et al, above n 401, 31 -34.
[509] Ibid.

environmental externalities. In theory, these taxes could be sufficient to encourage polluters' behaviours since their bases are determined as relevant as possible to externalities. However, the rate of these taxes does not seem to reflect the base. Consequently, the level of these taxes may not be sufficient to influence changes in polluters' behaviours.

A similar condition is also presented in the actual level of fuel taxes. As discussed, the base and rate of these taxes are not clearly linked to environmental externalities, which reduce the capacity of fuel taxes to change behaviour. In fact, taxes on fuels can be used to correct negative externalities caused by fuel consumption. The environmental impact of the fuel tax is much wider than any other environmental tax covered by Law No. 28 of 2009. The use of fuels releases pollutants which harm the environment not only at local levels but also globally. It is therefore important to address any negative externalities from the combustion of fuels by internalising the impacts into the price of fuels. If the price is right, consumers and/or producers will take the higher costs into their decision. In this case, the right pricing of fuels would likely change the behaviour of fuel users in several ways. For instance, users will reduce the consumption of fuel products or they will change to less polluting vehicles.

Yet, fuel taxes in Indonesia are not properly designed which contributes to the ineffectiveness of these instruments in practice. This situation is exacerbated by the presence of a subsidy in the price of fuels. It drives users to excessively consume fuels without having to consider the environment and social impacts associated with their activities. Addressing the subsidy issue on fuel products is vital as its impact is much broader, not only environmentally and socially but also economically. This is due to the reason that fuels play a very important role in every aspect of economic activity in Indonesia. Both industries and households depend on the use of fossil fuels to support their activities, such as the production of goods and transportation. The demand for fossil fuels is still high in recent years as the subsidy is embedded in the price of fuel products and makes fuel more affordable for consumers. The pervasive effects of the fossil fuel subsidy to the central government budget and the environment led the government of Indonesia to embark on a path of reforming this subsidy. However, removing the subsidy is challenging as the subsequent increase in fuel prices would

affect every sector and stakeholder in Indonesia. The next section will further discuss the impact of fuel subsidies, the attempt of Indonesian governments to reform the subsidy and the potential outcome of any reform.

4.4. The Fuel Subsidy Issues in Indonesia

The issue of subsidies to energy consumption, particularly on fossil fuels, has remained prevalent over recent years. In developing countries, energy subsidies are often used as the main fiscal policy to ensure price stability for domestic consumers.[510] In this regard, subsidies should be well targeted to low-income groups that need the most assistance since the increased price of energy products would generally increase the price of non-energy sectors, such as food and transportation. However, a considerable body of research has highlighted that most energy subsidies in developing countries benefit the non-poor rather than poor.[511] Therefore, fuel subsidies can be considered regressive as they are mostly absorbed by higher income households.[512]

As a developing country, Indonesia also faces the issue of energy subsidies. A fuel subsidy was first introduced in 1956 under the Sukarno regime (Indonesia's first president), which aimed at preventing inflation effects.[513] It was noted that by the end of his regime, approximately 20% of the government's total revenue was used to subsidise fuel. Regardless of the fiscal pressure on the budget, energy subsidies, specifically for fuel and electricity, continue to exist until now. This situation is worsened by the fact that Indonesia has become an oil-importing country since 2003 due to decreased oil

[510] Leitmann et al, above n 508; IEA, OPEC, OECD, and World Bank, 'Fossil-fuel and Other Energy Subsidies: An Update of the G20 Pittsburgh and Toronto Commitments' (Joint report by IEA, OPEC, OECD and World Bank prepared for the G20 Meeting of Finance Ministers and Central Bank Governors (Paris, 14-15 October 2011) and the G20 Summit (Cannes, 3-4 November 2011) 5 – 8.

[511] Leitmann et al, above n 508; IEA, OPEC, OECD and World Bank, above n 510; Christopher J Holton, *What are the effects of fossil-fuel subsidies on growth, the environment, and inequality?* (Master thesis in Applied Economics in the School of Economics, University of Nottingham, 2012) 11 – 14; Teguh Dartanto, 'Reducing Fuel Subsidies and the Implication on Fiscal Balance and Poverty in Indonesia: A Simulation Analysis' (Working Paper in Economics and Business Volume II No.6/2012; Department of Economics, Faculty of Economics, University of Indonesia, Jakarta, 2012) 2.

[512] Ibid.

[513] Christopher Beaton and Lucky Lontoh, 'Lessons Learned from Indonesia's Attempts to Reform Fossil-Fuel Subsidies' (the International Institute for Sustainable Development (IISD), 2010) 2.

production and increased oil consumption.[514] As a result, there is persistent pressure on the government budget for energy subsidies, which amounted to an estimated IDR 190 trillion (approximately USD $17 billion[515]) in 2011.[516] Of this amount, the subsidy to the fuel sector accounted for more than 50% of total energy subsidies for that year.

The fiscal pressure on the government is not the only distorting effect of fuel subsidies in Indonesia. This policy affects income distribution, the environment and the health sector.[517] In terms of income distribution, there are unequal distributive effects of fuel subsidies among households in Indonesia. Teguh Dartanto noted that in 2008 almost 72% of the fuel subsidies applied to gasoline went to the richest income groups, whereas the lowest income groups only absorbed 4% of gasoline subsidies. He further stated that "the richest income groups received fuel subsidies approximately IDR 111, 533/month/capita while the lowest income group received fuel subsidies approximately IDR 10, 787/month/capita".[518] As has commonly happened in developing countries, richer groups consumed a larger amount of fuel subsidies compared to poorer ones. Evidently, the policy of having a fuel subsidy has missed the targeted groups that are in greater need of assistance. This failure may be due to the fact that the government of Indonesia allows every household to purchase petroleum products at subsidised prices.[519] As a result, it is reasonable to conclude that fuel subsidies are an inefficient policy to reduce inequality between the richest and poorest in society.

The unequal distribution of fuel subsidies also links to the over-consumption of petroleum products and the inefficient use of energy resources.[520] Since there are no restrictions in consuming subsidised fuels in Indonesia, it may drive consumers and/or producers to excessively use petroleum products in their activities. Moreover, it is reported that Indonesia still relies heavily on the use of energy-based CO_2 emission in

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[514] Ibid 8.
[515] The calculation is based on the current exchange rate (20th October, 2013) from IDR to USD (IDR 1 equals to USD 11,000).
[516] Tri Widodo, G. A. Sahadewo, S. U. Setiastuti and M. Chaerriyah, 'Chapter 8: Impact of Fuel Subsidy Removal on Government Spending in Cambodia's Electricity Sector in the Context of Regional Electricity Market Integration' In Y. Wu, X. Shi and F. Kimura, *Energy Market Integration in East Asia: Theories, Electricity Sector and Subsidies* (ERIA Research Project Report, Jakarta, 2012) 174 – 175.
[517] Ibid 175.
[518] Dartanto, above n 511, 6 – 7.
[519] Widodo et al, above n 516.
[520] Leitmann et al, above n 401, 31 -32.

production and consumption, with low investment levels in renewable energy products and cleaner technology.[521] This fact may lead to negative impacts on the environment and public health. Although the quantification of the environmental and health impact of the fuel subsidy has not been calculated, Leitmann et al believed that the impact is significant. It is worth noting that Indonesia has already faced environmental challenges that have affected its economy.[522] It is predicted that the total cost of environmental degradation will increase in forthcoming years and at present is equal to 'the average annual growth rate'.[523] One example is that the health impact of CO_2 based activities from outdoor and indoor air pollution results in an annual loss of $4.6 billion.[524] Vehicles and industry are two major sources of outdoor air pollution, while indoor air pollution is dominated by the combustion of biomass or coal in households.[525]

The above example highlights the fact that to some extent environmental and health issues in Indonesia are caused by incorrect pricing schemes. As discussed, taxing products and activities that create pollutants is a pricing policy that can be used to manage pollution in a cost effective way. An environmental tax internalises negative externalities by setting the right price to targeted products or actual emissions. The effectiveness of an environmental tax is determined by the reduction of emission or consumption of products.[526] However, current pricing mechanisms in Indonesia do not have the capacity to alter polluters' behaviours. The presence of subsidies, for example, reinforces polluting behaviours by allowing over consumption of polluting products which eventually leads to increased emissions.

If taxing fuel products is considered to be a reasonable solution in sending the right price signals to producers and consumers, it is necessary to remove any subsidies that are embedded in the production or consumption of targeted products. As previously discussed, subsidy schemes are viewed as distorting the economy and to even have a harmful effect on the environment. The presence of a subsidy therefore will diminish the effectiveness of an environmental tax to force producers and consumers to consider the

[521] Ibid.
[522] Ibid.
[523] Ibid 9 – 11.
[524] Ibid.
[525] Ibid.
[526] World Bank, 2005, above n 349.

pollution costs in their economic decisions. Such taxes should encourage producers and consumers to decide whether to reduce consumption or to switch to substitute products that are less polluting. In this case, fuel taxes combined with a subsidy to ensure price stability, does not offer a better option to reduce pollution. The use of a subsidy conflicts with the Polluter Pays Principle (PPP). This principle not only contains the concept of cost internalisation, but also a non-subsidy concept.[527] A fuel tax as an environmental policy should reflect the PPP which means that it should not be accompanied by subsidies. Thus, reforming the existing fuel subsidy is the main priority to amplify the effectiveness of fuel prices.

Attempts to reform the fuel subsidy in Indonesia have been made over the last decade. Yet, the fuel subsidy remains in place as the central government faces several constraints in phasing it out. A previous attempt of subsidy removal began in 1998 when Soeharto (Indonesia's second president) signed an emergency loan agreement with the IMF to overcome an economy crisis.[528] One term of the agreement included the reduction of subsidies to basic commodities. Therefore, a large increase in the price of fuel and electricity was announced at the beginning of May 1998: 25% for kerosene, 60% for diesel and 71% for petrol.[529] This increase was one of the multifaceted factors that triggered general demonstrations in Indonesia resulting in Soeharto's downfall.[530] However, fuel subsidies in the 1998 fiscal year were still high and accounted for approximately one quarter of the government budget.[531]

After the price adjustment in 1998, several attempts to reduce fuel subsidies have been undertaken by the Indonesian government. In 2000, the government increased the price of kerosene, gasoline and diesel.[532] This adjustment was followed by the rapid rise in fuel prices in 2001 and 2002 for both households and industries.[533] It is worth noting that the fuel price for industries had been deregulated in these periods. In 2001, the government made an increase in the fuel price to 50% of the international market price for large

[527] See Chapter 2 (Section 2.2.).
[528] Beaton and Lontoh, above n 513, 3 - 4.
[529] Ibid.
[530] Ibid.
[531] Ibid.
[532] Rae Kwon Chung, 'Fuel Subsidy Reform in Indonesia' (KDI School of Public Policy and Management and World Bank Institute, 2012) 8.
[533] See Ibid.; Beaton and Lontoh, above n 513, 6 - 7.

industries. In 2002, there was also an intention to set the price for gasoline at 100% of the world market price for households and industries, while industrial diesel oil, fuel oil and kerosene prices were adjusted to 75% of the international market price.[534] However, the adjustment price for kerosene did not apply to small-scale industries and households, which was still 65% below the world price.[535] In 2003, the government of Indonesia issued ministry decrees (No. 31K/20/MEM/2003 and No.31/KMK.01/2003) to increase the domestic price of fuels to 100% of the world price for industries, particularly for the mining, quarrying, cement and steel industries.[536] This price adjustment was intended to ease fiscal pressure on the government budget and to properly allocate the funding to low income groups.[537] Yet, the share of fuel subsidies remained significant in these periods as the government still subsidised the retail price of fuel products (gasoline, diesel and kerosene).

Between 2000 and 2010, there was fluctuation in the share of fuel subsidies to the government budget as noted by Leitmann et al:

> Fuel subsidies peaked in 2000, accounting for 28.6 percent of total spending, and decreased again in 2001 as the government executed a slight fuel price increase in October 2000. Subsidies decreased markedly in 2002 and 2003, as a combined result of appreciation of the IDR and a slight decrease of the international prices of oil. In 2004 and 2005, fuel subsidies increased sharply following a hike in international oil prices (increase of 97 percent in 2004 relative to 2003), and decreased again after the reduction of the fuel subsidy in March and October 2005.
>
> Fuel subsidy reductions in 2005 freed up around $10 billion (World Bank 2007). However, fuel subsidies in 2008 were projected to have increased again to 13 percent of total government expenditures or around USD2 billion. Furthermore, in response to the global financial crisis and lower global fuel prices, the government decreased the regulated price of gasoline from IDR 6,000 to IDR 5,000 in December 2008. Transport diesel prices were cut from IDR 5,500 to IDR 4,800 per liter. In January 2009, the government continued to cut gasoline and transport diesel to 4500 IDR per liter.[538]

The above study highlighted that the international price of oil and the IDR/USD exchange rate have created the fluctuation of fuel subsidies. The amount of fuel subsidy is determined by the disparity between the regulated domestic price of fuels and the

[534] Beaton and Lontoh, 2010, above n 513, 6 - 7.
[535] Ibid.
[536] Dartanto, above n 511.
[537] Ibid.
[538] Leitmann et al, above n 401, 32.

international market price of oil.[539] The increase in the price of international oil will significantly increase the amount of money needed from the budget to subsidise the gap. This situation brings fiscal pressure to the government budget. To reduce the pressure, the government makes an adjustment in the domestic price of fuels following the hike in the international oil prices. Unfortunately, the increase of fuel prices has been trimmed back to the previous level due to the decrease in international prices.

The removal of fuel subsidies in Indonesia is not easy. Social and political instability are indicated to be the main constraints to the phasing out of fuel subsidies. The increase in the price of fuels is strongly opposed and triggers demonstrations in many regions in Indonesia. The worse situation that occurred was between 1998 and 2003 as protests over the subsidy cut turned into a violent demonstration.[540] This social unrest was driven by the rapid increase of fuel prices after the Asian financial crisis in 1997 and ineffective compensation programs in 2003.[541] In 2005 and 2008, the government still undertook subsequent attempts to reduce fuel subsidies. These attempts have faced the same problem of opposition, but it was less severe. This is because the subsidy cut was accompanied by several compensation programs for the poor[542] to help them adapt to the increasing cost of living. The introduction of welfare programs, together with raising public awareness toward the programs, was considered as an effective strategy to overcome public opposition to the subsidy reform.[543] Despite the successful adjustment of the fuel price in 2005 and 2008, the share of fuel subsidies in the national budget was still relatively high.

The recent adjustment of fuel prices was undertaken in June 2013. The government of Indonesia has increased the fuel retail price from IDR 4, 500 per litre to IDR 6, 000 per

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[539] Beaton and Lontoh, above n 513, 12 -13.
[540] Ibid 4 – 6.
[541] Chung, above n 532.
[542] Ibid. The unconditional cash transfer program (*Bantuan Langsung Tunai (BLT)*) and the fuel subsidy reduction compensation program (*Program Kompensasi Pengurangan Subsidi Bahan Bakar Minyak*) on health, education and rural infrastructure were first launched by the government of Indonesia in 2005 as strategies to support the subsidy reform. In 2008, the unconditional cash transfer program remained in place as the government had increased the price of fuels following the hike in world oil prices. In addition, the government also launched a number of programs to compensate poor groups, such as subsidies for rice and education for poor students.
[543] Chung, above n 532; Beaton and Lontoh, above n 513, 27.

litre in order to reduce the budget deficit.[544] Similar to previous subsidy reforms in 2005 and 2008, the government has announced various strategies to help poor households cope with the adverse impacts of the increased price of fuels. Included in these strategies are temporary unconditional cash transfers, subsidies for rice and poor student assistance programs.[545] In spite of public resistance to the subsidy cut, these strategies helped to lessen its effects. However, the fuel subsidy remained a large proportion of the government budget regardless of the latest adjustment in 2013. The share of fuel subsidy was estimated to reach 13.3% of total revenue.[546] In this case, the government should continue to undertake the subsidy cut in years ahead to relieve budget pressure and to minimise other adverse impacts from the use of fuels. However, the parliamentary and presidential election in 2014 may set back any attempts to reform fuel subsidies. As a consequence, the target to phase out fuel subsidies by 2014 will likely be missed without strong political commitment from the government.

4.5. Conclusion

The evolution of environmental law in Indonesia has brought a new dimension in environmental management. Law No. 32 of 2009, known as the 2009 environmental law, not only takes into account the democracy and decentralisation principles, but it also evidently strengthens many measures that can be used to manage the environment. Still, most of measures provided in the Law, ranging from environmental impact assessments to licensing, are based on command and control instruments. However, the Law also acknowledges the use of economic instruments as one of preventive measures in managing the environment.

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[544] The Economist, 'Fuel Subsidies in Indonesia: Unpriming the Pump', *The Economist* (online), 22 June 2013 <http://www.economist.com/news/asia/21579885-sound-economics-lousy-politics-unpriming-the-pump>.

[545] Tim Sosialisasi Penyesuaian Subsidi Bahan Bakar Minyak [Socialization Team of Fuel Subsidy Reform], *Buku Pegangan Sosialisasi dan Implementasi: Program-Program Kompensasi Kebijakan Penyesuaian Bahan Bakar Minyak 2013* [A Guide Book for Socialization and Implementation: Compensatory Programs of Fuel Subsidy Reform in 2013] (Sekretariat Wakil Presiden Republik Indonesia, 2013 [Secretariat of Vice President of Indonesia, Jakarta, 2013]) 17 – 39.

[546] Ibid.

Compared to previous legislation, the new Law expands the use economic instruments in much wider ways. These instruments include incentives/disincentives, developmental processes and environmental funding mechanisms. It seems the government is providing more room for the use of economic instruments in order to achieve a better quality of environment in Indonesia. As the function of environmental management has been ceded to local governments, the implementation of economic instruments will require more technical guidance, the use of the capacity of the local governance system, as well as availability of related policies. If not, it will end up being ineffective in practice.

Alongside the enactment of environmental law, laws on local taxes and charges are a part of the application of economic instruments at the local level. Some local taxes in the law have been recognised to have environmental related features as those found in OECD countries. Even with the development of law on local taxes and charges, the nature of local taxes as environmental taxes have become more noticeable. All prescribed provincial taxes in Law No. 28 of 2009, the new law on local taxes and charges, are deemed to have environmental characteristics in their base, while among eleven district/city taxes, only four of them have incentive/disincentive mechanisms related to the environment. The right of local governments to create a new scheme of local taxes – thus leading to the possibility of establishing a new environmental tax – in the 2000 Law has been removed. The new Law in 2009 only provides discretion to local governments for determining the rate of taxes within the threshold.

Despite the basis of local taxes being expanded, none of the environmental taxes in the 2009 Law has sufficiently addressed environmental protection issues. This is because most of taxes in the Law do not reflect related externalities in determining their basis as well as the rate. Consequently, improper determination of the base and the rate leads to inadequate levels of taxes that are designed to alter taxpayers' behaviours. Moreover, environmental goals are of secondary importance compared to revenue purposes, so most of the environmental taxes in the 2009 Law are relatively ineffective in providing sufficient incentives to abate the impact to the environment. The presence of the fuel subsidy has exacerbated the current concept of environmental taxes in Indonesia. Although attempts to phase out the subsidy have already been made, the subsidy is still a big proportion of the budget. This leads to the failure to send the right price signal to

consumers (industries and individuals) which will eventually lead to increased pollution and an added burden to the environment.

CHAPTER 5

THE ROLE OF ENVIRONMENTAL TAXES IN IMPROVING ENVIRONMENTAL OUTCOMES: A CASE STUDY IN THE SPECIAL PROVINCE OF YOGYAKARTA

5.1. Introduction

The previous chapter highlighted several weaknesses in the legislation that covered the provision of environmental taxes in Indonesia. Of importance was the insignificant linkage between the base and the rate of most environmental taxes in the Law, with related external effects. This leads to an inadequate level of taxes for altering polluters' behaviours. Deficiencies in the provision of environmental taxes indicate that these taxes are not being properly designed and may bring the consequence of ineffectiveness in practice. As the design and the imposition of environmental taxes are interrelated, this chapter aims to address the second main research question by uncovering the actual contribution of these instruments to the improvement of environmental outcomes. Understanding contextual issues in the imposition of environmental taxes, either from institutional or industrial perspectives, is very important in ascertaining the extent of effectiveness, and so that it may assist in developing a framework for a future scheme.

This chapter consists of three parts. The first part (section 5.2.) will provide a brief description of the Special Province of Yogyakarta showing the characteristics of this region, the growth of industries, as well as the impact of industrial activities in three dense districts/cities of this province, namely Sleman, Bantul and Yogyakarta. The second part of this chapter (section 5.3.), will be based on interviews with relevant institutions in 2012 (Directorate General of Fiscal Balance, Ministry of Finance, Local Revenue and Finance Bureaus, Association of Industries as well as Industrial, Trade and Cooperative Offices) located in either Jakarta, as the Capital City of Indonesia, or the Special Province of Yogyakarta. Sub-sections in the second part will cover discussion on issues related to the underlying rationale, revenue raised through environmental taxes, and obstacles and benefits from the imposition of these tax instruments.

The third part of this chapter (section 5.4.) presents data from survey questionnaires. As mentioned in chapter 1, a survey was conducted between September and November 2012, by administering one hundred (100) questionnaires to industries which have their basis of production in Sleman, Bantul and Yogyakarta. The response rate of this survey questionnaire was relatively high – 76% of the total participants. The analysis of responses is presented in sub-sections in the third part of the thesis. It begins with the profile of industries that participated in the questionnaire (5.4.1.) and then it is followed by discussion of waste management practices in the next section (5.4.2). The experiences and expectation of industries concerning the scheme of environmental taxes are discussed in the last two sections (5.4.3 and 5.4.4).

5.2. Special Province of Yogyakarta (*Daerah Istimewa Yogyakarta - DIY*) in Brief

The Special Province of Yogyakarta (*DIY*) is a region of Indonesia which is located on Java Island. In the south, it is bounded by the Indian Ocean, while in the north it is surrounded by regions of the Central Java Province such as Purworejo, Magelang, Boyolali, Klaten, Sukoharjo and Wonogiri. Administratively, the Special Province of Yogyakarta (*DIY*) has been divided into 4 (four) districts (*Kabupaten*) and 1 (one) city (*Kota*), namely Bantul, Sleman, Gunung Kidul, Kulon Progo districts and Yogyakarta city. This Province has an area of 3,185.80 km² which is 0.17% of Indonesian's area (1,860,359. 67 km²).[547] Accordingly, the Special Province of Yogyakarta (*DIY*) becomes the second smallest province in Indonesia after the Jakarta Capital Region.[548] With the smallest area size, the population has reached 3,457,491 in 2010 which means that the Special Province of Yogyakarta (DIY) has one of the highest population densities in Java.[549]

[547] *Kepala Daerah Daerah Istimewa Yogyakarta* [Governor of Special Province of Yogyakarta], 'Laporan Keterangan Pertanggungjawaban (LKPJ) Kepala Daerah Daerah Istimewa Yogyakarta Akhir Tahun Anggaran 2012' [The Accountability Report of Governor of Special Province of Yogyakarta for the Fiscal Year 2012] 6 – 7.
[548] Ibid.
[549] *Peraturan Daerah Provinsi DIY No. 4 Tahun 2009 tentang Rencana Pembangunan Jangka Menengah Daerah* [Provincial Regulation of Special Province of Yogyakarta (DIY) No. 4 of 2009 concerning Local Development Mid-Term Planning for the year of 2009 – 2013] (Indonesia).

Figure 5. Administrative Map of Special Province of Yogyakarta

Source: Bappeda DIY[550], 2012 and LKPJ[551] DIY, 2012

According to the Regional Environmental Board of the Special Province of Yogyakarta (*Badan Lingkungan Hidup DIY*), the population growth and economic development in this province have triggered an increasing number of environmental degradations.[552] This problem occurs specifically in three dense areas of the *DIY* province, namely: Sleman, Bantul and Yogyakarta, which have considerable socio-economic activities.[553] Air and water pollution have been highlighted as two major environmental issues in those aforementioned districts and city of the *DIY* province. The management of these issues should be a high priority. The evaluation done by the Regional Environmental Board in the *DIY* province has indicated that there is an increasing amount of air pollutants such

[550] *Bappeda: Badan Perencanaan dan Pembangunan Daerah* [The Development Planning Agency in Special Province of Yogyakarta] 2012 (Indonesia).
[551] *Kepala Daerah Daerah Istimewa Yogyakarta* [Governor of Special Province of Yogyakarta], above n 547.
[552] *Badan Lingkungan Hidup Daerah Istimewa Yogyakarta* [The Regional Environmental Board of Special Province of Yogyakarta], 'Laporan Standar Pelayanan Minimal Bidang Lingkungan Hidup DIY Tahun 2012' [The Report of Regional Environmental Board of Special Province of Yogyakarta (DIY) on The Standard of Minimum Service in Environmental Sector for the fiscal year 2012].
[553] *Peraturan Daerah Provinsi DIY No. 4 Tahun 2009 tentang Rencana Pembangunan Jangka Menengah Daerah* [Provincial Regulation of Special Province of Yogyakarta (DIY) No. 4 of 2009 concerning Local Development Mid-Term Planning for the year of 2009 – 2013] (Indonesia).

as CO, NO_2, HC, and particularly in urban areas, due to the growth of businesses/economic activities as well as the rising number of motor vehicles.[554] Furthermore, the quality of water has also decreased as a result of household and industrial discharges.[555] It has been predicted that water pollution will continue to occur in forthcoming years in line with the growth of population, which eventually will have a severe impact on the quality of ground and surface water in this province.[556]

The industrial sector is one of the main sources of both air and water pollution. Most of industries in the DIY province are small-medium, and have had a steady growth from 2008 to 2012 as shown in the following table:

Table 5. Industrial Progress in Special Province of Yogyakarta

Year	2008	2009	2010	2011	2012
Industrial units	76.267	77.851	78.122	80.056	82.344
Employees	273.621	291.391	292.625	295.461	303.385

Source: adapted from Bureau of Industry, Trade and Cooperation *DIY* Province (*Disperindagkop DIY*)

Although the increasing amount of industry has improved opportunities for employment, it has also brought about an increase in the level of pollution to the environment. Furthermore, people within polluted areas are particularly vulnerable as pollution has an adverse impact on their lives and health.

Many complaints have been filed to the Environmental Bureau in the DIY province and in each district/city as to the amount of pollution that is emitted from industrial production processes. It is reported that more than 10 industrial pollution cases either in the province and the districts/cities were resolved in 2012.[557] Air, water and noise pollution have been found to be the most common problem related to industrial activities. For

[554] *Badan Lingkungan Hidup Daerah Istimewa Yogyakarta* [The Regional Environmental Board of Special Province of Yogyakarta], above n 552.
[555] Ibid.
[556] Ibid.
[557] *Laporan Status Lingkungan Hidup Daerah (SLHD) Provinsi Daerah Istimewa Yogyakarta 2012* [The Report of Environmental Status in Special Province of Yogyakarta in 2012], 2012 <http://blh.jogjaprov.go.id/wp-content/uploads/LAPORAN-SLHD-DIY-2012.pdf>.

example, discharges from the tofu industry in Sleman have contaminated groundwater within surrounding areas, or pollutants from the metal production process in Yogyakarta have caused respiratory problems to people who live close to industrial areas.[558] Some pollution cases have been settled, but others are still under monitoring and restoration.[559]

As is already known, the cost to restore the environment is somewhat higher than to prevent pollution from occurring. Having sufficient funding is essential to support the settlement of environmental disputes. In the case of the DIY province and its districts/city, the adequacy of funding depends on the financial plan for environmental sectors during the fiscal year. When there are too many complaints from the community concerning industrial pollution, the funding is likely to be insufficient to deal with existing environmental problems, especially to cover laboratory verification for each case or to bring it to the court as criminal cases.[560] As a consequence, some environmental cases may not be facilitated and resolved completely.

5.3. The Application of Environmental Taxes at Local Levels from Institutional Perspectives

This section aims to analyse the current application of environmental taxes in the Special Province of Yogyakarta as a pollution control measure. Importantly, the analysis will cover several related issues from the primary motivation to barriers in the implementation of this instrument. Data used in this section is primarily gathered from interviews with several relevant institutions. At the end, a closer look at the practice of environmental taxes may enlighten the actual contribution of this instrument toward the improvement of environmental outcomes at local levels.

[558] Ibid.
[559] Ibid.
[560] *Badan Lingkungan Hidup Daerah Istimewa Yogyakarta* [The Regional Environmental Board of Special Province of Yogyakarta], above n 552.

5.3.1. The Underlying Rationale of Environmental Taxes

At first glance, the rationale of environmental taxes might be easy to determine. However, experiences from other countries have suggested differently. Most objectives of environmental taxes are not drawn up to achieve specific goals related to the environment *per se*. These instruments may be used to accomplish other goals such as revenue-raising, or may even have a multi-purpose aim such as the environment and employment.[561] Basically, the rationale of an environmental policy can be derived from its legislation. If this is the case, the law should specify a goal that is supposed to be achieved. Although it is quite easy to determine the rationale, Maatta underlined a difficulty in recognising a specific purpose in the law, as sometimes the law only regulates a broader objective as compared to a definite one.[562]

In the case of environmental taxes in Indonesia, these instruments have been governed in the Law on Local Taxes and Charges (No. 28 of 2009) as the higher legislation in the hierarchy. To be fully implemented, this law must be clarified in implementing regulations such as government regulations and local regulations.[563] In terms of local regulations, the enactment of these kinds of legislation differs among regions in Indonesia depending upon the number of imposed taxes. This is due to the fact that the 2009 Law provides discretion to local governments concerning the imposition of prescribed taxes. If the potential of the law is less than adequate, such taxes can remain uncollected. Therefore, no local regulation is required for unimposed taxes.

In the Special Province of Yogyakarta, local taxes are divided into provincial and district/city taxes as prescribed in Law No. 28 of 2009. At the provincial level, it seems all types of environmental taxes, specifically for industrial taxpayers, have been imposed, namely motor vehicle, transfer of motor vehicles ownership, fuel and utilisation of surface water taxes. Instead of creating local regulations for each imposed tax, the provincial government has enacted one Local Regulation of the DIY Province No. 3 of 2011 concerning Local Taxes. This local regulation covers provisions for 5 (five) types of

[561] Barde, 1997, above n 31, 234.
[562] See Maatta, above n 53, 16.
[563] See Article 95 (1) of the *Undang-Undang No. 28 Tahun 2009 tentang Pajak Daerah dan Retribusi Daerah* [Law No. 28 of 2009 concerning Local Taxes and Charges] (Indonesia).

provincial taxes (including a cigarette tax). However, specific provisions, such as registration of motor vehicles, a progressive rate of motor vehicle tax, and the value of surface water, have been assigned in detail in many Governor Regulations.[564]

Likewise, at district/city levels the application of prescribed taxes requires the enactment of local regulations. Bantul, Sleman and Yogyakarta are districts/city in the Special Province of Yogyakarta, where several environmental taxes in Law No. 28 of 2009 are imposed. In Bantul, all types of environmental taxes for districts/city levels are implemented, namely a street lighting tax, a tax on non-metal minerals and rocks, a ground water tax as well as a tax on swallows' nests. Unlike the Bantul district, the government in Sleman and Yogyakarta apply less environmental taxes.[565] To accommodate these imposed taxes, the government of Bantul has enacted Local Regulation No. 8 of 2010 concerning Local Taxes and several Head of District Regulations for each type of the aforementioned taxes.[566] Similarly, the government of Yogyakarta city has created one local regulation containing the imposed local taxes and has detailed administrative procedures in the Head of City Regulation.[567] Meanwhile, the government of Sleman has enacted several local regulations for each imposed tax, including three

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[564] The Provincial government in DIY Province enacted 4 (four) Governor Regulations for specific provisions as mandated by *Peraturan Daerah Provinsi Daerah Istimewa Yogyakarta No. 3 Tahun 2011 tentang Pajak Daerah* [Local Regulation of Special Province of Yogyakarta (DIY Province) No. 3 of 2011 concerning Local Taxes] (Indonesia). They are: Governor Regulation of DIY Province No. 30 of 2011 concerning Tax on Transfer of Motor Vehicles Ownership, Governor Regulation of DIY Province No. 31 of 2011 concerning Motor Vehicle Tax, Governor Regulation of DIY Province No. 16 of 2012 concerning The Collection of Fuel Tax and Governor Regulation of DIY Province No. 17 of 2012 concerning The Sale Value of Surface Water Tax. As can be seen, the title of Governor Regulations for Motor Vehicle Related Taxes does not illustrate specific provisions that should be clarified. However, the content is directed to mandated provisions in Local Regulation No. 3 of 2011.

[565] Sleman and Yogyakarta have levied the same number of environmental taxes, but the types are different. Taxes on street lighting, on non-metal mineral and rock as well as on ground water, are three types of environmental taxes that have been implemented in Sleman, while the city government of Yogyakarta has imposed street lighting taxes, ground water taxes and swallows nests' taxes.

[566] Head of Bantul District Regulation No. 9 of 2012 concerning Administrative Procedure of Street lighting Tax, Head Of Bantul District Regulation No. 10 of 2012 concerning Administrative Procedure of Tax on Non-Metal Mineral and Rock, Head Of Bantul District Regulation No. 12 of 2012 concerning Administrative Procedure of Groundwater Tax and Head Of Bantul District Regulation No. 13 of 2012 concerning Administrative Procedure of Tax on Swallows' Nests.

[567] Local Regulation of Yogyakarta City No. 1 of 2011 concerning Local Taxes and Head of Yogyakarta City Regulation No. 51 of 2011 concerning Procedural Guidelines of Local Regulation of Yogyakarta City No. 1 of 2011 concerning Local Taxes. Some provisions in the latter regulation such as the sale value of groundwater tax and administrative procedures of local taxes have been amended in 2012. The title is Head of Yogyakarta City Regulation No. 2 of 2012 concerning The Amendment of Head of Yogyakarta City Regulation No. 51 of 2011 concerning Procedural Guidelines of Local Regulation of Yogyakarta City No. 1 of 2011 concerning Local Taxes. Both of those procedural guidelines (No. 51 of 2011 and the amendment No. 2 of 2012) have been jointly used in practice.

types of environmental taxes. They are the Local Regulation of Sleman District No. 9 of 2011 concerning Street Lighting Tax, No. 10 of 2011 concerning Tax on Non-Metal Mineral and Rock and No. 13 of 2010 concerning Ground Water Taxes.

The rationale of the abovementioned local regulations, either in province or districts/city levels, is referred to Law No. 28 of 2009 as the legal basis for the implementation of local taxes. In essence, local taxes are designed to raise revenue for funding government's expenditures so as to improve community services and local independence. As environmental taxes are part of local taxes, the underlying rationale of these instruments is obviously the same. They should be used primarily to increase the local revenue stream. Therefore, providing an incentive to change behaviours has become of secondary importance.

The aforementioned rationale of the imposed local taxes has been affirmed by the Local Revenue, Finance and Asset Management Bureaus (*Dinas Pendapatan, Pengelolaan Keuangan dan Aset Daerah – DPPKAD*)[568] as the enforcers of Law No. 28 of 2009 in the Special Province of Yogyakarta and in its districts/city. They have interpreted the reasoning precisely as stipulated in the Law on Local Taxes and Charges that the focus of the imposed local taxes is for income optimisation. Apparently, all respondents in these bureaus hold the view that the enactment of Law No. 28 of 2009 and its implementing regulations (*read*: local tax regulations) do not have any correlation with environmental management at the local level as stated in the following interviews:

> The enactment of the Law on Local Taxes and Charges is nothing to do with environmental management since it has a different domain that relates to income sources within a local area. There is a specific law that regulates the environment related matters, namely: environmental laws. The laws do not operate together as they have different purposes.[569]
>
> According to Law No. 28 of 2009, districts/cities are given the authority to impose several types of local taxes. In Yogyakarta City, this law is clarified by Local Regulation

[568] The Local Revenue, Finance and Asset Management Bureaus are the departments in charge of local revenue administration and management, including the administrative procedure for local taxes. They are responsible for making local guidelines, policies and draft regulations related to local revenue and finance matters. In terms of local taxes, these bureaus are mainly in charge of ensuring the implementation of local taxes and charges as directed in Law on Local Taxes and Charges by providing guidelines, coordination among sectors and supervision over the imposed taxes.

[569] Interview with Interviewee 1, the officer of Department of Local Revenue and Finance Special Province of Yogyakarta (Yogyakarta, 21st September 2012).

> No. 1 of 2011 on Local Taxes as the tax-collection basis. The focus of these legislations is actually on increasing local revenues rather than managing the environment.[570]
>
> Law No. 28 of 2009 is not that different to the previous one. The motivation is still to generate local revenues. There is no condition, whatsoever, that requires local governments to use tax revenues for environment related matters.[571]
>
> In terms of local taxes, their nature is obligatory, unrequited payment and used by regions to maximize people's welfare. On this basis, the local government does not have an obligation to provide any compensation specifically for environmental management. The focus is mainly on generating local revenues.[572]

Although local taxes serve the primary function of revenue generated instruments, all interviewees at the local revenue and finance bureaus in this research agree with the fact that some local taxes at the province and district/city level are not merely used to increase local revenues. There might an implicit mission that is attached to some local taxes to limit consumption and/or utilisation of certain goods.[573] This recognition appears to refer to the base of certain taxes which have noticeable environmental characteristics. However, respondents from the local financial bureau argue that not all taxes have been used to achieve environmental purposes.[574] Their justification departs from the provisions in Law no. 28 of 2009 concerning revenue earmarked from prescribed taxes. The Law only requires local governments to allocate some revenue from 2 (two) provincial taxes and 1 (one) districts/city taxes for specific purposes other than revenue-raising.[575] As a consequence, other local taxes that have environmentally relevant tax-bases are deemed to be aimed at generating local revenues.

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[570] Interview with Interviewee 2, the officer of Local Revenue and Finance Bureau Yogyakarta City (Yogyakarta, 24th September 2012).
[571] Interview with interviewee 3, the officer of Local Revenue and Finance Bureau Sleman District/Regency (Sleman, 25th September 2012).
[572] Interview with Interviewee 4, the officer of Local Revenue and Finance Bantul District/Regency (Bantul, 26th September 2012).
[573] Interview with Interviewee 1, 2, 3 and 4 from Local Revenue and Finance Bureaus of Special Province of Yogyakarta, Yogyakarta City, Sleman and Bantul Districts/Regencies. A much clearer explanation has been provided by the local financial bureau in Yogyakarta city which also gave examples of environmental taxes at the districts/city level such as a tax on groundwater, a tax on swallows' nests and a street lighting tax. The groundwater tax has another objective - to make the society more responsible for water consumption, while other mentioned taxes have the similar purpose to limit the consumption of electricity and the utilisation of swallows' nests.
[574] Ibid.
[575] Two types of provincial taxes are a tax on motor vehicles and cigarettes, while a street lighting tax is one of the districts/city prescribed taxes. Revenue from motor vehicle tax should be earmarked for

More comprehensive views on the underlying rationale of Law No. 28 of 2009 have been delivered by respondents from the Directorate General of Fiscal Balance, the Ministry of Finance in Indonesia - the policymakers of local taxes. In fact, there are four main reasons in the amendment of the previous Law on Local Taxes and Charges. First, the 2009 Law has been enacted to rectify the problem raised by the previous law that allowed local governments to create new local taxes and charges based on local regulations (*Peraturan Daerah/Perda*).[576] Of about 13,600 local regulations that have been evaluated since 2001 – 2010, 36% were recommended by the Ministry of Finance to be cancelled due to ignoring the criteria of the taxes as required by the Law.[577] An overusing of discretion has led to an over-burden for society and non-conducive business practices which has brought a negative impact to national economic growth.[578] Then, Law No. 28 of 2009 restrains local governments' lawmaking practices concerning new taxes and charges by providing close-list taxes.[579]

The second reason is to increase the local taxing power by way of expanding the tax base, adding to the types of local taxes, changing the maximum tax rate and giving the discretion to local governments in determining the tax rate.[580] These several actions are intended to compensate the lost revenue as a result of the abolition of many previous levies created by local governments.[581] Looking at this reason, it definitely indicates a revenue-raising aspect. Apparently, the tax policymakers provided the aforementioned methods to accommodate the need for a consistent local revenue stream through the prescribed taxes. Therefore, the 2009 Law still maintains the same notion as previous laws in which taxes are used as revenue generated instruments.

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improving public transport, constructing and maintaining roads, whereas the allocation of revenue from the cigarette tax is mandated by the 2009 Law for financing public health services and law enforcement. The street lighting tax is the only districts/city tax which has been required by the Law to be allocated for financing the street lighting supply. As can be seen, the earmarking purpose is not associated with any environmental objectives. Although an ideal purpose of environmental taxes should principally represent specific environmental goals, it does not mean such taxes with other specific purposes cannot be considered as 'environment-related taxes'. Experiences from OECD countries in the use of environmentally related taxes may provide good examples, as at first the objective of most taxes is revenue-raising (See OECD, 2001, 2006 and 2010).

[576] Interview with Interviewee 5, the officer of Directorate General of Fiscal Balance, the Ministry of Finance (Jakarta, 17th October 2012).

[577] Ibid.

[578] Ibid.

[579] Ibid.

[580] Ibid.

[581] Ibid.

The third reason refers to the tax-revenue sharing from the province to the districts/cities. Previously, the predecessor law (No. 34 of 2000) governed the revenue sharing from provincial taxes to districts/cities, but it was uncertain on the shared proportion.[582] The 2009 Law has amended provisions on the revenue sharing by deleting the word "a minimum of".[583] At this point, the proportion is fixed and does not appear to raise a need for further interpretation.

The fourth reason is to improve the control mechanism of local regulation concerning local taxes and charges.[584] Law No. 28 of 2009 contains a preventive and corrective monitoring system to replace the old repressive one. The new system requires double reviews before and after a local tax regulation is enacted. The review of provincial tax regulations is to be carried out by the Home Affairs and Finance Ministries, while the districts/city regulations concerning local taxes and charges is evaluated by the governor in each respective Province. The local regulation can be invalidated if it does not comply with the public interest or the higher level of law.

Principally, the abovementioned reasons are directed to cover the need of local governments in raising sufficient local own-source revenue without creating a heavy burden on businesses or discouraging investment at the local level. It seems the implementation of local taxes is purely aimed at generating revenue as acknowledged by most local governments. As a consequence, several local taxes that fall into the category of environmental taxes are supposed to achieve the same objective as ordinary types of taxes in Law No. 28 of 2009. However, a further statement from the policymaker at the Directorate General of Fiscal Balance that "the 2009 Law is pro- job, pro-poor, pro-growth and pro-environment"[585] may lead to the possibility that there would be another objective associated with environmental taxes. In this case, several taxes that have a

[582] Ibid. In the previous Law, there is a word 'a minimum of' attached to the shared proportion. For example, Article 2A (1a) of Law No. 34 of 2000 stated "A minimum of 30% (thirty percent) of the receipt of tax on motor vehicles and motor vehicles travelling on water and transfer-of-titles fees on motor vehicle and motor vehicle travelling on water shall be handed over to the regency/municipality in the relevant province". Province and districts/city may interpret this differently: it could be at least 30 percent was given or it could be more than 30 percent. The polemic occurred due to this wording.
[583] Ibid.
[584] Ibid.
[585] Ibid.

close connection with the environment may be used as an instrument to discourage polluting behaviours as interpreted from the following statement:

> In Law No. 28 of 2009, there are some taxes that are directly related to the environment such as the motor vehicle tax, fuel tax, street lighting tax, surface and groundwater taxes. This is due to the reason that their tax basis appears to have environmental features. For example, the basis of the motor vehicle tax is the sale value of motor vehicles which is calculated based on two factors. The first is the price and the second is the weight. The latter can be seen as an inclusion of environmental features by taking into account road damages and pollution levels into the calculation. Another example is a fuel tax. The assumption is that the more people use fuel, the higher they cause pollution. Tax on street lighting also relates to the environment since not all electrical equipment is produced by environment friendly sources such as diesel fuel. The imposition of these taxes may reduce the consumption of aforementioned objects and at the same time may reduce pollution.[586]

Based on the above view, it can be reasonably assumed that environmental taxes in Law No. 28 of 2009 are likely to have double functions. The first is to raise local own source revenue and the second is to limit consumption/utilisation of certain goods. However, the first rationale is of the highest priority as explicitly written in the Law. It is in fact far from the ideal theory that emphasised altering behaviours as the primary purpose of environmental taxes.[587] In this case, raising revenues is of secondary importance. The effectiveness of a tax is therefore indicated by the decreasing of revenue over time. This concept might be best in theory, but it sometimes does not fit with certain circumstances in practice. Several factors such as social and political motives should be considered in designing environmental taxes. A decentralized fiscal system in Indonesia is one of the conditions that should be taken into account in a tax policy making. This system requires local governments to provide sufficient revenues to ensure that all government functions can be well performed. Environmental taxes in this case may be well-suited to be used as revenue providing instruments. Revenues from environmental taxes will go to government budgets and will be used to finance government expenditures. As a matter of fact, using environmental taxes as revenue generating instruments is evidently acceptable in both developed and developing countries. One of the reasons to use environmental taxes as an environmental policy instrument is the search for revenues

[586] Ibid.
[587] Maatta, above n 53, 96 -97.

either to support general budget or to finance specific environmental programs.[588] This underlying rationale has remained important for developing countries in recent years since there is a need for greater own-source revenues to support government objectives. Similarly, the government of Indonesia still maintains a revenue-raising notion as the underlying rationale of the imposed environmental taxes in response to democracy and decentralization principles which give regions a greater control toward their respective economies and political institutions.

5.3.2. Revenue Raised Through Environmental Taxes

The fact that the government of Indonesia seems to uphold the revenue-raising motivation of environmental taxes may lead to an assumption that there should be significant growth in revenue from these kinds of taxes. If this is the case, the amount of revenues from the prescribed taxes should be adequate to support local expenditures. Environmental management is one of obligatory expenditures that should be taken into account in the budget allocation. Sound environmental management can only be achieved when there is a strong commitment from local government to do so, as well as sufficient funding to support environmental related activities/programs. The latter factor is critical due to a wide range of local government tasks in managing the environment from developing local policies to implementing law enforcement strategies.

Basically, revenues from local taxes will go to local government budgets and will be distributed to programs proposed by each local government bureau/agency. Environmental taxes as part of local taxes do not escape this rule. Revenues from these taxes are gathered in the Local Own Source Revenues (*Pendapatan Asli Daerah – PAD*) as one component of local revenues.[589] This function has become the responsibility of the Local Revenue, Finance and Asset Management Bureaus (*DPPKAD*) in the province and

[588] See Barde, 1997, above n 31, 224; OECD, 2010, above n 70, 141 – 143.

[589] Article 157 of the *Undang-Undang No. 32 Tahun 2004 tentang Pemerintahan Daerah* [Law No. 32 of 2004 on Regional Government] (Indonesia) and Article 5 of the *Undang-Undang No. 33 Tahun 2004 tentang Perimbangan Keuangan antara Pemerintah Pusat dan Pemerintahan Daerah* [Law No. 33 of 2004 concerning Fiscal Balance] (Indonesia), govern that sources of local income consisting of Local Own Source Revenues, Balance Funds and Other Legal Local Income. Local Own Source Revenues comprise local taxes, local charges, proceeds from the management of separated local assets and other local own source revenues.

its districts/cities. Among other financial related functions, these bureaus are mainly in charge of ensuring the implementation of tax administrative and tax collection procedures within their areas. The budgeting allocation from local taxes is not part of these bureaus' functions and responsibilities, but it will be discussed in the budgetary forum that involves executive and legislative bodies planning and executing the proposed budget.

As previously discussed, in the Special Province of Yogyakarta and its districts/cities, there are differences in the number of the imposed environmental taxes. This is because the potency of such taxes may be less than adequate. Hence, certain taxes remain uncollected. In the case of the Special Province of Yogyakarta, the provincial government imposes all taxes that fall under the category of environmental taxes, namely those on motor vehicles, the transfer of motor vehicles ownership, fuel and the utilisation of surface water. Similarly, the government of the Bantul district imposes all types of environmental taxes which are a street lighting tax, a tax on non-metal mineral and rock, a ground water tax and a tax on swallows' nests. In contrast, not all environmental taxes in the 2009 Law have been imposed in the Sleman district or Yogyakarta city. The government of Sleman decided to impose two types of environmental taxes; a street lighting tax and a tax on non-metal minerals and rocks, whereas there are three types of environmental taxes that are imposed in Yogyakarta city; a street lighting tax, a ground water tax and a tax on swallows' nests. These imposed taxes, both at the province and district/city level, can be classified into three different tax bases – energy products (fuel and street lighting taxes), motor vehicle related taxes (taxes on motor vehicle and transfer of motor vehicles ownership) and others (surface and ground water taxes, a tax on non-metal mineral and rock as well as a tax on swallows' nest).

On average, revenues from the aforementioned environmental taxes, both in the Special Province of Yogyakarta and in its districts/cities, tend to increase over time. This trend has been acknowledged by all interviewees at the Local Revenue and Finance Bureaus in province and district/city levels. They admitted that these kinds of taxes mostly achieve the target or even higher than has been targeted. According to interviewees in the respective bureaus, there are many factors such as tax potency, previous revenues, spending and even a political factor that should be considered in setting the target of tax

revenue so that it is feasible to achieve. In essence, they hold the same prudent principle in that it is better not to have a very high target of tax revenue because the realization is often lower than expected. As a consequence, this will affect spending.

In the province level, there is an increasing trend of revenue raised through environmental taxes. As can be seen in figure 6, the vast majority of revenues are derived from motor vehicle related tax-bases. It appears that these bases are important sources of revenue for the Special Province of Yogyakarta, as these taxes are likely to grow on a regular basis consistent with urban growth. In this case, the amount of revenue collected through motor vehicle taxes (levied on an annual basis in which the owner will be allowed to use a motor vehicle in the given year) is much higher than the amount collected on the transfer of motor vehicle ownership tax (levied on initial or subsequent sale of a motor vehicle). Despite the fact that motor vehicle taxes are based on vehicle weight, representing an environmental feature, and are coupled with progressive rates to determine the tax level, the revenue from these taxes continues to grow. This perhaps is a sign that these taxes do not have a significant impact on altering behaviours.

A fuel tax as another category of environmental tax base that demonstrates a similar result to motor vehicle related tax bases. Revenue from this tax tends to grow and to constantly achieve the set target.[590] On one hand, this pattern is largely consistent with the primary purpose of environmental taxes as revenue generating instruments. However, on the other hand, this tax fails to provide a right price signal to consumers to alter their behaviours. This is because the base of this tax is far from being related to externalities such as pollution and congestion. Even further, the presence of the fuel subsidy in Indonesia exacerbates this condition. In theory, an environmental tax should not be used in combination with the subsidy since it will reduce the effectiveness of such a tax to alter behaviours.[591] Therefore, removing a fuel subsidy is a must so that taxpayers of fuel products will consider the cost of pollution in their economic decisions.

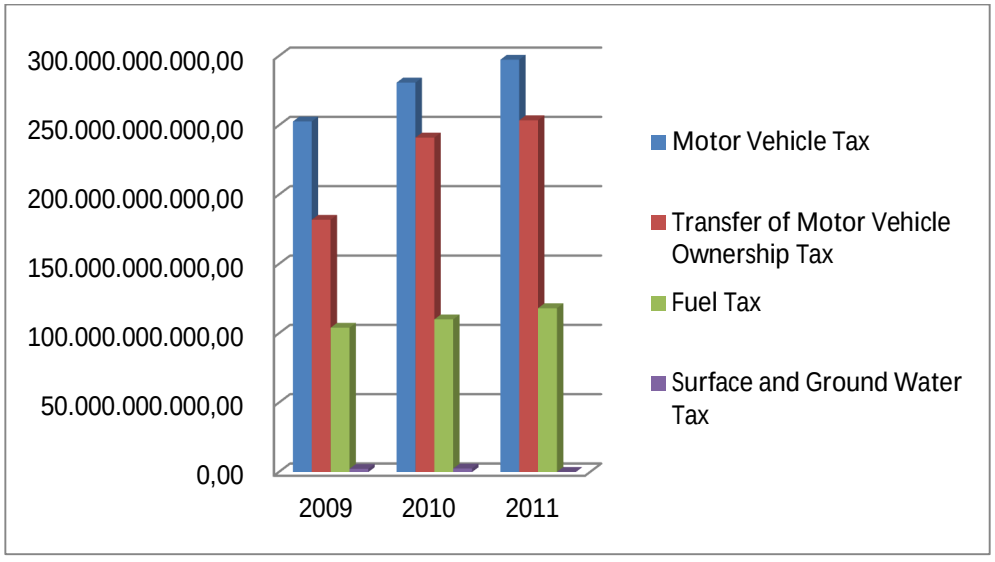
Meanwhile, the revenue from the surface water tax that falls into the 'other' category of environmental tax bases is relatively small over the period, compared to the two

[590] Interview with interviewee 1, the officer of Department of Local Revenue and Finance Special Province of Yogyakarta (Yogyakarta, 21st September 2012).
[591] See World Bank, 2005, above 349, 37; OECD, 2006, above n 11, 171 - 173; OECD, 2010, above n 70, 138.

aforementioned categories of tax bases. Even the revenue from this tax decreased considerably in 2011. This decline is initiated by the fact that Law No. 28 of 2009 has divided the surface and ground water tax into two independent types of taxes, namely: a surface water tax and a ground water tax. The province still holds a right to tax surface water, while a ground water tax has been assigned to district/city governments. It is worth noting that in spite of having a taxing right over surface water, the 2009 law requires the provincial government to share at least 50 percent of revenue from this tax to district/city governments.[592] This share is important to support district/city governments in performing their functions in line with democracy and decentralisation principles. Although the revenue from the surface water tax was quite low, this tax actually remains an important income for local governments as it has adequate revenue elasticity. It would seem local governments do not put any concern toward an implicit environmental motivation of this tax regardless of its base being closely linked to externalities such as the quality of water and the level of damage.

Figure 6. Revenue from Environmental Taxes in the Special Province of Yogyakarta in the period 2009, 2010 and 2011

In Indonesian Rupiahs (IDR)



Source: adapted from Local Revenue and Finance Reports in the Special Province of Yogyakarta on local tax revenues in the period 2009, 2010 and 2011.

[592] See Article 94 (1d) of the *Undang-Undang No. 28 Tahun 2009 tentang Pajak Daerah dan Retribusi Daerah* [Law No. 28 of 2009 concerning Local Taxes and Charges] (Indonesia).

Table 6 shows the proportion of revenue raised from environmental taxes in the Special Province of Yogyakarta with respect to local own source revenue (*Pendapatan Asli Daerah - PAD*) and total local revenue (*Pendapatan Daerah*). The implementation of environmental taxes contributes a significant income to either local own source revenues or total local revenue. As can be seen in Table 6, revenues from environmental taxes accounted for about 80 percent of local own source revenue. The share of these taxes is also relatively high for almost half of total local revenue. This highlights the fact that environmental taxes in this province are quite successful in achieving the prime motivation of taxation being a revenue generating instrument.

Table 6. Revenues from Environmental Taxes compared to Total Local Revenue in the Special Province of Yogyakarta

Local Revenues (in IDR)	2009	2010	2011
Revenue Raised from four types of Environmental Taxes	541,192,265,769.60	634,710,019,946.80	735,226,105,916.20
Local Own Source Revenue	645,145,551,075.74	768,341,053,125.19	871,963,501,186.23
Total Local Revenue	1,286,067,485,169.33	1,403,174,023,247.19	1,609,761,447,239.23

Source: adapted from Local Revenue and Finance Reports in the Special Province of Yogyakarta on local tax revenues in the period 2009, 2010 and 2011.

The 2009 Law requires a portion of revenues from environmental taxes in the provincial level to be distributed to district/city governments. As previously discussed, at least 50% of revenues from a surface water tax should be shared. This also occurs for other environmental taxes such as motor vehicle related taxes and a fuel tax. The share of revenues from these taxes is 30% for motor vehicle related taxes and 70% for a fuel tax. Although the 2009 Law does not specify the use of revenue sharing from these taxes, governments of the Special Province of Yogyakarta took an initiative to stipulate it in the local regulation No. 3 of 2011 concerning local taxes.[593] This regulation requires district/city governments to allocate the portion of revenue sharing from

[593] Interview with Interviewee 1, the officer of Department of Local Revenue and Finance Special Province of Yogyakarta (Yogyakarta, 21st September 2012).

aforementioned taxes for financing environmental purposes. For example, from the revenue generated from the fuel tax, at least 10% should be used to tackle air pollution and environmental degradation in the region. In addition, from the revenue generated by the surface water tax, a minimum 10% should be allocated to finance conservation and plantation. It appears that the government of the Special Province of Yogyakarta has demonstrated a strong commitment to the environment. According to interviewees from local revenue and finance bureaus in the province, this commitment, supported by the Local House Representative, was initiated by the fact that urban growth will increase consumption and the utilisation of fuel products, motor vehicles and water. The increasing amount of consumption is likely to have an adverse impact to the environment in respective regions. In response to this issue, the provincial government has included the use of tax revenues in the local legislation to support the function of environmental management at local levels.

The imposition of environmental taxes at the district/city level is not different to those in the province level in connection with the function of respective taxes as revenue generating instruments. Figures 7, 8 and 9 illustrate revenues from environmental taxes that are implemented at three different regions – Bantul, Sleman and Yogyakarta – that are located in the Special Province of Yogyakarta. Revenue from a street lighting tax that falls into the category of an energy product tax-base was increasing over the period, while revenues from the 'other' category of tax-bases (tax on non-metal minerals and rocks, ground water tax and swallows' nest tax) were quite small. However, a small number of revenues in the 'other' category do not necessarily mean that these taxes do not have capacity to achieve the primary motivation as mandated by the 2009 Law. A ground water tax and a tax on non-metal minerals and rocks are relatively successful in reaching the revenue targeted. These taxes show a positive trend in generating revenue for respective districts/cities. Unlike the ground water tax and the tax on non-metal mineral and rock, the tax on swallows' nests that has been imposed in Bantul and Yogyakarta failed to achieve the target.[594] For example, in 2011 the government of Yogyakarta city has targeted revenue from swallows' nest tax to reach about IDR

[594] Interview with Interviewee 2, the officer of Local Revenue and Finance Bureau Yogyakarta City (Yogyakarta, 24th September 2012); Interview with Interviewee 4, the officer of Local Revenue and Finance Bureau Bantul District (Bantul, 26th September 2012).

12,500,000, but it was only achieved about one third of the revenue targeted. Technical obstacles hindered its implementation. These difficulties will be elaborated in the next section.

Figure 7. Revenues from Environmental Taxes at the Bantul District in the Special Province of Yogyakarta

In Indonesian rupiahs (IDR)

Source: adapted from Local Revenue and Finance Report of the Bantul District concerning local tax revenues in the period 2009, 2010 and 2011.

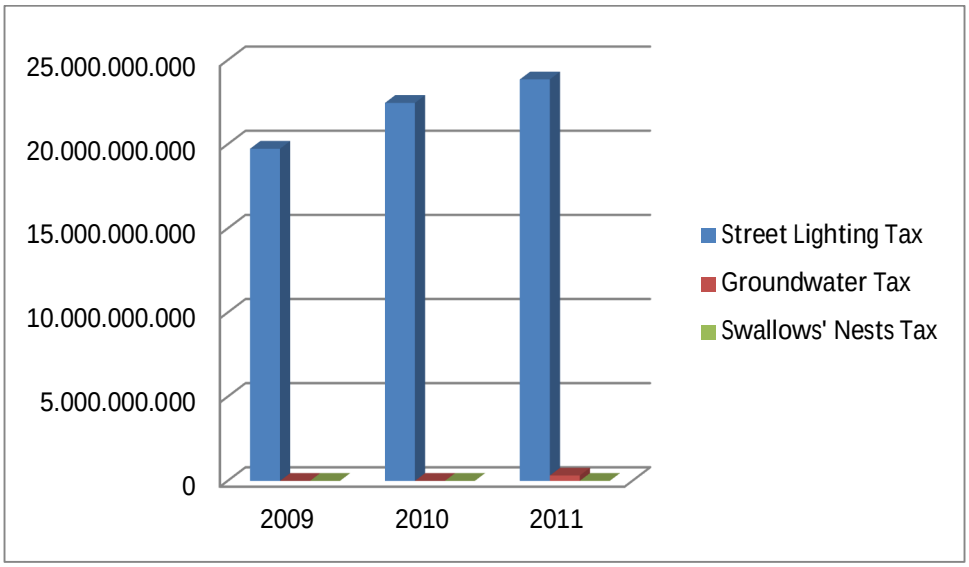
Figure 8. Revenues from Environmental Taxes at the Sleman District in the Special Province of Yogyakarta

In Indonesian rupiahs (IDR)

Source: adapted from Local Revenue and Finance Report of the Sleman District concerning local tax revenues in the period 2009, 2010 and 2011.

Figure 9. Revenues from Environmental Taxes at Yogyakarta City in the Special Province of Yogyakarta

In Indonesian rupiahs (IDR)



Source: adapted from Local Revenue and Finance Report of the Sleman District concerning local tax revenues in the period 2009, 2010 and 2011

A trend of increasing revenues from several environmental taxes in respective districts/cities is perhaps a sign that they are not effective in altering behaviours. If the price of a taxable object is right, it will encourage taxpayers to limit/reduce their consumption. In this case, the base and the rate of a tax are two parameters that should be determined properly. The base should reflect related externalities and the rate should be set in proportion with polluting substances on input/output/final products.[595] Unfortunately, this theory does not apply to several environmental taxes governed in Law No. 28 of 2009. Therefore, these taxes do not have the capacity to discourage polluting activities and reduce their activities to acceptable levels.

In terms of revenue allocation, environmental taxes in Bantul, Sleman and Yogyakarta are not specifically assigned to finance an environmental purpose as happens at the province level. Even revenue from a street lighting tax (that is imposed on electricity

[595] World Bank, 2005, above n 349, 36 – 38.

consumption) is not directed to be used for particular programs related to the environment. The 2009 Law mandates the allocation of a portion of revenue from this tax for the supply of street lighting.[596] It seems district/city governments in the Special Province of Yogyakarta follow exactly the provisions in the 2009 Law concerning the budget allocation of certain taxes as stated below:

> Our budget policy has not focused on certain expenditures. For example, a portion of revenues from a ground water tax is allocated to conserve ground water sources. All revenues from local taxes, including those that relate to the environment, go to the local budget and will be distributed to proposed programs. If there is a budget policy like the one we meant before, it should be stated in the respective legislation.[597]
>
> The 2009 Law does not specify the allocation of revenues from taxes related to the environment to be used for environmental programs. If there are programs for the environment, it is a job of the Environment Office in this region to put them into the Local Government Work Plan. Then, it will be discussed in the budgetary forum involving the Local House Representative.[598]
>
> Based on Law No. 28 of 2009, only revenue from tax on street lighting is supposed to be allocated for a specific purpose. This means a portion of revenue from this tax is given back to people and industry in the form of public lightning. By having good public lightning, the region will be developed as well as the industrial sectors. However, we do not have any revenue allocation for other taxes so they go directly to the local fund and are used to finance mandatory and elective affairs of Bantul's government.[599]

Although there is no initiative to allocate revenue from environmental taxes at the district/city level, it does not mean that respective local governments do not have a high commitment to the environment. If the Law authorises them to do the budget allocation, they will include the mandates in the policy making process.[600] Their commitment toward the environment is then by way of generating higher revenues from the

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[596] See Article 56(3) of the *Undang-Undang No. 28 Tahun 2009 tentang Pajak Daerah dan Retribusi Daerah* [Law No. 28 of 2009 concerning Local Taxes and Charges] (Indonesia).

[597] Interview with Interviewee 2, the officer of Local Revenue and Finance Bureau Yogyakarta City (Yogyakarta, 24th September 2012).

[598] Interview with Interviewee 3, the officer of Local Revenue and Finance Bureau Sleman District/Regency (Sleman, 25th September 2012).

[599] Interview with Interviewee 4, the officer of Local Revenue and Finance Bureau Bantul District/Regency (Bantul, 26th September 2012).

[600] Interview with Interviewee 2, the officer of Local Revenue and Finance Bureau Yogyakarta City (Yogyakarta, 24th September 2012); Interview with Interviewee 3, the officer of Local Revenue and Finance Bureau Sleman District/Regency (Sleman, 25th September 2012); Interview with Interviewee 4, the officer of Local Revenue and Finance Bureau Bantul District/Regency (Bantul, 26th September 2012).

prescribed taxes so that more funds can be allocated for financing government affairs which include environmental management in this case.[601] This concept of using tax revenues is probably acceptable in many countries. Experiences from developed and developing countries show almost similar patterns in using revenues from environmental taxes. Governments may retain the revenue within the general budget and use it to finance public spending, or the revenue from environmental taxes is earmarked for specific purposes.[602] Therefore, the treatment of revenue from environmental taxes in respective districts/cities is consistent with contemporary experiences from other countries. This option actually provides a greater flexibility for local governments to use the revenue throughout times.

5.3.3. Obstacles in the Implementation of Environmental Taxes in Respective Provinces and Districts/Cities

At a glance, the imposition of environmental taxes in the Special Province of Yogyakarta and in its districts/city seems free from many issues and pitfalls. This is because these taxes mostly achieve their prime motivation as revenue generating instruments. It means the base of environmental taxes is reliable in providing adequate revenue sources for the regions in the long run. Most assigned taxes also meet the administrative feasibility principle in that they are easy to collect at a low cost. For example, a fuel tax is collected by *Pertamina* (the National Oil Company) which then have the responsibility to report and directly transfer the total amount of tax on monthly basis to the account of the province.[603]

An assurance of a problem-free implementation is also given by policymakers from the Directorate General of Fiscal Balance as follows:

> Actually, some problems in the application of local taxes have appeared before the enactment of Law No. 28 of 2009, so they may not happen again. This is because the law is created on the basis of good principles of local taxation as well as decentralisation

[601] Ibid.
[602] See OECD, 2006, above n 11, 26; World Bank, 2005, above n 349, 26.
[603] See Article 36 – 37 of the *Peraturan Daerah Provinsi Daerah Istimewa Yogyakarta No. 3 Tahun 2011 tentang Pajak Daerah* [Local Regulation of Special Province of Yogyakarta (DIY Province) No. 3 of 2011 concerning Local Taxes] (Indonesia).

> principles. Therefore, it ensures that local taxes are feasible to implement and will not overburden society and businesses at local levels.[604]

On paper, it might be true that there will be no problems arising from the implementation of environmental taxes specifically on the tax collectors' side. However, no one can predict what will happen in practice. It might go smoothly, as expected, or it might be obstructed by many obstacles. The interviewee from the Directorate General of Fiscal Balance further admitted that most problems in the implementation were raised by taxpayers. For example, the implementation of a motor vehicle tax in a certain region in Indonesia raised an objection from the mining industry, since the 2009 Law includes open railway vehicles as its taxable objects.[605] They stated that the mentioned vehicle is used for production and do not use public roads.[606] The industry then proposed a judicial review to the Constitution Court (*Mahkamah Konstitusi*) and asked to revoke the provision in the 2009 Law.[607] According to the interviewee, the case was still being processed in the Constitution Court and until the time of interview, the Directorate General of Fiscal Balance has not received any decision.

In the Special Province of Yogyakarta, the implementation of environmental taxes appears to raise a number of issues. The first is related to territorial issues. This occurs when the application of environmental taxes creates problems among regions concerning the taxing right over a taxable object. A motor vehicle tax is a type of environmental tax which has evidently raised the territorial problem. According to the 2009 Law, the tax on motor vehicles is collected in the regional territory where the motor vehicle is registered. The problem is that the base of this tax is considered mobile, so it can be operated everywhere, including in other regions outside the registration place of the respective vehicles.[608] This means the other regions where the vehicle is used are unable to levy tax on this motor vehicle, so that they lose the potential income from this tax.[609] According to the interviewee from the Local Revenue and Finance Bureau in this province, there is a government regulation that attempts to resolve this problem by

[604] Interview with Interviewee 5, the officer of Directorate General of Fiscal Balance, the Ministry of Finance (Jakarta, 17th October 2012).
[605] Ibid.
[606] Ibid.
[607] Ibid.
[608] Interview with Interviewee 1, the officer of Department of Local Revenue and Finance Special Province of Yogyakarta (Yogyakarta, 21st September 2012).
[609] Ibid.

giving a taxing right to the region where motor vehicles are regularly used for 3 (three) consecutive months. Unfortunately, the regulation does not work in practice since it is very difficult to prove whether the use of a vehicle meets the required time.[610] As for this case, it has reached a deadlock at the national level.[611]

Another important issue that has been raised is a concern that there is a lack of transparency from *Pertamina* (the National Oil Company), the collector of fuel taxes. The provincial government seems to doubt data provided by *Pertamina* concerning the payment of fuel tax. This is because the amount of tax that has been transferred to the account of the respective province is based on the quantity of fuel products being sold.[612] According to the interviewee from the Local Revenue and Finance Bureau in the Special Province of Yogyakarta, the data provided by *Pertamina* sometimes did not match with the number of gas stations that are located in the province. The government actually needs data on the quota of fuel products for the Special Province of Yogyakarta and the allocation of this quota to the gas stations as well as to the industrial sectors. Unfortunately, this data remains undisclosed up until now.

As previously mentioned, most environmental taxes are easier to administer; however, there is still a difficulty in managing such taxes. Apparently, the problem is related to inter-administrative policy that involves district/city governments in the process. This occurred in the case of the surface water tax. This tax is levied on individuals and/or entities (industries) that utilise and/or exploit surface water excluding the utilisation and/or exploitation for household basic needs, farming, fisheries and other purposes as governed in the local regulation.[613] This means all activities performed by individuals or industries, with or without permits that fall under these provisions of law, will automatically be subject to tax. However, the government in this province determined that a surface water tax is imposed on those with permits only in order to make it easier to administer.[614] The issuance of the permit is by district/city governments where the

[610] Ibid.
[611] Ibid.
[612] Ibid.
[613] See Article 21(1) and 21(2) of the *Undang-Undang No. 28 Tahun 2009 tentang Pajak Daerah dan Retribusi Daerah* [Law No. 28 of 2009 concerning Local Taxes and Charges] (Indonesia).
[614] Interview with Iinterviewee 1, the officer of Department of Local Revenue and Finance Special Province of Yogyakarta (Yogyakarta, 21st September 2012).

surface water is located, whereas the collection is under administrative authority of the province.[615] Although coordination is arranged, the problem still arises in relation to the responsibility of local governments to ensure the availability of water meters in respective sites.[616] Sometimes, no water meter is provided which makes it difficult for the provincial government to keep an accurate measure of water use.[617] This obstacle has hindered the imposition of the surface water tax.

The aforementioned difficulties in the province are in fact almost similar to those occurring at the district/city levels. In most cases, transparency and lack of institutional capacity are the main obstacles that may hamper the imposition of environmental taxes in Bantul, Sleman and Yogyakarta. The transparency issue has been raised by all interviewees from the Local Revenue and Finance Bureaus at the aforementioned districts/city in relation to the application of a street lighting tax. This tax is paid by *Perusahaan Listrik Negara – PLN* (the National Electricity Company) to the respective local accounts through the appointed banks.[618] As a taxpayer, the *PLN* is responsible for providing a tax report as required in the local regulations which contains at least data as to the number of electricity customers, the amount of electricity charge claims and the amount of street lighting taxes.[619] The interviewees admitted that even though the transferred amount of street lighting taxes has matched with data provided by the *PLN*, it is not clear to how much electricity payments come from either households or industries, since the tax rate between these two customers is different and may affect the total revenue from this tax.[620] Furthermore, the officials from the Local Revenue and Finance

[615] Ibid.
[616] Ibid.
[617] Ibid.
[618] Interview with Interviewee 2, the officer of Local Revenue and Finance Bureau Yogyakarta City (Yogyakarta, 24th September 2012); Interview with Interviewee 3, the officer of Local Revenue and Finance Bureau Sleman District/Regency (Sleman, 25th September 2012); Interview with Interviewee 4, the officer of Local Revenue and Finance Bureau Bantul District/Regency (Bantul, 26th September 2012).
[619] Local Regulation of Bantul District No. 8 of 2010 concerning Local Taxes and its implementing regulation, namely: Head of Bantul District Regulation No. 9 of 2012 concerning Administrative Procedure of Street lighting Tax; Local Regulation of Sleman District No. 9 of 2011 concerning Street lighting Tax; Local Regulation of Yogyakarta City No. 1 of 2011 concerning Local Taxes and Head of Yogyakarta City Regulation No. 51 of 2011 concerning Procedural Guidelines of Local Regulation of Yogyakarta City No. 1 of 2011 concerning Local Taxes.
[620] Interview with Interviewee 2, the officer of Local Revenue and Finance Bureau Yogyakarta City (Yogyakarta, 24th September 2012); Interview with Interviewee 3, the officer of Local Revenue and Finance Bureau Sleman District/Regency (Sleman, 25th September 2012); Interview with Interviewee 4, the officer of Local Revenue and Finance Bureau Bantul District/Regency (Bantul, 26th September 2012).

Bureaus in respective districts/city stated that it is difficult to obtain such data from the *PLN* as the system is designed nationally and they do not even have the courage to change it. It would seem this issue will remain the same in years ahead if the central government does not have the sense to address it.

A lack of institutional capacity has also raised a great concern in the implementation of environmental taxes at district/city levels. This shortage includes incapability of local staff to accurately measure the utilisation of taxable objects and an inability to estimate its potency. These problems have been exacerbated by limited funding and human resources. For instance, in the case of a ground water tax, the officials from the Local Revenue and Finance Bureaus in Yogyakarta city and the Bantul district admitted that they still use a flat system to estimate a monthly use of groundwater specifically from industrial sectors, because there is no water meter provided. Consequently, the total amount of groundwater tax is always the same for every month even though there is a fluctuation in the water use.[621] Providing water meters as well as increasing coordination with another related agencies such as the Public Order Agency (*Dinas Ketertiban Umum*), seems to be an urgent agenda item to resolve the problem. In this case, the local government takes the responsibility to provide the device to measure the use of ground water; however, it can only be implemented one device at a time based on the local capability.[622] On this basis, it might be reasonable to assume that limited funding may become another hurdle in accomplishing this assignment.

Lack of technical ability happens in the case of a swallows' nest tax. All interviewees have similar views, that it is difficult to estimate the real potency of the swallows' nest tax. The difficulty lies in the fact that the government cannot enter the sites since there is a potential risk to drive swallows away and in turn, may have risks for businesses.[623] Therefore, the Sleman government decided not to impose a tax on swallows nests, even

[621] Interview with Interviewee 2, the officer of Local Revenue and Finance Bureau Yogyakarta City (Yogyakarta, 24th September 2012); Interview with Interviewee 4, the officer of Local Revenue and Finance Bureau Bantul District/Regency (Bantul, 26th September 2012).
[622] Interview with Interviewee 4, the officer of Local Revenue and Finance Bureau Bantul District/Regency (Bantul, 26th September 2012).
[623] Interview with Interviewee 2, the officer of Local Revenue and Finance Bureau Yogyakarta City (Yogyakarta, 24th September 2012); Interview with Interviewee 3, the officer of Local Revenue and Finance Bureau Sleman District/Regency (Sleman, 25th September 2012); Interview with Interviewee 4, the officer of Local Revenue and Finance Bureau Bantul District/Regency (Bantul, 26th September 2012).

though there might be potential revenue. The interviewee from the Local Revenue and Finance Bureau in Sleman stated that they gave up the taxing right over the swallows nests because the government seems not to know how to calculate the potency from this taxable object. They also do not want to rely solely on information provided by taxpayers without directly observing the object.[624] Unlike the Sleman government, local governments in the Bantul district and Yogyakarta city still impose a tax on swallows' nests regardless of the presence of the aforementioned difficulty. As a result, the revenue from this tax is far below its target.

As can be seen, obstacles in the implementation of environmental taxes are varied and are mainly related to administrative and institutional issues. These issues, in fact, commonly happened in other developing countries in the application of pricing instruments. Some countries have successfully overcome these problems; others may still try to find a proper way out. In the context of Indonesia, the presence of barriers seems not to disrupt the capacity of environmental taxes to achieve their objective. However, if the obstacles are not properly managed, potential revenues from these taxes will not be effectively captured. Therefore, local governments may lose a great deal of income needed to support their expenditures.

5.3.4. Benefits of Environmental Taxes

Principally, the imposition of environmental taxes should provide benefits to the environment. The achievement of environmental gains depends on the response of taxpayers to the price signals provided by an environmental tax. In this case, an environmental tax should be designed to supposedly influence behaviours. As discussed, two parameters should be taken into account to provide the correct price signal, namely a tax base and a tax rate. These parameters should have a closer link to related externalities such as the quantity of emissions so that an environmental tax may encourage taxpayers to consider the cost of pollution in their economic decisions. Thus,

[624] Interview with Interviewee 3, the officer of Local Revenue and Finance Bureau Sleman District/Regency (Sleman, 25th September 2012).

an environmental tax essentially has the capacity to discourage polluting activities by incorporating external costs in the price of goods and services.

Unfortunately, environmental taxes in Law No. 28 of 2009 do not reflect any required features to improve the quality of the environment in the first place. Perhaps, this is in line with the rationale of environmental taxes as being fiscal rather than regulatory. The first has a purpose to generate revenue, while the latter aims to influence behaviours.[625] Most environmental taxes in the 2009 Law seem to satisfy good principles of local taxation such as administrative simplicity and adequate revenue elasticity. With the exception of the motor vehicle tax, these taxes are evidently easy to collect since the taxable objects are relatively immobile and are located within the respective regions. Moreover, these taxes exhibit their capacity to fairly provide steady revenue streams for local governments. Hence, fiscal benefits are likely to be gained from environmental taxes in this case.

However, it is questionable whether environmental taxes in the 2009 Law may also have a significant contribution to the environment. In response to this issue, it is necessary to consider options in the use of revenues from these taxes. In theory, alternatives to use the revenue are many. The revenue may go to general government budgets and could be used to pay for public spending, or it can be earmarked for specific uses.[626] Other options are to use revenue to compensate individuals or industries from the rigorous impacts of taxation or to use revenue to make a reduction of an existing tax distortion.[627] In the case of Indonesia, Law No. 28 of 2009 explicitly governs the first two options in using revenues from environmental taxes. Some of the revenues are gathered into the general budget and used for government expenditures, while others are earmarked for specific purposes.

The use of revenue for public spending does not necessarily have a direct link with the environment. According to the interviewees from the Local Revenue and Finance Bureaus in the Special Province of Yogyakarta and its districts/city, the allocation of revenues within the government budget depends on the proposed programs from

[625] Maatta, above n 53, 96 – 97.
[626] OECD, 2006, above n 11, 26; World Bank, 2005, above n 349, 26; Barde, 1997, above n 31, 224
[627] See OECD, 2010, above n 70, 142; World Bank, 2005, above n 349, 27 – 28.

different sectors. The portions could be distributed on health, education or even to enhance the industrial development at the local level. The revenue could also be used to strengthen environmental management as one of local government functions. However, the share of revenues for each sector's program could not possibly be the same for every fiscal year. It is subject to the priorities of programs from different sectors that are approved by the local house representative. As a consequence, not all programs in the sectors are well-funded within the fiscal year.

Lack of funding has become a major problem in the operation of sectors' programs in the Province of Yogyakarta and its districts/city. Not only have environmental programs suffered from the limitation of funding,[628] but other programs related to the environment from different sectors have, in practice, had the same difficulty. In industrial sectors for example, there are many programs that aim to empower industries, specifically micro, small and medium ones, to produce better quality product that suit market demands either regionally, nationally or even globally.[629] Industrial bureaus run various technical guidance and training to improve the quality of products as well as to develop product innovation for industries. This training includes encouraging industries to process their products in an environmentally friendly manner so that it is safe for the environment.[630] In this case, the industrial bureaus together with the environmental offices provide information concerning environmental laws and regulations to raise awareness of industries in managing their waste so as to not contravene the requirements prescribed in the legislation.[631] In addition, the industrial bureaus assist certain industries such as *Batik* (traditional clothes of Indonesia) and food industries, which potentially pollute the environment, to build storage tanks for their discharges/waste.[632] However, these environmentally related activities are unlikely to be used to their utmost capacity since

[628] See *Badan Lingkungan Hidup Daerah Istimewa Yogyakarta* [The Regional Environmental Board of Special Province of Yogyakarta], above n 552.
[629] Interview with Interviewee 6, the officer of the Industrial, Trade and Cooperative Bureau in the Special Province of Yogyakarta (Yogyakarta, 30th October 2012); Interview with Interviewee 7, the officer of the Industrial, Trade and Cooperative Bureau in Yogyakarta city (Yogyakarta, 2nd October 2012); Interview with Interviewee 8, the officer of the Industrial, Trade and Cooperative Bureau in Bantul regency (Bantul, 2nd October 2012); Interview with Interviewee 9, the officer of the Industrial, Trade and Cooperative Bureaus in Sleman regency (Sleman, 28th September 2012).
[630] Ibid.
[631] Ibid.
[632] Ibid.

the priority of funding differs from time to time depending on the urgent agenda of respective sectors.

Gathering revenues from environmental taxes into the local budget, on one hand, provides a greater flexibility for governments to finance their expenditures, but on the other hand, it may not be seen as a very good option to present the real contribution that these taxes have made to the environment. This is exacerbated by the fact that the share of revenue for each sector is limited during the fiscal year. The environment is one of the sectors that the local governments should focus on. However, insufficient funding may disrupt the performance of local governments to effectively manage the environment. Accordingly, benefits for the environment may be less than planned.

Another option to use tax revenue as mandated by Law No. 28 of 2009 is to earmark the income for specific purposes. The intended purpose usually has a direct link with the revenue gathered from a particular tax. For example, in developed countries, revenue from transport related taxes has been earmarked to maintain or construct roads,[633] while in developing countries (such as China and Malaysia) the revenue from the pollution levy has been given back to industries to support pollution abatement projects.[634] The allocation of tax revenue is in fact against the concept of a tax and is not favoured by economists. However, the earmarking of funds may improve political acceptability toward an imposed tax.[635] More people want to see where the money goes in order to improve their trust on an existing tax policy. This is also the reasoning behind provisions of revenue earmarking in Law No. 28 of 2009.[636] In addition, the earmarking tends to ensure that there is sufficient funding for corresponding expenditures since the budget policy of local governments in Indonesia is typically based on expenditure priorities from different sectors as stated by the policymakers:

> Theoretically, revenue from taxes will go to the general budget and use depending on the expenditure priority of the state or local governments. If the priority within the fiscal year is not for a specific program such as road maintenance, the fund for this purpose will not be available. As a result, many roads will be left damaged. The longer the roads are in

[633] OECD, 2006, above n 11, 26.
[634] Ping, above n 256; Kathuria and Khan, above n 206.
[635] OECD, 2006, above n 11; World Bank, 2005, above n 349.
[636] Interview with Interviewee 5, the officer of Directorate General of Fiscal Balance, the Ministry of Finance (Jakarta, 17th October 2012).

> that condition, the more damage they might have and the higher the cost will be. The earmarking will guarantee funding supply for such expenditures. In this case, the funds are allocated in the local budget, so there should not be any excuse for saying that there is no money - for instance - for the road maintenance.[637]

Apparently, earmarking is seen as a good option to finance an expenditure that closely links to tax revenue. In the case of environmental taxes, Law No. 28 of 2009 requires revenues from taxes on motor vehicles and street lighting to be earmarked for related expenditures. Revenue from a motor vehicle tax is allocated for the development and maintenance of roads, while revenue from the street lighting tax is apportioned for the supply of street lighting.[638] It is worth noting that the provincial government in the Special Province of Yogyakarta follows this policy by way of earmarking revenues from all environmental taxes in the province – not only those that are required by the 2009 Law – for specific spending corresponding to tax revenue. Most of revenue from environmental taxes are allocated to programs related to the environment. For example, revenue from fuel taxes is earmarked to tackle air pollution and environmental degradation, whereas revenue from a surface water tax should be allocated to finance conservation and plantations.[639] Hence, it might be reasonable to assume that there should be gains to the environmental quality in the regions since the revenue from environmental taxes is readily targeted.

Considering that earmarking is in fact against the concept of tax, none of the revenue from environmental taxes in the province is fully earmarked. The law and regulation concerning local taxes has already set a minimum portion of revenue that should be allocated for specific expenditures.[640] This is actually in line with the theory provided by the World Bank in 2005, which allows partial earmarking for revenue generated through

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[637] Ibid.

[638] See Article 8 (5) and Article 56 (3) of the *Undang-Undang No. 28 Tahun 2009 tentang Pajak Daerah dan Retribusi Daerah* [Law No. 28 of 2009 concerning Local Taxes and Charges] (Indonesia).

[639] Article 75 (2) and (3) of the Provincial Regulation of the Special Province of Yogyakarta No. 3 of 2011 concerning Local Taxes.

[640] Provisions in Law No. 28 0f 2009 and the Provincial Regulation in the Special Province of Yogyakarta No. 3 of 2011 clearly set a minimum portion of revenue that should be used to finance specific purposes. Revenue from the motor vehicle tax should be allocated at a minimum 20% (twenty percent) including those that are shared to respective districts/city for the development and maintenance of roads as well as for the improvement of public transport. Revenue from fuel taxes is earmarked for at least 10% (ten percent) for programs related to resolving air pollution and environmental degradation, while revenue from a surface water tax is distributed at a minimum 10% (ten percent) for conservation and plantations.

environmental taxes. The revenue that is partially earmarked can be used to support the performance of environmental agencies in managing the environment as a lack of funding sometimes hampers implementation.[641] This partial earmarking seems to guarantee adequate revenue streams for any environmental related spending that is barely covered by funding from the general budget. Although it sounds reasonable to partially earmark revenue from environmental taxes, the World Bank highlighted the importance of the regular evaluation of this policy to prevent associated problems such as 'misallocation of revenue'.[642] This is to ensure that the funding from partial earmarking is being used correctly.

The option of partially earmarking tax revenue in Law No. 28 of 2009 and provincial regulations concerning local taxes, potentially brings benefits for the environment in the region. The portion of revenue is then used to assist programs related to the environment, such as reduction of air pollution and conservation. Unfortunately, none of the revenue is recycled back to industries for supporting pollution abatement projects or for assisting in research and development. Industrial associations in the Special Province of Yogyakarta have confirmed that no benefits from environmental taxes in the 2009 Law are received by industries in the region so as to facilitate research and testing on materials and substances that are safe for the environment.[643] They have stated that there has not been a fair share of benefits distributed among industrial sectors.[644] Some may have got some facilities from the government, while others may not have.[645] An example is in the case of roads. There are industrial sites where the roads they pass are not good for the distribution of products even though the industry has already paid the tax.[646] A similar view has also been presented by a representative from another industrial association – the *Batik* Industry (traditional clothes of Indonesia)[647] in the Special Province of Yogyakarta. No funding has been received by members of this *batik*

[641] World Bank, 2005, above n 349, 27.
[642] Ibid.
[643] Interview with Interviewee 10, the officer of the *ASMINDO – Asosiasi Industri Permebelan dan Kerajinan Indonesia* [Indonesia Furniture Industry and Handicraft Association] (Yogyakarta, 6th October 2012).
[644] Ibid.
[645] Ibid.
[646] Ibid.
[647] Interview with Interviewee 11, the officer of the *PPBI - Persatuan Pengusaha Batik Indonesia* [Indonesia Batik Industry Association] (Yogyakarta, 29th October 2012).

association that is linked to the payment of respective taxes.[648] So far, they manage discharges from *batik* production processes by constructing storage tanks without any financial assistance from the government.[649] Even though they do not receive any benefits from respective taxes, it does not bother them to continue paying taxes, as long as the government can ensure the certainty of such taxes.

According to policymakers, none of the environmental taxes in Law No. 28 of 2009 have any correlation with benefits provided to industries.[650] If any, the effect of these taxes on industrial sectors, for example, to encourage industry to use environment-friendly instruments, is only marginal.[651] Although most local taxes in Law No. 28 of 2009 exhibit features of environmental taxes and include industries as taxpayers, the objective is merely revenue raising.[652] Therefore, the fiscal benefit appears to be paramount.

Actually, there was a tax-concept that has been proposed to include in the Bill of Law on local taxes and charges (it is enacted as Law No. 28 of 2009) to the House of Representative.[653] The tax was called 'environmental tax' which aimed to be imposed on industries on the basis of production costs.[654] Revenue from this tax would be returned to industries to assist them in treating discharges from the production process.[655] However, this concept was not passed by the House of Representatives due to unanimous agreement among sectors of governments and objections from the business people as well.[656] It is very unfortunate that this concept failed to pass so it is not listed in Law No. 28 of 2009. As a matter of fact, the concept proposed by the Ministry of Finance to provide incentives for taxpayers to take pollution reduction measures sounds promising. This concept was considered as a supplementary policy of regulatory instruments.[657] Industries in this case are still required to follow such conditions provided in environmental legislations, e.g. performing environmental impact

[648] Ibid.
[649] Ibid.
[650] Interview with Interviewee 5, the officer of Directorate General of Fiscal Balance, the Ministry of Finance (Jakarta, 17th October 2012).
[651] Ibid.
[652] Ibid.
[653] Ibid.
[654] Ibid.
[655] Ibid.
[656] Ibid.
[657] Ibid.

assessments, and providing waste treatment plants. If this concept was carefully planned and then it was approved, it would contribute great benefits to the environment. By the enactment of Law no. 28 of 2009, it is forbidden to create a new scheme of tax since this law offers close-listed taxation. As a consequence, the government does not have any rights to propose taxes that aim to incorporate environmental gains as their objective.

Overall, a benefit provided by environmental taxes in Law No. 28 of 2009 is the fiscal one. Although there is spending targeted to the environment, the funding provided is limited depending on the priority of proposed programs from different sectors. As a consequence, environmental gains are fairly insufficient. The report from the Regional Environmental Board in the Special Province of Yogyakarta indicated the increasing amount of air and water pollution due to the increasing socio-economic activities in the region and it is predicted to continue to occur in forthcoming years.[658] Environmental taxes in this case are deemed to have failed in altering polluters' behaviours since the environmental purpose is of secondary importance.

5.4. The Practice of Environmental Management and Environmental Taxes from Industrial Perspectives: The Survey in the Special Province of Yogyakarta

This section presents results obtained from a survey questionnaire in 2012. The survey was carried out on industries which are located in three districts/cities (Yogyakarta, Sleman and Bantul) of the Special Province of Yogyakarta, Java Island. One hundred (100) questionnaires were administered, but only seventy-six industries responded. The survey focused on key topics with respect to the current practices used for industrial waste management in the region, the application of environmental taxes, and the future scheme of tax instruments from the standpoint of industries. Each topic comprised a set of specific questions to reveal contemporary experiences of industries that supplements data gathered through interviews. Responses to the questionnaire were compiled in a database and analysed qualitatively as data types are categorical/nominal (e.g. types of

[658] *Badan Lingkungan Hidup Daerah Istimewa Yogyakarta* [The Regional Environmental Board of Special Province of Yogyakarta], above n 552.

business ownerships) and binary (e.g. yes/no data) that contains frequencies.[659] Statistical representation from this analysis would contribute to the discussion on the role of environmental taxes to the improved environmental outcome in the region.

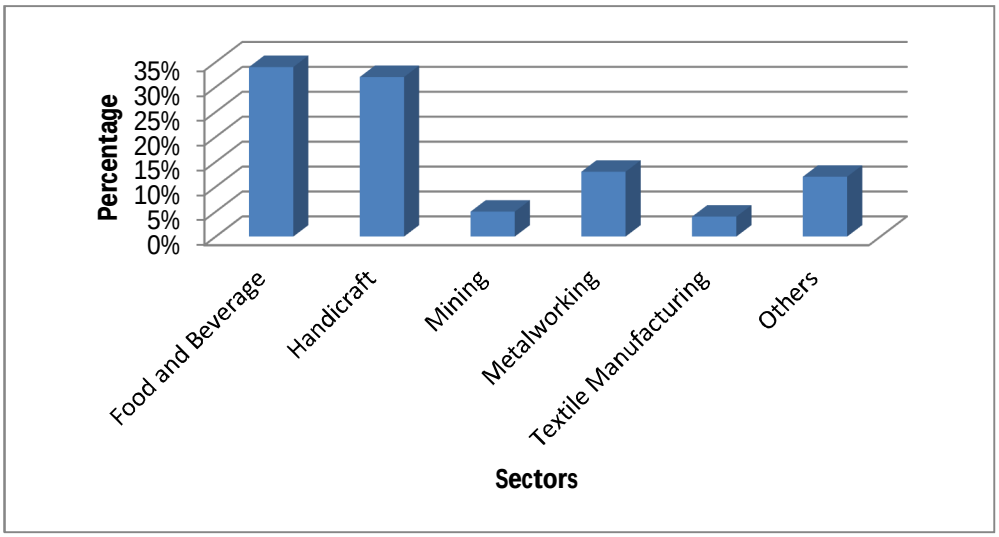
5.4.1. Background of the Industries

The industries that agreed to participate in this survey were varied and were established between 1950 and 2012. From seventy-six industries surveyed, about 54% had commenced their operation in the 2000s, while the least percentage of industries - around 2.5% - was established in 1950s. It is worth noting that the sole proprietary legal form was the most common type of industrial ownership in the Special Province of Yogyakarta. This is proven by 88% responses from industrial participants in the survey. In contrast, partnership and corporation represented the lowest number to choose: 8% and 5% respectively.

Regarding classification of industries, about 34% of industries surveyed fall within the category of food and beverages. This is followed by handicraft sectors, with only a slight difference in the percentage at 32%, then others and metalworking categories representing 14% and 13%, respectively. Others in this case include the agro industry, farm-packing industry and furniture industry. Mining and textile industries were the least represented sectors to participate in the survey, accounting for about 4 - 5% in proportion as shown in the figure 10 below.

[659] Statistical Services Centre, 'Approaches to the Analysis of Survey Data' (The University of Reading, UK, 2001) 6 – 17.

Figure 10. Sectors of Industries Surveyed



Source: Field Research, 2012

Industries that participated in this survey were mostly small to medium-sized enterprises (SMEs). The main factors to determine whether an industry is an SME are either total annual sales or total assets excluding land and buildings. These criteria are based on Law No. 20 of 2008 concerning Micro, Small and Medium Enterprises. The survey revealed that around 60% of industrial participants were minor-sized businesses with total annual sales less than IDR 300 million (< USD 32,390) or with total assets less than IDR 50 million (< USD 5390).[660] On the contrary, only 8% of industries which contributed to this survey fulfilled the criteria of medium-sized businesses by having total annual sales above IDR 2.5 billion to IDR 50 billion (around >USD 269,900 – USD 5.4 million) or total assets of more than IDR 500 million to IDR 10 billion (>USD 53,980 – USD 1.08 million).[661] In the case of big industries, very few of them took part in this survey – accounted for by about 3% from the total respondents.

A number of responses differed among industries in respect to the main resources used in production processes. However, it appears that water and electricity are the most important resources used by industries. Almost 100% of industries in food and

[660] The currency rate that I used to convert Indonesian rupiahs to US Dollars was based on the Oz foreign exchange at a rate of 9262.55 on Wednesday, 23 May 2012 at 1 pm (available at http://www.ozforex.com.au/currency-converter).
[661] Ibid.

beverages, as well as in textile sectors, used water and electricity as the predominant resources, apart from other materials such as raw materials (vegetables, fruits) and fabrics. Although water and electricity were not the only resources in mining, metalworking and handicraft sectors, these materials were still seen as one of the major elements in the production processes. They were used by approximately 30% in average compared to other selected materials such as fuel, motor vehicles, mineral, wood and clay. Meanwhile, the use of motor vehicles was included by mining industries in production. This means that motor vehicles are considered as one of the predominant factors to support the operation of industries. All mining industries surveyed (100%), opted for this resource, indicating its importance.

5.4.2. The Awareness of Industry toward Waste Management Practices and Regulatory Framework

Basically, every activity including consumption and production is likely to have an impact on health and the environment. In industrial sectors, the impact generated from goods processing is much more severe if waste/discharge is not properly managed. That is why the level of awareness of industry toward waste management practices and environmental legislations is of great importance. Proper management for industrial waste may reduce the pollution impacts on the surrounding environment, improving environmental sustainability. Seventy-six (76) industries surveyed in the Special Province of Yogyakarta have recognised by-products which were derived from their production processes. In the sector of textile manufacturing, industrial wastewater discharge, solid waste, air pollution and noise were selected as secondary results of main textile-processing. These by-products seem to have a higher degree of impact on the environment. Textile industries surveyed have placed great concern, not only on by-products issues, but also on resources being consumed. Alongside wastewater discharge, air pollution and noise, these industries also included electricity, water and fuel as resources that should be managed properly in their overall production.

By-products from goods processed in handicraft, metalworking, and 'others (e.g. agro, furniture)' sectors were similar to textile industries. Due to many processing steps in the

production of metal, handicraft and for instance, furniture (in 'others' category), these industries generated secondary results in the form of wastewater discharge, solid waste, air pollution and noise, which eventually raised environmental problems in practice. As for textile manufacturing, the primary concern of handicraft, metalworking and 'others' industries were placed on how to manage these by-products, and how to manage the consumption of resources in the production – electricity, water and fuel. These findings were not very different in food and beverage industries. Excluding noise, by-products of food and beverage sectors were wastewater discharge, solid waste and air pollution. The latter referred to foul-smelling waste coming from food processing stages when the waste is not treated properly, e.g. tofu industries.[662] Food and beverage industries' biggest aspects of concern were to manage by-products resulted from the production as well as the use of key resources in food processing, namely water, electricity and fuel.

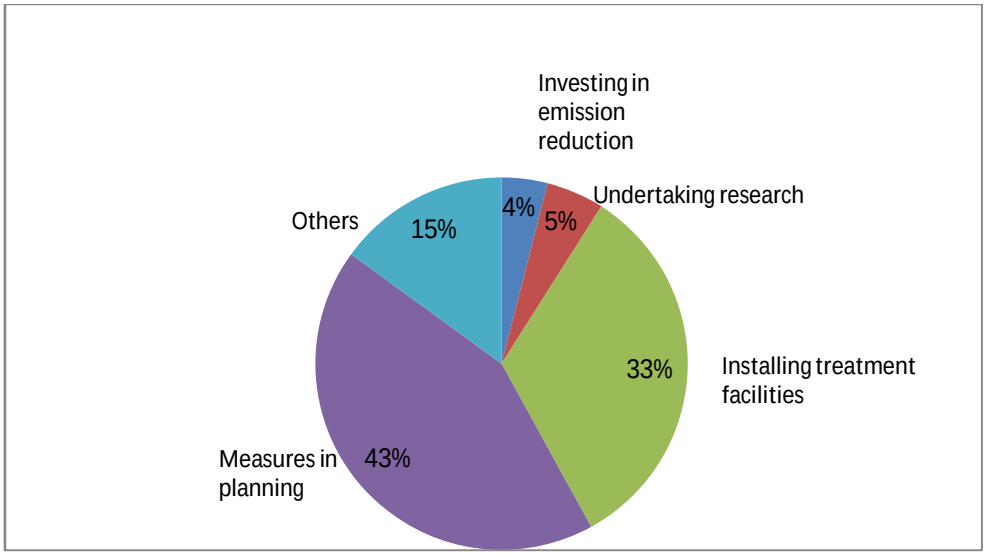
In the case of mining industries, the response concerning by-products of main production processes was diverse. Participants of this survey were from sand and gravel mining industries. Seventy-five percent (75%) of them stated that no secondary products were derived from their activities, whereas the remainder selected solid waste as a by-product. This is perhaps due to different processing stages in mining industries. Some of these industries only performed extraction stages, while others continued the processing of sand and gravel to make concrete. Although most of mining industries claimed no side-effects were generated from their activities, they still were concerned with every aspect of the mining process. As a matter of fact, considerable attention was given to the management of two resources in mining sectors: water and fuel. For mining industries that generated by-products in the production process, the management of solid waste was also included in their concerns.

In respect to industrial emissions or discharges, action or procedures should be undertaken by respective industries to reduce the negative impacts on the environment. This practice refers to the waste management system. Options for managing

[662] Interview with Interviewee 6, the officer of the Industrial, Trade and Cooperative Bureau in the Special Province of Yogyakarta (Yogyakarta, 30th October 2012); Interview with Interviewee 7, the officer of the Industrial, Trade and Cooperative Bureau in Yogyakarta city (Yogyakarta, 2nd October 2012); Interview with Interviewee 8, the officer of the Industrial, Trade and Cooperative Bureau in Bantul regency (Bantul, 2nd October 2012); Interview with Interviewee 9, the officer of the Industrial, Trade and Cooperative Bureaus in Sleman regency (Sleman, 28th September 2012).

emission/discharges in this survey were varied from investing in emission reduction practices to specifying their own answers (if any). The survey revealed that measures in planning were opted by 43% of industries located in Yogyakarta, Sleman and Bantul, while 33% of them nominated their treatment or disposal facilities. There was not much difference in proportion between industries that opted for investing in emission reduction practices and those that selected undertaking research into emission issues. Both of them were accounted for by approximately 4 - 5% of the total participants in this survey. It is worth noting that 15% of industries responded to this question by specifying their actions related to industrial waste/emission. About half of these industries used recycling, burying waste and waste collected by local government authorities as their methods to manage industrial waste/discharges, whereas others admitted that no actions or measures were taken.

Figure 11. Measures Being Taken by Industries Surveyed



Source: Field Research, 2012

Reasons for selecting measures in planning, or even worse, not taking any measures, probably referred to the fact that most of industries surveyed were micro to medium-sized businesses. In most cases, micro and small industries do not consider the importance of managing their waste or discharges. The major concern of these industries was to develop their businesses and to sell products in the market.[663] As a consequence, it

[663] Ibid.

may put an added strain on the environment as more money would go to support their business's goals instead of taking emission-reduction measures.

The majority of the surveyed industries (70%) have acknowledged their responsibilities as required by the law to provide treatment facilities for waste or discharges as a result of the production processes. The rest (30%), had various responses from those who believed no waste treatment facilities are required, to those who managed their waste by way of recycling and transporting to landfill. No treatment facilities responses were derived from almost all sectors of industries in the survey, excluding textile manufacturing. Perhaps, only mining industries (sand and gravels) in extraction stages were more likely to fit into this situation as they did not produce waste or discharges. Others who responded that no treatment facilities required were actually generating by-products that would likely to have negative impacts on the environment. For instance, food industries have potential to generate solid waste or wastewater discharges from processing raw materials, so they need to manage it by at least providing temporary waste storage as required by Law No. 18 of 2008 concerning waste management and its implementing regulations. In fact, there are number of environment and waste related policies in Indonesia that form the government's concern about the adverse effect of waste/discharges on the environment. Generally, these policies cover environmental management (Law No. 32 of 2009), waste management (Law No. 18 of 2008), hazardous waste management (Government Regulation No. 18 of 1999 amended by Government Regulation No. 85 of 1999, Government Regulation No. 74 of 2001 and Ministerial Regulation No. 18 of 2009), air pollution (Government Regulation No. 41 of 1999), water pollution (Government Regulation No. 82 of 2001) and recycling (Ministerial Regulation No. 2 of 2008 and No. 13 of 2012). The aforementioned policies should be able to influence industry's decision to carry out appropriate treatment of waste/discharges generated in the processing of goods.

It should be noted that a license for the management of waste generated in the production process is required by related laws and regulations. For example, Article 2 (1) of Ministerial Regulation No. 18 of 2009 concerning hazardous waste management licensing states that a license is a compulsory requirement for every stage of hazardous waste management, which includes transporting, temporary storing, waste collection, re-

use, waste processing and disposal. Industries which produce hazardous waste should be aware of further requirements in each stage of waste management to acquire the license. Furthermore, there are differences in licensing types for managing hazardous waste, domestic, non-domestic and specific waste, e.g. waste resulting from a natural disaster. Those who are involved in transporting, processing and the final disposal of domestic, non-domestic, as well as specific waste, must meet certain conditions such as having technical competence.[664] In this survey, industry's level of awareness toward the different types of environmental license for waste management was diverse. Sixty seven percent (67%) of industries surveyed were very aware. Another 29% admitted that they were somewhat aware of licensing differences in the management of waste. Only 4% of industries in the survey had a low level of awareness on this licensing aspect.

In the management of industrial waste, monitoring is needed to guarantee the effectiveness of the system in practice. Waste management related policies require those who are involved in each stage of waste systems to monitor their waste/discharges so as to meet with the requirements.[665] Industries are included in this requirement, as they have a different role in every stage of waste management. For example, industries as waste producers should properly reduce, process or dispose of waste/discharges through various methods such as using environmental friendly materials and providing temporary storage. In this case, industries should monitor their activities related to waste management system. The survey indicated that the majority of industries (75%) in the Special Province of Yogyakarta have monitored their operation to manage the level of waste/discharge. The frequency of monitoring was varied. Forty two percent (42%) of industries performed weekly monitoring, while others responded with monthly (17%),

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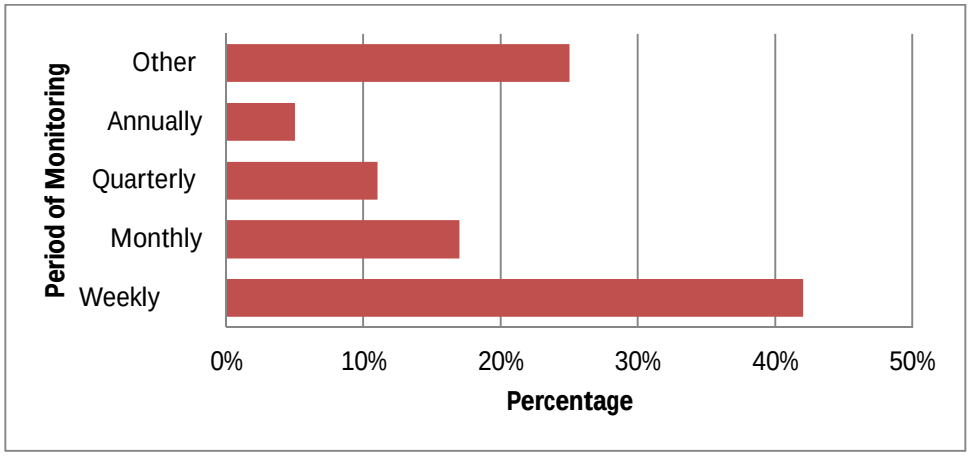
[664] See Article 30 of the *Peraturan Pemerintah No. 81 Tahun 2012 tentang Pengelolaan Sampah Rumah Tangga dan Sampah Sejenis Sampah Rumah Tangga* [Government Regulation No 81 of 2012 concerning The Management of Domestic Waste and Waste similar to Domestic Waste] (Indonesia).

[665] See *Undang-Undang No. 32 Tahun 2009 tentang Perlindungan dan Pengelolaan Lingkungan Hidup* [Law No. 32 of 2009 concerning Environmental Protection and Management] (Indonesia); *Peraturan Pemerintah No. 18 Tahun 1999 diamandemen oleh Peraturan Pemerintah No. 85 Tahun 1999 tentang Pengelolaan Limbah Bahan Berbahaya dan Beracun (B3)* [Government Regulation No. 18 of 1999 amended by Government Regulation No. 85 of 1999 concerning Hazardous Waste Management] (Indonesia); *Undang-Undang No. 18 Tahun 2008 tentang Pengelolaan Sampah* [Law No. 18 of 2008 concerning Waste Management] (Indonesia); *Peraturan Pemerintah No. 82 Tahun 2001 tentang Pengelolaan Kualitas Air dan Pencemaran Air* [Government Regulation No. 82 of 2001 concerning Water Quality and Pollution Management] (Indonesia).

quarterly (11%) and annual (5%) supervision. The rest (25%) had different responses from every day to no monitoring at all.

Figure 12. the Frequency of Monitoring done by Industries



Source: Field Research, 2012

Supervision must also be carried out by government agencies to ensure compliance with the applicable conditions in respective legislations. Unfortunately, the frequency of supervision is not explicitly stated in the legislation as to whether it should be performed monthly, quarterly or even annually. According to 9% of industries in the survey, the authorities had regular supervision of their operation, while another 38% claimed that the inspection was occasionally done. The latter proportion was nearly the same as the percentage (33%) of those who stated that government agencies never performed the supervision on the industrial sites. This was followed by 20% of industries that opted for 'seldom' to indicate the frequency of respective authorities in supervising industrial activities.

As discussed, laws and regulations pertaining to environment and waste management in Indonesia are many. In this case, either individuals or businesses need to be aware of relevant environmental laws and regulations that apply to their operation. Non-compliance with the applicable laws and regulations bring serious consequences. There are administrative and/or criminal penalties that apply to those who fail to comply with mandatory conditions in respect to environmental laws and regulations. The level of awareness toward legal consequences for non-compliance to legislations is sufficiently

high. Seventy percent (70%) of industrial participants claimed that they were very aware of severe penalties for non-compliance. Another 28% indicated that their level of awareness was in a moderate stage. This figure was followed by only 2% of industries that were unaware of legal consequences for not complying with the law.

The abovementioned findings on the level of awareness, is in fact consistent with responses on the major driver for compliance with any requirements in the environmental legislations. Afraid of any legal action was opted by 53% of industries which can be contrasted to the high level of awareness toward the legal consequences for non-compliance. Furthermore, 18% of industries pointed out pressure from customers as the primary reason to comply with the law, whereas the opinions of the other industries (29%) were dispersed to the other four options. The percentage of industries that selected an option, either afraid of temporary/permanent shutdown or government incentives, were not far behind, accounted for about 13% and 9% respectively. The two last options, namely cost reduction and 'others', only received approximately 3% – 4% response. Social sanctions from the surrounding society was clearly specified by industries in the 'others' option that made them obey environmental conditions in the laws and regulations.

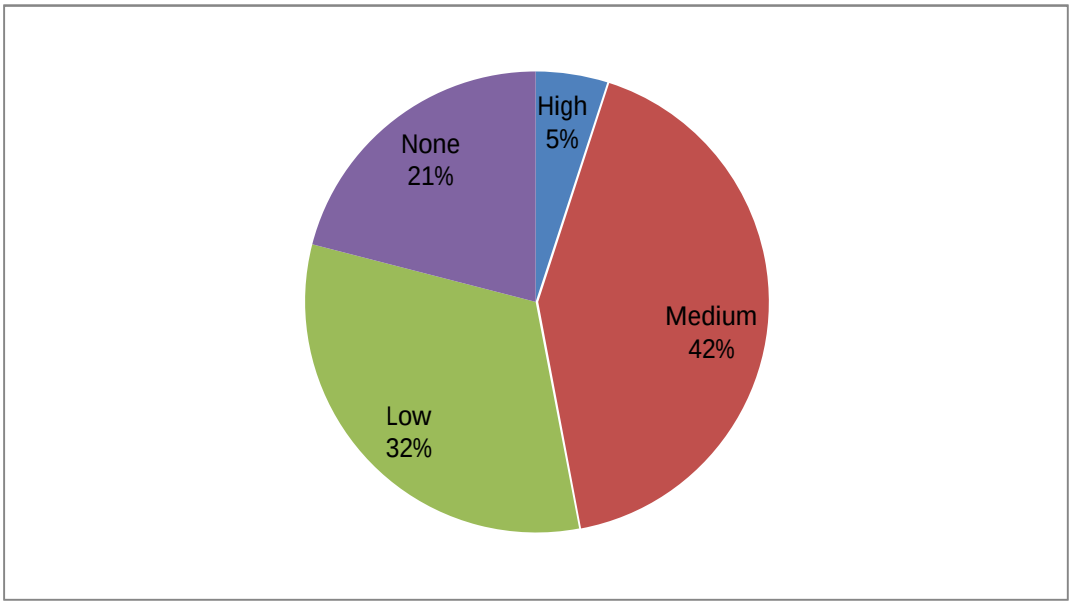
5.4.3. The Perspective of Industry toward the Imposition of Environmental Taxes

As discussed in the previous chapter, several local taxes prescribed in Law No. 28 of 2009 fall within the category of environmental taxes. These taxes are imposed on either individuals or industries at local levels. The discussion in chapter 4 indicated that a number of environmental taxes in the 2009 Law concerning local taxes and charges are not properly designed to alter taxpayers' behaviours which are represented by a loose linkage of tax bases and rates with environmental externalities. Presumably, the effect of this policy to taxpayers may not be significant in practice, which is definitely correlated to environmental outcomes. It is therefore important to ascertain the imposition of environmental taxes from the perspective of industrial taxpayers, as to whether it is effective to control their emission discharges.

Starting with a question as to types of environmental taxes that the surveyed industries paid, the responses were varied depending on their operational sectors. Motor vehicle related tax, fuel tax, street lighting tax, underground water tax and surface water tax were opted by industries in textile manufacturing, food and beverage as well as handicraft sector. On the other hand, mining industries admitted to paying motor vehicle related taxes, street lighting tax and tax on exploitation of minerals category non-metal and stone. Slightly different to the mining sectors, metalworking industries have paid motor vehicle related taxes, fuel tax, street lighting tax and underground water tax. Compared to other types of environmental taxes in the 2009 Law, motor vehicle related taxes, fuel tax and street lighting tax were opted by all sectors of industries in the survey. This means these three categories of environmental taxes may have a significant effect in altering industry's behaviours if properly planned and enforced.

Despite the fact that the industries surveyed recognised the aforementioned taxes and were fully aware of their tax responsibilities, most of them (53%) claimed that the relevance of any local taxes with the environment were little to none. Conversely, another 42% of industries considered that those local taxes only have adequate relevance to the environmental management at local levels, whereas 5% of them believed that the relevance is high as seen in figure 13. Options of low/none relevance indicated that environmental taxes in the 2009 Law have failed to send the right message to industries. They did not realise the importance of these taxes as one of instruments to manage the environment. This may be related to the fact that the primary rationale of these taxes is as revenue generated instrument.

Figure 13. Industries' Perspectives toward the Relevance of Local Taxes in Law No. 28 of 2009 with Environmental Management at Local Levels



Source: Field Research, 2012

Compliance to the aforementioned taxes is very important, but it may trigger additional costs in the operation of industries. There is not much difference in responses derived from the surveyed industries. The percentage of industries (53%) opted that any taxes that they paid had created additional costs were almost similar to the percentage (47%) of those that stated no generating an additional cost in their production processes. The reason for the 'yes' option was very similar among other industries that selected this preference. As any other imposed taxes, the compliance to environmental taxes in the 2009 Law brought a consequence of increasing costs in their operation. If the payment of taxes were not included in the production costs, it may decrease the profit. Those that opted 'no' gave their opinion on the basis the level of relevance between those taxes and the production of goods. Most of them claimed that the payment of the aforementioned taxes did not have any relevance to production processes, so it did not affect the operational costs.

Experiences from other countries show that revenue from environmental taxes is sometimes given back to industries either to facilitate research and development or to encourage any action to reduce emission discharges. In the case of environmental taxes in Indonesia, there are two different policies concerning the use of revenue. Revenue

from some taxes will gather in the general budget and will be used to fund government expenditure, while for some other taxes, the revenue is earmarked for specific purposes. However, this revenue earmarking is not aimed at facilitating industries to install treatment facilities for their waste/discharges. Revenue is allocated to purposes that are closely linked to the payment of taxes, e.g. revenue from motor vehicle tax is allocated to road maintenance and construction. From the responses obtained, the majority of industries (92%) in the survey were aware of this policy. They stated that no refund or subsidy from the payment of environmental taxes was received to assist them in managing their waste/discharges.

It is worth noting that there are other government levies that should be taken into account in the operation of industries. For example, a nuisance permit fee is imposed to activities carried out by individuals or entities which deem to cause threats of danger, losses, and/or disturbance to public health, safety and the environment. The presence of several levies related to business activities aims to minimise the potential risk that may occur to the public and the environment. The survey revealed that most of industries (65%) have paid other levies related to their businesses, while the remainder (35%) stated no other payment was made. Types of levies that most industries in the survey paid are local charges (such as nuisance and waste disposal fees) as well as environmental permit levies. These payments are in line with existing laws and regulations concerning local charges, environment and waste related management.

The implementation of environmental taxes is not without problem. On the taxpayers' side, there is always a natural resistance toward the imposition of tax policies. This opposition may be triggered by a number of factors. The survey indicated five non-satisfactory factors which were selected by industrial taxpayers in the implementation of environmental taxes. The surveyed industries could have chosen more than one of the provided options based on their experiences. The first non-satisfactory factor which received a great number of preferences (n=46) was untrustworthy issues related to the use of tax revenues, followed by the option (n=24) of no apparent real benefit. The other three options, namely: complicated payment procedure, lack of constitutional capacity and no penalty imposed for non-compliance, had the least responses (11, 9 and 6 respectively). These non-satisfactory factors were in fact very typical problems in the

implementation of tax policies. Environmental taxes in the 2009 Law are merely seen as a classic tax policy with a primary objective to raise revenue. Taxpayers in this case may have the same picture on how this policy would be likely to end up.

Table 7. Non-Satisfactory Factors in the Implementation of Environmental Taxes

Non-Satisfactory Factors	Number of Responses
Complicated payment procedure	11
Untrustworthy issues related to the use of tax revenues	46
No penalty imposed for non-compliance	6
No real benefits appear	24
Lack of institutional capacity to implement the above taxes	9

Source: Field Research, 2012

The imposition of environmental taxes at local levels is covered by Law No. 28 of 2009 and its implementing regulations. Compliance to these legislations is mandatory. Hence, it is important to understand the most effective option taken by industries in complying with environmental tax policy. A large majority of industries (68%) believed that the most effective option to comply was by way of paying environmental taxes regularly, while others (32%) preferred an option of paying environmental taxes regularly while controlling pollution. The first option indicated that environmental taxes in the 2009 Law are seen and treated as a regular tax policy. These policies eventually do not have a strong influence on taxpayers' economic decisions. This finding corresponds with the discussion in chapter 4 which highlighted the fact that environmental taxes in the 2009 Law are purely designed to generate revenue instead of achieving environmental goals.

In line with the above findings, most surveyed industries (62%) stated that the effectiveness of environmental taxes in managing the environment was quite low. This proportion comprised about 54% of industries that rated ineffective and another 8% that considered that environmental taxes were very ineffective. Conversely, 31% of

industries claimed that, to some extent, the imposition of environmental taxes was effective. Only 7% believed that the effectiveness of these instruments was very high. Even though this is just a small proportion, the latter finding is surprising. This is due to the fact that industries do not receive any benefit from the payment of environmental taxes. Even a representative of industrial sectors claimed that the role of environmental taxes was less obvious and industries so far did not realise this role.[666] In this case, environmental taxes seem to fail in altering behaviours. Most industries perceived that taxes are compulsory, but are not a major driver to take emission reduction measures.[667] Controlling the pollution was done due to the presence of environmental laws and regulations; however, most of industries are unlikely to maintain this activity after obtaining their business permit.[668] The major driver to consistently manage their waste/discharges or to keep environmental friendly products is a demand from international markets.[669] Therefore, it can be reasonable to assume that the performance of environmental taxes in practice is less significant compared to the requirements of the international market.

5.4.4. The Expectation on the Future Policy of Environmental Taxes

As discussed, environmental taxes in the 2009 Law do not reflect the right price signal to taxpayers to alter their behaviours. It may require a reform to improve environmental management while also generating revenues. The rate adjustment is one approach to achieve this effect in practice. It is expected that by increasing the rate, the presence of an environmental tax could encourage taxpayers to manage pollution or discourage overconsumption of polluted products and resources. To find out whether industries would react as expected if the rate was adjusted, the question concerning this topic is asked in the survey. From the responses obtained, there were no substantial differences in percentage between industries that selected 'continue to pay the prescribed tax' and

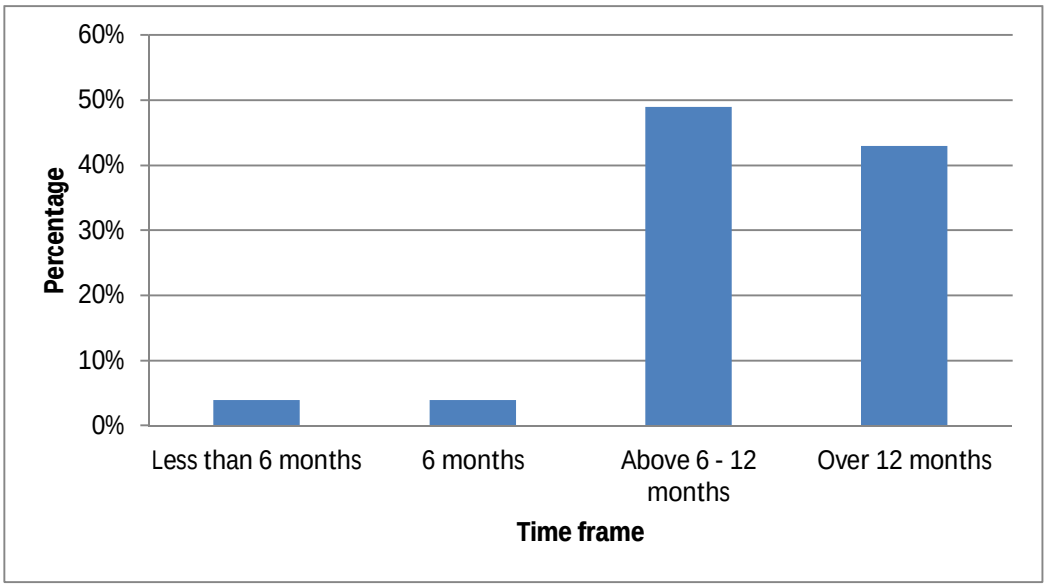
[666] Interview with Interviewee 10, the officer of the *ASMINDO – Asosiasi Industri Permebelan dan Kerajinan Indonesia* [Indonesia Furniture Industry and Handicraft Association] (Yogyakarta, 6th October 2012).
[667] Ibid.
[668] Ibid.
[669] Ibid.

those that much prefer to treat more pollution so that the payment of taxes will be reduced. The first option was selected by 47% of industries, whereas another 43% chose the second one. Planning to switch/to substitute to less polluted products seems the least preferable option. It received only a 10% response from industries in the Special Province of Yogyakarta. Seemingly, the rate adjustment has had a sufficient influence on industries in controlling emission/discharges. The total percentage of industries (about 53%) preferred to manage their degree of pollution or consumption instead of paying environmental taxes per se. By doing so, they expect that their tax payments could be reduced significantly.

Phasing in a tax policy is not easy, whether it be environmental or otherwise. There are number of factors that may influence public acceptability toward the implementation of a tax policy. In the case of environmental taxes, the OECD noted that public acceptance might be improved by gradual implementation of the policy.[670] A key word in here is 'gradual' which means the government should apply the new policy in stages. Therefore, the timing is very important as it plays a significant role in gaining public acceptability toward the proposed scheme. The survey revealed that industries require sufficient time to adapt to the tax rate adjustment scenario. The required time for adaptation was varied. Forty nine percent (49%) of industries needed more than 6 to 12 months to settle in, while 43% of them required over 12 months preparing and planning their strategy. Another 8% seems ready to face an increasing rate of environmental tax in a relatively short period, either less than 6 months or in exactly 6 months. These responses actually reflected a great expectation toward proper timing given by governments so as to allow industries to take on the early stages of preparation. A rapid adjustment may lead to rejection and disruption. Hence, it may result in termination of such a policy.

[670] See OECD, 2006, above n 11, 153.

Figure 14. The Expected Time-Frame for adapting with New Policy



Source: Field Research, 2012

There are number of possibilities in the use of revenue generated from environmental taxes. Revenue can be used for financing government expenditures or it can be earmarked for specific purposes.[671] Further possibilities are to use revenue from environmental taxes for compensation options and also for reducing existing tax distortions.[672] The World Bank highlighted that none of these provided options is flawless; hence, a case by case evaluation is needed.[673] In the survey, the use of revenue is questioned in order to understand the expectations of industries. The responses were diverse, as each industry surveyed could have ticked more than one option. A considerable number of responses went for two options. The first with 27 responses was the allocation of revenues for specific government programs depending on the imposed taxes, while the second majority (21 responses) went to an option using revenue from environmental taxes to fund education for raising environmental awareness among industries. Meanwhile, the allocations of revenue for government spending and for environmental projects done by governments were in third and fourth positions with nearly the same number of responses: seventeen (17) and fourteen (14) respectively. The last option preferred was the use of revenue for pollution control projects done by

[671] See OECD, 2006, above n 626; World Bank, 2005, above n 626; Barde, 1997, above n 626.
[672] See OECD, 2010, above n 627; World Bank, 2005, above n 627.
[673] World Bank, 2005, above n 349, 25 – 26.

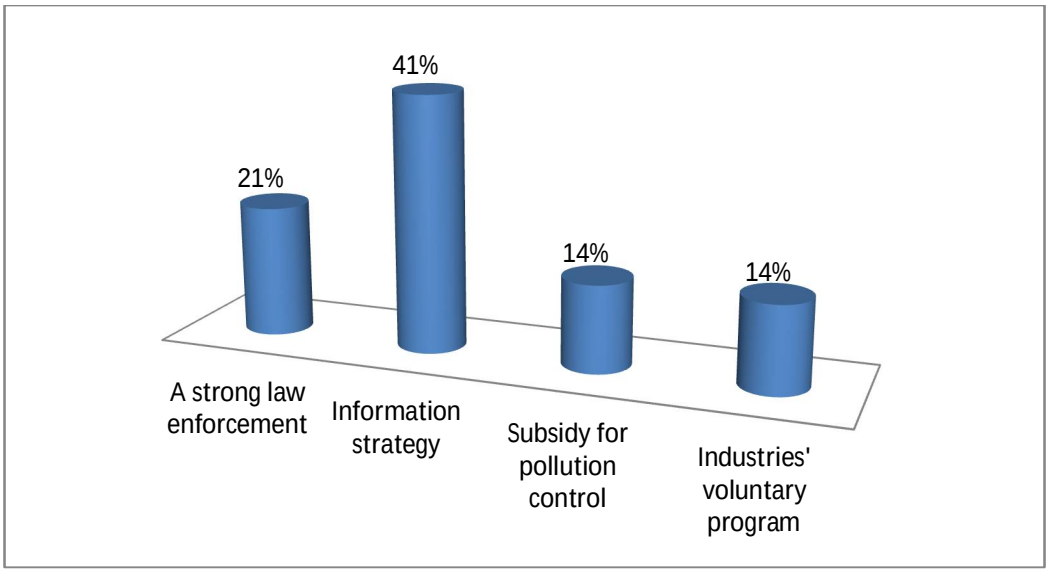
industries, with only 9 responses. None of industries selected the distribution of revenue for improving capacity building of government agencies.

The above finding indicates that the expectation of industries is basically the same as the existing theories in the use of revenue from environmental taxes. However, preference is given to options with revenue earmarked for specific uses. This option is already covered by the existing law on local taxes and charges. The concept provided in the law is partially earmarked for some of the revenue generated through several environmental taxes. Although it is contradicts the conventional wisdom of taxation, this partial earmarking offers gain for the public acceptance toward the imposition of environmental taxes. Note that the compensation option has a low preference compared to others. In this case, only a few responses were received for the use of revenue to facilitate the pollution control projects. This means there is only a small expectation from industries to get a refund from the environmental taxes that they paid for taking the emission reduction program. Perhaps industries perceive that existing environmental taxes are not directly correlated with their production processes. Therefore, most preferences are given to earmarking and educational options for industries.

Either environmental taxes or other instruments such as direct regulation and information strategies are not flawless. Each of them has strengths and weaknesses. Therefore, no single instrument can be performed well in addressing environmental problems without any support from other instruments. Many researchers already have recognised the importance of combining one instrument with another to achieve the effectiveness in practice (e.g. Goulder & Parry, Gunningham & Sinclair). Experiences from other countries also highlighted the fact that mixed-instruments were proven to function effectively in abating pollution. For example, a licensing fee is combined with a control and command (CAC) instrument to address the water pollution problem in Malaysia caused by palm oil mill effluent. In the context of environmental taxes in Indonesia, it may be important to consider the concept of mixed-instruments in future schemes. Thus, a question related to mixed instruments is asked to industries in order to understand their expectation concerning this issue. From seventy six industries surveyed, 42% of them stated that the effectiveness of environmental taxes will be increased by combining it with an information-based strategy, while about 21% of industries selected the

enforcement of environmental law as a complementary combination. The opinion of the other (28%) industries were distributed equally to those (14%) that selected a subsidy option and to those (14%) that believed industries' voluntary programs was the best combination to ensure effectiveness.

Figure 15. Instruments to combine with Environmental Taxes



Source: Field Research, 2012

As demonstrated in the survey, the majority of industries considered that an information strategy will ensure the effectiveness of environmental taxes in practice. This actually corresponds to the theory of mixed-instruments presented by several researchers.[674] The effect of the combination between these two instruments is positive. Environmental taxes require an information strategy to encourage changing behaviours and in turn the information strategy needs tax instruments to increase its reliability.[675] Another instrument that is seen to be inherently compatible with environmental taxes is a control and command instrument (CAC). In theory, to achieve the mutual combination of both CAC and environmental taxes, they should be targeted at different parts of environmental problems[676]; otherwise, the effect will be counterproductive. However, in most cases an environmental tax is used to supplement the CAC instrument. In other

[674] See Goulder and Parry, above n 170; Gunningham and Sinclair, above n 165; Barde, 1994, above n 26, 15.
[675] Gunningham and Sinclair, above n 165, 55; OECD, 2006, above n 11, 164.
[676] Gunningham and Sinclair, above n 165, 59; OECD, 2001, above n 32, 40.

words, regulatory/CAC is considered as the primary instrument to address environmental problems. This is in fact aligned with the expectation of governments and public in Indonesia toward the mixed-instrument which definitely gives more clout to regulatory instruments in dealing with environmental problems.

Other than the above responses, there were number of suggestion given by industries on how to improve the existing scheme of environmental taxes. It appears that most suggestions referred to previous questions concerning non-satisfactory factors in the implementation of environmental taxes at local levels. Simplifying tax procedures and having real benefits are found to frequently appear in the completed questionnaires. If this finding is contrasted to responses on non-satisfactory factors, they are interrelated. No real benefits brings about the suggestion to make benefits from environmental taxes much more clear and visible, while complicated payment procedures leads to the view to improve tax administrative by simplifying the tax payment system. In addition, industries have a concern on the primary objective of environmental taxes. They perceived that the objective of existing environmental taxes is merely revenue-raising. It is suggested to clearly link the aim of existing taxes to environment related problems that the tax is supposed to address. Another suggestion was related to the reduction of corrupt practices in Indonesia's tax bureaucracy. This issue contributes to a growing scepticism in the society to tax officials' performances

5.5. Conclusion

The Special Province of Yogyakarta is one region in Indonesia which implements Law No. 28 of 2009 covering provisions to taxes that have environmentally relevant tax-bases. Basically, all types of environmental taxes in the 2009 Law, particularly for industries, are levied in this province and its district/city. They are fuel taxes, motor vehicle taxes, taxes on the transfer of motor vehicle ownership, surface water taxes, ground water taxes, taxes on non-metal mineral and rock, street lighting taxes and swallows nests' taxes. According to tax policymakers, these taxes could be used to discourage polluting behaviours as the bases are deemed to be linked to the environment. It is therefore reasonable to assume that the aforementioned taxes may play a significant role in

preventing adverse impacts to the environment caused by polluting activities, particularly at the local level.

To some extent, environmental taxes have contributed to the improvement of environmental outcomes in the region. Revenue from these taxes is gathered in the local budget and used to finance government expenditures including spending in the environment sector. A case study in the Special Province of Yogyakarta highlighted an increasing trend of revenue raising from environmental taxes both in the province and districts/city levels for the last three fiscal periods (2009, 2010 and 2011). The revenue generated was quite high during these years. However, it was not targeted for the environment per se. There are other crucial programs from different sectors that also need sufficient funding. As a consequence, the share of revenue for the environment was less than obtained. The limited funding in this case may affect the performance of environmental agencies in managing the environment. The fact that provincial governments took an initiative to allocate a portion of revenue for environmental purposes, brought loads of assurances for improving the quality of environment in the regions. Yet, little evidence of action is available. Pollution in this region is still increasing due to the growth of business/economic activities. Lack of awareness in managing emission/discharges is indicated as one obstacle, among others, that instigates environmental degradation.

The survey confirmed the above problem. The level of industries' awareness to manage their waste/discharges is generally low. All surveyed industries already recognised by-products from their production processes. However, most of them (over 50%) admitted that they did not undertake any measures yet to manage their emission/discharges. This is actually in contrast with their understanding to provide any treatment facilities as required by the laws. The majority of industries (70%) stated that they acknowledged their responsibilities concerning the requirement of treatment facilities. Similar findings have occurred in respect of the industries' awareness toward licensing requirements and non-compliance effects. Most of them were fairly aware of these aspects provided by the laws. Unfortunately, better understanding of regulatory requirements is not accompanied by a high level of awareness in managing industrial discharges.

Another environmental policy, environmental taxes in Law No. 28 of 2009, fails to encourage industries to take emission reduction measures. This is due to the fact that the underlying rationale of these taxes is merely revenue-raising. As a consequence, fiscal benefits are more likely to appear than environmental benefits. These features have been recognised by the surveyed industries. Most of them perceived that environmental taxes in the 2009 Law have a little or even no relevance, with the environmental management in the regions. It appears that these taxes are seen as revenue generated instruments. Industries are aware of their tax liabilities, but environmental taxes are not considered as the major driver to control pollution. In other words, none of environmental taxes have a strong influence on industries' economic decisions. Therefore, a reform is needed to ensure the improvement of environmental benefits in the region while also providing sufficient revenue specifically for supporting enforcement activities.

CHAPTER 6

CONCLUSION

6.1. Introduction

The thesis aims to develop a framework for sustainability by using tax instruments as one of the environmental policies in Indonesia. This chapter not only summarises the findings from this study, but also proposes a framework as previously stated.

This concluding chapter is divided into two main parts. The first part is the summary of finding from the previous chapters. This is contained in section 6.2 of this chapter which highlights the theory and practices of environmental taxes, and it is broken down into two sub-sections. The first sub-section (6.2.1) underlines the experiences of developed and developing countries in the use of pricing instruments to address pollution. This sub-section is the reflection of the findings in chapters 2 and 3. Experiences of these countries are crucially important to provide an understanding of the theoretical concept, challenges in implementation as well as strategies that have been made to encounter the problems. The second sub-section (6.2.2) specifies the contemporary experiences of Indonesia in the imposition of environmental taxes. The discussion in this sub-section is based on the two main research questions of this study, which have already been addressed in chapters 4 and 5. It underlines deficiencies in the relevant legislation and outlines the actual contribution of these tax instruments to the environment.

The second part of this chapter (6.3.) presents propositions to improve environmental sustainability in Indonesia through pricing instruments. Restructuring the existing scheme of environmental taxes is the first proposed framework that is discussed in sub-section 6.3.1. This is followed by a discussion of fuel subsidy reform in sub-section 6.3.2 as the second best option. The latter is better-suited to the conditions of Indonesia within in the foreseeable future. The step toward fuel subsidy removal has already been undertaken by the government of Indonesia, which will eventually have positive effects for achieving environmental sustainability.

6.2. Environmental Taxes between Theory and Practice

6.2.1. Experiences of developed and developing countries

The concept of an environmental tax has been developed considerably over the last two decades. It is well established that taxes can be used to address market failure by taking into account environmental impacts into the prices of goods. The first concept of an environmental tax proposed by Pigou in 1920 is actually the best one as an imposed tax should incorporate the full social cost of a market activity.[677] If the marginal social cost of negative externalities is accurately set, a tax will effectively alter polluters' behaviours. However, difficulties in measurement and monitoring led to the concept being impractical. In the 1990s and 2000s, the concept has been broadened to not only include the pure emission tax (pigouvian tax), but also to cover a tax on a proxy of emissions or on polluting products.[678]

As most countries have become increasingly concerned about the occurrence of environmental degradation and sustainability, the concept of environmental taxes is gaining momentum. A growing interest towards the use of an environmental tax is due to the cost effectiveness of this instrument to reduce pollution. The objective of this tax is likely to be achieved at least cost when it is set at a proper level. An environmental tax in this case allows polluters to decide how to reduce their polluting activities. This distinctive feature leads countries, specifically in the developed world, to consider the use of this tax instrument to varying degrees. Most European countries have implemented environmental taxes, while others including the USA intend to do so.[679] In the case of European countries, Denmark, Finland, Norway, Sweden and the Netherlands are leading the way in imposing various types of environmental taxes from emission taxes to indirect ones such as a tax on energy and transportation.

As discussed in chapter 2, the classification of environmental taxes is derived from the definitions provided by the OECD and the European Commission. Environmentally

[677] See Chapter 1 (Section 1.1.) and Chapter 2 (Section 2.2.).
[678] See Chapter 2 (Section 2.2.).
[679] See Chapter 2 (Section 2.3.).

relevant tax bases are the key feature for categorisation. There are four broad categories of environmental taxes, namely: taxes on energy products, motor vehicle related taxes, waste related taxes and others. The latter type is intended to capture all taxes that have environmentally relevant tax bases, but cannot be included in the three former brackets, e.g. taxes on measured or estimated emissions or taxes on natural resources. The OECD database highlighted that the majority of environmental taxes in member countries is levied on energy products and motor vehicles, while the imposition of emission taxes (including those in the 'others' category) are quite small in proportion.[680] It was estimated in 1995 that about 90% of revenue from environmental taxes was derived from taxes on fuel and motor vehicles, and this fraction had remained the same in subsequent years.[681]

Despite growing interest in the use of environmental taxes in developed countries, the contribution of these taxes to the environment is somewhat unclear. Environmental taxes are seen to be effective in achieving environmental benefits if they encourage changes in polluters' behaviours. This actually refers to the function of tax bases and rates which should incorporate any negative externalities from economic activities. In some European countries, such as the United Kingdom, Turkey, the Netherlands, Norway and Portugal, the rates of environmental taxes are relatively high and the bases linked to relevant externalities. The imposition of fuel and motor vehicle taxes in these countries are the most prominent examples. However, insufficient evidence is available as to whether the higher level of these taxes affects behaviours, with the exception of Turkey. The success of fuel taxes in this country in altering behaviours is acknowledged. Turkey has imposed a higher level of tax on petrol than on diesel or LPG. As a consequence, consumers are switching from petrol based vehicles to diesel or LPG-fuelled vehicles.[682] This can be contrasted with the experiences of Canada and the USA. These countries have levied lower rates on petrol and diesel compared to European levels. Although less data is available, the existing level of gasoline taxes in Canada and the USA is unlikely to encourage changes in fuel consumption.

[680] Ibid.
[681] Ibid.
[682] Ibid.

Existing environmental taxes in developed countries represent the eagerness of governments to find ways to address a wide range of environmental issues. However, the magnitude of these instruments to achieve environmental sustainability is still insufficient. Most of the imposed environmental taxes are indirect ones which only affect changes in consumption and production but do not provide incentives for polluters to take emission reduction measures.[683] In practice, a pure emission tax is rarely imposed as most countries in developed economy tend to control emissions on air, land and water with direct regulations.[684] In addition, a number of exemptions and refund mechanisms have been included into the scheme of environmental taxes. Although these mechanisms are intended to reduce the effect of environmental taxes on competitiveness and distribution of income, their presence is detrimental to the effectiveness of existing tax instruments.[685] It is therefore suggested that the use of exemptions and refunds in the imposition of environmental taxes be limited, except when they encourage the utilisation of various environmentally friendly products.[686]

Environmental taxes are not flawless and there are hindrances to their adoption in every country. In developed economies, there are four major problems which may hinder the imposition of environmental taxes in practice, namely: competitiveness, income distribution, administrative cost and public acceptance.[687] As discussed in chapter 2, the OECD continues to develop strategies which may potentially alleviate their impact. For example, the distributional effect of environmental taxes can be tackled by targeting tax relief directly to lower income households instead of reducing the rate of tax for these groups.[688] This strategy would not counteract the effectiveness of environmental taxes in altering behaviours. The use of revenue from environmental taxes could also be used to alleviate the aforementioned problems. In most OECD countries, revenue from environmental taxes is used to reduce other taxes, such as on income, so that the burden

[683] Ibid.
[684] Arik Levinson, 'Taxes and The Environment: What are Green Taxes?' (Tax Policy Centre, 31 July 2007) <http://www.taxpolicycenter.org/upload/Elements/II11KEYELEMENTS_TAXESANDtheEnvironment.final.pdf> 1.
[685] Chapter 2 (Section 2.4.).
[686] Ibid.
[687] Ibid.
[688] Ibid.

of tax can be balanced.[689] This option could not only address the distributional problem but also enhance public acceptance towards the imposition of environmental taxes.

In addition to such strategies, the negative effects of environmental taxes can also be rectified by combining them with other instruments. However, careful consideration is needed in selecting various instruments that are compatible with environmental taxes. Incompatible mixed-instruments may lead to ineffectiveness. In theory, environmental taxes are best combined with information strategies and command and control (CAC) instruments. An example of a mixed-instrument between an environmental tax and information strategy is when a labelling system is given in the case of electricity consumption. Energy-efficiency labels for appliances provide information to consumers (individuals and industries) to make better choices, while a tax on the use of electricity would drive them towards using more energy efficient appliances.[690] Meanwhile, environmental taxes could be mutually combined with CAC instruments in a number of cases. For example, many governments in OECD countries combine taxes on sulphur dioxide with regulations on sulphur content in fuels to address air pollution at local levels.[691] The lesson learnt from these cases is that the possibility of an environmental tax successfully achieving its target is much larger when it is combined with other instruments than employed single-handedly. The mutual combination can underpin the strengths and lessen the weaknesses of each instrument. Therefore, environmental taxes combined with another instrument would be more politically acceptable to relevant stakeholders.

Similar to developed countries, developing economies have also embraced various pricing instruments to address environmental degradation. Focusing on the experiences of Malaysia, China and India in the use of pricing mechanisms to deal with industrial pollution, lessons can be learnt on implementation problems and strategies. These three countries have all attempted to manage pollution from industries over the years. As with other countries, Malaysia, China and India have relied greatly on regulatory instruments to address pollution problems. The pricing mechanisms that were introduced in 1970s seem to have been used supplementary to the regulatory ones. It is also worth noting

[689] Ibid.
[690] See Chapter 2 (Section 2.5.).
[691] Ibid.

that the pricing instruments in Malaysia, China and India have different labels to recognise them either as a fee, levy or tax. Using the concept of environmental taxes and their distinctive features identified by the OECD, this study revealed that the pricing instruments in these three countries fall within the classification of environmental taxes and user charges. The fee for palm oil mill effluent (POME) in Malaysia, a clean energy cess in India and the pollution levy system on air emission, wastewater discharges, solid waste and noise in China can be categorised as environmental taxes, while a cess for the use of water in India can be considered a user charge. The importance of this classification is to understand the legal distinction between taxes and charges which may affect the design and implementation of these instruments.

In Malaysia, palm oil mill effluent (POME) from the production processes of crude palm oil (CPO) industries has been identified as the major source of water pollution. To address this problem, the licensing fee was introduced in 1977 and it was developed as part of effluent standards.[692] The objective of this instrument is clearly set in the relevant Act and regulations to abate and control pollution. The first year of the implementation of the fee system failed to achieve its environmental goal. It was evident that the rate was too low to encourage CPO industries to comply with the applicable standard. However, instead of increasing the rate, the Department of Environment (DoE) made the effluent standard more stringent and obligatory. Harsh sanctions for non-compliance were imposed, ranging from suspending the license to shutting down industries. As a result, in 1989 the pollution load from palm oil mills fell considerably (by approximately 85% of the daily Biological Oxygen Demand (BOD) load discharge).[693] The imposition of the fee system has had a great impact on palm oil industries, increasing the burden of them to take pollution control measures. In this case, the Malaysian government provides an exemption either fully or partially for affected industries under the condition that these industries initially undertake research on effluent discharges. In 2006, the DoE made the BOD standard more stringent. [694] Palm oil industries were required to meet a BOD standard of 20 parts per million (ppm) to discharge into the watercourse.[695] In some sensitive areas, the DoE even limited BOD discharge from palm oil processing to a zero

[692] See Chapter 3 (Sub section 3.2.1.).
[693] Ibid.
[694] See Chapter 3 (Sub section 3.2.3.).
[695] Ibid.

emission requirement.[696] The stringent standard of POME has driven some oil palm industries to work together with research institutions and manufacturing companies to acquire advanced treatment technologies.[697] The use of a strict effluent standard and fee scheme in Malaysia has evidently been sufficient to address the relevant pollution concern.

Similar results have also been seen in the imposition of a pollution levy in China. The pollution levy system was introduced in 1979 on an experimental basis and in 1982 was applied nationwide. This instrument is a comprehensive one and covers potential pollution from five different areas, including air pollution, wastewater discharge, solid waste, noise and low level radioactive waste. The target group of the pollution levy is industries that emit pollutants exceeding the national standard. This leads to the levy effectively working as a non-compliance fee. In the 1990s, the pollution levy was modified and imposed on the basis of pollutant volume. Industries have sufficiently responded to the imposition of the levy system. This is demonstrated by a gradual decrease in the amount of air and water pollutants for the period 1987 – 1993 in almost all provinces in China.[698] However, the reduction of pollution was not caused merely by the application of the levy in combination with a CAC instrument, but also by pressure from the community to achieve the environmental goal. In spite of the gradual decrease in pollution and the reforms made to the pollution levy system in 2003, challenges in its implementation remain. As discussed in chapter 3, there are two major problems that hamper the effectiveness of the levy, namely conceptual and institutional problems. Due to these problems, the Chinese government proposed to implement an environmental tax for addressing industrial pollution in 2011. This proposed tax aims to discourage polluting industries by levying fees on the discharges of sulphur dioxide, sewage and other contaminants.[699] A tax on carbon emissions is excluded in this proposal due to the wariness of the Chinese government to amplify the burden on industries in a difficult

[696] Ibid.
[697] Ibid.
[698] See Chapter 3 (Sub section 3.3.2.).
[699] Jonathan Watts, 'China to Impose Green Tax on Heavy Polluters', *The Guardian* (online), 4 February 2011 <http://www.theguardian.com/world/2011/feb/04/china-green-tax-polluters>.

period for the domestic, and world, economy. However, the implementation of a carbon tax is still on the agenda as China has conducted a number of studies pertaining to it.

In India, pollution from industrial activity contributes to the degradation of water and air quality. Despite the approach for minimising pollution in India being mostly based on command and control (CAC) instruments, there is also a recognition of the need to use pricing instruments. For managing water pollution, the first green pricing instrument was the water cess. This instrument was introduced in 1977 to limit the consumption of water by domestic and industrial users. For industries, the cess is payable at specific rates based on the purpose of water consumption for industrial processing. However, the water cess is primarily aimed at generating revenue instead of limiting water consumption by industries. Most of the revenue raised from the cess is given back to the State Pollution Control Board (SPCB) to support their function as the supervisory agency in the imposition of this instrument. Unfortunately, cess revenue has been misallocated. Instead of backing up the SPCB's performance, the revenue is used for administrative expenditure. Added to this problem are conceptual and institutional drawbacks to the cess. The conceptual problem is the low rate of the water cess as it is insufficient to encourage industries to efficiently use water in the processing. Although the rate was adjusted in 2003, the problem remains the same and even the proposed reform in 2010 presented by the Ministry of Environment and Forest in India did not specifically address this conceptual problem. The institutional concern has led to the recommendation to empower the capacity of the SPCB through intensive training programs.

The importance of pricing instruments in controlling and preventing pollution in India is becoming more recognisable. In 2010, the Indian government introduced a clean energy cess to reduce greenhouse gas (GHG) emissions and to promote clean energy technologies.[700] This tax is levied at the rate of 50 rupees (US$1) on every ton of domestic or imported coal.[701] In the first year of implementation (2010 – 2011), the tax on coal was expected to raise about 30 billion rupees (US $660 million), and the revenue was directed towards the National Clean Energy Fund (NCEF).[702] This fund was created to

[700] Chapter 3 (Sub section 3.4.1).
[701] Ibid.
[702] Ibid.

finance research and development of renewable energy.[703] In fact, the annual revenue from the coal tax has grown significantly in just two years of implementation, reaching almost US$1 billion.[704] This revenue is used not only for financing research and development related to the reduction of GHG emissions, but also for cleaning up the 10 most polluted sites in India.[705] By levying a coal tax, India has taken a significant step in participating in global efforts to address climate change. This tax not only has a positive effect on the environment but also provides considerable revenues to fund government programs, such as the development of cleaner technologies and environmental cleaning up. The success of this tax will likely stimulate other developing countries to carry out the same action in controlling pollution through the use of pricing mechanisms.

The above experiences of Malaysia, China and India highlight that both developed and developing countries have searched for alternative instruments that are cost-effective in achieving environmental gains. Many countries therefore have considered the use of environmental taxes and user charges as market based instruments (MBIs), which theoretically provide a market signal to alter polluters' behaviours. In this sense, taxes and charges allow individuals and industries to decide the lowest cost way to reduce pollution. Despite providing a low-cost solution, challenges in the implementation of environmental taxes are many and differ among countries. In developed economies, competitiveness and distributional effects on income can be significant issues, whereas conceptual and institutional concerns are obstacles that developing countries must address. In both developed and developing countries, various policy strategies have been proposed to overcome these problems. However, it is important to note that environmental taxes should rarely be used as a substitute for regulatory instruments. The experiences of both developed and developing countries suggest that environmental taxes are more likely to achieve successful outcomes when they are combined with other instruments.

[703] Ibid.
[704] Ibid.
[705] Ibid.

6.2.2. Experiences of Indonesia

As any other country, Indonesia has also experimented with the use of taxes to discourage polluting activities for the last two decades. Beginning in 1997, the enactment of the first law on local taxes and charges (No. 18/1997) built momentum for the imposition of environmental taxes. This law contained several types of taxes that fell under the features of environmental taxes. Using taxes for disincentive purposes in fact does not contradict the environmental laws.[706] However, the role of these tax instruments in managing pollution is barely recognised. This study therefore evaluates and examines existing fiscal policy related to environmental taxes as well as the practical contribution of these instruments to the improvement of the environment at local levels.

This study examines whether the coverage of environmental tax legislation in Indonesia adequately addresses environmental protection issues. In response to this first main research question, a normative approach is used to ascertain deficiencies in the relevant law that may contribute to the ineffectiveness of environmental taxes in practice. Based on discussion in chapter 4, the current environmental taxes in Law No. 28 of 2009 are far from sufficient to manage the environment. This is due to flaws in the design of existing policy. Two main parameters for effective environmental taxes – the base and rate – do not reflect related externalities which lead to insufficient level of taxes to stimulate changes in behaviour. In addition, the presence of a subsidy for fuel products has worsened this condition by encouraging excessive consumption.

An environmentally relevant tax base is a distinctive feature of environmental taxes. It can be used to categorise such taxes as to whether they fall within the label of environmental taxes. As discussed in chapter 4, this study revealed that a number of taxes in Law No. 28 of 2009 can be classified as environmental taxes. There are four provincial taxes that have been identified as having environmentally relevant tax bases, namely fuel taxes, motor vehicle taxes, the tax on the transfer of motor vehicle ownership, and the tax on surface water.[707] At the district/city level, from eleven (11)

[706] See Chapter 4 (Section 4.2.). Law Number 4 of 1982 concerning the Environment was amended by Law Number 23 of 1997 concerning Environmental Preservation. The first amendment is replaced by Law Number 32 of 2009 concerning Environmental Protection and Preservation.
[707] See Chapter 4 (Sub Section 4.3.2.).

types of local taxes only four of them have characteristics as environmental taxes.[708] These are the street lighting tax, groundwater tax, the tax on non-metal mineral and rock as well as the tax on swallows' nests. The potential impacts of these taxes are varied. The use of fuels is correlated with carbon emission, which has an adverse impact on the environment and to people's health. In Indonesia, fuels are also used to activate motor vehicles and generate electricity. This means that higher consumption of vehicles and electricity results in the higher pollutant release. Taxes on fuels, motor vehicles and street lighting (taxes on electricity consumption) are the prime candidates to fix the externality generated from the use of fuels, vehicles and electricity. Although the base of taxes on the transfer of motor vehicle ownership is not closely linked to the environment, the imposition of these taxes together with motor vehicle and fuel taxes may reduce the consumption of vehicles. Other taxes (surface water taxes, ground water taxes, taxes on non-metal mineral and rock, swallows nest taxes) are typical environmental taxes that are levied to activities which likely harm the environment. For example, an excessive exploitation of minerals and swallows nests would deplete these natural resources in the long run. Therefore, it is critical to manage the sustainability of these resources for future generations.

A further analysis on the base of the aforementioned taxes underlines the fact that most environmental tax-bases regulated in the 2009 Law do not represent related externalities. Theoretically, the base and rate of environmental taxes should be determined by encapsulating all negative externalities associated with the taxed object to ensure their effectiveness. For example, the base and rate of fuel taxes should be linked to potential externalities, such as pollution, traffic congestion and climate change. This consideration is not reflected in the relevant policy concerning environmental taxes. A fair link between the base and externalities is only presented by a few environmental taxes in the 2009 Law, such as taxes on motor vehicles, surface water and groundwater.[709] Other taxes seem to disregard this requirement, which may weaken the capability of taxes to achieve environmental gains.

[708] Ibid.
[709] Ibid.

The aforementioned environmental taxes are targeted to taxpayers, either individuals or entities. Industries are included into one of the targeted taxpayers depending on the type of business ownership. If it is a sole proprietorship, an industry will be considered an individual taxpayer. On the contrary, an industry is considered as an entity when the type of business ownership is either a partnership or corporation. This classification is important to determine the level of tax to be paid since the rate of several environmental taxes diverges between individuals and entities. For example, the rate of the tax on motor vehicles owned by individual taxpayers is progressive and much higher than those owned/operated by entities.[710] However, the rate is still too low to influence polluters' behaviours, regardless of the adjustment in 2009.

From all imposed environmental taxes, a fuel tax is the one that may have the most significant impact on industries. This is due to the reason that fossil fuels are an important resource for the Indonesian economy. Households and industries rely heavily on fuel products to support their activities, and transportation and electricity need fossil fuels to activate. As the Indonesian economy grows, the demand for transport and electricity will also increase. A World Bank report in 2009 highlighted that a relatively high proportion of the expenditure of households and industries goes to meet their demand for transport and electricity.[711] However, the increased use of fossil fuels in these two areas will have an adverse impact on the environment. It is predicted that fossil fuel-based emissions from the transport and energy sectors will be three fold higher in 2030 than the level in 2005.[712]

A tax on fuel products is an effective way to reduce consumption patterns and thus lower greenhouse gas emissions. Unfortunately, the imposition of a fuel tax in Indonesia may not induce altered consumption patterns simply because consumers do not receive the

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[710] See Article 6 of the *Undang-Undang No. 28 Tahun 2009 tentang Pajak Daerah dan Retribusi Daerah* [Law No. 28 of 2009 concerning Local Taxes and Charges] (Indonesia). For ownership a first motor vehicle, individuals will be charged between the lowest rate of 1 percent and the highest of 2 percent, while the rate for subsequent vehicles is levied progressively with the lowest being 2 percent and the highest being 10 percent. For motor vehicles that are owned by governments or used for public interest purposes, the rate is determined to be the lowest at 0.5% (zero point five percent) and the highest at 1% (one percent). For heavy and large equipment which are owned by big industries (corporations) and used for production processes, the lowest rate is at 0.1% (zero point one percent) and the highest is at 0.2% (zero point two percent).

[711] Leitmann et al, above n 401, 63.

[712] Ibid.

correct price signal. The level of tax is too little and does not reflect relevant externalities. This condition is exacerbated by the presence of a fuel subsidy. This policy keeps the fuel price low which therefore encourages the overconsumption of fuel products. As a consequence, the adverse effect of fuel consumption to the environment continues to exist. There have been attempts to reform the subsidy policy in Indonesia since 1998, and a price adjustment on fuel products occurred following the increase in world fuel prices. However, the increase in fuel prices was strongly opposed at the time and was followed by clashes and demonstrations. Political and social instability made government of Indonesia consider trimming back the fuel price prior to the adjustment. Accordingly, the presence of subsidy will not be easily removed. Despite the latest adjustment in 2013, it is estimated that the subsidy will account for about 13.3% of total government revenue this year.

The examination of the law covering environmental tax provisions in Indonesia highlighted several flaws in design, and these flaws may influence their implementation and effectiveness in practice. It is therefore important to uncover the contribution of environmental taxes to the improvement of environmental outcomes. As the law is imposed regionally, this thesis carried out a case study in the implementation of the aforementioned taxes in the Special Province of Yogyakarta. The study relied on an analysis of data from interviews and questionnaires with relevant stakeholders. The findings from this field work (2012) revealed that gains to the quality of the environment were few. This ineffectiveness is due to the failure of environmental taxes in the 2009 Law to stimulate changes in polluters' behaviours. Added to this is the fact that revenue-raising is the prime motivation of environmental taxes under the 2009 Law. This signal is well-received by industries which leads to the wrong perception towards the use of the taxed products or activities. As a consequence, a reduction in consumption and polluting activities was not achieved.

As discussed, environmental taxes in the 2009 Law were designed as revenue-raising instruments. This function is clearly defined in the legislation and has been confirmed by policymakers and enforcers.[713] However, several taxes in the 2009 Law are likely to have

[713] See Chapter 5 (Section 5.3.).

a function other than revenue-raising.[714] These taxes could supposedly be used to limit the consumption of certain products or to discourage polluting behaviour. Unfortunately, this function is of secondary importance. The foremost objective is to generate sufficient revenues for financing government expenditure at local levels. This is actually in line with the decentralisation system in Indonesia since 1999.

This study revealed that the imposition of environmental taxes in the Special Province of Yogyakarta has successfully achieved its fiscal objective. In general, there is a trend of increasing of revenues from environmental taxes during the period of 2009, 2010 and 2011 either at the province or district/city level. Revenues from these taxes are essentially used to support local governments' expenditures, which include spending on environmental management. In addition, the practice of revenue earmarking exists. Some of the revenue generated is allocated for specific uses that are linked to the imposed taxes. For example, a portion of revenue from motor vehicle taxes is used to finance road construction and maintenance. Although the revenue raised from environmental taxes is quite high, accounting for about 80% of local own source revenue, the level of spending on the environment is not significant.[715] This is due to the budgeting system of regional governments which allocates local revenues based on the priority of proposed programs within the fiscal year. For example, when the health sector has been prioritised, a substantial amount of revenue will be allocated to that sector. Therefore, the share of revenue for other sectors including the environment will be less.

A lack of funding for the environment has affected the performance of environmental agencies in managing pollution at local levels. In the Special Province of Yogyakarta, the level of pollution, specifically air and water pollution, has increased.[716] The main factor causing the pollution is the rapid growth of business and economic activity in this province. It is reported that a number of cases concerning pollution from industries have been filed to the environmental bureaus; however, only few were resolved in 2012 because of limited funding.[717] A program run by industrial bureaus together with

[714] Ibid.
[715] See Chapter 5 (Sub section 5.3.2.)
[716] See Chapter 5 (Section 5.2.).
[717] Ibid.

environmental bureaus to raise the awareness of industries in managing discharges/waste suffered a similar funding problem. This consequently affects the outcomes of environment related programs which are targeted to industrial groups in this region.

A survey questionnaire responded by 76 industries in the Special Province of Yogyakarta affirmed the findings from the interviews. The survey questionnaires were firstly intended to identify the level of awareness of an industry towards waste management practices and the regulatory framework. It highlighted that most industries (50 percent) that participated in the survey do not realise their responsibilities in managing waste or discharges as a result of production processes. Forty-three (43) percent of industries admitted that the measure is still in planning, while 7 percent of them stated that no measure has been undertaken yet.[718] It is quite the opposite with their level of awareness towards treatment facilities required by the laws, licensing requirements as well as non-compliance effects. The awareness of industries to these three issues is quite high – about 70%. This means that the surveyed industries had a high level of understanding towards their responsibility to provide treatment facilities, to have a license to manage their waste or discharges and the legal consequences for non-compliance. However, this level of awareness towards the regulatory requirements is not reflected in the practice of industries in managing their waste or discharges. The practices of industries are increasing pollution to the environment, which is negatively impacting people's health.

As regulatory instruments have failed to raise awareness of industries in managing pollution, it was important to investigate the implementation of environmental taxes in the region through the survey to industries. The survey discovered that environmental taxes in the 2009 Law are not effective in inducing changes in industry behaviour. Industries in this case do not receive the right price signal in order to reduce pollution. Most industries (53%) perceived that there is no relevance between the imposed taxes and environmental management. They treated environmental taxes as they would do to any other tax by way of regularly paying the imposed tax without accompanying this with action to control their emissions. This perception may reflect the fact that gains for the environment are less obvious than the fiscal benefit. Added to this is the fact that

[718] See Chapter 5 (Sub section 5.4.2.)

environmental taxes are not designed properly. As previously discussed, the base and rate of these taxes do not reflect related externalities, which undermine the ability of the taxes to alter behaviours. Therefore, the importance of environmental taxes was not well understood by the majority of industries in the region.

6.3. A Framework for Managing Industrial Pollution in Indonesia: A Proposition

The experience of Indonesia in the imposition of environmental taxes highlights flaws in design and practice. This study revealed that environmental taxes in Law No. 28 of 2009 were not designed properly. The base and rate of these taxes are far from commensurate with the environmental impact they seek to address. In addition, the objective of environmental taxes is primarily to raise revenue. This means that gains for the environment is of secondary importance. These problems have likely contributed to the ineffectiveness of environmental taxes to alter polluters' behaviours. The empirical approach of this study proved the incapacity of environmental taxes to induce behavioural changes in practice. By using interviews and survey questionnaires, this study found that environmental taxes failed to send the right message to industries to reduce pollution. These instruments were not considered as the major driver to manage industrial waste or discharges. The imposition of environmental taxes was seen by the surveyed industries as a policy instrument to generate more revenue than to fix environmental externalities caused by polluting activities. Although the revenue generated from these taxes were quite high, spending in the environmental sector was insufficient. As a consequence, the intended environmental outcome in the region was not achieved. These findings lead the writer to propose frameworks to improve the capacity of environmental taxes to reduce pollution from industrial activities. The framework is directed to policymakers merely as guidance to determine which policy reforms are most relevant to Indonesia in the current climate.

There are two parts to the recommendation as a solution to achieve cost-effective environmental gains. The first aims to propose a reform of existing environmental taxes, based on the limitations that currently exist in them. Environmental tax reform has the potential to sufficiently address industrial pollution and also generate adequate

revenues, specifically to support the performance of environmental agencies. However, there are challenges in undertaking environmental tax reform that cannot be ignored, including several political barriers. Therefore, it is worth to consider the second best option for fixing pricing instruments. Reforming subsidies on energy sectors, particularly fossil fuels, might be more effective as the government has already undertaken policies and actions in this regard. Benefits from phasing out subsidies are similar to increasing the level of environmental taxes. Subsidy removal is likely to yield both fiscal and environmental benefits.

6.3.1. The First Framework: Restructuring Existing Environmental Tax System

Under the current situation, the existing scheme of environmental taxes in Indonesia needs improvement. The flaws in the design lead to the failure of these tax instruments to encourage changes in polluters' behaviours. A proposed framework covers strategies in restructuring the environmental tax scheme so as to more closely reflect the environmental damage cost. The following are several features that should be considered in designing a more effective framework of environmental taxes:

1. *Closely targeting environmental tax bases to externalities*

   The current environmental tax bases in the 2009 Law are insufficiently linked to externalities. A lax linkage to the pollutant or polluting activities results in the ineffectiveness of environmental taxes to alter behaviours. Even fuel taxes as the most promising instrument for inducing industries to reduce pollution are not levied close enough to relevant externalities. It is therefore important for policymakers to reconsider the determination of the basis of taxes in the 2009 Law. Fuel taxes, for instance, should have a clear base which reflects the environmental impact of fuel. Since fuel products release pollutants (e.g. carbon) to the environment, policymakers should incorporate this impact in the base of fuel taxes. This consideration would likely enhance the capacity of these taxes to induce changes in behaviours by either reducing fuel consumption or encouraging a switch to less polluting products.

2. *Adjusting the rate of environmental taxes*

The last adjustment of the rate of environmental taxes was carried out in 2009. However, data from field work in 2012 revealed that it is still too low to discourage polluting activities. Industries in this case prefer paying the taxes instead of reducing their emissions. Policymakers should therefore consider setting a proper tax rate to reflect the environmental cost of polluting activities. The rate of a tax should be calculated by incorporating potential environmental externalities. It will be necessary to involve technical expertise in the adjustment of the rate so as to minimise complexity in the valuation process. A successful adjustment of the rate of the tax – coupled with a better targeted base– would likely stimulate industries to change their behaviours. However, changes either in the base or rate should be implemented gradually to minimise disruption to industries. This study revealed that industries need sufficient time to adapt to any tax adjustment made by the Indonesian government. Therefore, pre-announcement of changes and adequate information of the policy are important to augment the acceptability of industries towards a more environmentally friendly tax scheme, as shown in other countries.

3. *Improving revenue usage for environmental purposes*

The analysis conducted in this study uncovered the fact that funding for environmental management at local levels is limited. The share of revenue for environmental sectors depends on the budget policy within the fiscal year. If the environment is not a main focus, it will receive a lesser amount of income than it otherwise should. Essentially, most revenue from environmental taxes is gathered in the local budget and used for financing local expenditures. Included in this expenditure is environmental management. However, the share of revenue for the environmental sector differs between fiscal years and is sometimes too little to support environmental management in the region. To resolve this financing problem it is worth considering increasing the share

of revenue within the government budget to finance environmental management sectors instead of earmarking the revenue for specific purposes. Despite earmarking having the potential to enhance public acceptance towards the reform of environmental taxes, it is not a good option since the revenue from environmental taxes tends to decrease over time. This is due to one of the key characteristics of environmental taxes, which is to alter polluters' behaviours. In addition, earmarking would decrease the flexibility of the government to use the revenue over time.[719] Revenue would continue to be used for financing specific programs even though other sectors would be deprived.

At present, the 2009 Law authorises the local government to allocate a proxy of revenue from taxes on motor vehicles and street lighting (imposed on electricity consumption). This study revealed that the provincial government in the Special Province of Yogyakarta have taken the initiative to partially earmark revenue from fuel and surface water taxes to improve the quality of the environment at local levels. This initiative has been reinforced in the local regulation which may represent a legally binding commitment for them to continue doing so. The commitment of the provincial government in this case could be viewed as a good example of supporting environmental sustainability in the region. However, considering that the revenue earmarking has potential drawbacks in fiscal decision making, the government should evaluate this policy to prevent improper allocation of revenues. It is better to retain the revenue in the government budget and to use it for financing government expenditures. A greater proportion of the revenue for the environment sector could be allocated from the budget to ensure the practice of sustainable management in the region.

4. *Implementation strategies in the reform process*

Environmental tax reform will result in increasing the level of environmental taxes that taxpayers pay. As a consequence, political resistance from many

[719] World Bank, 2005, above n 349, 26 -27.

stakeholders including industries would appear likely. Through the survey, this study has indicated that current environmental taxes have various implementation issues. The surveyed industries expressed concern over trustworthy, fairness and administrative issues.[720] In this writer's opinion, these issues would remain unchanged in the process of environmental tax reform. Therefore, the following suggestions are worth considering:

- *Gaining public trust*

The Indonesian public would be very sceptical towards the intention of government in reforming the existing scheme of environmental taxes. Fiscal motivation is seen as the foremost objective of these instruments, and therefore any other motivation mooted by the government will be perceived merely as a disguise to raise more revenue. This issue is also exacerbated by corruption practices within tax authorities, which leads to suspicion of the government's credibility in the use of tax revenue. Consequently, this may obstruct the effectiveness of the scheme or even worse prevent the proposed reform from taking place.

To improve public trust, it will be important to involve impacted stakeholders (e.g. industries) in the design process. Before consulting stakeholders on the proposed scheme, the objective, base and rate of each tax should be properly defined and measured. A vague notion of the scheme will likely to be opposed rigorously. This happened in the previous introduction of an environmental tax in Indonesia in 2006. As the determination of the base and rate were unclear, industries strongly opposed the scheme, and as a result the government failed to legislate it. Discussion covering the use of revenue may be of interest to industries and build support towards the scheme. For example, a proxy of revenue could be proposed to give back to industries in assisting them to invest in pollution reduction measures, while the government still holds the remainder revenue for supporting other expenditures. Furthermore, it is also important to phase in the reform

[720] See Chapter 5 (Sub section 5.4.3).

gradually and provide thorough information about the scheme. This gradual approach combined with an information campaign would help stakeholders understand and have a better response to environmental tax reform.

- *Improving institutional capacity*

Administratively, it is feasible to collect at relatively low cost the existing environmental taxes in the 2009 Law. Despite administrative ease, this study revealed incapacity problems in the imposition of several taxes, such as surface and groundwater taxes. A lack of capacity to accurately measure the taxable object and estimate its potency may hamper the effectiveness of environmental taxes in practice regardless of the primary objective of such taxes. In addition, the shortage of human resources to monitor the implementation of existing taxes has also become a crucial issue. This limitation has caused a negative and perhaps unfair impression of taxpayers towards environmental taxes. They perceive that tax authorities have rarely imposed sanctions for non-compliance.[721] This inadequate performance has weakened the capacity of environmental taxes to achieve their target.

The aforementioned issues related to institutional capacity would likely remain when the proposed reforms takes place. The problem of measurement and estimation could be resolved through cooperation with technical experts, either from universities or other related institutions. However, it is also important to develop the capacity of local tax authorities through relevant and regular training programs. Coordination with relevant sectors, such as the public order agency (*Dinas Ketertiban Umum*) and environmental agency (*Dinas Lingkungan Hidup*), to engage in active monitoring and to identify violators is one way to manage staff limitations. Though this approach may appear simple, it would be effective to ensure fair law enforcement among taxpayers. In respect of this method, it is worthwhile to set aside a proxy of revenue generated from environmental taxes as incentives in return for the support from other agencies.

[721] Ibid.

Essentially, the first proposed framework could also be used as guidance to introduce a new environmental tax in Indonesia (a national tax policy) that is targeted specifically to reduce industrial pollution. Emission taxes are best suited for this purpose due to the capacity of this instrument to not only encourage industries to reduce pollution but also to provide incentives for taking emission reduction measures. The implementation of these types of environmental taxes needs careful measurement as well as regular monitoring of the actual pollutant levels from various production processes. Given the current conditions in Indonesia, it is not possible to accomplish such measurement and monitoring requirements. This action requires a great deal of money, sufficient personnel as well as proper equipment, which Indonesia currently does not possess. At this point, introducing emission taxes might be the least preferable option for Indonesia.

The argument against the introduction of emission taxes in Indonesia is also supported by experiences from other countries. Difficulties in undertaking measurement and monitoring actual emission levels mean that emission taxes have rarely been imposed. Even the US and most European countries have not yet implemented taxes based on the actual pollutant, despite the strong capability of their tax systems and administration. Several developing countries, such as China and Malaysia, have introduced effluent taxes since the 1970s. These tax schemes were built upon effluent or concentration standards and took many years to achieve the stated targets. However, the success of emission taxes in China and Malaysia in reducing industrial pollution was greatly influenced by integrating the tax instrument with direct regulation. Community pressure on industries in China also played an important role in bringing about the outcome.

Restructuring the scheme of environmental taxes in the 2009 Law is a possible option for Indonesia. Despite the fact that existing taxes have not yet yielded similar effects on industries compared to what emission taxes could achieve, these taxes can still benefit the environment. The environmental gains could be achieved through discouraging the overconsumption of taxed products or activities. In addition, reforming existing environmental taxes might be a more attractive proposition for the Indonesian government as the tax system and administration are already in place. However, the

chances of successful reform depend on the political will of the government and relevant stakeholders. Increasing the level of taxes on energy, such as fuel products, would be strongly opposed by industries. In fact, pressure to reduce the tax level would likely be exerted. If the commitment of industry to protect the environment is not strong enough, tax reform would likely fail. The perception of stakeholders towards corruption in government also contributes to undermine reform efforts. Although restructuring the scheme of environmental taxes may fix under-pricing problems, it may not be the best option to be initiated while the subsidy on fossil fuels is still present. Increasing taxes on fuels will achieve nothing if these taxes are accompanied by the existing subsidy policy. It is therefore imperative to firstly remove the subsidy that is applied to the energy sector in Indonesia and then proceed to restructure existing environmental taxes.

6.3.2. The Second Best Option: The Continuation of Subsidy Reform on Fossil Fuels

Restructuring the existing tax scheme, including fuel taxes, may enhance the effectiveness of the scheme in practice. However, it may not be the best option since the presence of fuel taxes is accompanied by the subsidy. As discussed, the subsidy that is attached to existing taxes counteracts the Polluter Pays Principle (PPP).[722] It will distort fairness and weaken the performance of environmental taxes in reducing pollution. Thus, restructuring the existing tax scheme will be worthless if the subsidy policy remains in place. Removing the subsidy is vital and is the first step that the government of Indonesia should take to fix the issue of fuel pricing.

Energy products such as fossil fuels are essential in economic development. In Indonesia, both industry and households are largely dependent on the use of fossil fuels to sustain their economic activities. Fossil fuels are used in cooking, lighting, transportation, processing goods and electricity generation. However, fuel products in Indonesia are highly subsidised. The initial aim of subsidising fuels was to ensure price stability for domestic customers. In spite of it being targeted to poor consumers, all levels of households and industries have benefitted from the fuel subsidy. Therefore, the price hike in fuel products will essentially affect every level of stakeholder as it will result in

[722] See Chapter 2 and Chapter 4.

increased price for other non-fuel sectors such, as food and transport. Any decision to adjust the price of fuel either through the increase of fuel taxes or the removal of the subsidy will likely be opposed by industries and households.

As discussed in chapter 4, the Indonesian government is already engaged in efforts to eliminate subsidies in the energy sector. The first attempt began in 1998 and subsequent attempts to remove the subsidy have continued up to now. Removing subsidy on fossil fuels is considered to be a priority for the Indonesian government as the subsidy policy creates a number of problems, both fiscal and environmental. The impact of the subsidy on the fiscal budget is severe as keeping fuel prices below the international market price is hugely costly.[723] In 2011, the pressure on the fiscal budget for energy subsidies was estimated to be IDR 190 trillion, and over 50% of this total came from fuel sectors.[724] As a consequence, spending on other sectors, such as health, education and infrastructure has been limited.[725] Furthermore, the fossil fuel subsidy also hurts the environment. The low pricing of fuel leads consumers to use the energy product excessively and unwisely. This behaviour contributes to the increasing pollution levels in Indonesia. It is estimated that the annual cost for the health sector as a result of CO_2 emission is approximately US $4.6 billion.[726]

The elimination of the fuel subsidy, with its negative impact on the budget as well as the environment, should be prioritised. However, subsidy removal is regarded as a highly sensitive issue in Indonesia. This is because the effect of removing the subsidy is undesirable for many groups, specifically for poor income households. This group spends more of its income on fuel products than any other income group.[727] The increase of fuel prices may also have an adverse impact on industries in general as production costs would likely increase. Therefore, subsidy removal would likely raise resistance from all level of stakeholders. The first attempt of the Indonesian government to adjust fuel pricing through reducing the subsidy in 1998 faced the same challenge. The rapid

[723] See Chapter 4 (Section 4.4.). See also World Bank, '*Fuel Pricing and Subsidies in Indonesia: Reaching an Equitable and Sustainable Policy*' (The World Bank Organization, Washington, DC, USA 2012) <http://documents.worldbank.org/en/2012/1/16461267/pricing-subsidies-indonesia-reaching-sustainable-policy> 20.
[724] See Chapter 4 (Section 4.4.).
[725] World Bank, 2012, above n 723, 33.
[726] See Chapter 4 (Section 4.4.).
[727] Ibid.

increase of price on fuel products (kerosene, diesel and gasoline) after Asian financial crisis in 1997 triggered demonstrations in several cities in Indonesia. Public resistance towards this subsidy cut was very intense. Some demonstrations turned into riots and violence which forced Soeharto to step down as Indonesian president.[728]

Despite the political breakdown in 1998, attempts to reduce the fuel subsidy remain on the government's agenda. Between 2000 and 2004, a number of increases in fuel prices have been made for both households and industries. The price rise on fuel products in these periods also caused social unrest. It is worth noting that an attempt to remove the subsidy in 2003 was also accompanied by many compensation programs for the poor. Compared to previous attempts, the policy to cut the fuel subsidy in this period was designed much better. The Indonesian government took the initiative to allocate subsidy savings on health, education and social welfare.[729] However, the programs that were initially promised never materialised.[730] This led to public dissension which made the government reconsider the price adjustment on diesel.[731]

In 2005 and 2008, the government of Indonesia also increased the price of fuel products. Unlike previous attempts, the subsidy removal in these periods was opposed less by the public. This is because subsidy reform in 2005 and 2008 was associated with various strategies. The government launched a number of welfare programs, such as the unconditional cash transfer program (*Bantuan Langsung Tunai (BLT)*) and the fuel subsidy reduction compensation program, (*Program Kompensasi Pengurangan Subsidi Bahan Bakar Minyak*) on health, education and rural infrastructure.[732] Furthermore, the introduction of the kerosene to liquefied petroleum (LPG) conversion program was also initiated before the 2008 reform.[733] These programs were accompanied by a wide-ranging information campaign that aimed to raise public awareness of the government's

[728] Ibid.
[729] Beaton and Lontoh, above n 513, 7.
[730] Ibid.
[731] Ibid.
[732] Chung, above n 532, 8.
[733] Ibid 9.

strategy.[734] Although the reforms in 2005 and 2008 have been regarded as successful, the share of the subsidy as a proportion of the national budget is still large.

The most recent fuel price adjustment was carried out in 2013. Similar strategies to the 2005 and 2008 reforms were undertaken to increase public acceptance towards the increasing fuel prices. Compensatory measures, such as a rice subsidy for poor income groups (*subsidi beras bagi masyarakat miskin (Raskin*)), a poor student assistance program (*program bantuan siswa miskin*) and a temporary cash transfer program (*program bantuan langsung sementara masyarakat*) were directly targeted to poor households to alleviate the impact of the subsidy reform.[735] These short-term measures helped the poor cope with the fuel price hike as well as to reduce strong opposition to the reform.

In the case of industrial consumers, adjustments to fuel prices have been undertaken since 2000. Diesel oil, fuel oil and kerosene prices were increased to 75% of the international market price.[736] This was followed by another price adjustment on fuel products for industry in 2003 which was set at the price of the international market.[737] Since then, the fuel subsidy has not been applied to industries with the exception of micro and small-scaled industries. For these types of industries (and households), subsidised kerosene has remained in the market.[738] In fact, most micro- and small-scaled industries not only use kerosene but also gasoline to support their businesses. The proposed subsidy reform would likely affect these types of industries as a rise in the fuel price would increase production costs. It was reported in 2013 that several small and medium industries complained that their production costs would increase as a result of the adjustment in fuel prices.[739] In the 2008 reform, the government of Indonesia launched a compensatory program for small enterprises by providing low interest rate

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[734] Ibid 14.
[735] *Tim Sosialisasi Penyesuaian Subsidi Bahan Bakar Minyak* [Socialization Team of Fuel Subsidy Reform], above n 545, 17 – 39.
[736] See Chapter 4 (Section 4.4.).
[737] Ibid.
[738] Ibid.
[739] *Kementerian Perindustrian Republik Indonesia* [Ministry of Industries Republic of Indonesia], *IKM Tak Akan Peroleh Subsidi BBM* [Small Medium Industries would not Receive Fuel Subsidy], accessed date 15th March 2014 <http://www.kemenperin.go.id/artikel/6038/IKM-Tak-Akan-Peroleh-Subsidi-BBM>.

loans.[740] This program was introduced to assist micro and small industries to remain productive regardless of the hike in fuel prices. In 2013, the Director General of Small and Medium Industries in the Ministry of Industry stated that there will be no more fuel subsidies for industries and it will be replaced by several programs to support small and medium scaled industries to adapt to the increased price of fuel products.[741] The announced programs comprised various activities from facilitating industries to acquire relevant equipment to providing free trainings and trade fairs.[742] The presence of varying programs for micro, small and medium industries could be seen as a government strategy to ensure that the impact of the fuel subsidy cut does not stop the progress of micro, small and medium industries as they are considered the backbone of the Indonesian economy.

Over the 15 years of attempts to phase out the fuel subsidy, there have been improvements in the policy frameworks formulated by the Indonesian government. After three previous reforms in 1998, 2000 and 2003, the design of subsidy reform and strategies for implementation are much clearer and more targeted. Energy prices should be designed by aligning them with its economic price and the adjustment should be made gradually.[743] Moreover, the adjustment of energy price should also be accompanied by financial support for the poor.[744] The scheme of fuel subsidy reform in the period of 2005 – 2013 has reflected the aforementioned energy policies. First, the reform was gradually phased-in over subsequent years. The gradual approach is essential to provide sufficient time for all stakeholders to adapt to the impact. Second, the scheme of fuel subsidy reform during these periods was accompanied by a number of compensatory measures for the poor as well as for micro-small scaled industries. The measures were provided in the short-term for the lowest income groups in order to alleviate the adverse impact of the higher fuel price. Compared to the 2003 reform, the welfare measures that supported the subsidy reform from 2005 to 2013 were properly communicated and

[740] Beaton and Lontoh, above n 513, 21.
[741] *Kementerian Perindustrian Republik Indonesia* [Ministry of Industries Republic of Indonesia], above n 739.
[742] Ibid.
[743] See Article 7 of the *Undang-Undang No. 30 Tahun 2007 tentang Energi* [Law No. 30 of 2007 concerning Energy]; Article 5 of the *Peraturan Presiden Republik Indonesia No. 5 Tahun 2006 tentang Kebijakan Energi Nasional* [Presidential Regulation No. 5 of 2006 concerning The National Energy Policy].
[744] Ibid.

materialised. Furthermore, information about the reform and the measures for the poor was well-distributed to the general public, such as through television, newspapers as well as pamphlets and brochures.[745] Such an information-based strategy could help foster public acceptance toward any future subsidy reform.

As mentioned, the fuel subsidy in the present day appears to threaten the fiscal budget and environment more than it benefits the poor. It is therefore important to ensure continuous action to reform the subsidy of fuel products in Indonesia. The framework is already in place and to some extent success in the adjustment of the fuel price has been achieved. However, the existing policy framework needs further improvement since the fuel subsidy still represents a large proportion of government outlays. It is estimated to reach around 13% of total revenue in 2013.[746] Ndiame Diop, a Lead Economist for the World Bank, stated that the current approach of fuel subsidy reform in Indonesia is ineffective due to 'periodic and politically negotiated price-adjustment'.[747] This is because the approach relies heavily on changes in world oil prices and the IDR/USD exchange rate which creates uncertainty in the government budget.[748] Diop suggested that the approach be improved by applying 'a more predictable and transparent price-adjustment mechanism, along with an automatic convergence toward market price'.[749] Included in this recommendation are the following practical solutions to effectively cut the fuel subsidy:

- **Periodically moving prices through a pre-agreed rule**

  Through a pre-agreed rule, a new domestic price is set, with reference to recent world prices, on a periodic basis (monthly, quarterly, and so forth)…If Indonesia was to adopt a similar rule, the price setting rule could specify how much of the gap between world and domestic prices would be closed in successive cumulative years. For example, the rule might be that the domestic prices should reach 70 percent of average world prices for 2014 (from about 50 percent in 2013), changing to 80 percent in 2015, 90 percent in 2016, and 100 percent in 2017.

[745] Beaton and Lontoh, above n 513, 18.
[746] See Chapter 4 (Section 4.4.).
[747] Ndiame Diop, 'Why is Reducing Energy Subsidies a Prudent, Fair, and Transformative Policy for Indonesia?' (2014) *Economic Premise Number 136, The World Bank* 5.
[748] Ibid.
[749] Ibid.

- **Periodically moving prices set by a pre-agreed rule, with a price ceiling (a variant of option 1)**

This option introduced consumers to moving prices, but provides assurance that there is a maximum price that they will pay in the first year, regardless of international prices. For instance, even if the objective is to set the domestic price at 70 percent of the world price in 2014, the monthly or quarterly increase is capped, to avoid exceptionally high increases and limit the exposure of consumers in any given month or quarter. In following years, the price ceiling can be successively raised, while closing the indexation gap, thus leading to an incremental and predictable move to market prices.

- **Quarterly subsidy spending limits**

Announce subsidy limits for the coming budget year by quarter, and then adjust prices in subsequent quarters when there is a breach in the target. The quarterly limits would be based on observed fuel consumption patterns and assumed prices, converted into rupiah. This would allow adjustment of prices in the subsequent quarter based on the prior quarter's total subsidy spending. The basis upon which this could be done would be transparent and rule-based, removing from political and populist pressure the government decision makers.[750]

The above suggestions are worth considering as potential solutions to improve the current approach of fuel subsidy reform in Indonesia. Together with comprehensive welfare programs for the poor, the periodical approach of fuel subsidy reform would likely achieve the target of phasing out the subsidy. However, the fact that Indonesia will hold the presidential election in 2014 may delay the adjustment of fuel prices. In this case, the political factor could be the largest hurdle to meet the target in reducing fuel subsidies episodically. Reforming the fuel subsidy would be a good way to improve equality, the environment and the economy, but without a strong political commitment it unlikely eventuates.

6.4. Final Remarks

Despite the widely acknowledged capacity of environmental taxes to achieve cost-effective environmental gains, this study concludes that the imposition of these instruments in Indonesia have failed to influence changes in polluters' behaviours. This is due to the improper design of environmental taxes in Law No. 28 of 2009 which has

[750] Ibid.

diluted the role of these taxes in improving environmental outcome in the region. The study found that the base and rate of most environmental taxes in Law No. 28 of 2009 do not reflect relevant externalities, which leads to insufficient level of taxes to influence changes in polluters' behaviours. Furthermore, the presence of a subsidy (in fuel taxes) has exacerbated this problem. These failures have contributed to the ineffectiveness of environmental taxes in practice. This study also revealed that spending for the environment in the Special Province of Yogyakarta as a sample region in Indonesia is limited, despite the trend of increasing revenue being generated from environmental taxes. As a result, the level of pollution in the region is still high. Neither direct regulation nor environmental taxes were sufficient to make industries aware of the environment by way of managing waste/discharges or reducing consumption of polluting products. Industries perceived that several taxes in the 2009 Law did not have any relevance to the environment. Therefore, most surveyed industries were willing to pay taxes regularly instead of reducing pollution.

Based on this limitation, a framework is proposed to enhance the existing scheme of environmental taxes in Indonesia. The features for improvement include the design of the base and rate of environmental taxes, the use of revenue generated from them as well as implementation strategies. Restructuring the existing scheme of environmental taxes, particularly fuel taxes in the energy sector, would be a feasible solution to benefit the environment. However, this proposed framework would not work efficiently if the subsidy in the energy sector remains in place. The presence of the subsidies in fossil fuels brings disadvantages not only to the government's budget but also the environment. Given these consequences, the removal of fuel subsidies would be the best option for Indonesia. Fuel subsidy reform will relieve the pressure on the government's budget, encourage investment in alternative energy sources, and enhance environmental sustainability. To achieve these outcomes, subsidy reform needs a firm framework, consistent implementation as well as a strong commitment from the government.

Bibliography

Articles/Books/Reports

Ahmad, Ehtisam, and Ali Mansoor, 'Indonesia: Managing Decentralization' *(*IMF Working Paper, 2002).

Ahmad, Ehtisham, and Russell Krelove, 'Tax Assignments: Options for Indonesia' In E. Ahmad, G. Brosio, P. Desai, R. Krelove, J. Ma and Z. Qureshi, *Indonesia: Redesigning Intergovernmental Fiscal Relations* (Fiscal Affairs Department, 2000).

Andersen, Mikael Skou, 'The Use of Economic Instruments For Environmental policy – A Half Hearted Affair' (*IISD <International Institute for Sustainable Development> Website.* 1995) <http://www.iisd.ca/consume/skou.html>.

Anderson, Robert C, 'Incentive-Based Policies for Environmental Management in Developing Countries' (Resource for the future Issue Brief 02-07, 2002).

Arnold, Luke Lazarus, 'Deforestation in Decentralised Indonesia:What's Law Got to Do with It?' (2008) 4(2) *Law, Environment and Development (LEAD) Journal.*

Barber, Ben, 'Indian Coal Tax Nets $850 Million for the Environment', *Huffingtonpost* (online), 6 May 2013 <http://www.huffingtonpost.com/ben-barber/indian-coal-tax-nets-850-_b_3380696.html>.

Barde, Jean-Philippe, 'Economic Instruments in Environmental Policy: Lessons from the OECD Experience and Their Relevance to Developing Economies' (Research Programme on: Environmental Management in Developing Countries, 1994).

Barde, Jean-Phillipe, 'Environmental Taxation: Experience in OECD Countries' in Timothy O'Riordan (eds), *Ecotaxation* (Earthscan Publication Limited, UK, 1997).

Beaton, Christopher, and Lucky Lontoh, 'Lessons Learned from Indonesia's Attempts to Reform Fossil-Fuel Subsidies' (the International Institute for Sustainable Development (IISD), 2010).

Bedner, Adriaan, 'Consequences of Decentralization: Environmental Impact Assessment and Water Pollution Control in Indonesia' (2010) 32 *Law and Policy Journal.*

Bernstein, J.D., 'Chapter 6 Economic Instruments in Water Pollution Control' in Richard Helmer and Ivanildo Hespanhol, *A Guide to the Use of Water Quality Management Principles* (United Nations Environment Programme (UNEP) and The World Health Organization (WHO), 1997).

Bohm, Peter, 'Environmental Taxation and The Double Dividend: Fact or Fallacy' in Timothy O'Riordan (eds), *Ecotaxation*, (Earthscan Publication Limited, UK, 1997).

Bosquet, Benoit, 'Environmental Tax Reform: Does it Work? A Survey of The Empirical Evidence' (2000) 34 *Ecological Economics.*

Brodjonegoro, Bambang, 'Fiscal Decentralization in Indonesia' (The Institute of Economics and Social Research, The Graduate Program of Economics, University of Indonesia, Jakarta Indonesia, 2003).

Brodjonegoro, Bambang, 'The Indonesian Decentralization after law Revision' (Jakarta Indonesia: Department of Economics, University of Indonesia, unpublished paper).

Brotodihardjo, Santoso, 'Pengantar Ilmu Hukum Pajak' *[An Introduction of Taxation Law]* (PT Eresco Bandung, 1995).

Butt, Simon, 'Regional Autonomy and Legal Disorder: The Proliferation of Local Laws in Indonesia' (2010) 32 *Sydney Law Review.*

Butt, Simon, and Nicholas Parson, 'Reining in Regional Governments? Local Taxes and Investment in Decentralized Indonesia' (2012) 34 *Sydney Law Review.*

Cassing, James, 'Indonesia in Transition: Will Economic Prosperity Accompany Democracy' (2002) IX(1) *Spring 2002.*

Centre for Budget and Governance Accountability (CBGA), 'Framework and Performance of National Clean Energy Fund (NCEF)' (Policy Brief 1, Centre for Budget and Governance Accuntability, India, July 2012).

Chung, Rae Kwon, 'Fuel Subsidy Reform in Indonesia' (KDI School of Public Policy and Management and World Bank Institute, 2012).

Coase, Ronald, 'The Problem of Social Cost' (1960) *The Journal of Law and Economics.*

Commission, European, 'Environmental Taxes: A Statistical Guide' (Office for Official Publications of the European Communities, Luxembourg, 2001).

Consultancy, Transport, 'Dutch Road Pricing Trial' <http://www.trl.co.uk/consultancy/multi_modal_journey/intelligent_transport_systems/our_capabilities/road_user_charging/dutch_road_pricing_trial.htm>.

Creswell, John W, *Research Design: Qualitative, Quantitative and Mixed Methods Approaches (*Sage Publication, 2nd Edition, 2003).

Daerah Istimewa Yogyakarta, Kepala Daerah [Governor of Special Province of Yogyakarta], 'Laporan Keterangan Pertanggungjawaban (LKPJ) Kepala Daerah Daerah

Istimewa Yogyakarta Akhir Tahun Anggaran 2012' [The Accountability Report of Governor of Special Province of Yogyakarta for the Fiscal Year 2012].

Daerah Istimewa Yogyakarta, Badan Lingkungan Hidup [The Regional Environmental Board of Special Province of Yogyakarta], 'Laporan Standar Pelayanan Minimal Bidang Lingkungan Hidup DIY Tahun 2012' [The Report of Regional Environmental Board of Special Province of Yogyakarta (DIY) on The Standard of Minimum Service in Environmental Sector for the fiscal year 2012].

Darmawan, Rachmad Erland Danny, 'The Practices of Decentralization in Indonesia and its Implication on Local Competitiveness' (The Netherlands: University of Twente Enschede, 2008).

Dartanto, Teguh, 'Reducing Fuel Subsidies and the Implication on Fiscal Balance and Poverty in Indonesia: A Simulation Analysis' (Working Paper in Economics and Business Volume II No.6/2012; Department of Economics, Faculty of Economics, University of Indonesia, Jakarta, 2012).

Dasgupta, Susmita, Benoit Laplante, Nlandu Mamingi, and Hua Wang, 'Inspections, Pollution Prices, and Environmental Performance: Evidence from China' (2001) 36 *Ecological Economics.*

Datt, Divya, 'Green Budget Reform in India: Opportunities and Challenges' (2002) <http://www.teriin.org/ee/pdf/background.pdf>.

Department for International Development (DFID) and The WorldBank, 'Executive Summary: Indonesia and Climate Change' (Working Paper on Current Status and Policy, 2007).

Diop, Ndiame, 'Why is Reducing Energy Subsidies a Prudent, Fair, and Transformative Policy for Indonesia?' (2014) *Economic Premise Number 136, The World Bank.*

E.Gaines, Sanford, 'The Polluter-Pays Principle: From Economic Equity to Environmental Etho' (1991) 26 *Texas International Law Journal.*

Economic Analysis Team, 'Water Pollution Control in China: Review of laws, regulations and policies and their implementation' (Institute for Global Environmental Strategies (IGES), 2009).

Ehtisham, Ahmad, and Russell Krelove, 'Tax Assignment: Options for Indonesia' in E. Ahmad, G. Brosio, P. Desai, R. Krelove and Z. Qureshi J.Ma, *Indonesia: Redesigning Intergovernmental Fiscal Relations* (Chapter 3, 1999).

Ekins, Paul, 'On the Dividends from Environmental Taxation in Timothy O'Riordan (eds), *Ecotaxation*, (Earthscan Publication Limited, UK, 1997).

Ekins, Paul, and Stefan Speck, *Competitiveness and Exemptions From Environmental Taxes in Europe (*Environmental and Resource Economics 13, Kluwer Academic Publishers, 1999).

Eskeland, Gunnar S., and Shantayanan Devarajan, 'Taxing Bads by Taxing Goods: Pollution Control with Presumptive Charges' (The World Bank, 1996).

Farrell, Joseph, 'Information and The Coase Theorem' (1987) 1(2) *The Journal of Economic Perspectives.*

Florig, H. Keith, Guodong Sun, and Guojun Song, 'Evolution of Particulate Regulation in China—Prospects and Challenges of Exposure-Based Control' (2002) *Chemosphere 49.*

Fullerton, Don and Gilbert E. Metcalf, 'Environmental Taxes and The Double Dividend Hypothesis: Did You Really Expect Something for Nothing?' (National Bureau of Economic Research (NBER) Working Paper No. 6199, 1997).

Fullerton, Don, Andrew Leicester, and Stephen Smith, 'Environmental Taxes' (National Bureau of Economic Research (NBER) Working Paper 14917, 2008).

Gee, David, 'Economic Tax Reform in Europe: Opportunities and Obstacles' in Timothy O'Riordan, *Ecotaxation*, (Earthscan Publication Limited, UK, 1997)

Gifis, Steven H, *Dictionary of Legal Terms: A Simplified Guide to the Language of Law (*Barron's Educational Series Inc. , USA, 1998).

Goldar, Bishwanath, Smita Misra, and Badal Mukherji, 'Water Pollution Abatement Cost Function: Methodological Issues and An Application to Small-Scale Factories in An Industrial Estate in India' (2001) *Environment and Development Economics 6.*

Goulder, Lawrence H., and Ian W.H.Parry, *Instrument Choice in Environmental Policy (*Oxford University Press on behalf of the Association of Environmental and Resource Economists, 2008).

Government of India, Ministry of Environment and Forests, 'India: Taking on Climate Change – Post Copenhagen Domestic Actions' (Ministry of Environment and Forests, Government of India, 2010).

Government of India, Ministry of Environment and Forests, 'Report to the People on Environment and Forest 2009 – 2010' *(*Ministry of Environment and Forests, Government of India, 2010).

Government of India, The Ministry of Environment and Forests, 'Environmental Regulation in India: Issues and Challenges' (The Ministry of Environment and Forests, Government of India, power point presentation, 2010).

Gunningham, Neil, and Darren Sinclair, 'Regulatory Pluralism: Designing Policy Mixes for Environmental Protection' (1999) 21(1) *Law and Policy.*

Heij, Gite, 'The Definition of Tax' (2001) *Asia-Pacific Tax Buletin.*

Helm, Dieter, 'The Assessment: Environmental Policy – Objectives, Instruments, and Institutions' (1998) 14(4) *Oxford Review of Economic Policy.*

Hesse, Dieter, 'Environmental Policy and International Competitiveness in a Globalizing World: Challenges for Low-Income Countries in the UNECE Region' *(*Discussion Papers United Nations Economic Commission for Europe, November 2007).

Hilton, Isabel, 'Introduction in China's Green Revolution: Energy, Environment and the 12th Five-Year Plan' <http://www.chinadialogue.net/UserFiles/File/PDF_ebook001.pdf>.

Holton, Christopher J, *What are the effects of fossil-fuel subsidies on growth, the environment, and inequality?* (Master thesis in Applied Economics in the School of Economics, University of Nottingham, 2012).

Hukumonline, 'RUU Pajak dan Retribusi Daerah: Pemerintah Ngotot Pajak Lingkungan Masuk' [Bill of Local Taxes and Charges: Government Insisted on Regulating Environmental Tax], *Hukumonline website,* 26th May 2006 <http://new.hukumonline.com/berita/baca/hol14900/pemerintah-ngotot-pajak-lingkungan-masuk->.

Ibrahim, Ali Huddin, Moh Nordin Adlan Irvan Dahlan, and Arezoo Fereidonian Dasti, 'Comparative Study on Characterization of Malaysian Palm Oil Mill Effluent' (2012) 2(12) *Journal of Chemical Science.*

IEA, OPEC, OECD, and World Bank, 'Fossil-fuel and Other Energy Subsidies: An Update of the G20 Pittsburgh and Toronto Commitments' (Joint report by IEA, OPEC, OECD and World Bank prepared for the G20 Meeting of Finance Ministers and Central Bank Governors (Paris, 14-15 October 2011) and the G20 Summit (Cannes, 3-4 November 2011)).

Igwe, J.C., and C.C. Onyegbado, 'A Review of Palm Oil Mill Effluent (POME) Water Treatment' (2007) 1(2) *Global Journal of Environmental Research.*

India, Central Pollution Control Board Prevention and Control of Pollution (PCP), 'Cess Related Matters' n.d. <http://www.cpcb.nic.in/divisionsofheadoffice/pcp/other_information.pdf >.

India, Centre for Science and Environment, 'Cheapest Pickings', 15 February 2004. <http://www.cseindia.org/dte-supplement/industry20040215/cheapest-picking.htm>.

Jin, Yanhong, and Liguo Lin, 'China's Provincial Industrial Pollution: The Role of Technical Efficiency, Pollution Levy and Pollution Quality Control' (2013).

Jinnan, Wang, 'The Development of Pollution Charge in China' (Beijing: Chinese Academy for Environmental Planning, n.d.).

Kathuria, Vinish, 'Controlling Water Pollution in Developing and Transition Countries – Lessons from Three Successful Cases' (2006) *Journal of Environmental Management 78.*

Kathuria, Vinish, and Nisar A. Khan, 'Environmental Compliance versus Growth: Lessons from Malaysia's Regulations on Palm Oil Mills' (2002) *Economic and Political Weekly.*

Keating, Martha, 'Cradle to Grave: The Environmental Impacts from Coal' (Clean Air Task Force, Boston, MA, 2001).

Kementerian Perindustrian Republik Indonesia [Ministry of Industries Republic of Indonesia], *IKM Tak Akan Peroleh Subsidi BBM* [Small Medium Industries would not Receive Fuel Subsidy], <http://www.kemenperin.go.id/artikel/6038/IKM-Tak-Akan-Peroleh-Subsidi-BBM> accessed date 15th March 2014.

Laporan Status Lingkungan Hidup Daerah (SLHD) Provinsi Daerah Istimewa Yogyakarta 2012 [The Report of Environmental Status in Special Province of Yogyakarta in 2012], 2012 <http://blh.jogjaprov.go.id/wp-content/uploads/LAPORAN-SLHD-DIY-2012.pdf>.

Leitmann, Josef, et al, 'Investing in a More Sustainable Indonesia: Country Environmental Analysis' (CEA Series, East Asia and Pacific Region, World Bank, 2009).

Levinson, Arik, 'Taxes and The Environment: What are Green Taxes?' (Tax Policy Centre, 31 July 2007) <http://www.taxpolicycenter.org/upload/Elements/II-11KEYELEMENTS_TAXESANDtheEnvironment.final.pdf>.

Lewis, Blane D., 'Tax and Charge Creation by Regional Governments Under Fiscal Decentralization: Estimates and Explanations' (2003) 39(2) *Bulletin of Indonesian Economic Studies.*

Lewis, Blane D., 'Some Empirical Evidence on New Regional Taxes and Charges in Indonesia' (Research Triangle Institute, North Carolina, USA, 2003).

Lopez, Jorge García, Thomas Sterner, and Shakeb Afsah, 'Public Disclosure of Industrial Pollution:The PROPER Approach for Indonesia?' (Discussion Paper 04–34, Resources for the Future, 2004).

Maatta, Kalle, *Environmental Taxes: An Introductory Analysis* (Edwar Elgar Publishing Limited, 2006).

Madaki, Yahaya S., and Lau Seng, 'Pollution Control: How Feasible is Zero Discharge Concepts in Malaysia Palm Oil Mills' (2013) 02(10) *American Journal of Engineering Research (AJER).*

Malaysia, Department of Environment, 'Industrial Processes and The Environment (Handbook No. 3): Crude Palm Oil Industry' (Department of Environment Malaysia, 1999).

Maria, A, 'The Cost of Water Pollution in India' (the Conference on Market Development of Water & Waste Technologies through Environmental Economics, Delhi, 30th – 31st October 2003).

Maulana, Adi Ginanjar, 'Otomotif: Tarif Bea Balik Nama Naik' [Otomotive: The Rate of Tax on Motor Vehicle Ownership is Increasing], 27 May 2013 <http://bandung.bisnis.com/read/20130527/63532/369331/otomotif-tarif-bea-balik-nama-naik>.

Morgenstren, Richard, 'Environmental Taxes: Dead or Alive?' (Discussion Paper 96-03, Resource for the Future, 1995).

Mukherje, Krittivas, 'India Eyes Millions in Green Funds from Coal', *Reuter* (online), 26 February 2010 <http://www.reuters.com/article/2010/02/26/us-india-coal-climate-idUSTRE61P36D20100226>.

O'Connor, David, *Applying Economic Instruments in Developing Countries: from Theory to Implementation* (Cambridge University Press, 1998).

Organisation for Economic Co-operation and Development (OECD), *Environmental Compliance and Enforcement in India: Rapid Assessment* (the OECD Program of Environmental Co-operation with Asia jointly produced with the AECEN (Asian Environmental Compliance and Enforcement Network), 2006).

Organisation for Economic Co-operation and Development (OECD), *Environmentally Related Taxes in OECD Countries: Issues and Strategies* (OECD, 2001).

Organisation for Economic Co-operation and Development (OECD), *The Political Economy of Environmentally Related Taxes* (OECD, 2006).

Organisation for Economic Co-operation and Development (OECD), *Taxation, Innovation and The Environment* (OECD, 2010).

Organisation for Economic Co-operation and Development (OECD), *Environmental Principles and Concepts* (OECD, 1995).

Pandey, Rita, Sanjay Bali, and Nandita Mongia, 'Promoting Effective Utilisation of National Clean Energy Fund' (A Sakti Sustainable Energy Foundation Supported Initiative, 2013).

Pargal, Sheoli, Hemamala Hettige, Manjula Singh, and David Wheeler, 'Formal and Informal Regulation of Industrial Pollution: Comparative Evidence from Indonesia and the US' (The World Bank, 1997).

Pearce, David, 'The Role of Carbon Taxes in Adjusting to Global Warming' (1991) *The Economic Journal 938.*

Pigou, A.C., *The Economic of Welfare* (London, Macmillan, 4th edition, 1962).

Ping, Yun, 'The Pollution Charge System in China: An Economic Incentive?' (ACFEC research report, 2003).

Prugh, Thomas, Robert Costanza, John Cumberland, Herman E. Daly, Robert Goodland and Richard B. Norgaard, *Natural Capital and Human Economic Survival* (CRC Press, LLC., second edition, 1999).

Rahim, Khalid Abdul, 'Internalisation of Externalities: Who Bears the Cost of Pollution Control?' (1991) 11(1) *The Environmentalist.*

Rahim, Khalid Abdul, 'Why Pollution Standards are Preferred by Industries: Pragmatism and Rent-seeking Behaviour' (1996) *The Environmentalist 16.*

Rajah, Najma, and Stephen Smith, 'Using Taxes to Price Externalities: Experiences in Western Europe' (Annual Review Energy Environment, 1994).

Reni, Dewi Savitri, '2011 Indonesian Law Review: Environmental Protection & Management', *SSEK Indonesian Legal Consultants* (26 January 2012) <http://blog.ssek.com/index.php/2012/01/2011-indonesian-law-review-environmental-protection-management/>.

Singh, Damandeep, 'India Commits to Low-Carbon Development by Imposing Coal Tax' (1 April 2010) <http://blogs.worldwatch.org/revolt/india-coal-tax/>.

Sakumoto, Naoyuki, 'Chapter VII: Development of Environmental Law and Legal Reform in Indonesia' in Naoyuki Sakumoto and Hikmahanto Juwana, *Reforming Laws and Institutions in Indonesia: An Assessment* (Institute of Developing Economies, Japan External Trade Organization, 2007).

Sarkar, Amin U, 'Sustainable Development of India: Resource Management' (2009) *International Journal of Sustainable Development & World Ecology.*

Sawhney, Aparna, 'A Review of Market Based Instruments for Pollution Control: Implication From India' (A Background Paper for the Task Force Report, Environmental Policy Cell, National Institute of Public Finance and Policy, 1997).

Shah, Anwar, and Theresa Thompson, 'Implementing Decentralized Local Governance: A Treacherous Road with Potholes, Detours and Road Closures' *(*World Bank Policy Research Working Paper 3353, 2004).

Shailesh, 'Carbon Tax: An Indian Perspective', 1 February 2011 <http://greencleanguide.com/2011/02/01/carbon-tax-an-indian-perspective/>.

Singh, Ruchira, and Utpal Baskar, 'India Likely to Raise Coal Tax Issue with Australia, Indonesia', 10 November 2011 <http://www.livermint.com/Politics/NvnZrPsITCb6hZUSIwH3zH/India-likely-to-raise-coal-tax-issue-with-Australia-Indonesia.html>.

Smith, Stephen, 'Taxation and the Environment' in Michael P. Devereux, *The Economics of Tax Policy* (Oxford University Press, New York, 1996).

Song, Sophie, 'China to Debut Environmental Tax to Address Smog Problem, Replacing Ineffective Pollution Charges', 1 May 2014 <http://www.ibtimes.com/china-debut-environmental-tax-address-smog-problem-replacing-ineffective-pollution-charges-1560933>.

Speck, Stefan, 'Possibilities of Environmental Fiscal Reform in Developing Countries' (Bank Indonesia Annual International Seminar Macroeconomic Impact of Climate Change: Opportunities and Challenges, Nusa Dua Bali, August 1 - 4, 2008).

Statistical Services Centre, 'Approaches to the Analysis of Survey Data' (The University of Reading, UK, 2001).

Stavins, Robert N, 'Experience with Market-Based Environmental Policy Instruments' *(*Discussion Paper 01–58 Resource For The Future, 2001).

Stevens, Candice, 'The OECD Guiding Principles Revisited' (1993) 23 *Environmental Law Review.*

Sudarmo, Sri Probo, and Brasukra G. Sudjana, 'The Missing Link: The Province and its Role in Indonesia's Decentralization' (UNDP Policy Issues Paper, 2009).

Sunaryo, Thomas, 'Environmental Problems in Indonesia: A Review' (Australian Institute of Criminology Conference, Canberra, 1992).

Symons, E.J., S. Speck, and J.L.R. Proops, 'The Distributional Effects of Carbon and Energy Taxes: The Cases of France, Spain, Italy, Germany and UK' (2002) *European Environment 12.*

Tanzi, Vito, *Pitfalls on the Road to Fiscal Decentralization* (Carnegie Endowment for International Peace Washington, DC, 2001).

Tempo, 'Hatta: Pajak Progresif Bentuk Keadilan' [Hatta: Progressive Taxes Represent Equality], *Tempo* (online), 4 December 2010 <http://www.tempo.co/read/news/2010/12/04/087296693/Hatta-Pajak-Progresif-Bentuk-Keadilan>.

Tempo, 'Pajak Progresif Belum Mampu Kurangi Pembelian Kendaraan' [Progressive Taxes on Motor Vehicles Fail to Limit Vehicles' Consumption], *Tempo* (online), 13 February 2011 <http://www.tempo.co/read/news/2011/02/13/090313189/Pajak-Progresif-Belum-Mampu-Kurangi- Pembelian-Kendaraan>.

The Environment Protection Authority, *Regulatory Impact Statement on the proposed Protection of the Environment Operations (Clean Air– Motor Vehicles and Motor Vehicle Fuels) Regulation 2002* (Environment Protection Authority, Sydney, 2002).

The Economist, 'Fuel Subsidies in Indonesia: Unpriming the Pump', *The Economist* (online), 22 June 2013 <http://www.economist.com/news/asia/21579885-sound-economics-lousy-politics-unpriming-the-pump>.

The Jakarta Post, 'Government Plans Uniform Environmental Tax in Regions', *the Jakarta Post website,* 5 November 2006 <http://www.thejakartapost.com/news/2006/05/11/govt-plans-uniform-environmental-tax-regions.html>.

Tilt, Bryan, 'The Political Ecology of Pollution Enforcement in China: A Case of Sichuan's Rural Industrial Sectors' (2007) *The China Quarterly 192.*

Tim Sosialisasi Penyesuaian Subsidi Bahan Bakar Minyak [Socialization Team of Fuel Subsidy Reform], *Buku Pegangan Sosialisasi dan Implementasi: Program-Program Kompensasi Kebijakan Penyesuaian Bahan Bakar Minyak 2013* [A Guide Book for Socialization and Implementation: Compensatory Programs of Fuel Subsidy Reform in 2013] (Sekretariat Wakil Presiden Republik Indonesia, 2013 [Secretariat of Vice President of Indonesia, Jakarta, 2013]).

Vanistendael, Frans, 'Legal Framework for Taxation' in Victor Thuronyi, *Tax Law Design and Drafting (*IMF, Washington D.C., 1998).

Vedder, Richard K., and Lowell E. Gallaway, 'Some Underlying Principles of Tax Policy' (paper for Joint Economic Committee, Washington, 1998).

Wang, Hua, 'Pollution Charge, Community Pressure and Abatement Cost: An Analysis of Chinese Industries' (Development Research Group, World Bank, 2000).

Wang, Hua, and David Wheeler, 'Financial Incentives and Endogenous Enforcement in China's Pollution Levy System' (2005) *Journal of Environmental Economic and Management 49.*

Wang, Hua, and David Wheeler, 'Endogenous Enforcement and Effectiveness of China's Pollution Levy System' (Development Research Group, World Bank, 1999).

Wang, Mark, Michael Webber, Brian Finlayson, and Jon Barnett, 'Rural Industries and Water Pollution in China' (2008) *Journal of Environmental Management 86.*

Warren, Carrol, and Kylie Elston, *Environmental Regulation in Indonesia (*University of Western Australia Press, 1994).

Watts, Jonathan, 'China to Impose Green Tax on Heavy Polluters', *The Guardian* (online), 4 February 2011 <http://www.theguardian.com/world/2011/feb/04/china-green-tax-polluters>.

Weier, Annette, 'Legal Definitions of Taxation Terms – Implications for the Design of Environmental Taxes and Charges' (the 50th Annual Conference of the Australian Agricultural and Resource Economics Society (AARES) Conference, Sydney, 2006).

White, Andrew J., 'Decentralised Environmental Taxation in Indonesia: A Proposed Double Dividend for Revenue Allocation and Environmental Regulation' (2007) 19(1) *Journal of Environmental Law.*

Widianarko, Budi, 'Democratization, Decentralization and Environmental Conservation in Indonesia' (the 9th Asia-Pacific NGO Environmental Conference (APNEC9) and the 30th anniversary of Japan Environmental Conference (JEC), Kyoto, 2009).

Widodo, Tri, G. A. Sahadewo, S. U. Setiastuti, and M. Chaerriyah, 'Chapter 8: Impact of Fuel Subsidy Removal on Government Spending in Cambodia's Electricity Sector in the Context of Regional Electricity Market Integration' In Y. Wu, X. Shi and F. Kimura, *Energy Market Integration in East Asia: Theories, Electricity Sector and Subsidies* (ERIA Research Project Report, Jakarta, 2012).

Wier, Mette, Katja Birr-Pedersen, Henrik Klinge Jacobsen, and Jacob Klok, 'Are CO_2 taxes regressive? Evidence from the Danish experience' (2005) *Ecological Economics 52.*

Wingqvist, Gunilla Ölund, and Emelie Dahlberg, 'Indonesia Environmental and Climate Change Policy Brief' (A desk Study of Sida, University Gothenburg, 2008).

World Bank, 'Decentralizing Indonesia' (The World Bank Regional Public Expenditure Review for Indonesia, 2003).

World Bank, 'Environmental Fiscal Reform: What should be done and How to achieve it' (The World Bank Organization, Washingthon DC, USA, 2005).

World Bank, 'Indonesia: Environment at a Glance 2008' (The World Bank Organization. 2008) <http://siteresources.worldbank.org/INTEEI/Data/21836378/IDN08.pdf>.

World Bank, '*Fuel Pricing and Subsidies in Indonesia: Reaching an Equitable and Sustainable Policy*' (The World Bank Organization, Washington, DC, USA 2012) <http://documents.worldbank.org/en/2012/1/16461267/pricing-subsidies-indonesia-reaching-sustainable-policy>.

Xu, Jintao, and Haipeng Zhang, *Environmental Policy in China: Gaps, Innovation and Future Directions (*China Environment Yearbook 1992 – 2007, 2007).

Yan, Yan, 'China Mulls Tax on Carbon Emission', 16 January 2012 <http://www.rsc.org/chemistryworld/News/2012/January/china-considers-carbon-tax-greenhouse-emissions.asp>.

Zhang, Junjie, 'Delivering Environmentally Sustainable Economic Growth: The Case of China' *(*Asia Society, 2012).

Zou, Daozhong, *The Application of Economic Instruments for Preventing and Controlling the Industrial Pollution in China* (A Thesis for Master of Science Degree in Environmental Science, Lund University, 1998).

Legislation

China

Environmental Protection Law of the People's Republic of China 1989-12-26 <http://english.mep.gov.cn/Policies_Regulations/laws/environmental_laws/200710/t20071009_109928.htm>.

Law of the People's Republic of China 1984-05-11 <http://english.mep.gov.cn/Policies_Regulations/laws/environmental_laws/200710/t20071009_109915.htm >.

India

Ministry of Finance Government of India Notification No. 6/2010 – Clean Energy *Cess.*

The Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974) (India).

The Water (Prevention and Control of Pollution) *Cess* Act, 1977 No. 36 of 1977 (India).

Indonesia

Peraturan Pemerintah No. 18 Tahun 1999 diamandemen oleh Peraturan Pemerintah No. 85 Tahun 1999 tentang Pengelolaan Limbah Bahan Berbahaya dan Beracun (*B3)* [Government Regulation No. 18 of 1999 amended by Government Regulation No. 85 of 1999 concerning Hazardous Waste Management] (Indonesia).

Peraturan Pemerintah No. 41 Tahun 1999 tentang Pengelolaan Pencemaran Udara [Government Regulation No. 41 of 1999 concerning Air Pollution Management] (Indonesia).

Peraturan Pemerintah No. 65 Tahun 2001 tentang Pajak Daerah [Government Regulation No. 65 of 2001 concerning Regional Taxes] (Indonesia).

Peraturan Pemerintah No. 74 Tahun 2001 tentang Pengelolaan Bahan Berbahaya dan Beracun [Government Regulation No. 74 of 2001 concerning Hazardous Materials Management] (Indonesia).

Peraturan Pemerintah No. 82 Tahun 2001 tentang Pengelolaan Kualitas Air dan Pencemaran Air [Government Regulation No. 82 of 2001 concerning Water Quality and Pollution Management] (Indonesia).

Peraturan Pemerintah No. 27 Tahun 2012 tentang Izin Lingkungan [Government Regulation No. 27 of 2012 concerning Environmental License] (Indonesia).

Peraturan Pemerintah No. 81 Tahun 2012 tentang Pengelolaan Sampah Rumah Tangga dan Sampah Sejenis Sampah Rumah Tangga [Government Regulation No 81 of 2012 concerning The Management of Domestic Waste and Waste similar to Domestic Waste] (Indonesia).

Peraturan Presiden Republik Indonesia No. 5 Tahun 2006 tentang Kebijakan Energi Nasional [Presidential Regulation No. 5 of 2006 concerning The National Energy Policy].

Peraturan Menteri Negara Lingkungan Hidup No. 18 Tahun 2009 tentang Tata Cara Perijinan Pengelolaan Limbah Bahan Berbahaya dan Beracun [Ministerial Regulation No. 18 of 2009 concerning Licensing Mechanism for Hazardous Waste Management] (Indonesia).

Peraturan Menteri Negara Lingkungan Hidup No. 2 Tahun 2008 tentang Daur Ulang (Recycle) [Ministerial Regulation No. 2 of 2008 and No. 13 of 2012 concerning Recycling] (Indonesia).

Peraturan Daerah Provinsi DIY No. 4 Tahun 2009 tentang Rencana Pembangunan Jangka Menengah Daerah [Provincial Regulation of Special Province of Yogyakarta (DIY) No. 4 of

2009 concerning Local Development Mid-Term Planning for the year of 2009 – 2013] (Indonesia).

Peraturan Daerah Provinsi Daerah Istimewa Yogyakarta No. 3 Tahun 2011 tentang Pajak Daerah [Local Regulation of Special Province of Yogyakarta (DIY Province) No. 3 of 2011 concerning Local Taxes] (Indonesia).

Peraturan Gubernur Provinsi Daerah Istimewa Yogyakarta No. 30 Tahun 2011 tentang Bea Balik Nama Kendaraan Bermotor [Governor Regulation of Special Province of Yogyakarta (DIY Province) No. 30 of 2011 concerning Tax on Transfer of Motor Vehicles Ownership] (Indonesia).

Peraturan Gubernur Provinsi Daerah Istimewa Yogyakarta No. 31 Tahun 2011 tentang Pajak Kendaraan Bermotor [Governor Regulation of Special Province of Yogyakarta (DIY Province) No. 31 of 2011 concerning Motor Vehicle Tax] (Indonesia).

Peraturan Gubernur Provinsi Daerah Istimewa Yogyakarta No. 16 Tahun 2012 tentang Pemungutan Pajak Bahan Bakar Kendaraan Bermotor [Governor Regulation of Special Province of Yogyakarta (DIY Province) No. 16 of 2012 concerning The Collection of Fuel Tax] (Indonesia).

Peraturan Gubernur Provinsi Daerah Istimewa Yogyakarta No. 17 Tahun 2012 tentang Nilai Jual Pajak Air Permukaan [Governor Regulation of Special Province of Yogyakarta (DIY Province) No. 17 of 2012 concerning The Sale Value of Surface Water Tax] (Indonesia).

Peraturan Daerah Kabupaten Bantul No. 8 Tahun 2010 tentang Pajak Daerah [Local Regulation of Bantul District No. 8 of 2010 concerning Local Taxes] (Indonesia).

Peraturan Kepala Daerah Kabupaten Bantul No. 9 Tahun 2012 tentang Prosedur Administrasi Pajak Penerangan Jalan [Head of Bantul District Regulation No. 9 of 2012 concerning Administrative Procedure of Street lighting Tax] (Indonesia).

Peraturan Daerah Kabupaten Bantul No. 10 Tahun 2012 tentang Prosedur Administrasi Pajak Pengambilan Mineral Bukan Logam dan Batuan [Head of Bantul District Regulation No. 10 of 2012 concerning Administrative Procedure of Tax on Non-Metal Mineral and Rock] (Indonesia).

Peraturan Kepala Daerah Kabupaten Bantul No. 12 Tahun 2012 tentang Prosedur Administrasi Pajak Air Bawah Tanah [Head of Bantul District Regulation No. 12 of 2012 concerning Administrative Procedure of Groundwater Tax] (Indonesia).

Peraturan Kepala Daerah Kabupaten Bantul No. 13 Tahun 2012 tentang Prosedur Administrasi Pajak Sarang Burung Walet [Head of Bantul District Regulation No. 13 of 2012 concerning Administrative Procedure of Tax on Swallows' Nests] (Indonesia).

Peraturan Daerah Kabupaten Sleman No. 9 Tahun 2011 tentang Pajak Penerangan Jalan [Local Regulation of Sleman District No. 9 of 2011 concerning Street lighting Tax] (Indonesia).

Peraturan Daerah Kabupaten Sleman No. 10 Tahun 2011 tentang Pajak Pengambilan Mineral Bukan Logam dan Batuan [Local Regulation of Sleman District No. 10 of 2011 concerning Tax on Non-Metal Mineral and Rock] (Indonesia).

Peraturan Daerah Kabupaten Sleman No. 13 Tahun 2010 tentang Pajak Air Bawah Tanah [Local Regulation of Sleman District No. 13 of 2010 concerning Ground Water Taxes] (Indonesia).

Peraturan Daerah Kota Yogyakarta No. 1 Tahun 2011 tentang Pajak Daerah [Local Regulation of Yogyakarta City No. 1 of 2011 concerning Local Taxes] (Indonesia).

Peraturan Kepala Daerah Kota Yogyakarta No.2 Tahun 2012 tentang Perubahan Peraturan Kepala Daerah Kota Yogyakarta No.51 Tahun 2011 tentang Petunjuk Pelaksanaan Peraturan Daerah Kota Yogyakarta No. 1 Tahun 2011 tentang Pajak Daerah [Head of Yogyakarta City Regulation No. 2 of 2012 concerning The Amendment of Head of Yogyakarta City Regulation No. 51 of 2011 concerning Procedural Guidelines of Local Regulation of Yogyakarta City No. 1 of 2011 concerning Local Taxes] (Indonesia).

Peraturan Kepala Daerah Kota Yogyakarta No.51 Tahun 2011 tentang Petunjuk Pelaksanaan Peraturan Daerah Kota Yogyakarta No. 1 Tahun 2011 tentang Pajak Daerah [Head of Yogyakarta City Regulation No. 51 of 2011 concerning Procedural Guidelines of Local Regulation of Yogyakarta City No. 1 of 2011 concerning Local Taxes] (Indonesia).

Undang-Undang Dasar Negara Republik Indonesia Tahun 1945 Amandemen I – IV [The 1945 Constitution Amendment I-IV] (Indonesia).

Undang-Undang No. 22 Tahun 1999 tentang Pemerintahan Daerah [Law No. 22 of 1999 concerning Regional Government] (Indonesia).

*Undang-Undang No. 25 Tahun 1999 tentang Perimbangan Keuangan antara Pemerintah Pusat dan Pemerintahan Daerah [*Law No. 25 of 1999 concerning Fiscal Balance] (Indonesia).

Undang-Undang No. 10 Tahun 2004 tentang Pembentukan Peraturan Perundang-undangan [Law No. 10 of 2004 concerning the Formulation of Laws and Regulations] (Indonesia).

Undang-Undang No. 32 Tahun 2004 tentang Pemerintahan Daerah [Law No. 32 of 2004 on Regional Government] (Indonesia).

Undang-Undang No. 33 Tahun 2004 tentang Perimbangan Keuangan antara Pemerintah Pusat dan Pemerintahan Daerah [Law No. 33 of 2004 concerning Fiscal Balance] (Indonesia).

Undang-Undang No. 30 Tahun 2007 tentang Energi [Law No. 30 of 2007 concerning Energy].

Undang-Undang No. 18 Tahun 2008 tentang Pengelolaan Sampah [Law No. 18 of 2008 concerning Waste Management] (Indonesia).

Undang-Undang No. 20 Tahun 2008 tentang Usaha Mikro, Kecil dan Menengah [Law No. 20 of 2008 concerning Micro, Small and Medium Enterprises] (Indonesia).

Undang-Undang No. 28 Tahun 2009 tentang Pajak Daerah dan Retribusi Daerah [Law No. 28 of 2009 concerning Local Taxes and Charges] (Indonesia).

Undang-Undang No. 34 Tahun 2000 tentang Perubahan atas Undang-Undang No. 18 Tahun 1997 tentang Pajak Daerah dan Retribusi Daerah [Law No. 34 of 2000 which amended Law No. 18 of 1997 concerning Local Taxes and Charges] (Indonesia).

Undang-Undang No. 18 Tahun 1997 tentang Pajak dan Retribusi Daerah [Law No. 18 of 1997 concerning Local Taxes and Charges] (Indonesia).

Undang-Undang No. 32 Tahun 2009 tentang Perlindungan dan Pengelolaan Lingkungan Hidup [Law No. 32 of 2009 concerning Environmental Protection and Management] (Indonesia).

Undang-Undang No. 23 Tahun 1997 tentang Pengelolaan Lingkungan Hidup [Law No. 23 of 1997 concerning Environmental Management] (Indonesia).

Undang-Undang No. 4 Tahun 1982 tentang Ketentuan-Ketentuan Pokok Pengelolaan Lingkungan Hidup [Law No. 4 of 1982 concerning Basic Principles on Environmental Management] (Indonesia).

Malaysia

Environmental Quality (Prescribed Premises) (Crude Palm Oil) (Amendment) Regulation 1982 (Lawnet Percetakan Nasional Malaysia Berhad, 1982).

Environmental Quality (Prescribed Premises) (Crude Palm Oil) Regulation 1977 – Incorporating latest amendments – P.U.(A) 184/82 (Lawnet Percetakan Nasional Malaysia Berhad, 1977).

Environmental Quality Act, 1974 (Act 127) (Lawnet Percetakan Nasional Malaysia Berhad, 1974).

Appendices

- Appendix 1: List of Interview Questions
- Appendix 2: Survey Questionnaire
- Appendix 3: Ethics Final Approval

Appendix 1

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LIST OF INTERVIEW QUESTIONS FOR OFFICERS AT THE DIRECTORATE GENERAL OF FISCAL BALANCE IN THE INDONESIAN MINISTRY OF FINANCE

1. What is the underlying rationale of the enactment of Law No. 28 of 2009 on Local Taxes and Charges?

2. Compared to previous Laws (Law No. 34 of 2000 amended Law No. 18 of 1997 on Local Taxes and Charges), are there any attempts to use some local taxes[1] in Law No. 28 of 2009 as an instrument to minimize environmental problems at local level? Please, provide reasons for your answers.

3. In the explanation of Law No. 28 of 2009, some revenues of certain local taxes will be distributed to specific purposes other than revenue-raising. What is the prime motivation in driving this change and who will control the implementation?

4. Will some local taxes related to the environment in Law No. 28 of 2009 bring burden for manufacturing industries to exist? If yes, what kind of assistances may be offered?

5. Are there any benefits associated with some local taxes in Law No. 28 of 2009 that may be given back to manufacturing industries to innovate and improve environmental technology?

6. What kind of problems may arise in the imposition of some local taxes related to the environment in Law No. 28 of 2009 at local levels? If any, what kind of efforts should be taken into consideration to encounter the problems?

7. Do you agree or disagree that some local taxes in Law No. 28 of 2009 will be sufficient to use in rectifying environmental problems? Is it urgent for Indonesia to

[1]Law No. 28 of 2009 governs different types of local taxes both for provincial governments and for district/municipal governments. Some of local taxes deem to represent the concept of environmentally related taxes that are highlighted in the OECD report. The concept emphasized on taxes that have environmentally relevant tax-bases such as energy products, motor vehicles and waste (The OECD, 2006). In the case of local taxes for provincial governments in Indonesia, there are 5 (five) taxes that represent the above concept. They are motor vehicle taxes, motor vehicle transfer taxes, fuel taxes, surface water taxes and cigar taxes. For district/municipal governments, there are 11 (eleven) types of taxes that can be imposed based on Law No. 28 of 2009. However, only three (3) taxes have environmentally relevant tax bases that are street lighting taxes, underground water taxes and tax on exploitation of minerals category non-metal and stone.

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apply carbon taxes in the future to rectify the climate change's impacts? If yes, should carbon taxes be governed in Law of Local Taxes and Charges?

8. In your opinion, are there any other instruments that can be implemented in combination with some local taxes related to the environment as governed in Law No. 28 of 2009 to manage the environment at local levels in Indonesia?

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LIST OF INTERVIEW QUESTIONS FOR OFFICERS AT LOCAL REVENUE AND FINANCE BUREAUS (LOCAL TAXES OFFICERS)

1. What is your opinion on the enactment of Law No. 28 of 2009 (Local Taxes and Charges) related to environmental management at local level?

2. Are there any difficulties arising from the implementation of following local taxes related to the environment:

    a) For provincial government: motor vehicle taxes, motor vehicle transfer taxes, fuel taxes, surface water taxes?

    b) For district/municipal governments: street lighting taxes, underground water taxes, swallows' nest taxes and taxes on exploitation of minerals category non-metal and stone?

3. Are revenues from the above local taxes higher than has been targeted? If yes, does it mean that the above local taxes do not represent environmental friendliness of local tax system in the country?

4. Are revenues from the above local taxes allocated for specific environmental purposes? If your answer is either yes or no, please provide reasons. If yes, what are the percentages of the allocation projected?

5. Do the above local taxes have direct or indirect impact to manufacturing industries at local level in managing the environment? Please provide reasons for your answer.

6. Are there any benefits that manufacturing industries receive from the imposition of the above local taxes? Please provide reasons for your answer.

7. Do you agree or disagree that local tax instruments should be used in combination with other instruments (e.g. regulatory instruments)? Please provide reasons for your answer.

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LIST OF INTERVIEW QUESTIONS FOR LOCAL ASSOCIATION OF INDUSTRIES

1. In your opinion, do the majority of industries in DI Yogyakarta have a system to track environmental laws and regulations that apply to the operation of the industries? If No, what kind of support does this association provide to ensure the environmental laws and regulations are properly informed? In your opinion, is the regulatory compliance an important aspect to encourage the industries in managing the environment?

2. Are the industries aware of any current and future environmental requirements (e.g., restriction to use CFCs) in their processes? If yes, do the industries accommodate the environmental requirements to avoid the potential risk of business interruption for their products? From whom do the industries obtain the information of environmental requirements?

3. In your opinion, should governments provide subsidy to industries to facilitate compliance with environmental regulations? Do you agree or disagree that subsidy should also be provided to raise environmental awareness of industry through education or to assist capacity building of government agencies through regular training?

4. What is your view on the imposition of some local taxes related to the environment* in provincial and district/municipal levels based on Law on Local Taxes and Charges? Do these taxes create a burden for industries? Are the industries aware of the role of local taxes in managing the environment?

   *Motor vehicle taxes, motor vehicle transfer taxes, fuel taxes, surface water taxes, cigar taxes, street lighting taxes, underground water taxes and on exploitation of minerals category non-metal and stone.

5. Are there any advantages and disadvantages related to the implementation of the above local taxes specifically for industries? What should government do to ensure fairness and equity in the imposition of the above local taxes?

6. What are some of the real benefits that industries receive from the imposition of the above local taxes?

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7. Are there any efforts from industries to minimize pollutants that may occur in goods processing after fulfilling their tax obligation (the payment of the above local taxes)? What kind of efforts (if any) do industries carry out?

8. In your opinion, what types of instrument (e.g. environmental law, information strategies or subsidy) will combine well with the above local taxes in practice to manage the environment specifically at local levels in Indonesia?

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LIST OF INTERVIEW QUESTIONS FOR INDUSTRIAL, TRADE AND COOPERATIVE OFFICERS IN THE SPECIAL PROVINCE OF YOGYAKARTA

1. How is the development of industry in the Special Province of Yogyakarta?
2. What is the main function of this industrial bureau?
3. What types of industry do emit more pollutant than the other?
4. In your opinion, do the majority of industries in Yogyakarta have a system to track environmental laws and regulations that apply to the operation of the industries? If No, what kind of support does this bureau provide to ensure the environmental laws and regulations are properly informed? In your opinion, is the regulatory compliance an important aspect to encourage the industries in managing the environment?
5. Are the industries aware of any current and future environmental requirements (e.g., restriction to use CFCs) in their processes? If yes, do the industries accommodate the environmental requirements to avoid the potential risk of business interruption for their products? From whom do the industries obtain the information of environmental requirements?
6. Are there any efforts from industries to minimize pollutants that may occur in goods processing? What kind of efforts (if any) do industries carry out?

Appendix 2

SURVEY QUESTIONNAIRE

"The return of the questionnaire will be regarded as consent to use the information for research purposes"

SECTION 1: PARTICIPANT'S PROFILE

Please respond to the following questions so that a profile of participants can be developed.

1. When was this business established/commence operation? _____

2. What is the type of this business's ownership structure?

☐ Sole proprietorship ☐ Partnership ☐ Corporation

3. What sector best describes the general operations of this business?

☐ Chemical business
☐ Textile manufacturing
☐ Mining
☐ Food and beverage
☐ Metalworking
☐ Handicraft
☐ Other (please specify)_____

4. What is the business's total annual sale in average[2]?

☐ Less than 300 million rupiahs (< USD 32.389)
☐ Above 300 million– 2.5 billion rupiahs (>USD 32.389 – USD 269,904)
☐ Above 2.5 billion– 50 billion rupiahs (>USD 269,904 – USD 5.4 million)
☐ Over 50 billion rupiahs (> USD 5.4 million)

5. What is the business's total asset excluding business land and building[3]?

☐ Less than 50 million rupiahs (< USD 5398)
☐ Above 50 million– 500 million rupiahs (>USD 5398 – USD 53,980)
☐ Above 500 million– 10 billion rupiahs (>USD 53,980 – USD 1.079 million)
☐ Over 10 billion rupiahs (> USD 1.079 million)

6. What resources does this business predominantly use in the production of goods?

☐ Fuel ☐ Electricity
☐ Water ☐ Motor vehicles
☐ Minerals (e.g. sand and gravel) ☐ Other (Please specify)_____

[2]The questions on the business's total annual sale and the total asset have been based on the Law Number 20 of 2008 on Micro, Small and Medium Enterprises. The currency rate that I used to convert Indonesian rupiahs to US Dollars based on the ozforeign exchange at a rate of 9262.55 on Wednesday, 23 May 2012 at 1 pm (available at http://www.ozforex.com.au/currency-converter).
[3]Ibid.

Appendix 2

SECTION 2: THE AWARANESS OF THE BUSINESS OF WASTE MANAGEMENT PRACTICES AND THE REGULATORY FRAMEWORK

Please answer the following questions by ticking the relevant answer below.

7. What is the byproduct of this business's main production processes?

- ☐ Industrial wastewater discharge
- ☐ Air emission
- ☐ Solid waste
- ☐ Noise
- ☐ Hazardous materials
- ☐ Other (Please specify)_____

8. Which of the following aspect is this business concerned about managing its overall production?

- ☐ Electricity
- ☐ Water
- ☐ Fuel
- ☐ Wastewater discharge
- ☐ Air emission
- ☐ Solid waste
- ☐ Noise
- ☐ Hazardous materials

9. What measure is this business taking to manage industrial emission or discharges?

- ☐Investing in emission reduction practices
- ☐Undertaking research into emission issues
- ☐Installing treatment or disposal facilities
- ☐Measures in planning
- ☐Other (Please specify) _____

10. Which of the following treatment facility is this business required to have by the law?

- ☐ Hazardous waste storage
- ☐ Air emission control equipment
- ☐ Wastewater treatment
- ☐ Storage tanks
- ☐ Other (Please specify)_____

11. Please indicate this business' level of awareness toward the different types of environmental permits/licenses for the management of waste generated in the production process?

- ☐ Very aware
- ☐ Somewhat aware
- ☐ Unaware

12. How often does this business monitor its operation or discharges to manage the pollution level?

☐ Weekly
☐ Monthly
☐ Quarterly
☐ Annually
☐ Other (Please specify)_____

13. How frequently do the regulatory agencies monitor/inspect this business to ensure compliance?

☐ Often
☐ Sometimes
☐ Seldom
☐ Never

14. What is the level of awareness of this business toward the consequences of non-compliance with the applicable regulation?

☐ Very aware
☐ Somewhat aware
☐ Unaware

15. In your opinion, what is the major driver to comply with the applicable regulation?

☐ Afraid of any legal action
☐ Afraid of temporary or permanent shutdown
☐ Cost reduction
☐ Government incentives (e.g. rebate, subsidy)
☐ Pressure from customers
☐ Other (Please specify)_____

SECTION 3: THE IMPOSITION OF ENVIROMENTALLY RELATED TAXES

Please answer the following questions based on your experiences with respect to the implementation of environmentally related taxes in the region.

16. Which local tax relating to the environmental management does this business pay? (You can tick more than one)

☐ Motor vehicle tax
☐ Transfer of title fees for motor vehicles
☐ Fuel tax
☐ Surface water tax
☐ Tax on exploitation of minerals category non-metal and stone
☐ Street lighting tax

☐ Underground water tax
☐ Swallows' nest tax

17. How do you rate the relevance of the above local taxes in managing the environment at local levels?

☐ High
☐ Medium
☐ Low
☐ None

18. Does the compliance of the above taxes create additional costs for the operation of this business?

☐ Yes
☐ No

Please provide reasons for your answer

_____

19. Does this business receive any refund or subsidy from the payment of above tax/taxes to encourage building a treatment facility or to encourage any actions to prevent the pollution to happen?

☐ Yes
☐ No

20. Does this business also pay other government's levies related to environmental management?

☐ Yes
☐ No

If Yes, what kind of levies did this business pay? (You can tick more than one answer)

☐ Local fees/charges (e.g. liquid waste treatment fees, nuisance fees)
☐ Environmental permit fees
☐ Other (Please specify)_____

21. Which of the following factor/(s) did this business find non-satisfactory in the implementation of environmentally related taxes (the above local taxes) in the region?

☐ Complicated payment procedure
☐ Untrustworthy issues related to the use of tax revenues
☐ No penalty imposed for non-compliance
☐ No real benefits appear
☐ Lack of institutional capacity to implement the above taxes
☐ Other (Please specify)_____

22. In your opinion, which option is the most effective in complying with the environmentally related taxes' scheme?

☐ Paying the above taxes regularly
☐ Paying the above taxes regularly while controlling pollution
☐ Controlling pollution so that the tax payment will be reduced

23. In overall, how would you rate the effectiveness of environmentally related taxes in managing the environment in the region?

☐ Very effective
☐ Somewhat effective
☐ Ineffective
☐ Very ineffective

SECTION 4: A FUTURE SCHEME OF ENVIRONMENTALLY RELATED TAXES

Please answer the following questions based on your needs and expectation toward a future scheme of environmentally related taxes as an instrument to manage the environment.

24. If the government would like to increase the rate of environmentally related taxes, will you…

☐ Continue to pay those taxes?
☐ Treat more pollution so as to reduce payment of taxes?
☐ Plan to switch/to substitute less polluted products (if any)?
☐ Others (Please specify)_____

25. Which of the following is the proper time frame that should be provided to businesses to adapt with any plan to increase the rate of an environmentally related tax?

☐ Less than 6 months
☐ 6 months
☐ Above 6 - 12 months
☐ Over 12 months

26. In your opinion, in which of the following activities should revenues from environmentally related taxes be earmarked to?

☐ General public's expenditures/services
☐ Specific government's programs depending on the imposed taxes (e.g. revenues from motor vehicle taxes will be allocated to maintain or to construct the road)
☐ Pollution control projects done by industries
☐ Environmental projects done by governments
☐ Funding education for raising environmental awareness among industries
☐ Funding regular training programs for improving capacity building of government agencies

Appendix 2

27. In your opinion, which of the following mechanisms will ensure the effectiveness of environmentally related taxes in practice?

☐ A strong enforcement of Environmental Law

☐ Information strategies to public

☐ Subsidy for industries to assist pollution control programs

☐ Industries' voluntary programs related to environment

28. Do you have any other suggestions for improving the existing environmentally related taxes' scheme in the region?

Thank you for your participation. <u>Please ensure that you have answered every question</u>. Your response is very important to the research which will contribute to the understanding of the imposition of environmentally related taxes from the perspective of manufacturing industries in the region.

Appendix 3

MACQUARIE UNIVERSITY

DAHLIANA HASAN <dahliana.hasan@students.mq.edu.au>

Final Approval - 5201200565(D)

Mrs Yanru Ouyang <yanru.ouyang@mq.edu.au> Mon, Aug 27, 2012 at 10:31 AM
To: Associate Professor Hope Kwaku Ashiabor <hope.ashiabor@mq.edu.au>
Cc: Dr Kay Chan <kay.chan@mq.edu.au>, Ms Dahliana Hasan <dahliana.hasan@students.mq.edu.au>

Dear Associate Professor Ashiabor,

Re: 'Environmentally related taxes on manufacturing industries in Indonesia: Developing an effective framework for environmental sustainability and revenue raising.'

Reference No.: 5201200565

Thank you for your recent correspondence. Your response has addressed the issues raised by the Faculty of Business & Economics Human Research Ethics Sub Committee. Approval of the above application is granted, effective 27 August 2012 and you may now commence your research.

This research meets the requirements of the National Statement on Ethical Conduct in Human Research (2007). The National Statement is available at the following web site:

http://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/e72.pdf.

The following personnel are authorised to conduct this research:

Associate Professor Hope Kwaku Ashiabor
Dr Kay Chan
Ms Dahliana Hasan

NB. STUDENTS: IT IS YOUR RESPONSIBILITY TO KEEP A COPY OF THIS APPROVAL EMAIL TO SUBMIT WITH YOUR THESIS.

Please note the following standard requirements of approval:

1. The approval of this project is conditional upon your continuing compliance with the National Statement on Ethical Conduct in Human Research (2007).

2. Approval will be for a period of five (5) years subject to the provision of annual reports.

Progress Report 1 Due: 27th Aug. 2013
Progress Report 2 Due: 27th Aug. 2014
Progress Report 3 Due: 27th Aug. 2015
Progress Report 4 Due: 27th Aug. 2016
Final Report Due: 27th Aug. 2017

NB. If you complete the work earlier than you had planned you must submit a Final Report as soon as the work is completed. If the project has been discontinued or not commenced for any reason, you are also required to submit a Final Report for the project.

Progress reports and Final Reports are available at the following website:

Appendix 3

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/forms

3. If the project has run for more than five (5) years you cannot renew approval for the project. You will need to complete and submit a Final Report and submit a new application for the project. (The five year limit on renewal of approvals allows the Committee to fully re-review research in an environment where legislation, guidelines and requirements are continually changing, for example, new child protection and privacy laws).

4. All amendments to the project must be reviewed and approved by the Committee before implementation. Please complete and submit a Request for Amendment Form available at the following website:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/forms

5. Please notify the Committee immediately in the event of any adverse effects on participants or of any unforeseen events that affect the continued ethical acceptability of the project.

6. At all times you are responsible for the ethical conduct of your research in accordance with the guidelines established by the University. This information is available at the following websites:

http://www.mq.edu.au/policy/
http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/policy

If you will be applying for or have applied for internal or external funding for the above project it is your responsibility to provide the Macquarie University's Research Grants Management Assistant with a copy of this email as soon as possible. Internal and External funding agencies will not be informed that you have final approval for your project and funds will not be released until the Research Grants Management Assistant has received a copy of this email.

If you need to provide a hard copy letter of Final Approval to an external organisation as evidence that you have Final Approval, please do not hesitate to contact the FBE Ethics Committee Secretariat, via fbe-ethics@mq.edu.au or 9850 4826.

Please retain a copy of this email as this is your official notification of final ethics approval.

Yours sincerely
Alan Kilgore
Chair, Faculty of Business and Economics Ethics Sub-Committee