

Thesis 3252

WASTE MANAGEMENT LAW AND POLICY IN TAIWAN: A CASE  
STUDY IN COMPARATIVE ENVIRONMENTAL LAW

THE SCHOOL OF ORIENTAL AND AFRICAN STUDIES  
JOAN S. KUO  
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## **Table of Abbreviations**

The abbreviations, which I use in the text and in the footnotes, are mostly standards, but in order to avoid some possible points of confusion, I list the following:

<b>ADR</b>	<b>Alternative Dispute Resolution</b>
<b>AEADP</b>	<b>Atomic Energy Application and Development Policy</b>
<b>AEC</b>	<b>Atomic Energy Council</b>
<b>APEC</b>	<b>Asia Pacific Economic Cooperation</b>
<b>APCA</b>	<b>Air Pollution Control Act</b>
<b>APROC</b>	<b>Asia Pacific Regional Operations Centre</b>
<b>BATNEEC</b>	<b>Best Available Techniques Not Entailing Excessive Cost</b>
<b>BPEO</b>	<b>Best Practicable Environmental Option</b>
<b>CEPD</b>	<b>Council for Economic Planning and Development</b>
<b>CFCs</b>	<b>Chlorofluorocarbons</b>
<b>CO<sub>2</sub></b>	<b>Carbon Dioxide</b>
<b>COM</b>	<b>Communications of European Commission</b>
<b>DoE</b>	<b>Department of Environment</b>
<b>DPP</b>	<b>Democratic Progressive Party (Minjingdang)</b>
<b>EC</b>	<b>European Community</b>
<b>ECJ</b>	<b>European Court of Justice</b>
<b>EEC</b>	<b>European Economic Community</b>
<b>EIA</b>	<b>Environmental Impact Assessment</b>
<b>EIIR</b>	<b>Environmental Impact Investigation Report</b>
<b>EIS</b>	<b>Environmental Impact Statement</b>
<b>EMS</b>	<b>Environmental Management System</b>
<b>EPA</b>	<b>Environmental Protection Act</b>
<b>FCCC</b>	<b>Framework Convention on Climate Change</b>
<b>FCMA</b>	<b>Fuel Cycle and Materials Administration</b>
<b>GDP</b>	<b>Gross Domestic Product</b>
<b>GMOs</b>	<b>Genetically Modified Organisms</b>
<b>GNP</b>	<b>Gross National Product</b>
<b>HWMS</b>	<b>Hazardous Waste Measure Standard</b>
<b>I&amp;CWMS</b>	<b>Industrial and Commercial Waste Storage, Clean-up and Disposal Treatment Methods and Facilities Standards</b>
<b>IDB</b>	<b>The Industrial Development Bureau</b>
<b>INER</b>	<b>Institute of Nuclear Energy Research</b>
<b>IPC</b>	<b>Integrated Pollution Control</b>
<b>IPPC</b>	<b>Integrated Pollution Prevention Control</b>
<b>ISO</b>	<b>International Organization for Standardization</b>
<b>KMT</b>	<b>Kuomintang (the National Party)</b>
<b>LLRW</b>	<b>Low-level Radioactive Waste</b>
<b>MEA</b>	<b>Multilateral Environmental Agreement</b>
<b>MOEA</b>	<b>Ministry of Economic Affairs</b>
<b>NBMD</b>	<b>Nuclear Backend Management Department</b>
<b>NCSD</b>	<b>National Council for Sustainable Development</b>
<b>NGO</b>	<b>Non-Governmental Organisation</b>
<b>NIMBY</b>	<b>Not In My Back Yard</b>
<b>NOD</b>	<b>Nuclear Operation Department</b>
<b>NP</b>	<b>The New Party (Xindang)</b>

NPP	Nuclear Power Plant
N&RWM	Nuclear Material and Radioactive Waste Management
NTD*	New Taiwan Dollar
PEPB	Provincial Environmental Protection Bureau
PRC	People's Republic of China
POPs	Persistent Organic Pollutants
PPG	Planning Policy Guidance
ROC	Republic of China
R&D	Research and Development
RWMP	Radioactive Waste Management Policy
SEA	Single European Act
TANs	Technical Advice Notes
TEPA	Taiwan Environmental Protection Administration
T&CPA	Town & Country Planning Act
TPC	Taiwan Power Company
UNCED	The United Nations Conference on Environment and Development
WCAs	Waste Collection Authorities
WCED	World Commission on Environment and Development
WDA 2001	Waste Disposal Act 2001
WDAs	Waste Disposal Authorities
WPCI	Water Pollution Control Institute
WRAs	Waste Regulation Authorities
WTO	World Trade Organization

\* New Taiwan Dollar is the currency unit that is actually in use in Taiwan. The exchange rate is about NTDS\$56.9 against one pound sterling or NTDS\$34.7 against one US dollar. See *The Economist*, 31<sup>st</sup> May - 6th June 2003, Vol. 367, No. 8326, p.102.

## GLOSSARY OF CHINESE TERMS

- Appreciation of Goods Project 惜福計劃 (*hsi-fu ji-hua*)
- Appropriate person in relation to the site 土地關係人 (*tu-dih-guang-shi-ren*)
- Arbitration 仲裁或裁決 (*zong-chai, tsair-jyue*)
- 'Clear and Clean Project 安靖計劃 (*an-jin ji-hua*)
- Collective Funds 資源回收公益基金 (*tzy-yuan hui-shou goan-li ji-jin*)
- Collective Organisation 工會 (*gong-huey*)
- Deep burial 深地層障壁 (*shen-di-cherh chuh-jyh*)
- Enterprise waste 事業廢棄物 (*shi-yeh fei-chi-wu*)
- Four-In-One Recycling Programme 四合一資源回收計劃 (*si-he-yi zi-yuan hui-shou ji-hua*)
- General waste 一般廢棄物 (*i-ban fei-chi-wu*)
- High-level radioactive waste 高放射性廢棄物 (*gau-fung-she-sing fei-chi-wu*)
- Inspections 專業監測 (*tzuoh-yeh jean-char*)
- Light-water fission reactor 清水反應器 (*ching-shui fan-ing-chihe*)
- Litigation 訴訟 (*shu-song*)
- Low-level radioactive waste 低放射性廢棄物 (*di-fung-she-sing fei-chi-wu*)
- Mediation 調解或裁處 (*tyau-jie or tyau-chuh*)
- Nuclear Backend Fund 核能後端研發基金 (*her-neng how-duan yng-yun ji-jin*)
- Pilot Scheme 垃圾不落地 (*leh-seh buh-luoh-dih*)
- Regulatory meetings 管制會議 (*kuan-chih huey-yih*)
- Remediation 再調處 (*tzay tyau-chuh*)
- Reviews 計畫審查 (*jih-huah sheen-char*)
- Rites 理 (*li*)
- Self-help 自力救濟 (*tzyh-lih jiow-jih*)
- Settlement 合解 (*her-jie*)
- Sino-American Fund 中美基金 (*zhong-mei ji-jin*)
- Soil pollution 土壤污染 (*tu-rang u-ran*)
- The Development Fund of the Executive Yuan 行政院基金 (*xing-zhen-yuan ji-jin*)

The Taiwanese Law Society 台灣律師公會 (*liuh-shy gong-huey*)

The number of the garbage bags 隨袋徵收 (*shwei-dai jeng-sou*)

The Principle of Prevention 污染預防原則 (*u-ran yuh-farng yuan-tzer*)

The Polluter-Pays-Principle 污染者付費原則 (*u-ran-jer fuh-fey yuan-tzer*)

The Principle of Permit-Register-Report 合法許可保全記錄原則 (*her-far sheu-ker, bao-tswen jih-loh yuan-tzer*)

Very low-level radioactive waste 低於一般法度或重量影響放射性廢棄物 (*di-yu i-ban hwo-du huoh jong-liang yi-shiah fung-she-sing fei-chi-wu*)

Waste 廢棄物 (*fei-chi-wu*)

Water classification 地面水體 (*dih-mian shui-ti*)



## **ABSTRACT**

The purpose of the thesis is twofold. First, the dissertation examines the state of waste management laws and regulations in Taiwan (the Republic of China). Secondly, it considers whether the waste management laws and regulations of England and Wales may serve as effective models for assisting Taiwan to develop a more comprehensive waste management law.

This study is primarily focused on the legal and practical aspects of waste management laws and regulations in Taiwan, which for many years has been recognised as a significant problem. Key areas of legal reform are argued to be the adoption of integrated pollution prevention control towards waste management, liability in relation to contaminated land, concerns regarding duty of care, and the development of an effective and fair system of dispute resolution for resolving environmental disputes.

The thesis begins with an overview of the major developments in the waste management field in Taiwan. The current status of environmental protection and the relevant administrative framework will be considered. The thesis then discusses the implementation of environmental laws in Taiwan. Solid waste disposal management and pertinent pollution control will be carefully analysed. Subsequently, consideration is given to the issues of special problem of radioactive waste, dispute settlement and 'sustainable development' in Taiwan.

A selective examination of the waste management laws and regulations of England and Wales that might provide inspiration for a more cohesive and integrated environmental protection regime in Taiwan are used as a basis to propose a number of law reforms. For instance, legislative measures for the remediation of contaminated land are suggested. The regime of duty of care is drawn upon to recommend the amendment of existing Taiwanese waste management laws to include a liability section. The integrated pollution prevention control system found in England and Wales is better than that provided by existing environmental legislation in Taiwan. The urgent need for legal development regarding the effective use of alternative dispute resolution to resolve environmental disputes in Taiwan. Further, greater public participation in environmental decision and rule making is also proposed.

The thesis advances knowledge through its examination of the current state of waste management laws and regulations in Taiwan. At the same time, the dissertation makes a contribution to comparative law in as much as it considers the manner in which the waste management laws and regulations of England and Wales may serve as effective tools for the reform of the environmental regulatory regime on Taiwan.

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## Chapter 1 Introduction

### 1.1 Purpose of the study

Taiwan (the Republic of China or ROC) is an island state with a total area of nearly 36,000km.<sup>1</sup> Taiwan is a densely populated island that has experienced rapid development in industry and business in recent times. Taiwan also has developed a substantial corpus of environmental regulation and control that are often poorly drafted and loosely enforced. Largely, as a result of these two factors, Taiwan has come to suffer from a number of environmental problems. In particular, during the past two decades, Taiwan has quickly become an industrialised and economically powerful country, but its approach to environmental protection has proved incapable of preventing and redressing the severe degradation of the environment that has occurred alongside the rapid economic growth.

Moreover, environmental protection has often been regarded as a barrier to the economic growth that Taiwan has more and more counted on to bolster its international position as its diplomatic isolation has deepened.<sup>2</sup> However, with growing public awareness of the severity of pollution and, faced with the need to clean up and preserve the natural environment, Taiwan's environmental regulations and controls, although often poorly drafted and loosely enforced, have

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<sup>1</sup> The administrative regions now under the jurisdiction of Taiwan include 'Taiwan Island and Fuchien Province, and two metropolitan municipalities, Taipei and Kaohsiung'. The 'hierarchical structure' of Taiwan Island includes '16 counties (Hsien) and five provincial municipalities'. Fuchien Province includes 'three groups of strategic offshore islands, known as Chingmen, Matsu and Tungying'. (See *Zhong-hua-min-guo Tai-wan-di-chu Huan-jing Tzy-shiun [State of the Environment in Taiwan, ROC]*, (1995), Environmental Protection Administration, Executive Yuan. (in Chinese, hereafter referred to as *State of the Environment* ), p. 10.

<sup>2</sup> At the end of 'the first Sino-Japanese War' in 1895, Taiwan was yielded to Japan, and was not reinstated to the Republic of China (ROC) until World War II ended in 1945. Since then, Taiwan has been governed as one of the provinces of the ROC. Following the introduction of Chinese Communist rule over the Chinese mainland in 1949, the Taiwan (ROC) government withdrew to Taiwan and defended the island against Communist China (People's Republic of China, or PRC). In 1971, Taiwan (ROC), a founding state of the United Nations, lost its membership and was replaced by the People's Republic of China. In 1978, the United States of America announced the recognition of the PRC, and ceased official diplomatic relations with Taiwan. As a result, in terms of international politics, as shaped by 'the Shanghai Communique, the Taiwan Relations Act of April 1979, and the Shanghai Communique II of August 1982', Taiwan is regarded as a province of China and formally does not exist as an independent State. Officially, Beijing considers Taiwan to be a 'misbehaving province', whilst Taiwan has never officially declared independence from the PRC. In addition, Beijing has made it clear that if Taiwan were to 'proclaim itself an independent nation'; the PRC would not 'hesitate to use force against it'. Despite its uncertain political status, Taiwan continues to 'thrive and survive', and to enjoy de facto independence. (See Bell, B (ed) (1998) *Insight Guides Taiwan*, (Singapore: APA Publications GmbH & Co, Verlag KG), pp. 34-44.)

become increasingly important. In general, the Taiwanese government's efforts in pollution control in recent years have been substantially enhanced. However, a major failing in Taiwan's current pollution control is the 'single-medium' approach, which 'disregards other environmental emissions'.<sup>3</sup>

The primary purpose of my research is to probe the legal dimensions of Taiwanese waste management and pollution control with a view to examining the possibilities of 'sustainable development'. This study will also provide an analysis of the relevant social, economic and political contexts of the problems. Without such analysis, any examination of environmental law in Taiwan would be inadequate. In order to accomplish this objective, the thesis addresses the rules of environmental law relating to solid waste management, including prevention and treatment, disposal, recycling and re-use of waste. It is intended to offer a practical analysis of solid waste management law and pollution control for those in industry, commerce, government, and private practice, and covers the wide range of applicable Taiwanese legislation.

Chapter Two provides an overview of the development of environmental law and the legal structure of waste management in Taiwan. Chapters Three and Four detail the state of waste disposal management and the special problem of nuclear waste management. Then, Chapter Five looks into the latest developments in dispute resolution and related matters. After that, Chapter Six weighs up the subject matter of sustainable development in Taiwan. In these chapters I have endeavoured to include practical advice on the implications and requirements of the control regime. This advice is based in part on my reflections on interviews with environmental policy-makers and regulators on current and possible future practice.

A second purpose of this thesis is to evaluate whether the waste management laws and regulations of England and Wales may serve as effective tools in assisting Taiwan to develop more comprehensive waste management law. In order to achieve this goal Chapter Seven will examine

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<sup>3</sup> Waite, A (1991) "Integrated Pollution Control and Local Authority Air Pollution Control: The New Regime", *Land Management and Environmental Law Report*, Vol. 3, No. 1, p.11.

selectively the relevant English waste management laws and regulations. I then take up the findings to propose some suggestions in order to transform certain adequate and suitable legislative measures in Taiwan. And finally, Chapter Eight will present a conclusion to support my findings.

While Taiwan continues to build on the strengths of the old ‘command-and-control’<sup>4</sup> scheme, reforms of the type suggested in this study, if adopted, would improve the current waste disposal management system to a more comprehensive and effective control regime. In this respect, the dissertation hopes to contribute towards a more solid and integrated environmental protection programme for Taiwan.

## 1.2 Synopsis

By and large, Taiwan experiences most of the environmental problems which are typical of many other developing countries.<sup>5</sup> Environmental pollution has for many years been recognised as a significant problem in Taiwan. In spite of this recognition, waste disposal management only became an important issue quite recently. Under the current waste management regime in Taiwan, the treatment and disposal of waste is controlled and administrated separately from the regulation of air, water and waste disposal management, even though they all one way or another have to do with waste. However, for reasons of space and given the rapid increase of municipal waste that has occurred in Taiwan in recent years,<sup>6</sup> the thesis does not cover the important issue of air pollution,<sup>7</sup>

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<sup>4</sup> ‘Common-and-control’ regulation, described by Petts as ‘... a system of direct control over activities and organization which has a legal basis and is operationalised through a range of structures and procedures’. (See Petts, J (2000) “The Regulator-Regulated Relationship and Environmental Protection: Perceptions in Small and Medium Sized Enterprises”, *Environment and Planning*, Vol. 18, p. 191.)

<sup>5</sup> Such as: air and water pollution from industry and traffic, waste disposal management control, soil erosion, and the illegal dumping of hazardous waste and so on.

<sup>6</sup> The average daily collection of municipal solid waste reached ‘18,753 metric tons in 1990, representing an increase of 114 per cent since 1980’. (See *Yearbook of Environmental Statistics, Taiwan Area, The Republic of China*, (1991), p. 134, (Taipei: The TEPA, in Chinese)). A statistic carried out by the TEPA shows that in 1996, the daily collection of municipal solid waste was ‘238,630 metric tons per day, indicating an increase of 44.7 per cent since 1990’. (See *National Environmental Protection Project*, (1998), p.104.)

<sup>7</sup> For a discussion of the issue of air pollution see, for example, Cheng, C (1993) “A Comparative Study of the Formation and Development of Air & Water Pollution Control Laws in Taiwan and Japan”, *Pacific Rim Law & Policy Journal*, Vol. 3 (Special Edition), pp. 43-87.

nor does it cover the crucial issue of water pollution.<sup>8</sup> Instead, for the reasons just stated, this research focuses on the legal dimensions of solid waste disposal management in Taiwan.

Before proceeding to the more detailed discussion regarding the legal aspects of waste disposal management in Taiwan, Chapter Two provides an overview of the emerging development of Taiwanese environmental law, noting some of the successes achieved and difficulties encountered. This includes an examination of the current status of waste management, and of the relevant administrative framework, in Taiwan.

Chapter Three presents the state of waste management and relevant measures. The main focus of this Chapter is the principles and rules that constitute the regulatory framework within which the Taiwanese government and various sectors must operate. Special attention will be given to solid waste management, along with the pertinent pollution control. By and large, the role of the planning system is to keep watch over the development and use of land in the public interest. The relationship between planning system and environmental control has become increasingly integrated. A development project can only be approved if it is without adverse impact on the natural environment, even the setting of waste disposal sites needs to be carefully assessed. Hence, the second part of this Chapter will review various influential factors in the environmental impact assessment system currently implemented in Taiwan.

Subsequently, Chapter Four examines the special problem concerning nuclear waste management in Taiwan, thereby identifying issues that arise as a result of the uncertainties inherent in nuclear waste management problems. These uncertainties have encouraged critical arguments with regards to the extent of danger to public health, the illness of nearby inhabitants, and safety problems associated with the transport (and storage) of nuclear wastes.

Growing public environmental consciousness in Taiwan pressured the government to get serious about public nuisance dispute settlement. The flexibility in the dispute process may lead

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<sup>8</sup> For a discussion of the issue of water pollution see, for example, Cheng, C (1993) "A Comparative Study of the Formation and Development of Air & Water Pollution Control Laws in Taiwan and Japan", *Pacific Rim Law & Policy Journal*, Vol. 3 (Special Edition), pp. 43-87.

to reach an applicable agreement in environmental disputes. In order to build up a workable scheme of dispute resolution for resolving environmental dispute, the essential development is to 'prepare and train lawyers and the specialists for participation in certain alternative modes by developing skills in respect of such matters as counselling, interviewing, negotiation, mediation and non-curial advocacy.'<sup>9</sup> Hence, the thesis in Chapter Five focuses on disputes and their settlement.

Recent progress in the political, economic and environmental spheres in Taiwan has placed the government in a better position to strike a balance between economic development and environmental protection. Nevertheless, Taiwan still faces many challenges on the way to achieving sustainable development. With the aim of illustrating the meaning of sustainable development and the manner in which it can be applied in Taiwan, Chapter Six discusses the issue of 'sustainable development' and related matters.

Before embarking on its conclusions, the thesis, in Chapter Seven, begins with a comparative study on the application of legal transplants. Subsequently, followed by a selective examination of England and Wales<sup>10</sup> waste management laws and regulations, a few useful and adequate measures are used as a basis to recommend some law reforms in Taiwan. Thus, the second part of this chapter will endeavour to detail as to how best the Taiwanese system will be reformed.

However, legal transplantation must be done with great care. Certain critical differences in laws and regulations exist between England and Taiwan. The adoption of foreign legal processes and the techniques used in their implementation inevitably presents difficulties. The distinctive nature of culture, political and legal systems cannot be ignored. There is little doubt that a great difference exists between the theoretical scope of these principles and rules and their implementation in practice. The differing environmental standards are reflected in a wide range of

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<sup>9</sup> Twining, W (1993) "Alternative to What? Theories of Litigation, Procedure and Dispute Settlement in Anglo-American Jurisprudence: Some Neglected Classics", *Modern Law Review*, Vol. 56, p. 381.

<sup>10</sup> Subsequently, I will only use the appellation 'England' to refer to 'England and Wales'.

factors. These include particular needs and circumstances, the structure of economic development, specific cultural background and the historic factors that can give rise to an environmental problem. Accordingly, if Taiwan decides to draw upon the England experiences in the future, the reform legislative measures must be sought through 'localisation' to achieve what were intended.

Chapter Eight -- the concluding chapter -- summarises the previous chapters and provides an overview of national strategy in the development of a comprehensive system for waste management. In addition, the issue of how best to adopt and localise the relevant measures found within English waste management laws and regulations will be addressed. It is my hope that this area of my study will particularly benefit Taiwanese waste management laws and practice, and thereby promote the welfare of the people of Taiwan.

### **1.3 The methodology of research**

The methodology this thesis adopts is mainly to analyse empirical statements and to draw reference from academic discussions with regard to the waste disposal management and relevant matters. The sources of empirical material consist of official publications and relevant reports contained in newspapers and websites. The interpretations contained in these materials are treated with caution. In addition, interviews have been conducted as a supplement in order to investigate more effectively the actual practices of the waste management in Taiwan. This thesis also attempts to provide some suggestions as to what reforms the Taiwanese government could adopt in pursuit of a more cohesive and integrated waste management regime and in promoting 'sustainable development'. Hence, a comparative study is employed to appraise the possible application of legal transplant. In order to achieve this end my research is carried out by a mixture of methods.

First of all, difficulties in the course of my research arose regarding certain methodological issues. First, a system of constitutional and codified administrative standards provides a large and significant part of environmental law in Taiwan. For this reason, administrative law often regulates



the exercise of discretion in environmental law enforcement. In addition, residents in Taiwan have a tradition of distancing themselves from court or avoiding litigation. Given this anti-litigation attitude, most environmental disputes are resolved by non-judicial processes of dispute resolution. As a result, very few decided cases on issues of environmental welfare are found in the present Taiwanese legal system. Secondly, the national strategy for economic development and governmental policies direct most of the debate around the operations of the waste management. This thesis attempts to utilise the interpretation of all the relevant official instruments, such as the *State of the Environment in Taiwan, ROC* and the *Environmental White Paper*,<sup>11</sup> as a supplement to data analysis and in order to identify potential legal issues.

In order to examine and portray the current state of waste management, four types of data will be drawn on to analyse and identify the differing aspects of waste management laws and practice in Taiwan. They are as follows:

First, certain specific Acts and regulations in relation to waste management in Taiwan will be considered. These Acts and regulations are officially issued by the Legislative Yuan and published by the Bureau of Environmental Protection Administration, the Executive Yuan. They include the Guiding Principles of Contemporary Environmental Protection Policies at the Current Stage,<sup>12</sup> the Environmental Impact Assessment Act 1994,<sup>13</sup> the Public Nuisance Dispute Resolution Act 2000,<sup>14</sup> the Waste Disposal Act 2001,<sup>15</sup> and the Environmental Protection Basic

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<sup>11</sup> *Huan-jing Bai-pi-shu [Environmental White Paper]*, (1997), Environmental Protection Administration, Executive Yuan. (in Chinese, hereafter referred to as *Environmental White Paper*).

<sup>12</sup> Shian-jie-duan Huan-jing Bau-hu Zhen-cher Gang-lin [Guiding Principles of Contemporary Environmental Protection Policies at the Current Stage] (promulgated and effective on 2 October 1987) (in Chinese, hereafter referred to as the Guiding Principles of the Current Stage) in *Huan-jing Bau-Fu Fa-Ling Hui-Pien [The Compilation of Environmental Laws and Regulations]*, (1998), Environmental Protection Administration, Executive Yuan (in Chinese, hereafter referred to as *Compilation*), p. 241. It contains three chapters with 19 articles.

<sup>13</sup> Huan-jing Yin-sheang Pin-ku-fa [Environmental Impact Assessment Act] (promulgated and effective on 30 December 1994).

<sup>14</sup> Gong-hai Chiu-fen Chu-li Fa [Public Nuisance Dispute Resolution Act] (Promulgated and effective on 1 February 1992, last amended on 19 January 2000) in *White Paper on Public Dispute Settlement*, (2000), pp. 232-239.

<sup>15</sup> Fei-chi-wu Ching-li Fa [Waste Disposal Act] (promulgated and effective on 26 July 1974; last amended on 14 July 1999) in Chang, C and C Lin. (eds) (1999) *Tsui-shin Liu-fa Chuan-shu [The Latest Collection of the Six Laws]*, (Taipei: Dar-Zhong-guo publication Co. in Chinese, hereafter referred to as *the Six Laws Collection*), pp. 736-39. The latest amendment was carried out on 24 October 2001, in the *TEPA Register*, No.168, (December 2001), pp.44-65.

Act 2002.<sup>16</sup> Other relevant Acts and regulations will also be addressed in relation to various issues related to the disposal of particular types of waste.

Secondly, the *State of the Environment in Taiwan, ROC* (1995), and the *Environmental White Paper* (1997, 1998), will be examined. These contain empirical data published under the authority of the Bureau of Environmental Protection Administration, the Executive Yuan, Taipei, Taiwan. They provide, in particular, solid waste management data. I will use these empirical data not only to address the nature and causes of Taiwanese environmental problems, but also to indicate the measures necessary for practical improvements.

Thirdly, I will draw on the *White Paper on Public Dispute Settlement* (2000). This is a publication, edited by the Executive Yuan's Environmental Protection Agency, which reports on the settlement or resolution of public disputes. According to material in the *White Paper*, there are, on average, more than 200 environment cases per year. Particularly important cases that will be discussed include the 'Kaohsiung Nan-Tzi Linyuan Incident', the incident of 'Northern Tao-Yuan Seashore', and the case of the 'Closure of Nan-Tzi Electronics Ltd'.<sup>17</sup> From these reported cases and other data, I examine in depth the meaning and operation of current legislation and indicate its shortcomings and difficulties. Of course, it is not always easy to identify the real and underlying causes of protest and litigation. The chain of causation between the source of pollution and the effects of the damage it has created can be ambiguous and very difficult to judge. Meanwhile, a shortage of knowledgeable personnel to determine the causal relationship between the pollution and the damages also limits the practical implementation of access to environmental justice in Taiwan.

Fourthly, the many reports contained in daily newspapers -- for example, the *Central Daily News* (Zhong-yang Ryh-bao), the *Liberty Times* (Zi-you Shi-bao), the *United Daily News* (Lian-he-bao), and the *Chinese Times* (Zhong-guo Shi-bao) -- are considered.

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<sup>16</sup> Huan-jing Bau-fu Ji-bern Fa [Environmental Protection Basic Act] (promulgated and effective on 19 November 2002), also see Chapter Two, footnote No. 74. A detailed discussion is given in Section 7.5 of Chapter Seven.

<sup>17</sup> A detailed discussion is given in Section 5.3 of Chapter Five.

The analysis of the above data deals not only with substantial issues but also reflects on the weaknesses and strengths of such materials. In addition, I identify here two general issues. First, Taiwan's approach to the environmental protection has been very often shaped by economic and political concerns that are similar to those found in many other developing countries.<sup>18</sup> These difficulties also make accurate analysis of the complicated relationship between political policy-making, rapid economic development and the legislative process in Taiwan difficult. This, in turn, will make it difficult to assess whether Taiwan's environmental law is evolving rapidly enough to solve the problems created by various types of pollution. Secondly, I have not had the experience of working in the civil service and it is sometimes difficult for an outsider like me to understand fully the many conflicts of interest between government, local communities, private sectors and residents in developing and implementing environmental law.

In an attempt to accumulate the supplementary material and relevant fieldwork material, I have conducted extensive interviews -- with governmental bureaux and organisations, local authorities, manufacturing industries and residents in particular areas -- and also examined survey data with caution. The main purpose of fieldwork is to gain knowledge of the thinking that informs the thoughts and the view of the Taiwanese government and the different sectors.

It must be made clear that surveys were conducted by interviewing officers in the government and local authorities, non-governmental organisations, factory owners and residents in particular areas. These respondents were aware of the purpose of the research in which they are participating and this may have affected their responses. As a result, there exists the possibility that during the interviews with government officials, disagreement with the aims of my research may well have led to false responses. However, such difficulties are one of the features of field research, but wherever possible I have tried to avoid any bias towards my data gathering.

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<sup>18</sup> For example: funds, technology, and environmental management capacity have been, and often remain insufficient. Sometimes, even when an environmental threat is became visible, there is still a great emphasis on improving living standard and increasing national wealth through continued economic development.

As mentioned above, a comparative approach informs this research. In particular, this dissertation examines the manner in which certain English laws and regulations might be transplanted in order to provide theoretical support for the adoption of reforms that would enable Taiwan to move to 'sustainable development'. In this part of the dissertation, I undertake a selective examination to the relevant principles and rules of English waste management laws and regulations. The data utilised in this section were obtained from a number of sources, including various treaties and Conventions.

In general, the position taken in this study is that 'legal transplants' are an effective method for legal modernisation and 'do not cause instability in the existing legal or socio-culture through its own creative modernisation efforts'.<sup>19</sup> Very often, 'legal transplants' are not necessarily dependent on any resemblance of 'underlying social or economic state of affairs'.<sup>20</sup> It is well acknowledged that legal rules from one society can serve as a model for legal development in another. As a matter of fact, much law has been borrowed even if the 'recipient' has been completely divergent in social structure, legal tradition and so on from the 'donor' system.<sup>21</sup> Therefore, the foremost consideration is on how imported or borrowed elements are incorporated with the home grown to succeed in the 'recipient' society rather than on where they initially have roots in.<sup>22</sup> In this thesis, I, therefore, propose to try to explain why the model provided by the English environmental laws and regulations is my preferred exemplar for modernising the current Taiwan waste management law. I do not propose to discuss theories of comparative law at any length, however, and they are not so essential in the arguments that follow. This is because my focal concern is to propose legal-policy suggestions for the reform of waste management law in Taiwan.

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<sup>19</sup> Orucu, E (2000) "Critical Comparative Law: Considering Paradoxes for Legal System in Transition", *Electronic Journal of Comparative Law*, Vol. 4.1. ([www.law.kub.nl/ejcl/41/art41-1.html](http://www.law.kub.nl/ejcl/41/art41-1.html))

<sup>20</sup> Wise, E (1990) "The Transplant of Legal Patterns", *The American Journal of Comparative Law*, Vol. 38, p. 5.

<sup>21</sup> *Ibid*, P. 6.

<sup>22</sup> Orucu, E (2000) "Critical Comparative Law: Considering Paradoxes for Legal System in Transition", *Electronic Journal of Comparative Law*, Vol. 4.1. ([www.law.kub.nl/ejcl/41/art41-1.html](http://www.law.kub.nl/ejcl/41/art41-1.html))

Nevertheless, the adoption of foreign law, procedure and techniques inevitably presents difficulties in any 'legal transplant' process. It is impossible to ignore the individuality of culture, political and legal system. Hence, there is little doubt that a great variation exists between in scope and in practice of different systems. Given the fundamental cultural and ideological differences between England and Taiwan, it is anticipated that adoption of foreign measures in Taiwan may well have unintended consequences.

#### **1.4 Conclusion**

The underlying purpose of the thesis is to evaluate the situation regarding waste management in Taiwan and to assess whether English waste management laws and regulations might serve as effective tools in assisting Taiwan to develop a more comprehensive waste management law. In addition, the suggestions and evaluations proposed in this thesis are intended to provide a framework for understanding, advising on and managing the control and regulation of waste management in Taiwan. The law of waste management represents a considerable challenge given the width, depth and the rapid evolution of the subject. The thesis presents the current state of waste management law in Taiwan in the space of eight chapters; it has not always been easy to determine what to exclude.

Although each country bases its legislation on its specific political, cultural, economic and social experiences, similar problems frequently need similar legal solutions. For that reason, this selective analysis offers some suggestions based on foreign experience to the Taiwan government. It is hoped that these recommendations may serve as a guide to transform the current situation.

Reforms of Taiwan's environmental law suggested in this study are as follows. First, legislative measures that clearly impose responsibility and allocate costs for the remediation of contaminated land are suggested. This proposed reform would see changes to Taiwan's Waste Disposal Act 2001 or enact a new law so that it offers an effective and more workable solution

to the problem of remedying contaminated land. Secondly, the regime of 'duty of care' is drawn upon to recommend that existing Taiwanese waste management laws should be appropriately amended to include a pollution liability section. Thirdly, the 'integrated pollution prevention control' system that is found in the waste management laws and regulations of England is undoubtedly better than the system provided by existing environmental legislation in Taiwan. The latter mainly relies on a 'single media' approach. Therefore, reform of the 'integrated pollution prevention control' regime based on that of England is strongly recommended. And fourthly, given the significant increase in many parts of the world in both the use of 'alternative dispute resolution' processes and 'public participation' in environmental decision and rule making, a further and pressing need in current stage is 'to prepare lawyers and the specialists for participation in various alternative modes by developing skills in respect of such matters as counselling, negotiation, mediation.'<sup>23</sup> Thus, not only to improve understanding of the problems associated with the current heavy dependence on alternative dispute resolution processes, but also to foster an effective and fair use of alternative dispute resolution to resolve environmental disputes in Taiwan. To this extent, the policy of 'the multi-door courthouse' might well be a good approach for Taiwan to adopt in dealing with environmental disputes. In addition, greater public participation in environmental decision and rule making is also proposed.

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<sup>23</sup> Twining, W (1993) "Alternative to What? Theories of Litigation, Procedure and Dispute Settlement in Anglo-American Jurisprudence: Some Neglected Classics", *Modern Law Review*, Vol. 56, p. 381.

## **Chapter 2 Taiwan's Emerging Environmental Law and Structure of Waste Management**

Over the last two decades, Taiwan has suffered many severe problems of environmental degradation as a result of rapid economic growth and industrialization. The reaction to solve various problems from the Taiwan government has been the introduction of more legislation to control and prevent pollution. This chapter reviews the formation and history of environmental pollution control laws. And so to provide an overview of the emerging development of Taiwanese environmental law, noting some of the successes achieved and difficulties encountered. After providing the essential background, the second part of this chapter examines the structure of waste management in Taiwan which includes an examination of the current status of environmental protection, and of the relevant framework in Taiwan. It is hoped that a clear picture of the present state of legal aspects of structure of waste management in Taiwan will emerge.

### **2.1 The development of Taiwanese environmental law**

Over the past few decades, Taiwan's economic and political systems have radically changed.<sup>1</sup> At the same time, pollution from economic activities increasingly affected the ecological

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<sup>1</sup> Since 1895, the economy in Taiwan had mostly been focused to sustaining the Japanese domestic economy. The restoration of the island to the Republic of China in 1945 led to a series of problems regarding 'economic dislocation'. When the Nationalist Party or Kuomintang (KMT) withdrew the central government from Mainland China to Taiwan at the end of 1946, Taiwan was an 'under-developed' country. During the period 1946-49, the Taiwan government encouraged the 'revitalization of agriculture'. One of the major reforms was 'land reform'. The 'land reform' program began in 1948 when 'farm rents were fixed at 37.5 per cent of the total annual yield of the main crop'. Over the following few years, the government sold off a considerable amount of land to the small farmers. In 1953, this 'land reform' achieved what became known as 'the Land to the Tiller Act'. Following the first successful economic reform, Taiwan has undergone three major stages of economic development. The first period was from 1953 to 1962. During the first stage of development, the government took up a series of economic reforms and promoted 'light industrial development'. Within the first phase, Taiwanese industry geared to meet with local demand in areas such as 'food processing and textiles'. The late 1950s spotted the early development of the Taiwanese automobile industry. The second period was the 'external orientation phase' from 1963 to 1980. In particular, in the 1970s, government policies on economic development addressed on five major areas of macroeconomic policy. These were 'domestic fiscal policies, external fiscal policies, monetary and interest rates, foreign exchange policies and policies on international investments'. However, there were also important subordinate areas in government enterprises and investment in social infrastructure. The fields of 'education, science and technology' were given a specific priority. The third phase was a 'second stage of external orientation' based on 'upgrading technology and increasing value added production in line with Taiwan's changing comparative advantage'. The third phase carried on from 1981 to 1995. It witnessed the island's economy open up the production of more complex consumer goods. Taiwan now takes control of a major

environment. In addition, the lifting of the Martial Law<sup>2</sup> in 15 July 1987 has had positive impacts on facilitating the growth of environmental awareness in the society, and also has encouraged the development of anti-pollution movements in response to environmental pollution problems. The government's reaction to these environmental difficulties has been the introduction of more legislation to control and prevent pollution.

In studying the development of Taiwanese environmental law, it is important to understand Taiwan's legal system and state structure.<sup>3</sup> Taiwan generally is seen to be a member of the Civil Law family. Nevertheless, many newly developed and more technological fields of law in Taiwan, such as environmental law, follow the models set by the United States.<sup>4</sup> In Taiwan, environmental

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position in a number of key sectors of the computer markets. These include '72 per cent of the world market in computer mice, 65 per cent of motherboards, 64 per cent of keyboards and 64 per cent of the scanners market'. Since 1996, Taiwan has been in the process of fourth phase with the attempt to turn Taiwan into an 'Asia Pacific Regional Operations Center (APROC)'. In retrospect, economic development in Taiwan shows a 'distinctive feature of gradual upgrade and transformation'. However, the Taiwanese economy does suffer from some problems. Also, as 'political liberalization' has taken place, there have been growing environmental concerns on Taiwan, which has led to resistance to some economic developments, which were aware of to be environmentally degrading. (See Maguire, K (1998) *The Rise of Modern Taiwan*, (Aldershot: Ashgate), Chapter Four: The Economy, pp. 49-83.)

Moreover, as the economy continues to develop, mounting pressures for political development have become apparent. This pressure brought about the lifting of martial law in 1987, and the transition on the road to democracy. Since 1986, there have been ten major elections. Each has contributed to the transformation of a multiparty political system. In addition, the Taiwan government has held constitutional amendments six times since 1991. The Constitutional amendments enhanced a great deal to the smooth transition of Taiwan from an authoritarian state to a full democracy country and have brought some far-reaching changes for the future. (See Tang, D (1997) "New Developments in Environmental Law and Policy in Taiwan" in *Pacific Rim Law & Policy Journal*, Vol. 6, No. 2, pp. 245-304.)

<sup>2</sup> Chieh-yen Fa [Martial Law] (promulgated and effective on 29 November 1934, amended on 19 May 1948 and 14 January 1949) in *Six Laws Collection*, (1999), p. 993. The order for Martial Law was cancelled at midnight 15 July 1987. During the martial law ruling period (1949-1987), the government prohibited the organization of any new political party besides the then existing National Party (Kuomintang or "KMT").

<sup>3</sup> The governmental structure in Taiwan includes three levels. They are: first, the central level, which consists of 'the presidency, five Yuan (the Executive Yuan, the Legislative Yuan, the Judicial Yuan, the Examination Yuan, and the Control Yuan), and the National Assembly'. Secondly, the provincial or special municipality level, which includes 'the Taiwan provincial government, Fujian government, Taipei city government and Kaohsiung city government'. Thirdly, the Hsien or city level, which includes 'five city governments (Keelung, Hsinchu, Tainan Taichung and Chiayi) and eighteen Hsien governments'. The Executive Yuan is the highest administrative organization in Taiwan. The Legislative Yuan is the highest legislative organization of the state. The Legislative Yuan 'passes laws, examines budgetary bills, reviews audit and oversees the operation of the Executive Yuan'. The Judicial Yuan 'operates the national court system and is responsible for handling all civil, criminal and administrative cases'. The Judicial Yuan has fifteen grand justices. The president appoints all grand justices with the consent of the Legislative Yuan. The Examination Yuan is responsible for 'examination, employment and management of all civil service personnel'. The Control Yuan exercises 'the power of impeachment, censure, correction and audit'. National Assembly's functions are 'limited to amending the ROC's Constitution and altering the national territory after a public announcement by the legislative Yuan'. In addition, National Assembly may 'impeach the president or vice president within three months of a petition initiated by the Legislative Yuan'. (See [www.tw.org.com](http://www.tw.org.com))

<sup>4</sup> The justification for this deviation lies in the fact that since World War II, Taiwan has been influenced mainly by the United States, both economically and politically. Not surprisingly, most influential people in Taiwan have been educated in the United States.



policy has frequently been considered as a part of the nation's economic policy. Thus, development needs have been significantly exerted pressure upon environmental policy.<sup>5</sup>

In this section, I will examine the formation and historical development of environmental laws and regulations in Taiwan. This development can be characterised in four stages.<sup>6</sup> The preliminary stage covers 1949 to March 1971. The 'formative stage'<sup>7</sup> covers March 1971 to January 1982. The progressing stage runs from January 1982 to August 1987. The integrated stage stretches from September 1987 to the present day.

### 2.1.1 *The preliminary stage (1949 to March 1971)*

When the Kuomintang (KMT) -- led central government evacuated to Taiwan at the end of 1946, Taiwan was an 'under-developed' country. During the preliminary stage, the Taiwan government adopted an industrial development policy of 'substitution by import', while concentrating on 'light industry'.<sup>8</sup> In the late 1950s and 1960s, Taiwan came to enjoy the benefits of its miraculous economic growth and modernisation. Between 1961 and 1971, the government adopted an 'export-oriented policy', focusing on production of goods for sale in foreign markets. At the preliminary stage, the Taiwan government opened its doors to foreign investment and did all it could to encourage investment by local entrepreneurs. At the same time, through government monopolies, it also set up and operated a number of major economic enterprises. In its desire to

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<sup>5</sup> The establishment of Taiwan's Environmental Protection Administration (TEPA) on 22 August 1987 is regarded as a milestone in environmental protection in Taiwan. The Bureau of Environmental Protection, within the Department of Health, was TEPA's predecessor having been established in 1982. Environmental law was first formally offered as a course in Taiwan's law school during the 1988 academic year.

<sup>6</sup> The factors that underpin the justification of these development stages lie within the build-up of environmental regulatory structures. Before March 1971, the Bureau of Sanitation in the Ministry of the Interior took responsibility for environmental regulation. Little if any attention was paid by the government to protection of the natural environment. On March 1971, a new Bureau of Environmental Sanitation was created in the Department of Health to deal with environmental affairs. However, environmental regulation did not set out on a noticeable role within the public health bureaucracy until January 1982 when the Bureau was renamed as the Bureau of Environmental Protection and obtained further authority over environmental regulation. The ruling regulatory body now is the Environmental Protection Administration (TEPA), which was established on 22 August 1987 with maximum authority over all kinds of environmental regulation.

<sup>7</sup> Cheng, C (1993) "A Comparative Study of the Formation and Development of Air & Water Pollution Control Laws in Taiwan and Japan", *Pacific Rim Law & Policy Journal*, Vol. 3 (special edition), p. 51.

<sup>8</sup> During the 1950s, the Taiwan government encouraged the development of the 'plastics and synthetic fibre industries'. Such as: 'refined petroleum, cement, chemical fertiliser, paper products, weaving and knitting and other products'. (See Maguire, K. (1998) *The Rise of Modern Taiwan*, (Aldershot: Ashgate), p. 52.

promote rapid economic growth, little if any attention was paid by the government to protect the natural environment. In addition, the industrial structure also played a vital role in environmental crisis. In Taiwan most industrial output comes from small and medium-sized establishments, in rural as well as in urban areas. These factories operated under narrow profit margins, and were unable or unwilling to invest money in anti-pollution equipment or to observe anti-pollution regulations and laws. By the 1970s, Taiwan had become an island for so-called ‘dirty industries’ such as petrochemicals.<sup>9</sup> Thus, while the resulting industrial and economic development provided a solid base for future economic progress, mass consumption of natural resources and increases in polluting industries paved the way for major environmental problems.

During the preliminary stage, a number of decrees in relation to environmental pollution, which had been, promulgated long before 1949 were put into a more stringent enforcement. For instance: the Criminal Act 1925,<sup>10</sup> Articles 173 to 194 prescribed punitive provisions for ‘causing danger or damage to public places and creating a public nuisance’. In particular, Article 190 pointed out that ‘any action that might pollute or damage public water resources, or waterways constituted a criminal offence’. In the Epidemic Disease Prevention and Management Ordinance 1944,<sup>11</sup> Articles 13 and 20 provided for general environmental sanitation regulation. Section 8 of the Factory Act 1975<sup>12</sup> contained provisions for ‘the control of health and safety equipment and general environmental sanitation’. In order to control and regulate sources of pollution in specific industries, the 1966 amendment to the Mining Industry Act 1930<sup>13</sup> indicated in Article 81 that ‘the responsible agencies should instruct mining proprietors to make immediate improvements or

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<sup>9</sup> Wehrfritz, G (1992) “Asia’s Richest, But Also Dirtiest”, *Far Eastern Economic Review*, (29, October), (Focus Environment), p. 38.

<sup>10</sup> Shyng-fa [Criminal Act] (promulgated on 1 January 1925; effective on 1 July 1925; last amended on 21 April 1999. The Criminal Act has been undertaken ten times amendments since July 1925) in *Six Laws Collection*, (1999), pp. 477-496.

<sup>11</sup> Chwan-ran-bing Fang-chih Tiao-li [Epidemic Disease Prevention and Management Ordinance] (promulgated and effective on 6 December 1944, last amended on 19 January 1983) in *Compilation*, (1994), pp. 2437-2445.

<sup>12</sup> Kung-chang Fa [Factory Act] (promulgated on 30 December 1929; effective on 1 August 1931; last amended on 19 December 1975) in *Six Laws Collection*, (1999), pp. 807-810.

<sup>13</sup> Kuang-yeh Fa [Mining Industry Act] (promulgated and effective on 21 May 1930, enacted on 1 December 1930; last amended on 25 September 1996) in *Six Laws Collection*, (1999), pp. 1186-1189.

temporarily suspend their work if their activities are considered to endanger public interest’.

Furthermore, the Tap Water Act 1966<sup>14</sup> was promulgated and put into force during this stage in order to promote water conservation. Article 11 of the Tap Water Act 1966 highlighted that ‘any action that might damage water quality or restrict water quantity is prohibited’. In addition, Article 55 of the Tap Water Act 1966 dealt with the management of water sanitation.

In addition, various local administrative regulations were also introduced at this stage. These included the Taipei Municipality Regulations on Breeding Domestic Animals, Poultry and Livestock<sup>15</sup> in 1960, the Taiwan Environmental Hygiene Management Regulations<sup>16</sup> in 1967, the Taipei Municipality Cumbersome Waste Management Ordinance<sup>17</sup> in 1969 and the Taipei Municipality Air Pollution Prevention Measures<sup>18</sup> in 1969.

In general, through the 1950s and 1960s there was little or no environmental consciousness showed by either the government or the public. Whatever environmental problem did appear was regarded as a necessary cost of the building up the island's economy and the standard of living. The rapid economic and industrial development of the 1960s caused several major pollution problems.<sup>19</sup> Besides, Taiwan’s authoritarian political system gave no room for public debate. Moreover, due to the institution of martial law, fewer or no anti-pollution popular movements

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<sup>14</sup> Tzu-lai-shui Fa [Tap Water Act] (promulgated and effective on 17 November 1966; last amended on 21 May 1997) in *Six Laws Collection*, (1999), pp. 1211-1216.

<sup>15</sup> Tai-pei-shih Goan-jyh Shyh-yeang Jia-chuh Jia-chyn Bann-fa [Taipei Municipality Regulations on Breeding Domestic Animals, Poultry and Livestock] (promulgated and effective on 22 April 1960; enacted on 18 May 1979; last amended on 19 May 1983) in *Compilation*, (1994), pp. 2012–2015.

<sup>16</sup> Tai-wan Huan-jing Wei-sheng Kuan-li Kuei-tse [Taiwan Environmental Hygiene Management Regulations] (promulgated and effective on 24 July 1967; amended on 6 June 1974) in *Six Laws Collection*, (1978), p. 180.

<sup>17</sup> Tai-pei-shih Huan-jing Bau-fu-jyu duey Ti-ji Pung-dah Bern-jong Fei-chi-wu Kuan-li Pan-fa [Taipei Municipality Cumbersome Waste Management Ordinances] (promulgated and effective on 21 November 1969; last amended on 10 July 1989) in *Compilation*, (1994), pp. 1597–1598.

<sup>18</sup> Tai-pei-shih Kung-chi Fang-wu Pan-fa [Taipei Municipality Air Pollution Prevention Measures] (promulgated on March 10, 1969; enacted on 25 March 1969) in *Compilation*, (1978), p. 127.

<sup>19</sup> For example, in October 1965 poisonous odors were released from the Tainan Paper Mill during the testing of one of its paper production processes. Tens of thousands of local residents experienced ‘cranial nerve swelling and vomiting’. In the same month, Tung-nan (Southeast) Chemical Corporation of Kaohsiung emitted a large amount of sulfur dioxide gas into the air while testing lately installed equipments. Teachers and students at the neighboring school were suffering from ‘respiratory difficulties’. (See Cheng, C (1993) “A Comparative Study of the Formation and Development of Air and Water Pollution Control Laws in Taiwan and Japan”, *Pacific Rim Law & Policy Journal*, Vol. 3 (Special Edition), p. 45.)

developed in Taiwan during this period. Taken as a whole, within the preliminary stage, laws and regulations merely provided an early guideline for pollution management activities.

### 2.1.2 The 'formative' stage (March 1971 to January 1982)

During the period 1972 - 82, the Taiwan government encouraged the development of 'heavy industry and technology-intensive' industry. The economic strategy before 1982 was to 'accelerate economic upgrading and develop strategic industries'.<sup>20</sup> Although the fast growing rate of economic was created, the rapid increase in the number and density of factory and economic activities produced huge volumes of waste. Faced with the need to clean up and preserve Taiwan's natural environment, the government chose to create more bureaucratic structures and set up more institutions to manage pollution control.

In addition, by growing recognition of the importance of environmental protection and pollution control, the government passed numerous important laws during this period. These included the National Park Act 1972,<sup>21</sup> the Environmental Pesticides Control Act 1972,<sup>22</sup> the Drinking Water Management Act 1972,<sup>23</sup> Enforcement Rules for Drinking Water Management Act in Taipei City 1975,<sup>24</sup> Enforcement Rules for Drinking Water Management Act in Taiwan District 1976,<sup>25</sup> Enforcement Rules for Drinking Water Management Act in Kaohsiung City 1982,<sup>26</sup> the Water Pollution Control Act 1974,<sup>27</sup> Enforcement Rules for Water Pollution Control

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<sup>20</sup> *State of the Environment*, (1995), p. 19.

<sup>21</sup> Guo-jia Gong-yuan Fa [National Park Act] (promulgated and effective on 13 June 1972, last amended on 27 August 1983) in *Compilation*, (1994), pp. 2533–2541.

<sup>22</sup> Nong-yao Kuan-li Fa [Environmental Pesticides Control Act] (promulgated and effective on 6 January 1972, last amended on 5 December 1988) in *Six Laws Collection*, (1999), pp. 1190-1192.

<sup>23</sup> Yin-yung-shui Kuan-li Tiao-li [Drinking Water Management Act] (promulgated and effective on 10 November 1972; last amended on 21 May 1997) in *Six Laws Collection*, (1999), pp. 719-720.

<sup>24</sup> Yin-yung-shui Kuan-li Tiao-li Tai-pei-shih Shy-shyng Shih-tzer [Enforcement Rules for Drinking Water Management Act in Taipei City] (promulgated and effective on 20 October 1975; amended on 29 September 1993) in *Compilation*, (1994), pp. 1953–1963.

<sup>25</sup> Yin-yung-shui Kuan-li Tiao-li Tai-wan-sheng Shy-shyug Shih-tzer [Enforcement Rules for Drinking Water Management Act in Taiwan District] (promulgated and effective on 13 January 1976) in *Compilation*, (1994), pp. 1949–1953.

<sup>26</sup> Yin-yung-shui Kuan-li Tiao-li Kau-shyong-shih Shy-shyng Shih-tzer [Enforcement Rules for Drinking water Management Act in Kaohsiung City] (promulgated and effective on 16 December 1981) in *Compilation*, (1994), pp. 1964–1967.

<sup>27</sup> Shui-wu-ran Fang-chih Fa [Water Pollution Control Act] (promulgated and effective on 11 July 1974; last amended

Act 1975,<sup>28</sup> the Waste Disposal Act 1974,<sup>29</sup> Enforcement Rules for Waste Disposal Act in Taiwan District 1975,<sup>30</sup> the Air Pollution Control Act 1975,<sup>31</sup> the Mining Security Act 1973,<sup>32</sup> the Nuclear Damage Compensation Act 1971,<sup>33</sup> the Procedures for Factory Waste Water Management Act 1974,<sup>34</sup> the National Compensation Act 1980,<sup>35</sup> and the Environmental Protection Act in Taiwan District 1979.<sup>36</sup>

Within this plethora of new laws and regulations, the Air Pollution Control Act 1975, the Water Pollution Control Act 1974, the Waste Disposal Act 1974 and the Drinking Water Management Act 1972 were the most influential laws. Despite this substantial effort in speeding up environmental pollution control legislation, the resulting laws, unfortunately, did not come to provide a comprehensive control of pollution. Very often, the relationship between the relevant laws has sometimes been inconsistent<sup>37</sup> and sometimes overlapping,<sup>38</sup> giving rises to a complex division of authority.<sup>39</sup> As a result, these laws were largely ineffective in promoting environmental

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on 28 May 2002) in *TEPA Register*, No. 174, (June 2002), pp. 4-23.

<sup>28</sup> Shui-wu-ran Fang-chih Fa Shy-shyug Shih-tzer [Enforcement Rules for Water Pollution Control Act] (promulgated and effective on 29 May 1975; last amended on 12 August 1998) in *Six Laws Collection*, (1999), pp. 727-735.

<sup>29</sup> Fei-chi-wu Ching-li Fa [Waste Disposal Act] [hereinafter referred as to the WDA Act] (promulgated and effective on 26 July 1974; last amended on 24 October 2001) in the *TEPA Register*, No.168, (December 2001), pp. 44-65;.

<sup>30</sup> Fei-chi-wu Ching-li Fa Tai-wan-sheng Shy-shyng Shih-tzer [Enforcement Rules for Waste Disposal Act in Taiwan District] (promulgated and effective on 21 May 1975; last amended on 15 June 1990) in *Compilation*, (1994), pp. 1249-1256.

<sup>31</sup> Kung-chi Wu-ran Fang-chih Fa [Air Pollution Control Act] (promulgated and effective on 23 May 1975; last amended on 20 January 1999) in *Six laws Collection*, (1999), pp. 701-706.

<sup>32</sup> Kuang-chang An-chyuan Fa [Mining Security Act] (promulgated and effective on 22 December 1973; amended on 24 November 1986) in *Compilation*, (1994), pp. 2623-2634.

<sup>33</sup> Her-tzy Soen-hay Peir-shang Fa [Nuclear Damage Compensation Act] (promulgated and effective on 26 July 1971; amended on 6 May 1977) in *Compilation*, (1994), pp. 2766-2774.

<sup>34</sup> Kung-chang Fei-shui Kuan-li Pan-fa [Procedures for Factory Waste Water Management Act] (promulgated and effective on 11 November 1974) in *Compilation*, (1978), p. 122.

<sup>35</sup> Guo-Jia Peir-shang Fa [National Compensation Act] (promulgated and effective on 2 July 1980) in *Six Laws Collection*, (1999), p. 36.

<sup>36</sup> Tai-wan Ti-chu Huan-jing Bao-hu Fang-an [Environmental Protection Act in Taiwan District] (promulgated and effective on 20 April 1979).

<sup>37</sup> For example: in Article 11 of the Tap Water Act 1966 and Article 4 of the Drinking Water Management Act 1972, the controlling principle in the designation of protection districts was 'water quality and quantity preservation district', which was changed to 'water resource management district' in Article 4 of the Taipei Municipality Water Resource Pollution Control Ordinance.

<sup>38</sup> For example: the central government's Waste Disposal Act, Enforcement Rules for Waste Disposal Act in Taiwan District, Enforcement Rules for Waste Disposal Act in Taipei City and Enforcement Rules for Waste Disposal Act in Kaohsiung City all overlap and are similar to each other. Another example is Article 3 in the Procedures for Factory Waste Water Management Act 1974 and Article 38 in the Water Conservation Law 1974.

<sup>39</sup> For example: the Water Pollution Prevention Department was responsible for industrial effluent pollution in Taiwan Province while the Water Resources Planning Commission, Industry Development Bureau and the Department of

protection. Moreover, effectual enforcement provisions were commonly lacking in these laws. In some cases, violations were not subject to direct punishment. For example, violations of the Water Pollution Control Act 1974, by 'mining and industrial interests' that caused harm to human health were neither punished directly nor through administrative penalties.<sup>40</sup> In addition, there were no co-ordinating bridge between different administrative agencies to solve conflicts -- it was therefore difficult to implement environmental protection policies.

Thus, although a framework of pollution control laws emerged in this period, it was only weakly enforced. In addition, during the formative stage, laws were promulgated directly in return to solve existing problems, rather than being proactive measures designed to avoid future damage. Moreover, the government was very anxious about the consequences of any disturbance to the economic development. Only limited attention was paid to environmental protection by the government. Hence, the functioning of pollution control law within the period of formative stage remained unsatisfactory.

### ***2.1.3 The progressing stage (from January 1982 to August 1987)***

During the late 1970s, the pollution caused by industrial operations, particularly in rural areas, significantly reduced the environmental quality in Taiwan. Improper disposal caused soil pollution and river pollution. 'Soil pollution' (*tu-rang u-ran*) turned out to be the 'catchphrase to illustrate the degradation of agricultural land from industrial waste and agricultural chemicals'.<sup>41</sup> Various studies found 'higher than standard, and higher than tolerable, levels of cadmium, chromium, copper, mercury, nickel, lead, and zinc' in soil samples in different sites within the five-county area of central Taiwan.<sup>42</sup>

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Water Conservation were responsible at the level of the central government.

<sup>40</sup> Article 14 of the Water Pollution Control Act 1974.

<sup>41</sup> *Studies on the Heavy Metal Pollution of Agricultural Soils and Crops in Taiwan*, (1986) (Taipei: Executive Yuan, Council of Agriculture, in Chinese), p. 6.

<sup>42</sup> *Ibid*, p. 32. The five-county areas refer to Miauli, Taizhong, Yunlin, Changhua, and Nantow.

In fact, some serious pollution incidents occurred early in this period. For instance, improper disposal of 'cadmium-tainted water' by the Kao-yin Chemical Industrial Company Ltd. in 1983 polluted approximately fifty hectares of farmland.<sup>43</sup> The pollution caused to farmland at Kuanying and Luchu in Taoyuan County originated from poor treatment -- or even untreated wastewater -- being discharged by the Ji-li Chemical Industrial Company Ltd. in 1983.<sup>44</sup> Also, significant dioxin emissions occurred in Wan-li, Tainan in 1983.<sup>45</sup>

However, a significant event that occurred in this stage was the revocation of Martial Law in July 1987. This initiated the way for greater freedom of expression and some anti-pollution activities. For example, in February 1987 protests were held against water pollution caused by the Lee Chang Yung Chemical Industrial Corporation in Hsin-chu.<sup>46</sup> In March 1987, due to local residents' protests, plans for the establishment of a Lu-Kang DuPont titanium oxide factory were abandoned.<sup>47</sup> These protests were as a turning point in the history of Taiwan's environmental movement. The anti-pollution demonstration forced the government to become much more serious about protecting the environment. It also resulted in the irrevocable involvement of the public to taking part in environmental protection.

Subsequent to the revocation of Martial Law, several factors encouraged a growing public environmental awareness. First, the scale of environmental degradation was escalating at a greater rate than ever and was impossible to ignore. Secondly, many scholars, especially with higher degrees from abroad, consistently advocated and campaigned certain actions in order to awaken

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<sup>43</sup> *United Daily News* (Lian-he-bao), 12 November 1983, p. 4. (The case was referenced as E7702 of the Public Nuisance Dispute.)

<sup>44</sup> Jwo, I (1988) *Studies of the State of Soil Pollution and Prevention Policy* (Taipei: Huan-jing Tong-shiunn Publication Co, in Chinese), p. 78-85. (The case was referenced as E7704 of the Public Nuisance Dispute.)

<sup>45</sup> *State of the Environment*, (1995), pp. 456-457. (The case was referenced as Q7802 of the Public Nuisance Dispute.)

<sup>46</sup> *White Paper on Public Dispute Settlement*, (1993), p. 98 and p. 192. (The case was referenced as G7701 of the Public Nuisance Dispute.)

<sup>47</sup> *White Paper on Public Dispute Settlement*, (1993), p. 191. (The case was referenced as E7802 of the Public Nuisance Dispute.) The DuPont Co. was finally built their plants in early 1989 in a new site, at the Kuanyin Industrial District in Taoyuan County, but with a stringent environmental safety measure this time. This set an important precedent in the establishment of industrial plants on the island. ("DuPont At Last Given Go-Ahead for Plant Plans" *Free China Journal*, April 17, 1989)

public environmental consciousness. Thirdly, ‘non-governmental organisations (NGOs)’<sup>48</sup> started to quickly increase in number. Many NGOs endeavoured to hold various public activities as to raise public awareness and understanding of the environmental crisis. Fourthly, more and more often local residents began to combat environmental abuse committed by government or private enterprises that directly have an effect on their life. Sometimes, even scholars and leaders of NGOs assisted local people to demonstrate at street. And finally, the political liberalisation of the government<sup>49</sup> led to a lifting of restrictions on forming opposition<sup>50</sup> and protest by the mid-1980s.

With the aim of improving the environment, the Environmental Protection Bureau (EPB) was established in January 1982 and was assigned several responsibilities to control pollution. Apart from reforming the environmental administrative system, the government also speeded up to promulgate new laws and regulations. New laws included the Sewage Act 1984,<sup>51</sup> the Toxic Chemical Substances Control Act 1986,<sup>52</sup> the Noise Control Act 1983,<sup>53</sup> the Procedures for Industrial Waste Water Management Act 1987,<sup>54</sup> the General Waste Sanitation Landfill Ordinance 1985,<sup>55</sup> the Waste Incineration Management and Control Ordinance 1985,<sup>56</sup> the Medical Care Act 1986,<sup>57</sup> the Taipei Municipality Waste Soil Management Bill 1983,<sup>58</sup> the Environmental Pesticides

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<sup>48</sup> Such as the ‘Consumers Federation of the ROC’, the ‘Society for Wildlife and Nature’, the ‘National Parks Association’, and others.

<sup>49</sup> Since 1986, there have been ten major elections. Each of them contributed to the gradual transition towards a multiparty political system.

<sup>50</sup> For example, the Civil Bodies Organization Act (Ren-min Twan-ti fa, promulgated and effective on 10 February 1942, last amended on 31 December 1993, in *Six Laws Collection*, 1999, pp. 997-1000) has been used by the KMT as a means to suppress the forming of opposition on Taiwan for a very long time.

<sup>51</sup> Shiah-shui-daw Fa [Sewage Act] (promulgated and effective on 21 December 1984) in *Six Laws Collection*, (1999), pp. 1218-1220.

<sup>52</sup> Dwu-shing Fa-shyue Wu-jyr Kuan-li Fa [Toxic Chemical Substances Control Act] (promulgated and effective on 26 November 1986, amended on 16 November 1988) in *Compilation*, (1994), pp. 1673-1700.

<sup>53</sup> Tsau-yin Kuan-chih Fa [Noise Control Act] (promulgated on 13 May 1983, amended on 1 February 1992) in *Six Laws Collection*, (1999), pp. 715-716.

<sup>54</sup> Shyh-yeh Fei-shui Kuan-li Ban-fa [Procedures for Industrial Waste Water Management Act] (promulgated and effective on 5 May 1987) in *Compilation*, (1994), pp. 1007-1014.

<sup>55</sup> I-bang Fei-chi-wu Wei-sheng Yean-mai-charng Sheh-jyh Guei-fang [The General Waste Sanitation Landfill Ordinance] (promulgated and effective on 1 January 1985) in *Compilation*, (1994), pp. 1494-1516.

<sup>56</sup> Leh-seh Fern-far Chuh-li Sheh-jyh Guei-fang [Waste Incineration Management and Control Ordinance] (promulgated and effective on 28 January 1985) in *Compilation*, (1994), pp. 1520-1546.

<sup>57</sup> I-liao Fa [Medical Care Act] (promulgated and effective on 24 November 1986) in *Six Laws Collection*, (1999), pp. 1647-1651.

<sup>58</sup> Tai-pei-shih Fei-tu Kuan-li Yao-dean [Taipei Municipality Waste Soil Management Bill] (promulgated and effective on 9 February 1983) in *Compilation*, (1994), pp. 1599-1601.



Control Act 1984,<sup>59</sup> the Public Premises No Smoking Measures 1987,<sup>60</sup> the Slope Conservation Utilisation Act 1986,<sup>61</sup> and the Cultural Assets Conservation Law 1982.<sup>62</sup> Of these laws and regulations, the following have substantially played part of the cause in waste management: the Toxic Chemical Substances Control Act 1987, the Procedures for Industrial Waste Water Management Act 1987, the Sewage Act 1984, and the Waste Disposal Act 1985.

Simultaneously, several amendments were carried out to modify the outmoded law during this period. The Waste Disposal Act was promulgated and effective in 1974. The first amendment was carried out in 1980 and enacted in 1985. In the amendment of 1985, substantive provisions of the Act were strengthened.<sup>63</sup> The amendment changed the whole Act from 28 Articles to 36 Articles.

The Water Pollution Control Act promulgated and enacted in 1974 and was first amended in 1983. The 1983 amendment contained a modification of the 'water classification (*dih-mian shui-ti*)'<sup>64</sup> to make it applicable to all bodies of water such as lakes and oceans as well as rivers. Moreover, the 1983 amendment bestows pollution victims the right to 'ask local authorities to investigate the causes of pollution incidents',<sup>65</sup> and 'the right to claim appropriate compensation'.<sup>66</sup>

The first amendment of the Air Pollution Control Act 1975 was made in 1982. The 1982 amendment contained two distinctive features that were not found in the original Act. First, the amended Act called for 'the installation of automatic monitoring and alarm systems'.<sup>67</sup> Secondly, the amended Act included 'a right for pollution victims to enquire local authorities to examine the

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<sup>59</sup>Huan-jing Wei-shen Yong-yao Kuab-li Ban-fa [Environmental Pesticides Control Act] (promulgated and effective on 22 May 1984, amended on 29 November 1993) in *Compilation*, (1994), pp. 1983–2004.

<sup>60</sup>Gong-gong Chang-suo Jin-ian Ban-fa [Public Premises No Smoking Measures] (promulgated and effective on 3 June 1987, last amended on 7 April 1988) in *Compilation*, (1994), pp. 2005–2006.

<sup>61</sup>Shan-bo-di Bau-yuh Li-yong Tiao-li [Slope Conservation Utilization Act] (promulgated and effective on 10 January 1986; last amended on 7 January 1998) in *Six Laws Collection*, (1999), pp. 1174–1176.

<sup>62</sup>Wen-fa Tzy-yuan Bau-tswen Fa [Cultural Assets Conservation Law] (promulgated and effective on 26 May 1982) in *Compilation*, (1994), pp. 2739–2753.

<sup>63</sup>In particular, the amended version contained additional Article 23-1, and also included modification of Articles of 5, 6, 11, 15, 18, and 21.

<sup>64</sup>Article 2(2) of the Water Pollution Control Act 1974.

<sup>65</sup>*Ibid*, Article 25.

<sup>66</sup>*Ibid*, Article 32.

<sup>67</sup>Articles 13 and 14 of the Air Pollution Control Act 1982.

causes of pollution incidents,<sup>68</sup> as well as the right to claim appropriate compensation for harm occurred by such incidents'.<sup>69</sup> Overall, the amended Act indicates a more progressive attitude towards pollution control.

As mentioned earlier, in Taiwan, environmental policy has often been considered as a part of the state's economic policy. As a result, economic development needs have significantly affected environmental policy. Although the government has made every effort to control environmental pollution through legislation and a strengthening of its administrative system, during this period the development of environmental laws and policies remained incomplete.

#### ***2.1.4 The integrated stage (from September 1987 to the present day)***

By the late 1980s, Taiwan had begun to enjoy the benefits of its economic growth and modernisation. Also, since 1986, there have been ten major elections. Each election made a contribution to the continuing transition towards a multiparty political system.<sup>70</sup> In addition, Constitutional amendments that were carried out in 1991, 1992, 1994, 1997, 1999 and 2000 facilitated the smooth transition of Taiwan from an authoritarian state to a more democratic state. The emergence of a multiparty political regime and the growth of democratisation have assisted the expansion of environmental awareness in Taiwanese society. Generally, protection of the environment has developed into a public policy supported by all the political parties in Taiwan.

With environmental protection fast becoming one of the most important tasks facing the authorities, the Taiwan government adopted a policy called 'Environmental Protection in Line with Economic Development' in 1987.<sup>71</sup> Furthermore, on 22 August 1987 the Environmental

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<sup>68</sup> Article 31 of the Air Pollution Control Act 1982.

<sup>69</sup> Ibid, Article 42.

<sup>70</sup> During the Martial law period (from 14 January 1949 to 15 July 1987), the Taiwan government prohibited the organization of any new political party 'besides the then existing party, the ruling party 'KMT', the Democratic Socialist Party (Minshehdang), and the Chinese Youth Party (Chinniandang)'. However, 'the name of the Democratic Progressive Party ('DPP') (Minjingdang) formally appeared on the ballot in the 1989'. The New Party ('NP') (Xindang) split from the KMT in August 1993. (See *Republic of China Year Book*, (1996), (Taipei: Executive Yuan, in Chinese), p. 3.)

<sup>71</sup> *State of the Environment*, (1995), p. 355; also see *National Environmental Protection Project* (1998), p. 3.

Protection Bureau in the National Health Administration was upgraded to become the Environmental Protection Administration<sup>72</sup> (TEPA) directly under the Executive Yuan.<sup>73</sup>

Under the current regime, the TEPA consists of twelve divisions<sup>74</sup> and three institutes<sup>75</sup>, and carries out central governmental responsibilities for administering national environmental protection affairs.<sup>76</sup> Since its inception, the TEPA has endeavoured to prevent the deterioration of environmental quality in the Taiwan area. The TEPA is accountable for identifying potential threats to Taiwan's environment, to propose improvement plans and to take other active response measures. The TEPA is also answerable for the creation of a digital government environmental system and sometimes works in partnership for joint environmental protection efforts with non-governmental organizations (NGOs). Furthermore, the TEPA supports various international environmental initiatives.<sup>77</sup> Overall, through its work in the preservation of ecological balance and environmental quality, the long-term objective for the TEPA is to achieve sustainable development in Taiwan.

Under the terms of the TEPA Organization Act 1995, the specific functions of the TEPA are identified as follows:

First, the TEPA has the obligation to instruct and to supervise provincial, municipal and county environmental authorities to carry out national environmental strategies and policies.

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<sup>72</sup> The TEPA contained seven divisions: 'the Bureau of Comprehensive Planning, the Bureau of Air Quality Protection, the Bureau of Noise Control, the Bureau of Water Quality, the Bureau of Solid Waste Control, the Bureau of Environmental Sanitation and Toxic Chemical Control, the Bureau of Performance Evaluation and Disputes Settlement, and the Bureau of Environmental Monitoring and Data Processing'.

<sup>73</sup> *State of the Environment*, (1995), p. 639.

<sup>74</sup> They are: Department of comprehensive planning, Department of air quality protection and noise control, Department of water quality protection, Department of waste management, Department of environmental sanitation and toxic substance management, Department of supervision evaluation and dispute resolution, Department of environmental monitoring and information management, Department of incinerator engineering, Bureau of environmental inspection, Recycling fund management board, Soil and groundwater remediation fund management board and Air pollution control fund management board.

<sup>75</sup> They are: Environmental analysis laboratory, Environmental professionals training institute and Office of science and technology advisors.

<sup>76</sup> Hsing-cheng-yuan Huan-jing Bau-fu-shu Zu-zhi Tiao-li [The Environmental Protection Administration Organization Act] (promulgated and effective on 29 July 1987) in *Compilation*, (1994), pp. 9-16.

<sup>77</sup> For example: bilateral international environmental cooperation (among others, projects included greenhouse gases reduction, and in the UK in April 2003 Minister Hau met with the UK director of the environment to discuss bilateral cooperation issues) and multilateral international environmental cooperation (projects included Ocean Model Information System for APEC Region and Marine Resource Conservation Working Group (MRCWG)).

Secondly, in order to improve the quality of governmental policy, the TEPA encourages and advises regular meetings and communication between central government officers, ministries, commissions, and administrations to be carried out in order to strengthen cooperation between their officers and the TEPA.

Thirdly, environmental protection and control require the development of various types of scientific knowledge and technological improvement. Due to the fact that current environmental protection operations in Taiwan often lag far behind those of developed countries, the weight has been placed on the expansion of environmental science and technology.

Fourthly, the TEPA has introduced serious programmes designed to raise public consciousness and concern for environmental protection. It also has funded many activities to encourage the public participation in environmental concerns. Along with environmental education planning and research in the Taiwan area, environmental law has been formally offered as a course in Taiwan's universities.

Last but not least, since its establishment in 1987, the TEPA has reviewed the system for environmental protection, and encouraged the introduction of new environmental protection laws and regulations. It also has amended obsolete environmental laws and regulations and commenced many enforcement actions. Between September 1987 and December 2003, the TEPA promulgated no fewer than 14 Acts of law (including amendments) and 175 regulations and executive orders. And the TEPA is currently pushing for the completion of a number of other important relevant regulations.<sup>78</sup>

The new environmental protection laws and regulations introduced under the TEPA aegis include: first, the Environmental Protection Basic Act (Basic Act),<sup>79</sup> which 'amounts to an

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<sup>78</sup> See different publications of the *TEPA Register* and [www.epa.gov.tw](http://www.epa.gov.tw).

<sup>79</sup> Huan-jing Bau-fu Ji-bern-fa [Environmental Protection Basic Act] Date reported to the Executive Yuan on 13 February 1988; submitted to the Legislative Yuan on 31 May 1988. The purpose of the Environmental Protection Basic Act is 'to prevent pollution, which might damage human health and environment, to provide for compensation in the event of such damage, and to protect the living environment'. The Act intends to integrate policy and legislative guidelines, allowing it 'to function as a framework for creating future environmental laws'. Hence, the Basic Act plays

Environmental Protection Constitution<sup>80</sup> was passed and promulgated on November 2002.

Secondly, the Environmental Impact Assessment Act 1994<sup>81</sup> was put into practice. The EIA Act 1994 is an across-the-board mechanism that endeavours to supply decision-makers with information on the 'potential environmental consequences' of planned activities. Thirdly, in order to handle the increasing number of complaints about environmental nuisance, the Public Nuisance Dispute Resolution Act 1992<sup>82</sup> was introduced. Moreover, new laws governing modern pollution controls have been introduced -- for example, the Soil and Underground Water Pollution Remediation Act 2000,<sup>83</sup> and the Marine Pollution Control Act 2000.<sup>84</sup> An organisation law for all subordinating authorities, such as the TEPA's Environmental Inspection Institute Organisation Act 1995,<sup>85</sup> was also introduced.

The principal amendments of obsolete environmental laws and regulations were as follow:

In 1991, the Water Pollution Control Act 1974 was amended a second time with much better revisions. There are five main modifications in this second amendment. First, the Water Pollution Control Act now accommodates 'a system of granting permission prior to the set-up or alteration of polluting enterprises',<sup>86</sup> as well as 'a system for reporting effluent discharges'.<sup>87</sup>

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a role in the formation of a comprehensive environmental legal system. See Huan-jing Bau-fu Li-fa Yen-chiu (Research on Legislation of Environmental Protection, in Chinese), (1987), pp. 204-205. An *ad hoc* Committee for the Improvement of Economic and Social Legislation CEPD, Executive Yuan.

<sup>80</sup> *Huan-jing Bau-fu Nien-chien* [The Year Book of Environmental Protection], (1989) (Taipei: Environmental Protection Administration, Executive Yuan, in Chinese), p. 388.

<sup>81</sup> Huan-jing Yin-sheang Pin-ku-fa [Environmental Impact Assessment Act] (promulgated and effective on 30 December 1994; last amended on 22 December 1999) in *TEPA Register*, No. 146, (February 2000), p. 9.

<sup>82</sup> Gong-hai Chiu-fen Chu-li Fa [Public Nuisance Dispute Resolution Act] (promulgated and effective on 1 February 1992; last amended on 19 January 2000.) in *White Paper on Public Dispute Settlement*, (2000), pp. 232-239. The Act provides a legal basis for the Public Nuisance Mediation Committees in every city, county and provincial government in Taiwan (Article 4). A higher Public Nuisance Arbitration Panel was allocated under the TEPA (Article 9). Decisions reached by the mediation committees or the TEPA's arbitration panel are reviewed by the courts and thus carries the weight of legal judgments (Article 30).

<sup>83</sup> Tu-rang ji Di-shiah-shoei U-ran Jeng-chyr Fa [Soil and Groundwater Pollution Remediation Act]. Reported to the Executive Yuan on 22 April 1991; submitted to Legislative Yuan on 31 July 1991; promulgated and effective on 2 February 2000) in *TEPA Register*, No. 147, (March 2000), pp. 21-31.

<sup>84</sup> Hai-yang Wu-ran Fang-chih Fa [Marine Pollution Control Act] (promulgated and effective on 1 November 2000) in *TEPA Register*, No. 156, (December 2000), pp. 3-12.

<sup>85</sup> Hsing-cheng-yuan Huan-jing Bau-fu-shu Huan-jing Jian-yan-suo Zu-zhi Tiao-li [The TEPA's Environmental Inspection Institute Organization Act] (promulgated and effective on 24 May 1989; last amended on 13 January 1995) in *Compilation*, (1998), pp. 8-10.

<sup>86</sup> Articles 13 to 15 of the Water Pollution Control Act 1974.

<sup>87</sup> *Ibid*, Articles 20, 22, 29, and 31.

Secondly, the amended Act expands the scope of control areas to include ‘sewage systems and the construction of wastewater treatment facilities’,<sup>88</sup> and also ‘empowers local authorities to designate a more stringent effluent discharge standard in individual cases’.<sup>89</sup> Thirdly, ‘permissible pollution emissions’ are now determined by ‘the rate of water tolerances of the total amount of wastewater effluents against the total overall quantities of pollutants’.<sup>90</sup> Fourthly, under the ‘polluter pays principle’, treatment fees are now introduced and collected from individual polluters, based on ‘the quality and quantity of water affected’.<sup>91</sup> And finally, the 1991 amendment contains punitive provisions with heavy penalties for violations.<sup>92</sup> These punitive provisions not only fine ‘those managing and carrying out polluting activities, but also include administrative criminal punishment system’.<sup>93</sup> Overall, the management and implementation of the Water Pollution Control Act 1991 was improved.

The Air Pollution Control Act 1975 was also amended a second time in 1992 and then a third time in 1999. These amendments represented a breakthrough in the area of air pollution control policy.<sup>94</sup> For example, the 1992 amendment regulates ‘stationary pollution sources’<sup>95</sup> and ‘requires the installation of automatic monitoring equipment’,<sup>96</sup> as well as ‘institutes mechanisms to grant approval for the installation, modification and operation of stationary pollution source monitoring equipment’.<sup>97</sup> In addition, the second amendment also modifies the original version regarding ‘the classification of pollution prevention districts and outlines procedures for setting air quality standards’.<sup>98</sup> Furthermore, the 1992 amendment promulgated Article 10 to allow regulatory agencies of all level of government to collect air pollution control fees. The third amendment of

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<sup>88</sup> Ibid, Article 7(1).

<sup>89</sup> Ibid, Article 7(2).

<sup>90</sup> Ibid, Article 9.

<sup>91</sup> Ibid, Article 11.

<sup>92</sup> Ibid, Article 32 to Article 58.

<sup>93</sup> Ibid, Article 36.

<sup>94</sup> The 1992 amendment increases the Air Pollution Control Act from contains 27 Articles to 55 Articles. The 1999 amendment even expands the total number of Articles to 78. (See *TEPA Register*, No.135, (March 1999), pp. 3-5.)

<sup>95</sup> Article 19 of the Air Pollution Control Act 1992.

<sup>96</sup> Ibid, Article 7, Article 9, and Article 12.

<sup>97</sup> Ibid, Article 13 and Article 14.

<sup>98</sup> Ibid, Article 5.

1999 revises ‘the emission standards for stationary sources’<sup>99</sup> and ‘the emission standards for mobile sources’.<sup>100</sup> Both ‘stationary sources and mobile sources’ (including automobiles and motorcycles) are subject to the charges.<sup>101</sup>

The Waste Disposal Act 1985 also introduced four further changes.<sup>102</sup> In particular, Article 10-1 and Article 23-1 of the 1988 amendment introduced the legal basis for recycling programs. General speaking, the amended Act made certain progresses. However, in order to improve the pollution control, the Waste Disposal Act 1985 was undertaken a major amendment on 24 October 2001. The new version of the Waste Disposal Act 2001 comprises of 77 articles<sup>103</sup> which requires ‘the implementation of waste management with an integrated approach and also obliges operators to take all measures necessary to prevent pollution’.<sup>104</sup>

What's more, during the integrated stage, the first comprehensive environmental policy plan -- the Guiding Principles of Contemporary Environmental Protection Policies at the Current Stage<sup>105</sup> -- was passed in 1987. On top of the above-mentioned modification, on 28 May 1992, the then President Lee Teng-hui promulgated the Additional Articles of the ROC Constitution.<sup>106</sup> Of these, Article 10 asserts that ‘environmental and ecological protection shall be given equal consideration with economic and technological development’. In another words, a legal basis for ‘sustainable development’ was introduced.

Above and beyond, the Taiwan government also has taken another significant movement.

That is, the Taiwan government has substantially released its control over many sectors of the

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<sup>99</sup> The revised standards further clarified the difference between new and existing sources in response to the stringency of pollution control. Secondly, there are at least 13 special emission standards, which were set up for specific category of industries, such as emission standards for waste incinerators.

<sup>100</sup> Articles 33 to 40 of the Air Pollution Control Act 1999.

<sup>101</sup> *Ibid*, Articles 16 to 19. The revenues from both kinds of emission fees will go to a special fund, the ‘Air Pollution Control Fund’, and may be spent only for air pollution control related purposes (Article 18).

<sup>102</sup> The 1988 amendment made modification on Articles 4, 11, 20, and promulgated new Articles of 10-1 and 23-1. The 1997 amendment further revised Articles 10-1, 23-1 and 31. The 1999 amendment promulgated new Articles 34-1, and also revised Articles 5, 13, 17, 22, and 34. Each of these amendments made some improvements over the previous Act. The 2001 amendment revised Articles 4 and 35.

<sup>103</sup> The *TEPA Register*, No. 168, (December 2001), pp. 44-65. A detailed discussion follows at Section 2.2.

<sup>104</sup> See Section 7.5 of Chapter Seven.

<sup>105</sup> Executive Yuan (Cabinet) Order 76 (Sanitation) No. 22427 (2 October 1987) in *Compilation*, (1998), pp. 241-246.

<sup>106</sup> Zhong-hua-min-guo Shyen-fa [The ROC Constitution] (promulgated on 1 January 1946 and effective on 25 December 1946; last amended on 21 July 1997) in *Six Laws Collection*, (1999), pp. 3-12.

economy by adopting more flexible policies.<sup>107</sup> This has in turn compelled Taiwan to ‘diversify its economy in the direction of a larger service sector and more technical-intensive industries’.<sup>108</sup> In addition, the intention to develop Taiwan into an ‘Asia-Pacific Regional Operation Centre’<sup>109</sup> was a further impetus for changing Taiwan's economy and environmental regulations. Moreover, the new environmental awareness has had a considerable impact on foreign investment in Taiwan. In general, foreign business must now ‘take proper measures to ascertain beforehand the scope and extent of their obligations regarding environmental protection’.<sup>110</sup>

However, although Taiwan has made impressive progress in developing a system of environmental laws, it has not yet succeeded in controlling pollution problems. The amended Acts still fail to address adequately issues of liability and compensation. The enforcement of existing legislation remains, in general, unsatisfactory. Whilst the relevant regulations allow the TEPA to take action against polluters, the environmental agencies have been kept ineffectual by an anxiety comes from government that higher environmental standards could restrain economic growth.

Public protests remain frequent. Several incidents have taken place during this period. In May 1992, residents of Shan-Chu-Ku (in Nangang) protested against a proposed garbage landfill

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<sup>107</sup> Such as: first, ‘financial liberalization’. Within this action, Taiwan government has gradually released its restrictions on ‘inward and outward capital transfers’. (See Hsing-cheng-yuan Jin-gji Jian-she Wei-yuan-hui (Council for Economic Planning and Development, Executive Yuan, December, 1996 Year Report, in Chinese)). Secondly, ‘tariff cuts’. This means that in line with ‘the World Trade Organization (“WTO”) negotiations and Asia Pacific Economic Cooperation (“APEC”) trade liberalization’; Taiwan has amended ‘import tariffs on 758 items of industrial goods in July 1995’. (See Fa-zhan Tai-wan Cheng-wei Ya-tai Ying-yun Zhong-zin Ji-hua (The Plan for Developing Taiwan as an Asia-Pacific Regional Operations Centre, Council for Economic Planning and Development, Executive Yuan Report, 1995)).

<sup>108</sup> For example, since the mid-1980s, almost ‘over one-third of the US dollar value of the electronics and components imported into the USA has come from the four Asian newly industrialized countries Taiwan, South Korea, Singapore, Hong Kong, and Mexico’. As to 1990s, the region of trade to North America has ‘shifted from the Atlantic to the Pacific Rim’. (See Simon, D F (1994) “Taiwan’s Emerging Technological Trajectory: Creating New Forms of Competitive Advantage”, in Hu, J (ed) *Quite Revolutions in Taiwan, Republic of China*, (Taipei: Kwang-Hwa Publishing Co.), p. 123.)

<sup>109</sup> In light of the fact that ‘the global economic is increasingly oriented toward the Asian-Pacific regime’, the Taiwan government has an ambition to promote Taiwan as ‘the center of industries such as manufacturing, finance, sea transportation, air transportation, telecommunication, and the media in Asian-Pacific area’. The Executive Yuan (Cabinet) on January 5, 1995 approved ‘The Plan for Developing Taiwan as an Asia-Pacific Regional Operations Center’ (Fa-zhan Tai-wan Cheng-wei Ya-tai Ying-yun Zhong-zin Ji-hua) See Hsing-cheng-yuan Jin-gji Jian-she Wei-yuan-hui (Council for Economic Planning and Development, Executive Yuan, 1995 Report, in Chinese)

<sup>110</sup> Freedman, W and Fu, J (1996) “Environmental Issues Affecting Business Transactions in Taiwan”, *Natural Resources and Environment*, Vol. 10, p. 47.



site to be built in their area.<sup>111</sup> A ‘near-riot’ protest over environmental pollution occurred at the Da-Lin Chinese Petroleum Plant.<sup>112</sup> Other examples include protests against proposed new nuclear power plants.<sup>113</sup> Radioactive steel bars were discovered in the structure of a building.<sup>114</sup> Perhaps the most critical environmental dispute to have taken place was the ‘Linyuan Incident’, which occurred in 1988 in Kaohsiung hsien. Protests by villagers forced on the factories a temporary closure, and villagers subsequently won some NTDS<sup>115</sup> 1.27 billion (approximately US\$36,600,000) in compensation.<sup>116</sup>

Other difficulties also abound. For example, many civil servants with non-legal or only a weak legal background have drafted most of the environmental statutes. As a result, much environmental legislation has lacked sound legislative technique and is marked by ambiguous phrasing. In addition, violent confrontations between parliamentary members led to unprecedented inefficiency in the legislative process. For this reason, a proposal of draft Environmental Protection Basic Act was submitted to the Legislative Yuan in May 1988, after much foot-dragging, the Basic Act was finally promulgated on 19 November 2002. Secondly, although the TEPA passed the first administrative plan -- the ‘Guiding Principles of Contemporary Environmental Protection Policies at the Current Stage’ in 1987 -- this plan has only had a minor influence on the legislature, courts or citizens concerned. Thirdly, in the current Taiwan legal system, environmental statutes contain no provisions for legal liability. The Taiwanese Civil Code<sup>117</sup> at Article 184 provides a legal base

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<sup>111</sup> *Chinese Times* (Zhong-guo Shi-bao), (24 May 1992), p. 5. Also see *White Paper on Public Dispute Settlement*, (1993), p. 198. (The case was referenced as A8101 of the Public Nuisance Dispute.)

<sup>112</sup> *Central Daily News* (Zhong-yang Ryh-bao), (29 May 1992), p. 7. Also see *White Paper on Public Dispute Settlement*, (1993), p. 130 and p. 189. (The case was referenced as B7709, B7804 of the Public Nuisance Dispute.)

<sup>113</sup> *Free China Journal*, (17 March 1992), p. 2. Also see *White Paper on Public Dispute Settlement*, (1993), p. 190 and p. 205. (The case was referenced as D7701 of the Public Nuisance Dispute.)

<sup>114</sup> *United Daily News* (Lian-he-bao), (4 September 1992), p. 5. Also see *White Paper on Public Dispute Settlement*, (1993), p. 198. (The case was referenced as A8102, D8105 of the Public Nuisance Dispute.)

<sup>115</sup> New Taiwan Dollar (NTD) is the currency unit that is actually in use in Taiwan. The exchange rate is about NTD\$56.9 against one pound sterling or NTD\$34.7 against one US dollar. (See *The Economist*, (31<sup>st</sup> May – 6<sup>th</sup> June 2003), Vol. 367, No. 8326, p. 102.)

<sup>116</sup> *White Paper on Public Dispute Settlement*, (1993), p. 117 and p. 133. (The case was referenced as S7706, S7803 of the Public Nuisance Dispute.) Also see Administrative Court 1988 Trial 2271 (31 December 1988); Yeh, J (1989) "Deadlines in the Environmental Law: Small and Large Perspectives in the Administrative Law Chamber's Linyuan Trial", in *Fa-shyue Tsorng-kan*, Vol. 34, No. 4, pp. 126-137, (in Chinese).

<sup>117</sup> Tai-wan Min-fa [Taiwan Civil Code] (promulgated on 23 May 1929, effective on 10 October 1929, last amended on

for civil liability, but in most pollution cases the plaintiffs (usually victims) have to prove negligence on the part of the defendants, and it is extremely difficult to prove such negligence. As a result, people in Taiwan seldom take their pollution-related cases to court. When major pollution events occur, the victims usually immediately surround the suspected pollution sites and demand compensation. Therefore, most of the settlements for compensation in pollution cases have been 'out-of-court settlement'. This approach has prevented the development of a legislative measure to solve relevant environmental disputes. Furthermore, Article 197, Section 1 of the Taiwanese Civil Code states 'the right to make a claim for compensation resulting from tort damage lasts two years, from the time of knowledge of injury and knowledge of parties responsible for compensation. Also, claims may not be made more than ten years after the occurrence of the tortious act'. Unfortunately, in practice, the limitation period is sometimes too short to prove the causation of pollution and damage.

In addition, environmental rights are still in their preliminary stage. Therefore, the concept of environmental rights needs to be more clearly defined, so as to give environmental rights a clear legal status.

These deficiencies in Taiwan's legislation should be resolved without delay. It is recommended by this study that the existing laws might need to carry out certain amendments so as to achieve in delivering a more coherent and more integrated preventive measures that promote environmental welfare.

## **2.2 The structure of waste management in Taiwan**

Having examined the developing stages of environmental laws and regulation in Taiwan, the Chapter in this section presents the legal structure of waste management in Taiwan. Thus, a framework for understanding the main legal instruments that related to waste management is

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21 April 1999) in *Six Laws Collection*, (1999), p. 146.

provided. In doing so, first, I look at the legislative framework and regulatory framework. Next, the meaning of 'waste' and the authority for the waste management are examined. Finally, the main legal instruments of waste management in Taiwan are considered.

### **2.2.1 Legislative framework and regulatory framework**

Before proceeding to a more detailed overview of the main issues of waste management laws and regulations in Taiwan, it is necessary to give some attention to the general relationship between law and development over the past half century as this is an important dimension to the context within which Taiwan's environmental laws and regulations have developed. The Constitution of the Republic of China was promulgated and put into force before the Nationalist Party withdrawal from Mainland China to Taiwan in 1949. Due to historical factors, the policies on law and development have often been complicated by political issues between the central and local government.<sup>118</sup> The Constitution of the Republic of China attempts to address this problem by setting some guidelines that divide all legislative subject matters into four categories.<sup>119</sup> Any matters not enumerated in Articles 107, 108, 109, and 110 fall within the jurisdiction of the central government if they are national in nature, the province if they are provincial in nature, and the

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<sup>118</sup> In imperial times, China saw Taiwan as 'a prefecture of Fujian province', and was proclaimed as 'the 22<sup>nd</sup> province of China in 1886'. At the end of the 'first Sino-Japanese War' in 1895, Taiwan was 'ceded to' Japan. In the meantime, the Republic of China (ROC) finally succeeded in overthrowing the Ching dynasty on 10 October 1911. After the successful 'Northern Expedition' against the warlords in 1927, the Nationalist Party (KMT) came to power. In order to impose 'law and order' and solve many complicated political issues between the central and local government, the Constitution of the Republic of China was promulgated on 1 January 1947 and put into force on 25 December 1947. After Japan's defeat in World War II and surrender to the Allies, Taiwan was reinstated to Chinese sovereignty on 25 October 1945. At the same time, civil war had broken out on the mainland between 'the Communist Party of Mao Zedong and Zhou Enlai, and the Nationalist Party (KMT) of Chiang Kaishek'. Unfortunately, the Nationalist Party (KMT) was defeated in the civil war and subsequently withdrew to Taiwan in 1949. However, the retreating government still referred to the ROC, and the 'law and order' based on the Nationalists' system of governance was still applied in Taiwan. (See Bell, B (ed) (1998) *Insight Guides Taiwan*, (Singapore: APA Publications GmbH & Co. Verlag KG), pp. 28-42.

<sup>119</sup> First, Article 107 of the Constitution states that 'matters relating to foreign affairs, national defence, judicial system, international trade policy, designation of national, provincial and hsien revenues are legislated and executed by the Central Government'. Secondly, Article 108 of the Constitution indicates that 'general principles of provincial and hsien self-government, the education system, public welfare and policy system are matters that are legislated by the Central Government. However, in these areas provinces may also enact separate rules and regulations provided these do not conflict with national laws'. Thirdly, Article 109 of the Constitution provides that 'intra-provincial issues concerning education, public health, and transportation are legislated by the provincial government, but the provinces may delegate the power of administration to the hsien or county level'. Fourthly, Article 110 of the Constitution provides that 'issues included education, public health, and transportation within a hsien, the hsien shall have power of legislation and administration.

hsien if they are local in nature. In cases of dispute over legislative authority, the Legislative Yuan should settle the issue'.<sup>120</sup>

Environmental protection is not a matter enumerated in any of the four above-cited provisions, and its nature is so flexible that all levels of government may participate in forming environmental laws and policies. Generally speaking, the waste management laws and regulations in Taiwan are organized in a 'multilevel structure'<sup>121</sup> which consists of the central administrative level, the provincial and municipal level, and the county level. An examination of the development of environmental legislation, it becomes clear that national laws have in fact been derived from local administrative standards, albeit in accordance with the Constitution of the Republic of China. Although Taiwan's environmental laws and regulation usually contain stringent and detailed standards, the regulatory strategy for environmental protection in Taiwan remains one of 'command-and-control'.

This system is largely justified by the Taiwanese government by reference to the fact that before the 1990s, Taiwan suffered from poor economic conditions, insufficient funds, relatively low levels of scientific knowledge and technology, and unsatisfactory environmental management capacity. Taiwan's approach to environmental protection has consistently been influenced by economic and political concerns, so that even when an environmental threat has been perceived, there has still been an emphasis on continued economic development. In practice, environmental laws and regulations in Taiwan have been built up as a succession of measures suited for planned economic schemes which were carried out in four different phases. Hence, environmental protection is succeeding in utilizing devise of uniform, inflexible standards together with a choice of monitoring and sanctions instruments. The economic condition and political situation before the late 1990s were not mature enough to allow the Taiwanese government to employ market forces to regulate certain activities. All these factors have reflected on the development of 'command-and-

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<sup>120</sup> Article 111 of the Constitution of the Republic of China.

<sup>121</sup> Freedman, W and Fu, J (1996) "Environmental Issues Affecting Business Transactions in Taiwan", *Natural Resources and Environment*, Vol. 10, p. 44.

control' approach. Hence, 'command-and-control' regulation obliges all sectors to comply whatever their circumstances, and whatever their compliance costs.

However, setting standards is a complex exercise that requires consideration of the state of the environment, local requirements, and an assessment of what can realistically be enforced. It is hardly ever appropriate to adopt standards set in other countries without modification to suit local conditions. Generally speaking, the setting of standards which are currently applied in Taiwan is rather loose in nature. Although laws and regulations are normally adopted based on the best practical technology available when they were passed, the enforcement of these laws is difficult in the face of political indifference and administrative weaknesses. In addition, judicial review of administrative rule-making is unavailable in Taiwan. For these reasons, environmental agencies are substantially free from the constraint and pressure of potential litigation challenging the propriety of promulgated standards. In particular, whenever confronted with criticism, the TEPA and environmental agencies usually assert that the standards promulgated are reasonable by referring to the relevant applicable standards prevailing in other countries.

There have been frequent criticisms by many people in Taiwan that the type of 'command-and-control' regulatory system is 'cost-ineffective' and lacks the incentive needed to encourage innovation and investment in respect of pollution control.<sup>122</sup> In recent times, it has been argued that many environmental problems are closely related to economic and social issues, and that the sustainable development principle should now be influential in setting standards. Therefore, modern administrative standards should balance the need for environmental protection against the need for economic growth. Moreover, the contemporary development of environmental law has been transformed from a reactive subject providing standards to one which functions to provide preventative and precautionary measures. Increasing reliance on economic incentives (or instruments) have required the administrative standards to develop different techniques for

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<sup>122</sup> Tang, T C (1993) 'The Environmental Laws and Policies of Taiwan: A Comparative Law Perspective', *Pacific Rim Law & Policy Journal*, Vol. 3 (Special Edition), p.119.

implementation and enforcement. As a result, it is essential for Taiwan to change its approach. Hence, this study strongly recommends that administrative standards which are implemented in Taiwan should be tailored (or modified) to suit local condition and to provide an up to date system of pollution control as part of a comprehensive regime of environmental law.

### 2.2.2 The meaning of 'waste'

Generally speaking, waste (*fei-chi-wu*) as used in the Waste Disposal Act 2001 of Taiwan refers to 'any material, substance or article which the holder does not want and decide to dispose of, or intends or is required to dispose of, in the categories set out in Article 2 of the Waste Disposal Act 2001. Even if the holder foresees that it may be reprocessed or recycled.'<sup>123</sup> Accordingly, along the lines of Article 2 of the Waste Disposal Act 2001, the term 'waste' is classified into two categories as follows:

1. General waste (*i-ban fei-chi-wu*):

Garbage, night soil and urine, animal corpses, or any other waste, solid or liquid, which may be generated by an institution other than a business enterprise and which is sufficient to pollute the environment.

2. Enterprise waste (*shi-yeh fei-chi-wu*):

(1) Hazardous industrial waste: toxic or hazardous waste that is generated by enterprises and in a concentration or amount sufficient to affect human health or to pollute the environment.

(2) General industrial waste: waste other than hazardous industrial waste generated by enterprises.

The criteria for identification of hazardous industrial waste set forth in the preceding paragraph shall be prescribed and promulgated by the central competent authority upon consultation with the executing authorities.

Radioactive waste shall be disposed of in according with the provisions as specified in Article 26 Section 10 of the Atomic Energy Act.<sup>124</sup>

General waste (*i-ban fei-chi-wu*) generally includes combustible and non-combustible refuse and recoverable resource refuse. The categories of enterprise waste (*shi-yeh fei-chi-wu*)

<sup>123</sup> The TEPA (Waste) Order No.12988 (23 May 1990) in *Compilation*, (1994), p. 1176.

<sup>124</sup> Article 26 (10) of the Atomic Energy Act (Yuan-tzy-neng Fa, promulgated and effective on May 9, 1968; amended and promulgated on December 24, 1971) expresses that 'any transfer of possession or disposal of radioactive materials, any transfer of possession or disposal of the equipment which will produce floating radiation, or any disposal of radioactive waste will and must be apply to the Committee of Atomic Energy for permission. The Committee of Atomic Energy must then send member or members to examine it'.

are divided into 'general industrial waste and hazardous industrial waste'. Waste other than hazardous industrial waste generated by an enterprise is general industrial waste. In accordance with the definition provided in Article 2(2)(1) of the Waste Disposal Act 2001, hazardous industrial waste refers to 'the toxic and hazardous waste produced by factories, whose concentration or amount will affect the health of human being or pollute the environment'. In addition, the Hazardous Enterprise Waste Identification Criteria 1987<sup>125</sup> states the different types of the listing hazardous industrial waste -- the terms includes 'toxic industrial waste, corrosive industrial waste, infectious industrial waste, polychlorinated biphenyl industrial waste, and other hazardous industrial waste declared by the central authority'.

The application of common terminology by different societies does not necessary indicate that such terms carry the same meaning. Formulating a workable definition of waste has proved to be a very complex exercise within the European Community. However, the difficulties in finding a clear definition of 'waste' and the meaning of the term 'discard' in the US law<sup>126</sup> and EC Directive<sup>127</sup> seem not to have surfaced in Taiwan yet. Thus, up till now, there has been no single case in Taiwan which deals with the difficulty of considering what should be classified as waste or whether the definition of waste is appropriate or not. Of course, this does not mean that there will be no such cases in the future. However, at present, linguistic analysis of the meaning of 'waste' and the term 'discard' is far less important than the consideration of potential environmental harm caused by improper waste management. It means the focal point of the waste management in Taiwan is how best to prevent and control environmental pollution.

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<sup>125</sup> Yeou-hai Shi-yeh Fei-chi-wu Ren-ding Biao-zhun [Hazardous Enterprise Waste Identification Criteria] (promulgated and effective on 12 May 1987; amended and promulgated on 10 March 1994) in *Compilation*, (1994), pp. 1411–1433.

<sup>126</sup> The term 'discard' has given rise to protracted debate and litigation. (See Tromans, S (2001) "EC Waste law – A Complete Mess", in *Journal of Environmental Law*, Vol. 13, No. 2, p. 141 and footnote No. 35.).

<sup>127</sup> The European Community has for many years taken a broader view of 'waste'. A major problem has been the 'equivocal nature of the relationship' concerning the meaning of 'discard' and 'the descriptions of the various types' of 'disposal' and 'recovery' operations set out in Annexes IIA and IIB of the 91/156/EEC Directive. (See Tromans, S (2001) "EC Waste law – A Complete Mess", in *Journal of Environmental Law*, Vol. 13, No. 2, p. 141.). However, the definition of waste has 'inherent' complexity that has been the area under discussion of substantial 'academic commentary and judicial consideration'. (See Cheyne, I (2002) "The Definition of Waste in EC", in *Journal of Environmental Law*, Vol. 14, No.1, pp. 61.)

The main techniques for disposal of general waste currently utilised in Taiwan are sanitation landfill and incineration<sup>128</sup>. In addition to incineration and sanitary landfill, treatment methods include ‘composting, open dumping, on-site burning and filling in low land’.<sup>129</sup> An extensive analysis of these measures will be provided in the following Section 3.2 of Chapter Three. By and large, the Waste Disposal Act 2001 is the major law regulating waste recycling, reuse, storage, cleaning, treatment, disposal and schedule of fees.

In addition, the TEPA has established a ‘Toxic Chemical Data Bank’, which provides information on toxic substances used in Taiwan and promotes disaster prevention and response. In order to gather information on pollution sources, the report, registration, and licensing system was applied. All enterprises that involve in dealing with toxic substances or that discharge waste gas, waste water, or industrial waste are required to ‘file plans for properly disposing of their toxic output’.<sup>130</sup> Special attention will be paid to enterprise waste in the following Section 3.2 of Chapter Three.

### ***2.2.3 The authority for the waste management***

The term ‘competent authority’, as used in the Waste Disposal Act 2001, means ‘the Environmental Protection Administration (TEPA) of the Executive Yuan in the case of the central government; the municipality at municipal government level;<sup>131</sup> the hsien (or city) government in hsien (or city) level’.<sup>132</sup>

The term ‘executing authorities’, in accordance with Article 5(1) of the Waste Disposal Act 2001, refers to ‘the environment protection departments of the municipal government and environmental protection bureaus at the hsien (or city) governments’. The executing authorities, in

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<sup>128</sup> According to TEPA figures, ‘93 per cent of garbage is dumped in Taiwan's 130 landfill sites, few of which meet international standards’. In order to improve solid waste management, Taiwan’s US\$ 300 billion ‘Six Year National Development Plan (Liow-nien Guo-jian Jih-huah)’ plans to set up 21 new incinerators by 1996. However, funds problems have slowed many of those projects. *Environmental White Paper*, (1997), p. 232.

<sup>129</sup> *State of the Environment*, (1995), p. 620.

<sup>130</sup> Article 5 of the I&CWMS. (See the following footnote No. 136)

<sup>131</sup> At the regional level include: the Taiwan provincial government and the Taipei and Kaohsiung City government.

<sup>132</sup> Article 4 of the Waste Disposal Act 2001.



most cases, 'are empowered to enact waste management laws and regulations specific to their regions and to establish a special unit with exclusive responsibility for recycling, clean-up and disposal of waste'.<sup>133</sup>

#### **2.2.4 The main legal instruments of waste management in Taiwan**

Article 1 of the Waste Disposal Act 2001 points out the objectives of waste management in Taiwan is 'with a view to effectively cleaning up and treating the waste, thereby improving environmental sanitation and maintaining national health'. Therefore, the meaning of waste management takes into account 'social, technological and economic aspects and using physical, chemical or biological means to ensure that the generation of wastes were within adequate disposal facilities, effective, and harmless'.<sup>134</sup>

Basically, the Waste Disposal Act 2001 regulates domestic and industrial solid waste management in Taiwan. Under the Waste Disposal Act 2001, municipalities are responsible for the management of domestic and other non-industrial waste. Articles 11 to 27 relate to the collection, transportation, and disposal of domestic waste. In general, domestic and non-industrial wastes are buried at a waste disposal site or burned in a municipal incinerator. Articles 28 to 40 govern an industrial facility's management of industrial waste. A facility either may dispose of industrial wastes on-site or transfer them to licensed disposal companies for proper disposal. Detailed standards regarding the collection, transfer, and disposal of hazardous waste (substances) have been promulgated under the Hazardous Waste Measures Standards<sup>135</sup> (HWMS) and the Industrial and Commercial Waste Storage, Clean-up and Disposal Treatment Methods and Facilities Standards (I&CWMS).<sup>136</sup> In order to encourage compliance, environmental laws often provide for

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<sup>133</sup> Ibid, Article 5(2).

<sup>134</sup> Article 11 of the Waste Disposal Act 2001.

<sup>135</sup> You-hai Shi-yeh Fei-chi-wu Rennding Biao-joen [Hazardous Waste Measure Standards] [hereinafter referred as to HWMS] (promulgated and effective on 12 May 1987; last amended on 7 March 2001) in *TEPA Register*, No. 160, (April, 2001), pp. 3-22.

<sup>136</sup> Shi-yeh Fei-chi-wu Chu-tswen Ching-chu Chu-li Fang-fa ji She-shi Biao-joen [Industrial and Commercial Waste Storage, Clean-up and Disposal Treatment Methods and Facilities Standard] [hereinafter refer as to I&CWMS] (promulgated and effective on 8 May 1989; last amended on 29 June 1999) in *TEPA Register*, No. 139, (July, 1999),

penal or criminal sanctions for violators. Articles 45 to 69 prescribe punitive provisions for violations, which include a fine and a jail sentence. Although the Waste Disposal Act 2001 provides for criminal sanctions, administrative agencies normally resort to persuading violators to comply with regulations through taking 'corrective measures'.<sup>137</sup>

In addition, the Executive Yuan promulgated the 'Guiding Principles of Contemporary Environmental Protection Policies at the Current Stage' in late 1987. It is clearly expressed in these guidelines that 'environmental protection is a national priority to be emphasised equally with economic development'. Articles 2 and 3 in Chapter Two of the Guiding Principles of the Current Stage give a clear picture of the governmental strategy:

**Article 2:** For the nation's long-term interests, environmental protection and economic development shall be given the same attention. During the process of economic development, if there is any significant adverse impact on the environment, environmental protection shall receive priority consideration.

**Article 3:** The public and industry share the responsibility of environmental protection with the government.

Accordingly, the following principles apply to the measures of waste management.

### ***1. The Principle of Prevention (U-Ran Yuh-Farng Yuan-Tzer)***<sup>138</sup>

The 'preventive principle' seeks to avoid environmental damage as an objective itself. It requires action to be taken at an early stage and, if possible, before damage has happened.<sup>139</sup> This may involve three basic strategies.<sup>140</sup>

### ***2. The Polluter-Pays-Principle (U-Ran-Jer Fuh-Fey Yuan-Tzer)***<sup>141</sup>

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pp.15-19.

<sup>137</sup> Articles 50 and 51 of the Waste Disposal Act 2001.

<sup>138</sup> Chapter Two Article 4 of the Guiding Principles of the Current Stage states that 'national construction, production activities, and consumer behaviour should be based on the principles of resource conservation and pollution prevention.'

<sup>139</sup> Purdue, M (1991) "Integrated Pollution Control in the Environmental Protection Act 1990: A Coming of Age of Environmental Law?", *Modern Law Review*, Vol. 54, pp. 535.

<sup>140</sup> Three basic strategies are as follow: first: reduction and re-use of waste; secondly: waste minimization; and thirdly: environmental impact assessment process. (See the Guiding Principles of Contemporary Environmental Protection Policies at the Current Stage 1987 – the Principle of Prevention (a) and (b))

<sup>141</sup> Article 5 in Chapter Two of the Guiding Principles of the Current Stage states that '... the polluter pays principle, pollution-related damage compensation, and environmental recovery programmes shall be established. The

The principle of polluter pays is particularly relevant in the case of waste disposal. This principle seeking to encourage polluters to improve their facilities, as well as to fine them for the pollution they produce. The original viewpoint is that the producer of the pollution should carry costs. However, there is little evidence that such a principle will restrain or reduce pollution. In effect, 'it is not really the polluter who pays in the end but the consumer of his product through higher price'.<sup>142</sup> Generally speaking, 'environmental harm' usually means 'a cost in economic parlance, remains external to the market'.<sup>143</sup> So 'neo-classical economics' supports a system that 'will put a price on environmental externalities'.<sup>144</sup> Based on this suggestion, the 'polluter pays principle' requires the TEPA to use one of two criteria to determine the stringency of pollution control regulations. Some provisions use 'health-based' criteria, requiring 'a level of reduction sufficient to protect public health and the environment'.<sup>145</sup> Others use 'technology-based' criteria, requiring 'the agency to demand reductions achievable through available technology'.<sup>146</sup> Derived from the above mentioned description, the 'polluter pays principle' applies to the costs of measures with the intention of preventing and controlling pollution within the current waste management regime. Taken as a whole, the 'polluter pays principle' has undoubtedly served as a guiding principle for Taiwan in its attempt to counter pollution externalities.<sup>147</sup>

### ***3. The Principle of Permit-Register-Report (Her-Far Sheu-Ker, Bao-Tswen Jih-Loh Yuan-Tzer)***

Under the principle of 'permit-register-report', manufactures must apply to the relevant authority 'for permission before settling up or modifying plant and equipment, or discharging pollutants'.<sup>148</sup> Manufactures are also required to 'install automatic monitoring facilities and to send

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government shall also take appropriate reward and subsidy steps in these areas'.

<sup>142</sup> Purdue, M (1991) "Integrated Pollution Control in the Environmental Protection Act 1990: A Coming of Age of Environmental Law?", *Modern Law Review*, Vol. 54, pp. 535.

<sup>143</sup> Driesen, D (1997) "The Societal Cost of Environmental Regulation: Beyond Administrative Cost-Benefit Analysis", *Ecology Law Quarterly*, Vol. 24, p. 553.

<sup>144</sup> Driesen, D (1997) "The Societal Cost of Environmental Regulation: Beyond Administrative Cost-Benefit Analysis", *Ecology Law Quarterly*, Vol. 24, p. 553.

<sup>145</sup> *Ibid*, p. 554. For example: Article 40 of the Waste Disposal Act 2001.

<sup>146</sup> *Ibid*. For instance: Article 28 of the Waste Disposal Act 2001.

<sup>147</sup> See Article 4 and Article 28 of the Environmental Protection Basic Act 2002.

<sup>148</sup> Article 41 of the Waste Disposal Act 2001. In addition, Article 36 of the Waste Disposal Act 2001 states that 'the

their operation records regularly to the authorities'.<sup>149</sup> The competent authority may 'send its personnel to inspect the enterprise waste storage, clean-up and disposal operations and to take samples and acquire relevant materials if necessary'.<sup>150</sup>

In addition, for the purpose of establishing a 'joint waste disposal system' to handle waste cleaning and disposal work, the municipal and hsien (or city) governments involved 'may work out the regulations governing the establishment and administration thereof and submit the same to their respective superior authorities for approval, and may then set up a regional joint waste disposal unit'.<sup>151</sup> Furthermore, an executing authority is responsible for 'clearing general waste, and to perform appropriate sanitary treatment of such waste. If necessary, it may request the superior authority for approval of entrusting the foregoing work to a public or private waste disposal and treatment organisation'.<sup>152</sup> A key objective of this measure is that joint waste disposal could remedy the problem of serious shortage of environmental inspection personnel.

### 2.3 Conclusion

Based on the above findings, environmental protection has appeared as a priority concern on Taiwan's domestic policy agenda in recent years. Taiwan's efforts to progress the legislative measures over current and future activities have been described in this chapter, and it can be said that its history of the development of waste management law is mixed. Certainly, determined efforts have been made to improve environmental welfare and, in some respects, they have been highly effective. Nevertheless, several fundamental dilemmas have to be tackled in order to ensure the long-term efficacy of environmental protection without unnecessarily detracting from economic development.

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methods and facilities for storage, clean-up and disposal of enterprise waste shall meet the regulations prescribed by the central competent authority.'

<sup>149</sup> Article 37 of the Waste Disposal Act 2001.

<sup>150</sup> Ibid, Article 9 and Article 20.

<sup>151</sup> Ibid, Article 28.

<sup>152</sup> Ibid, Article 14.

## **Chapter 3 The State of Waste Management**

### **3.1 Introduction**

Waste management has for many years been recognized as a significant problem in Taiwan and has encountered various difficulties. The focus of this chapter is to examine the current state of the waste management regime in Taiwan. This chapter begins with a discussion of the existing regulatory frameworks within which waste management is operated. The inadequacy in the system and the difficulties in practice will be analysed.

As mentioned in Section 2.2 of Chapter Two, the main techniques for disposal of solid waste currently utilised in Taiwan are sanitation landfill and incineration. In accordance with the TEPA's own records, many of Taiwan's landfill sites are at, or are approaching, full capacity. Since the relatively high population density makes land extremely scarce, to build new landfill sites or to find a suitable location for an incineration plant is difficult. However, in order to avoid unnecessary ecological pollution and to safeguard the natural environment, the location of new sites for the replacement can not be delayed. As a result, the environmental impact assessment regime plays an important part in the process of selecting suitable sites and making satisfactory environmental decisions. Hence, the second part of this chapter examines various influential factors in the environmental impact assessment system currently implemented in Taiwan. The weaknesses of the current environmental impact assessment system will also be included. Subsequently, proposals for reform relating to the Environmental Impact Assessment Act 1994 will be provided.

### **3.2 The contemporary measures of waste management in Taiwan**

Pollution controls in Taiwan were for many years only concerned with the treatment of air and water pollution; no proper attention was given to solid waste management. As a result,

improper waste management and the spread of hazardous and toxic substances caused pollution to the soil and water. In order to solve the problem of pollution caused by inappropriate waste management, the Taiwan government promulgated several laws and regulations in relation to waste management. Of these, the Waste Disposal Act 2001 (WDA 2001) is the major law that regulates waste recycling, reuse, storage, cleaning, treatment, disposal and schedule of fees. In this section, I aim to identify and examine different aspects of waste management in Taiwan. They include general waste management, industrial waste management, agricultural waste management, and medical waste management.

In general, waste management strategy in Taiwan has been set out in three basic rules.<sup>1</sup> First, the generation of waste should be prevented wherever possible. Secondly, waste should be reused or recycled to the maximum feasible level. Finally, waste that cannot be treated otherwise should be safely disposed of. Overall, the recent approach of waste disposal system appears to be more concerned with minimising waste and maximising recycling.

In addition, most of the management dealing with industrial waste is subjected to a control and authorization regime, through a 'permit-register-report' system. This includes techniques such as 'licensing or permits for installations' and 'prior permission for movements of waste' or even 'a ban on export, transit or import'. Accordingly, whether an object or a substance is classified as industrial waste has important consequences for the holder, which may include criminal sanctions for breaches of the waste regulations.

### **3.2.1 *General waste management***

The regulatory framework for general waste management is based upon Article 11 to Article 27 of the WDA 2001 which regulates the collection, transportation, and disposal of general waste. Currently, the main techniques for disposal of general waste utilised in Taiwan are sanitation landfill and incineration. In order to give a clearer picture of the current state of general

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<sup>1</sup> This is generally known as the 'waste hierarchy'. (See Thornton, J and S Beckwith (1997) *Environmental Law*, (London: Sweet & Maxwell), p. 170.)

waste management, this section will cover the following topics: sanitation landfill and incineration, waste recycling, reuse and reduction, waste management fees, sewage treatment, household hazardous waste, and others measures for waste management.

### **3.2.1.1 Sanitation landfill and incineration**

Traditionally, the most common form of general waste management is by direct landfill of untreated waste. As the TEPA's records show, many of Taiwan's landfill sites are at, or are approaching, full capacity.<sup>2</sup> Therefore, the need to construct new landfill sites, or, in some cases, the need to build temporary dumpsites was imposed on the local authorities. However, since the relatively high population density makes land extremely scarce, to build replacements is difficult. In addition, there is a long history of improper handling of solid waste, and in many cases, local residents oppose the new sites.<sup>3</sup> Hence, Taiwan's current waste management policy has made a 'U-turn' in that incineration is given priority over sanitation landfill.<sup>4</sup>

Nevertheless, the construction of incinerators together with running expenses will impose a very significant financial burden on the government. Locating a source for the matching funds required -- either from the public funds or from the governmental budget -- has posed a great challenge to the Taiwan government.<sup>5</sup> In addition, due to lacking sufficient personnel and experience, local environmental protection bureaus face many difficulties in effectively managing the operations of these incinerators.<sup>6</sup>

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<sup>2</sup> In June 1993, the TEPA's year report indicated that 'three-quarters of Taiwan's 316 landfill sites were at, or approaching full capacity. Of these 111 landfill sites need to be replaced by the end 1993'. In spite of the 250 landfill sites established during 1996, '75 of the newly established landfill sites' were at full capacity. According to the report of the Solid Waste Management Bureau of the TEPA, the major reason for Taiwan's landfill sites becoming so full so fast is that 'commercial and industrial waste has been dumped into municipal landfill sites for years'. *Liberty Times* (Zi-you Shi-bao), 12 June 1997, p. 6. Also see *Environmental White Paper*, (1997), p. 157.

<sup>3</sup> For example: the communities of Tamshui, Pali, Wuku, Daliao, and Chiku.

<sup>4</sup> Interview with Dr. Y R Chen, Secretary General of the TEPA on 12 February 2001. It anticipates that all incinerators will be operating by 2006. (See ([www.epa.gov.tw/waste](http://www.epa.gov.tw/waste))).

<sup>5</sup> According to Article 4, Article 7, and Article 8 of the General Waste Disposal Treatment Fee Collection Measures 1994: 'the government will allocate different rates of the disposal fee between areas where the wastes are disposed of by landfill and areas where the wastes are operated by the incineration'. In (1995) *Compilation*, pp. 34-36. However, how to put this in practice will be a major challenge to the government according to the previous experience of designating the waste collection and disposal fees by mean of landfill. (Also see *Liberty Times* (Zi-you Shi-bao), 4 July 1999, p. 9.)

<sup>6</sup> According to the statistics published by the TEPA in 2001, 'a total 774,000 metric tons of incinerator ash was

Facing the difficulties normally experienced in finding suitable sites and for the purpose of making the most effective use of limited resources, the 'Municipal Solid Waste Disposal Project', one of the fourteen essential 'National Construction Projects', was initiated in July 1984 and completed in June 1990. It effectively tackled a great deal of problems associated with municipal solid waste. Subsequently, the TEPA launched a second municipal solid waste project (July 1990 to June 1996) as a continuation of the previous project.<sup>7</sup>

Furthermore, in response to the rapid increase of municipal waste that has occurred in Taiwan,<sup>8</sup> control plans for general solid waste recovery and recycling have been established. Since early 1990s, a series of projects for recycling waste under a campaign entitled 'Appreciation of Goods Project (*hsi-fu ji-hua*)' was set up by the TEPA. Seventeen recycling programmes<sup>9</sup> have been put into force.

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produced in Taiwan. It foresees that 1.81 million metric tons of incinerator ash will be produced in 2006 when all the incinerators are in full operation'. With this much incinerator ash, a considerable portion of Taiwan's landfill space will be used up. (At present, the management policy for incinerator ash remains to dump in landfill sites.) In order to encourage and promote the reuse of incinerator ash and build final disposal sites for municipal waste incinerator ash, the TEPA has extended the existing guidelines to allow 'local governments, based on their particular needs, to either jointly construct both ash reuse facilities and final disposal sites on their own, or to construct only final disposal sites and select existing ash reuse plants to convert ash into a useful material'. For the establishment of final disposal sites and new ash reuse facilities, local governments will encourage private enterprises to adopt 'BOO (build-operation-own) or BOT (build-operation-transfer)' investment methods, or will build and operate these sites and facilities themselves. In order to establish a legal basis for the reuse of incinerator ash, the TEPA is proceeding to propose a draft 'Municipal Waste Incinerator Bottom Ash Reuse Regulations' in the near future. ([www.epa.gov.tw/waste](http://www.epa.gov.tw/waste))

<sup>7</sup> For example: in 1996, the TEPA initiated a 'Five Year Improvement Project'. Also, the TEPA established 'baseline information systems' for solid waste. In addition, the TEPA promoted schemes for packing, labelling, reduction and recovery of solid waste. It also established more municipal solid waste treatment and disposal plants. Furthermore, the TEPA conducted 31 environmental impact assessment projects in relation to municipal solid waste treatment and disposal sites. (See *Environmental White Paper*, (1997), p.157.)

<sup>8</sup> The average daily collection of municipal solid waste reached '18,753 metric tons in 1990, representing an increase of 114 per cent since 1980'. (See *Yearbook of Environmental Statistics, Taiwan Area, The Republic of China*, (1991), p. 134, (Taipei: The TEPA, in Chinese)). A statistic carried out by the TEPA shows that in 1996, the daily collection of municipal solid waste was '238,630 metric tons per day, indicating an increase of 44.7 per cent since 1990'. (See *National Environmental Protection Project*, (1998), p.104.)

<sup>9</sup> For example: waste PET bottles, waste tires, waste lubricating oils, waste aluminium cans, waste iron cans, discarded agricultural chemicals cans, discarded pesticide cans, waste storage batteries, dry cells containing mercury, discarded fluorescent lamps, waste paper, waste plastic, scrapped automobiles, scrapped motorcycles, waste glass, paper containers, and aluminium foil bags. However, the total number of recycling programme has now reached 21. *Environmental White Paper*, (1997), p.157.



### 3.2.1.2 Waste recycling, reuse and reduction

As mentioned above, the Taiwanese government has treated recycling as an important aspect of waste management. In 1992, a 'pilot scheme (*leh-seh buh-luoh-dih*)' was introduced.<sup>10</sup> Since then, the recycling waste schemes have been steadily promoted as a part of the government policy in parallel environmental protection and economic growth. Nevertheless, the outcome of household recycling scheme is far from satisfactory. Without an easy accessible facility to deposit recyclable materials, the usual practice for most people is just to leave the recyclable materials mixed in with ordinary household garbage. In order to improve the pilot scheme, the TEPA established a more integrated pollution control programme, the 'Four-In-One Recycling Programme (*si-he-yi zi-yuan hui-shou ji-hua*)' in 1997.<sup>11</sup> In addition, the latest amendment of Waste Disposal Act 2001 contains several articles which regulate the waste recycling scheme.

In line with Articles 15 to Article 23 of the WDA 2001, the main characteristics of the waste recycle scheme at present are as follows.

First, all manufacturers, distributors, and importers of waste and merchandise importers that have been designated as control targets. They must submit application forms, business licenses, import permits, recycle and disposal plan and relevant documents to the local authorities to apply for registration. All documents must also be filed with the central government.<sup>12</sup>

Secondly, all designated targets of control and management are required either to dispose of their generated waste themselves, or to assign the task to the 'public or private waste-handling

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<sup>10</sup> In order to improve the efficiency of recycling program, the TEPA has therefore drawn up an assistance plan to help local sanitation teams purchase recycling vehicles.

<sup>11</sup> Under this scheme 'four parties (schools and local communities, recycling merchants and sectors, local governments and non-governmental organisations)' joined forces to implement the 'Four R [recycle, recovery, reuse and reduction] Programme'. See *Recycling Four-In-One: Planning Report*, (20 December 1997), (Environmental Protection Administration, Executive Yuan, in Chinese). Since launched the 'Four-In-One Recycling Programme', the quantity of garbage began dropping after 1997; while the amount of recycled resources rose. The latest figure shows that 'in the year 2001, the recycling rate was raised to 9.8 per cent. And in year 2002, the recycling rate reached up to 14.5 per cent'. ([www.epa.gov.tw/solid\\_waste\\_management](http://www.epa.gov.tw/solid_waste_management))

<sup>12</sup> Article 15 of the WDA 2001.

organisation'.<sup>13</sup> The amount recycled should be reported to the local authorities on a quarterly basis and filed with the central government.<sup>14</sup>

Thirdly, all waste control and check standards are to be based on the recycling rate promulgated by the central government.<sup>15</sup> Those failing to meet this standard will be punished in accordance with Articles 50 and 51 of the WDA 2001.

Fourthly, in order to achieve the recycling and disposal of all promulgated controlled waste, relevant industries may jointly establish a 'recycling foundation'. The levels of fee and fund control are to be stipulated by the recycling foundation's steering committee of those industries.<sup>16</sup>

Finally, a committee organised by the central government must supervise the recycling and disposal of all relevant industries.<sup>17</sup>

Before the latest amendment was carried out in 2001, the TEPA together with the IDB and the MOEA promulgated the 'Measures for Collection, Clean-up and Disposal of General Waste Containers'<sup>18</sup> in April 1994. Subsequently, the TEPA has utilised its broad statutory delegation to instruct each regulated industry to institute a 'collective organisation [*gong-huey*]'<sup>19</sup> for recycling. Almost every company in these regulated industries must, by paying, the 'disposal fees' agreed among them, establish 'Recycling Funds' within their industrial association or union.

Unfortunately, each of these recycling programmes has been developed separately; no systematic, comprehensive recycling and control system exists. Whether the regulated enterprises indeed carried out the specified annual rate as indicated by their statistics is doubtful. Together

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<sup>13</sup> Article 14 and Article 28 of the WDA 2001.

<sup>14</sup> *Ibid*, Article 18(3).

<sup>15</sup> *Ibid*, Article 18(4).

<sup>16</sup> *Ibid*, Article 16.

<sup>17</sup> *Ibid*, Article 5.

<sup>18</sup> Fei I-ban Rong-chi Hui-shou Ching-chu Chu-li Ban-fa [Measures for Collection, Clean-up and Disposal of General Waste Containers] (promulgated and effective on 15 April 1994) in *Compilation*, (1996), p. 418.

<sup>19</sup> Article 10-1 of the WDA 1985 and Article 21 of Measures for Collection, Clean-up and Disposal of General Waste Containers, and every different Measures for Collection, Clean-up and Disposal (Treatment) promulgated by the TEPA contains such a provision.

with the ambiguous scope of responsibility for recycling programmes,<sup>20</sup> the existing recycling schemes faced many difficulties and problems.

In order to make progress of the existing system, the TEPA initiated the 'Four-In-One Recycling Programme' scheme on 1 January 1997. A certification technique was employed to improve inspection and the checking of all enterprises handling general containers.<sup>21</sup> A system of 'Collective Funds (*tzy-yuan hui-shou goan-li ji-jin*)' was established to entrust a financial institution with responsibility for operating and maintaining the recycling programmes.<sup>22</sup> In addition, recently, the TEPA instituted the 'Plastic Shopping Bag and Plastic Disposable Dishes Use Restriction Policy'<sup>23</sup> to place restrictions on the usage of plastic shopping bags on one hand, and try to promote waste reduction on the other hand. This particular policy went into effect on 1<sup>st</sup> July 2002.

### 3.2.1.3 *Waste management fees*

Along the lines of the Waste Disposal Act, the TEPA promulgated the 'General Waste Disposal Treatment Fee Collection Measures'<sup>24</sup> in July 1991. The major standing points for this measure originated from the 'polluter pays principle' and had the purpose of encouraging waste minimisation. Within this scheme, the executing authorities may collect service fees from residents in the designated clearing areas. In accordance with Article 24 of the Waste Disposal Act 2001, the TEPA stipulated the standard charging rates and the service fee collection methods by taking into account the costs and expenses incurred from the local disposal methods and treatment equipment. The means of collection under consideration included adding a surcharge to tap water or electricity

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<sup>20</sup> Article 10-1 of the WDA 1985 did not specify the responsibility for recycling as either joint or several among the manufacturers, importers and seller of goods. It is also not clear in what share or percentage this liability should be assigned to the different enterprises.

<sup>21</sup> See Amendments to Measures for Collection, Clean-up and Disposal of General Waste Containers (86) TEPA (waste) No.02016 Public Notice (15 January 1997), reprinted in the *TEPA Register*, No. 110, (February 1997), p. 6.

<sup>22</sup> Article 17 of the WDA 2001.

<sup>23</sup> The legal base of this policy is Article 21 of the WDA 2001.

<sup>24</sup> A study sponsored by the TEPA on the feasibility of collecting waste management fee was issued in April 1989. (See *A Study of the System of Collecting Trash Fee in Taiwan*, TEPA Research Report No. 34044780132 (April 1989)) Also see (80) TEPA (waste) No. 29621 Public Notice in *Compilation*, (1994), p.1365; I-ban Fei-chi-wu Ching-chu Chu-li-fei Zhen-shou Ban-fa [General Waste Disposal Treatment Fee Collection Measures] (promulgated on 31 July 1991, amended on 10 June 1994) in *Compilation*, (1995), p. 33.

bills or a charge based on the number of members of household. However, given the dubious nature of the link between the production of garbage and the three tactics mentioned above, these means of collection and the rate of waste disposal fee to be levied were both heavily criticised.<sup>25</sup> Nevertheless, government interest in fee collection and the great value of water in Taiwan meant that the TEPA finally put the 'waste collection and disposal fees' system into force in 1997 by imposing a surcharge on tap water supply.<sup>26</sup>

Yet after several years of the system in place, it is arguable whether such measures have resulted in reducing waste disposal or reducing the use of tap water. The fees still failed to reflect the full extent of the resources needed to handle the range of solid waste disposal problems. The 'waste collection and disposal fees' measures were, at the very most, revenue for solid waste management. Hence, in order to promote the concept of waste minimisation and waste recovery, Taipei municipal government abolished the 'waste collection and disposal fees' by adding a surcharge to tap water supply, at the same time stipulates their own means and standard charging rate based on the number of the garbage bags (*shwei-dai jeng-sou*) on 1 July 2000.<sup>27</sup>

#### 3.2.1.4 Sewage treatment

The other serious and complicated pollution source that confronts in general waste management is domestic sewage. Most cities and counties in Taiwan are not equipped with domestic sewage treatment plants. Only 3.5 per cent of the sewer system in Taiwan meets sanitary standards.<sup>28</sup> The wastewater from domestic sewage has caused serious environmental problems.

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<sup>25</sup> See (83) TEPA (waste) No. 22531 Public Notice in *Compilation*, (1995), p. 33. Also see *Liberty Times* (Zi-you Shi-bao), 11 January 1997, p. 6. "Academia Suggests How to Decide the Means of Waste Collection and Disposal Fee" by Wei Yi-jah.

<sup>26</sup> See (82) TEPA (waste) No. 16218 Public Notice in *Compilation*, (1994), p. 1645. Also see *Liberty Times* (Zi-you Shi-bao), 25, November 1998, p.5. "County [City] Government At Last Given Go-ahead to Stipulate Their Own Means and Standard Charging Rates for Waste Collection and Disposal Fee" by Wei Yi-jah.

<sup>27</sup> Tai-pei-shih Leh-seh-fei Shwei-dai Jeng-sou Bau-gaw (*The Report of Waste Collection and Disposal Fee Based on the Number of the Garbage Bags*), (2001), (Taipei Municipal Government Environmental Protection Bureau, February 2001, in Chinese)

<sup>28</sup> *Liberty Times* (Zi-you Shi-bao), 12 December 1995, p. 10. According to the latest official statistics, 'with a target of about 10 to 20 per cent annual rate of sewage connection, Taiwan's sanitary sewer system connection rate will reach 70 per cent in 2006'. (See *Liberty Times* (Zi-you Shi-bao), 22 June 1997, p. 11. Also *National Environmental Protection Project*, (1998), p. 223.)

Although there are 422,379 septic tanks in Taiwan,<sup>29</sup> most are poorly constructed and lack proper maintenance. The deficiency has seriously affected environmental sanitation and caused river pollution. If the situation does not improve, domestic sewage will indeed become a very serious issue. In addition, because the sewage system is far from satisfactory, all rivers in Taiwan are more or less polluted, and the pollution has dramatically affected the river's ecosystem.<sup>30</sup> A further result of an inadequate sewage system is the pollution of irrigation water.<sup>31</sup>

In order to prevent more pollution, in my view, the Taiwan government should plan and carry out long-term sewage system project thereby reducing sewage pollution and related pollution problems. In addition, the basic construction of the sewage system should be initiated and the relevant authorities on all levels compelled to implement effective maintenance and impose stringent controls.

### **3.2.1.5 Household hazardous waste**

The advances in medical care over past decades have contributed to improving the quality of life for chronic diseases. The 'home health care'<sup>32</sup> industry grows at a great rate. As 'home health care' becomes more popular, proper disposal of household hazardous waste will become increasingly important. In my view, medical waste regulation should be extended to 'home health care', as it would permit pragmatic and rational methods for the treatment and disposal of infectious waste in the 'home health care' setting and avoid the problems associated with discarding medical waste in the general household waste stream.

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<sup>29</sup> *National Environmental Protection Project*, (1998), p. 223.

<sup>30</sup> According to the TEPA, the 1996 survey showed that '62.4 per cent main rivers were unpolluted down streams, 12.3 per cent main rivers were polluted, 14.9 per cent main rivers were badly polluted, and only 10.4 per cent main rivers were slightly polluted'. (See *National Environmental Protection Project*, (1998), p. 80.)

<sup>31</sup> According to the 1995 annual report by the Water Conservancy Bureau, it showed that '72 to 95 per cent of irrigation water was unacceptable with ammonia nitrogen. The standard for containing ammonia nitrogen shall be 1 ppm in irrigation water. Actually, there are 31 per cent of total samples where ammonia nitrogen is more than 10 ppm in irrigation water'.

<sup>32</sup> 'Home health care' is defined as 'the provision of equipment and services to the patients in the house for the purpose of restoring and maintain his or her maximal level of comfort, function and health'. (See MacKnight, K T (1993) 'The Problems of Medical and Infectious Waste', *Environmental Law*, Vol. 23, p. 802.)

Under the current regime, household hazardous waste is exempted from the hazardous waste regulations imposed by the WDA 2001. Article 1 of the WDA 2001 empowers the TEPA to serve the Act's objectives by promulgating necessary standards. In spite of this perceived need, the TEPA has not yet produced bill to address the issue in relation to household hazardous waste. The ambiguity that characterises the household hazardous waste disposal remains unchanged.

#### **3.2.1.6 Others**

Apart from the above-mentioned measures for waste management, only very insignificant quantity of waste is subject to composting, open dumping, on-site burning and filling in low land.<sup>33</sup>

Overall, based on the above analysis, the major issue for general waste management is that current standards of waste management need to be raised and consistently applied. In addition, the costs of rectifying the problem will have to be met, possibly by central government or local authorities. In short, the vital concerns for the Taiwan government are to develop new strategies for accomplishing sound waste management measures and to establish integrated waste management in order to prevent a further environmental degradation.

#### **3.2.2 Industrial waste management**

Over the past three decades, Taiwan's rapid industrial development has generated a great amount of wastewater, gas and solids.<sup>34</sup> Very often pollution control facilities are insufficient. Most industrial waste is not treated -- or, at least, not properly treated -- but instead discharged directly into the natural environment. Therefore, there have been many incidents of pollution. For example, the pollution at the farmland at Kuanying and Luchu in Taoyuan Hsien was caused by poorly treated or even untreated wastewater which contained cadmium and lead, being discharged

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<sup>33</sup> The measure of 'filling in low land' benefits to resolve waste soil from 'construct industries' on the one hand, and 'restore a site' to where it can be used for specific purposes on the other. Such as: use waste soil to establish industrial plants or parks. These treatment channels manage about '7.5 per cent of Taiwan's total waste'. (See *Environmental White Paper*, (1997), p. 159.)

<sup>34</sup> According to a survey and assessment conducted in 1998, the amount of industrial waste (includes both general industrial waste and hazardous industrial waste) and commercial waste was estimated at 'around 18.2 million tons', with '1.47 million tons (about 8 per cent) classified as hazardous industrial waste 'being produced each year, with a proper treatment disposal rate of '58 per cent'. (See *Liberty Times* (Zi-you Shi-bao), 27 December 1998, p. 7.)

from Kao-yin and Ji-li chemical plants, resulting in toxic rice that had to be destroyed.<sup>35</sup> Also, a survey conducted by agricultural authorities in 1994 indicated that ‘there were 52 cases of pollution, with 448 hectares of land contaminated’.<sup>36</sup> The pollution caused by industrial waste was also damaging to the fish farming industry. The most prominent case is the ‘green oysters’ incident that happened at the River Erhjen in April 1986 as a result of improper dumping of waste metal near the River Erhjen.<sup>37</sup>

The predominance of small and medium-sized enterprises in Taiwan means that the volume of waste produced may not be very large, but the scale of economy, technology, personnel and financial resources are insufficient for undertaking appropriate industrial waste management. In addition, a poor tracking system of waste production and insufficient handling capacity encourage illegal dumping of industrial waste.<sup>38</sup> In order effectively to control the types and amount of the industrial waste, the TEPA advocates industrial waste resource reduction and recycling activities. Moreover, the TEPA speeded up the creation of special industrial waste treatment centres. Furthermore, the amendment of the WDA 2001 set out more stringent regulations in order to control industrial waste management. Currently, Article 28 to Article 40 of the WDA 2001 regulates industrial waste management. Detailed standards regarding the collection, transfer, and disposal of hazardous industrial waste have been promulgated under the HWMS 2001<sup>39</sup> and the I&CWMS 1999<sup>40</sup>. Thus, whenever dealing with hazardous industrial waste, the relevant regulations must also be taken into account.

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<sup>35</sup> *State of the Environment*, (1995), p. 127 and p. 209. The Kao-yin case was referenced as E7704 of the Public Nuisance Dispute, in *White Paper on Public Dispute Settlement*, (1993), p. 191 and p. 212; The Ji-li case was referenced as E7702 of the Public Nuisance Dispute, in *White Paper on Public Dispute Settlement*, (1993), p. 191 and p. 211.

<sup>36</sup> *State of the Environment*, (1995), p. 210-214.

<sup>37</sup> *State of the Environment*, (1995), p. 127 and p. 209. The ‘Green Oysters’ case was referenced as S7701 of the Public Nuisance Dispute, in *White Paper on Public Dispute Settlement*, (1993), p. 195 and p. 233.

<sup>38</sup> Illegal dumps in places like Yingchiao, Tashu Hsiag, Laonong Creek and so on have been found one after another in recent years. ([www.epa.gov.tw/industrial waste management](http://www.epa.gov.tw/industrial%20waste%20management))

<sup>39</sup> See Chapter Two, footnote No. 135.

<sup>40</sup> See Chapter Two, footnote No. 136. Article 24, particularly, regulates the storage, clean-up and disposal treatment methods.

### 3.2.2.1 General industrial waste

Article 28 of the WDA 2001 stipulates that ‘... except for reuse, enterprises that generate industrial waste are liable for the clean-up and disposal of such waste either by themselves, or by establishing joint clearance facilities, or alternatively by engaging public or private waste cleaning and disposal organisations (waste handling organizations) to handle industrial waste on a commission basis’. In general, industrial waste management is required to apply the following measures: first, the registration and permit procedure,<sup>41</sup> secondly, the clean-up proposal approval measures,<sup>42</sup> thirdly, the recording requirement,<sup>43</sup> and finally the double check measure.<sup>44</sup>

With the aim of properly handling industrial waste, the TEPA and the MOEA jointly established the ‘Waste Reduction Task Force’ in 1989 and subsequently launched various projects to boost industrial waste minimisation.<sup>45</sup> On the whole, the joint efforts at industrial waste minimisation by industry, academia, and government have become an important collaborative process for achieving both environmental protection and economic growth.

Presently, the waste handling capacity of ‘waste handling organisations’ are insufficient to meet the demands placed on them.<sup>46</sup> Moreover, as mentioned earlier that Taiwan lacks

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<sup>41</sup> Article 28 (2) of the WDA 2001 highlights that ‘enterprises, which handle industrial waste by establishing a joint clearance and disposal facility, must file their application, declaring their professional technicians, tools, methods, equipment and premises for the aforesaid business purposes, to the local competent authority for a permit. After approval from the authorities, the joint clearance and disposal facilities may clear and dispose of the said waste’.

<sup>42</sup> Article 31 (1) of the WDA 2001 indicates that ‘the newly established designated industrial sectors must present the waste clean-up project paper to a competent authority, after approval the establishment is allowed’.

<sup>43</sup> Article 37 of the WDA 2001 outlines that ‘enterprises or public and private waste cleaning and disposal organisations are required properly to keep the records regarding the operation and inspection of the storage, clean-up and disposal of enterprise waste, and must submit on a regular basis such records to the competent authority in a municipal or hsien (city) government for recording and reference’.

<sup>44</sup> Article 9 of the WDA 2001 indicates that ‘a competent authority may send its personnel to inspect the enterprise waste storage, clean-up and disposal operations and to take samples and acquire relevant materials if necessary. Upon finding any discrepancies in the storage, clean-up and disposal operations, a notice requiring improvement thereof to be made within a time limit shall be given. Accordingly, all level of authorities should assign special persons to approve the permit licence, the clearance project papers, and the operation records and to double check the operation status of industrial and business clearance and treatment’.

<sup>45</sup> *State of the Environment*, (1995), p.439.

<sup>46</sup> Many reasons cause this situation, they are as follow: first, it is very difficulty to obtain land. Secondly, the cost of waste management equipment is extremely high, and such investment carries a high risk. Thirdly, local protests (NIMBY).



dedicated landfills for ‘final disposition’ of general industrial waste. Only a handful of ‘waste handling organisations’ have facilities for ‘final disposition’ of waste. Faced with these unpleasant circumstances, the first step for the TEPA to take was to promote waste reduction. In addition, in order to encourage industrial operators to undertake resource recovery and reuse, the TEPA has made efforts to simplify and streamline paperwork for the application and approval process. Moreover, a special measure ‘Pollution Prevention Equipment Importation Duty Tax Free and Investment Tax Reduction’ was launched in 2001.<sup>47</sup> This measure intended to assist and encourage the development of or investment in waste clearance and treatment facilities.<sup>48</sup>

However, despite the TEPA’s endeavour to promote and encourage waste recycling, reuse and reduction, there exist several difficulties in industrial waste management. For instance, although the Waste Disposal Act 2001 contains provisions encouraging recycling, in practice there has been little effort to recycle waste.<sup>49</sup> In addition, for several years, the Taiwan government has focused on the pollution control of state enterprises rather than small- or medium-sized enterprises,<sup>50</sup> even though the latter businesses cause over half the pollution -- and they did not participate. In my view, for the most effective waste measures to be implemented on a large scale, the relevant authority must address the capital requirements and ‘research and development (R&D)’ needs of medium and small businesses. Additionally, in order to evaluate the potential benefit of industrial waste minimisation, access to information must be improved and made readily available and easy applicable to industry.

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<sup>47</sup> Article 68 of the Waste Disposal Act 2001.

<sup>48</sup> There were 114 applications for preferential tax duty free and 74 applications for investment tax reduction before December 2002. ([www.epa.gov.tw/](http://www.epa.gov.tw/) industrial waste management)

<sup>49</sup> Mostly, the emphasis in the TEPA or industry is not on reducing waste generation but, rather, on management of waste once such waste is generated. Waste reduction is the most favoured strategy of the TEPA and industry, it clearly is not first priority.

<sup>50</sup> The reasons for this approach is because the government could directly or substantially influence the management of state enterprises and such enterprises are generally larger firms that are better equipped than smaller counterparts to devote to waste reduction technologies.

### 3.2.2.2 Hazardous industrial waste

Hazardous waste may consist of 'toxic, flammable, explosive, corrosive, chemically reactive or contagious material'. In order to control these substances, the TEPA has established a 'Toxic Chemicals Data Bank' to provide information, and also promulgated the Hazardous Waste Measure Standards in 1987 specifically to deal with hazardous and toxic substances. In addition, for the purpose of gathering information on pollution sources, the TEPA has set up a programme, which it calls the 'Clear and Clean Project [*an-jin ji-hua*]'. Accordingly, all enterprises that produce hazardous or toxic waste substances must file plans for properly disposing of their toxic output. Generally speaking, the management of hazardous waste in Taiwan has become more advanced, though there are still certain inadequacies, such as poor enforcement and a shortage of disposal sites.<sup>51</sup>

Current hazardous industrial waste management is based on four main measures: first, the registration and permit procedure;<sup>52</sup> secondly, the clean-up proposal approval measure;<sup>53</sup> thirdly, a record-keeping and reporting requirement;<sup>54</sup> and fourthly, the follow-up measures.<sup>55</sup> In practice, the major characteristics of the hazardous waste management system are as follows. First, a 'manifest system', which provides not only to track hazardous wastes that leave the premises of the generator, but also is designed to discourage illegal disposal. Secondly, special

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<sup>51</sup> For example: the Formosa Plastics Group illegally exported hazardous waste that contains toxic materials of mercury to the Cambodia. *Liberty Times* (Zi-you Shi-bao), 22 December 1998, p. 3; 25 December 1998, p. 15; 5 August 1999, p. 9 and 7 August 1999, p. 9. (Also see Lohnes, J (1999) "Taiwanese Company Dumps 3000 Tons of Toxic Waste in Cambodia", *Colorado Journal of International Environmental Law and Policy*, pp.262-278.)

<sup>52</sup> Article 28(1) of the WDA 2001.

<sup>53</sup> On 8 May 1989, the TEPA promulgated the 'Industrial and Commercial Waste Storage, Clean-up Disposal Treatment Methods and Facilities Standards'. See *Compilation*, (1994), p. 1384. Article 3 of the Standards indicates that 'the designated generators should submit an application together with its clean-up proposal to the authorities concerned for approval before commencing operations. Generators already established before the promulgation of this regulation should also complete the approval procedure'.

<sup>54</sup> This is regulated by the 'Hazardous Industrial Waste Manifest System and Operation Record Keeping and Reporting System' (promulgated and effective on 16 December 1992; last amended on 29 January 1993) in *Compilation*, (1995), p. 167 and p. 170. The object of this regulation aims to effectively control hazardous industrial waste from the beginning of production to final treatment. Also see Article 9 and Article 17 of the Hazardous Business Waste Import and Export Permit Control Measures.

<sup>55</sup> Article 9 of the WDA 2001.

design and performance standards are required for treatment, storage and disposal facilities that will handle hazardous wastes.<sup>56</sup>

Nevertheless, the 'manifest system' apparently is neither applied efficiently to control much of the hazardous waste to properly dispose of, nor does it produce information crucial to discovering dumping violations.<sup>57</sup> In addition, advanced disposal techniques that meet the TEPA's performance criteria and sites furnished with particular technologies equipment may not be available soon enough to provide appropriate treatment.<sup>58</sup> A recent review of the hazardous waste management indicates that existing regime and strategies did not present a satisfactory result.<sup>59</sup> With the aim of improving unsatisfactory hazardous waste management and avoiding illegal transshipment of hazardous waste, the Taiwan government promulgated the 'Hazardous Waste Import and Export Permit Control Measures',<sup>60</sup> which is regarded as a clear support to the Basel Convention.<sup>61</sup> The Department of Customs Administration, the Board of Foreign Trade (BOFT), and the TEPA in Taiwan have been working together to respond to the international task. In

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<sup>56</sup> See generally the HWMS 2001 and the I&CWMS 1999.

<sup>57</sup> According to the TEPA's data, 'roughly about 58,000 tons of hazardous waste solvents are produced each year, but total domestic capacity for properly treating waste solvents is approximately 40,000 tons per year. As a result, illegal waste dumping has continually occurred. Currently, well-known cases of illegal dumping have been found in Taipei Hsien at San-yin Bridge and in Kaohsiung Hsien near the Laonong Creek'. ([www.epa.gov.tw/industrial\\_waste\\_management](http://www.epa.gov.tw/industrial_waste_management)).

<sup>58</sup> Waste treatment organizations indicated that 'through numerous inspections and heavy investment can Class A treatment organizations obtain operating licenses caused many difficulties to the waste handling businesses'. Therefore, the services offered by legal Class A treatment organizations are put at an extreme disadvantage by high cost. In addition, 'some handling or treatment organizations false claim re-use solvent in order to evade stringent inspection processes happened from time to time'. Also, there is no effective monitoring system for 'the secondary pollution, which created by solvent reuse as it is currently implemented in Taiwan'. ([www.epa.gov.tw/P2/P2-5.htm](http://www.epa.gov.tw/P2/P2-5.htm)).

<sup>59</sup> *Environmental White Paper*, (1997), p. 234; also see *2000 Annual Report of National Sustainable Development*, (Taipei: Executive Yuan, NCSD), p. 47.

<sup>60</sup> You-hai Shi-yeh Fei-chi-wu Shu-ruh Shu-chu Sheu-kee Bann-fa [Hazardous Waste Import and Export Permit Control Measures] (promulgated and effective on 29 January 1993, last amendment on 13 August 1997) in *TEPA Register*, No. 117, (September 1997), pp. 14-19. The latest amendment also made changes of the title as 'Hazardous Waste Import, Export, Transit and Transshipment Management Measures'.

<sup>61</sup> Basle, 22 March 1989, in force 24 May 1989, See (1989) *International Legal Materials*, Vol. 28, p. 657. The 1989 Convention on the Control to Transboundary Movements of Hazardous Wastes and Their Disposal (1989 Basle Convention) is intended to establish a global regime for the control of international trade in hazardous and other wastes.

addition, the amendment of the Hazardous Waste Measure Standards<sup>62</sup> has meant the classification standards are very much in line with the Basel Convention.

However, in order to prevent and reduce industrial pollution, I recommend that an integrated developing management embraced with multiple factors, including education, technical assistance, financial incentives, and information exchange, is necessary. Also to build up sufficient treatment facility must become part of an overall government strategy. In addition, it must be assured that hazardous industrial wastes are delivered to specific facilities for proper treatment, as this can have a strong direct effect on reducing unwarranted 'environmental risk'.<sup>63</sup> Once pollution and waste control achieve more uniform standards, the resulting financial success will give industry a strong incentive to participate in recycling, reusing and minimising programmes.

### 3.2.3 Agricultural waste<sup>64</sup> management

A study carried out by agricultural authorities indicated that 'about 10.62 million tons of agricultural waste, which is mostly reusable organic material, was produced in 2001.'<sup>65</sup> At present, the most common method used in agricultural waste management is sanitation landfill.<sup>66</sup>

The system of livestock production has changed rapidly and dramatically in Taiwan over last decade.<sup>67</sup> In general, agricultural waste in solid form directly discarded into soil without proper pre-treatment. This has resulted in water quality degradation. A survey conducted by the water authorities in 1996 revealed that 'over 22.5 per cent of all water impairments attributed to agricultural pollution were caused by livestock waste.'<sup>68</sup> Furthermore, the continuous development

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<sup>62</sup> Two amendments were carried out on 10 March 1994 and 29 February 1996. Also see Chapter Two, footnote No. 135.

<sup>63</sup> At present, Taiwan lacks dedicated landfills for 'final disposition' of hazardous industrial waste. Up to now, only China Petroleum Company (CPC) has two sealed landfills used for the 'final disposition' of hazardous waste. ([www.epa.gov.tw/P2/P2-4.html](http://www.epa.gov.tw/P2/P2-4.html)) Therefore, there is an urgent need for Taiwan to build more final disposal sites.

<sup>64</sup> Agricultural waste includes 'wastewater and solid waste, which generated by livestock breeding, poultry farming and fish farming sectors'. ([www.epa.gov.tw/P2/P2-4.htm](http://www.epa.gov.tw/P2/P2-4.htm).)

<sup>65</sup> [www.epa.gov.tw/P2/P2-4.htm](http://www.epa.gov.tw/P2/P2-4.htm).

<sup>66</sup> Ibid.

<sup>67</sup> According to the governmental official report in 1996, it revealed that 'the number of the livestock production sectors decreased from 33,247 in 1993 to 25,357 in 1996. 8.9 per cent of livestock production sectors increased their number of animal to over 1,000'. (See *Environmental White Paper*, (1997), p. 105.)

<sup>68</sup> *Environmental White Paper*, (1997), p. 47.

in the fish farming industry has also created much pollution. The waste from fishponds has caused the nearby areas to retain 'excessive amounts of sodium, sulphates and chloride.'<sup>69</sup>

Government regulators have recognised that wastewater and solid waste generated by livestock, poultry and fishing farming sectors are a significant and widespread environmental problem. In order to improve the agricultural waste management, the TEPA promulgated the 'Modified Pig Breeding Measures (Yeang-ju Tzeng-tseh Tyau-jen Fang-ann)' in 1992 – this regulated and improved pig farming industry facilities. Accordingly, all pig farms that have bred over 200 animals should be equipped with certain facilities to deal with their waste. In addition, agricultural authorities have also established a control team to guide livestock farms to control pollution, and grant loans to farmers to help them install wastewater treatment facilities. Recently, many livestock farms have reduced their sewage discharge.<sup>70</sup> Nevertheless, due to the expensive maintenance cost, the effects of the new measures were still far from satisfactory.<sup>71</sup> Therefore, in my view, in long term -- the TEPA should categorise livestock farms that cause different degrees of pollution by district and class, and make frequent inspections including heavy penalties for any legal violations. In addition, the pollution control facilities of newly established livestock farms should be checked up more strictly and more frequently in order to effectively restrain the new pollution source.

### **3.2.4 Medical waste management**

Increasing public awareness in Taiwan of the growing environmental crisis has meant that environmental issues have been the focus of much public attention and legislative effort over the

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<sup>69</sup> For example: the Ilan Irrigation Association conducted a survey in 1994 shows that '20 per cent soil has more than 3,000 US/cm 25 C electric conductivity in soil'. The primary cause of this pollution was the waste released from fishponds by nearby fish farms. (See *State of Environment*, (1995) p. 204.)

<sup>70</sup> According to the annual report by Agriculture Bureau released on December 1996, it revealed that 'about 82 per cent of pigs' farms have followed the relevant regulations to invest in certain facilities in order appropriately to generate livestock waste'.

<sup>71</sup> Although many pig farms have installed the necessary equipment for waste management, very often in order to cut the running cost they normally switch off the main power. Only when the responsible agency enters sites to inspect and check the condition do they put the facilities into full running condition. (This finding was based on interviews with three pig farms and two poultry-farming operators in southern Taiwan which conducted in July 1998).

past two decades. One field that has been extremely controversial is medical waste and its regulation. Medical waste was first formally recognised as a 'distinct waste' form by the TEPA in 1987 when the TEPA considered classifying infectious waste as hazardous waste under the Hazardous Waste Measures Standards<sup>72</sup> (HWMS) and the Industrial and Commercial Waste Storage, Clean-up and Disposal Treatment Methods and Facilities Standards<sup>73</sup> (I&CWMS).

In accordance with Article 4 of the HWMS 2001, medical waste is defined as:

Any waste which consists wholly or partly of human or animal tissue; blood or bodily fluids; excretions; drugs or other pharmaceutical products; swabs or dressings; or syringes, needles or other sharp instruments and any other waste arising from medical, nursing, dental, veterinary, pharmaceutical or similar practice, which may cause infection to any person coming into contact with these waste. In addition, materials such as contaminated equipment, wastes from surgery and autopsy, laboratory wastes should be included by [virtue of their] potential infectiousness.<sup>74</sup>

The packing and labelling procedures for medical waste must followed the provisions embrace within the I&CWMS 1999. At present, incineration is the most common method of treating medical waste, and is the practice of approximately 53 to 89 per cent of reporting hospitals.<sup>75</sup> However, there are problems with hospital incineration, particularly the cost of upgrading incinerators. In general, many old and less efficient incinerators, which were used to dispose of medical waste, do not meet the TEPA's air quality standards. In Taiwan, the majority of hospital incineration plants have only the most elementary air-pollution control technologies. No regulations exist to control the high levels of heavy metals, acid gases, and toxic organic compounds that hospital incinerators release. Moreover, incineration of plastics commonly present in medical waste can result in the emission of air pollutants such as dioxin and furan.<sup>76</sup>

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<sup>72</sup> See Chapter Two, footnote No.135.

<sup>73</sup> See Chapter Two, footnote No.136.

<sup>74</sup> Low-level radioactive wastes are another common hospital waste product; however, they are beyond the scope of this paper and separately regulated by the Atomic Energy Act.

<sup>75</sup> *Interim Report: a review of medical waste management*, (August 1997), Environmental Protection Administration, Executive Yuan, (in Chinese), (hereafter referred to as *TEPA Interim Report*), pp. 12-14.

<sup>76</sup> An increase in plastics disposable items, especially if the waste is incinerated, will enlarge 'hydrogen chloride production and furan and dioxin emissions'. (See *Liberty Times (Zi-you Shi-bao)*, 30 August 1998, p. 8.)

This poses a potentially significant problem, since many hospital incinerators in Taiwan are located in heavily populated areas.

As the amount of medical waste increases, so too does the need for lawful and affordable disposal options. Installing incineration units is the most convenient and efficient method of disposal, but many hospitals are reluctant to make the large capital investment that is necessary. Since many hospitals in Taiwan cannot afford to set up incinerators, it is often necessary for a hospital to consider 'off-site'<sup>77</sup> incineration and disposal services. In order to control the medical waste management, Articles 17 and 19 of the I&CWMS 1999 create and administer 'a tracking system with a series of reports to ensure the proper handling and disposing of medical waste before and after leaving the source of generation'. Unfortunately, the tracking system creates a paper trail (containing six copies) of 'tracking forms'<sup>78</sup> and 'records'<sup>79</sup> that does not really help law enforcement officials investigating the illegal dumping. In practice, the tracking system is too time-consuming<sup>80</sup> and is therefore ineffective. The tracking system could, however be improved by using of modern technology -- for example, a computer 'on-line' system.

Due to the illegal dumping -- whether by the generator or through the development of fraudulent transportation -- still occurs on a regular basis,<sup>81</sup> both public and media attentions have forced the government to take action. In order to reduce unlawful discarding medical waste, recent movement from the TEPA is through better enforcement of environmental laws.<sup>82</sup> On the other

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<sup>77</sup> 'Off-site' refers to transportation away from the generating person or facility; not to merely moving the waste about the generating facility'. (See Mercer, D R (1990) "A Prospectus on the Legislative Response to Medical Waste", *Missouri Law Review*, Vol. 55, p. 530.)

<sup>78</sup> Article 19 of the I&CWMS 1999.

<sup>79</sup> *Ibid*, Article 17.

<sup>80</sup> Normally the 'tracking form' takes 30 days to reach the law enforcement officials.

<sup>81</sup> *Liberty Times* (Zi-you Shi-bao), 6 February 1997, p. 9. For example: "Six Trucks of Untreated Medical Waste Illegally Dump To San-ju-ku Landfill Site" by Lee Wen-yi. In this article, it revealed that the official inspectors of the Environmental Protection Bureau of Taipei Municipal Government went to check the San-ju-ku landfill site, discovered that six major hospital's infectious waste were illegally dump by the transport agents. Hence, the TEPA issued an individual fine of NTD\$ 30,000 to each hospital. At the same time, the TEPA issued another fine of NTD\$ 15,000 to the six different responsible transport agencies.

<sup>82</sup> (86) TEPA (waste) No.49033 Public Notice (6 August 1997) in *TEPA Register*, No. 117, (September 1997), p. 36. Before 31 July 1997, hospitals may decide whether to find and pay a willing 'hauler' to transport medical waste to adequate and safe disposal facilities both on-site and off-site, or using incinerators to dispose of medical waste. From 1 August 1997, in accordance with this administrative order, all medical waste must only disposed of

hand, since August 1997, the TEPA has seen quite a lot of numbers of civil and criminal cases and has sought and collected large fines. Therefore, through the pressure from both the public and NGOs, the existing legislation<sup>83</sup> was carried out more vigorously and the TEPA have prosecuted more offenders. As a result, medical waste management has been improved.

However, other types of healthcare facilities also contribute to the medical waste stream, although the amount of medical waste from such non-hospital sources is not known. Further accurate data is needed and the manner in which such sources may contribute to medical waste managing ought to inspect. Even less is known about other sources of medical waste, such as 'syringes generated in home health care or by illegal drug users'.<sup>84</sup> These in 'home health care' patients and 'illegal intravenous drug users' are not even subject to the I&CWMS 1999 regulations. As a result of this deficiency, many 'home health care' generators just dump their medical waste randomly. This is a difficult issue that needs to be addressed by the TEPA.

Overall, the existing law has not adequately addressed the recognized threat to public health and the environment caused by the mismanagement of medical waste.<sup>85</sup> For this reason, the TEPA needs to initiate an additional revise with the aim of coming across the most effective means of regulating medical waste. Unless law and regulation relating to the disposal of medical waste are extended to cover wide-ranging situations, it is unlikely that the perceived medical waste problem will be solved.

### **3.3 The Relationship Between Waste Management and Environmental Impact Assessment**

From the above detailed discussion of the current state of waste management, it seems clear that the waste management regime in Taiwan is far from satisfactory. In order to prevent

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by incineration.

<sup>83</sup> For example: Article 30 of the WDA 2001 indicated that '... the enterprise and the commissioned waste handling organizations are mutually responsible for improvement of the clearance and environment'.

<sup>84</sup> MacKnight, K T (1993) "The Problems of Medical and Infectious Waste", *Environmental Law*, Vol. 23, p.801.

<sup>85</sup> Battle, L C (1994) "Regulation of Medical Waste in the United States", *Pace Environmental Law Review*, Vol. 11, No. 2, p. 583.



further environmental depletion and deterioration, the Taiwanese leadership decided in the mid-1990s to utilize the specific process of environmental impact assessment (EIA) to plan and build the essential replacement sites for waste disposal and for other major projects in order to improve environmental welfare in Taiwan.

EIA is an across-the-board mechanism that endeavours to supply relevant authorities or decision-makers with information on the 'potential environmental consequences' of planned activities. Under the EIA regime, the planning authority is obliged to prepare a formal statement indicating the environmental effects to certain proposed projects before planning permission is granted. Accordingly, a development project can only be approved if it is without adverse impact on the natural environment.

The theory behind EIA in Taiwan accommodates two clear conceptions. First, there is the 'prevention rather than remedy' approach.<sup>86</sup> This concept requires the decision-maker to carefully evaluate environmental impact before an action is taken. This formal assessment might prevent unintended damage to the environment. The other standpoint regards EIA as an attempt to 'balance two effects between environmental protection and economic development.'<sup>87</sup> Thus, environmental considerations must be now considered in parallel with the potential economic function of the probable planned project. Accordingly, EIA is reckoned as an 'effective device for reconciling development with the principles of sustainability'.<sup>88</sup> This is done through mechanisms such as 'screening, scoping, post-decision monitoring, public participation, consultations and expert reviews'. The regulatory details of the system of the EIA are to be found in the Environmental Impact Assessment Act 1994<sup>89</sup> (EIA Act). The EIA Act 1994 also empowers the TEPA to promulgate rules to further identify specifically which activities fall under the EIA

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<sup>86</sup> Article 1 of the EIA Act 1994.

<sup>87</sup> Ibid; Also in accordance with Additional Article 10 of the Constitutional Amendment of the Republic of China - environmental safeguard and economic developments are both given same weight.

<sup>88</sup> Andreen, W L (2000) "Environmental Law and International Assistance: the Challenge of Strengthening environmental Law in the Developing World", *Columbia Journal of Environmental Law*, Vol. 25, No. 1, p.38.

<sup>89</sup> Huan-jing Yin-shiang Pin-gu Fa [Environmental Impact Assessment Act] [hereinafter referred as to the EIA Act] (promulgated and effective on 30 December 1994) in *Compilation*, (1996), pp. 1-29.

requirement and to set up guidelines for conducting the EIAs.<sup>90</sup> Major projects such as industrial parks, construction of harbours and airports, land drainage, development and utilization of lands reserved for agriculture, forestry, fishing and grazing, constructions of nuclear waste storage and treatment sites, and others are subject to EIAs whenever they might have an adverse impact on the environment.<sup>91</sup>

Taiwan has been conducting environmental impact assessments in conjunction with major development projects since 1985 when the Executive Yuan approved the ‘Programme for Speeding Up the Promotion of Environmental Impact Assessment’.<sup>92</sup> Yet, the credibility of these assessments and subsequent measures remains very low. Taiwan is yet to benefit fully from the implementation of the EIA system.

In order to present the current state of the EIA regime which prevails in Taiwan, this section starts with an introduction to the development background and the theory of EIA in Taiwan. Followed by examining various legal procedures of EIA regime, and that inform -- the strengths and weaknesses of -- the Environmental Impact Assessment Act 1994<sup>93</sup> (EIA Act).

### 3.3.1 *The development of the environmental impact assessment*

Prior to the enactment of the EIA Act 1994, there were three items of legislation directly relevant to environmental impact assessment in Taiwan. First, the framework for the EIA legislation in the ‘Guiding Principles of Contemporary Environmental Protection Policies at the Current Stage’,<sup>94</sup> Chapter Three, Section Eight -- this was a reference point for the implementation

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<sup>90</sup> See (84) TEPA (comprehensive) No. 54036 Public Notice (18 October 1995) -- Details and Scope Identification Criteria for the Development Activities That Shall Conduct Environmental Impact Assessment, reprinted in *TEPA Compilation of Environmental Laws and Regulations*, (1996), pp. 17-29.

<sup>91</sup> Article 5 of the EIA Act 1994 regulates the types of activities that may require an EIA.

<sup>92</sup> Jia-chyang Twei-dong Huan-jing Yin-shiang Pin-gu Fang-an [Programme for Speeding Up the Promotion of Environmental Impact Assessment] Executive Yuan (Cabinet) Order 74 (Sanitation) No. 19080 (17 October 1985); reprinted in *TEPA Compilation of Environmental Laws and Regulations*, (1989), p. 9. This administrative order of ‘Policy Statement’ (1985) granted the Executive Yuan for a five-year experimental implementation period ‘within which the need for a statute would be evaluated’.

<sup>93</sup> Huan-jing Yin-shiang Pin-gu Fa [Environmental Impact Assessment Act] [hereinafter referred as to the EIA Act] (promulgated and effective on 30 December 1994, last amended on 8 January 2003) in *Compilation*, (1996), pp. 1-29, Also see *TEPA Register*, No. 182, (February 2003), pp. 5-8.

<sup>94</sup> Shian-jie-duan Huan-jing Bau-fu Gang-lin [Guiding principles of Contemporary Environmental Protection Policies

of legislation through comprehensive planning and management of the environment. Secondly, two administrative orders: the 'Programme for Speeding Up the Promotion of Environmental Impact Assessment'<sup>95</sup> and the 'Follow Up Programme for Speeding Up the Promotion of Environmental Impact Assessment'<sup>96</sup> -- these specified the EIA procedures and the conditions for obtaining a licence to perform EIAs and conducting expert reviews of EIAs. It also defined conditions for public hearing and reviews. Thirdly, various Acts and Ordinances<sup>97</sup> addressed the assessment of building and construction, technology, and development plans.

The Environmental Impact Assessment Act was promulgated and effective on 30 December 1994. It is regarded as ushering in a new era in Taiwanese environmental protection, as it is the first and the only item of legislation to address a wide range of environmental issues within one Act. Nevertheless, no constant and regular check or review of feedback is geared up in the existing system. Only very minimal public involvement and limited NGO movements (but gaining in strength and experience) is built into the decision-making processes. Also, a lack of systematic decision-making procedures associated with internal conflicts within different sectors has restrained the EIA's development. Hence, the EIA Act 1994 has gained little credibility as an instrument promoting environmental protection.

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at the Current Stage] (promulgated and effective on 2 October 1987) in *Compilation*, (1998), p. 241.

<sup>95</sup> Jia-chyang Tuei-dong Huan-jing Yin-shiang Pin-gu Fang-an [Programme for Speeding Up the Promotion of Environmental Impact Assessment] Executive Yuan (Cabinet) Order 74 (Sanitation) No. 19080 (17 October 1985); reprinted in *TEPA Compilation of Environmental Laws and Regulations*, (1989), p. 9. This administrative order of 'Policy Statement' (1985) granted the Executive Yuan for a five-year experimental implementation period 'within which the need for a statute would be evaluated'.

<sup>96</sup> Jia-chyang Tuei-dong Huan-jing Yin-shiang Pin-gu Hou-shiuh Fang-an [Follow Up Programme for Speeding up the Promotion of Environmental Impact Assessment] Executive Yuan (Cabinet) Order 81 (Environment) No. 36588 (2 November 1992) in *Compilation*, (1994), p. 211. After the 'Policy Statement' (1985), a draft of the proposed Environmental Impact Assessment Act was transmitted to the Legislative Yuan in 1990, while the draft was still pending, the second administrative order of 'Policy Statement II' (1991) was assigned to govern assessments.

<sup>97</sup> For example: Shan-bo-di Bao-yuh Li-yong Tyau-li [Hillside Conservation and Utilization Ordinance] (promulgated on and effective 10 January 1986, last amended on 7 January 1998) in *Six Laws Collection*, (1999), p. 1174; Chiu-yuh Jih-hwa Fa [Area Planning Act] (promulgated and effective on 31 January 1974, last amended on 1 September 1983) in *Six Laws Collection*, (1999), p. 1130; Du-shyuh Jih-hwa Fa [Urban Planning Act] (promulgated and effective on 1 September 1964, last amended and promulgated on 15 July 1988) in *Six Laws Collection*, (1999), p. 776.

On the whole, the EIA Act 1994 stipulates a legal procedure for screening,<sup>98</sup> scoping,<sup>99</sup> an EIA Report,<sup>100</sup> a final EIA Report,<sup>101</sup> and Post-Project Analysis and Environmental Monitoring.<sup>102</sup> The following section will discuss in detail the current state of the EIA regime in Taiwan.

### ***3.3.2 Legal Procedures of Environmental Impact Assessment***

In the usual course of events, EIA is aimed at delivering the relevant information to the competent authorities in order to enable them to make a correct decision on a particular project. By and large, an applicant submits a development project with a planning application without being formally requested an environmental statement in the first stage. Only when the authority comes to a decision that the development is an 'EIA development', then an environmental impact assessment will have to be submitted with a planning application. Presently, Article 5 of the EIA Act 1994 regulates the type's activities that may require on EIA. The grouping of activities in the EIA regime does not apply 'categorical exclusions'<sup>103</sup> but relies instead on list is currently act upon in Taiwan.<sup>104</sup> Once a proposed project is decided shall be subject to EIAs, the following environmental review processes -- screening and scoping, a draft EIA report, a final EIA report, post-project analysis and monitoring, and public involvement -- were carried out in the process of the EIA.

#### ***3.3.2.1 Screening, scoping and relevant procedures***

At the present time, Article 6 of the EIA Act 1994 regulates the subject matter of the screening. In general, the screening and scoping process commences with the submission of a

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<sup>98</sup> Article 6 of the EIA Act 1994.

<sup>99</sup> Ibid, Article 10.

<sup>100</sup> Ibid, Article 11.

<sup>101</sup> Ibid, Article 13.

<sup>102</sup> Ibid, Article 18.

<sup>103</sup> Andreen, W L (2000) "Environmental Law and International Assistance: the Challenge of Strengthening environmental Law in the Developing World", *Columbia Journal of Environmental Law*, Vol. 25, No. 1, p. 44.

<sup>104</sup> Article 5 of the EIA Act 1994.

notification together with the EIA by the project's proponent<sup>105</sup> to the competent authority, while the power of reviewing the EIA is reserved for the central environmental authority.<sup>106</sup>

Currently, in Taiwan, when carrying out the process of screening and scoping, the competent authority must firstly follow the Screening Criteria for Development Activities and the Working Guidelines for the EIA Act,<sup>107</sup> as well as the Implementation Rules for the Environmental Impact Assessment Act, and conduct a series of examinations of the select criteria in order to determine whether particular facilities -- new waste landfill sites or incineration plants -- are environmentally acceptable. Simultaneously, the competent authority needs to gain knowledge of the likely significant environmental impact and to identify feasible alternatives to the proposed development plan. By and large, consideration must be given to the extent of 'the scale of the development and whether some harm to the relevant environmental interest is inevitable or whether the development will actually produce an improvement in the environment.'<sup>108</sup> After this stage of development, the competent authority must decide as to whether a proposed project comes within the relevant regulation and the subsequent judgment to conclude whether an environmental impact statement (EIS) is required -- 'the so called screening decision'.<sup>109</sup> However, unlike in England where a local authority is obliged to provide the EIS, in Taiwan the EIA Act 1994 requires the project's proponent to prepare the EIA, while reserving the power of reviewing the EIA to the TEPA.<sup>110</sup>

After deciding that the EIA is necessary, the project proponent must, in accordance with Article 11 of the EIA Act 1994, prepare a draft environmental impact assessment report (the 'Draft EIA Report') which contains all the essential information and submit the Draft EIA Report to the competent authority. Once the competent authority has received a completed

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<sup>105</sup> Article 6 of the EIA Act 1994.

<sup>106</sup> Ibid, Article 7.

<sup>107</sup> Ibid, Article 5(2) and Article 6.

<sup>108</sup> The Court of Appeal's judgment which was given by Pill L.J. in *Gillespie v First Secretary of State and Bellway [2003]EWCA*, (See (2003) Current Topics -- Environmental Impact Assessment, *Journal of Planning Law (June)*, pp. 662-663.

<sup>109</sup> Ibid, p. 661.

<sup>110</sup> Article 11 of the EIA Act 1994.

report from the project proponent, the competent authority is required within 30 days to issue a statement based on the expert opinion, on-site inspection, and the records of the public discussion to the TEPA.<sup>111</sup> On the other hand, the TEPA is required to set up an 'EIA Review Commission' in which 'no less than two-thirds of the commissioners must be experts or academics'.<sup>112</sup> Upon obtaining the statement from the competent authority, the TEPA must conclude its review within 60 days<sup>113</sup> and provide the review conclusion to the competent authority and the project proponent.<sup>114</sup> After this stage of development, the project proponent must revise its Draft EIA Report in accordance with the review conclusion and prepare an EIA Report ('Final EIA Report') for approval, and submit that Report to the competent authority.<sup>115</sup>

However, Article 14 of the EIA Act 1994 assigns the competent authorities jurisdiction over the development project, while requires the competent authority not to grant a permit for construction until the TEPA has completed the EIA review process. Given the length and complexity of many EIAs as well as the many other duties occupying the time of officials at the competent authority, the number of days allowed for the process is often inadequate for a thorough review.<sup>116</sup>

In addition, under the current EIA regime implemented in Taiwan, the EIA Act 1994 leaves room for the TEPA and relevant competent authorities to mandate rules in order to set up guidelines for conducting the EIAs.<sup>117</sup> This remains the risk that certain project that may have a significant effect on the environment will slip through the EIA net, especially when the competent

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<sup>111</sup> Article 12 of the EIA Act 1994.

<sup>112</sup> *Ibid*, Article 3.

<sup>113</sup> But if necessary the period can be extended by an additional 60 days.

<sup>114</sup> Article 13 of the EIA Act 1994.

<sup>115</sup> *Ibid*, Article 13(2).

<sup>116</sup> Interviewed with Dr. Y R Chen, Director General of Bureau of Waste Management of the TEPA on 19 March 1997.

<sup>117</sup> Article 5 of the EIA Act 1994. Accordingly, the TEPA promulgated the 'Details and Scope Identification Criteria for the Development Activities That Shall Conduct Environmental Impact Assessment' on 18 October 1995, in (1996) *Compilation*, at p 17. Since then, the TEPA has published 22 guidelines to direct numerous projects that were required the operation of EIA. Furthermore, the TEPA amended and promulgated some articles of the 'Details and Scope Identification Criteria for the Development Activities That Shall Conduct Environmental Impact Assessment'. See (87) TEPA (Comprehensive) No. 0042249 Public Notice (8 July 1998), reprinted in *TEPA Register*, No. 128, (August, 1998), p. 4.

authority is also the developer.<sup>118</sup> Also several issues arise here in relation to the process of EIA. First, given that new information was found, whether or not a competent authority which has given a screening opinion that the EIA has not required, can or should revisit the issue before granting permission, remains unclear. Secondly, given that the nature of the information required varies with the nature of the project, it is uncertain whether or not a criminal offence is committed whenever the project proponent provides inadequate or misleading environmental information.

Theoretically, EIA process should operate in parallel with other regimes, in particular, the planning system. Nevertheless, in practice, the EIA regime in Taiwan frequently serves only to appraise irreversible impact, not to reduce or remove impact from the beginning.<sup>119</sup> Therefore, in my point of view, it is necessary to make amending improvements to the EIA Act 1994, including, for example, making provisions in primary legislation for extending the scope of EIA and addressing the importance of the predicted effects and all material considerations to other related regimes.<sup>120</sup>

### **3.3.2.2 Public involvement**

EIA is founded upon the principle that development decisions must take adequate account of environmental impacts. Apart from formal screening and scoping phases, public involvement 'has proved to be of major importance for EIA since EIA is predicated on creating transparency in decision-making'.<sup>121</sup> Taken as a whole, members of the public, including pressure groups and other organizations, can play an important part in the EIA process. For example, for scoping and for on-site inspection before reviewing the Draft EIA Report, public shall be invited to participate

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<sup>118</sup> For example, the establishment of the fourth nuclear power plant is a case.

<sup>119</sup> For example, the establishment of the fourth nuclear power plant of Taiwan Power company was given consent to go ahead without proper assessment of the potential impacts to the environment.

<sup>120</sup> For instance: the issue of air pollution or CO<sub>2</sub> emissions quantities should referred to the TEPA; water resource distribution priorities should consult the Water Resource Bureau of the MOEA; or the development of a industrial harbor, the Industrial Development Bureau (IDB) should be notified.

<sup>121</sup> Palerm, J R and W R Sheate (January 1996) "Environmental Impact Assessment in Central and Eastern Europe: Lessons from the Czech Republic and Romania", *European Environmental Law Review*, p. 22.

in the decision-making process. As a result, the competent authority cannot grant development consent to the project without taking the views of the public.<sup>122</sup> Furthermore, Articles 9, 10, 11, and 12 of the EIA Act 1994 express explicitly that ‘the environmental statement must be publicized, public consultation must include in the Draft EIA Report and Final EIA Report’.

Nevertheless, in general, the public in Taiwan does not become aware of a proposed project until the impact study has been carried out. The public must, in my view, have access to the decision-making process so the public has a proper opportunity to express their concerns. It is equally important to allow the public a right of entry to all relevant information, so the public can make appropriate judgements.

However, in reality, the public has no formal opportunity to be consulted prior to publication of the environmental assessment report in Taiwan. Although the TEPA bears a duty to publish a summary of public review findings in the EIA Reports, it is not necessary to make the public aware of the development proposals at any time. Unless the relevant authorities require the project proponent to obtain written approval from an affected community. In practice, whenever a new project is subject to an environmental assessment, various interest groups are often involved. The ‘multiplicity of values’ is often explicated in very different ways with respect to the same incident.<sup>123</sup> Moreover, the lack of trust in government prevents people from participating openly in decision-making processes, even when legal provisions permit the public to do so. Hence, in my view, flexible and active public participation schemes need to be developed in order to encourage the public to get involved.

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<sup>122</sup> Article 12 of the EIA Act 1994.

<sup>123</sup> Wang, M and Huang G (1993) “Environmental Impact Assessments for Major Construction Projects in Taiwan: Problems and Solutions”, *Pacific Rim Law & Policy Journal*, Vol. 3 (special edition), p.150.



### 3.3.2.3 Alternatives

‘An alternative approach is to presume that EIA procedures apply to any proposed action’.<sup>124</sup> In order to minimize any unnecessary ‘environmental risk’, the potential impact of development proposals and a full range of alternative options must be analysed at the earliest possible time. Information on environmental impact statement is meant to provide the scientific and analytical basis in order to plan the ‘alternatives’. Due to the fact that the proposal project might have unpredicted impacts towards environment, therefore, it should always presume the outcomes of ‘no action’.<sup>125</sup> Nevertheless, project proponents were keen to avoid further delay in obtaining project consent. As a result, a modified development project presenting a possible alternative project may not always be apparent.

As a general rule, if the activity is to take place adjacent to a protected area, a critical evaluation may be required.<sup>126</sup> When further details have to be supplied, the description of effects should consider ‘direct effects’ and any ‘indirect effects’ of the project.<sup>127</sup> If the EIA regime contains a proper ‘alternative’ provision, whenever the relevant authorities need to compare the entire alternative, they can evaluate ‘the advantages and the disadvantages of all possible courses

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<sup>124</sup> Andreen, W L (2000) "Environmental Law and International Assistance: the Challenge of Strengthening environmental Law in the Developing World", *Columbia Journal of Environmental Law*, Vol. 25, No. 1, p. 44.

<sup>125</sup> *Ibid*, p. 46.

<sup>126</sup> Article 8 of the EIA Act 1994. For example, the “Her-Pin Fire Powered Electrical Plant” development project in Hualien was asked by the competent authority to conduct a critical evaluation. See (87) TEPA (comprehensive) No. 0044167 Public Notice (17 July 1998), reprinted in *TEPA Register*, No. 128, (August, 1998), p. 228; The Binnan Industrial Park development project was the biggest investment project in the year 2000 in Taiwan. The project drew great concerns from the public and relevant authorities due to its potential environmental impact. The Binnan Industrial Park development project was applied under Article 23 of the Statute for Upgrading Industries 1990 (see Chapter Five, footnote No. 103) to the TEPA in accordance with Article 13 of the EIA Act 1994 in December 1997. Because of the wide impacts and high complexity of the Binnan Project, the draft EIA report included ten specific issues to evaluate their impacts to the environment. These ten issues to be considered included ‘(1) site alternatives, (2) harbour alternatives, (3) coastal erosion, (4) lagoon protection, (5) water supply and drainage, (6) impact to the Tainan Science-based Industrial Park, (7) CO<sub>2</sub> emissions and pollution control, (8) acid rain, (9) preservation of the black-faced spoonbill and nature conservation, as well as (10) fisheries and miscellaneous topics’. On 17 December 1999, the draft EIA for the Binnan Industrial Park development project was reviewed and passed by the TEPA’s EIA Review Committee. The final conclusions specified that the Binnan Project be accepted with the adoption of a number of special provisions. In all, ‘twenty-seven conditions and eight supplements were added to the EIA report’. In addition, during the process of review, ‘nine addendums related to government authorities were involved’. Overall, to a certain extent, it seems fair to say that the EIA review process for the Binnan Project was carried out very cautiously. ([www.epa.gov.tw/EIA](http://www.epa.gov.tw/EIA))

<sup>127</sup> Andreen, W L (2000) "Environmental Law and International Assistance: the Challenge of Strengthening environmental Law in the Developing World", *Columbia Journal of Environmental Law*, Vol. 25, No. 1, p. 46.

of action' so as to make a balance preference.<sup>128</sup> However, the EIA Act 1994 does not provide additional guidance on information to be supplied. Hence, the EIA Act leaves this discretion largely to the project proponent, which is clearly an important deficiency.

#### **3.3.2.4 Post-project analysis and environmental monitoring**

Post-project analysis and environmental monitoring are important requirements that help to corroborate the accuracy of EIA predictions. In addition, post-project analysis and environmental monitoring are able to bring in 'remedial and corrective' action where impact differs from those predicted.<sup>129</sup> The EIA Act 1994 prescribes in Article 18 that '... the competent authority must supervise the implementation of the EIA Report, and the EIA review conclusions'. By law, whenever it is necessary, a project proponent may be asked to submit periodically an 'Environmental Impact Investigation Report' (EIIR) comparing environmental changes 'pre-development and post-development'.<sup>130</sup> When there is a 'showing of adverse impacts' to the environment, the competent authority is required to order the project proponent within a certain period of time to submit response strategies and to implement response strategies that have been approved.<sup>131</sup> Any violation to the EIA's requirement is subject to an administrative penalty.<sup>132</sup> Furthermore, if the violation is found to be sufficiently serious, the competent authority may require the responsible agency that has jurisdiction over the development project to suspend the construction -- or, when necessary, the competent authority may stop the development directly.<sup>133</sup> Those who fail to follow the order are punished by imprisonment of no more than three years and a fine.<sup>134</sup>

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<sup>128</sup> Andreen, W L (2000) "Environmental Law and International Assistance: the Challenge of Strengthening environmental Law in the Developing World", *Columbia Journal of Environmental Law*, Vol. 25, No. 1, p. 46.

<sup>129</sup> Article 18(3) of the EIA Act 1994.

<sup>130</sup> *Ibid*, Article 18(2).

<sup>131</sup> *Ibid*, Article 18(3).

<sup>132</sup> *Ibid*, Article 23.

<sup>133</sup> *Ibid*, Article 22.

<sup>134</sup> *Ibid*, Article 23.

Under current practice, post-project analysis and environmental monitoring are considered only vaguely. No constant and regular check or review of feedback mechanism is equipped in the existing system. These measures may be required if so determined by the competent authority. However, the quality of the EIA has been identified as a major weakness, though it is generally improving. Not only is there inadequate review of decisions over the requirement for EIAs, there is no effective quality control over the information provided by the project proponent to the competent authority.<sup>135</sup> This is especially true where the competent authority is also the developer. Numerous public protests over proposed development projects are the evidence for this state of affairs.<sup>136</sup>

Taken as a whole, the poor quality of EIA is commonly the result of developers wanting to finish EIAs as quickly as possible. It is also associated with the structure of the EIA Act 1994, which details the format for the EIA Report and enables the consultants to simply fill in the information asked for. This does not encourage the evaluation of cumulative impact, or a suitable consideration of the 'alternatives'. Unfortunately, it seems unlikely that the TEPA will consider any modification to the EIA Act 1994 in the near future. However, strengthening appropriate and applicable mode of public participation and building capacity in NGOs, generally improving the systematic procedures and creating a supervise body to oversee the EIA process, are reforms and developments that could assist in the realization of the EIA's objectives.

Based on the above findings, I come to a conclusion that successful EIA procedures could ensure the effective planning and implementation of major construction projects. If sustainability assessments were to be adhered to in the EIA process with the aim of protecting the natural environment, then 'EIA must integrate both objective information and subjective values from a

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<sup>135</sup> Under the existing regime, it is not a criminal offence to supply inaccurate information in an environmental impact statement. At least, there is no case to support this sort of fraud up till now.

<sup>136</sup> For example: several major projects -- including the fifth naphtha plant of the Chinese Petroleum Corporation, the sixth naphtha plant of the Formosa Plastic Corporation, the fourth nuclear power plant and a fire-powered electrical plant of the Taiwan Power Corporation -- have been appraised as economic developments with only very limited consideration of potential negative environmental impact. Many public protests were held to against all these projects. (See *State of Environment*, (1995), p. 669.

variety of sources'.<sup>137</sup> Any project that might provide unacceptable or adverse impact on the environment would have to be rejected, despite its economic benefits. The positive attitude resulting from these actions should prevent certain activities or programmes from causing irreversible damage to the natural environment. Also, this could prevent potential negative environmental impact which may directly affect local residents and society. In addition, it is essential for the Taiwan government to monitor the increasing environmental impact of all existing economic activity, since over time, the actual outcomes of certain development plans may be different from those which were predicted. Furthermore, in order to increase the credibility of EIA procedures, the problems and difficulties Taiwan has experienced in public participation urgently need to be dealt with. The authorities must develop techniques and methods for evaluating public views and opinions, as well as to develop certain strategies in order to adequately and duly respond to the various subjective value judgments of different groups -- variations which reflect intellectual and social differences and even conflict.

### **3.4 Conclusion**

The effort to address environmental problems, especially in respect of waste management in Taiwan, has been presented in this chapter. Based on the above findings, it can be said that the waste management regime in Taiwan is far from comprehensive. In order to avoid continuous environmental depletion and deterioration, it is necessary for Taiwan to develop new strategies so as to carry out sound waste management. Constantly changing requirements for environmental protection present tremendous technological challenges. Inevitably, there are serious difficulties ahead. These include the following. First, financial constraints are particularly significant barriers for small-firms' attempts to improve their efforts to adhere to environmental welfare standards.

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<sup>137</sup> Wang, M and G Huang (1993) "Environmental Impact Assessments for Major Construction Projects in Taiwan: Problems and Solutions", *Pacific Rim Law & Policy Journal*, Vol. 3 (Special Edition), p.147.

Certainly, determined efforts have been made to improve matters and, in some respects, such efforts have been highly effective. Secondly, there is a shortage of the personnel to carry out the relevant inspections and enforcement activities. This shortage of personnel also limits the government's capacity for promoting proper pollution control. Thirdly, sound waste management strategies require building up in order to assist industries to agree to fulfil more recycling and reuse programmes. Fourthly, there is an urgent need to establish integrated waste treatment and disposal facilities in order to prevent unwanted pollution incidents.

Effective environmental protection and natural conservation projects rely on every development decision takes adequate account of environmental impacts. It was with this need in mind in particular that the Environmental Impact Assessment Act was introduced in 1994. The aim of EIA is to draw upon the wide-ranging of knowledge offered by the professional analysis, as well as the participation of the public, to enable the decision-maker to prepare different alternatives. As mentioned above, the waste management in Taiwan is far from satisfactory. In order to prevent continuous environmental depletion and deterioration, it is indispensable to utilize the specific process of EIA to plan and build the essential replacement sites for waste disposal so as to improve the environmental quality.

Unfortunately, the EIA regime in Taiwan contains many deficiencies, especially in respect of environmental impact assessment processes. These weaknesses include the absence of constant and regular check or review of feedback measures, and the scopes of the process often apply only to projects, not programmes or policies. In addition, EIA only applies to new activities, not existing ones. Moreover, the skill employed in the process may be poor or inadequate. Furthermore, there remains a lack of opportunity for public participation.

Based on the above findings, I conclude that if sustainability assessments were to be adhered to in the EIA process and with the aim of protecting the natural environment, any project that might provide unacceptable or adverse impacts to the environment would have to be rejected,

in spite of its economic benefits. It is because certain damages to the natural environment are irreversible. In addition, it is essential for the Taiwan government to monitor the increasing environmental impact of all existing economic activity. Moreover, it is essential to weigh up environmental and sustainability considerations as focal point into all decision-making. Under such a system, a development project can be approved only if it is without adverse impact on the natural environment. Thus, historical relics -- of which that only a few have been survived in Taiwan -- can be properly preserved.

Overall, I firmly suggest that certain reforms to Taiwan's current EIA system be carried out. For instance, the notice and comment procedure should be employed all the way within the scooping process. The screening process has to be 'properly noticed, documented, and made available for public and relevant agency to give comments'.<sup>138</sup> Moreover, some sort of veto power should be allowed to exercise if an unlisted activity, or another government policy proposal, actually poses a significant risk of harm to the environment. Together with adequate and consistent quality control, the whole environmental impact assessment process could thus made be effective, providing a basis for securing environmentally sustainable policies and actions.

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<sup>138</sup> Andreen, WL (2000) "Environmental Law and International Assistance: the Challenge of Strengthening environmental Law in the Developing World", *Columbia Journal of Environmental Law*, Vol. 25, No. 1, p. 45.

## Chapter 4 Waste Management: The Special Problem of Radioactive Waste

Currently, nuclear energy is one of Taiwan's major energy sources. It contributes up to 23 per cent of total electricity production in Taiwan.<sup>1</sup> In 1978, the commercial operation of Chinshan Nuclear Power Plant (NPP) Unit One initiated Taiwan's nuclear power program. At present, there are three NPPs -- each consisting of two units -- in operation and the fourth NPP is under construction.<sup>2</sup> The Taiwan Power Company (TPC) is the main nuclear power producer, contributing more than 90 per cent of the total volume of radioactive waste in Taiwan. The remaining 10 per cent were made by small producers, such as industrial and medical facilities, research institutes and universities.<sup>3</sup>

The public and various NGOs in Taiwan have become increasingly concerned in the health and safety problems associated with radioactive waste management since the late 1990s. This concern is evident in the reports of the Atomic Energy Council (AEC) and the Fuel Cycle and Materials Administration (FCMA), both of which are aimed at amending and regulating the handling, storage, transportation and disposal of radioactive waste.

The purpose of this Chapter is to examine the special problem concerning nuclear waste management in Taiwan, thereby identifying issues that arise as a result of the uncertainties inherent in nuclear waste management problems. This chapter is divided into three sections. Section I contains an introduction with a review of the statutory basis for radioactive waste and the general principles of radioactive waste management in Taiwan. Section II presents a detailed discussion of the current state of radioactive waste management which includes areas of low-level radioactive waste (LLRW) management, spent fuel and

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<sup>1</sup> [www.aec.gov.tw](http://www.aec.gov.tw).

<sup>2</sup> See Table 1-- Information of Nuclear Power Plants in Taiwan.

<sup>3</sup> *Radioactive Waste Management Report*, (2002), the Fuel Cycle and Material Administration of the Atomic Energy Council, Executive Yuan. (in Chinese, hereafter referred to as the *RWM Report*), p. 50. For example: Institute of Nuclear Energy Research (INER) and National Ching-hwa University.

high-level radioactive waste management, and the specific considerations of final disposal site for radioactive waste. Finally, in Section III, I recommend legislative responses to the radioactive waste management crisis in Taiwan.

#### 4.1 Introduction

The management of radioactive waste<sup>4</sup> is a vital task which involves not only handling nuclear and radioactive waste safely but also endeavours to protect natural environment from unnecessary threat. In Taiwan, radioactive waste is classified into the following categories.<sup>5</sup>

1. High-level radioactive waste (*gau-fung-she-sing fei-chi-wu*) -- which means the spent nuclear fuel for final disposal or the extraction residuals generated in reprocessing.
2. Low-level radioactive waste (*di-fung-she-sing fei-chi-wu*) – this term applies to all radioactive waste except spent fuels ready for final disposal or the liquid residue after the first extraction and the product after reprocessing of spent fuels or radioactive waste containing alphaemitting transuranium nuclide with a specific activity exceeding 3,700 Bq (0.1  $\mu$  Ci) per gram.
3. Very low-level radioactive waste (*di-yu i-ban hwo-du huoh jong-liang yi-shiah fung-she-sing fei-chi-wu*) covers materials with uranium and/or thorium activity complied with the standard for exemption from control of radiation sources.

Presently, radioactive waste management in Taiwan is mainly carried out by three different procedures -- reviews (*jih-huah sheen-char*), inspections (*tzuoh-yeh jean-char*)<sup>6</sup>, and regulatory meetings (*kuan-chih huey-yih*)<sup>7</sup>. Stringent standards apply to all relevant processes of radioactive waste management, which include reduction, treatment, transport, storage, and data reporting<sup>8</sup>.

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<sup>4</sup> 'Radioactive waste' means the discarded material that is radioactive or is contaminated by radioactive substance, including the spent nuclear fuel ready for final disposal. See Article 4 of the Nuclear Materials and Radioactive Waste Management Act 2002.

<sup>5</sup> Fung-seh-sing Wu-liau Kuan-li Fa Shy-shyung Shih-tzer [Enforcement Rules for Nuclear Materials and Radioactive Waste Management Act] (Promulgated and effective on 30 July 2003) (hereafter referred to as the Enforcement Rules 2003). (See Articles 4, 22 and 23 of the Enforcement Rules 2003.)

<sup>6</sup> Article 10, 12, 13, 14(1), and 15(2) of the N&RWM Act 2002.

<sup>7</sup> Quarterly meetings provide a bureaucratic channel of communication and dialogue between the regulatory agency and operators, and are presented by all interrelated governmental, research, and operating units.

<sup>8</sup> An Automatic Radioactive Waste Tracking System was launched in October 1992 to monitor radioactive waste data. The system covers solidified waste, non-solidified waste, liquid waste, transport, storage and future disposal, and other data (including emission records from incinerators and discharge records from the Lan-Yu Storage Site). The system tracks radioactive waste quantitatively at all stages from generation to final disposal.



The Atomic Energy Act,<sup>9</sup> first promulgated in 1968, established the legal basis for regulating nuclear energy activities in Taiwan. Over three decades, regulatory guidelines and standards have been promulgated along with international developments and in tune with domestic needs. In order to advance the regulatory system so as to improve radioactive waste management, following extensive efforts over a four year period, the ‘Nuclear Materials and Radioactive Waste Management Act’<sup>10</sup> (N&RWM Act) was promulgated and put into force on 25 December 2002. Since then, the N&RWM Act 2002 has replaced all previous administrative orders and standards that had been implemented over the past three decades. In the meantime, the AEC and the FCMA drafted 11 regulations in order to enhance compliance with and enforcement of the N&RWM Act 2002.<sup>11</sup>

In addition, the Atomic Energy Application and Development Policy<sup>12</sup> (AEADP) and the Radioactive Waste Management Policy<sup>13</sup> (RWMP) specify the principal guidelines for the planning and management of radioactive waste in Taiwan.<sup>14</sup> Accordingly, in line with the N&RWM Act

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<sup>9</sup> Yuan-tzy-neng Fa [the Atomic Energy Act]( promulgated and effective on May 9, 1968; amended and promulgated on December 24, 1971)

<sup>10</sup> Fung-seh-sing Wu-liau Kuan-li Fa [The Nuclear Materials and Radioactive Waste Management Act] (Promulgated and effective on 25 December 2002) (hereafter referred to as the N&RWM Act 2002). The Act sets regulatory requirements for all licensing and inspection activities on nuclear source materials, nuclear fuel and radioactive waste. For radioactive waste, the Act details all regulations on the treatment, storage, repository construction, operation, closure, decommissioning and institutional control. For the enforcement of the Act, punitive actions including monetary fines and/or jail terms were set for the violation of each clause of the Act. For example, the deserting of radioactive waste may result in a jail term for up to three years plus a fine for NT\$ three millions.

<sup>11</sup> Such as: Enforcement Rules for Nuclear Materials and Radioactive Waste Management Act (promulgated and effective on 30 July 2003); Regulation on Final Disposal of Low Level Waste and Safety Management of the Facilities (promulgated and effective on 10 September 2003); Regulation on Treatment and Storage of Radioactive Waste and Safety Management of the Facilities (promulgated and effective on 8 October 2003); Regulation for the Import, Export, Transit, Tranship en Route, Carry, Discard, or Assignment of Radioactive Materials (promulgated and effective on 24 December 2003) and so on.

<sup>12</sup> Yuan-tzy-neng Ing-yong Fa-jan Fang-jen [Atomic Energy Application and Development Policy] (promulgated and effective on 1 June 1991) (hereafter referred to as AEADP 1991).

<sup>13</sup> Fun-she-sing Fei-liau Kuan-li Fang-jen [Radioactive Waste Management Policy] (promulgated and effective on 16 September 1988, last amended on 2 September 1997) (hereafter referred to as RWMP 1997).

<sup>14</sup> These two Policies proclaim the following basic principles. Firstly, the responsibility for safely treating, transporting, storing, and disposing radioactive waste should rest with the producer. Therefore, the producer is responsible for all necessary expenses in order to carry out the ‘polluter-pays-principle’. Secondly, radioactive waste administration must take into consideration the safety of citizens and the protection of environment, and observe related international conventions. Thirdly, the radioactive producers should endeavour to minimize the waste generation and to reduce the volume. Fourthly, the feasibility of regional cooperation for radioactive waste disposal should be assessed in parallel with the domestic option. A domestic option must be available even in the

2002<sup>15</sup>, the RWMP 1997, and the AEADP 1991, the objective of radioactive waste management includes the following purposes. First, the management cost should be imposed directly on the producers of radioactive waste -- the polluter pays principle. Secondly, radioactive waste should be managed and disposed in ways which protect the public, workers and the environment so as to maintain the quality of environmental ecology and prevent current and future generations from suffering from the unwanted effects from radioactive waste.

Currently, the Atomic Energy Council (AEC), Executive Yuan, is the authority responsible for control and administration with regards to all matters relating to nuclear source materials.<sup>16</sup> The Fuel Cycle and Materials Administration (FCMA) -- an organization subordinate to the AEC -- is responsible for regulatory control over radioactive waste management matters. The Institute of Nuclear Energy Research (INER) was empowered by the AEC to assume responsibility for radioactive waste generated by a small quantity of producers and to deal with problems of radioactive waste if necessary. The Nuclear Backend Management Department (NBMD) and the Nuclear Operation Department (NOD) of the TPC took charge of the off-site and on-site radioactive waste management of NPPs. The main responsibility of the NOD is to administer treatment and storage of LLRW within NPPs. The NBMD legally bears the duty for radioactive waste transportation -- both the operations of the Lan-yu (Orchard Island) Storage Site and the Volume Reduction Centre. More significantly, the NBMD is liable for selecting the final disposal site for LLRW and spent fuel in Taiwan.

Overall, within the framework provided by the N&RWM Act 2002, the enterprises and the institutions which produce radioactive waste bear the direct responsibility for their safe and

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case that extraterritorial disposal become possible. (See Chapter Two: Strategies of the Radioactive Waste Management Policy 1997.)

<sup>15</sup> Article 1 of the N&RWM Act 2002 states: 'This Act is enacted to administer radioactive material, prevent radioactive hazard and secure public safety...'

<sup>16</sup> Ibid, Article 2. 'Nuclear source material' means 'ores of uranium and/or thorium, and /or any other materials designated by the competent authorities'. (See Article 4(1) of the N&RWM Act 2002.)

effective management.<sup>17</sup> The operational liability for the treatment and storage of radioactive waste lies with each waste producer together with trained operating personnel.<sup>18</sup> It is necessary for radioactive waste producers to submit treatment and storage plans to authorising and licensing bodies so as to demonstrate that environmental consequences of waste treatment have been taken into account.<sup>19</sup> Licensing and enforcement for the safety control of nuclear source material<sup>20</sup> and nuclear facilities<sup>21</sup> are very tightly controlled by the competent authority.<sup>22</sup> In particular, the licensing for the construction and operation of nuclear power plant is seen as crucial in avoiding any unwanted crisis.<sup>23</sup> Only after the competent authorities have inspected the construction engineering and approved the pre-operation thereof, will an operating license issued.<sup>24</sup>

In addition, licensing for ionizing equipment and radioactive material for medical, academic and industrial applications represents a further major task of the AEC. In response to international nuclear communities' endeavour to raise the level of radiation safety and security, the newly enacted Ionizing Radiations Protection Act 2002<sup>25</sup> laid down radiation standards, limitations, and program requirements for protecting individuals from ionizing radiation caused by conduct of radioactive activities. The Ionizing Radiations Protection Act 2002 applies to exposures from the management of waste at all NNPs facilities and contains requirements for controlling property that

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<sup>17</sup> Article 8 of the N&RWM Act 2002.

<sup>18</sup> Ibid, Article 27

<sup>19</sup> Ibid, Article 8.

<sup>20</sup> Nuclear source material means 'ores of uranium and/or thorium, and /or any other materials designated by the competent authorities.' (See Article 4 of the N&RWM Act 2002.)

<sup>21</sup> Nuclear facilities means 'a civilian facility and its associated land, buildings and equipment in which radioactive materials are produced, processed, used, handled, stored or disposed of on such a scale that consideration of safety is required.' (See De Kagenek A and C Pinel (1998) "The Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management", *International and Comparative Law Quarterly*, Vol. 47, p.418.

<sup>22</sup> Article 6 of the N&RWM Act 2002.

<sup>23</sup> For example, the fourth nuclear power plant -- project feasibility analysis and budget allocation are of exclusive duty of the Ministry of Economic Affairs. The AEC reviews site selection reports and environmental impact assessment report. Subsequently, numerous licensing review processes are followed for the qualification, issuance of construction, fuel loading and the approval of permit. (Also see Article 8 of the N&RWM Act 2002.)

<sup>24</sup> Ibid, Article 9.

<sup>25</sup> You-li Fwu-she Farn-g-huh Fa [Ionizing Radiations Protection Act] (promulgated on 30 January 2002, effective on 1 February 2003).

may be contaminated.<sup>26</sup> The Act focuses on effective occupational radiation protection schemes and other measures to ensure the health and safety of the work force are satisfactorily protected by keeping individual and collective radiation doses below regulatory limits. At the same time, it also endeavours to gradually reduce the tolerable doses so that they are as low as is reasonably achievable.

Taken as a whole, there is adequate statutory and institutional authority to ensure safe management of radioactive waste in Taiwan. However, the current plethora of regulations is complex and many working group members themselves had difficulty in understanding the regulations well enough to discuss with me coherently the system and its applications<sup>27</sup> -- which has apparently resulted in ineffectual management practices and, possibly, in some cases increased risk overall.

#### **4.2 Radioactive waste management in Taiwan**

Radioactive waste management systems involve the production, storage, treatment, transport and dispose of radioactive waste. In this section, I attempt to examine and analyse government policies, relevant laws and regulations in three important areas -- low-level radioactive waste (LLRW) management, spent fuel management program, and final disposal.

By and large, the management of LLRW in Taiwan is carried out by means of three different channels -- the waste is dispatched to the Volume Reduction Centre, shipped and stored at the Lan-yu (Orchard Island) Storage Site and on-site storage. With regard to the management of spent fuel and other high-level radioactive waste, given that Taiwan still does not have sufficient capability, technique and skill to build on geological repository as the final disposal site, spent fuel

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<sup>26</sup> There have been several incidents of discovery of buildings contaminated with radioactive steel. The outcome of these incidents have been costly -- leading to very cautious and conservative practices in the steel and nuclear industries, and fuelled public distrust in the regulatory system. In order to prevent further embarrassment to the government, steel mills now fall under the supervision of the AEC.

<sup>27</sup> Interviews were conducted with members of the AEC and different groups of the FCMA during April 2004.

and other high-level radioactive waste are now temporarily stored in the pools of each nuclear power plant. Prior to the establishment of adequate final disposal facilities, on-site dry storage remains the favoured measure for dealing with the waste. With the aim of solving the problem posed by spent fuel, a long-term investigation plan is being undertaken by the TPC to select a suitable candidate site with preferred geological characteristics for future development into a geological repository.<sup>28</sup> However, public acceptance is the predominant factor in the success of selecting a final disposal site for radioactive waste. In order to develop a reliable and better strategy for radioactive waste management, measures to improve public participation and to enhance public acceptance in relation to the final disposal site selection activities are being implemented right now in Taiwan.

Increasing public attention has been focused on the use of nuclear power and radioactive waste disposal options. In general, safety is an indispensable part of any consideration of nuclear and radioactive waste management options. A number of interviews conducted in April 2004 highlighted that there is persistent and widespread public concern with all aspects of radioactive waste management and disposal in Taiwan. Members of the Taiwanese public have expressed considerable lack of trust in the low-activity waste regulatory system due to its complexity, inflexibility, and inconsistency. These factors have apparently raised doubts about the current system's capacity for protecting public health. The following sub-sections present a detailed examination of the current state of radioactive waste management in Taiwan.

#### ***4.2.1 Low-level radioactive waste (LLRW) management and regulation in Taiwan***

In general, LLRW generated or disposed in the commercial sector is regulated by the Nuclear Materials and Radioactive Waste Management Act 2002. Currently, more than 90 per cent

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<sup>28</sup> The relevant regulations concerning the establishment of final disposal site are: (1) Regulation on Final Disposal of Low Level Waste and Safety Management of the Facilities (promulgated and effective on 10 September 2003); (2) Regulation on Treatment and Storage of Radioactive Waste and Safety Management of the Facilities (promulgated and effective on 8 October 2003) and (3) a new law 'LLRW Final Repository Site Selection Act' has been drafted and submitted to the legislative Yuan for approval on December 2002. The passing of the new law is expected to speed up the ongoing sitting selection process.

(by volume) of LLRW generated in Taiwan has been produced by three NPPs. The remaining 10 per cent was contributed by hospitals and various medical facilities, research institutions, universities and others. In the main, LLRW arises from nuclear reactor operations, industrial uses of radioactivity and medical uses. In Taiwan, LLRW is segregated into two major groupings, namely, low-level wet radioactive waste and dry active radioactive waste.<sup>29</sup> Wet radioactive waste includes evaporation residue, filter mud, and spent resins, which are first solidified inside galvanized steel drums and then stored in a repository.<sup>30</sup> For the most part, wet radioactive waste of LLRW requires 'treatment and packaging in an inert stable' surrounding substance before disposal.<sup>31</sup> Up till now, concrete has been the most commonly used solidification agent for wet radioactive waste in Taiwan. After being so treated, with extreme care the TPC has transported and shipped these solidified radioactive waste to the Lan-yu (Orchard Island) Storage Site. Dry radioactive waste, mainly containing waste paper, clothes, plastics, woods, metal and so on are either segregated or tore up and then dispatched to the Volume Reduction Centre.

As noted above, the management of LLRW in Taiwan is currently carried out by three different channels. These are described below.

#### First, Radioactive Waste Volume Reduction

In 1988, the FCMA's predecessor -- the Radioactive Waste Administration (RWA) -- called for existing nuclear power plants to make every effort to reduce radioactive waste as well as to set limits on NNPs' annual radioactive waste production. In addition, the RWA sets strict annual radioactive waste limits for new plants. In order to facilitate its storage, transport and disposal, the priority of radioactive waste management is to reduce its quantity and volume. Hence, in 1990 the RWA established a Radioactive Waste Volume Reduction Centre at the Kuosheng NPP. This Centre is equipped with a powerful incinerator to handle dry

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<sup>29</sup> [www.aec.gov.tw/radioactivewastemanagement](http://www.aec.gov.tw/radioactivewastemanagement).

<sup>30</sup> Ibid.

<sup>31</sup> *Radioactive Waste Management and Radioactivity in the Environment*, (1988), A Report of Research Commissioned by her Majesty's Inspectorate of Pollution, April 1986-December 1987, London: HMSO, para. 2.2.

radioactive waste. The Centre has significantly lessened the volume of radioactive waste -- the dry radioactive waste from LLRW production have been reduced from a high level at 11,814 drums per year in 1983 to less than 5,000 drums in 1990 and further down to 818 drums in 2002.<sup>32</sup> With the aim of further improving performance in radioactive waste reduction, the FCMA has appointed an Expert Radioactive Waste Reduction Advisory Group to appraise advanced radioactive waste reduction technologies from around the world and to promote radioactive waste reduction at all nuclear energy facilities. Furthermore, half-yearly and irregular spot inspections have been carried out by the FCMA at three NNPs.

In the past, bitumen was combined with incinerator ash and the resulting mixture was then disposed of in a landfill site.<sup>33</sup> This practice was recently altered to one of compression by a super-compactor. The aim of the new practice is reduce waste volume. The benefit of this alteration could significantly prolong the life of existing burial sites and limit the need for new facilities.<sup>34</sup> In addition, in order to minimize the possibility of unwanted risk during the transportation processes, a small scale incinerator started operation at the Maanshan NPP in 2001.<sup>35</sup> A similar incinerator will also be installed to the Chinshan NPP within a few years time.<sup>36</sup> Furthermore, the INER is currently undertaking a new research on plasma burner technology in an attempt to progress technique in managing incinerator ash.<sup>37</sup>

The High Efficiency Solidification Technology (HEST) was first developed by the INER and successfully implemented at Maanshan NPP in 1998.<sup>38</sup> A similar solidification plant will be installed in the Kuosheng NPP.<sup>39</sup> It is expected that future technical developments might be able to reduce further radioactive waste generation in the medium to long-term.

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<sup>32</sup> *RWM Report 2002*, p. 14.

<sup>33</sup> [www.aec.gov.tw/radioactivewastemanagement](http://www.aec.gov.tw/radioactivewastemanagement).

<sup>34</sup> *Ibid.*

<sup>35</sup> *Ibid.*

<sup>36</sup> *Ibid.*

<sup>37</sup> *Ibid.*

<sup>38</sup> *Ibid.*

<sup>39</sup> *Ibid.*

Secondly, the Lan-yu (Orchard Island) Storage Site<sup>40</sup>:

The Lan-yu Storage Site offers off-site interim storage for solidified radioactive waste since 1982. This site, located in a small islet, contains a storage capacity of about 98,000 drums (each drum contains about 55-gallons) in 23 semi-underground engineered trenches. These storage trenches were constructed with thick reinforced concrete walls, building up an effective barrier against radiation. Also, with the purpose of preventing radioactive nuclides from reaching the environment, a complete rainwater interception and water treatment system were added to the trenches. In addition, continuous measures to diminish rainwater ingress to the trenches, and treatment of any leaching water come out from the trenches were required by the FCMA. Furthermore, in line with 'Zero Discharge of Radioactivity Policy', without preceding authorized approval any leaching water may not be released into the environment in order to prevent unnecessary pollution.

However, due to the fact that the Lan-yu Storage Site was approaching its full capacity (the site had received 97,672 waste drums by the mid-1990s) as well as because of local protests,<sup>41</sup> the Lan-yu Storage Site stopped receiving further solidified radioactive waste from 15 February 1996 onwards. With the aims of monitoring the surrounding area of Lan-yu storage site and of evaluating the feasibility of possible conveyance of these waste drums to the future final disposal site, following a pilot project carried out at the end of 1996, the TPC was specifically required by the FCMA to ensure that older storage drums which may have been oxidized and corroded were overhauled or repacked by the end of 1998. In addition, in order to accomplish a thorough inspection system and to prepare a system for forthcoming transportation of waste to the final disposal site, the Executive Yuan in mid 2002, assembled an exclusive committee to finalize the strategy for the radioactive waste removal and site clean-up matters.

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<sup>40</sup> The following paragraphs are summarized from the *RWM Report 2002*, pp. 20-23.

<sup>41</sup> *Liberty Times* (Zi-you Shi-bao), 28, April 1996, p. 5; 29 April 1996, p. 6; 30 May 1996, p. 6.



### Thirdly, On-site Storage:

With it being difficult to continue transporting solidified radioactive waste to the Lan-yu Storage Site, the TPC commenced repository constructions at each nuclear power plant.<sup>42</sup> The development of on-site storage facility would include environmental design, licensing, and construction activities. Construction of on-site storage facilities for LLRW must be approved by the FCMA. All constructions are carefully supervised and inspected and the completed facilities are subject to final approval before they can be operated.<sup>43</sup> In order to ensure safety in storage operations and to reduce the radiation exposure of personnel, the FCMA carries out spot checks at all on-site storage facilities every two months or at other times as appropriate. However, despite the fact that severe accidents in the management of radioactive waste have not yet occurred in Taiwan, in general, ‘on-site storage remains an inadequate, short-term resolution to a long-term problem’.<sup>44</sup> Therefore, a final disposal site for LLRW is urgently needed in Taiwan.

In general, LLRW final disposal facilities refer to the lands, buildings, structures, and equipments used to dispose the low level waste.<sup>45</sup> The method of ‘multiple barriers (*duo-chorng jang-bih*)’<sup>46</sup> is the basis for decision-making after a wide-ranging appraisal of the technical, economical, and environmental impacts for LLRW final disposal.<sup>47</sup>

Currently, the final disposal site for LLRW in Taiwan is under preparation. As the TPC contributes 90 per cent of all the LLRW generated in Taiwan, in accordance with Articles 28 and 49 of the N&RWM Act 2002, the TPC is responsible for planning and selecting proper LLRW final disposal sites. Accordingly, the TPC is undertaking all necessary

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<sup>42</sup> These include a 40,000 drums facility at Kuosheng NPP, a 23,000 drums facility at Chinshan NPP and a 40,000 drums facility at Maanshan NPP. ( See [www.aec.gov.tw/radioactivewastemanagement](http://www.aec.gov.tw/radioactivewastemanagement))

<sup>43</sup> Article 9 of the N&RWM Act 2002.

<sup>44</sup> Flax, S J (1981) ‘Radioactive Waste Management’, *Harvard Environmental Law Review*, Vol. 5, P. 272.

<sup>45</sup> Article 2 of the Regulation on Final Disposal of Low Level Waste and Safety Management of the Facilities.

<sup>46</sup> ‘Multiple barrier’: refers to the combination of solidified waste, containers, buffering and backfill materials, engineering structures, and stratum as well as natural barriers used by the radioactive waste disposal facilities to delay the leaching, leakage, and migration of the radioactive nuclides. (Article 2 of the Regulation on Final Disposal of Low Level Waste and Safety Management of the Facilities).

<sup>47</sup> *RWM Report 2002*, Chapter Four, p. 41.

preparation work -- including environmental design, licensing, and construction activities. As a result, the TPC reported a preliminary result on site selection to the AEC on 25 February 1998. Little Chiu Yu at Wu-Chiu Hsiang was chosen by the TPC as the priority candidate site for investigation.<sup>48</sup> The TPC submitted the Environmental Impact Statement Report (EIS) to the TEPA and put forward the Investment Feasibility Study Report (IFS) to the Ministry of Economic Affairs in November 2000 and June 2001 respectively for review.<sup>49</sup> Having received approval of the EIS and IFS reports, the Safety Analysis Report was subsequently submitted to the AEC.<sup>50</sup> Should approval be received for this final Report in the future, Little Chiu Yu can then be formally qualified as a disposal site.

Most LLRW disposal facilities employ a series of natural and engineered barriers to prevent radioactivity from reaching the environment. In addition to abiding by the common principles and requirements which were specified by international practice, due considerations of Taiwan's unique geographical characteristics were taken into account to draw specific selection criteria for LLRW final disposal site.<sup>51</sup> In addition, Article 8 of the Regulation on Final Disposal of Low Level Waste and Safety Management of the Facilities 2003<sup>52</sup> states explicitly that 'the annual dose to any member of the public resulting from radioactivity in a disposal site must not exceed 0.25 mSv'.

In addition to the above mentioned LLRW generated by three NNPs, a small amount of radioactive waste arises from the use of radioactive materials in medicine, industry,

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<sup>48</sup> The islet, under the jurisdiction of Kinmen County, is located off the China Mainland coast, about 80 nautical miles to Taiwan's west coast and about 10-20 nautical miles to the north-west island of Mainland China. (See *RWM Report 2002*, Chapter Four, p. 43.)

<sup>49</sup> *RWM Report 2002*, Chapter Four, p. 43.

<sup>50</sup> *Ibid.*

<sup>51</sup> Chapter Three of the Regulation on Final Disposal of Low Level Waste and Safety Management of the Facilities -- Article 7 to Article 12. They include such as: '(1) The site selection, operation and closure of a repository must take consideration for the re-utilization of the repository site; (2) Sites should be situated in an area with low population density and low development potential; (3) Areas where tectonic activity, geological processes, hydrological and geo-hydrological conditions could endanger the safety of the disposal facility should be avoided; (4) Areas where geological and hydrological data are too complicated to be adequately evaluated should be avoided; (5) Areas acknowledged with important natural resources, ecological protection needs, and historical reservation values should be avoided.'

<sup>52</sup> *Supra* footnote No, 28.

academia and research processes. In order to prevent environmental hazards, the FCMA has stringently regulated such radioactive waste.<sup>53</sup> Low-level radioactive waste from the Institute of Nuclear Energy Research (INER) is processed at the Institute's own radioactive waste treatment plant, from which liquid waste may be discharged after treatment if it matches up to the required standard; otherwise, further treatment is required. Solid wastes are reduced in volume by incineration, cutting and compression, then packed in drums and sited at INER's in-house storage facility. Low-level radioactive waste from Ching-hwa University's research reactors is also processed at INER. Other radioactive waste and spent radiation sources from all medical, agricultural and industrial organizations are altogether collected by the INER as requested by the AEC and are placed in the radioactive waste storage facility at the INER. In the future, such waste will be disposed of together with waste from nuclear power plants.

#### ***4.2.2 Spent fuel management and regulation in Taiwan***

As noted above, nuclear power is contributed some 23 per cent of electricity supply in Taiwan. Presently, the TPC is the sole organization in possession of spent fuel from commercial operation in Taiwan, while the Institute of Nuclear Energy Research (INER) and National Ching-hwa University are another two small producers. In general, nuclear professionals acknowledge that spent fuels are not exactly 'waste'. If spent fuels are subjected to reprocessing, they become valuable resources. On the other hand, if spent fuels are to be disposed of, they constitute high-level radioactive waste. However, the costs of reprocessing<sup>54</sup> far outweigh its benefits, therefore, the final stage of storage or disposal will be the alternative choice for handling the spent fuel rod problem. In addition, documented evidence indicates that Taiwan still does not have sufficient techniques and skill to develop a 'geologic repository'. Hence, contemporary spent fuel management strategies declared by the Executive Yuan in 1997 are as follows: 'in the short-term,

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<sup>53</sup> The following paragraphs are summarized from *RWM Report 2002*, Chapter Five, pp. 50-58.

<sup>54</sup> Reprocessing has three serious costs: it complicates the fuel cycle, it creates its own waste problem, and it increases the chances of nuclear proliferation. (See Flax, S J (1981) "Radioactive Waste Management", *Harvard Environmental Law Review*, Vol. 5, p. 265.)

the aim of spent fuel management is to expand the spent fuel pools capacity. Following that stage, the target is to promote on-site dry storage, while at an appropriate time, to evaluate the feasibility of extraterritorial reprocessing; and in the long-term, the final goal is to implement final disposal site plan.<sup>55</sup>

However, in order to enhance the progress of spent fuel management, a Nuclear Backend Fund [*her-neng how-duan yng-yun ji-jin*] has been set up to allocate money for all nuclear backend activities including the implementation of spent fuel interim storage and final disposal.<sup>56</sup> The following paragraphs present the current state of spent fuel management, which exists within the framework provided by the above cited radioactive waste management policy.

In a light-water fission reactor (Ching-shui Fan-ing-chihe -- the type of nuclear reactor now in service in Taiwan)<sup>57</sup> the fuel is composed of a mixture of two isotopes of uranium: 'readily fissionable isotope uranium 235 and ordinarily non fissionable isotope uranium 238.'<sup>58</sup> During the reactor's operation, neutrons which are produced as a result of 'the fission of some of the uranium-235 nuclei strike other uranium nuclei, either splitting them in two or being absorbed.'<sup>59</sup> In most cases, the operation of nuclear reactor uses up 'the supply of fissionable uranium-235 atoms' inside the fuel rods.<sup>60</sup> As a result, the spent fuel rods hold a great deal of 'unconsumed uranium-238 and small amounts of plutonium and uranium-235'.<sup>61</sup> Hence, those spent fuel rods are the main source of high-level radioactive waste.

At present, after the spent fuel is removed from the reactor, it is temporarily stored in on-site pools for some months to 'allow the isotopes with a short radioactive half-life to decay'.<sup>62</sup> Despite the fact that the re-racking project for the spent fuel pools has been carried

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<sup>55</sup> *RWM Report 2002*, Chapter Three, p. 33.

<sup>56</sup> Article 46 of the N&RWM Act 2002.

<sup>57</sup> *RWM Report 2002*, Chapter Three, p. 30; also see Table 1: column – Reactor type.

<sup>58</sup> Cohen, L B (1981) "High Level Radioactive Waste", *Natural Resources Journal*, Vol. 21, p.705.

<sup>59</sup> *Ibid*, p. 706.

<sup>60</sup> Flax, S J (1981) "Radioactive Waste Management", *Harvard Environmental Law Review*, Vol. 5, p. 263.

<sup>61</sup> Cohen, L B (1981) "High Level Radioactive Waste", *Natural Resources Journal*, Vol. 21, p.706; also see *RWM Report 2002*, Chapter Three, P. 33.

<sup>62</sup> *Ibid*.

out, Chinshan and Kuosheng NPPs will reach full storage capacity by 2008 and 2007 respectively.<sup>63</sup> In order to solve this problem, following a detailed research on safety, technical, social, economical, and environmental impacts, on-site dry storage is currently the favoured approach for dealing with spent fuel management in Taiwan.

Although the spent fuel dry storage concept has been adopted in numerous countries,<sup>64</sup> the idea is new to Taiwan.<sup>65</sup> The establishment of an interim on-site dry storage facility would include environmental design, followed by the required preparation of an environmental impact statement, after which construction activities and licensing can commence.<sup>66</sup> Thus far, the EISs for Chinshan and Kuoshen NPPs have been appraised and approved by the TEPA.<sup>67</sup> Also, the safety analysis reports of interim storage projects have been submitted to the FCMA for review.<sup>68</sup> In the review process, various experts and scholars have been summoned to provide technical opinions. Furthermore, an independent computation regarding criticality, heat dissipation and site boundary dose limitation is now underway. The concrete cask was selected by the TPC recently as its interim storage container for Chinshan's spent fuels. As a general rule, the spent fuel rods are loaded vertically in concrete tanks and lined with stainless steel. The tanks are filled with water to dispel the heat and to absorb the radiation that arises out of the decay of radioactive materials within the fuel rods.<sup>69</sup> However, certain technical limits on the matrix material of tanks may exist; also on-site storage must be carefully monitored in order to prevent unwanted nuclear reaction. Although the radiological hazards of

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<sup>63</sup> See Table 2 -- Spent Fuel Storage Capacity in Nuclear Power Plant; also *RWM Report 2002*, Chapter Three, p. 32.

<sup>64</sup> Kageneck, A D and C Pinel (1998) "The Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management", *International and Comparative Law Quarterly*, Vol. 47, p. 410.

<sup>65</sup> Article 15 and Article 50 of the N&RWM Act 2002 are the legal base with regards to the spent fuel on-site dry storage facility. However, the TPC plans to commission its dry storage facilities in 2004 and 2006. Hopefully, the first on-site storage facility will be ready in 2007. (See *RWM Report 2002*, Chapter Three, pp. 33-34.)

<sup>66</sup> Appendix C of (1996) "Site-Specific Waste Acceptance, Storage and Transportation Strategy", *Natural Resources Journal*, Vol. 36, p. 932.

<sup>67</sup> *RWM Report 2002*, Chapter Three, p. 33.

<sup>68</sup> *Ibid.*

<sup>69</sup> *RWM Report 2002*, Chapter Three, pp. 33-35; Also see Flax, S J (1981) "Radioactive Waste Management", *Harvard Environmental Law Review*, Vol. 5, p. 271.

these wastes have not occurred in Taiwan, on-site dry storage remains an unsatisfactory and temporary means. Therefore, with the aim of solving the longer-term problem, it becomes necessary to develop a safe, permanent disposal facility for spent fuel in order to reduce the risks of on-site storage.

Currently, deep burial (*shen-di-chern chuh-jyh*) offers the most universal and secure method of high level radioactive waste disposal. The strategy for final disposal of spent fuel and high-level radioactive waste is resting these radioactive wastes within particular tanks in a deep geologic repository for at least ten thousand years.<sup>70</sup> The technique for deep burial approach will depend on multiple barriers, both natural and man-made engineered. The natural barrier will be the rock configuration of the depository site. The first and foremost essential man-made engineered barrier will be the waste package, which refers to the combination of solidified waste, containers, and any extra barriers such as buffering and backfill surrounding the waste package.<sup>71</sup>

As mentioned above, currently, the TPC is legally responsible for planning and selecting a final disposal site for high-level radioactive waste and spent fuel. To date, the TPC has launched several study projects. Geological surveys have shown that potential host rocks, including granite, shale and mudstone, could be found at certain depths in some parts of Taiwan.<sup>72</sup> In addition, establishing a long-term R&D program plan for final disposal facility and carrying out geological investigation in the potential host rock areas has begun.<sup>73</sup> On the basis of these preparations, the TPC plans to identify the spent fuel disposal site in 2016, and to commission the repository after

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<sup>70</sup> Appendix A of (1996) "Evolution of the Civilian Radioactive Waste Management Program", *Natural Resources Journal*, Vol. 36, p.926.

<sup>71</sup> *Ibid.*

<sup>72</sup> *RWM Report 2002*, Chapter Four, p.46.

<sup>73</sup> *Ibid.*, pp. 46-48. The following considerations were covered in the R&D program plan: 'first, long-term investigation is required to select a suitable site for developing a geological repository and to gain sufficient information for safety assessment. Secondly, spent fuels interim storage of 40 years or longer is required to provide ample time for carrying out the plan and ensuring flexibility for the adoption of reprocessing whenever feasible as an alternative to direct disposal.' Based on the experiences gained from previous proposed plans, the long-term program has been revised and will be carried out in 4 phases. They are as follow: '(1) Potential host rock characterization and evaluation (1999-2007); (2) Detail site investigation and confirmation (2008-2018); (3) Facility design and licensing (2019-2023); and (4) Facility construction (2024-2031).'

2032. Overall, implementing adequate measures for the disposal of spent nuclear fuel presents a significant technical challenge to the TPC and Taiwan government.

Regulation for the operational safety of high-level radioactive waste disposal and facility is being enacted under the N&RWM Act 2002 and other relevant regulations. Specific requirements are being introduced by the following features. First, a parallel licensing system has been adopted -- both construction and operation of storage facilities must be filed and approved by the competent authorities.<sup>74</sup> Secondly, activities such as design amendment or equipment change, permanent cease of operation, and exemption from institutional control require pre-approval from the competent authorities.<sup>75</sup> Thirdly, waste must be situated at least at a depth of 200 metres underground. Fourthly, the integrity of waste containment must be maintained for no less than 1000 years. However, the most modern technology will need to be utilised in order to improve the construction of storage tanks. Fifthly, the groundwater travel time from the disposal area to the accessible environment should be as long as 1000 years. And, finally, the annual individual equivalent effective dose limit must be less than 0.25 mSv/yr.<sup>76</sup>

### 4.3 Conclusion

More than a dozen laws and regulations mould and shape the legal regime for the program of radioactive waste management in Taiwan. The authority to develop guidance for radiation protection and control radioactive material was originally given to the AEC. The FCMA -- a subordinate organization to the AEC -- is currently liable for regulatory control over radioactive waste management matters. In general, Taiwanese government policy on radioactive waste management is that radioactive wastes should be managed and disposed of in ways which safeguard the public, workforce and the environment. The fundamental principles and criteria

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<sup>74</sup> Articles 8, 9 of the N&RWM Act 2002.

<sup>75</sup> Ibid, Articles 18, 19, 23, and 24.

<sup>76</sup> Article 5 of Regulations on Treatment and Storage of Radioactive Waste and Safety Management of the Facilities (promulgated and effective on 8 October 2003.)

adopted in Taiwan and applied by the regulatory bodies are designed to make certain that there is no unacceptable risk was often in the company of radioactive waste management.

The management of radioactive waste arising from nuclear energy utilizations is a top priority for the government today in Taiwan. In addition to abiding by those principles and requirements commonly existing in the international community, due consideration of Taiwan's specific circumstances have been taken into account in handling radioactive waste. Most of the radioactive waste arising in Taiwan is generated from the commercial nuclear power industry -- LLRW and spent fuel -- and is generally stored where it is produced. As three NPP's operations continue and the fourth NNP is under construction, the needs for sufficient facilities for nuclear waste are becoming more urgent. In order to achieve the goal of making Taiwan 'a nuclear-free homeland',<sup>77</sup> final disposal for the LLRW and spent fuel must be implemented.

Based on the earlier findings, I conclude that the radioactive waste management system which is currently implemented in Taiwan has a number of key features, which are outlined below.

First, radioactive waste management in Taiwan is mainly carried out by three different measures -- reviews, inspections, and regulatory meetings. Stringent standards apply to all relevant processes of radioactive waste management which include reduction, treatment, transport, storage, and data reporting. Secondly, in line with the N&RWM Act 2002, the RWMP 1997, and the AEADP 1991, the objective of radioactive waste management is twofold. Namely, the 'polluter pays principle' is applied -- the management cost should be imposed directly on the producers of radioactive waste. And, radioactive waste should be managed and disposed of in ways which protect the public, workers and the environment so as to maintain the quality of environmental ecology and prevent suffering from unwanted threats from radioactive waste. Thirdly, the control and licensing system for ionizing equipment and

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<sup>77</sup> Article 23 of the Environmental Protection Basic Act 2002.



radioactive material for medical, academic and industrial applications is focused on effective occupational radiation protection schemes or other measures to ensure that the health and safety of the work force are satisfactorily protected by keeping up individual and collective radiation doses below regulatory limits.

With regard to current practice of radioactive waste management, solidified LLRW from three NNPs is stored at nuclear power plants sites. When radioactivity of the waste falls to within levels permitted for transport, the drums are shipped to the Lan-yu Storage Site. Before waste is transported, transport plans and emergency response plans must be approved by the FCMA, which will send inspectors to monitor the operations. Dry LLRW are separated and handled either by incineration or compressed and sent in special containers to the Radioactive Waste Volume Reduction Centre.

However, with continuing difficulties in continue transporting solidified radioactive waste to the Lan-yu Storage Site, the TPC commenced repository construction at each nuclear power plant. All construction is carefully supervised and inspected and the completed facilities are subject to final approval before they can be operated. In order to ensure safety in storage operations and reduce the radiation exposure of personnel, the FCMA carries out spot checks at all on-site storage facilities every two months or at other times as appropriate. In addition, quarterly meetings provide a bureaucratic channel of communication and dialogue between the regulatory agency and operators, and are attended by all relevant governmental, research, and operating units. The FCMA also audits fuel storage operations at all nuclear energy facilities at regular and irregular intervals to ensure compliance with safety regulations.

As to the issue of final disposal facilities for radioactive waste, since 1990, a series of research and R&D program plans have been undertaken to sustain and extend the need for the relevant authorities to develop their capabilities for dealing with radioactive waste. In addition, the FCMA began essential research work to draw up regulatory procedures for final disposal. At

present, a draft 'LLRW Final Repository Site Selection Act' is pending in the Legislative Yuan for approval.

So as to prepare the selection process, the TPC has appointed an independent committee of experts to choose candidate sites for the final disposal facility subject to strict objective criteria. Also, the FCMA has set up a board of specialists to oversee implementation of the TPC's plans for final disposal of radioactive waste. All aspects of the final disposal program, from site selection and construction to operation and final closure as well as post-closure monitoring of the facility are stringently supervised and controlled.

In order to smooth the progress of the selection process, the AEC has urged the TPC not only to publicize the selection criteria, to draft a communication and dialogue plan and an incentive program, but also to explain the selection process to the public in the earliest stage to avoid protest. Undoubtedly, public support is the most important factor to the success of selecting a repository site. This can be achieved by various ways. For example: public participation during the decision-making process has been demonstrated to be vitally important from past experience. Information transparency, particularly the effective public communication, is the major channel to gain public confidence. Additional economic benefits or policy considerations for regional development provide another constructive cause for public acceptance.

Based on the above findings, it is possible to conclude that there is adequate statutory and institutional authority to ensure safe management of radioactive waste in Taiwan. However, the current regulations are complex and varied and many working group members themselves have difficulty in understanding the regulations well enough to discuss the system and its applications -- which has led to examples of ineffectual management practices and possibly in some cases increased risk overall. Hence, I suggest the following reforms.

First, the radiological hazard of LLRW depends on both its level of radioactivity and its longevity. In general, the radiological hazard of LLRW is much less than that for spent fuel or

high-level radioactive waste, but the hazard may persist for long periods of time. Therefore, risks are inherent. In order to prevent any unacceptable risks -- although the regulatory system was developed primarily to control radiological risks of LLRW -- non-radiological hazards are also important and therefore should be included in the category of LLRW.

Secondly, naturally occurring radioactive materials<sup>78</sup> waste has hitherto received little attention from policy makers or the public in Taiwan. Usually, naturally occurring radioactive materials waste only has little penetrating radiation. But this kind of radioactive waste is a potential long-term environmental hazard if the radio nuclides are allowed to migrate. In order to avoid further environmental problems, a system for recognizing and more consistently controlling the radiological hazards of naturally occurring radioactive materials is clearly needed.

Thirdly, in developing current requirements for the manner in which LLRW is managed or disposed of, risks of transportation accidents; and environmental risks and costs have not been analysed. In addition, utilized sites remedial action program is not included in the current regime. In order to oversee the safety of the final disposal site, it is necessary to establish a supervising scheme to identify, investigate, and take appropriate cleanup action at the site whenever radioactive contamination results from inadequate management.

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<sup>78</sup> Naturally occurring radioactive materials arise in many mineral extraction operations and are often discarded as waste – examples include phosphate industry residues, scale and sludge from oil and gas production, and coal ash residues.

Table 1. Information on Nuclear Power Plants in Taiwan

Unit	Reactor Type	Installed Capacity (MWe)	Commercial Operation	Status
Chinshan 1	BWR/4	636	1978	Operating
Chinshan 2	BWR/4	636	1979	Operating
Kuosheng 1	BWR/6	985	1981	Operating
Kuosheng 2	BWR/6	985	1982	Operating
Maanshan 1	PWR	951	1984	Operating
Maanshan 2	PWR	951	1985	Operating
Yenliao 1	ABWR	1,350	2006	Construction (43.8%)
Yenliao 2	ABWR	1,350	2007	Construction

Sources: www.aec.gov.tw (September 2004)

Table 2. Spent Fuel Storage Capacity in Nuclear Power Plants

Unit	Year Of Commercial Operation	Capacity Before/After Re-racking*	Year of Re-racking Operation	Current Storage Inventory* (12/2002)	Expected Year of Full Occupation	Discharge Fuel Cycle*	
Chinshan	#1	1978	1410/3083	2008	2,208	2008	130
	#2	1979	1620/3083	1987/1999	2,092	2009	130
Kuosheng	#1	1981	2469/4237	1992	2,812	2009	220
	#2	1982	2469/4237	1992	2,840	2010	220
Maansha	#1	1984	746/2151	1994	792	2025	72
	#2	1985	746/2159	1994	813	2026	72

Remarks: \* Unit (Fuel Assembly)

Sources: www.aec.gov.tw (September 2004)

## Chapter 5 Disputes and Their Resolution

### 5.1 Introduction

A dispute is ‘a conflict or controversy; a conflict of claims or rights; an assertion of a right, claim or demand on one side, met by contrary claims or allegations on the other’.<sup>1</sup> A dispute can also be defined as ‘discrete, bounded and pathological episodes, generated by rule breach’.<sup>2</sup> Settlement refers to ‘the termination of a disputed matter by the adoption of terms agreeable to the parties to it’.<sup>3</sup> An ‘environmental dispute’ exists ‘whenever a person raises a claim based on an environmental norm -- whether legally, socially or intellectually recognised’.<sup>4</sup> In the context of this thesis, ‘environmental dispute’ applies to disputes between parties that are regarding or are specifically related to the natural environment.

In 1998, an interview of government officials, industry representatives, and members of environmental non-governmental organisations (NGOs) was conducted in Taiwan. All three groups clearly expressed to me that although traditional political and legal processes have achieved the settlement of some disputes in the environmental arena, there is a need to improve the use of alternative dispute resolution ‘ADR’ techniques – ‘ADR’ refers to the broad variety of methods ‘by means of which conflicts and disputes are resolved other than through litigation’.<sup>5</sup> Unfortunately, the lack of a firm legal framework is a significant barrier to the successful use of alternative processes for dealing with environmental disputes. Hence, law reform in this area is a current need in Taiwan.

Growing public environmental consciousness in Taiwan has pressured the government to get more serious about public nuisance dispute settlement. Although traditional practice

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<sup>1</sup> Nolan, J R (1990) *Black's Law Dictionary*, (6<sup>th</sup> ed) (St. Paula; West Publishing Co.), p. 472.

<sup>2</sup> Palmer, M and S Roberts (1998) *Dispute Processes (ADR and the Primary Forms of Decision Making)*, (London: Butterworths), p. 7.

<sup>3</sup> Ivamy, E R H (1988) *Law Dictionary*, (10<sup>th</sup> edn) (London: Butterworths), p. 436.

<sup>4</sup> Swanson, E J (1995) “Alternative Dispute Resolution and Environmental Conflict: the Case for Law Reform”, *Alberta Law Review*, Vol. 34, No. 1, p. 270.

<sup>5</sup> Goss, J (1995) “An Introduction to Alternative Dispute Resolution”, *Alberta Law Review*, Vol. 34, No. 1, p. 2.

combines governmental intervention and negotiation to resolve major environmental disputes in Taiwan, documented evidence revealed that the outcome of environmental cases is unsatisfactory in terms of environmental welfare standards. Therefore, in order to acquire a workable scheme of dispute resolution for resolving various kinds of environmental disputes, the essential need is to 'prepare and train lawyers and the specialists for participation in certain alternative modes by developing skills in respect of such matters as counselling, interviewing, negotiation, mediation and non-curial advocacy'.<sup>6</sup> To some extent, this implies that the Taiwan government needs not only to improve understanding of the problems associated with the current heavy dependence on 'ADR' processes, but also to foster an effective and fair use of 'ADR' to resolve environmental disputes, particularly waste management related disputes.

A few related factors may help to explain the relevance of 'ADR' to waste management disputes. First, the people in Taiwan – like Chinese people in general -- have a general tendency to distance themselves from litigation. In general, mediation is considered to be the best process for resolving various kinds of dispute in Taiwan. Secondly, Taiwan is facing a waste management crisis, which is centred on the location of the sites and the process by which the sites are chosen. Faced with the resistance phenomena of 'not in my backyard', fewer sites have actually been chosen and disputes over the location of such sites have erupted. Thirdly, as mentioned earlier, many of Taiwan's landfill sites are at, or are approaching, full capacity.<sup>7</sup> Therefore, the construction of new landfill sites, or, in some cases, building temporary dumpsites, is urgently needed. However, various surveys and interviews revealed that public opposition to the sites of waste facilities and lack of constructive public participation are the two major obstructions in the success of site selection. In these circumstances, 'legal skills'<sup>8</sup>-- such as mediation or mediated negotiation -- might play a role in the processes of managing participation so as to

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<sup>6</sup> Twining, W (1993) "Alternative to What? Theories of Litigation, Procedure and Dispute Settlement in Anglo-American Jurisprudence: Some Neglected Classics", *Modern Law Review*, Vol. 56, p. 381.

<sup>7</sup> See Chapter Three, footnote No. 2.

<sup>8</sup> Twining, W (1993) "Alternative to What? Theories of Litigation, Procedure and Dispute Settlement in Anglo-American Jurisprudence: Some Neglected Classics", *Modern Law Review*, Vol. 56, p. 387.

successfully channel public behaviour and to provide acceptable ways of reaching decisions and thereby settling disputes among different parties.

In the light of the above, Chapter Five examines Taiwan's approach towards disputes and their resolution in the context of environmental issues. In doing so, this chapter begins with a review of the current legal measures for dispute settlement in Taiwan. After that, case analyses are given in the subsequent section -- contain cases which occurred in the early 1990s may be seen as examples revealing weaknesses in the dispute settlement system. It then focuses on the need for procedural reform and follows this by proposing some ideas of how best Taiwan could improve its dispute settlement system. The final section then looks at the extent to which public access to environmental information and public participation are employed in the use of 'ADR' processes, especially, the mediation process.

## **5.2 Description of the current Taiwanese system**

The following section reviews the current legal measures for dispute settlement in Taiwan. It begins with a brief description of the development of legal system and the judicial system in Taiwan. Following which a sketch of various means of current dispute resolution mechanisms will be presented. It aims to give a picture of the actual practices of disputes settlements, which have been carried out in Taiwan.

### **5.2.1 *Legal development and the judicial system***

The law as put into effect and practised in Taiwan today developed over thousands of years. It consists of three major elements: first, 'Imperial Chinese law'; secondly, laws and regulations from 'Contemporary China'; thirdly, 'borrowing heavily and adopting principles and concepts from civil law jurisdictions, such as Germany, Japan and the United States'.<sup>9</sup> In fact, law in Taiwan has developed out of 'legal transplantation', a process that has been quite successful.

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<sup>9</sup> Chiu, H and J Fa (1985) "Taiwan's Legal System and Legal Profession" in H. Ma (ed.) *Trade and Investment in Taiwan*, (2<sup>nd</sup> edn), (Taipei: Institute of American Culture, Academia Sinica), p. 21.

The history of law in Taiwan is largely a history of borrowing legal materials from other legal systems.<sup>10</sup> Various foreign rules were chosen, translated, adapted and adjusted in order that they might be introduced or applied in Taiwan despite the social and legal divergences. In fact, foreign laws and regulations have been successfully modified to suit Taiwan's needs. An extensive range of foreign codes has characterised much of Taiwan's legal history.

Taiwan generally is seen to be a member of the Civil Law family. Nevertheless, several newly developed and more technological fields of law, for instance environmental law, go after models set by the United States.<sup>11</sup> In addition, environmental policy has frequently been regarded as a part of the nation's economic policy. Therefore, development needs have exerted considerable pressure upon environmental policy in Taiwan.

Article 77 of the ROC Constitution expresses that 'the Judicial Yuan shall have charge of civil, criminal, and administrative cases and cases concerning disciplinary measures against public functionaries'. The attending institutions within the judicial system include: the Judicial Yuan;<sup>12</sup> the Council of Grand Justices;<sup>13</sup> the Commission on the Discipline of Public Functionaries;<sup>14</sup> the Administrative Court; and the ordinary courts.

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<sup>10</sup> Between 1928 and 1937, such as the Criminal Act (1928, revised 1935), the Code of Criminal procedure (1928, revised 1935), the Civil Code (1929), the Code of Civil Procedure (1929), the Insurance Act (1929), the Company Act (1929), the Maritime Law (1929) 'borrowed heavily from Japan'. Since the 1950s Taiwan has benefited from closed relations with the United States. As a result, American law has greater influence than before. Amendments of commercial statutes - the Company law, the Law of Negotiable Instruments, the Maritime Law, and the Insurance Law - have 'drawn heavily on American theory and practice', and the Chattel Secured Transactions Act, 'a very important appendix to the Civil Code, is believed to ensue the American Model'. (See Ma, H (1985) "General Features of the Law and Legal System on the Republic of China", in H. Ma (ed.) *Trade and Investment in Taiwan*, (2<sup>nd</sup> edn), (Taipei: Institute of American Culture, Academia Sinica), pp. 16-20.)

<sup>11</sup> The justification for this divergence lies in the fact that since World War II, Taiwan has been influenced mostly by the United States, economically as well as politically. Not surprisingly, the majority of influential people in Taiwan have been educated in the United States.

<sup>12</sup> Apart from to 'co-ordinate the various courts and to act as the nominal leader of the judiciary', the Judicial Yuan seems to have little to do in practice. However, due to the fact that Taiwanese judges 'are part of the civil service system, judicial administration has become the Judicial Yuan's major function'. (See Chiu, H and J Fa (1985) "Taiwan's Legal System and Legal Profession" in H. Ma (ed.) *Trade and Investment in Taiwan*, (2<sup>nd</sup> edn), (Taipei: Institute of American Culture, Academia Sinica), p. 28.)

<sup>13</sup> Seeing that the only organization that 'interprets the Constitution and renders a uniform interpretation of laws, statutes, and regulations', the Council of Grand Justice holds a 'noticeable position' in the structure of the Taiwan government. The Council of Grand Justice is made up of 17 members who are appointed by the President of the ROC with the prior approval of the National Assembly. The Council of Grand Justice is 'similar to the American Supreme Court'. (See Chiu, H and J Fa (1985) "Taiwan's Legal System and Legal Profession" in H. Ma (ed.) *Trade and Investment in Taiwan*, (2<sup>nd</sup> edn), (Taipei: Institute of American Culture, Academia Sinica), p. 29.)



As to the Administrative Court, pursuing the 'French model', administrative adjudication in Taiwan is divided off from the ordinary courts.<sup>15</sup> An Administrative Court is under the supervision of the Judicial Yuan. In accordance with Article 6 of the Administrative Proceeding Act<sup>16</sup> 'any individual who feels that his or her rights or interests have been infringed upon through an unlawful or improper administrative order may bring a petition against that authority to the immediately superior authority'. Afterwards, 'if the ruling is unsatisfactory, the petitioner may re-appeal to the next level of the agency. If he or she is still not satisfied with the decision of the re-appeal, his or her last resort is the Administrative Court.'<sup>17</sup> However, the jurisdiction of the Administrative Court is limited to 'the legality of administrative orders and cases relating to administrative discretion are excluded'.<sup>18</sup> Although current administrative procedure provides an individual with three opportunities to challenge a questionable administrative decision, in practice, the first two appeals are conducted within the administrative hierarchy, and thus only the litigation before the Administrative Court may be called for an impartial and objective judicial review.<sup>19</sup>

Taiwan generally is seen to be a member of the Civil Law family, and, therefore, belongs to 'non-jury jurisdiction'. Being a civil law country, subject-matter jurisdiction is divided among courts.<sup>20</sup> As a general rule, the common courts handle civil disputes and criminal matters. There are three levels of courts in Taiwan. They are: the Supreme Court<sup>21</sup>, the High Court, and the District Court.<sup>22</sup>

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<sup>14</sup> Another organization, which is 'on a par with' the Administrative Court in the Judicial Yuan, is the Commission on the Discipline of Public Functionaries. The major role for the Commission is to manage impeachments submitted by the Control Yuan. (The Taiwanese government structure sees Chapter Two, footnote No. 3.)

<sup>15</sup> Chiu, H and J Fa (1985) "Taiwan's Legal System and Legal Profession" in H. Ma (ed.) *Trade and Investment in Taiwan*, (2<sup>nd</sup> edn), (Taipei: Institute of American Culture, Academia Sinica), p. 29.

<sup>16</sup> Shyng-jen Suh-song Fa [Administrative Proceeding Act] (promulgated and effective on 17 November 1932, last amended on 28 October 1998) in *Six Laws Collection*, (1999), pp. 1678-1692.

<sup>17</sup> Article 4 of the Administrative Proceeding Act 1998.

<sup>18</sup> *Ibid*, Article 3.

<sup>19</sup> Article 210 of the Administrative Proceeding Act 1998. 'As officials tend to defend their own or their subordinates' action against criticism', administrative judicial review, in fact, rarely happened in the Taiwan's legal history. (See Chiu, H and J Fa (1985) "Taiwan's Legal System and Legal Profession" in H. Ma (ed.) *Trade and Investment in Taiwan*, (2<sup>nd</sup> edn), (Taipei: Institute of American Culture, Academia Sinica), p. 29.)

<sup>20</sup> Fa-yuan Tzu-jy Fa [Statute for Organization of Court] (promulgated and effective on 28 October 1932, last amended on 3 February 1999) in *Six Laws Collection*, (1999), pp.56-61. Articles 1 to 7.

<sup>21</sup> Among civil cases, those in which the benefit accruing from such an appeal would not exceed NTD\$300,000

### 5.2.2 The current dispute resolution mechanisms in Taiwan

In general, there are three major dispute resolution mechanisms available in Taiwan, namely litigation (*shu-song*), arbitration (*zong-chai*) and mediation (*tyau-jie* or *tyau-chuh*).

Litigation (*shu-song*) has long been the primary dispute resolution mechanism in Taiwan. Given that Taiwan adopts the civil law jurisdiction, professional judges, without the participation of juries, conduct trials. The Code of Civil Procedure provides the procedural rules governing the processes of litigations. However, it is noteworthy that by reasons of the cost and duration of litigation, and heavy burden of proof on the plaintiff, environmental disputes in Taiwan have usually been solved without recourse to litigation.<sup>23</sup>

Arbitration (*zong-chai*) has been broadly recognized as an efficient alternative to litigation in relation to resolving commercial disputes in Taiwan. Particularly, the disputes arise from a variety of infrastructure projects being carried out by the public and private sectors and from cross-border transactions. The Commercial Arbitration Act<sup>24</sup> provides the legal procedural rules and enforceability of arbitrations. The parties may proceed with arbitration administered by the Taiwan Commercial Arbitration Association in accordance with the Arbitration Act and its related rules. As arbitration awards are results of mediation or settlement, an application to

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(approximately USD\$86,000) are barred from appeal to the Supreme Court. (See Min-shyh Suh-song Fa [Code of Civil Procedure] (promulgated and effective on 1 February 1945, last amended on 3 February 1999) in *Six Laws Collection*, (1999), pp.349-379; Article 466). In addition, Petty offences, those that usually carry a sentence of three year or less, are also limited to appeal to the Supreme Court. (See Criminal Act, Article 61; and Shyng-shyh Suh-song Fa [Code of Criminal Procedure 1967] (promulgated and effective on 1 January 1935, last amended on 21 April 1999) in *Six Laws Collection*, (1999), pp. 551-575; Article 376.)

<sup>22</sup> The District Court, sometime serves appeals against decisions of the summary courts [Jean-yih Fa-ting]. Specific tribunals for family, juvenile, traffic, financial, and labour matters may be available at District Court level.

<sup>23</sup> In Taiwan, a plaintiff or an appellant is required to pay court filing fees in the amount of 1 per cent of the claim in controversy at the district court level, 1.5 per cent at the appellate level and an additional 1.5 per cent at the Supreme Court level. (See Articles 78-106 of the Code of Civil Procedure, and Articles 2 to 16 and Article 18 of the Civil Procedure Costs Act (Min-shyh Suh-song Fey-young Fa)) The excessive court filing fee requirement has often discouraged victims from taking legal action against polluters. In light of the difficulty in pursuing legal actions, Taiwan citizens often resort instead to “self-help” methods, which include ‘public accusations, demonstrations, blockades, and in some cases, violence’. For example, a landmark incident in 1988 (the “Lin-Yuan Incident”, for details see Section 4.3 of Chapter Four).

<sup>24</sup> Shan-wu Zong-chai Tiao-li, [Commercial Arbitration Act] (promulgated and effective on 21 January 1961; last amended on 24 June 1998) In the last amendment, the so-called ‘Commercial Arbitration Act’ which was renamed as ‘Arbitration Act’ in *Six Laws Collection*, (1999), p. 468. The last amendment was mainly a precipitation of increasing Taiwan’s judicial recognition and enforcement of foreign arbitral awards.

the court may be required for an execution order.<sup>25</sup> However, the Arbitration Act does not include environmental dispute in its coverage.<sup>26</sup> Therefore, arbitration is not a feasible means to the resolution of environmental disputes in Taiwan.

Thirdly, mediation (*tyau-jie* or *tyau-chuh*) is known 'as a form of third-party intervention supportive of negotiation'.<sup>27</sup> Currently, three types of mediation through different authorities and procedures are exercised in Taiwan. They are: first, mediation by local government,<sup>28</sup> mediation by courts,<sup>29</sup> and mediation by the Bureau of Foreign Trade (BOFT).<sup>30</sup> Given that a traditional Chinese anti-litigation attitude commonly exists in Taiwan society, in general, mediation is considered to be a practical alternative for the resolution of disputes in Taiwan. However, mediation cannot be conducted if in a pending litigation a court has already rendered a judgment.<sup>31</sup>

In order to further reduce lawsuits, another process -- settlement (*her-jie*) -- may be employed whenever there is a possibility that a settlement will succeed. For instance, an 'in-court settlement' might be reached before a judge rendered the final judgement.<sup>32</sup> The 'in-court

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<sup>25</sup> Article 37(2) and Article 44(2) of the Arbitration Act.

<sup>26</sup> *Ibid*, Article 1.

<sup>27</sup> Palmer, M and S Roberts (1998) *Dispute Processes (ADR and the Primary Forms of Decision Making)*, (London: Butterworths), p. 101.

<sup>28</sup> Shiang-jenn-shyh Tyau-jie Tyau-li [Act of Mediation in Villages, Towns, and Cities 1982](hereafter referred to as Rural Mediation Act)(promulgated and effective on 22 January 1955, last amended on 17 January 1996) in *Six Laws Collection*, (1999), pp. 472-474. The Rural Mediation Act 1982 was enacted to promote mediation by local governments as the preferred form for settling minor disputes.

<sup>29</sup> Article 403 to Article 426 of the Code of Civil Procedure. Mediation by courts is, mainly, provided in the Code of Civil Procedure 1990. The court mediation is, primarily, initiated upon the parties' mutual consent (Article 406-1). Under the court mediation system, very often a judge will in charge of negotiation and helps the parties form a compromise. Once a compromise is reached, the court will document the agreement between the parties. The mediation is made mandatory prior to a formal lawsuit for cases where an insignificant amount is involved or where the subject matters fall within the scope of claims enumerated in the Code (Article 403). The general rule regarding the legal effect of a judicial mediation settlement is that court-mediated agreements are legally binding in the same way as a writ judgment (Article 416).

<sup>30</sup> Arbitration Act 1998 provides the legal foundation and procedural requirement for mediation carried out by the BOFT. Mediation by the BOFT is intended to solve foreign trade disputes with a regard for time duration. In general, the Arbitration Act accords the same legal effects as a final judgment to an arbitration award between the parties, although its enforceability varies between domestic and foreign awards (Articles 37(2), 44(2) and 47).

<sup>31</sup> Article 9 of the Rural Mediation Act 1982.

<sup>32</sup> Article 377 to Article 380 of the Code of Civil Procedure 1990. In-court settlement is different from mediation. The settlement is carried out only after the case is formally reached to the court but before the final verdict was given. However, a settlement reached in court proceedings has the same effects as a final judgment (Article 380).

settlement' parallels a final court judgment. Therefore, a party to the 'in-court settlement' may launch enforcement proceedings should the other party fail to comply with the terms of settlement.<sup>33</sup> However, an 'out-of-court settlement', whether conducted before or after the commencement of litigation, is not binding as a final judgement.<sup>34</sup> Additionally, the principle of *res judicata* is not applicable if a party to the 'out-of-court settlement' ignores the settlement and later sues.<sup>35</sup>

In summary, although it is true that the people in Taiwan have a general tendency to distance themselves from formal litigation, the progressive development and modernization towards legal system in Taiwan have started to effectively employ law, litigation, and the courts to solve disputes. In the meantime, arbitration and mediation also continue to play increasing important roles in settling various disputes.

### 5.2.3 Resolving public nuisance disputes

Growing public environmental consciousness in Taiwan pressured the government to get serious about public nuisance dispute settlement. As mentioned above, there are three major dispute resolution mechanisms available in Taiwan. By reasons of the cost and duration of litigation, heavy burden of proof on the plaintiff, and facing the threshold difficulty of standing requirements, environmental disputes in Taiwan have usually been solved on 'self-help (*tzyh-lih jiow-jih*)'.<sup>36</sup> In order to discourage incidents of 'self-help' and to accelerate the dispute resolution process, during July 1987, the TEPA and the Council for Economic Planning and Development co-operated with the Postgraduate Institute of Law, National Taiwan University, to

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<sup>33</sup> Article 380 of the Code of Civil Procedure 1990.

<sup>34</sup> Judgment (Precedent) 28-Tai-Shang-Tze-2040 (in Chinese), Supreme Court, Taiwan, 1939.

<sup>35</sup> Judgment (Precedent) 20-Tai-Shang-Tze-1586 (in Chinese, Supreme Court, Taiwan, 1931) held that 'the resolution through the processes of out-of-court settlement does not provide a precedent for the resolution of other disputes'.

<sup>36</sup> The meaning of 'self-help (*tzyh-lih jiow-jih*)' in accordance with Article 151 of the Taiwan Civil Code refers to as that 'a person who, in order to protect his or her rights, exercises constraint over the liberty, or seizes or destroys the property, of another person, is not liable to make compensation, provided that the assistance of the Court or other related authorities could not be obtained in due time and there was a danger that if the person did not act immediately, the exercise of his or her right would be rendered impossible or obviously difficult'.

conduct a research project -- the 'Public Nuisance Dispute Resolution and Civil Relief Legal System'.<sup>37</sup> In February 1988, based on the Japanese 'Public Nuisance Disputes Resolution Act' paradigm,<sup>38</sup> the draft of Public Nuisance Disputes Resolution Act was produced.<sup>39</sup> It was promulgated and put into force on 1 February 1992.<sup>40</sup>

The key characteristics of the Public Nuisance Resolution Act 1992 are as follows. First, it sets up a 'Public Nuisance Disputes Mediation Committee'.<sup>41</sup> This mediation committee is an administrating authority that carries out 'the mediator functions in one of two analytically distinctive ways; either by simply providing the linkage through which negotiation may take place; or by actively seeking to eliminate differences'.<sup>42</sup> In an attempt to encourage public confidence, 'adequacy and fairness' are key values for the independent regulatory committee.<sup>43</sup>

Secondly, 'mediation (*tyau-chuh*)<sup>44</sup> -- remediation (*tzay tyau-chuh*)<sup>45</sup> -- arbitration (*tsair-jyue*)<sup>46</sup>' is the process that, under the Public Nuisance Resolution Act 1992, should be used to solve public nuisance disputes.<sup>47</sup> However, arbitration is limited to cases in which there is a claim for compensation, not every case can apply for arbitration.<sup>48</sup>

Thirdly, the Public Nuisance Resolution Act 1992 is a supplementary instrument to the traditional civil relief system. In order to promote and effectively handle public nuisance disputes,

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<sup>37</sup> *State of Environment*, (1995), p. 659.

<sup>38</sup> The modern legal systems of Japan and Taiwan both 'originated from Roman law'. Despite the existence of quite a few differences, they share 'many similarities in the rights relief regime'. Although the Draft of Public Nuisance Disputes Resolution Act was broadly modelled Japanese 'Public Nuisance Disputes Resolution Act', it has taken many specific circumstances which exist in Taiwan's legal system into consideration to localize the regulation so as to acquire a more feasible and suitable law.

<sup>39</sup> After the Institute of Law completed the 'Draft of Public Nuisance Dispute Resolution Act', the TEPA has then carried out two public hearings respectively on 7 and 28 April 1988, to gather public opinion. The draft contains four chapters and consists of 51 articles. It was submitted to the 2123th cabinet meeting of the Executive Yuan for approval. On 18 May 1989, the draft was referred to the Legislative Yuan for resolution. (See *State of Environment*, (1995), p. 659.)

<sup>40</sup> See Chapter One, footnote No. 14.

<sup>41</sup> Article 4 of the Public Nuisance Dispute Resolution Act 1992.

<sup>42</sup> Palmer, M and S Roberts (1998) *Dispute Processes (ADR and the Primary Forms of Decision Making)*, (London: Butterworths), p. 103.

<sup>43</sup> Articles 26 and 27 of the Public Nuisance Dispute Resolution Act 1992.

<sup>44</sup> *Ibid*, Article 14.

<sup>45</sup> *Ibid*, Article 32.

<sup>46</sup> *Ibid*, Article 33.

<sup>47</sup> Article 14 to Article 40 of the Public Nuisance Resolution Act 1992 regulate the process of public nuisance disputes.

<sup>48</sup> *Ibid*, Article 9 and Article 33.

the victims are endowed by the Act with executive rights. Article 30 of the Public Nuisance Resolution Act 1992 explicitly specifies that ‘a mediation accord approved by the court has the same effect as a final civil decision by a court of law’. Hence, the parties may not bring a suit in a court of law over the same subject matter (*res judicata*). As a result, the mediation agreement may serve as legal title for enforcement.

Fourthly, the Public Nuisance Resolution Act 1992, more or less, refers to the existing mediation regime. The mediation regime in Taiwan has been used for resolving certain civil disputes for many years. The mediation regulation stipulated in the Code of Civil Procedure and the Rural Mediation Act 1982 is in fact effectively settling many disputes. In order to abide by the principle of consistency in the legal system, the mediation procedures of the Public Nuisance Resolution Act 1992 are fundamentally in accordance with the Code of Civil Procedure and the Rural Mediation Act 1982.

Fifthly, as mentioned above, the Public Nuisance Resolution Act 1992 is designed to be a supplementary mechanism (channel) to achieve ‘due and just’ ways for dispute settlements. Hence, the Public Nuisance Resolution Act 1992 does not remove the possibility of court adjudication in accordance with the Code of Civil Procedure. Moreover, it does not contain a complex and complete set of regulations for solving disputes, and in particular cases provisions located in other laws or Acts should also be taken into account.<sup>49</sup>

Finally, Article 44 of the Public Nuisance Resolution Act 1992 explicitly expresses that to solve severe environmental problem,<sup>50</sup> the TEPA is empowered to set up an exclusive committee, namely the ‘Public Nuisance Resolution Task Force’, to supervise and co-ordinate the resolution of environmental disputes. Furthermore, the Public Nuisance Resolution Act 1992 also provides an

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<sup>49</sup> For example: Article 49 of the Public Nuisance Resolution Act 1992 expresses that ‘The provisions of the Code of Civil Procedure shall apply, where appropriate’.

<sup>50</sup> For example: the Nan-Tzi scrap metal dispute; Northern Tao-Yuan public nuisance dispute. (See the following Section).

exceptional article<sup>51</sup> to regulate environmental agreements:<sup>52</sup> ‘if the pollution sources breach the environmental agreement, residents of the area may directly secure an injunction without going through mediation procedure’.

However, although the TEPA and the Taiwan government have not only tried to enact more specific environmental Acts and Standards, but also to increase the prosecution of environmental pollution, Taiwan still faces a number of difficulties in resolving public nuisance disputes.

First, regarding the disputes over pollution control, the TEPA has set up stricter standards to control and check pollution sources. Nevertheless, barriers erected by local civic representatives and interest groups make it difficult for environmental control officials to investigate and to identify accurately pollution sources. In addition, it is particularly difficult to crack down on unlicensed factories. Moreover, resistance to pay penalties by polluters retard the process of compulsory execution. Although executing authorities do repeat their follow-up procedures, the evasion of penalties is still a very frequent occurrence.

Secondly, appraising proximate cause and calculating ‘adequate and fair’ compensation, often involves a complicated technology. Currently, the executing authorities experience many difficulties. Sometimes, without sufficient ‘know-how’ in a particular field, they find it difficult in determining the sampling.<sup>53</sup> In some cases, due to the tasks being extremely time demanding and bearing an extraordinary liability, executing authorities do not have suitable experts who can conduct evaluations.<sup>54</sup> Additionally, the parties involved occasionally distrust the evaluation

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<sup>51</sup> Article 30(2) of the Public Nuisance Dispute Resolution Act 1992.

<sup>52</sup> The environmental agreement aim to provide solutions to environmental problems based on consent among project investors, local residents and local government. In the event of breach, the environmental agreement may serve as legal title to have certain action been carried out without entering into mediation.

<sup>53</sup> See a case study -- the incident of northern Tao-yuan seashore -- in the following Section 5.3.

<sup>54</sup> See another case study – the lin-yuan incident – in the following Section 5.3.

reports, arguing that the reports lack of credibility. The defeated parties often resort to outrageous measures of protest.<sup>55</sup>

Thirdly, the outcomes regarding claims for compensation are usually far from satisfactory. The problem of expense and lack of technological 'know-how' considered in relation to environmental nuisance actions diminish the probability that the ordinary citizen will gain environmental justice. In addition, one of the dilemmas for victims of pollution in Taiwan is that the assessment of compensation payable for extensive damage has taken many different forms and terminologies.<sup>56</sup>

Furthermore, regarding appeals via mediation procedure, as the Public Nuisance Dispute Act 1992 relies on the voluntary mediation of the parties involved, usually only minor pollution disputes go to the hsien's mediation committee for a quick and effective solution. Unfortunately, the results of mediation are very often 'unacceptable to both parties'. As a result, the Public Nuisance Resolution Act 1992 does not effectively fulfil the special function of the particular mediation process in resolving environmental disputes.

Given the significant increase in environmental disputes, a pressing need to the Taiwanese government is to develop an alternative effective and fair system for resolving environmental disputes.

### **5.3 Case analysis – weaknesses in the Taiwanese system in the early 1990s**

Since the lifting of the Martial Law in 15 July 1987, an increasing number of large-scale public disputes have arisen, often containing a multiplicity of parties and interests in Taiwan.<sup>57</sup> In

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<sup>55</sup> See above case study, the incident of northern Tao-yuan seashore.

<sup>56</sup> Sometimes it could be named as 'retribution fund (Hwei-kuey Ji-jin)' or 'compensation (Bu-charng-jin)' or even 'damage awards (Peir-chang-jin)' or 'local developing fund (Dih-fang Fa-jan Ji-jin)'. For example, in the Lin-Yuan incident, the environmental damages for pollution cost resulted in the defendant company paying compensation to local villagers for loss of income. In the northern Tao-yuan case, apart from compensation for damage to crops and windbreak forest trees, damage awards were granted for loss of income, social effects, general inconvenience and rehabilitation of land.

<sup>57</sup> One of the most prominent cases was DuPont's decision not to build a titanium dioxide plant in an industrial zone



general, a common practice for settling environmental dispute in Taiwan during the 1990s is to allow statutory provisions to guide a process of consensual dispute resolution. Therefore, a practice combines governmental intervention and negotiation resolves all major environmental cases in Taiwan. Unfortunately, the end result of environmental disputes is unsatisfactory in terms of environmental welfare standards. The following cases studies, which occurred in the early 1990s, may be seen as examples of the need for greater use 'ADR' in Taiwanese environmental disputes.

### **The Lin-Yuan incident<sup>58</sup>**

Perhaps the most critical environmental dispute to have occurred in the early 1990s is the Lin-yuan incident. This occurred in 1988 at the Lin-yuan Industrial Park in Kaohsiung Hsien, where a complex of 18 petrochemical plants was being operated. The wastewater management in Lin-yuan Industrial Park was only designed to have primary stage effluent treatment. This was followed by marine discharge through an offshore outfall pipe via another outlet in the nearby Lin-hei Industrial Park. In October 1988, storm-water runoff from several days of heavy rain exceeded the capacity of the treatment plant. The overflow of untreated wastewater discharged into neighbouring villages and subsequently caused massive damage to local fish farms. As a result, villagers complained that a series of accidents over the previous 10 years had polluted the area with effluent, damaging marine life and reducing their income. They demanded a substantial sum

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near Lukang, Changhua Hsien, because of local residents' protest. (See 'Students Help 'Uncle Chief' Fight Pollution' and 'Du Pont At Last Given Go Ahead for Plant Plans' in *Free China Journal* (Taipei: Kwang-hwa Publishing Co.) 7 April 1986 and 17 April 1989. The President of DuPont Taiwan Ltd pointed out that 'DuPont learned a hard lesson about the importance of community communication (or public participation) when it attempted to locate a plant in Lukang'. The plant was finally given the go-ahead in early 1989 for a new site, at the Kuanyin Industrial Park in Taoyuan Hsien, but with strict environmental safeguards this time. This environmental dispute set an important example in 'the construction of industrial plants in Taiwan'. Another widely publicized incident took place in Ilan where Formosa Plastics, one of Taiwan's largest industrial companies, intended to build another naphtha cracker. Wang Yung-ching, the head of Formosa Plastics, 'had a public debate with the government of Ilan county on television regarding the project'. This was 'an invigorating change' from past practices. (See *Free China Journal*, (1990), (Taipei: Kwang-Hwa Publishing Co), 20 December 1990, p. 7.)

<sup>58</sup> The following case study is summarised from the Report of 'Linyuan gong-yeh-chu Gong-hai Chiu-fen Chu-li lih-cherng' (1989) (Taipei: TEPA, Executive Yuan, in Chinese). Due to this large-scale public dispute involving a multiplicity of parties, the TEPA set up a special committee 'Public Nuisance Supervisory and Management Committee' to settle the dispute. Although the incident does not have a satisfactory outcome in resolving a complex environmental dispute, nevertheless, the result compelled the Taiwan government to initiate the pressing demand for the Draft of the Public Nuisance Resolution Act.

in compensation for environmental damage. In addition, villagers blockaded the entrance of the Lin-yuan Industrial Park and 'forced the closure of Park for four days'.

This case reached the highest level of the government because of 'the great importance of the petrochemical industry to Taiwan and the specific importance of the Lin-yuan Industrial Park'. The petrochemical industry 'provided up to 30 per cent of Taiwan's GNP'. Thousands of Taiwan manufacturers depend on its products. The Lin-yuan Industrial Park provided '70 per cent of the raw materials needed by Taiwan's chemical industry'. In the early 1990s, Taiwan's economy could not pay for a long shut down of the Lin-yuan Industrial Park. As it was, the companies affected 'lost around US\$200million in sales in just those four days'. In addition, the price of raw material rose '20 per cent as a result of this dispute'. In an effort to resolve this environmental dispute and to 'put aside the economic crises', under a 'mixed process' of administrative decision-making and negotiation, the Taiwan government 'compelled 18 companies', which were operated inside the park to pay compensation totalling NTD\$1.27 billion (approximately US\$36,600,000) to local villagers for loss of income, and for a year's grace to modify the industrial park's waste treatment plant.<sup>59</sup>

In this case, during the dispute resolution process, the involved parties did not conduct in a way of 'fair and due procedure' to solve the first major environmental dispute. In stead, the Taiwan government 'were forced to take action due to increasing public demands and pressures'. However, the environmentalists were not content with the outcome of this case. 'The result of paying compensation rather than immediately installing a new plant to alter existing practices set an unsatisfactory precedent'.

#### **The incident of the closure of Nan-Tzi Electronics Ltd**

The scrap metal factories near Er-Zen Creek in Jia-Ding Village, Kaoshiung Hsien had a long history of causing air pollution. In May 1991 and later on, in April 1992, a large quantity of

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<sup>59</sup> Judgement (Precedent) 78- Tai- Pang-Tze- 243 (in Chinese), Administrative Court, Taiwan: 1989.

dioxin was released into the air by the burning of cable wires had caused severe pollution to the nearby Kerliau Elementary School. The cause of pollution was the burning of scrap circuit boards at a junkyard near the seashore right behind the school. The circuit boards were from the factory of Nan-Tzi Electronics Ltd in Nan-tzi Industrial Park.<sup>60</sup>

On 1 May 1992, the environmental agency in Kaoshiung Hsien imposed an administrative fine of NTD\$210,000 (approximately US\$6,100) and said it would proceed with a possible criminal prosecution against Nan-Tzi Electronics Ltd. The latter admitted the ownership of these burnt circuit boards but argued that it should not bear any legal liability, because the company had followed the procedures laid down in government regulations to deal with unwanted waste circuit boards and held tracking forms as proof.<sup>61</sup>

Minister Tsou of the TEPA was furious about the event and ordered the imposition of a severe penalty on the Nan-Tzi Electronics Ltd. According to Article 19<sup>62</sup> of the Air Pollution Control Act (APCA) 1982, Minister Tsou ordered closure of the factory and a fine of NTDS 1million (approximately US\$29,000).<sup>63</sup> He suggested that the company had violated regulations by handing over the scrap metal to the Ng-cheng Company, which had no special licence to manage such materials. The TEPA also fined Ng-cheng Company and closed it down.

Nan-Tzi Electronics Ltd was shocked by TEPA's decision<sup>64</sup> and argued that 'the damage of closure could never be recovered. It would bring the company down and there were about 80 companies, including many international famous companies such as IBM, which would also be affected by their closure'. Moreover, Nan-Tzi Electronics Ltd is a listed company on the Taiwan Stock Exchange, and innocent stockholders would suffer great losses.<sup>65</sup>

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<sup>60</sup> *Chinese Times (Zhong-guo Shi-bao)*, 1 May 1992, p. 7.

<sup>61</sup> *Chinese Times (Zhong-guo Shi-bao)*, 2 May 1992, p. 9.

<sup>62</sup> Article 19 of the APCA 1982 prevented any illegal burning of material that emitted odorous or poison gas.

<sup>63</sup> *Chinese Times (Zhong-guo Shi-bao)*, 3 May 1992, p. 7.

<sup>64</sup> *United Daily News (Lian-ho-bao)*, 3 May 1992, p. 6.

<sup>65</sup> *United Daily News (Lian-ho-bao)*, 9 May 1992, p. 9.

However, after a long-running negotiation, an agreement was finally reached between all relevant authorities. The agreement concluded that

Due to the Nan-Tzi Company's negligence, the company had to accept the decision of closure imposed by the TEPA. Secondly, however, the company could apply to resume production immediately after the closure, except for the production of electronic circuit boards. Thirdly, the company must remove the burning scrap circuit boards located behind the school and apply to the TEPA and Kaoshiung Hsien local government for examination of the area. Fourthly, the company must submit to the TEPA a proper plan for managing such industrial waste in the future. Fifthly, only after the above third and fourth items of agreement had been approved by the TEPA, could the company apply to reproduce electronic circuit boards again.<sup>66</sup>

In this case, although a solution was reached through a form of governmental intervention and various processes of bargaining negotiation, there was clearly a lack of integrated co-operation between the TEPA and relevant departments, which resulted in contradictory recommendations.<sup>67</sup>

#### **The incident of northern Tao-yuan seashore**

The livelihood and property of residents of the four seashore villages of Northern Tao-yuan Hsein, Lu-tzu, Da-yuan, Guan-in and Sing-wu, had always suffered from 'the strong winds and salty fog from the sea' that affected this part of the Taiwan coast. A small forest acted as a windbreak along the seaside, reiterating the impact of the wind and the fog. However, 'some 70 per cent of the forest' was cut down for development. Later on, the Lin-Kou Power Plant of the Taiwan Electric Company, a government-run public company, was built, and in full operation in near area. Its emission of smoke and soot polluted the area and the quality of the air worsened significantly. The very few remaining trees that survived began to die out. As a result, 'the strong sea wind and heavy salty fog' significantly affected the production of local crops and damaged the livelihood of the farmers in that area. Farmers complained the situation to the relevant authorities.

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<sup>66</sup> *United Daily News* (Lian-ho-bao), 10 May 1992, p. 5.

<sup>67</sup> *Chinese Times* (Zhong-guo Shi-bao), 15 May 1992, p. 5. Although the outcome of this case is not totally satisfactory by the authorities, nevertheless, the incident ensured that the TEPA and the Economy Department fully co-operated on similar cases in the future, and two Departments decided to inspect and prevent any release of toxic industrial wastes in any kind.

In October 1988, 'about 400 farmers from the four villages backed by civil representatives and the Tao-yuan Hsein governor', blockaded the Taiwan Electric Company in protest and demanded compensation for the damage. All parties, including 'the farmers, the MOEA, the TEPA, Hsien governors and local civil representatives', had made an agreement to set up a 'Coastline Public Nuisance Settlement Arbitration Committee' to deal with compensation issue.<sup>68</sup>

Taiwan Electric Company, with the assistance of the Agricultural and Forest Department, employed experts who carried out nine different research reports, which all suggested that 'the main cause of destruction of the windbreak forest was the strong sea wind mixed with sand and salty fog, not the emissions of the Taiwan Electric Company'. But the residents of the villages had strong doubts about the reports.<sup>69</sup> The TEPA also had 'certain reservations' towards the results and insisted that a 'Special Task Force' to re-do the surveys and to investigate the area thoroughly. In January 1991, the 'Special Task Force' concluded that

Although it was not the solely direct cause, the evidence showed that the emission by the power station of Taiwan Electric Company, contains sulphur dioxide and other material, did constitute one of the many causes of the destruction of trees along with other remote causes like salty fog and sand soot. But the Special Task Force was unable to estimate the percentage of damage done by each possible cause.<sup>70</sup>

This report clearly contradicted the earlier findings, and indicated the possible legal liability of the Taiwan Electric Company for the losses incurred by the seashore farmers.

In April 1991, the Industrial Public Nuisance Settlement Committee of the Executive Yuan held a special meeting 'urging the TEPA to set up a team of members from the Council of Agriculture and NGOs to make a careful study of the incident and estimate the damage of the farmers'. The Committee revealed that 'it would take at least one year to appraise the compensation'. The farmers were not satisfied with the decision. Subsequently, the farmers set up a 'Special Claiming Body' to push the pace of compensation and demanded that the amount of

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<sup>68</sup> *White Paper on Public Dispute Settlement*, (1991), p. 74.

<sup>69</sup> *Chinese Times (Zhong-guo Shi-bao)*, 1 January 1991, p. 4.

<sup>70</sup> *White Paper on Public Disputes Settlement*, (1993), p. 216.

NTD\$23 billion (approximately US\$663,000,000). Although the Taiwan Electric Company was willing to 'admit its partial responsibility' for the losses of the farmers, 'compensation would not be given until the TEPA had researched the costs of estimated damages'. Due to the uncertainty of allocating liability towards the damage, the farmers were determined to continue protest until an affirmation of compensation was promised by Taiwan Electric Company.<sup>71</sup>

With an effort to settle the dispute, a special meeting was set up at the Legislative Yuan on 19 November 1991. Following the meeting, 'the MOEA agreed to grant NTD\$800 million (approximately US\$23,050,000) to the local government of Northern Tao-yuan Hsein, and Taiwan Electric Company also approved NTD\$80 million (approximately US\$2,305,000) as compensation. The fund of NTD\$880 million (approximately US\$ 25,400,000) would be distributed between members of the four villages'.<sup>72</sup> The Mayor of Tao-yuan Hsein was pleased with the decision and persuaded the farmers to cancel the protest action on 24 November 1991.<sup>73</sup>

After much foot-dragging, this environmental dispute was finally resolved with an agreement between the parties. In February 1993, the MOEA confirmed that 'from 1994 a budget had been set up with NTD\$800 million (approximately US\$23,050,000) in the name of the Local Developing Fund. Taiwan Electric Company also acknowledged another NT\$80 million (approximately US\$2,305,000) would be reimbursed to the local government in the name of Electricity Development Fund to subsidise local development projects'.<sup>74</sup>

The case revealed that to find a balance between resolving an environmental dispute and securing 'fair and adequate' compensation for injured parties is very difficult. The outcome of this case indicated that 'the TEPA did find pollution, but no evidence linking it to the plant'. In addition, the authority 'condemned public protest as an irrational action, and also revealed that

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<sup>71</sup> *Chinese Times* (Zhong-guo Shi-bao), 1 November 1991, p. 4.

<sup>72</sup> *United Daily News* (Lian-ho-bao), 20 November 1991, p. 3.

<sup>73</sup> *Ibid.*

<sup>74</sup> *Chinese Times* (Zhong-guo Shi-bao), 3 February 1993, p. 6.

usually such protest are the result of local politicians bent on extorting money from industry'.<sup>75</sup>

Moreover, this environmental dispute revealed, 'policy inconsistencies lowered the TEPA's credibility and undermined trust in government'.<sup>76</sup>

The above three cases point out a few problems faced in Taiwanese environmental case. These cases strongly illustrate the inadequacies of informal inter-governmental agreements. The status of these agreements is unclear. Although the Public Nuisance Resolution Act 1992 by now has been promulgated and put into force, it does not successfully sort out environmental conflict. An alternative system is inevitably required in order to solve environmental disputes effectively. Equally problematic are the on-going relationships between government and the public. As can be seen from these cases studies, communication between government and the public are worked out poorly. But there is a heavy price to pay for this necessity; there is the increased likelihood that on-going relationships will compromise government's ability to make decisions. Clearly, in these cases, the outcome is unsatisfactory in terms of environmental welfare standards.

Therefore, until the reform of a legislative basis for dispute resolution process is made, alternative process is likely to continue to be viewed by government and industry as a problem, rather than a positive approach to government enforcement.

#### **5.4 Need for procedural reform in Taiwan**

As mentioned above, although traditional legal and political processes have solved some disputes in the environmental field, there is a need to expand and improve the use of 'ADR' techniques and for procedural reform. By and large, various alternative forms of dispute resolution have developed into an accepted part of the legislative and policy-making process. In general, 'ADR' provides alternatives to using litigation as a method of solving disputes. In some ways, this

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<sup>75</sup> *White Paper on Public Disputes Settlement*, (1993), p. 216.

<sup>76</sup> Wehrfritz, G (1992) "Asia's Richest, But Also Dirtiest", *Far Eastern Economic Review*, (29, October), (Focus Environment), p. 38.

flexible resolution channel may enhance the success in settling environmental disputes. This section examines the state of 'ADR' in Taiwan. The objective of this section is to identify how to reform the 'ADR' procedure so as to facilitate the resolution of environmental disputes. Although there are no clear solutions, it is vital to start evaluating applicable possibilities.

As pointed out in the previous section, by reasons of the cost and duration of litigation, and the heavy burden of proof on the plaintiff, environmental disputes in Taiwan have usually been solved without recourse to litigation. In order to discourage incidents of 'self-help' and to accelerate the dispute resolution process, the Public Nuisance Dispute Resolution Act 1992 was promulgated. Within the framework of this Act, there are three means of dispute resolution. Filing fees, are required.<sup>77</sup> In addition, a settlement proposal accepted by the parties must be submitted to a court for approval.<sup>78</sup>

Given that a traditional Chinese anti-litigation attitude commonly exists in Taiwan society, and in the light of the intrinsic value of mediation as a 'consensus-based dispute resolution mechanism', it seems that mediation should be played a role as the favoured dispute resolution procedure. However, in practice, the Public Nuisance Dispute Act 1992 relies on the voluntary mediation of the parties involved. The filing fee requirement has discouraged private parties from using such proceedings. Besides, the common practice for settling environmental dispute in Taiwan is to allow statutory provisions to guide a process of consensual dispute resolution.<sup>79</sup> Under a combination process of administrative decision-making and negotiation, the environmental agency officers have to ensure that regulations have been implemented

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<sup>77</sup> Article 43 of the Public Nuisance Dispute Resolution Act 1992.

<sup>78</sup> *Ibid*, Article 28.

<sup>79</sup> The Public Nuisance Dispute Resolution Act 1992 provides a legal basis for settling environmental disputes. Additionally, in order to establish the rule of determining the cause and responsibility of public nuisance dispute, and to enhance the ability to conduct evaluation in all levels of the TEPA authorities, the TEPA compiled the "Public Nuisance Determining Technology Manual" in June 1992. (See *White Paper on Public Dispute Settlement*, 2000, pp. 48-50.) Furthermore, Article 1 of the Taiwan Civil Code states that 'in civil matters, if there is no provision of law applicable to a case, the case shall be decided according to custom. If there is no such custom, the case shall be decided in accordance with the general principles of law'. (See *Six Laws Collection*, (1999), p.139.) The 'principles of equity' are a part of the general principles of law.



‘firmly but fairly’.<sup>80</sup> As to the quantum of compensation, it is usually left for the parties to decide through negotiation.

As the above mentioned cases indicate, by and large the government imposes settlement. Unfortunately, such an approach is unlikely to achieve anything constructive. In addition, the outcome in most cases is unsatisfactory in terms of environmental welfare standards. Hence, the Public Nuisance Dispute Resolution Act 1992 has not been effective in resolving environmental disputes. In order to improve this situation, it is essential for the Taiwan government to improve understanding of the problems associated with the current application of non-adjudicatory processes, as well as to foster an effective and fair use of ‘ADR’ to resolve environmental disputes, particularly waste management related disputes.

In general, ‘ADR’ refers to the broad variety of methods ‘by means of which conflicts and disputes are resolved other than through litigation’.<sup>81</sup> Among these, environmental mediation aims to ‘resolve the dispute by mutual consent through a process of assisted negotiation’.<sup>82</sup> Given this, mediation seems to bring in ‘the possibility of greater public involvement in decision-making as well as encouraging more flexible and creative results’.<sup>83</sup>

Despite the fact that mediation may have merit in being a ‘flexible and creative’ character, the development of environmental mediation in Taiwan has been hindered by the lack of available resources to support the emerging profession of mediation. At present, the mediator is usually employed in the executive branch of the government department either at central governmental level or a local level,<sup>84</sup> with a brief to encourage and promote the use of mediation to solve land use, environmental, and other public policy disputes.<sup>85</sup> The advantage of this situation is that the mediator is usually learned about the related laws and regulations.

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<sup>80</sup> Articles 26 and 27 of the Public Nuisance Dispute Resolution Act 1992.

<sup>81</sup> Goss, J (1995) “An Introduction to Alternative Dispute Resolution”, *Alberta Law Review*, Vol. 34, No. 1, p. 2.

<sup>82</sup> Harrison, J (1997) "Environmental Mediation: The Ethical and Constitutional Dimension", *Journal of Environmental Law*, Vol. 9, No. 1, p. 80.

<sup>83</sup> *Ibid.*

<sup>84</sup> Articles 4 to 8 and Article 44 of the Public Nuisance Dispute Resolution Act 1992.

<sup>85</sup> Article 1 of the Public Nuisance Dispute Resolution Act 1992.

The negative aspect is that the mediator might be less accountable to the parties, and the process might be less transparent, as the mediator may not be independent in every respect. Although lawyers in Taiwan are gradually developing environmental mediation as a new area of professional practice, their involvement is fairly limited due to the high fees they charge, and also because only some trained mediator-lawyers are willing and able to take on mediations themselves. In addition, the difficulty of unequal access to information and other resources remains an obstacle. However, in spite of these limitations, alternative dispute resolution is a better way than adjudication.

There is no single solution to this difficulty but some suggestions can be proposed. For instance, the government could amend certain statutes and regulations so that technical assistance grants are made available for those participating in negotiations, especially environmental pressure groups and local community groups. In addition, the Taiwanese Law Society (*liuh-shy gong-huey*) may also play a part in backing the setting up of academic and independent resolution institutions that are willing to offer mediation services at little or no cost to local groups. Overall, if these possibilities are to become a reality, mediators 'shall conduct environmental disputes fairly, diligently, and in a manner consistent with the principle of self-determination by the party'.<sup>86</sup>

Thus, if Taiwan aspires to integrate the practice of environmental mediation into the resolution of public dispute, mediators in Taiwan will need to cultivate their own 'ethical'<sup>87</sup> principles in keeping with the framework of legal and political arrangements. In my point of view, these should contain the following elements. First, each mediator shall independently exercise his or her duties in accordance with law and free from bias.<sup>88</sup> Secondly, mediators should make all efforts to provide parties with appropriate advice so as to reach an applicable

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<sup>86</sup> Harrison, J (1997) "Environmental Mediation: The Ethical and Constitutional Dimension", *Journal of Environmental Law*, Vol. 9, No. 1, p. 93.

<sup>87</sup> *Ibid.*

<sup>88</sup> Article 7 of the Public Nuisance Dispute Resolution Act 1992.

agreement.<sup>89</sup> Thirdly, there should be a duty on mediators to safeguard the rights and the interests of all parties, including the interests of unrepresented parties.<sup>90</sup> And finally, in order to 'fairly and promptly' handle public nuisance dispute, it is essential to ensure that the process is running openly.<sup>91</sup> If these requirements are met, I believe that alternative dispute resolution processes can offer a constructive gateway of reaching consensual results that are beneficial to all parties.

Given the desirability and necessity of expanding the usage of 'ADR' on a large scale, a further and pressing need for the Taiwanese government is to develop a workable scheme of dispute resolution for resolving environmental disputes. In my view, it would be a good idea for Taiwan to adopt the policy of 'the multi-door courthouse'<sup>92</sup> where, in effect, 'the parties in disputes have a clear range of choices as to what dispute resolution procedure they can follow'. This model has all the 'doors' -- 'under one roof'-- containing a multifaceted network to provide comprehensive dispute resolution system.<sup>93</sup> A 'provisional' access of 'multi-door courthouse' could involve 'a screening and referral clerk who would seek to diagnose incoming cases and refer them to the most suitable alternative dispute resolution mechanisms'.<sup>94</sup> However, there exists a critical difficulty. That is whether or not the 'specialists' have enough ability to classify a mixture of devices.<sup>95</sup> This skill is indispensable so as to appropriately direct a specific type of case to a right and suitable process or mechanism. Although I cannot be sure how the process might grow and mature given that alternative dispute resolution mechanisms in Taiwan are still at a primitive stage, it is important to start to evaluate workable possibilities.

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<sup>89</sup> Article 26 of the Public Nuisance Dispute Resolution Act 1992.

<sup>90</sup> Ibid, Article 1.

<sup>91</sup> Ibid, Article 23.

<sup>92</sup> Sander, F E A (1985) "Alternative Methods of Dispute Resolution: An Overview", *University of Florida Law Review*, Vol. 37, No. 1, p. 12.

<sup>93</sup> Ibid.

<sup>94</sup> Ibid. The available mechanisms might contain 'mediation, arbitration, court adjudication, fact-finding, mal-practice screening, media action lines or an ombudsman'.

<sup>95</sup> Ibid.

In order to successfully cultivate 'ADR' processes in Taiwan, it will demand a great deal of effort to expand 'the presently limited understanding of the field'.<sup>96</sup> Progress can only be made by continuous 'experimentation and research', together with further endeavours to re-conceptualise the field.<sup>97</sup> Thus, until a firm legislative basis for alternative dispute resolution is achieved, alternative dispute resolution is not likely to be seen by government and the public as 'the vehicle for pursuing strategies of settlement dispute'.<sup>98</sup>

### 5.5 Mediation and public participation

As pointed out in Chapter Three, one of the current waste management crises in Taiwan is centred on site selection and the process by which the site are chosen. Documented evidence revealed that public opposition and the lack of constructive public participation are two key obstacles in reaching the decision of site selection. The authorities in Taiwan have become vary familiar with the phenomenon of public protest that now attends every major facility siting decision. Since public participation has not been effectively used, the introduction of mediation into the siting process is a skilful and better means of reaching siting decisions.

Mediation, or mediated negotiation could bring certain positive effects in the operating public process. In general, mediation is a voluntary process in which the mediator(s) addresses the communication problem by bringing parties together to negotiate on all issues of concern. Usually, the mediator(s) assists the parties in working out a solution which accomplished their 'individual and collective interests'.<sup>99</sup> In this circumstance, mediation is not only a means of dispute resolution, but it also encourages and improves public participation.

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<sup>96</sup> Sander, F E A (1985) "Alternative Methods of Dispute Resolution: An Overview", *University of Florida Law Review*, Vol. 37, No. 1, p. 18.

<sup>97</sup> Ibid.

<sup>98</sup> Palmer, M and S Roberts (1998) *Dispute Processes (ADR and the Primary Forms of Decision Making)*, (London: Butterworths), p. 1.

<sup>99</sup> McGuire, J E (1986) "The Dilemma of Public Participation in Facility Siting Decisions and The Mediation Alternative", *Seton Hall Legislative Journal*, Vol. 9, p. 470.

In general, broader right of access to environmental information and greater opportunities to participate in decision-making process could prevent protests in the later stages of environmentally sensitive projects. Access to environmental information is also intended to assist participation by the public in decision-making. All these efforts will facilitate the process of mediation or mediated negotiation in resolving disputes. Hence, the following section reviews the linkage between mediation, public participation and related issues.

### 5.5.1 Access to information and public participation

‘The right of access to environmental information, whether to the public at large or to specific categories of person (such as workers), is a recent development in international law’.<sup>100</sup>

The EC Directive on Access to Environmental Information provides that

Every citizen shall have the right to demand and receive information on any matter of public importance. Any natural or legal person is entitled access to information relating to the environment without having to show an interest, at a charge not exceeding a reasonable cost, upon request.<sup>101</sup>

In addition, Agenda 21 provides that

Individuals, groups and organisations should have access to information relevant to environment and development held by national authorities, including information on products and activities that have or are likely to have a significant impact on the environment, and information on environmental protection measures.<sup>102</sup>

Moreover, the connection between ‘access to environmental information’ and ‘the right to a shared responsibility for creating a decent environment’ has progressively emerged at national and international levels. For instance, the UK 1990 White Paper *This Common Inheritance* states that ‘the responsibility for the environment is shared; it is not a duty for the government alone, but an obligation on all’.<sup>103</sup> Hence, ‘access to environmental information’ seems to take part of the cause of holding a vital function to play in safeguarding the environment.

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<sup>100</sup> Sands, P (1995) *Principles of International Environmental Law* Vol. 1, (Manchester: Manchester University Press), p. 616.

<sup>101</sup> Article 3 of the EC Directive on Access to Environmental Information, Council Directive 90/313/EEC, Official Journal of the European Communities 158, 23 June 1990.

<sup>102</sup> Robinson, N A (1993) *Agenda 21: Earth's Action Plan*, (New York: Oceana Publications), para. 23.3.

<sup>103</sup> The 1990 White Paper -- *This Common Inheritance: Britain's Environmental Strategy*, (London: HMSO), para.

By and large, the environmental information could be classified into three categories.<sup>104</sup>

The first type is labelled as 'selective access environmental information'. Various registers of environmental data and the journal of official or informal reports for 'dissemination to the general public or to specific groups' are examples of this type of provision of information.<sup>105</sup> This environmental information generally addresses interpretation to particular data that 'earns them a constructive source of information in a specific context'.<sup>106</sup>

The second category of information can be classified as 'the dependent measure'.<sup>107</sup> This 'dependent measure' indicates that the environmental information is dependent on other policy measures, processes or procedures. The best illustration to represent this measure is the process of environmental impact assessment (EIA).

The third type can be marked as 'the independent approach', which is 'a right to request information that is independent of any process, procedure or interest'.<sup>108</sup> The third type of 'independent approach' suggests that access to environmental information is not limited or restricted by the provider. The most significant model of this type is the EC Directive 90/313 on Freedom of Access to Information on the Environment, which 'endorses freedom of access to any natural or legal person to information on the environment retained by public authorities subject to limited exemption, which are imperative to protect legitimate interests of privacy or confidentiality'.<sup>109</sup>

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<sup>104</sup> Kimber, C J M (1997) "Access to Justice and Freedom of Environmental Information", W G Hart Legal Workshop, Institute of Advanced legal Studies, (unpublished paper).

<sup>105</sup> Ibid.

<sup>106</sup> Such as: *Taiwan Environmental Protection Administrative (TEPA) Register*, TEPA Public Notice, Executive Yuan (Cabinet) Order. An additional representative of the selective type is the provision of reports. Reports can bear a number of various forms, such as 'annual reports' or 'guidance memorandum' of agencies and public bodies, official publications by government or governmental reports in the form of a policy statement. Such as: *the Interim Report: A Review of Medical Waste Management* (1997).

<sup>107</sup> Kimber, C J M (1997) "Access to Justice and Freedom of Environmental Information", W G Hart Legal Workshop, Institute of Advanced legal Studies, (unpublished paper).

<sup>108</sup> Ibid.

<sup>109</sup> The 90/313/EC Directive permits certain exemptions, such as 'for national defense, public security, commercial secrets, and cases before the courts'. Also exempt is 'the disclosure of environmental information whose dissemination could actually threaten the environment, for example the location of nesting sites of rare species'. (See Johnson, S P & G Corcell (1995) *The Environmental Policy of the European Communities*, (2<sup>nd</sup> edn),

Unfortunately, at the time of writing, Taiwan does not have any provisions to encourage access to environmental information. In addition, due to the fact that there is no law to regulate procedures for the release of governmental information to the public, the competent authorities in Taiwan enjoy a great deal of discretion to classify information as confidential. Particularly, in the field of the environment, there is no assurance to the right of freedom of environmental information. Moreover, the relevant authorities very often regard certain environmental data as confidential and to be made available only to certain persons who hold particular official positions in the system of environmental protection. The lack of transparency of governmental institutions is also influential factors in releasing environmental information to the public. Although the right for public participation is declared in the Environmental Impact Assessment Act 1994,<sup>110</sup> the legislative body does not seem to be adequately approachable to the public, which appears a failure to achieve a required standard.

At present, in Taiwan, some governmental departments or official bodies<sup>111</sup> have their own public registers that generally hold certain details under a given regime. Normally, these different official bodies have their individual form and publish their registers at different dates. In some cases, certain official bodies<sup>112</sup> do not have their own public registers; those official bodies publish their executive orders or administrative regulations within other registers.<sup>113</sup> Although members of the public have no more than a limited entitlement to access environmental information, there is nothing to prevent public authorities taking a more open approach of arrangement for publishing their own registers. However, there is little evidence of this happening in practice in Taiwan. As a result, this handicaps the role of public registers.

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(London: Kluwer Law International), p. 367.)

<sup>110</sup> For example, Articles 10, 12 and 13 of the Environmental Impact Assessment Act 1994.

<sup>111</sup> Such as: the TEPA and the Legislative Department.

<sup>112</sup> For instance: the Nuclear Power Development Committee.

<sup>113</sup> The Nuclear Power Development Committee always publishes their orders or regulations in the President Hall Register (*Zong-tong-fu Gong-bao*).

How does public participation together with free access to environmental information lead to better protection of the environment? From my point of view, the accessibility of information on the state of the environment gives rise to public consciousness of the effects of pollution and human activity on the environment. This increased awareness may well steer citizens to be more concerned about their environment and demand that government or polluters act in a more environmental friendly manner, and thereby protect the environment. This strong desire of protection of the environment might then develop as an issue on the political agenda. As a result, the availability of information and public participation will provide citizens with the knowledge and power to hold the government accountable for its actions. Thus, the effectiveness of public participation and the right of access to environmental information will therefore develop into an influence channel in achieving better environmental protection -- including the establishment of waste management facilities.

Taken as a whole, in the environmental field, adequate environmental information has the capacity to spread knowledge about a serious negative aspect on the future of the environment. Its effectiveness depends on encouraging public participation. In this respect, much remains to be done. Accordingly, Taiwan needs better legislation to enhance the quality of public participation in each individual case. For the purpose of fostering better environmental protection, broader participation rights, together with freedom of information, and the creation of an independent commission against corruption, are essential possible reforms.

Therefore, I strongly suggest that the Taiwan government should re-evaluate the positive role of the right of access to environmental information. In addition, in order to avoid conflicts emerging in the later stages of a project, public participation should be involved as early as possible. The public might also play a key part in 'post-activity monitoring'. In my view, greater access to environmental information will result in increasing involvement and participation by the



public in environmental problems. Subsequently, this will smooth the progress of resolving environmental disputes.

### ***5.5.2 Mediation and public participation***

As mentioned above, currently in Taiwan, there is only limited environmental information made available to the public. It is not surprising that there is little opportunity for the public to voice their opinion. This deficiency became especially critical when the issue is related to the setting of waste disposal sites.

Prior to political liberalisation in the mid-1980s, decisions on major public construction projects were made solely by the executive agencies and legislature. The public had no legal basis on which to participate. After moderate political reforms, the plebiscite for the establishment of the fifth naphtha-cracking plant in Kaohsiung hsien was held in 1992. A majority of the residents rejected the project in spite of prospective benefits stressed by the government.<sup>114</sup> Also the building of the fourth nuclear power station in Taipei hsien, the plebiscite was held in 1994. The result was an overwhelming 96.99 per cent vote against the installation.<sup>115</sup> The advantages of public participation are well illustrated by the public environmental awareness inherent in such issues.

As pointed out in Chapter Three, Taiwan is facing waste management crisis, which is centred on the location of the sites and the process by which the sites are chosen.<sup>116</sup> Many public officials in different hsiens who were involved in the attempt to site waste facilities have faced the anger of the public whose vigorous message is 'not in my backyard'. As a result, fewer sites have actually been chosen and disputes over the location of such sites have erupted.

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<sup>114</sup> The original result was not clear by the writer, but the issue was reprinted in *Liberty Times* (Zi-you Shi-bao), 2 June 1996, p. 7.

<sup>115</sup> *Liberty Times* (Zi-you Shi-bao), 27 January 1995, p. 9.

<sup>116</sup> *Liberty Times* (Zi-you Shi-bao), 4 June 1997, p. 9 and 12 June 1997, p. 7.

Public participation 'in and of itself' is not an 'obstacle'.<sup>117</sup> To some extent, the difficulty remains in 'the way the siting process is carried out by officials and perceived by the public'.<sup>118</sup> However, one of the primary problems found in the current permissions process in Taiwan is a lack of early public input. If accurate and relevant information is made accessible to the public, many issues<sup>119</sup> that can be directly addressed by bringing parties together to negotiate.

Of course, such mediated negotiations will not be easy. In general, it pursues the following steps.<sup>120</sup> First is to set down the 'siting criteria'.<sup>121</sup> Following that several sites, which satisfy the criteria, would be chosen. The government agency responsible for siting would negotiate with the specific proposed borough to settle the 'terms and conditions' acceptable to the individual community. These 'terms and conditions' would be noted down in a siting agreement. Thus, the people most directly affected by the siting decision would have participated in sitting a facility in their community before the final decision is made. Public officials making the final decision would have the advantage of reviewing different siting agreements and could base their decision on the best available alternative. Such efforts would have an effect on strengthening the meaningful public participation that is so necessary in making sound siting decisions.

However, there exists a further difficulty for the public or all interested parties who seek to take part in mediated negotiation in resolving siting selection in Taiwan. That is, the public frequently has an unequal ability to participate, owing to the public lacking the resources to conduct studies on all relevant issues. Hence, in order to enhance the current situation, the Taiwan government needs to improve the functioning of the access to information. In addition, a parallel duty on the part of public authorities needs to reinforce so as to provide the information being

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<sup>117</sup> McGuire, J E (1986) "The Dilemma of Public Participation in Facility Siting Decisions and The Mediation Alternative", *Seton Hall Legislative Journal*, Vol. 9, p. 468.

<sup>118</sup> Ibid.

<sup>119</sup> Such as: the fear of exposure to air pollution, the impact on property values, and the effect on the quality of life and exquisite of the community.

<sup>120</sup> Interviewed with Dr. Y R Chen, (Secretary General of the TEPA), Mr. Chun-lu Lin (Section Chief, Bureau of Performance Evaluation and Dispute Settlement), Mr. Kuen-shan Liu (Senior Staff officer, Bureau of Solid Waste Control), Mr. Chin-Hwei Jiang (Senior Chief, Taipei City Government, Waste Management Department) and Mr. Li-Der Lu (Editorial Writer, Executive Secretary, China Times) during the fieldwork conducted on 1998 and 2000.

<sup>121</sup> Article 6 and Article 13 of the Waste Disposal Act 2001.

demand. This is fundamental, yet an essential, safeguard ensuring that the public will have effective access.

Based on the above findings, an option to utilize mediation will work effectively in resolving the dispute of siting agreement. In addition, mediated negotiation among local citizens, public officials and other interest parties is a powerful technique in enhancing meaningful public participation that is so necessary in making sound siting decisions. Hence, mediation is not only a feasible alternative, but also a better means to resolve waste management disputes.

## **5.6 Conclusion**

Disputes and their resolutions have been an important issue which has been deliberated in Taiwan for many years. Attention here has been focused on the extent to which reformed and new disputes resolution mechanisms may provide a better solution to the problem. In general, there are three major dispute resolution mechanisms available in Taiwan, namely litigation, arbitration and mediation. Litigation has long been the primary dispute resolution mechanism in Taiwan. However, it is noteworthy that by reasons of the cost and duration of litigation, and heavy burden of proof on the plaintiff, environmental disputes in Taiwan have usually been solved without recourse to litigation.

Secondly, arbitration has been broadly recognized as an efficient alternative to litigation in relation to resolving commercial disputes in Taiwan. Nevertheless, the Arbitration Act 1998 does not include environmental dispute in its coverage. Hence, arbitration is not a feasible approach to resolving environmental disputes in Taiwan.

Thirdly, mediation is a “consensus-based” dispute resolution mechanism. Currently, three types of mediation through different authorities and procedures are exercised in Taiwan. These are: first, mediation by local government, mediation by courts, and mediation by the Bureau of Foreign Trade. Given that a traditional Chinese anti-litigation attitude commonly

exists in Taiwan society, in general, mediation is considered to be the most important and practical alternative for the resolution of disputes in Taiwan.

Last but not least, in order further to reduce lawsuits, another process -- settlement -- may be employed whenever there is a possibility that a settlement will succeed. Overall, the progressive development and modernization towards legal system in Taiwan have started to effectively employ law, litigation, and the courts to solve disputes. Meanwhile, both arbitration and mediation also continue to play increasingly important roles in settling various disputes as alternatives to litigation and the courts.

Although traditional political and legal processes have been successful in settling some disputes in the environmental arena, the desirability and the necessity in developing adequate application in the processes of the 'ADR' is apparent. Indeed, 'ADR' processes can offer more 'flexible and creative results' than litigation. At present, the lack of a legislative basis for alternative dispute resolution in Taiwan has 'obstructed, but not precluded, the use of 'ADR' processes to address environmental conflict'.<sup>122</sup> Based on the above findings, this research suggests that mediation is not only a feasible alternative, but also a better means to resolve waste management disputes. There is an increasing need for greater use of 'ADR' processes and public participation in environmental decision and rule making, so that a further and pressing necessity for law reform is to develop an effective and fair system of 'ADR' to resolve environmental disputes in Taiwan. Formalising new procedures through some forms of 'legal transplant' would, at a minimum, 'ensure consistency between 'ADR' processes and might, in addition, be used to ensure fairness to participants'.<sup>123</sup>

In addition, this Chapter has also examined the issue of public participation and its related issues. Two brief points can be made. First, the public can meaningfully be involved in dispute

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<sup>122</sup> Harrison, J (1997) "Environmental Mediation: The Ethical and Constitutional Dimension", *Journal of Environmental Law*, Vol. 9, No. 1, p. 93.

<sup>123</sup> Swanson, E J (1995) "Alternative Dispute Resolution and Environmental Conflict: the Case for Law Reform", *Alberta Law Review*, Vol. 34, No. 1, p. 277.

settlement that does not conflict with the basic environmental policy or decision-making.

Secondly, and more decisively, many environmental cases are concerns of local application -- whether a certain discharge into surroundings should be allowed, or where a hazardous waste site should be located -- and are in many cases as critical to citizens as they are complex to national policies. Thus, for Taiwan, a practical strategy towards the protection of the environment is to associate the formal procedure of environmental enforcement with the informal instrument of public participation. Increasing public participation is accordingly a demanding task.

## Chapter 6 Sustainable Development in Taiwan

### 6.1 Introduction

The currently widely-used definition of ‘sustainable development’ -- as adopted by the World Commission on Environment and Development (WCED) in 1987 -- is brief: ‘sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs’.<sup>1</sup> The UN Conference on Environment and Development explicitly declared that sustainable development is a formula as well as a pragmatic objective.<sup>2</sup>

The expression of ‘sustainable development’ is used and interpreted in many different ways. In line with the (2000) *Planning for Sustainable Development in the 21<sup>st</sup> Century*, the following definition has been offered:

The term ‘development’ implies change, progress, and the potential for improvement. ‘Sustainability’ promotes the idea of durability. And that in turn implies that the change must not only be economically viable but also environmentally and socially successful. In other words, ‘sustainable development’ is understood as a form of societal change that, in addition to traditional development objectives, has the objective or constraint of ecological sustainability.<sup>3</sup>

By and large, the overall objective of sustainable development is to ‘ensure a better quality of life for everyone, now and for generations to come’.<sup>4</sup> In addition, the process of sustainable development is generally viewed as ‘requiring major societal changes through radical or incremental restructuring of institutions and management approaches’.<sup>5</sup> Based on the above characterizations, a number of primary notions are included in sustainable development. They are

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<sup>1</sup> World Commission on Environment and Development (WCED) (1987) *Our Common Future*, (Oxford: Oxford University Press), p. 43.

<sup>2</sup> See, for example, Rio Declaration, UN Doc. A/CONF. 151/5 (1992), Principle 10. Also further Principles 20, 21 and 22 on participation of key groups.

<sup>3</sup> UK Round Table on Sustainable Development (2000) *Planning for Sustainable Development in the 21<sup>st</sup> Century*, A contribution to a study by the Royal Commission on Environmental Pollution, p. 1.

<sup>4</sup> The principle of sustainable development includes: ‘first, the need for economic development; secondly, caring for the environment; and thirdly, taking the right decisions’. (See United Kingdom Secretaries of State for the Environment (1994) *Sustainable Development: the UK Strategy*, (London: HMSO), Chapter 3, “Principle of Sustainable Development” pp. 32-34.)

<sup>5</sup> Vanderzwaag, D (1993) “The Concept and Principles of Sustainable Development: “Rio-Formulating” Common Law Doctrines and Environmental Laws”, *Windsor Yearbook of Access to Justice*, Vol. 13, p. 42.

as follow: first, sustainable development delivers the idea that environment, development and social concerns should be integrated in decision-making. Secondly, the notion of sustainable development is generally related to the principle of equity. This means that the equal needs of present and future generations should be according respect and incorporated in decision-making. Thirdly, the objectives of sustainable development include on ‘increasing social welfare’; hence, in order to truly sustain economic development it is essential to tailor the design and functioning of development plans to the needs and capabilities of people who are expected to benefit from them.<sup>6</sup>

Given an ever-changing world, the specific measures and priorities among objectives and the requirements for carrying out sustainability often change. However, in line with the WCED’s statement, the critical objectives introduced from sustainable development are more fixed and stable: ‘reviving growth; changing the quality of growth; meeting essential needs for jobs, food, energy, water and sanitation; ensuring a sustainable level of population; conserving and enhancing the resource base; reorienting technology and managing risk; merging environment and economics in decision making; reorienting international economic relations, and making development more participatory.’<sup>7</sup>

How then are these specific connotations of sustainability to be applied and achieved? It is difficult to provide a straightforward reply to this question, because managing this development framework implies certain uncertainty and complexity. In general, ‘the creation of an effective regulatory program; an informed and educated public; risk-based environmental policies; political leadership; a sound scientific framework for decision-making and public participation in government decision making’ are considered to be important strategies and means in applying and practicing sustainable development.<sup>8</sup> The next section reviews the current practices of sustainable

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<sup>6</sup> Extracted from United Nations Development Programme: Human Development Report 1992.

<sup>7</sup> World Commission on Environment and Development (WCED) (1987) *Our Common Future*, (Oxford: Oxford University Press), p.49. This formulation can be said to represent the mainstream of sustainable development thinking.

<sup>8</sup> Andreen, W L (2000) "Environmental Law and International Assistance: the Challenge of Strengthening Environmental Law in the Developing World", *Columbia Journal of Environmental Law*, Vol. 25, No. 1, p. 27, footnote No. 44. The definition and how to apply ‘sustainable development’ has been the subject of considerable

development in Taiwan which covers the response to relevant international conventions and the institutional capacity building for sustainable development. Following that, Section 5.3 goes into detailed examination of latest development towards the issue of reviving growth with sustainability and the relationship between environmental assessment, economic incentives and sustainable development.

The rapid transition towards democracy together with economic success have strengthened Taiwan's self-identity and stimulated its desire for international recognition. Due to Taiwan's ambiguous diplomatic status, its participation in international environmental organisations and treaties has been exceedingly difficult because Taiwan falls short of standing as a 'nation'. As a consequence, Taiwan has never signed a regional or international environmental treaty, but has nevertheless endeavoured to comply with the relevant regulations of international conventions and to incorporate them into national environmental strategy. For example, the Taiwan government set up a special committee<sup>9</sup> -- the 'Global Environmental Change Task Force' in August 1992. The Task Force, which is composed of relevant ministers and environmental scholars, institutes various working groups,<sup>10</sup> is intended to help implement in Taiwan global environmental agreements such

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academic commentary. See, for example: Pearce, D W, E Barbier and A Markandya (1990) *Sustainable Development: Economics and Environment in the Third World*, Aldershot, Hants: Elgar.; Beckerman, W (1992) "Economic Growth and the Environment: Whose Growth? Whose Environment?", *World Development*, Vol. 20, No. 4, pp. 481-496; Lele, S M (1991) "Sustainable Development: A Critical Review", *World Development*, Vol. 19, No 6, pp. 607-620; Vanderzwaag, D (1993) "The Concept and Principles of Sustainable Development: "Rio -- Formulating" Common law Doctrines and Environmental Laws", *Windsor Yearbook of Access to Justice*, Vol. 13, pp. 39-80, and so on.

<sup>9</sup> In order to implement the various international environmental conventions and tackle the related activities of sustainable development, on 19 August 1992, the Executive Yuan established an 'inter-agency organization' - the 'Global Environmental Change Task Force'. The Task Force has been 'proactively taking part in and co-operating in international environmental protection tasks'. Further to unify the related tasks of domestic sustainable development and to define the national guidelines for sustainable development, on 23 August 1997, the Executive Yuan expanded the Committee into 'National Council for Sustainable Development' (NCSA). Later on, in October 2000, the NCSA set up a website ([ww2.epa.gov.tw/nsdn](http://ww2.epa.gov.tw/nsdn)) to transmit information about the NCSA's various accomplishments and policies to the international societies through the Internet. Also the NCSA's network provides 'an instant and integrated Internet query service for the various sectors of society in order to enhance people's knowledge about the trend of sustainable development'. (See *2000 Annual Report of National Sustainable Development*, (Taipei: Executive Yuan, NCSA), p. 8 and p. 21.)

<sup>10</sup> They are 'the atmospheric protection and energy working group; the waste management and waste-to-resources working group; the marine and nature conservation working group; the policy and environmental development working group; the trade and environmental protection working group; the sustainable industrial development working group; and the sustainable social development working group'. In December 2000, the NCSA formed further more new working groups. The new working groups are 'the technology development and advisory working group; the national



as the 1987 Montreal Protocol, the Convention on International Trade in Endangered Species, and the 1992 Biodiversity Convention. Moreover, the 'National Council for Sustainable Development' (NCSD) compiled with and formulated the 'Agenda 21- National Sustainable Development Strategy Guidelines of Taiwan (hereinafter referred to as Taiwan Agenda 21)' in May 2000, which acts as 'an indicator of sustainable development work'.<sup>11</sup>

In general, recent developments in the political, economic and environmental spheres in Taiwan can be regarded as an improvement to draw near the goal of sustainable development. Several factors combine to define the course of Taiwan's progress towards to sustainable development. First, the constitutional amendments of 1991, 1992, 1994, 1997, 1999 and 2000 have made a great contribution to the well-ordered transition of Taiwan from an authoritarian state to a fundamentally more democratic state. Secondly, regarding environmental concerns, additional articles contain in constitutional amendments have created precise endorsement of environmental issues. Thirdly, due to these constitutional amendments, environmental improvement procedures would involve transparency and public participation in governmental decision-making processes to poise different interests. Thus, public interests expected to be more reflected in the decision-making mechanism.<sup>12</sup> Fourthly, credited by successive economic growth, Taiwan is now in a more preferable financial position to protect its own environment.

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health insurance and welfare working group, the green gross domestic product (GDP) working group, the biodiversity working group, and the sustainable development indicators working group'. (See *2000 Annual Report of National Sustainable Development*, (Taipei: Executive Yuan, NCSD), p. 10.)

<sup>11</sup> The Taiwan Agenda 21 divides sustainable development into five categories, and focus on twenty-two specified fields and descriptions respectively. The development strategies for each category are as follow: 'first, a sustainable environment, which focuses on matters of atmosphere, water resources, land resources, biodiversity, and environmental management. Secondly, a sustainable society, which tackle issues of population and health, residential environment, social welfare, cultural heritage, and disaster prevention and response. Thirdly, a sustainable economy, which places the center of attention on economic development, industrial development, transportation development, energy strategy, and resources re-utilization. Fourthly, the drive force, the focus on the drive force includes education development, science and technology development and free access to information. And finally the promotional mechanisms, these include public participation, government re-structuring and international co-operation in promoting sustainable development'. (See *2000 Annual Report of National Sustainable Development*, (Taipei: Executive Yuan, NCSD), p. 17.)

<sup>12</sup> For example, the public interest in conserving ecological integrity of natural resources and preservation of biological and cultural diversity has been advocated as a new theoretical source for the public decision-making. Such as a debate in regards to the Taiwan Power Company to build a dam within the Taroko Gorge, and the Formosa Plastics Ltd to construct a new cement plant at areas near the entrance to the Gorge. The Gorge is generally regarded as one of

Nevertheless, regardless of the above-mentioned improvement factors, Taiwan still faces many challenges on the way to achieving sustainable development. The major factors include:

First, the habitats of diverse forms of species in Taiwan have been harmed by decades of rapid development without proper waste management, Forests, coastal and marine areas, rivers and wetlands are all under threat of various pollutions. Secondly, population density, numbers of motor vehicles, abundance of factories and primary energy consumption in Taiwan cause heavy environmental loading. Thirdly, with the limited space, dense population, and a shortage of natural resources in Taiwan, it seems that the people in Taiwan overuse the natural resources. For example, the imbalance of water shortage and supplement has caused groundwater levels to decrease. Fourthly, Taiwan is located on the eastern edge of the Asian Continental Shelf. With such complex geology, typhoons, flooding and earthquakes happen quite frequently to cause natural disasters. And finally, Taiwan relied heavily on international trading; the new order of economic situation has increased pressure for nationwide businesses and resource usage to change.<sup>13</sup>

In addition, a political structure that values public participation, ‘social justice’, ‘market function’, ‘procedural rationality’ and technological innovation are essential requirements to fulfil sustainable development.<sup>14</sup> To this extent, Taiwan is facing more difficulty. In practice, both public and private sectors encounter less financial capacity or technological innovation, also the public frequently has an unequal ability to participate in decision-making.

Moreover, the need to integrate environmental assessment into national socio-economic planning should be made a priority because environmental assessment can, when appropriately designed and implemented, be the most effective mechanism for integration development within the principles of sustainability.<sup>15</sup> Hence, in spite of recent reforms, further institutional

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Taiwan’s most glorious natural wonders. The public became enraged due to the fact that these developments will damage or even destroy this treasure. The Construction and Planning Administration and the Department of National Parks joined together to ‘force the cabinet to reconsider the measure’. As a result, the Taiwan Power Company had to withdraw the project, although it had already drilled numerous tunnels in the Gorge and started other preliminary stages of the project. These tunnels still stand to ‘provide increased access for hikers wishing to explore the beauties of the Gorge’. (See the *TEPA Register*, (September 1996), No. 105, p. 82; the *TEPA Register*, (September, 1997), No. 117, p. 106; the *TEPA Register*, (October, 1997), No. 118, p. 92; also See *National Environmental Protection Project*, (1998), p. 25 and p. 157.)

<sup>13</sup> See Taiwan Agenda 21, [ww2.epa.gov.tw/nsdn](http://ww2.epa.gov.tw/nsdn).

<sup>14</sup> Sustainable Development in Taiwan, Chapter five: Achievements of the NCS Working Groups in 2001 (See [ww2.epa.gov.tw/nsdn](http://ww2.epa.gov.tw/nsdn)).

<sup>15</sup> Lee, N (2000) “Environmental Assessment in its Developmental and Regulatory Context” in N. Lee and C. George (ed.) *Environmental Assessment in Developing and Transitional Countries*, London: John Wiley & Sons Ltd. p. 31; Also see Wilson, P (1995) “Emerging Trends in National Environmental Legislation in Developing Countries” in *New Way Forward: Environmental Law and Sustainable Development*, UNEP, p. 202. In addition, a

improvement<sup>16</sup> is necessary in order to bolster the understanding and application of the principle of ‘sustainable development’ in Taiwan.

## **6.2 Current practices of sustainable development in Taiwan**

Since 1980s, Taiwan’s emphasis on economic development has resulted in significant damaging impact to Taiwan’s environment. In order to ameliorate this situation, tremendous efforts are required to control industrial pollution, improve environmental quality, and conserve biodiversity. Hence, with the aim of achieving the goal of sustainable development, the Taiwan government has made an effort to balance economic development and environmental protection, and to improve living quality and ecological environment. The following sections try to present only some, not all, of the progress that the Taiwan government has endeavoured so hard to make in order to achieve ‘sustainable development’.

### **6.2.1 *Responding to relevant international conventions***

Due to the political and legal ambiguity in its international status, Taiwan remains a non-party to every major ‘multilateral environmental agreement’ (MEA) and is therefore not subjected to the regulations of any of the major MEAs. Yet, the various statements from the President of Taiwan indicated that the government’s policy has always been voluntary compliance with the MEAs, and that sustainable development is a core principle of Taiwan's administration.<sup>17</sup>

Striving to implement sustainable development in Taiwan, the NCSD completed many active

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detailed discussion of EIA regime is given in Section 3.3 of Chapter Three.

<sup>16</sup> For example: more institutional transparency and public participation in decision-making processes should be provided and institutionalised; the vague relationship between central and local governments should be clarified and the integrity of judiciary should be fortified.

<sup>17</sup> The former President of Taiwan Lee Teng-hui has made the following statement to the 1992 UNCED: ‘The Republic of China (Taiwan) ... had voluntarily indicated to adopt all measures in observance of the agreements of the Montreal Protocol and the Framework Convention on Climate Change.’ In addition, in President Chen Shui-bian’s inauguration speech presented on 20 May 2000, he clearly declared: ‘At present, we need to immediately improve social order and environmental protection, which are important indicators of the quality of life. Building a new social order, we will let the people live and work in peace and without fear. Finding a balance between ecological preservation and economic development, we will develop Taiwan into a sustainable green silicon island’. (See [ww2.epa.gov.tw/nsdn](http://ww2.epa.gov.tw/nsdn)).

programs, including the 'Biodiversity Promotion Plan',<sup>18</sup> the 'National Communications on Greenhouse Gas Emissions',<sup>19</sup> and the 'Green GDP Plan'.<sup>20</sup> These efforts signify that the Taiwan government is very determined in its efforts to accomplish sustainable development. In addition, the Taiwan government is devoted to adopting and amending its domestic laws and policies based on the regulations of the MEAs. The examples are as follows:

First, an action was carried out towards the Montreal Protocol.<sup>21</sup> Taiwan has been a producer and consumer of chlorofluorocarbons (CFCs, one of the main controlled substances in the Montreal Protocol). The possibility of being cut off from the international market of CFCs has worried industry as well as the Taiwan government. In order to reduce the chance of being trade-sanctioned, Taiwan has voluntarily agreed to observe the Montreal Protocol and pledged to reduce its CFC consumption. The Executive Yuan has approved a 'phase-out schedule' and the TEPA has established 'short-term and long-term strategies'.<sup>22</sup> The 'Measures on Substances' regulated by the Montreal Protocol was promulgated and effective in 1991 by the Ministry of Economic Affairs (MOEA), and was amended in 1993.<sup>23</sup>

Secondly, the reaction corresponds to the Basel Convention.<sup>24</sup> In the early period of economic development, Taiwan imported industrial waste from abroad to generate resources from

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<sup>18</sup> On 7 March 2001, the NCSA passed the 'Biodiversity Promotion Plan' to ensure the nation's biological diversity and to stay in step with international conservation trends. (See *2001 Annual Report of National Sustainable Development*, ww2.epa.gov.tw/nsdn)

<sup>19</sup> Taiwan has adopted a 'No – Regrets' policy that includes 'conserving energy resources, increasing energy efficiency, and promoting the use of clean energy as a means of reducing greenhouse gas emissions'. (See *2001 Annual Report of National Sustainable Development*, ww2.epa.gov.tw/nsdn.)

<sup>20</sup> 'Green Gross Domestic Product' (Green GDP) is based on 'social accounting' which 'integrates environmental and economic indices, and deducts the amount of resource consumption and environmental quality degradation from GDP, to truly reflect the personal income after considerations of environmental and ecologic balance'. (See Current Status of Sustainable Development in Taiwan, ww2.epa.gov.tw/nsdn).

<sup>21</sup> The first Protocol to the Vienna Convention is the 1987 Montreal Protocol. The Montreal protocol sets forth specific legal obligations, including 'limitations and reductions on the calculated levels of consumption and production of certain controlled ozone depleting substances'. In 1990, 'the Second Meeting of the Parties to the Convention adopted the first Adjustment and Amendments'. In 1992, 'the Fourth Meeting of the Parties to the Convention adopted a second round of Adjustment and Amendments'. (See Sands, P (1994) *Principles of International Environmental Law*, (Manchester: Manchester University Press), Vol. 1, p.261.)

<sup>22</sup> *National Environmental Protection Project*, (1998), p. 293-294.

<sup>23</sup> Ibid.

<sup>24</sup> Basle, 22 March 1989, in force 24 May 1989, (See (1989) *International Legal Materials*, Vol. 28, p. 657.) The 1989 Convention on the Control to Transboundary Movements of Hazardous Wastes and Their Disposal (1989 Basle Convention) is intended to establish 'a global regime for the control of international trade in hazardous and

such waste. Inappropriate treatment of hazardous waste caused severe environmental pollution.<sup>25</sup>

Generally speaking, the management of hazardous waste in Taiwan has become more advanced in recent years, though there are still certain inadequacies, such as poor enforcement and a shortage of disposal sites.<sup>26</sup> Therefore, an urgent need to accelerate sustainable development towards hazardous waste management and transboundary movement of hazardous wastes cannot be delayed.

With the aim of improving unsatisfactory hazardous waste management, the Taiwan government promulgated the 'Hazardous Waste Import and Export Permit Control Measures',<sup>27</sup> which is regarded as a strong and substantial support to the Basel Convention. The Department of Customs Administration, the Board of Foreign Trade, and the TEPA in Taiwan have been working together to respond to the international task. In addition, the amendment of 'Hazardous Waste Measure Standards' (HWMS)<sup>28</sup> has made the classification standards in conformity with the Basel Convention.

Thirdly, the Taiwan government's strategy in responding to the 1992 Framework Convention on Climate Change (FCCC)<sup>29</sup> is another case. After the government openly committed itself to conform to the obligations of the FCCC voluntarily, it started to prepare the 'National

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other wastes'.

<sup>25</sup> Such as: The problem of hazardous waste caught the attention of the Taiwanese public in the 1980s when toxic chemicals were found dumped along the bank of Er-Zen Creek (the Green Oyster case). Also, the burning of cable in the Wanli Area of Tainan Hsien has had a history of more than 12 years. The ash remains in the soil have been tested in 1990, and it was found that the TCDD (Dou-lu-lian-bern) contents reached an astonishing degree and the health of the residents was almost certainly damaged. After the test, The Executive Yuan immediately banned the import of waste metal from 1 January 1993, so as to prevent more serious pollution cases. (See *State of the Environment*, (1995), p. 457.)

<sup>26</sup> For example: the Formosa Plastics Group illegally exported hazardous waste that contains toxic materials of mercury to the Cambodia. *Liberty Times* (Zi-you Shi-bao), 22 December 1998, p. 3; 25 December 1998, p. 15; 5 August 1999, p. 9 and 7 August 1999, p. 9. (Also see Lohnes, J (1999) "Taiwanese Company Dumps 3000 Tons of Toxic Waste in Cambodia", *Colorado Journal of International Environmental Law and Policy*, pp.262-278.)

<sup>27</sup> You-hai Shi-yeh Fei-chi-wu Shu-ruh Shu-chu Sheu-kee Bann-fa [Hazardous Waste Import and Export Permit Control Measures] (promulgated and effective on 29 January 1993, last amendment on 13 August 1997) in *TEPA Register*, No. 117, (September 1997), pp. 14-19. The latest amendment also made changes of the title as 'Hazardous Waste Import, Export, Transit and Transshipment Management Measures'.

<sup>28</sup> Two amendments were carried out on 10 March 1994 and 29 February 1996, also see Chapter Two, footnote No. 134.

<sup>29</sup> New York, 9 May 1993, in force 24 March 1994. (See (1992) *International Legal Materials*, Vol. 31, p. 849.) The fundamental objective of the Climate Change Convention is to 'stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system'. It also emphasized that 'prevention of climate change is the primary objective'. (See Articles 1 and 2 of the FCCC.)

Communication', an obligation for all the parties to the FCCC.<sup>30</sup> Moreover, the TEPA was told by the Executive Yuan to carry out research on the possible impact of various scenarios in case Taiwan was required to comply with, for example, obligations under the Kyoto Protocol to the FCCC or other protocols in relation to greenhouse gas emission reduction.<sup>31</sup> In an effort to reduce greenhouse gas emissions, an Air Pollution Fees scheme was launched to operate in July 1995. A National Energy Conference was held in May 1998 where the Taiwan government pledged to decrease the carbon dioxide emission level. In addition, it was explicitly declared in the National Energy Conference that 'whenever EIA reports were prepared for large-scale investment projects the carbon dioxide (CO<sub>2</sub>) emission would be considered'.<sup>32</sup>

Fourthly, representatives from many nations signed the London Convention on 29 December 1972, which serves to prevent marine pollution that stems from the dumping of waste at sea.<sup>33</sup> The ocean, with a coastline of 1576 kilometers, surrounds Taiwan and ocean resources are naturally of vital importance to Taiwan.<sup>34</sup> In November 2000, the Marine Pollution Control Act<sup>35</sup> was finally promulgated and put into force. The implementation of the Marine Pollution Control Act 2000 is a new milestone for Taiwan in the area of marine environmental protection. Almost immediately after the establishment of this Act, the 'Amorgos' oil spill incident occurred in January 2001.<sup>36</sup> Taiwan confronted bravely to defeat the difficulties and became determined to speed up the establishment of marine pollution emergency response systems.

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<sup>30</sup> See Article 12 of the FCCC.

<sup>31</sup> *National Environmental Protection Project*, (1998), p. 293.

<sup>32</sup> The EIA Report of the establishment of the Binnan Industrial Park. The Binnan Industrial Park is the biggest investment project in the past six years in Taiwan. Because of the wide impacts and high complexity of the Binnan project, the draft EIA report embraces ten specific issues. They include: 'site alternatives; harbor alternatives; coastal erosion; lagoon protection; water supply and drainage; impact to the Tainan Science-based Industrial Park; CO<sub>2</sub> emission and pollution control; acid rain; preservation of the black-faced spoonbill and nature conservation; and fisheries and miscellaneous topics'. (See [www.gov.tw/epa](http://www.gov.tw/epa). Conclusions for the Binnan Industrial Park EIA Report, January 2000).

<sup>33</sup> Sands, P (1994) *Principles of International Environmental Law*, (Manchester: Manchester University Press), Vol. 1, p.309. This convention became effective on 30 August 1975.

<sup>34</sup> *State of Environment*, (1995), p.10.

<sup>35</sup> See Chapter Two, footnote No. 83.

<sup>36</sup> [www.epa.tw/announce/amas.htm](http://www.epa.tw/announce/amas.htm).

Fifthly, regarding hazardous waste pollution, a course of action was set out to deal with the UN Stockholm Convention on Persistent Organic Pollutants.<sup>37</sup> How serious, exactly, is pollution in Taiwan from POPs? Many POPs are ‘organo-chlorine pesticides’ and Taiwan formerly used great amounts of these to prevent mosquitoes and agricultural pests. However, as Taiwan experienced an outbreak of PCB poisoning in 1979, the manufacture, import and sales of PCBs were prohibited in 1988. In 2001, PCB use was completely banned. At present, apart from the purpose of experimentation, research and education, use of all POPs is forbidden in order to reduce environmental pollution and harm to human health.

‘Dioxins and furans’ are pollutants that are products of the ‘oxidation or combustion of organo-chlorine substances’. Dioxins are a result of ‘combustion and special industrial processes’, and in order to prevent dioxin pollution, the TEPA on 6 August 1997, proclaimed the ‘Waste Incinerator Dioxin Emissions Standards’.<sup>38</sup> Then, on 12 December 2001, the TEPA announced the ‘Steel Refinery Arc Furnace Dioxin Controls and Emission Standards’,<sup>39</sup> with the aim of diminishing dioxin pollution levels at the source.

Finally, on 30 October 2001, the Aarhus Convention officially went into effect. The Aarhus Convention primarily covers three issues:

First, freedom of access environmental information, that is governmental agencies must make environmental information open to the public upon demand; secondly, the right of public participation in policy making, the convention authorizes certain procedures for the public to participate in specified agricultural, industrial, and other activities; and thirdly, access to environmental justice, the convention formulates different judicial and executive procedures so that the public has an opportunity to raise dissenting opinions on environmental policies.<sup>40</sup>

Up to now, the Taiwan government has not yet made any movement regarding this particular convention. Nevertheless, with the intention of making progress of sustainable

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<sup>37</sup> The following paragraphs are summarized from [www.epa.gov.tw](http://www.epa.gov.tw) in relation to Persistent Organic Pollutants (POPs) statement.

<sup>38</sup> Fei-chi-wu Fern-far-lu Dai-ou-shin Kuan-jyh ji Pai-fang Biao-zhun [Waste Incinerator Dioxin Emissions Standards] (promulgated and effective on 6 August 1997) in *TEPA Register*, No. 117, (September 1997), pp.10-13.

<sup>39</sup> Lian-gang-yeh Dian-fu-lu Dai-ou-shin Kuan-jyh ji Pai-fang Biao-zhun [Steel Refinery Arc Furnace Dioxin Control and Emission Standards] (promulgated and effective on 12 December 2001) in *TEPA Register*, No. 169, (January 2002), pp. 4-8.

<sup>40</sup> [www.unece.org/env/pp](http://www.unece.org/env/pp).

development, the Taiwan government will more effectively engage in promoting public participation and make free access towards environmental information available. Thus, at this point of time the influence of the Aarhus Convention remains uncertain.

### **6.2.2. Institutional capacity building for sustainable development <sup>41</sup>**

In order to promote sustainable development, the NCSD set up various special working groups to carry out the relevant actions. In accordance with the (2000) *Annual Report of National Sustainable Development* and the (2001) *Sustainable Development in Taiwan*, the major accomplishments of these working groups are as follows:

#### **1. Waste Management and Waste-to-Resources Working Group**

The major achievements within the last few years by this working group are as follow:

First, on 17 January 2001, the Executive Yuan approved the ‘National Industrial Waste Management and Disposal Plan’ which assigns the TEPA responsibility for developing a unified plan for general industrial waste management. The Plan also allocates the MOEA the duty of designing a unified plan, comprising of measures and installations of hazardous industrial waste disposal facilities.

Secondly, the Executive Yuan and the Legislative Yuan amended the Waste Disposal Act in October 2001. According to the amendment, the TEPA will, in the near future, revise 40 related provisions detailing clauses and stipulations. Also, in order to promote the reuse of industrial waste, the MOEA is expected to prepare and plan the ‘Regulations Governing the Reuse of Industrial Solid Waste’. Furthermore, with the intention of increasing recycling and reuse of resources, the TEPA has proposed a draft ‘Resource Recycling and Reuse Act’ which when it becomes law will greatly enhanced Taiwan’s efforts in recycling and reuse.

Thirdly, the TEPA is campaigning to set up a ‘Demonstration Recycling Zone’. In doing so, the Taiwan government will, subsequently, provide industries with ‘effectual economic and

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<sup>41</sup> The Section 5.2.2 is summarized from the 2000 *Annual Report of National Sustainable Development* and the *Sustainable Development in Taiwan*, Chapter five: Achievements of the NCSD Working Groups in 2001 (See [ww2.epa.gov.tw/nsdn](http://ww2.epa.gov.tw/nsdn)).



legal assistance'. Concrete measures will include 'subsidies on land leases, technological assistance and support, and simplified application procedures'. It is expected that the plan will transform 'old ideas and practices of passively handling waste to an approach that actively creates environmentally friendly industry that recycles and otherwise solves its waste problems in an environmentally appropriate manner'.

Fourthly, the TEPA continues to promote the 'Four-in-One Recycling Program' with the purpose of encouraging more people to participate the recycling programmes.

Fifthly, in order to tackle transboundary waste management, the TEPA and the MOEA held a round-table on the Basel Convention in October 2001, where experts discussed and recommended a variety of reforms in response to the main developments and management concepts in the Basel Convention. The proposals are as follow:

First, the forum recommends that it is necessary to establish a national reporting system for hazardous waste. Secondly, in order to show Taiwan's commitment to international responsibility and service, the Taiwan government should watch closely the latest developments and should impose severe penalties for violations. Thirdly, it is important for Taiwan to search for international cooperation and to develop local technology, as well as endeavour to reduce the risks that go along with cross-boundary shipment. Fourthly, continuing export and import of hazardous waste is inevitable for Taiwan; therefore, Taiwan should actively seek to reach agreements through bilateral or multilateral negotiations. Fifthly, Taiwan must set up a fund to deal with emergency measures in the event of a hazardous waste accident. This includes collecting compensation from violators for losses, and accords priority consideration to the principles set in the Basel Convention. Sixthly, as the Basel Convention has approved the Basel Protocol on liability and compensation in the event of damages caused by transboundary shipment and disposal of hazardous waste, Taiwan should strengthen transboundary control of hazardous waste, so as to stay synchronized with related regulations in international conventions. Seventhly, it is vital to make information transfer mechanism available. This includes the establishment of an easy access information system to enhance data transfer within Taiwan, as well as publicity and training'.

## ***2. Atmospheric Protection and Energy Working Group***

The Bureau of Air Quality Protection and Noise Control of the TEPA is responsible for establishing this working group, which acts to advance work on the Montreal Protocol, the UN's Framework Convention on Climate Change (FCCC) and energy related matters.

Continual progress has been made on the research and development of new and renewable energy sources in recent years. Moreover, on 1 January 1995, Taiwan began control of 'methyl bromide consumption'. In addition, in order to comply with a '35 per cent reduction in HCFC' consumption by 1 January 2004, the MOEA, Industrial Development Bureau requested that the Industrial Technology Research Institute recommend a schedule for stopping the use of HCFCs within each of its applications. According to recent reports from the Industrial Technology Research Institute, 'the elimination of HCFCs used in washing and foaming agents is planned by 2008. Where used as a refrigerant, the termination date is extended to 2010'.

In addition, Taiwan has launched 'No-Regrets Policy' measures. These measures include 'conserving energy, increasing energy efficiency, and promoting the use of clean energy in order to reduce greenhouse gas emissions'.

### ***3. Sustainable Development Indicators Working Group***

The Working Group on Sustainable Development Indicators was set up in December 2000 with a purpose of 'developing an indicators system, suited Taiwan's particular situation and needs'. The Working Group operates an evaluation system, to assist in 'formulating Taiwan's response to global environmental changes and provide warnings and references concerning the direction of Taiwan's development'.

An important part of this evaluation system is to 'bring about both internationalisation and localization'. In the international arena, Taiwan can cooperate with 'Southeast Asian nations' on the issue of 'sustainable development indicator systems'. In the local arena, the evaluation system can be 'integrated with local government administration mechanisms in an effort to achieve of certain goals'.

### ***4. Environment and Policy Development Working Group***

The Bureau of Comprehensive Planning of the TEPA has established a working group on environment and policy development. The working group is liable for 'bringing environment and development issues into the governmental decision-making processes. It also assists in researching plans for the 'Taiwan Agenda 21', of which important aims are 'gathering promotion results and advocating sustainable development concepts to the public'.

#### ***5. Ocean, Water and Land Resources Working Group***

The Water Resources Bureau of the TEPA and the MOEA established this working group in order to carry out 'management of marine resources, fresh water resources and land resources'. In an attempt to ensure 'the sustainable use of public land resources, enhance the prospects for balanced regional development, reduce urban and rural disparity, improve the quality of living environment, and increase social welfare', the Ministry of the Interior's Construction and Planning Administration submitted a draft entitled 'Comprehensive National Land Development Act'. This was approved by the Executive Yuan on 26 September 2001 and is currently pending approval in the Legislative Yuan.

#### ***6. Trade and Environmental Protection Working Group***

This working group is responsible for promoting issues related to international trade and environmental protection. The Board of Foreign Trade and the MOEA assembled the working group. In order to respond to the impact following entering the World Trade Organization (WTO), this working group is expected to 'speed up the training of experts in the trade field, improve lateral communication between related government departments, enhance cooperation between government departments and citizen groups, establish scientific evidence and strengthen efforts on advancement and exchange of technology'.

#### ***7. Sustainable Industry Working Group***

It is essential that sustainable development include the participation and cooperation of industry. The Sustainable Industry Working Group, established by the Industrial Development

Bureau and the MOEA, is in charge for promoting 'ISO-14000 standards, environmental engineering industry development, clean production and matters related to ISO-9000'.

The primary efforts of this working group are focussed on 'education and delivered the ideas and methods involved in sustainable industry, through the use of different media (including periodicals, promotion material and meetings)'. Additionally, this working group particularly emphasizes 'clean production, life cycle evaluation and designing of the environment'. Apart from gathering related industrial information from other countries, the working group also assigns 'consultant groups to adapt technology to Taiwan according to domestic industries' needs'. The results from such measures, via 'periodicals, websites, promotion materials and forums, are distributed to the industry'.

#### ***8. Ecological Conservation and Sustainable Agriculture Working Group***

This group is organized by the Council of Agriculture's Forestry Department and its main work includes 'strengthening ecological conservation and providing guidance to farmers in changing agricultural practices'. This working group is currently in the process of 'surveying and monitoring biological diversity', including the research and funding of projects such as: 'Establishment of genetic diversity survey classification and database; Establishment of species diversity survey classification and database; and Biodiversity Maintenance and Rehabilitation'.

As regards to biodiversity conservation, specific conservation measures involve the following projects: 'the Troibes magellanous butterfly (Orchid Island), the butterflies of Nanshan Creek, the Rhododendron kanehidai (Wulai), Pararasbora moltrechti, Hygrophila progonocalyx Hayata, native ferns, and Archangiopteris henryi Christ'. In addition, current work also includes 'promoting the management of a wild bird preserve within an ecological education park, a wild animal emergency rescue station, and the operation of experimental stations at high, mid and low elevations'.

#### ***9. Sustainable Urban and Rural Development Working Group***

This working group is set up by the Ministry of the Interior's Construction and Planning Administration with important tasks of 'National Park planning and management, city park construction and management, and natural environment planning'.

In order to raise the quality of life in cities, this working group prepares plans for 'the construction of city parks as well as promoting the construction and management of parks and green spaces'. In accordance with the 'Development Project of Taiwan Region's City Area Recreational Facilities', certain planning for recreating parks is being carried out in Kaohsiung, Taichung, Tainan and Taipei.

In addition to implementing construction plans, the Construction and Planning Administration is also under a duty to take on certain research in order to prepare the draft of 'Park Green Space Act' and the 'Construction Plan for City Park Green Space: Phase One'. Apart from the construction of city parks, another important task is to 'reinforce the protection of nature and culture unique to Taiwan, and to actively promote environmental education'.

#### ***10. Technology Developments and Advisory Working Group***

This working group is organized by the National Science Council and is responsible for 'the sustainable development of technology R&D, the transfer of sustainable technology, the construction of sustainable development research information networks, as well as the formulation of strategies and advisory tasks related to sustainable development'.

#### ***11. National Health Insurance and Welfare Working Group***

This working group is jointly organized by the Department of Health and the Department of the Interior, and is mainly answerable for the following tasks: 'protection of citizens' health, national health insurance, the National Pension Scheme, and the eradication of poverty'.

The working group has formulated the 'Task Plan on Social Welfare Group Short-term Employee and Career Advancement Services' to aid 'public and private elderly nursery

institutes, health care groups, and welfare groups for the handicapped'. In addition, a 'Plan to Reduce Knowledge Gap' is being originated. Thirdly, the 'National Pension Scheme' was first established in 2000. However, in response to the impact of the 21 September 2000 earthquake, the government urgently increased its expenditure to begin reconstruction the damage resulted from the earthquake. This led to the delay of implementation of the pension plan. Currently, initial plans can be divided into either the 'National Pension Scheme Savings Insurance' or the 'Citizen Allotment Balance Fund'.

### ***12. Green Gross Domestic Product (GDP) Working Group***

The Directorate General of Budget, Accounting and Statistics, and the Council for Economic Planning and Development jointly organize this working group. Its major task is to 'promote compilation of materials on Green GDP'. This working group adopts a measure, which was design by the 'United Nations and World Bank, called the SEEA', in the direction of 'developing tentative budget compilation groundwork for Taiwan'.

'Green GDP' is a notion, 'which is to draw natural resource depletion and degradation of environmental quality into the GDP to illustrate the real figure combined account of the environment and economy'. This can function as 'a basis for the national standard of life and welfare, as well as an overall indicator for a sustainable economy and environment'. Therefore 'the economic growth rate no longer is the only guideline to base administration on'.

### ***13. Biodiversity Working Group***

This working group is assembled by 'a minister without portfolio', with the task of 'research and conservation of the genetics, diversity, uniqueness and habitats of all biota in Taiwan'. The 'Biodiversity Promotion Project', which received Executive Yuan ratification in August 2001, adopts 'the initiative and goals behind the UN Convention on Biodiversity to set an overall national goal for the conservation of biodiversity in Taiwan'.

### ***14. Sustainable Development of National Land Working Group***

A main objective for this working group is to ‘initiate an administration policy for a Green Silicon Island’. Other goals include ‘accentuation of economic development to raise the national quality of life, environmental and ecological conservation, the use of technology to guide economic development, and social justice’. The Council for Economic Planning and Development established this working group.

This working group endeavours to distribute knowledge and information technology in order to ‘advance newly developing industries, to safeguard the growth of current dominant industries, and to assist in the modification of traditional industries’. In addition, the group actively advocates ‘environmental conservation as a precondition and strategy to achieve economic development’. Furthermore, ‘in order to improve social justice, the group makes the best use of market functions to achieve both efficiency and justice, and adopt necessary countermeasures to back defunct markets’.

Apart from the above-mentioned institutional capacity building for sustainable development by different working groups, on 30 May 2001, first ratification of Taiwan’s major environmental law, the draft of Environmental Protection Basic Act was approved in a ‘Joint Conference of the Legislative Yuan’s Health, Environment and Social Welfare committee and Judiciary committee’. The Environmental Protection Basic Act 2002 comes into force on 11 December 2002.<sup>42</sup>

Furthermore, a lesson was learned from the ‘Amorgos’ oil spill incident (January 2001). In order to deal with the spillage of spill crude oil from the ‘Amorgos’, which was causing very serious marine pollution to the Taiwan coastline, the TEPA completed the draft ‘Emergency Response Plan for Severe Marine Oil Pollution’ and subsequently on 10 April 2001, the Executive Yuan ratified this plan. If another severe marine pollution incident were to occur ‘this plan can be executed and the necessary specialists will summon to prevent the pollution

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<sup>42</sup> A detailed review is given in the Section 7.6 of Chapter Seven.

from spreading'. The establishment of this emergency system will 'lessen impending destructive effects in the event of another ocean pollution situation'.

In addition, in order to assist the advancement of the marine pollution emergency response plan, the Taiwan government has allocated funds to strengthen related prevention machinery and equipment, and to train specialists.

### **6.3 Revitalising growth with sustainability<sup>43</sup> in Taiwan**

During the economic development process, natural resources are taken out from the environmental system, transformed into goods and services, and distributed to consumers. Residuals from production and consumption activities are then converted into waste. Through this course of action, economic development may influence the sustainability of the environmental system. If the actions taken in pursuit of economic growth have clearly deteriorated the earth's ecosystem, the sustainability of the economic development process will become severely threatened. As a result, the economic and social goals will remain unfulfilled. In order to prevent such an unpleasant situation, it is essential that any investment appraisal should check on the resource and environmental consequences of the development project. To some extent, the employment of environmental policy instruments,<sup>44</sup> economic and social policy instruments<sup>45</sup> might modify the market forces, as well as influencing the relationship between development and environmental quality.

It is clear that the 'command-and-control' regulatory strategy in Taiwan is not going to achieve its environmental protection goals in the long run. Although the traditional hypothesis signifies that economic and environmental goals are conflicting, in fact, the two goals are not

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<sup>43</sup> Robinson, N A (1993) *Agenda 21: Earth's Action Plan*, (New York: Oceana Publications Inc.), p. 43.

<sup>44</sup> Mainly includes command-and-control instruments which are usually taken the form of permit and authorization procedures.

<sup>45</sup> Such as: pollution charges and environmental taxes, environmental protection subsidies and grants, market creation schemes – such as emission trading schemes and environmental licensing charges and fines for non-compliance with environmental regulations.



certainly in contradiction. Instead, foremost focuses should put on the development of a new generation of environmentally sensitive technologies, and on the economic incentives needed to encourage their adoption. Since the early 1990s, environmental protection has appeared as an important issue on Taiwan's domestic policy agenda. Any destruction to the natural environment is prevented even if economic growth might be limited. Environmental agencies have made significant progress in carrying out pollution prevention and control, but they still have to tackle various fundamental difficulties in order to avoid unjustifiably jeopardising economic development.

Under the current Taiwanese regulatory framework, economic development needs and protection of the environment are to be treated with equal priority. In practice, this may create many difficult problems. Although evidence has indicated that Taiwan seems to be moving towards sustainable development, the island's unique background and various environmental indicators show that somehow Taiwan risks imbalance of overall economic development and environmental protection. Hence, it is quite clear that economic development and environment relationships need to be addressed through new or strengthened policy measures. In addition, certain actions must be taken in order to prevent or reduce unnecessary crisis. As indicated above, sustainable development will involve a great degree of changes in society. The following section attempts to recommend the ways by which Taiwan might be able to achieve the objective of sustainable development through changing consumption patterns and successful application of environmental assessment and economic incentives instruments.

### ***6.3.1 Changing consumption patterns***<sup>46</sup>

It is well known that environmental protection is not just the result of industrial processes - - consumer behaviour may also contribute to progress in environmental welfare. As mentioned above, economic and social instruments influence sustainable development. Although market

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<sup>46</sup> Robinson, N A (1993) *Agenda 21: Earth's Action Plan*, (New York: Oceana Publications Inc.), p. 43.

forces maybe sometimes lead to an efficient allocation of resources, market forces are not always environmentally friendly. As a result, the achievement of sustainable development may well rely on 'changing consumption patterns'.<sup>47</sup> A shift is needed from the passively wasteful consumption patterns of the past to another positive version founded on a concern for the future.<sup>48</sup> Generally, a successful 'changing of consumption patterns' requires the joint efforts of government, industry and individuals in a gradual process of changing people's attitude.

In this respect, Taiwan has employed two types of measure so as to 'change consumer lifestyles' and to 'improve products' environmental impact'.<sup>49</sup> In the area of 'lifestyle change', major results can be seen in the incorporations of environmental awareness into school education curricula, and implementation of garbage reduction, recycling and reuse programmes.

As to the measure of 'improve products' environmental performance', this is an issue which can be analysed by taking into account the following factors, namely, 'market force'<sup>50</sup> and 'the International Organization for Standardization (ISO) standards'.<sup>51</sup> In general, 'the costs and consequences of environmentally damaging consumption' are not borne entirely by the producers and consumers who create them.<sup>52</sup> Therefore, the government can take advantage of powerful 'market force' through a variety of regulations, taxes and fees to direct the translation to sustainability.<sup>53</sup>

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<sup>47</sup> Robinson, N A (1993) *Agenda 21: Earth's Action Plan*, (New York: Oceana Publications Inc.), p. 43.

<sup>48</sup> For example: the TEPA instituted the 'Plastic Shopping Bag and Plastic Disposable Dishes Use Restriction Policy' to place restrictions on the usage of plastic shopping bags on one hand, and try to promote waste reduction on the other hand. This particular policy went into effect on 1<sup>st</sup> July 2002.

<sup>49</sup> *National Environmental Protection Project* (1998), p.56.

<sup>50</sup> *National Environmental Protection Project* (1998), p. 229. Also see Stewart, R B (1988) "Controlling Environmental Risks Through Economic Incentives", *Columbia Journal of Environmental Law*, Vol. 13, p. 169.

<sup>51</sup> *National Environmental Protection Project* (1998), p. 237. Also see Johnson, S P and G Corcelle (1995) *The Environmental Policy of the European Communities*, (2<sup>nd</sup> edn), (London: Kluwer Law International), p. 284.

<sup>52</sup> Robinson, N A (1993) *Agenda 21: Earth's Action Plan*, (New York: Oceana Publications Inc.), p. 66.

<sup>53</sup> For example: emission fee (Article 16 of the Air Pollution Control Act 1999); discharge fee (Article 11 of the Water Pollution Control Act 1991); and waste collection and disposal fee (Article 24 of the Waste Disposal Act 2001). In addition, economic instrument systems, including 'pollution charges, transferable pollution permits, and waste disposal and refund programmes', apply market principles to accomplish environmental goals while steering clear of many of the 'dysfunctions of centralized regulation'. Besides, economic instruments carry out the advantage of 'allowing producers and consumers rather than government regulators to make a decision, through the mechanism of market choice, with regards to the extent to which environmental protection is to be safeguarded'. (See Stewart, R B (1988) "Controlling Environmental Risks Through Economic Incentives", *Columbia Journal of Environmental Law*,

Moreover, information on the 'environmental costs and consequences' of different brands can be decisive in affecting consumers to select 'environmentally conscious produce'.<sup>54</sup> What's more, governments should re-examine and improve the environmental impact of their procurement policies and persuade industry to introduce the 'environmental labelling of products', so that consumers can be distinctly aware of the end result of their consumption and behaviour.<sup>55</sup>

According to the (2000) *Annual Report of National Sustainable Development*, more 'environment-oriented consumer preferences' are emerging in Taiwan, but much remains to be done. In order to improve the current situation, I firmly suggest that existing public policies can play an influential part in encouraging environmental investment and innovation – they can do this by applying appropriate price to encourage or discourage consumers' preferences, or providing long-term incentives for investment in cleaner technologies to persuade more industries to participate in 'green productivity'. Overall, the evolution of consumers' preferences can play a constructive role in providing correct market choices.

Ever since late 1980s, 'international environmental management systems' have been developed, that is the 'International Organization for Standardization (ISO) 9000'.<sup>56</sup> Later on from 1996, 'ISO 14000'<sup>57</sup> has converted into a recognized phrase that refers to a widespread symbol of 'international environmental management standards'. Compliance with any standards developed by ISO is voluntary. At present, the Taiwan government favours companies with ISO 14000-type management systems. The Taiwan government has encouraged most manufacturers to undertake this management system to produce environmental friendly production. A special 'Green Mark'

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Vol. 13, p. 158.)

<sup>54</sup> Robinson, N A (1993) *Agenda 21: Earth's Action Plan*, (New York: Oceana Publications Inc.), p. 66.

<sup>55</sup> Ibid. For example, the 'Green Mark (Taiwan's eco-label) Program' of ROC was launched in August 1992. In order to promote this system in Taiwan, the Government Procurement Act 1998 included a clause for green procurement. The clause stipulates that 'during government procurement bids, products bearing the 'Green Mark' or with comparable characteristics should be given priority in the bid and enjoys a price advantage of within 10 %'. (See Article 96 of the Government Procurement Act 1998.)

<sup>56</sup> Taiwan transferred the ISO 9000 into national standard as Chinese National Standards (CNS) 12860 to provide a certification ensuring that company has an effective environmental management structure and environmental programmes. (See *Environmental White Paper*, (1997), p. 236.)

<sup>57</sup> Taiwan transferred the ISO 14000 into national standard as CNS 14000 to represent 'Green' claims made by manufactures for their products. (See *Environmental White Paper*, (1997), p. 236.)

has been designed to promote 'green products' and 'green consumption'.<sup>58</sup> The objective of the introduction and use of an economic instrument such as the 'eco-mark system' is to establish a 'green consuming concept' and thereby encourage the consumption of products which are recyclable, low-polluting, and energy-saving, so as to minimize consumer-related pollution. Currently, a few companies in Taiwan have received ISO 14001 certificates.<sup>59</sup> Nevertheless, how effective these efforts are remains to be seen.

Apart from the above mentioned efforts, education is another essential prerequisite for making progresses in 'changing consumption patterns'. Therefore, I suggest that it is important for the Taiwan government to invest not only in environmental hardware, but also to make plans for 'educational, shared learning and innovation processes through a broad range of pilot projects' and experiments involving as many different participants as possible.<sup>60</sup> Moreover, integration of environmental issues in school, university, and 'vocational training'<sup>61</sup> education should be supported at community, national and regional levels.<sup>62</sup>

Based on the above findings, it is clear that there is no real alternative to uphold sustainable development unless the rate of economic growth is input with an appropriate share of capital distributed to environmental protection and technology innovation. Also, the success of sustainable development will undoubtedly count on undertaking certain degree of 'changing consumption patterns'.

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<sup>58</sup> *National Environmental Protection Projects*, (1998), p. 262

<sup>59</sup> *Environmental White Paper*, (1997), p. 236. ISO 14001 relates to the needs of small firms and contains basic principles about management system development with ISO 9000. This ISO 14001 scheme has been very successful with steady rise in the number of companies applying for certification and achievement registration.

<sup>60</sup> For example: 'The Special Lecture of Beautiful Hualien for Sustainable Development' and 'The National Book Fair 2000 -- Care for the Earth, Care for Sustainable Living' were held by the NCSD in 2000, and these affairs turned out to be a huge successes. Therefore, in my view, such kinds of activity that might be to inspire people's own sustainable awareness could be held more frequently. (See *2000 Annual Report of National Sustainable Development*, p. 23-24.)

<sup>61</sup> *National Environmental Protection Project*, (1998), p. 243.

<sup>62</sup> Such as 'Sustainable Development Forum for Karalan' which was held to discuss the meaning of cultural traditions and sustainable development with Ilan residents by the NCSD in 2000. The affair emphasized that 'sustainable development is not only to protect environment, but also to preserve a region's historical background and the tradition of an area'. (See *2000 Annual Report of National Sustainable Development*, p. 25.)

### 6.3.2 *Environmental assessment, economic incentives and sustainable development*

As mentioned above, the current environmental policies in Taiwan have been largely based on a 'command-and-control' approach. Therefore, regulatory measures have served as a central role in the development of the policy. In order to initiate changes in current trends and practices, I take the view that the Taiwan government needs to promote the most favourable involvement of all sectors of society in a spirit of 'shared responsibility and partnership'. This can be done by implementing integration<sup>63</sup> -- integrating environment and development at the policy, planning and management levels. Also, the application of economic incentives can be an effective way to achieve sustainable development by closely examining 'cost and benefit' analyses.<sup>64</sup> The subsequent paragraphs attempt to propose some thoughts on implementing integration to the Taiwan government with the aim of reforming the current regime in order to secure 'sustainable development'.

#### 6.3.2.1 *The relationship between the planning system, environmental assessment and sustainable development*

Sound environmental management requires a consideration of 'cross-media' approach. In fact, 'the environment is all interconnected'.<sup>65</sup> The latest manoeuvres used to achieve integration development seek mostly to 'link air, water, and waste management' combine with the land use planning system through integration of environmental laws and permitting processes.<sup>66</sup> In general, integrated development tries to figure out the 'collective effect' of the relevant facilities. Thus, the

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<sup>63</sup> The principle of integration may carry various meanings. Two predominate conceptions may be legally secured in various ways. 'First, the term may encapsulate the need for all policy sectors, at both national and international levels, such as finance, energy, agriculture, trade, to ensure their plans, programs and budgets integrate economic and environmental concerns. This has been referred to as external integration'. The term may also refer to 'the need to overcome fragmentation in departmental responsibilities and permitting processes for air, water and land pollution through consideration of cross-media effects and a coordination of governmental control efforts possibly through a unified agency and/ or permit. This form has been called internal integration'. (See Vanderzwaag, D [1993] "The Concept and Principles of Sustainable Development: "Rio-Formulating" Common Law Doctrines and Environmental Laws", *Windsor Yearbook of Access to Justice*, Vol. 13, pp. 44-53.)

<sup>64</sup> Driesen, D (1997) "The Societal Cost of Environmental Regulation: Beyond Administrative Cost-Benefit Analysis", *Ecology Law Quarterly*, Vol. 24, p. 505.

<sup>65</sup> Krier, J E and M Brownstein (1992) "On Integration Pollution Control", *Environment Law*, Vol. 22, p. 125.

<sup>66</sup> Ibid. It was with this need in mind in particular that the TEPA promulgated The Environmental Impact Assessment Act in 1994, which stipulated 'development activities ... to include environmental factors during their planning stages'.

outcomes of the integrated schemes could provide a potential solution to protect the environment and economic development in order to achieve sustainable development.

Although 'cross-media integration' is a fundamental measure, it is insufficient to provide a comprehensive approach towards sustainable development. Part of the complexity is due to the fact that integrated environmental protection decisions take account of ethical and moral issues, as well as scientific and economic factors.<sup>67</sup> Therefore, strengthening sustainable development would involve wide-ranging factors. Apart from education, there is a requirement for governmental decision-making processes to operate with higher clarity and accountability, following which full public participation is a necessity to ensure integrated development. Also, integration development could be reflected in a 'reorientation' of attitudes in systems for planning, monitoring and implementation, namely, the environmental assessment regime. Taken as a whole, in order to achieve sustainable development, information, techniques and appropriate policy instruments must be accessible in order to support the adoption of these schemes. The following paragraphs look at the relationship between the planning system, environmental assessment and sustainable development.

It is acknowledged that the planning system carries an affirmative role in improving internal relationship within the government. The planning system is one of the few current mechanisms which clearly 'links national goals with local ones'; which offers a potential possibility for issues to be considered 'in the round'; and which 'allows, encourages, public participation in decision making'.<sup>68</sup> Planning control is a permit based process with the aim of regulating development to prevent any potential environmental harm. In fact, the function of the

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<sup>67</sup> For example, the Taiwan government believes that modern incinerators have an important role to play in a system of integrated sustainable waste management. (See above Section 3.2.1.1 of Chapter Three) Waste is rising on the regional political agenda in Taiwan for many years, therefore, the establishment of incinerator poses many challenges, such as: the governmental strategy, 'adequate administrative capacity and sufficient funding', the planning system will need to operate at 'high levels of efficiency, fairness and transparency', regional waste capacity and management targets, the geographic zone of the region, 'public consultation processes and public acceptance' (this will include technical and information support, the ways of which to ease local residents feel anxiety as to the possible health effects of new proposed facility) and so on. (www.gov.tw)

<sup>68</sup> UK Round Table on Sustainable Development (2000) *Planning for Sustainable Development in the 21<sup>st</sup> Century*, A contribution to a study by the Royal Commission on Environmental Pollution, p. 1.

planning process can be 'a strategic, proactive force for economic prosperity, social cohesion and environmental protection'.<sup>69</sup> For that reason, every development project should be determined by the long-term interests of society as a whole.

In particular, in regarding siting or location issues, the planning process inevitably makes a contribution in the delivery of hazard or risk into society. In the United Kingdom, Section 54A of the Town and Country Planning Act 1990 states that 'where in making any determination under the Planning Acts, regard is to be had to the development plan; the determination shall be made in accordance with the plan unless material considerations indicate otherwise.' And, for example, the waste incinerator at Gateshead<sup>70</sup> is subject to special control regime -- integrated pollution control (IPC), which recognises and addresses the major hazards associated with this type of activity. In Gateshead, the question of the hazards link to a planning application may arise in the context of a consideration of 'material considerations' by the decision-maker, or in regard to the contents of the development. The chance of an incident taking place is one major issue which the public do consider seriously when measuring the hazards associated with new development. Hence, the fear of communities affected by hazardous development should be fully addressed by the planning system. Based on the above mentioned factors, Glidewell LJ held<sup>71</sup> that 'pollution discharged which created unacceptable risks of harm to humans or the environment were material considerations'. He also went on to say that 'public concern was, of course, and had to be, recognised by the Secretary of State to be a material consideration'

Unfortunately, the current planning system<sup>72</sup> in Taiwan, by general consent, does not deliver a satisfactory performance.<sup>73</sup> There are a number of problems that need to be tackled. For

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<sup>69</sup> UK Round Table on Sustainable Development (2000) *Planning for Sustainable Development in the 21<sup>st</sup> Century*, A contribution to a study by the Royal Commission on Environmental Pollution, p. 1.

<sup>70</sup> Gateshead MBC v. SOSE [1995] *Journal of Planning Law*, p. 432

<sup>71</sup> *Ibid.*

<sup>72</sup> Three most important planning items of legislation currently regulate the planning regime in Taiwan are: first, Chiu-yuh Jih-hwa Fa [Regional Planning Law] (promulgated and effective on 31 January 1974, last amended on 26 January 2000); secondly, Du-shyh Jih-hwa Fa [Urban Planning Law] (promulgated and effective on 8 June 1939; last amended on 11 December 2002) Thirdly, Huan-jing Yin-sheang Pin-ku-fa [Environmental Impact Assessment Act] (promulgated and effective on 30 December 1994; last amended on 22 December 1999). Apart

example, the existing ‘multi-layered structure’<sup>74</sup> of planning system with up to three tiers, national, regional and local (hsien and city) levels, is quite complex. Very often, plans are submitted to different authorities within different time-scales. Hence, the ‘multi-level structure’ of planning has become a major barrier to responsive and effective plans. Therefore, I strongly suggest, ‘parallel consents with relevant authorities’<sup>75</sup> might be a better way for the Taiwan government to adopt. For example, certain developments with potential for pollution emissions, such as waste management facilities and some industrial plants, separate consents are required from two different authorities – a planning authority on land use and from the Environmental Agency on pollution control. If those proposing to develop such facilities apply for pollution control authorisation and planning permission at the same time, such developments can be handled more efficiently. Thus, the relevant authorities have been working together to ‘produce a concordat’ aimed at ‘synchronising the two processes’ -- this will minimize delays and uncertainty for both the developer and the community.

In addition, to be successful, the planning system must secure the confidence of various different groups. All parts of the community – individuals, organizations and businesses – must be able to make their voice heard. Nevertheless, the current system too often fails to engage communities. Hence, I firmly suggest that real public participation in the preparation of new local development, particularly in drawing up ‘action plans that may result in the regeneration or

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from this statutory framework, ‘planning policies and administrative standards issued by the Minister of Interior of the Executive Yuan’ also grant general planning permissions for limited types of development. In addition, local (hsien and city) authorities exercise discretion in their preparation of local plans and determine individual planning applications and negotiate relevant agreements with landowners governing the use of land. At present, six different departments carry out various planning tasks. They are: ‘first, the Department of Regional Planning; secondly, the Department of Urban Planning; thirdly, the Department of National Parks; Fourthly, the Department of Public Housing; fifthly, the Department of Building Regulation and sixthly, the Department of Public Works’. (See the Bureau of Planning and Construction Administration of the Minister of Interior of the Executive Yuan, Taiwan)

<sup>73</sup> A successful planning system will ‘promote economic prosperity by delivering land for development in the right place and at the right time’. In addition, a successful planning system will encourage ‘urban and rural regeneration’ and ensure that ‘everyone has the opportunities of a decent home, and the quality of life that goes with that’. Furthermore, a successful planning system will improve ‘the country’s infrastructure’. Hence, a successful planning system has a critical part to play in ‘achieving the government’s commitment to truly sustainable development’. (See [www.open.gov.uk/planning-green-paper](http://www.open.gov.uk/planning-green-paper)) To this extent, the situation in Taiwan remains much to be improved.

<sup>74</sup> [www.open.gov.uk/planninggreenpaper](http://www.open.gov.uk/planninggreenpaper).

<sup>75</sup> Ibid. The following example is summarized from the UK Planning Green Paper, Chapter Five, Section 5.17.



conservation of particular neighbourhoods', is urgently needed.<sup>76</sup> This will, subsequently, impel relevant authorities to provide clearer information for planning and new requirements for openness and accountability within the planning process will also improve.

Moreover, there is a need to improve integration with other 'strategic planning'.<sup>77</sup> Effective environmental protection and natural conservation projects rely on the availability of comprehensive information. It was with this need in mind that the TEPA promulgated The EIA Act in 1994, which stipulated 'development activities... to include environmental factors during their planning stages'. Due to the fact that the current hierarchy of planning structure in Taiwan is complex as previously noted, very frequently plans contain inconsistencies. In addition, the absence of consistent check, or review, of feedback mechanisms has proved to be the major limitation on improving the performance and extent of environmental impact assessment. Therefore, I firmly suggest that certain reforms to Taiwan's current Environmental Impact Assessment system be carried out. For instance, the screening process<sup>78</sup> has to be 'properly noticed, documented, and made available for public and relevant agencies to give comments'.<sup>79</sup> Together with adequate and consistent quality control, the whole environmental impact assessment process could thus be made effective, providing a basis for securing environmentally sustainable policies and actions.

Furthermore, to deliver a fundamental improvement in performance, local authorities need to be properly resourced. Planning requires specialist skills and expertise. Shortage of suitable qualified planners affects on authorities' ability to deliver an effective development control. However, the planning profession has become less attractive as a career and able planners have been in short supply for some years in Taiwan. For this reason, I strongly urge the Taiwan government to improve the skills of, and to strengthen the profession in the planning field.

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<sup>76</sup> [www.open.gov.uk/planninggreenpaper](http://www.open.gov.uk/planninggreenpaper).

<sup>77</sup> Ibid.

<sup>78</sup> Article 5 of the Environmental Impact Assessment Act 1994.

<sup>79</sup> Andreen, W L (2000) "Environmental Law and International Assistance: the Challenge of Strengthening Environmental Law in the Developing World", *Columbia Journal of Environmental Law*, Vol. 25, No. 1, p. 45.

Equally, local councillors need to keep informed the update information and to be better trained on a regular basis in order to carry out the difficult decision-making role that they exercise on Planning Committees.<sup>80</sup>

Overall, the current planning regime, which operates in Taiwan, has been built up over many years. In order to improve the planning function, it is necessary to alter its old fashion style of 'inflexible and bureaucratic procedures'.<sup>81</sup> An ideal planning regulation shall provide -- 'consistency, proportionality, targeting, transparency and accountability; and at the same time is promoting and facilitating effective public participation'.<sup>82</sup> With the aim of achieving sustainable development, Taiwan needs a better, simpler and more accessible system that can deliver 'multidimensional integration'.<sup>83</sup> To this extent, the existing planning system in Taiwan remains much to be done.

On the other hand, environmental assessment procedures -- an integral component of environmental regulatory system -- have been recognized as an effectual and powerful tool in integrated environmental planning into national socio-economic development. In general, the environmental assessment process establishes a decisive connection between environment and development as it demands that the process of economic development takes into account 'the ecological perspective of socio-economic transformation'.<sup>84</sup> Hence, the adoption and implementation of environmental assessment legislation is indispensable for national environmental legislation.

By and large, the implementation of the EIA process results in the following contributions. First, instead of employing traditional single-media environmental controls, the environmental assessment process applies an integrated, multi-media appraisal system which is likely to be more

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<sup>80</sup> [www.open.gov.uk/planninggreenpaper](http://www.open.gov.uk/planninggreenpaper).

<sup>81</sup> [www.open.gov.uk/planninggreenpaper](http://www.open.gov.uk/planninggreenpaper).

<sup>82</sup> Ibid.

<sup>83</sup> Ibid.

<sup>84</sup> Lee, N (2000) "Environmental Assessment in its Developmental and Regulatory Context" in N. Lee and C. George (ed.) *Environmental Assessment in Developing and Transitional Countries*, (London: John Wiley & Sons Ltd.), p. 31.

‘cost-effective’ and capable of achieving environmental objectives.<sup>85</sup> Secondly, by virtue of its regulatory requirement and emphasis on consultation and public participation, it should encourage greater transparency and more community involvement and commitment in both the environmental regulatory system and the development process.<sup>86</sup> Thirdly, the EIA process can improve the cost-effectiveness and environmental performance of the environmental regulatory system by making use of the environmental impact analysis mechanism to assess the proposed new regulations and to evaluate the existing regulatory systems.<sup>87</sup> And finally, it is a very important policy instrument, within the environmental regulatory system, integrating environmental considerations into planning and appraisal of development activities.<sup>88</sup>

Despite the above mentioned benefits, certain deficiencies can still be identified in the current regulatory system in Taiwan. Thus, for example, there exist significant difficulties in integrating environmental assessment procedures into the ‘command-and-control’ system for development projects.<sup>89</sup> Secondly, insufficient co-ordination between relevant Taiwanese ministries impedes the integration of environmental considerations into the overall development process. Thirdly, shortages of adequately trained staff and deficiencies in institutional capacities, post-project analysis and environmental monitoring have adversely affected the effectiveness of the environmental assessment process. Fourthly, institutional resistance against greater public access to environmental information is fairly widespread, as it is for greater the transparency of environmental planning, pollution control processes and public participation. Accordingly, public participation in the environmental assessment process as a whole is relatively limited.

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<sup>85</sup> Lee, N (2000) “Environmental Assessment in its Developmental and Regulatory Context” in N. Lee and C. George (ed.) *Environmental Assessment in Developing and Transitional Countries*, (London: John Wiley & Sons Ltd.), p. 31.

<sup>86</sup> Ibid; also see Articles 9, 10, 11 and 12 of the EIA Act 1994.

<sup>87</sup> Lee, N (2000) “Environmental Assessment in its Developmental and Regulatory Context” in N. Lee and C. George (ed.) *Environmental Assessment in Developing and Transitional Countries*, (London: John Wiley & Sons Ltd.), p. 31.

<sup>88</sup> Article 5 of the EIA Act 1994.

<sup>89</sup> See also, Lee, N (2000) “Environmental Assessment in its Developmental and Regulatory Context” in N. Lee and C. George (ed.) *Environmental Assessment in Developing and Transitional Countries*, (London: John Wiley & Sons Ltd.), p. 31.

The above mentioned factors indicate that the adoption of environmental assessment is fairly complex in the case of Taiwan. It would seem that in order to be effective in promoting sustainable development, the environmental assessment system must have the capacity to support specific environmental and developmental needs. To this extent, much remains in Taiwan to be done.

In addition to the above mentioned planning system and environmental assessment process, 'data collection and monitoring' are equally critical in achieving sustainable development. Better data on pollution sources and environmental conditions can be utilised as an important integrating instrument to measure the effectiveness of different control efforts.<sup>90</sup> In addition, the integration of different indicators can clearly reveal the actual situation and illustrate the trends of sustainable development. Therefore, the 'monitoring and data collection' measures need to be reviewed on a regular basis and fully carried out in co-ordination with the relevant departments and local environmental agencies in order to achieve sustainable development.

In brief, in order to achieve sustainable development, Taiwan government must bring in a number of actions. First, better integration between environmental and other sectoral issues is essential. Secondly, the involvement of the local community in developing and implementing solution through encouraging partnership among government, the private sector, the voluntary or non-profit organisations and residents must expand. Thirdly -- this is an urgent need at the present stage --, to identify the local features of problems and to deal with these local issues through collaboration between the local government and general public.

Each of these steps is sequentially and individually sought-after, but each also would illustrate an essential move toward a more sustainable development. Until the Taiwan government adopts a more integrated approach toward environmental protection and economic development

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<sup>90</sup> For example, since 1990s, the TEPA has devoted extensive efforts to developing a national data collection and analysis programme for monitoring the conditions of the nation's ecological systems. (See Section 5.2.2 of the Chapter Five).

and introduces the legal reforms to support such an approach, sustainable development will not be achieved.

### 6.3.2.2 *Economic incentives and sustainable development*

Sustainable development is a process in which 'economic, fiscal, trade, energy, agricultural and industrial policies are all designed to bring about development that is economically, socially and ecologically sustainable'.<sup>91</sup> 'Prices, markets and the rewards and penalties' inherent in fiscal and economic policies play powerful roles in influencing attitudes and behaviour towards the environment.<sup>92</sup> An example is the 'polluter-pays-principle'. As part of a general shift toward sustainable policies, it is necessary to make effective use of economic instruments and market and other incentives 'to dispel the assumption that the environment is free good'.<sup>93</sup> Thus, 'the use of pricing policies, taxation and market-oriented incentives' could be an effective means to address environmental issues.<sup>94</sup>

In general, most environmental harm is related to process pollution associated with 'socially desired production of goods and services'.<sup>95</sup> At present, environmental regulatory measures in Taiwan still heavily rely on 'command-and-control'. This encouraged non-compliance or resistance by industry. By and large, 'centralised regulation of the sort' introduced in Taiwan is clearly incapable of achieving environmental protection goals in an efficient and economical manner. In my view, economic incentives could be among several possible alternative techniques to lead to sustainable development between environmental protection and economic growth. The following paragraphs attempt to appraise the relationship between economic incentives and sustainable development.

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<sup>91</sup> Lele, S M (1991) "Sustainable Development: A Critical Review", *World Development*, Vol. 19, No 6, p. 609.

<sup>92</sup> Robinson, N A (1993) *Agenda 21: Earth's Action Plan*, (New York: Oceana Publications Inc.), p. 54.

<sup>93</sup> Ibid.

<sup>94</sup> Robinson, N A (1993) *Agenda 21: Earth's Action Plan*, (New York: Oceana Publications Inc.), p. 55.

<sup>95</sup> Elder, P S (1991) "Sustainability", *McGill Law Journal*, Vol. 36, p. 848.

The use of economic incentives depends on ‘cost-benefit analysis’.<sup>96</sup> The ‘cost-benefit analysis’ approach requires that ‘choices or compromises be made among competing values’.<sup>97</sup> In general, economic incentive systems, including ‘pollution charges, transferable pollution permits, and waste deposits and refund programmes, employ market principles to reach environmental goals while avoiding many of stringent regulations’.<sup>98</sup>

In general, economic incentives apply various forces to place continuous pressure on industry in order to enhance more efforts at reducing pollution. The way as to how much or how to control pollution is prepared by an individual justification of each plant or enterprise. This flexibility of economic incentives provides with several important advantages over traditional ‘command and control’ regulation.<sup>99</sup>

First, government administrators are not ‘under a necessity to accumulate the detailed information needed to decide the feasible and appropriate level of control for each plant or enterprise’. Once an economic incentive system is in place, plant executives and engineers, not the relevant environmental agency, make control decisions.

Secondly, economic incentives ‘grant enterprises with the freedom’ to invent different control measures that are most suitable, effective, and cheap for their individual need. Hence, ‘flexibility in control technologies’ is the advantage of economic incentives.

Thirdly, economic incentives can ‘strengthen the accountability of environmental policy decisions’. Instead of setting in the complex regulatory policy, the economic incentive system

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<sup>96</sup> The basic notion of ‘cost-benefit analysis’ is: ‘if we have to decide whether to do A or not, the rule is: do A if the benefits exceed those of the next best alternative course of action, and not otherwise’. (See Layard, R and S Glaister (ed) (1999) *Cost - Benefit Analysis*, (2<sup>nd</sup> edn) (Cambridge: Cambridge University Press), p. 1.) Or, in short, ‘costs should not out-weigh benefits’. (See Driesen, D (1997) “The Societal Cost of Environmental Regulation: Beyond Administrative Cost-Benefit Analysis”, *Ecology law Quarterly*, Vol. 24, p. 564.)

<sup>97</sup> Ibid.

<sup>98</sup> Stewart, R B (1988) “Controlling Environmental Risks Through Economic Incentives”, *Columbia Journal of Environmental Law*, Vol. 13, p. 158.

<sup>99</sup> The following paragraphs of several important advantages are summarized from the article of Stewart, R B (1988) “Controlling Environmental Risks Through Economic Incentives”, *Columbia Journal of Environmental Law*, Vol. 13, p. 159-162, Section III.

‘converges upon which environmental risk should be controlled and how much environmental risks should be regulated’.

Fourthly, economic incentive systems can provide the government with an ‘appropriate and indispensable source of revenue through taxes’. Basically, ‘charges and licence fees are no difficulty to manipulate since they do not involve amendments to legislation’.

Fifthly, in an attempt to comply with the control levels compelled by existing regulations, economic incentives could yield enterprises with a motivation to search for cheaper ways or design new technologies in order to reduce the amount of pollution and ‘environmental risk’ that they generate.

Based on the above-mentioned factors, it is clear that continuing to rely predominantly on ‘centralised commands’ is insufficient to achieve environmental protection goals. The use of economic incentives appears to portray a feasible alternative way to secure environmental protection.

Taiwan, like many countries, has incorporated various economic incentives into its pollution control mechanisms. The types of incentive measure include: emission and discharge fees, tax benefits, low interest bank loans and incentives for factory removal. The following paragraphs address current economic incentives, which are utilized in Taiwan with the aim of balancing environmental development and economic growth.

### *Emission or discharge fees*

An economic incentive mechanism for the enforcement of emission standards is the ‘effluent or discharge fee’.<sup>100</sup> In addition, the Air Pollution Control Act includes the ‘bubble principle’<sup>101</sup> to regulate ‘emissions from multiple sources owned or operated by a single polluter

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<sup>100</sup> Article 16 of the Air Pollution Control Act 1999 and Article 11 of the Water Pollution Control Act 1991 applies economic incentive system to impose emission charges on emission or discharges.

<sup>101</sup> Article 26 (1) of the Air Pollution Control Act 1999 states: ‘The public and private place(s) within the same (air quality) control region, which (have) more than one stationary source emitting the same air pollutant, may improve (their) total emissions of a particular air pollutant, so that the total emissions are less than those specified in the

which are treated as a single unit for regulatory purposes to facilitate the most efficient strategy of reducing emissions among related sources'. Furthermore, the TEPA adopts the 'polluter pays principle' and waste minimisation objective, 'waste collection and disposal fee' was introduced.<sup>102</sup>

### *Tax benefits*

Tax benefits also promote environmental protection. Several types of tax incentives were contained in the Statute for Upgrading Industries 1990.<sup>103</sup>

#### *(i) Exemption from import duty*

The regulations of Amendment Note 3 of chapter 84, Note 4 of chapter 85, Note 1 of chapter 90 of the Customs Import Tariff Ordinance<sup>104</sup> implicitly express that 'the import of machinery and equipment (including parts and components) under this Ordinance for the prevention of air pollution, water pollution, noise, vibration and the monitoring and testing of environmental pollution and the waste treatment are exempted from import duty'.<sup>105</sup> The Council of Agriculture verifies the 'import certification of livestock industries and farmers'. The MOEA validates the 'import documents of manufacturing industry' and the TEPA will prove the import certification by other consumers.

#### *(ii) Accelerated depreciation*

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applicable emission standards and will made positive contributions to the air quality. These areas may then request the regulatory agency of the provincial or municipal government to review and allow (their) individual sources to be free from the limitations set by the emission standards under Section 1, Article 26 of the Act. The extent of allowance as well as the total amount of emissions and their density shall be in accordance with the provisions to be established by the regulatory agency of the central government.' Before the APCA provision was enacted, Article 13 of the Air Pollutants Emission Standards for Stationary Source in the Province of Taiwan already 'permitted internal bubble trades'. See *Compilation*, (1994), p. 332.

<sup>102</sup> Article 24 of the Waste Disposal Act 2001 and Article 5, Article 8 of the General Waste Disposal Treatment Fee Collection Measure.

<sup>103</sup> Chuh-jing Tsan-yeh Shen-ji Tiao-li [Statute for Upgrading Industrial] (promulgated and effective on 29 December 1990, last amended on 30 January 2002).

<sup>104</sup> Hai-guan Jin-kou Sui-tzer [Customs Import Tariff Ordinance] (promulgated and effected on 8 August 1978, last amended on 7 May 1997) in *Six Laws Collection* (1999), p. 1415.

<sup>105</sup> These three regulations are the latest Minister of Financial (MOF) amendments of exemption from import duty.



Article 51 of the Income Tax Act<sup>106</sup> clearly addresses that ‘a set table determines the depreciation of durable goods’.<sup>107</sup> However, the period for equipment that prevents water or air pollution and other environmental pollution treatments may be shortened to two years. In addition, Article 48 of the Enforcement Rules of Income Tax Act<sup>108</sup> states that ‘for profit-making enterprises conforming to the above stated equipment the depreciation incentive shall apply at the time of filing final returns for the current taxable year, which should be accompanied by the certificates approved both by industrial authorities and by regional tax authorities’. Furthermore, Article 5 of the Statute for Upgrading Industries 1990 expresses that ‘manufacturing enterprises are permitted to elect an accelerated two-year depreciation schedule for pollution control investments for income tax purposes’.

### (iii) *Investment deduction*

In order to improve the industrial system, to increase international competition and to encourage the willingness of investment, the MOEA co-ordinated with the Minister of Finance to stipulate the draft of ‘Investment Deductions for Private Manufacturing Industry and Technical Service Industry Purchasing Automation Equipment or Technology, Pollution Control Equipment or Technology Measures’<sup>109</sup>, which states that ‘in the purchase of brand new pollution control equipment 20 per cent can be deducted from the local purchased amount; 15 per cent can be deducted from the foreign purchased amount; 5 per cent can be deducted from purchased of technology’.

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<sup>106</sup> Suo-der-sui Fa [Income Tax Act] (promulgated and effected on 17 December 1943, last amended on 9 February 1999) in *Six Laws Collection*, (1999), p. 1351.

<sup>107</sup> Article 51(2) of the Income Tax Act states that ‘where the fixed assets have reached the full periods of its prescribed useful years but the accumulation of depreciation thereof has not accounted to the cost thereof, depreciation at the original rate may be made until full depreciation has been provided’.

<sup>108</sup> Suo-der-sui Fa Shy-shyng Shih-tzer [Enforcement Rules of Income Tax Act] (promulgated and effective on 9 July 1943, last amended on 10 June 1998) in *Six Laws Collection*, (1999), p. 1371.

<sup>109</sup> Min-yin Zhi-zao-ye ji Ji-shu-fu-wu-ye Gou-zhi Zi-dong-hua Shen-chan She-bei huo Ji-shu Fang-zhi Wu-ran She-bei huo Ji-shu Shi-yong Tou-zhi Di-jian Ban-fa [Investment Deductions for Private Manufacturing Industry and Technical Service Industry Purchasing Automation Equipment or Technology, Pollution Control Equipment or Technology]. This draft was based on the Article 6 of the Facilitating Industrial Upgrading Ordinance and approved for promulgation and enforcement by the Executive Yuan on 14 April 1991, Memorandum No. Tai- (80)-Tsia-Tzu-11223.

#### *(iv) Rebate income tax*

Article 16 of the Statute for Upgrading Industries 1990 stipulates that ‘if a corporation uses its undistributed profit to increase the capital by purchasing or renovating machinery, equipment, and transportation equipment for prevention pollution, and enables its shareholders to obtain newly issued registered stock, this profit would be exempted from shareholders’ consolidated income for that year. If the shareholder is a profit-making enterprise, the newly issued stock will be exempted from its taxable income for the current taxable year’.

#### *Low interest bank loan*

Apart from the above tax benefits, polluting enterprises also qualify for other subsidies. ‘The Development Fund of the Executive Yuan (*xing-zhen-yuan ji-jin*)’ agreed to allocate NTD\$2 billion (approximate US\$58,000,000) to be matched by NTD\$3 billion (approximate US\$86,500,000) from the government-owned Medium Business Bank of Taiwan to set up ‘Low-Interest Loans for an Private Sector’s Pollution Control Equipment’, which ‘offers long-term, low-rate loans for private sectors to buy pollution control equipment’. Participating banks include the major banks in Taiwan that offer ‘a rate of 2 per cent less than the basic rate of the banks granting loan’. In addition, the ‘Sino-American Fund (*zhong-mei ji-jin*)’ offers a low-interest loan for small and medium businesses to invest in pollution control equipment.

#### *Incentives for factory removal*

Article 14 of the Statute for Upgrading Industries 1990 indicates that “factories that voluntarily relocate or remove to an industrial park, to land designated for an industrial park, or to an industrial area in the urban plan, when approved by authorities concerned, may enjoy certain benefits. The minimum rate of increment tax on land value will be levied on the sale or transfer of the original factory land’. Moreover, ‘factories that agree to relocate their plants at the direction of

the governing authority to reduce pollution problems will be exempt from payment of the electricity expansion fee'.<sup>110</sup>

In summary, the TEPA seeks to provide practical and effectual incentives for polluters to reduce the amount of their discharge into the environment.<sup>111</sup> In Taiwan, the economic and industrial system relies heavily on the market, and economic incentives are very likely to do far better in controlling 'environmental risks' than legalistic prohibitions. By acting along with the market, economic incentives could help industry develop environmentally processes to maintain reduced levels of 'environmental risks' in the line with continued economic growth.

#### 6.4 Conclusion

'Taken literally, sustainable development and economic and social considerations must be weighted in terms of resource and environmental protection'.<sup>112</sup> In Europe, the Amsterdam Treaty<sup>113</sup> and secondary Community legislation<sup>114</sup> state, 'environmental protection requirements must be integrated into the definition and implementation of Community policies and activities in particular with a view to promoting sustainable development'. It is generally accepted that 'this may be too vague to provide a concrete foundation; nevertheless, there is a sense of direction in using the language of environmentalists'.<sup>115</sup> The practical application of this vision will involve great changes in institutions and in the decision-making process. In other words, sustainable development is apparently to be a 'blueprint for societal transformation'<sup>116</sup> as well as a challenging and promising vision.

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<sup>110</sup> Taiwan Power Co. Letter, Tien-Yeh-Tsu 680510957 (24 May 1979).

<sup>111</sup> Chien, E (1990) *Working Towards Environmental Quality in the 21st Century*, (Taipei: Environmental Protection Administration), p. 3.

<sup>112</sup> McEldowney, J and S McEldowney (2001) *Environmental Law and Regulation*, (London: Blackstone Press Limited), p.41.

<sup>113</sup> Article 3(d) now renumbered as Article 6.

<sup>114</sup> Regulation 30621/95, See (1995) OJL 327/9, Article 2(4).

<sup>115</sup> McEldowney, J and S McEldowney (2001) *Environmental Law and Regulation*, (London: Blackstone Press Limited), p.41.

<sup>116</sup> *Ibid.*

Without doubt, the past few years have seen a spectacular change in the environment and development debate within Taiwan. Political and economic leaders, as well as environmental groups, have endorsed the concept of 'sustainable development'. The general public is much more aware of and concerned about environmental issues. This has broadened and improved the prospects for environmental protection. However, in practice, what should be done to meet the requirements of sustainable development? In my view, a number of general measures are particularly worthy of consideration. First, environmental assessment legislation is a crucial component of any effective environmental management strategy. Hence, integration of environmental assessment into national socio-economic planning should be made a top priority because it can, when appropriately designed and implemented, be the most effective mechanism for integration development within the principles of sustainability.<sup>117</sup> Secondly, Taiwan needs to develop environmentally sound planning policies. Therefore, I strongly suggest, 'parallel consents with relevant authorities' might be a better way for the Taiwan government to take matters forward. Thirdly, the Taiwan government should undertake an active environmental education programme. This includes investment not only in environmental hardware, but also in making plans for a broad range of pilot projects and experiments involving as many different participants as possible. Finally, it is necessary to promote the widest possible public participation, both in the formulation of environmental policy and in its implementation. Taken as a whole, in order to achieve sustainable development, information, techniques and appropriate policy instruments must be made accessible so as to support the adoption of these schemes.

It is clear that the 'command-and-control' regulatory strategy in Taiwan is doomed to fail and will not achieve its environmental protection goals in the long run. Although the traditional hypothesis signifies that economic and environmental goals are conflicting, in fact, the two goals

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<sup>117</sup> Lee, N (2000) "Environmental Assessment in its Developmental and Regulatory Context" in N. Lee and C. George (ed.) *Environmental Assessment in Developing and Transitional Countries*, London: John Wiley & Sons Ltd. p. 31; Also see Wilson, P (1995) "Emerging Trends in National Environmental Legislation in Developing Countries" in *New Way Forward: Environmental Law and Sustainable Development*, UNEP, p. 202. In addition, a detailed discussion of EIA regime is given in Section 3.3 of Chapter Three.

are not certainly in contradiction. Instead, foremost focuses should be put on the development of a new generation of environmentally sensitive technologies, and on the economic incentives needed to encourage their adoption.

Since the beginning of promoting the implementation of sustainable development, the TEPA in Taiwan has made strenuous efforts to achieve sound waste management policies. However, the current implementation of certain policies is undermined by a shortage of personnel with which to carry out inspections and enforcement activities. To expand the implementation of sound waste management, I strongly suggest that there is a special need to promote a variety of training courses that must be met. In addition, it is also important to increase environmental manpower and strengthen the administrative system at the local level. This would involve recruiting more environmental specialists to environmental agencies in hsien or city levels.

In addition, environmental protection requires more than just governmental effort. The public must participate to assure long-term success. As stated earlier, public participation in the fulfilment of sound waste management measures needs to be strengthened. Therefore, successive consolidations of action and collaboration between the government and the public remain much to be done.

With respect to the issue of the development of environmentally sound planning policies, in order to bring up sustainability the prime duty should be located on all government decision-makers, not just those engaged in environmental impact assessment and project approval.<sup>118</sup> The transformation could be implemented through amendments to existing planning or municipal government acts. Additionally, perhaps, it will be very useful if Taiwan was to develop new institutions to ensure that environmental and sustainability considerations are as central to all decision as economics factors. For this reason, each department of government could have an

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<sup>118</sup> For example: planning authorities are required to have regard to other government guidance in preparing their development plans. Once a plan has been prepared, it will be deposited for a period of time. If modification to the plan is made, there is a need for a further period of consultation. If new issues are raised during this period, a further inquiry can be held.

environmental section. Under such a system, maybe 'historical relics'-- of which that only a few have survived in Taiwan -- can be properly preserved.

By and large, Taiwan has made some progresses in recent years, which are likely to continue by making the best use of administrative, legal, economic, and educational measures to assure sound waste management. Hopefully, these progresses can and should be made to direct Taiwan's waste management regime in the direction of multidimensional integration.

## Chapter 7 Comparative Studies in Waste Management Laws and Regulations

### 7.1 Legal transplants and law reform

‘Waste’ can be looked at several angles. Very often, it simply represents a major source of pollution. Although major waste management strategies -- prevention, recycling, and reuse -- were developed and have been repeatedly reiterated since 1970s,<sup>1</sup> the legislation on waste management in Taiwan remains mostly ‘regulating the disposal of waste rather than addressing and preventing its generation’.<sup>2</sup> However, the waste management has grown into an important field, both for the government and for the public.

As mentioned in previous chapters, the current environmental protection regimes in Taiwan are far from cohesive and integrated. Law reforms are urgently needed. It is with this need in mind that the first section in this chapter discusses legal transplants and law reform. After that, the subsequent sections, on the basis of a selective examination of English waste management laws and regulations, I will recommend the most appropriate measures that might provide inspiration for Taiwan to develop a comprehensive environmental protection regime with the purpose of achieving ‘sustainable development’.

Before proposing recommendations, I should like to take this opportunity to illustrate legal regulations from a national viewpoint. While there are certain similarities between the two jurisdictions, there are also enough differences to raise the more general issue of whether or not there are ‘nationally distinct styles’<sup>3</sup> of regulations. In my view, it is impossible to ignore the distinctness of culture, political and legal systems. The differentiated approaches to environmental welfare are reflected in a wide range of features. These features include special needs and circumstances, future economic development, particular cultural background and the

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<sup>1</sup> Tromans, S (2001) “EC Waste Law – A Complete Mess?”, *Journal of Environmental Law*, Vol. 13, No. 2, p. 133.

<sup>2</sup> Sands, P (1994) *Principles of International Environmental Law*, Vol. 1, (Manchester: Manchester University Press), p. 517.

<sup>3</sup> Lange, B (1999) “National Environmental Regulation? A Case Study of Waste Management in England and Germany”, *Journal of Environmental Law*, Vol. 11, p. 80.

historic factors that can give rise to an environmental problem. Therefore, in the area of environmental protection at least, the adoption of foreign laws and processes and the techniques used in their implementation inevitably presents difficulties.<sup>4</sup>

Comparative law studies show that 'legal transplants' are an effective method of modernisation and do not necessarily cause 'instability' in the pre-existing legal or socio-culture.<sup>5</sup> As Watson has pointed out that 'legal transplants refer to the moving of a rule... from one country to another...'.<sup>6</sup> The prerequisites for achieving harmony are not necessarily 'similarity or regularity'.<sup>7</sup> As an alternative, 'difference and diversity' often produce a well-balanced final production.<sup>8</sup> In fact, many systems in transition look at and are 'inspired' by systems, which are 'socio-culturally or legal culturally' different from their own.<sup>9</sup>

The law as implemented and practised in Taiwan today contains 'remnants of imperial Chinese law', elements from 'contemporary China', also 'heavily borrowing and adopting principles and concepts from civil law jurisdictions (such as Germany and Japan) as well as the common law in the United States'.<sup>10</sup> However, in the field of environmental law, because rules mostly do not have a 'socially connected' effect in any way; differences in 'historical factors and habits of thought' do not confine the decisive factor of their transplantability.<sup>11</sup> In addition, different legal systems very often provide similar answers to similar questions, even where their legal traditions and methods are quite different. In other words, different legal systems often

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<sup>4</sup> National regulation in this part of thesis means a style of regulation, which exists exclusively in one individual state or jurisdiction. The foreign law discussed is that applicable to the jurisdiction of England and Wales only, rather than the UK. 'Regulation' covers 'the act of controlling, directing, or governing according to a rule, principle or system.' (See Prosser, T (1997) *Law and the Regulators*, (Oxford: Clarendon Press), p. 4.)

<sup>5</sup> Orucu, E (2000) "Critical Comparative Law: Considering Paradoxes for Legal System in Transition", *Electronic Journal of Comparative Law*, Vol. 4.1. ([www.law.kub.nl/ejcl/41/art41-1.html](http://www.law.kub.nl/ejcl/41/art41-1.html)).

<sup>6</sup> Watson, A (1993) *Legal Transplants: An Approach to Comparative Law*, (2<sup>nd</sup> edn), (Athens and London: The University of Georgia Press), p. 21.

<sup>7</sup> *Ibid.*

<sup>8</sup> *Ibid.*

<sup>9</sup> *Ibid.*

<sup>10</sup> Chiu, H and J. Fa (1994) "Taiwan's Legal System and Legal Profession", in M A Silk (ed.) *Taiwan Trade and Investment Law*, (Oxford: Oxford University Press), p. 21.

<sup>11</sup> Legrand, P (1997) "The Impossibility of Legal Transplants", *Maastricht Journal of European and Comparative Law*, Vol. 4, p. 113.



reach the same destination by different routes.<sup>12</sup> Therefore, it seems fair to conclude that environmental law is ‘culture-neutral’.<sup>13</sup>

Since borrowing is the most productive source of legal change,<sup>14</sup> I argued that the reception of foreign codes should focus on usefulness and necessary, rather than a concern of national identity. In this section I, first, consider the scope of comparison in focusing careful attention on the similarities and differences between the two legal systems of England and Taiwan. Subsequently, my research looks at ‘legal transplants’ with the view of appraising the capability of localisation. This is important if the policy recommendations of this research are to have any chance of successful implementation.

### ***7.1.1 National characteristics of two legal systems of England and Taiwan***

The first difference leads toward defining the distinctive features of two legal systems. The English legal system is based on the common law, that of Taiwan on the civil law tradition. A central aspect of civil law systems is ‘codification of legislation’.<sup>15</sup> Codes provide a ‘systematic, principled, coherent and comprehensive approach’ to defining the law, can ‘legalise a whole area of law’, and mainly act as the major and occasionally only source for resolving individual legal disputes that come before the courts.<sup>16</sup> Whilst the lower courts respect judicial interpretations of higher courts, the concept of binding ‘case law’ does not exist. As a consequence, the decisions of Taiwan’s Supreme Court have no binding effect on the lower courts unless such decisions are ‘designated’ by a special judicial conference as ‘precedent’.<sup>17</sup>

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<sup>12</sup> Harding, A (2000) “Comparative Public Law: A Neglected Discipline?”, in I Edge (ed.) *Comparative Law in Global perspective*, (Ardsley, N.Y.: Transnational Publishers. Inc.), p. 101.

<sup>13</sup> Foster, N (2002) “Transmigration and Transferability of Commercial Law in a Globalized World”, in A Harding and E Orucu (eds) *Comparative Law in the 21<sup>st</sup> Century*, (London; New York: Kluwer Academic), p. 60.

Examining the concept of ‘culture-neutral’ in depth would go beyond the scope of this paper. Whether or not environmental law is ‘culture-neutral’ counts on ‘the attitude towards it of those in a position to influence the success of the reception’.

<sup>14</sup> Orucu, E (2000) “Critical Comparative Law: Considering Paradoxes for Legal System in Transition”, *Electronic Journal of Comparative Law*, Vol. 4.1. ([www.law.kub.nl/ejcl/41/art41-1.html](http://www.law.kub.nl/ejcl/41/art41-1.html)).

<sup>15</sup> Such as Taiwan Civil Code (Tai-wan Ming-fa) which is the main source of private law.

<sup>16</sup> Lange, B (1999) “National Environmental Regulation? A Case Study of Waste Management in England and Germany”, *Journal of Environmental Law*, Vol. 11, p. 63.

<sup>17</sup> Chiu, H and J. Fa (1994) “Taiwan’s Legal System and Legal Profession”, in M A Silk (ed.) *Taiwan Trade and Investment Law*, (Oxford: Oxford University Press), p. 30.

In contrast, environmental legislation in England is made of distinct and often separate areas of legislation, which were sometimes 'passed in an *ad hoc* manner as a response to a particular environmental problem'.<sup>18</sup> Therefore, 'even statutes may reflect the common law tradition of the case law where legal doctrine is developed from the bottom-up through the incremental development of legal principles that respond to the empirical realities and real life complexities of disputes that come before the courts'.<sup>19</sup>

Further distinctive differences arise from the legal framework of environmental law and regulation between England and Taiwan. In Taiwan 'constitutional and codified administrative standards' provide the framework for a large and significant part of environmental law. As a result, the 'exercise of discretion' in environmental law enforcement is regulated under a systematic structure of codified administrative law.<sup>20</sup> In Taiwan, for the most part the environmental protection bureaus at the level of the hsien or county governments conduct enforcement. There are three levels of appeal concerning a government agency's decision. If there is a decision, the first appeal should be brought to the local hsien or county government. The petitioner then may appeal the hsien or county government decision to the TEPA. The last resort is to bring an administrative action to the Administrative Court in Taiwan. Frequently, unless there is a statutory basis for retrial, an Administrative Court decision cannot be appealed.

In England, however, environmental regulation consists of 'discrete and often unrelated items of legislation', and is formed predominantly by 'parliamentary statutes'.<sup>21</sup> The EPA 1990 is a very important piece of legislation in the field of waste management. The EPA 1990 contains

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<sup>18</sup> Lange, B (1999) "National Environmental Regulation? A Case Study of Waste Management in England and Germany", *Journal of Environmental Law*, Vol. 11, p. 64.

<sup>19</sup> Rheinstein, M (1952) "Common Law and Civil Law: An Elementary Comparison", *Rev J UPR* 22, p. 90 and p. 103, in Lange, B (1999) "National Environmental Regulation? A Case Study of Waste Management in England and Germany", *Journal of Environmental Law*, Vol. 11, p. 65, footnote, No. 47.

<sup>20</sup> For instance, regulatory authorities often negotiate with operators all the important details of a licence in informal talks before the start of the official licensing procedure. However, there is a number of evidence that enforcement is not always unbiased. For some operators, in particular larger or governmental owned companies; regulatory authorities might fail to notice the breach of environmental standards while smaller operators would be held more strictly responsible for encroachment of environmental law.

<sup>21</sup> Lange, B (1999) "National Environmental Regulation? A Case Study of Waste Management in England and Germany", *Journal of Environmental Law*, Vol. 11, p. 66.

several Parts to tackle different issues.<sup>22</sup> However, apart from the Environmental Protection Act 1990, the other influential relevant legislation include Environmental Protection (Duty of Care) Regulations 1991,<sup>23</sup> Waste Management Licensing Regulations 1994,<sup>24</sup> Special Waste Regulations 1996,<sup>25</sup> and The Pollution Prevention Control Act 1999,<sup>26</sup> the Town and Country Planning Act 1990<sup>27</sup> and the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (the '1999 Regulations') are the principal sources of environmental law in England and Wales. As a result, most environmental disputes come before the courts. However, as England lacks a written constitution, and administrative law is a developing field, the 'exercise of discretion' in environmental law enforcement is 'only in part legally regulated through less specific grounds of judicial review,<sup>28</sup> or under common law principles such as natural justice'.<sup>29</sup>

Furthermore, there are different styles for regulation. Taiwan's approach to regulation should be considered as 'based on a normative policy style' and to be 'legalistic and

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<sup>22</sup> The EPA 1990 is the major piece of legislation in waste management field. It is split into several Parts dealing with the different areas. 'Part I tackles Integrated Pollution Control (IPC) and Air Pollution Control by local authorities. Part II manages the controls on waste on land, including waste management licensing and the general duty of care placed on those who deal with waste'. The regime is supplemented by a system of 'registering all waste brokers and carriers under the separate Control of Pollution (Amendment) Act 1989'. A new Part IIA on the 'remediation of Contaminated Land' has been 'squeezed into' the EPA 1990 by the Environmental Act 1995. Part III of the EPA 1990 represents a 'consolidation of the old law on statutory nuisances'. Other parts of the EPA 1990 cover 'litter (Part IV), genetically modified organisms (GMOs, under Part VI)'. (See Woolley, D (QC), J Pugh-Smith, R Langham and W Upton (2000) *Environmental Law*, (Oxford: Oxford University Press), p. 61.)

<sup>23</sup> SI 1991/2839.

<sup>24</sup> SI 1994/1056.

<sup>25</sup> SI 1996/972; However, prior to the enactment of the Regulations in September 1996, regulation 2, which set out the meaning of 'special waste', was entirely replaced by an amendment stemming from the Special Waste (Amendment) Regulation 1996. (SI 1996/2019).

<sup>26</sup> The Pollution Prevention and Control Act 1999 transposes Council Directive 96/61 on integrated pollution prevention and control (the 'IPPC Directive') into national law. The Pollution Prevention Control Act 1999 includes 'a broad range of industrial processes, together with the other significant waste management activities'.

<sup>27</sup> Whilst there may not be a clear legal answer to the overlap between the planning and pollution control systems, the English government has set out the approach it believes should be 'followed as a matter of policy'. This is discussed in some detail in Planning Policy Guidance Note 23 -- Planning and Pollution Control (PPG 23). The PPG 23 contains 'the government's policies on the relevance of pollution controls to the exercise of planning powers, to development plants, to development control considerations, and on the specific considerations, which apply to contaminated land and waste disposal'. (See Woolley, D (QC), J Pugh-Smith, R Langham and W Upton (2000) *Environmental Law*, (Oxford: Oxford University Press), p. 633.)

<sup>28</sup> Woolley, D (QC), J Pugh-Smith, R Langham and W Upton (2000) *Environmental Law*, (Oxford: Oxford University Press), p. 633. Such as 'Wednesbury unreasonableness or irrelevant considerations, or through grounds of review, which do not have a clear legal status, such as proportionality'.

<sup>29</sup> Lange, B (1999) "National Environmental Regulation? A Case Study of Waste Management in England and Germany", *Journal of Environmental Law*, Vol. 11, p. 67.

formalistic' in nature.<sup>30</sup> 'Legalism' is understood as the 'strict application of formal rules and the tendency to avoid extensive interpretations'.<sup>31</sup> In the 'legalistic approach', 'consensual ways of interaction and situational *ad hoc* decision-making are seen as in conflict with the principle of the subordination of the administration to the rule of law'.<sup>32</sup> In contrast, English regulations are characterised as 'pragmatic',<sup>33</sup> 'informal and based on bargaining',<sup>34</sup> 'secretive',<sup>35</sup> and favouring 'voluntary compliance'.<sup>36</sup> 'Pragmatism' is characterized by a greater use of 'discretion, adaptation to concrete situations', an excessive degree of 'informal co-operation between those interested and consensual forms of interaction' between those participating in regulation.<sup>37</sup>

Hence, an examination of the legal framework of environmental regulations in England and Taiwan indicates that there are different 'national styles' of regulation. However, the following paragraphs discuss general aspects of the manner in which environmental regulation responds to the more specific area of waste management regulation.

First, basic aspects of the regulatory framework of England and Taiwan, such as the licensing and supervision of waste management sites, are found similar in waste management regulations. In these two jurisdictions, a public regulatory authority is responsible for the licensing and supervision of sites.<sup>38</sup> In addition, non-compliance with licence conditions or the unlicensed disposal of waste is a regulatory offence<sup>39</sup> in both jurisdictions.

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<sup>30</sup> Dyson, K (1982) "West Germany: The Search for a Rationalist Consensus", in J Richardson (ed.) *Policy Styles in Western Europe*, (London: George Allen and Unwin), p. 19.

<sup>31</sup> Lange, B (1999) "National Environmental Regulation? A Case Study of Waste Management in England and Germany", *Journal of Environmental Law*, Vol. 11, p. 62.

<sup>32</sup> *Ibid.*

<sup>33</sup> Hancher, L (1989) "Regulating Drug-Prices: The West German and British Experience", in L Hancher and M Moran *Capitalism, Culture and Economic Regulation*, (Oxford: Clarendon Press), p. 99.

<sup>34</sup> Harlow, C and R Rawlings (1997) *Law and Administration*, (London: Butterworths), pp. 312-315.

<sup>35</sup> Vogel, D (1986) *National Styles of Regulation*, (Ithaca: Cornell University Press), p. 146.

<sup>36</sup> *Ibid.*

<sup>37</sup> Lange, B (1999) "National Environmental Regulation? A Case Study of Waste Management in England and Germany", *Journal of Environmental Law*, Vol. 11, p. 63.

<sup>38</sup> Section 29(7) and (8) of the EPA 1990 and Section 40 of the Environment Act 1995 (of England and Wales); Articles 4 and 5 of the WDA 2001 (of Taiwan).

<sup>39</sup> Section 33(6) of the EPA 1990 in connection with the Waste Management Licensing Regulation 1994 reg 1(3) (of England and Wales); Articles 45-69 of the WDA 2001 (of Taiwan).

Despite these similarities, there are a few differences in waste management regulation that reveal different policy approaches to the final disposal of waste. These policy approaches are shaped by national geological and economic conditions. For example, the shortage in waste disposal sites in Taiwan was one of the factors that have caused high prices for landfill disposal, which in turn has led to a greater demand for waste incineration. Accordingly, Taiwan has favoured waste incineration as a final disposal means. This is in contrast to England, where there is the 'geological capacity' to provide enough space for suitable landfill sites.<sup>40</sup> As a result, England favours the traditional approach to dispose of a significant share of waste through landfill.<sup>41</sup>

In addition, differences exist in the legal framework of England and Taiwan on the handling of special waste. In England, the movement of special wastes is controlled through the Special Waste Regulations 1996 made under Section 62 of the EPA 1990.<sup>42</sup> Under these regulations the movement of special waste from the waste producer's premises has to be notified in advance to the Environment Agency for the purpose of checking whether the suggested disposal plant is suitable under its licence conditions and to guard against consignments of special wastes from disappearing into unlicensed sites. These regulations only deal with the pre-notification of waste management -- rather than the control of the type of final waste disposal plant -- and do not deal with the question of which type of disposal facility waste should be disposed of, so long as the plant is licensed to take in the particular type of waste.

So far, according to Article 28 of the Waste Disposal Act 2001, enterprises in Taiwan that generate waste are liable to dispose of waste either by themselves, or by public or private waste disposal organisations on a commission basis without pre-notify to the waste authority. Additionally, Articles 17 and 19 of the I&CWMS 1999 provide a 'tracking system' to avoid

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<sup>40</sup> *Making Waste Work: A Strategy for Sustainable Waste Management in England and Wales*, CM 3040 (1995), para.1.18, p. 4.

<sup>41</sup> *Ibid*, para. 1.2. Figure 1.2, p. 4.

<sup>42</sup> SI 1996 No 972, as amended by SI 1996 No 2019 and SI 1997 No 251.

illegal dumping. These recommend that particular types of waste should go to specific types of final disposal facilities, such as chemical and physical treatment, incineration or landfill.

What is more, the same officers in Taiwan carry out licensing and enforcement functions. While in England these tasks are generally assigned to separate authorities, however, the Environment Agency may be involved both licenses and enforcements through different offices. In addition, Taiwan's waste regulation authority will only begin supervision activities if there is a complaint from neighbours or an accident or other problems in meeting legal requirements. In contrast, the proactive style of enforcement of the English waste regulation authority involves a programme of regular but unannounced site visits initiated by the regulatory authority.<sup>43</sup>

Although the above factors suggest that there are 'nationally distinct styles'<sup>44</sup> of regulation, it is argued here that it is still possible to 'transplant' one national or international policy and regulation to another state or jurisdiction. In fact, law in Taiwan in general has developed out of legal transplantation, a process that has been quite successful. The history of law in Taiwan is largely a history of borrowing legal materials from other legal system.<sup>45</sup> Various foreign codes were chosen, translated, adapted and adjusted in order that they might be introduced or applied in Taiwan despite the social and legal divergences. The history of law in Taiwan witnessed that foreign laws and regulations have been successfully modified to suit Taiwan's needs. Therefore, extensive reception from foreign models has characterised much of Taiwan's legal history. However, the purposes and effects of the transplant may not have

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<sup>43</sup> Lange, B (1999) "National Environmental Regulation? A Case Study of Waste Management in England and Germany", *Journal of Environmental Law*, Vol. 11, p. 80.

<sup>44</sup> *Ibid*, p. 62.

<sup>45</sup> Between 1928 and 1937, the Criminal Act (1928, revised 1935), the Code of Criminal procedure (1928, revised 1935), the Civil Code (1929), the Code of Civil Procedure (1929), the Insurance Act (1929), the Company Act (1929), the Maritime Law (1929) 'borrowed heavily from Japan'. Since the 1950s Taiwan has enjoyed 'close relations' with the United States, and the American law has great influence. Amendments of commercial statutes - the Company law, the Law of Negotiable Instruments, the Maritime Law, and the Insurance Law - 'have drawn heavily on American theory and practice, and the Chattel Secured Transactions Act, an important appendix to the Civil Code, is said to follow the American Model'. (See Ma, H (1985) "General Features of the Law and Legal System on the Republic of China", in H. Ma (ed.) *Trade and Investment in Taiwan*, (2<sup>nd</sup> edn), (Taipei: Institute of American Culture, Academia Sinica), pp. 16-20.)

always remained the same or achieved precisely what was intended, because ‘global doctrine’ becomes clothed in local knowledge.<sup>46</sup> The overall experience of the transplantation of law to Taiwan has been successful.

### **7.1.2 Legal transplants and law reform**

#### **7.1.2.1 Legal transplant theories<sup>47</sup>**

Academic debate on legal transplants provides important insights for carrying out research in comparative law. The debate encircling the theory of legal transplants shows rival theories. The difference in views can be found in the espousal of opposing understandings about the relationship between law and society.<sup>48</sup>

Watson’s approach emphasises that there is no intrinsic relationship between law and society.<sup>49</sup> He makes the following points: ‘law is not a perfect mirror of society. There is no exact, fixed, close, complete, or necessary correlation between social, economic, or political circumstances and a system or rules of private law’.<sup>50</sup> Also, in Watson’s view, ‘law develops by transplanting, not because some such rule was the inevitable consequence of the social structure and would have emerged even without a model to copy, but because the foreign rule was known to those with control over lawmaking, and they observed the apparent merits that could be derived from it.’<sup>51</sup> He has additionally identified several factors that he considers are essential elements in deciding if particular states are mature for legal change by transplantation.<sup>52</sup> Moreover, Watson upholds that ‘legal transplants do not depend on similarity

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<sup>46</sup> Harding, A (2002) “Global Doctrine and Local Knowledge: Law in South East Asia”, *International and Comparative Law Quarterly*, Vol. 51, p. 45.

<sup>47</sup> The following paragraphs are based on Mistelis, L A (2000, Fall) “Regulatory Aspects: Globalization, Harmonization, Legal Transplants and Law Reform - Some fundamental Observations”, *The International Lawyer*, Vol. 34, No. 3, pp.1065-1067 and Foster, N (2002) “Transmigration and Transferability of Commercial Law in a Globalized World”, in A Harding and E Orucu (eds) *Comparative Law in the 21<sup>st</sup> Century*, (London; New York: Kluwer Academic), pp.55-74.

<sup>48</sup> Ewald, W (1995) “Comparative Jurisprudence II: The Logic of Legal Transplants”, *American Journal of comparative Law*, Vol. 43, p. 496.

<sup>49</sup> Wise, E (1990) “The Transplant of Legal Patterns”, *American Journal of Comparative Law*, Vol. 38, p. 2.

<sup>50</sup> Ibid.

<sup>51</sup> Watson, A (1978) “Comparative Law and Legal Change”, *Cambridge Law Journal*, Vol. 37, p. 315.

<sup>52</sup> Ibid, p. 322. Watson provides a list of nine factors that are relevant: ‘pressure force, opposition force, transplant bias, discretion factor, generality factor, societal inertia, felt-needs, source of law, and law-shaping lawyers’. For

of underlying social or economic conditions. Legal rules, taken out of context, can serve as a model for legal development in a very different society. In fact, much law has been borrowed even where the social, economic, and political circumstances of the recipient were entirely different from those of the donor system'.<sup>53</sup>

Otto Kahn-Freund took issue with Watson's proposition. He maintains that 'legal institutions cannot be easily moved from one context to the other; laws must not be separated from their purpose or from the circumstances in which they are made'.<sup>54</sup> He also asserts that 'some areas of law (which are more 'mechanical') that are more closely linked to society than others (which are more 'organic') are relatively easy to transplant. The success of transplants of more organic areas of law depends primarily on the political system (or the foreign power-structure)'.<sup>55</sup> In general, Kahn-Freund's theory of comparative legislation -- 'a revised version of Montesquieu's theory' -- emphasizes that 'legal institution may be more-or-less deeply embedded in a nation's life, and therefore more-or-less readily transplantable from one legal system to another; but nevertheless at one end of the spectrum law is so deeply embedded that transplantation is in effect impossible'.<sup>56</sup> Within Kahn-Freund's theory, there is a two-step analytical model for establishing the feasibility of a future transplant. The first step is to look at 'the relationship between the legal rule to be transplanted and the socio-political structure of the donor state'.<sup>57</sup> The following step engages 'comparing the socio-political environment of the donor and receiving state'.<sup>58</sup> Overall, Kahn-Freund's core theory is that 'the degree to which

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further details see Watson, A (1993) *Legal Transplants: An Approach to Comparative Law*, (2<sup>nd</sup> edn), (Athens, London: University of Georgia Press) is one of the best known.

<sup>53</sup> Watson, A (1974) *Legal Transplants: An Approach to Comparative Law*, (Edinburgh: Scottish Academic Press), p. 95-96. Also see Wise, E M (1990) "The Transplant of Legal Patterns", *American Journal of Comparative Law*, Vol. 38, p. 5.

<sup>54</sup> Kahn-Freund, O (1974) "On Use and Misuse of Comparative Law", *Modern Law Review*, Vol. 37, No. 1, p. 27.

<sup>55</sup> *Ibid*, pp. 5-6; 12-13.

<sup>56</sup> Ewald, W (1995) "Comparative Jurisprudence II: The Logic of Legal Transplants", *American Journal of Comparative Law*, Vol. 43, p. 495.

<sup>57</sup> Kahn-Freund, O (1974) "On Use and Misuse of Comparative Law", *Modern Law Review*, Vol. 37, No. 1, p. 18. Three factors should be taken into account: '(1) the macro-political structure of the donor state (democracy or dictatorship?); (2) the distribution of power within the political system; and (3) the role played by organized interests'. (See *ibid*, pp. 11-13).

<sup>58</sup> Kahn-Freund, O (1974) "On Use and Misuse of Comparative Law", *Modern Law Review*, Vol. 37, No. 1, p. 12.



any rule can be transplanted depends primarily on how closely it is linked with the foreign power structure'.<sup>59</sup>

Watson's work has also been considered by Ewald.<sup>60</sup> Ewald in his 'subtle critique' identified the difference between a 'Weak Watson'<sup>61</sup> and a 'Strong Watson'.<sup>62</sup> In the examination, Ewald points out that 'both Watsons argue against the mirror theory. 'Weak Watson' does the theory weakly and cautiously; 'Strong Watson' opposes it strongly and recklessly'. Moreover, Ewald continues to remind us that there is a range of 'mirror theories'.<sup>63</sup>

In contrast, Legrand<sup>64</sup> and the Seidmans argue that 'law is a culturally determined artefact, which cannot be transplanted'.<sup>65</sup> The Seidmans have stressed very clearly their views on the 'law of non-transferability of law'.<sup>66</sup> They claim that 'in introducing foreign legal and political norms into any society, those norms will become effective and take root only if they incorporate also a part at least of the norms and philosophy of the native society'.<sup>67</sup>

Teubner takes a more complicated position, looking at both sides of the debate, including Ewald's work, and presents a 'core theory' -- 'legal transplant irritates law's binding arrangement'.<sup>68</sup> He argues that 'legal transplant is an outside noise which creates wild perturbations in the interplay of discourses within these arrangements and forces them to reconstruct internally not only their own rules but to reconstruct from scratch the alien element

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<sup>59</sup> Watson, A (1976) "Legal Transplants and Law Reform", *Law Quarterly Review*, Vol. 92, p. 79.

<sup>60</sup> Ewald, W (1995) "Comparative Jurisprudence II: The Logic of Legal Transplants", *American Journal of Comparative Law*, Vol. 43, pp. 489-510.

<sup>61</sup> *Ibid*, p. 491.

<sup>62</sup> *Ibid*, p. 492.

<sup>63</sup> *Ibid*, pp. 495-496.

<sup>64</sup> Legrand, P (1997) "The Impossibility of Legal Transplants", *Maastricht Journal of European and Comparative Law*, Vol. 4, p. 111.

<sup>65</sup> Foster, N (2002) "Transmigration and Transferability of Commercial Law in a Globalized World", in A J Harding and E Orucu (eds) *Comparative Law in the 21<sup>st</sup> Century*, (London; New York: Kluwer Academic), p. 59.

<sup>66</sup> Seidman, A and R B Seidman (1994) *State and Law in the Development Process: Problem Solving and Institutional Change in the Third world*, (Basingstoke: Macmillan), pp.44-46.

<sup>67</sup> Legrand, P (1997) "The Impossibility of Legal Transplants", *Maastricht Journal of European and Comparative Law*, Vol. 4, p. 118, footnote No. 22.

<sup>68</sup> Teubner, G (1998) "Legal Irritants: Good Faith in British Law or How Unifying Law Ends Up in New Divergences", *Modern Law Review*, Vol. 61, p. 12.

itself'.<sup>69</sup> He subsequently points out that certain areas of law are 'tightly coupled' to 'legal and social processes'; this difference between 'loose and tight coupling' has influenced the possibility of success in transferring from one legal order to the other.<sup>70</sup> In addition, he asserts that the interaction between 'the recipient' and 'the donor' will give rise to 'new cleavages'.<sup>71</sup> Thus, 'new divergences as their unintended consequences' become inevitable.<sup>72</sup>

Despite the fact that there are 'competing theories on the viability of legal transplants', it is generally acknowledged that the phrase 'legal transplants' refers to 'the movement of legal norms or specific laws from one state to another during the process of law-making or legal reform'.<sup>73</sup> The empirical evidence demonstrates that the reception of foreign law is a powerful device for legal development.<sup>74</sup> Law reform, very often, is a process that will involve the reception of foreign law or legal transplants.

By and large, law reforms in Taiwan<sup>75</sup>, particularly since 1900, have often been driven and stimulated by legal transplants. Broadly speaking, Watson's ideas with respect to legal transplants seem to be especially useful for understanding Taiwan's borrowing of law for the purpose of legal change, and in particular the development of Taiwan's environmental laws and regulations. Taiwan's historical experiences have shown the value of foreign models for legal

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<sup>69</sup> Teubner, G (1998) "Legal Irritants: Good Faith in British Law or How Unifying Law Ends Up in New Divergences", *Modern Law Review*, Vol. 61, p. 12.

<sup>70</sup> *Ibid*, pp. 18-19.

<sup>71</sup> *Ibid*, p. 13.

<sup>72</sup> *Ibid*.

<sup>73</sup> Mistelis, L A (2000, Fall) "Regulatory Aspects: Globalization, Harmonization, Legal Transplants and Law Reform – Some fundamental Observations", *The International Lawyer*, Vol. 34, No. 3, p.1067.

<sup>74</sup> Until recently, Turkey was generally regarded as the most extreme example of a modern legal transplant. A number of Codes were chosen from what were seen to be 'the best' in their field for various reasons. For example: 'the law of obligations and civil procedure from Switzerland, commercial law, maritime law and criminal procedure from Germany, criminal law from Italy and administrative law from France that were chosen, translated, adapted and adjusted to solve the social and legal problems of Turkey and to fit together.' In addition, since 1988 the United Nations Convention on Contracts for the International Sale of Goods has been enacted as law in 54 countries. Although it may be argued that the needs of transnational business make this an exceptional case, it does not change the fact that the 'foreign' law could be recognized and accepted in many countries. Moreover, 'ninety seven per cent of the draft of book 2 of the new Armenian civil code, Obligation, is taken straight from the Russian civil code'. And finally the idea of a single code of private law for the European Union is another example. See Watson, A (Dec. 2000) "Legal Transplants and European Private Law", *Electronic Journal of Comparative Law*, Vol. 4.4-2. ([www.law.kub.nl/ejcl/44/art44-2.html](http://www.law.kub.nl/ejcl/44/art44-2.html)). For a history of legal transplants in Taiwan, please see example footnote 45.

<sup>75</sup> That is, Mainland China pre 1949, and Taiwan post 1949.

transformation. In general, the history of legal transplantation in Taiwan over the past century has been very successful, with numerous foreign laws being effectively transferred into Chinese cultural soil and Taiwanese society. A possible reason for such flourishing legal change lies in the economic growth, political liberalization, diplomatic ambition, and other home-grown concerns that have occurred in Taiwan over the past decades and their influences on the society and its culture. These have all encouraged a willingness on the part of both government and society to embrace appropriate foreign models and inspiration.

In most cases, new rules of law were established on the basis of foreign models, but with their scope circumscribed so as to comply with national interests. The usage of language and cultural diversity were treated with care in the transplantation process, as the use of common terminology by various jurisdictions does not always ensure that equal terms will bear equal meaning in each setting. Of course, although there has existed a great deal of literature and justification, failure comprehensively to address the question of why a particular type of rule was different from other relevant Chinese concepts has sometimes hampered the process of legal transplantation. Occasionally, the introduction of a form of a new rule of law created uneasiness and encountered many difficulties, particularly where the concept was fundamentally new to Taiwan.<sup>76</sup>

Moreover, 'the Confucian vision of the nature of civilization' remained the dominant element in the traditional Chinese society's evaluation of foreign concepts.<sup>77</sup> The 'rites (*li*)' extended equal weighting to personal and social ordering relating 'the present simultaneously

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<sup>76</sup> For example: Huan-jing Bau-fu Ji-bern-fa [Environmental Protection Basic Act] Date reported to the Executive Yuan on 13 February 1988; submitted to the Legislative Yuan on 31 May 1988, and promulgated and effective on 19 November 2002. The purpose of the Environmental Protection Basic Act is 'to prevent pollution, which might damage human health and environment, to provide for compensation in the event of such damage, and to protect the living environment'. Due to the 'environmental right' is a new concept and a new rule of law to Taiwanese society and legal jurisdiction, it has taken many specific circumstances which exist in Taiwan's legal system into consideration to localize the regulation so as to acquire a more feasible and suitable law. Although it is very difficult to implant a new legal concept in the beginning, however, the implementation of the Environmental Protection Basic Act 2002 demonstrates another successful example of legal transplantation in Taiwan.

<sup>77</sup> Alford, W (1997) *To Steal a Book Is An Elegant Offence: Intellectual Property Law in Chinese Civilization*, (Stanford, California: Stanford University Press), p. 19.

with that which came before and that which was to follow' needs to pay similar caution.<sup>78</sup>

Additionally, lawmakers needed to have sufficient foresight to determine the most appropriate rule of law to implement. As a result, the context of the rule had to be studied thoroughly to understand the possible success of the transformation. In addition, a successful legal transplant and law reform should not fail to respond to the changing social, political and economic circumstances. The example of Taiwan's legal transplant shows that political culture is not impervious to change. Thus, in order to allow legal transplant processes to be sustained and thereby achieve their stated goal, Taiwan has made ongoing unparalleled efforts to develop and improve the institutions of lawmaking and legal education.

Undoubtedly, within different cultural backgrounds, concepts or rules of law can be developed in markedly varying ways. Specific circumstances and needs can give rise to a certain degree of difficulty. Only by modifications to foreign rules or concepts could the legal transplant have continued to develop in the recipient legal system. Given the above-mentioned conceptual and practical complications which exist in Taiwan, one might well have reservations towards the soundness of searching for a 'Western' model in an 'Eastern' context.<sup>79</sup>

Nevertheless, the success of borrowing foreign law for legal change has an impact on assembling constructive legal rules to improve the legal system in Taiwan. The legal transformation of Taiwan, reveals that foreign models can often be successfully borrowed and adopted from a highly developed system even by a country with a different stage of development and a dissimilar legal system. Moreover, this indicates that the borrowing of foreign law could well be effective in advancing the recipient society's interests. Indeed, legal reform is a necessity if social welfare is to be protected and improved. As Watson has pointed out, 'legal borrowing reflects social needs'.<sup>80</sup>

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<sup>78</sup> Alford, W (1997) *To Steal a Book Is An Elegant Offence: Intellectual Property Law in Chinese Civilization*, (Stanford, California: Stanford University Press), p. 21.

<sup>79</sup> *Ibid*, p. 8.

<sup>80</sup> Wiener, J B (2001) "Something Borrowed for Something Blue: Legal Transplants and the Evolution of Global

Law in Taiwan in general has developed out of legal transplantation through an enormous length of time.<sup>81</sup> Extensive reception from foreign models has characterised much of Taiwan's legal history. Thus, Taiwan's example suggests, as is Watson's view, that 'legal transplants do not rely on similarity of underlying social or economic condition'. What's more, 'legal rules, taken out of context, can serve as a model for legal development in a very different society'. Indeed, legal change in Taiwan suggests that, as Alford has put the matters, 'East and West are inextricably linked in matters of legal transplants'.<sup>82</sup>

#### 7.1.2.2 Reception of foreign law and law reform in Taiwan

As Watson has pointed out, 'legal transplants' do not rely on 'similarity of underlying social or economic conditions'.<sup>83</sup> Very often, legal rules are able to act as a prime example for legal development in a variety of different societies. In general, much law has been borrowed even where the social, economic, and political circumstances of the 'recipient' were entirely different from those of the 'donor system'.<sup>84</sup> In addition, Watson also indicated that the moving of a rule or a system of law from one country to another has been shown to be a most productive source of legal development. By and large, the usual reform in most systems is the result of borrowing.<sup>85</sup> Furthermore, 'globalising processes' have created a worldwide network that tends to downgrade the laws of the national state to the states of mere regional parts of this network that are in 'close communication' with each other.<sup>86</sup> Therefore, it is fair to say that in most cases change in a legal system may be ascribed to 'legal transplants'. The most distinct and

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Environmental Law", *Ecology Law Quarterly*, Vol. 27, p. 1353.

<sup>81</sup> See *supra* footnote No. 45.

<sup>82</sup> Alford, W (1997) *To Steal a Book Is An Elegant Offence: Intellectual Property Law in Chinese Civilization*, (Stanford, California: Stanford University Press), p. 8.

<sup>83</sup> Watson, A (1974) *Legal transplants: An Approach to Comparative Law*, (Edinburgh: Scottish Academic Press), pp. 95-96.

<sup>84</sup> Wise, E M (1990) "The Transplant of Legal Patterns", *American Journal of Comparative Law*, Vol. 38, p. 6.; Also see Harding, A (2002) "Global Doctrine and Local Knowledge: Law in South East Asia", *International and Comparative Law Quarterly*, Vol. 51, p. 45.

<sup>85</sup> Watson, A (1974) *Legal Transplants: An Approach to Comparative Law*, (Edinburgh: Scottish Academic Press), p. 94.

<sup>86</sup> Teubner, G (1998) "Legal Irritants: Good Faith in British Law or How Unifying Law Ends Up in New Divergences", *Modern Law Review*, Vol. 61, p. 16.

famous cases are such countries as Japan and Turkey.<sup>87</sup> For instance, both the private and public law of Turkey are ‘either directly borrowed from, or significantly influenced’ by foreign models.<sup>88</sup> Modern Japanese law is so far as ‘influenced by American legal culture as by German or French’.<sup>89</sup> Even the new Dutch Civil Code is ‘filled with rules borrowed from France, Germany, and the Common Law’.<sup>90</sup> In addition, law in South East Asia has been cultivating and expanding through legal transplants for many centuries.<sup>91</sup>

The rapid social, economic and political change which has taken place in Taiwan, and ‘globalising processes’ in legal development, indicate that Taiwan needs better and quicker responses to the practical problems of waste management. At present, the task for the law reformers in Taiwan is how best to recognise and select ‘transferable, flexible ideas’ to deal with key problems.<sup>92</sup> Indeed, many of the major reforms in Taiwan have been the result of legal transplantation. Without a doubt, legal transplants have been a ‘crucial catalytic element’, and provided ‘inspiration and stimulus’ to various law reforms in Taiwan.<sup>93</sup> Therefore, it appears clearly that the role of ‘legal transplant’s in the process of construction of Taiwan’s law has been important and will continue.

There is no evidence that one kind of law is more easily transplanted than another.<sup>94</sup>

This dissertation has adopted a comparative approach -- the problem being studied must be set in the context of the best solutions obtaining from the most significant legal systems. It follows from this that Taiwan must either adopt the best existing variant or find a new solution that is

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<sup>87</sup> Orucu, E (2000) “Critical Comparative Law: Considering Paradoxes for Legal Systems in Transition”, *Electronic Journal of Comparative Law*, Vol. 4.1. ([www.law.kub.nl/ejcl/41/art41-1.html](http://www.law.kub.nl/ejcl/41/art41-1.html)).

<sup>88</sup> *Ibid.*

<sup>89</sup> Mattei, U (1994) “Efficiency in Legal Transplants: An Essay in Comparative Law and Economics”, *International Review of Law and Economics*, Vol.14, p. 6.

<sup>90</sup> *Ibid.*, p. 7.

<sup>91</sup> Harding, A (2002) “Global Doctrine and Local Knowledge: Law in South East Asia”, *International and Comparative Law Quarterly*, Vol. 51, p. 45.

<sup>92</sup> De Cruz, P (2002) “Legal Transplants: Principles and Pragmatism in Comparative Family Law”, in A, Harding and E Oruce (eds) *Comparative Law in the 21<sup>st</sup> Century*, (London; New York: Klumer Academic), p.119.

<sup>93</sup> Harding, A (2002) “Global Doctrine and Local Knowledge: Law in South East Asia”, *International and Comparative Law Quarterly*, Vol. 51, p. 45.

<sup>94</sup> Harding, A (2002) “Global Doctrine and Local Knowledge: Law in South East Asia”, *International and Comparative Law Quarterly*, Vol. 51, p. 45.

better and more easily applied than any of the existing ones. This means that Taiwan no longer can confine itself to making proposals for the reform of national law only in an effort to see what can be of use to Taiwan itself. Taiwan must now go beyond this limitation. Even if the legal institutions in different systems are ‘historically and conceptually’ quite different, they may still ‘perform’ the same role in the same way.<sup>95</sup> Taiwan, therefore, needs to abandon ‘national doctrines’ and come directly to grips with the demands for suitable rules. Other types of legal systems can, and should, also be considered. Under this circumstance, English law offers a whole new dimension for law reform in Taiwan. Hence, I strongly suggest that the best course of action for dealing with contaminated land, the adoption of the concept of ‘duty of care’, and ‘integrated pollution prevention control’ regime, which are found in English waste management laws and regulations, these are practicable measures which could be very usefully applied in Taiwan.

Undoubtedly, within the reform process, the adaptation of foreign legal concepts for local implementation will be of great concern for the Taiwan government. Through legal transplants, interaction between domestic and foreign practice will most likely lead to ‘new convergence’. As a result, rather than unnecessary anxiety over the scope of possible conflicts, the Taiwan government should be focused upon amending existing unsatisfactory or inadequate laws and regulations in preparation for integration. Drawing inspiration from foreign legal concepts together with vigilant utilisation of legal transplants can provide a waste management framework that will assist to protect the natural environment in Taiwan. In the context of Taiwanese legal transactions, similar processes have been recorded which have brought about substantial positive effects. Taken as a whole, success or failure in environmental ‘legal transplantation’ may well rely on a successive collaboration among government, local

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<sup>95</sup> Zweigert, K and H Kotz (1998) *An Introduction to Comparative Law*, (3<sup>rd</sup> edn) (Oxford: Clarendon Press, trans: A. Weir), p. 37.

authorities and the general public in order to adapt unfamiliar ideas and perhaps to ‘maximise incentives and remove disincentives to popular acceptance of new legal ideas’.<sup>96</sup>

How exactly English waste management laws and regulations might have an impact on the Taiwan waste management legislation will be significantly determined by giving the English laws and regulations a local gloss so that they fit in with Taiwan’s society. Without doubt, Taiwan has in the past few years made considerable progress, especially in moving forward environmental legislation and fostering technological upgrading. In practice, however, what should be done to meet the requirement of localisation of other countries’ law and policy and to promote a comprehensive and constant system of environmental protection? In my view, first of all, Taiwan needs to re-examine its existing laws and regulations, followed by evaluating the effectiveness of environmental protection efforts of local governments as a central consideration in deciding which are the most significant shortcomings in the current legislation. Subsequently, the evaluation results can be employed to determine which foreign environmental laws or regulations are likely to gain a local dimension -- that is, to blend in effectively with the existing corpus of Taiwanese law and to gain the necessary social acceptance. On the other hand, these outcomes can also be used as a basis on which to distribute subsidies and encourage local administrators to attach greater importance to environmental issues.

Over and above this, Taiwan must also raise the environmental protection awareness and ‘foster environmental ethics among the citizenry’.<sup>97</sup> This should include intensifying environmental education, boosting common understanding of the need for environmental protection and natural conservation, and cultivating ‘environmental ethics’ among the public so as to make environmental protection an integral part of everyone’s daily life.

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<sup>96</sup> Cotterrell, R (2001) “Is There a Logic of Legal Transplants?”, in Nelken, D and J Feest (ed.) *Adapting Legal Cultures*, (Oxford: Hart Publishing), p. 80.

<sup>97</sup> Hu, J (ed) (1994) *Quiet Revolutions on Taiwan, Republic of China*, (Taipei: Kwang- Hwa), p. 206.



Furthermore, public access to environmental information is requisite to environmental protection. Usually, various pollution control regimes require the enforcing authorities to maintain public registers containing detailed information. In practice, the general public hardly ever consults these registers. To set up a nationwide on-line information system might help enhance and reach the purpose of localising certain foreign environmental laws and regulations into a local dimension.

On the basis of the above suggestion, I conclude that the adoption of foreign processes and the techniques used in the implementation remains an important task for the policy-makers and legislators of Taiwan. These decision-makers must convert these aspirations into reality.

## **7.2 The issue in relation to contaminated land**

Over the past two decades, as Taiwan has raced to become an industrialised and economically powerful country, its approach to environmental protection has proved incapable of preventing and redressing the severe degradation of the environment that has occurred. As previously stated, not only has a considerable amount of the waste been disposed of in an untreated condition, but also due to faulty management, the long history of the mishandling of waste has given Taiwan a record of pollution that cannot be ignored.

The problems associated with tackling contaminated land have been amongst the most difficult environmental matters to solve in recent years. In the past, contaminated land has been given much less legislative attention than air pollution or water pollution. However, wider understanding of the toxic effect of many pollutants resulting in soil and underground water pollution has led to considerable concern in the issue of contaminated land. The history of industrial activity taking place over large areas of land in the past two decades along with improper waste management suggests that the number of contaminated sites could be large.

At present, the Soil and Groundwater Pollution Remediation Act 2000<sup>98</sup> acts solely as the legislative measure, which empowers certain bodies<sup>99</sup> as agencies to take responsibilities and designate the costs of remediation<sup>100</sup> for contaminated land. Nevertheless, the Soil and Groundwater Pollution Remediation Act 2000 suffers some regulatory problems and poses certain ambiguity. First, it is uncertain whether the term ‘appropriate person in relation to the site (*tu-dih-guang-shi-ren*)’<sup>101</sup> includes past landowners. Secondly, although the ‘strict liability’ was laid down in Article 25, the ‘appropriate person in relation to the site’ (in certain circumstances, which may be the landowner or occupier) will not normally be held liable unless the ‘appropriate person’ breached his or her ‘duty of care’ to avoid the ‘occurrence, aggravation, or continuance’ of soil pollution.<sup>102</sup> The Act seems to require that the ‘appropriate person’ exercise a ‘high degree of care’. Thirdly, it is unsure whether the innocent buyer may have a right to defence for any potential legal liability in relation to the cost of clear-up the contaminated land.<sup>103</sup> Fourthly, the Act does not include any provision regarding the issue of ‘retrospective liability’, which may give rise to ‘statutory offences of environmental strict liability’ to a third-party. Fifthly, the Act does not regulate the problem of ‘historic polluted’ sites and how to carry out the remedial measures in general.<sup>104</sup> And finally, the Act does not seek to prevent future contamination. The Act focuses only on securing the clean-up of existing contaminated sites by regulatory intervention. These issues all remain to be resolved. Therefore, Part IIA of the EPA 1990 of England and Wales

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<sup>98</sup> Tu-rang Jyi Dih-shiah-shoei U-ran-jeng-chyr Fa [Soil and Groundwater Pollution Remediation Act] (promulgated on 2 February 2000, effected on 3 February 2001), in the *TEPA Register*, No. 147, (March 2000), pp. 21-31. The Act was introduced in the Legislative Yuan (of Taiwan) in 1991.

<sup>99</sup> Articles 3 and 4 of the Solid and Groundwater Pollution Remediation Act 2000.

<sup>100</sup> *Ibid*, Article 22 to Article 25.

<sup>101</sup> *Ibid*, Article 2(15) and Article 6.

<sup>102</sup> *Ibid*, Article 25.

<sup>103</sup> Article 8 of the Solid and Groundwater Pollution Remediation Act 2000. The issue of a seller’s disclosure obligation affects a seller’s liability for fraud if the seller deliberately conceals the fact of contamination.

<sup>104</sup> For example: ‘chemical analysis of surface and deep soils at a site to help determine levels of contamination is expensive and demanding’. Taking correct samples and analyzing for accurate compounds is not a easy task and ‘predicting risks’ to human being health and to other ‘living organisms’ from the quantity and types of chemicals is also difficult. In addition, there are ‘seldom records of the history of sites’, which have continually had various industrial uses and, therefore, whichever appraisal of ‘the probable nature of contaminations’ from the industries, at a site is to be very difficult. (See McEldowney, J F and S McEldowney (2001) *Environmental Law and Regulation*, (London: Blackstone Press Limited), p.152.)

which envisages a new regime for statutory guidance and regulations for the identification of contaminated land sites is a useful measure to observe.

Most of the solid waste that the UK produces has traditionally been disposed of in landfill sites and this has resulted in a considerable number of contaminated sites.<sup>105</sup> As a result, the English government has brought in Part IIA of the EPA 1990, which was inserted by the Environment Act 1995, to deal with the issue of contaminated land.<sup>106</sup> In line with Section 78A(2) of the EPA 1990, contaminated land is defined as follows:

Land that appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under it, that either:

- (a) significant harm is being caused or there is a significant possibility of such harm being caused; or
- (b) pollution of controlled waters is being, or is likely to be, caused.

In broad terms, contaminated land that is likely to 'cause serious harm' to the environment or to controlled waters is to be designated by the local authority as a 'special site'<sup>107</sup> over which 'the Environment Agency exercises responsibility'. In the case of control over contaminated land that 'poses a risk of significant (but not serious) harm to the environment is exercised by the local authority'.<sup>108</sup>

As to the meaning of 'harm', it should be noticed that in Part IIA of the EPA 1990, 'harm' is given a different description than that which appears in Part I of the Act. Therefore, 'harm' may be difficult to access accurately.<sup>109</sup> However, as regards to human beings 'the

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<sup>105</sup> Such as those 'at the Chemstar solvent recovery works at Stalybridge, the Laporte Works at Ilford and the Ministry of Defence site at Lumsden Road in Portsmouth'. (See McIntyre, O. (1996) 'The U.K. Environment Act 1995 Section 57: A Contaminated Land Regime at Last', *Environmental Liability*, Vol. 4, p.67.)

<sup>106</sup> Twenty-six new sections (Section 78A to 78YC).

<sup>107</sup> Under Section 78C(8) of the EPA 1990, a contaminated site 'is to be designated as a special site by the relevant local authority if it is of a description prescribed by regulations to be made by the Secretary of State'. Under Section 78C(10), the regulations may, in particular, have considered 'whether the harm or pollution concerned is serious or whether the Environment Agency is likely to have expertise in dealing with what harm or pollution'.

<sup>108</sup> Under Section 78A(9) of the EPA 1990, a local authority in England and Wales is 'any unitary authority, any district council so far as it is not a unitary authority, or the Common Council of the City of London'.

<sup>109</sup> McEldowney, J F and S McEldowney (2001) *Environmental Law and Regulation*, (London: Blackstone Press), p. 153.

definition in Part IIA extends only to her or his property -- offences to her or his senses are not part of the definition'.<sup>110</sup>

The provisions provide for the level of remediation to be carried out, requiring 'the cost of clean-up to be balanced against the risk of harm', that risk being carefully considered in terms of further harm and intended use.<sup>111</sup> The approach that local authorities are to take on identifying contaminated land is described in the draft guidance<sup>112</sup>, which 'employs a methodology based on risk assessment'.<sup>113</sup> Each local authority is required to establish 'source-pathway-target' relations with regard to all land that it presumes may be contaminated.<sup>114</sup>

Once a local authority has acknowledged that the site is a contaminated site, the authority must decide which remediation should be carried out. Subsequently, if the site has been suggested as a 'special site', the authority is obliged to notify 'the Environment Agency, the owner of the site and any person in occupation of the site'. It must also give notice to the person whom it considers to be the 'appropriate person' in relation to that site<sup>115</sup> (which may, in certain circumstances, also be the owner or occupier) who may then be forced to clean-up the land himself, or 'bear the cost of clean-up operations undertaken by the local authority or by a third party'.

As contaminated land is often the result of the activities of polluters who cannot be found, there is an obvious difficulty in giving effect to the 'polluter pays principle'. Under this circumstance, the EPA 1990 adopts a 'hierarchical approach' to identify liability.<sup>116</sup> According to Section 78F(2) of the EPA 1990, the 'appropriate person to bear responsibility for the

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<sup>110</sup> Section 78A(4) of the EPA 1990. This point is emphasized by the draft guidance on identifying contaminated land, issued for consideration by Parliament during the passage of the Environment Bill (DoE, 5 May 1995), which states that 'a local authority should disregard harm to the health of man other than death, serious injury and clinical toxicity'.

<sup>111</sup> *Ibid*, Section 78E(4).

<sup>112</sup> *Ibid*, Section 78E(5).

<sup>113</sup> This is compatible with the approach described in the *Guide to Risk Assessment and Risk Management for Environmental Protection* (DoE, 1995). (Also see Thornton, J and S Beckwith (1997) *Environmental Law*, (London: Sweet & Maxwell), p 153.)

<sup>114</sup> Thornton, J and S Beckwith (1997) *Environmental Law*, (London: Sweet & Maxwell), p 153.

<sup>115</sup> Section 78B(3) of the EPA 1990.

<sup>116</sup> Thornton, J and S Beckwith (1997) *Environmental Law*, (London: Sweet & Maxwell), p.156.

contaminating substances in, on or under land is the person who caused or knowingly permitted those substances to be there'. If, 'after reasonable enquiry', such a person cannot be found, 'the owner or occupier of the contaminated land is made the appropriate person'.<sup>117</sup> It is to be aware of that 'the criteria for determining environmental liability under Part II of the EPA 1990 are different from those in common law, under the rule in *Rylands v Fletcher*'.<sup>118</sup> Once a local authority has identified any contaminated land within its area, the authority may serve on each 'appropriate person' a 'remediation notice'<sup>119</sup> specifying 'what that person is required to do by way of remediation and the time periods within which each of the things specified are to be done'.<sup>120</sup> Section 78A to 78Q of the EPA 1990, as amended, contain details of the procedure, powers of inspection and enforcement powers, such as requiring 'reasonable' remediation measures but with regard to the 'likely costs of measures and the seriousness of the harm'.<sup>121</sup>

However, a few important issues limit the nature of the action that the enforcing authority may require by way of remediation. First, where the contaminated land is causing or is likely to cause pollution to 'controlled waters', but no significant harm is being caused or is likely to be caused, the authority 'has no power to require remediation of any land or waters, although it can carry out remediation itself without recovering the cost'.<sup>122</sup> Secondly, the scope of remediation, which 'the enforcing authority may do, or require to be done', are subject to reasonable considerations 'having taken into account its likely cost in relation to the seriousness of the harm being caused or likely to be caused by the contamination'.<sup>123</sup> Thirdly, liability is

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<sup>117</sup> Section 78F(4) of the EPA 1990. The idea of placing liability on an owner or occupier who is not at fault in having caused or permitted the contamination was sharply criticised.

<sup>118</sup> (1868) LR 3 HL 330. (Also see Thornton, J and S Beckwith (1997) *Environmental Law*, (London: Sweet & Maxwell), p. 158.)

<sup>119</sup> Subs. (1) of the EPA 1990.

<sup>120</sup> Section 78E(1) of the EPA 1990.

<sup>121</sup> McEldowney, J F and S McEldowney (2001) *Environmental Law and Regulation*, (London: Blackstone Press Limited), p.155.

<sup>122</sup> Section 78J of the EPA 1990.

<sup>123</sup> *Ibid*, section 78E(4). Where the authority concludes that remedial measures cannot be required, "as the costs would outweigh the seriousness of the harm or pollution in question, it must publish a remediation declaration recording its decision". (Section 78H(6) of the EPA 1990)

restricted in respect of land to which contaminating ‘substances’<sup>124</sup> have escaped from other land. However, in accordance with Section 78M(1) of the EPA 1990, it is an offence to ‘fail, without reasonable excuse, to comply with the requirements of a remediation notice’.

Moreover, each enforcing authority is under a duty to ‘maintain a public register of contaminated land identified within its jurisdiction’.<sup>125</sup> In order to maintain consistence with the UK’s government policy, the provisions also let ‘market forces and pressure for development’ to be part of the cause in the remediation of contaminated land while ‘preserving the caveat emptor principle’.<sup>126</sup> In addition, the legislation provides for ‘the enforcing authority to carry out remedial measures itself in the case of an emergency or where no responsible party can be found’.<sup>127</sup> Where the party identified as responsible fails to carry out the required remediation, ‘the enforcing authority may act and recover its costs from that party’.<sup>128</sup> The defaulter will also be criminally liable.<sup>129</sup>

Furthermore, the contaminated land regime has certain link with the planning process.<sup>130</sup> For instance, Planning Policy Guidance (PPG) 12<sup>131</sup> provides that ‘a policy should be adopted on the re-use of derelict or under-used land in preference to development of greenfield sites, an approach which is favoured by the present government’.<sup>132</sup> There is also PPG 23<sup>133</sup>, which ‘incorporates on the location of industries that have high pollutant potential’.

On the whole, the contaminated land provisions introduced by the Environment Act 1995 are finally ‘bringing to an end a period of legal uncertainty’ for those engaged in the

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<sup>124</sup> Section 78A(9) of the EPA 1990.

<sup>125</sup> *Ibid*, Section 78R.

<sup>126</sup> McIntyre, O (1996) ‘The UK Environment Act 1995 Section 57: A Contaminated Land Regime at Last!’, *Environmental Liability*, Vol. 4, No. 4, p. 68.

<sup>127</sup> Section 78N of the EPA 1990.

<sup>128</sup> *Ibid*, Section 78P.

<sup>129</sup> *Ibid*, Section 78M.

<sup>130</sup> *Draft Guidance on Identifying Contaminated Land*, (DoE, 5 May, 1995), para. 4.

<sup>131</sup> 1992/GGP12 : Development Plans and Regional Planning Guidance, published by the DoE.

<sup>132</sup> McEldowney, J F and S McEldowney (2001) *Environmental Law and Regulation*, (London: Blackstone Press Limited), p.156.

<sup>133</sup> 1994/PPG 23 -- Planning and Pollution Control; published by the DoE, contains a section on contaminated land.

property sector in the UK<sup>134</sup>. That is, the Part IIA of the EPA 1990 provides an important and practical solution to the problem of remedying contaminated land. In addition, the EPA 1990 seeks to accommodate a 'fair balance between imposing liability on the parties responsible, in line with the polluter pays principle'.<sup>135</sup> Moreover, the provisions indicate 'remedial measures' ordered should be 'reasonable' having regard to 'the cost which is likely to be involved' and they try to make use of 'market forces by preserving the caveat emptor principle'. Hence, the above findings suggest that contaminated land provisions contained in Part IIA of the EPA 1990 shall provide a valuable and feasible solution to Taiwan's present situation.

This section has sought to explore the possibility of adopting in Taiwan the contaminated land provisions contained in the Part IIA of the UK's EPA 1990. Undoubtedly, any implementation of the legal concepts contained in the EPA 1990 will result in a continuously monitored reform of the current contaminated land regime in Taiwan. Such modification could have practical implications in providing certainty to assigning potential liability for those involved in transactions for the sale or development of contaminated land, thus enabling the parties to negotiate warranties and assurances. Furthermore, the provision could enable the Taiwan government to employ market forces in the remediation of contaminated land, as well as providing a practical mechanism in the allocation of liability for historic pollution.

### 7.3 Concerns regarding 'duty of care'

In the current Taiwan legal system, the central government enacts laws and regulations and offers guidance in environmental matters, but the power to accomplish enforcement is left to local authorities. Each waste regulation authority has been given ample authorisation and enjoys great

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<sup>134</sup> Mdntyre, O (1996) "The UK Environment Act 1995 Section 57: A Contaminated Land Regime at Last!", *Environmental Liability*, Vol. 4, No. 4, p. 74.

<sup>135</sup> *Ibid.*

discretionary powers. There have been countless cases of competition and disagreement among these environmental agencies in carrying out their responsibilities.

In addition, prior to 2002, environmental statutes in Taiwan contain no 'action-forcing' provisions to oversee the authority to carry out their appropriate actions. When pollution events occur, the residents or the victims immediately barricade the suspect sites and demand compensation. This combination of circumstances prevents the formation of legal theory in the implementation of anti-pollution civil compensation law. Hence, a change in the law and legal framework is urgently needed.

Generally speaking, environmental law in Taiwan is in transition. At present, the difficulties of assessing liability and the enforcement of liability are areas of particular weakness for environmental law in Taiwan. Therefore, the development of effectual rules on liability is central to the maturation of environmental law. It is with this in mind that the 'duty of care' regime can provide something of a framework which, potentially, could change for the better present situation in Taiwan.

In England, the operation of the 'duty of care' is carried out during the whole waste management process.<sup>136</sup> The provisions of Section 34 of the EPA 1990<sup>137</sup> are backed up by the Environmental Protection (Duty of Care) Regulation 1991,<sup>138</sup> and are accompanied by a special Circular<sup>139</sup> and also by a statutory Code of Practice.<sup>140</sup>

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<sup>136</sup> See generally, Section 34 of the EPA 1990. In practice, it is virtually not possible to have anything to do with waste and escape the duty of care, apart from in two situations. The first can be found in Section 34(2): '... which absolves the occupier of domestic property from any duty of care in respect of household waste produced in that property'. Secondly, there is the exemptions arise under the Waste Management Licensing Regulations 1994, reg 16: '... which exclude persons undertaking activities from the need to obtain a licence'. Also see above Section 6.2.3.3 of the Chapter Six.

<sup>137</sup> Section 34 of the EPA 1990 has been experienced 'minor amendment by Section 33 of the Deregulation and Contracting Out Act 1994 and also Section 120 and para. 65 of Schedule 22 of the Environment Act 1995'. (Also see Laurence, D (1999) *Waste Regulation Law*, (London: Butterworths), p.120.)

<sup>138</sup> SI 1991/2839.

<sup>139</sup> Circular 19/91 *Environmental Protection Act 1990 Section 34, The Duty of Care*, HMSO, London.

<sup>140</sup> *Environmental Protection Act 1990 Section 34, Waste Management, The Duty of Care: A Code of Practice*, (1996) (2<sup>nd</sup> edn.), HMSO, London.



The 'duty of care' regime intends to establish a continuous duty that is fulfilled by the producer of the waste, the transporter or handler of that waste and those responsible for its final disposal. Any person who is failed to perform the 'duty of care' or 'with a requirement of the regulations made under Section 34(6) of the EPA 1990' will be legally responsible for a fine.

In brief, Section 34 of the EPA 1990 requires 'all parties in waste management to take measures applicable to them that are reasonable in the circumstances'.<sup>141</sup> These measures can be underlined in four courses: First, to prevent 'the escape of waste from the holder's control'.<sup>142</sup> Secondly, to secure that 'all waste are transferred only to correctly authorised persons' such as 'waste management licence holders or registered waste carriers'.<sup>143</sup> Thirdly, at the time of the transfer, an 'adequate written description' of the waste -- 'transfer note' -- is required.<sup>144</sup> And finally, to prevent other persons being in breach of Section 33 of the EPA 1990.<sup>145</sup> Apart from these measures, waste management laws and regulations in England also contain a variety of civil enforcement tools available to the regulatory authorities.<sup>146</sup> Therefore, on the basis of the above findings, it appears that the regime of 'duty of care' should be carried out in the whole waste management process. Also, it reveals that the regime of 'duty of care' endorses 'an overlapping system of liability from which no single actor can escape'.<sup>147</sup>

Moreover, the EPA 1990 contains a sort of precautionary clause in which those potential polluters must apply the 'Best Available Techniques Not Entailing Excessive Cost (BATNEEC)' to their operations<sup>148</sup>. Liability for environmental damage is imposed in anybody who 'causing or knowingly permitted' the damage to occur. In addition, the EPA 1990 was also a step towards

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<sup>141</sup> Section 34(1) of the EPA 1990.

<sup>142</sup> *Ibid*, section 34(1)(b).

<sup>143</sup> *Ibid*, section 34(1)(c)(i).

<sup>144</sup> *Ibid*, section 34(1)(c)(ii).

<sup>145</sup> *Ibid*, section 34(1)(a).

<sup>146</sup> Section 34(6) provides that 'any person who fail to comply with the duty of care or with a requirement of the regulations made under Section 34(6) will be liable on summary conviction to a fine not exceeding the statutory maximum and on conviction on indictment to a fine'.

<sup>147</sup> (1990 "The New Duty of Care as to Waste Management", *Land Management and Environmental Law Report*, Issue 1, Vol. 2, p. 19.

<sup>148</sup> See the following Section of 7.4.

‘integrated pollution control’, rather than the segmented approach to environmental protection. Furthermore, it also created criminal offences as well as civil remedies for failure to meet with statutory obligations imposed in Part I of Act.<sup>149</sup>

In Taiwan, there have been a number of examples of slow implementation of waste management laws. As mentioned earlier, each waste regulation authority in Taiwan has been given ample authorisation and enjoys great discretionary powers. However, since Taiwan’s legal system does not have a comprehensive liability regime; incomplete existing laws and regulations secure the authorised regulatory agencies a better position even if they have not properly addressed violations of environmental laws. In order to improve the current situation, the ‘duty of care’ regime that is found in the waste management laws and regulations of England seems to be able to provide an affirmative strategy to set reasonable and generally acceptable standards.

Moreover, in light of the current emphasis in Taiwan on enforcing environmental laws through criminal prosecution,<sup>150</sup> the best way of keeping away from liability for environmental crime is to carry out a strong environmental compliance programme. Under the regime of ‘duty of care’, any one who ‘imports, produces, carries, keeps, treats or disposes of waste or who, as a broker’ fail to properly handle its environmental matters can easily result in violating the legal liability. It is clear that the ‘duty of care’ regime will remain a powerful instrument into the future.

Taken as a whole, there can be no doubt as to the importance of an adequate system of environmental liability as a means of protecting the environment. Nevertheless, in practice, efforts to achieve these aims of environmental protection have been limited in their success. However, the ‘duty of care’ regime is a powerful measure; it definitely merits its role in the system of environmental protection. Therefore, I conclude that the application of ‘duty of care’, a powerful

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<sup>149</sup> The only exceptions to this rule are, ‘first, where the damage arose wholly because of the fault of the victim, and secondly, where she or he voluntarily accepted the risk of the damage being caused’. (See Section 73(6) of the EPA 1990.)

<sup>150</sup> *Liberty Times* (Zi-you Shi-bao), Sheh-luenn: “Chyuan-tai Leh-seh Wenn-ti Bih-shiu Biau-been Jian-jyh”, in 31 May 1997, p.3.

regime found in England, may help to reduce some of the unfairness and distrust that currently exists in the Taiwan's legal system.

In sum, the focal point of this section is to examine the legal liability regime which is currently implemented in Taiwan for the purpose of regulating waste management and disposal. The findings of this research suggests that this regime is both highly necessary and yet also problematic. The 'duty of care' represents not only a very important development of the law but also a transformation of philosophy for the manner in which Taiwan deals with environmental pollution. Undoubtedly, there are differences in the style of legal thinking and the techniques of applying the law in the countries of the Common Law on the one hand and on the Civil Law on the other. However, it would certainly be wrong to suggest that there would be an unbridgeable gap between these two great legal families when Taiwan's environmental regulators get started in the task of discovering the relevant law. There are grounds for believing that these two legal traditions are gradually moving closer together in their methods and techniques.<sup>151</sup> Furthermore, pollution-control law in Taiwan has not yet developed a specific attachment to a particular legal system, therefore borrowing of foreign ideas such as the 'duty of care' should not pose many problems.

It is certainly too early to come to a firm conclusion that the introduction of the foreign legal concept -- 'duty of care' -- will be easily accepted and transplanted into Taiwan society. However, the concept of a duty of this kind is not completely foreign to the Taiwanese law. A comparable concept is indispensable to health and safety legislation and therefore the society should be more or less familiar with this notion. As mentioned earlier, imported law can work in an unpredictable and destructive fashion. Hence, legal transplantation must be done with great care. Given the fundamental cultural and ideological differences between England and Taiwan, it is anticipated that adoption of the 'duty of care' may well have unintended consequences.

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<sup>151</sup> Evidence of this change can be seen in the fact that almost every Member State in the European Union has now implemented various Directives.

#### 7.4 The subject associated with ‘integrated pollution prevention control’

The phrases ‘Integrated Pollution Prevention and Control’ (IPPC) and ‘integrated pollution control (IPC)’ seem to imply different schemes. Nevertheless, these two terminologies represent the similar precautionary measures ‘if the control of pollution is taken to include prevention as it should’.<sup>152</sup>

In general, IPC is a control system aiming to prevent or minimise the environmental impacts of some industrial practices.<sup>153</sup> The IPC regime in England seeks to restrain certain types of ‘industrial prescribed processes’, which have the potential to pollute the environment.<sup>154</sup> IPC was brought in by Part I of the Environmental Protection Act 1990. Overall, the IPC regime is built on a ‘holistic approach’ to the management of pollution.<sup>155</sup>

A further development of IPC is to be found in the introduction of the 1996 EC Directive on Integrated Pollution Prevention and Control (IPPC) (96/61).<sup>156</sup> In order to comply with the EC directive, the Pollution Prevention Act 1999 contains the provisions of the Directive on IPPC.<sup>157</sup> The broad meaning of IPPC implies a concept to be applied in the general field of pollution control rather than a single or specific control system. The underlying principle of IPPC suggests that pollution problems should be tackled in an integrated manner that includes all three environmental media -- air, water and land. This is contrary to the common approach which only focuses on one

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<sup>152</sup> Emmott, N and N Haigh (1996) “Integrated Pollution Prevention and Control: UK and EC Approaches and Possible Next Steps”, *Journal of Environmental Law*, Vol. 8, No. 2, p. 301.

<sup>153</sup> Section 4(2) of the EPA 1990.

<sup>154</sup> Woolley, D (QC), J Pugh-Smith, R Langham and W Upton (2000) *Environmental Law*, (Oxford: Oxford University press), p. 187.

<sup>155</sup> Thornton, J and S Beckwith (1997) *Environmental Law*, (London: Sweet & Maxwell), p. 115.

<sup>156</sup> The IPPC reflects that integrated pollution control (IPC) system should be applied in the wide-ranging area of pollution control rather than single or specific prescribed processes. (See Emmott, N and N Haigh (1996) “Integrated Pollution Prevention and Control: UK and EC Approaches and Possible Next Steps”, *Journal of Environmental Law*, Vol. 8, No. 2, p. 301.

<sup>157</sup> Laurence, D (1999) *Waste Regulation Law*, (London: Butterworths), pp.30-32.

medium at a time. The detailed definition of IPPC is to be found in a Recommendation adopted by the OECD in 1991.<sup>158</sup>

Practice integrated pollution prevention and control, taking into account the effects of activities and substances on the environment as a whole and the whole commercial and environmental life cycles of substances when assessing the risks they pose and when developing and implementing control to limit their release.

An Appendix to the Recommendation gives particulars of guidance on implementation of the IPPC concept. They cover the principles of IPPC, essential policy aspects, foci for decision making, and management instruments.<sup>159</sup>

The objectives of IPC fall into two categories, as follows.<sup>160</sup> First, IPC is intended to ‘prevent, minimise or render harmless the releases of any prescribed substances or other substances’ – the major approach is using the ‘Best Available Techniques Not Entailing Excessive Cost (BATNEEC)’<sup>161</sup>. Secondly, IPC is ‘to develop an approach to pollution control that considers releases from industrial processes to all media in the context of the effective on the environment as a whole’ -- the preference of BATNEEC must have taken into account the ‘Best Practicable Environmental Option (BPEO)’<sup>162</sup>.

BATNEEC is the means by which ‘economic, environmental and social costs and benefits are to be compared and weighed up in establishing the best method for controlling the particular pollutant in question’.<sup>163</sup> In short, BATNEEC maintains equilibrium between ‘limiting the financial price of pollution control and the environmental cost of industrial operations’.<sup>164</sup> As to the BPEO, it was not defined in the EPA 1990. Nevertheless, specific guidance has been set up in

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<sup>158</sup> OECD (1991) *Integrated Pollution Prevention and Control*, Environment Monograph No. 37, Article I(a).

<sup>159</sup> See Appendix of the Recommendation, para. 1, 2, 3, and 6.

<sup>160</sup> McEldowney, J and S McEldowney (2001) *Environmental Law and Regulation*, (London: Blackstone Press Limited), p.46. See the following paragraphs.

<sup>161</sup> Section 7(2) of the EPA 1990.

<sup>162</sup> Ibid, Section 7(7).

<sup>163</sup> Jordan, A (1993) “IPC and the Evolving Style and Structure of Environmental Regulation in the UK”, *Environmental Policies*, Vol. 2, No. 3, p. 405.

<sup>164</sup> Emmott, N and N Haigh (1996) “Integrated Pollution Prevention and Control: UK and EC Approaches and Possible Next Steps”, *Journal of Environmental Law*, Vol. 8, No. 2, p. 303.

order to facilitate the selection of the BPEO<sup>165</sup>. In addition, the Royal Commission in its 12th Report suggested the definition of BPEO as follows:

A BPEO is the outcome of systematic, consultative and decision-making procedure that emphasises the protection and conservation of the environment across land, air and water. The BPEO procedure establishes for a given set of objectives the option that provides the most benefit or least damage to the environment as a whole at acceptable cost in the long term as well as in the short term.<sup>166</sup>

In general, the IPC regime contains several noteworthy concepts. First, it reveals that the adoption of 'clear environmental quality standards'<sup>167</sup> is especially important.<sup>168</sup> Secondly, it emphasizes that environmental measures should be 'preventive and precautionary rather than remedial'.<sup>169</sup> Thirdly, it identifies the polluter-pays-principle.<sup>170</sup> The existing procedures for obtaining authorisations are to be found in Schedule I of the EPA 1990 and in the Environmental Protection (Applications, Appeals and Registers) Regulations 1991. In addition, it may be worth noting that in line with Section 6(4) 'the enforcing authorities should not to grant authorisation unless it is considered that the applicant will be able to carry out the process so as to comply with the conditions which would be included in the authorisation'.<sup>171</sup>

Based on the above-mentioned features, the IPC regime is, indeed, a constructive pollution control system. The implementation of IPC endeavours to apply 'cross-media' controls<sup>172</sup> by utilizing the selection of 'BATNEEC' and 'BPEO'. The IPC provisions is significant because it is a re-orientation towards the approach -- operators are required to reduce the environmental impacts

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<sup>165</sup> See *Best Practicable Environmental Option Assessments for IPC: A Summary*, Her Majesty's Inspectorate of Pollution, London, 1996.

<sup>166</sup> Royal Commission on Environmental Pollution Twelfth Report: Best Practicable Environmental Option, Cmnd. 310 (1988).

<sup>167</sup> Thornton, J and S Beckwith (1997) *Environmental Law*, (London: Sweet & Maxwell), p.138.

<sup>168</sup> *Ibid.* For example, the Environmental Quality Standards (EQSs) have been set in relation to many substances. See the Draft Technical Guidance Note E 1, Vol. 1 (DoE), which define the maximum level of concentration of a particular substance in the environment, which can be considered tolerable.

<sup>169</sup> Section 7 of the EPA 1990.

<sup>170</sup> *Ibid.*, Section 27 and Section 157.

<sup>171</sup> Purdue, M (1991) "Integrated Pollution Control in the Environmental Protection Act 1990: A Coming of Age of Environmental Law?", *Modern Law Review*, Vol. 54, p.540.

<sup>172</sup> *Ibid.*, p. 537.

of certain industrial processes, or otherwise are responsible for harm caused by breaches of pollution control.

By and large, the IPPC regime is similar in several respects to IPC, but there exist some areas of disparity. For example, in line with the EC Directive on IPPC, IPPC has a wider scope than the IPC regime. The former relates to the control of pollution from activities<sup>173</sup> while the latter links up with the control of processes. For example, under IPPC, where there is an installation at which a listed activity takes place, the whole installation must be subject to IPPC.<sup>174</sup> Secondly, the activities listed for IPPC contain a number of categories that are not currently regulated under IPC, including landfills, intensive agriculture installations and the production of food and drink products. Thirdly, the definition of ‘pollution’ in IPPC is broader than that of IPC and includes vibrations and noise.<sup>175</sup> Fourthly, the technology requirement in the IPPC regime is ‘best available techniques’ (BAT)<sup>176</sup> whereas that of IPC is BATNEEC. Fifthly, IPPC require competent authorities to ensure that installations are operated in such a way that certain basic obligations are fulfilled.<sup>177</sup> These provisions are not currently reflected in IPC. Sixthly, the requirements for permit applications in IPPC describe certain items which are not covered by the IPC.<sup>178</sup> Also, ‘if necessary’, an IPPC permit must include ‘appropriate requirements ensuring protection of the soil and groundwater and measures concerning the management of waste’,<sup>179</sup> as well as containing

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<sup>173</sup> Article I and Annex I of the IPPC Directive.

<sup>174</sup> Ibid, Article 2(3). An installation is defined as ‘a stationary technical unit where one or more activities listed in Annex I are carried out, and any other directly associated activities which have a technical connection with the activities carried out on that site and which could have an effect on emissions and pollution’.

<sup>175</sup> Ibid, Article 2(2).

<sup>176</sup> Ibid, Article 11. The definition of ‘available’ implies both ‘technically and economically viable ..., taking into consideration the costs and advantages.’

<sup>177</sup> Ibid, Article 3. These include: ‘avoidance of waste production in accordance with Directive 75/442 – waste recovery, or where that is not practical, safe disposal; efficient use of energy; implementation of measures to prevent accidents and limit their consequences; and implementation of measures upon cessation of an activity to avoid further pollution and restore the site to a satisfactory state’.

<sup>178</sup> Ibid, Article 6(1) of the IPPC Directive. These include: ‘the raw and auxiliary materials, other substances and energy used or generated; the conditions of the site of the installations; the nature and quantities of foreseeable emissions from the installation; where necessary measures for the prevention and recovery of waste; and further measures planned to comply with the basic operator obligations’.

<sup>179</sup> Ibid, Article 9(3).

‘suitable release monitoring requirements’<sup>180</sup> and ‘measures relating to conditions other than normal operating conditions’.<sup>181</sup>

Overall, the above findings indicate that IPPC is not just concerned with pollution but also embraces energy efficiency and consumption of raw materials. Additionally, the scope of IPPC shows that it requires an integrated approach to be applied to certain facilities -- the control extends to installations where activities take place.

In January 1993, the TEPA introduced the ‘Integrated Waste Management and Control System Measures’ in Taiwan in order to improve industrial waste management system. It established a ‘Special Industrial Waste Management Facility’ and a ‘District Industrial Waste Treatment Centre’. The TEPA is currently in a stage of developing an integrated regulatory approach to control air and water pollution and waste production in industry. In addition, to further raise the standard of industrial environmental protection, the MOEA plans to develop a ‘Clean Technology Centre’ to integrate all available resources in the country and upgrade industry to a higher level.

Unfortunately, it would seem that there exists a large gap between the regulatory implementation and practice. At present, there are 88 industrial parks in Taiwan but only less than 40 of these have had proper treatment facilities installed.<sup>182</sup> In many cases, as there is insufficient capacity to carry out sound waste management, or the facility is in a bad state of repair, many of these management and control facilities have not properly carried out the current regulatory standards. For the purpose of solving these problems, the effective integrated waste disposal and treatment facility must be part of an overall government strategy.

The Taiwan government’s efforts at assisting industries in pollution control over the past few years have seen significant results. Nevertheless, it would seem that there is no comprehensive legislation in relation to ‘integrated pollution prevention control’ in waste management. Taiwan is

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<sup>180</sup> Article 9(5) of the IPPC Directive.

<sup>181</sup> Ibid, Article 9(6).

<sup>182</sup> [www.epa.gov.tw/wastemanagement](http://www.epa.gov.tw/wastemanagement)



a densely populated island with rapid development in industry, business, as well as a history of 'soft-soft' in pollution control, all of which make environmental problems especially difficult to solve. In this state of affairs, Taiwan has to make more efforts to re-orientate its environmental management and effectively carry out pollution control measures.

Although there remains a guiding principle for promoting integrated pollution control in Taiwan, a fresh approach is required. At present, existing environmental legislation is mainly 'single-media' in its approach. It may be that the only effective way to shift to a truly managerial approach is by fresh primary legislation. The IPPC regime is undoubtedly an improvement on the present system. Not only is it aimed at incorporating 'all of the inputs into an industrial process and all of the outputs in the form of emissions',<sup>183</sup> but also it aims to 'ensure [that] any controls applied are optimal taking account of external as well as internal impacts'.<sup>184</sup> In order to achieve integrated protection of the Taiwanese environment as a whole, I conclude that an explicit legislative regulation to transplant the IPPC regime is the first step to improve the current waste management system and it remains for the policy-makers and legislators to convert these aspirations into reality.

## 7.5 Liability for environmental damage in Taiwan

In line with the Waste Disposal Act 2001, the liabilities resulting from environmental violations in Taiwan include: shut down,<sup>185</sup> suspension of operation,<sup>186</sup> administrative fines,<sup>187</sup> and criminal penalties.<sup>188</sup> Civil liability is more often imposed on polluters than criminal law.

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<sup>183</sup> Emmott, N and N Haigh (1996) "Integrated Pollution Prevention and Control: UK and EC Approaches and Possible Next Steps", *Journal of Environmental Law*, Vol. 8, No. 2, p. 309.

<sup>184</sup> *Ibid.*

<sup>185</sup> Articles 51, 52, and 53 of the Waste Disposal Act 2001.

<sup>186</sup> Article 54 of the Waste Disposal Act 2001.

<sup>187</sup> The administrative fines, namely 'continuous daily fines', are levied on the polluter by the regulatory agencies. (See Chapter Five: Awards and Penalties of the Waste Disposal Act 2001). However, since these administrative fines do not deprive the polluters of the economic profits gained from delaying or escaping compliance with pollution control requirement, the regulations have not been enforced effectively. In addition, Taiwan regulatory agencies can only force a fine of the maximum amount on a continuous daily basis to the recalcitrant violators.

<sup>188</sup> Article 45 of the Waste Disposal Act 2001.

Damages are calculated by 'joining both direct and indirect losses'.<sup>189</sup> The focus of this section is to examine the nature and process of the issue of liability and compensation for environmental damage in Taiwan.

As mentioned earlier, establishing civil liability for environmental damage in Taiwan is subject to certain difficulties. As a result, the limitations hamper the role of civil liability in safeguarding environmental protection. Generally speaking, in many cases concerning pollution, the plaintiff faces very high 'procedural costs', known as 'transaction costs',<sup>190</sup> which 'represent legal costs associated with establishing liability on the part of the defendant'.<sup>191</sup> However, from an environmental perspective, the necessity to prove fault in all cases would put a heavy burden on the plaintiff.

Within the English law, whenever considering the issue of liability for environmental damage, it appears that 'causing impairment of the environment' is the prerequisite of liability.<sup>192</sup> Subsequently, this environmental pollution must 'result in individual damage'.<sup>193</sup> The causation between an 'impairment of the environment' and 'damage' would have to be proved by the injured party according to the general principles of proof.<sup>194</sup>

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<sup>189</sup> Article 30 of the Waste Disposal Act 2001.

<sup>190</sup> 'Transaction costs' are increased by factors such as 'the need to establish fault and causation'. These costs may be very high in many cases concerning environmental damage. (See Wilde, M (2002) *Civil Liability for Environmental Damage*, (London: Kluwer Law International), p.55.)

<sup>191</sup> *Ibid.*

<sup>192</sup> Wilde, M (2001) "The EC Commission's White Paper on Environmental Liability: Issues and Implications", *Journal of Environmental Law*, Vol. 13, No. 1, p. 32.

<sup>193</sup> *Ibid.*

<sup>194</sup> The particular difficulties arising in this area of liability fall into four categories: '(1) problems of identification; (2) problems of source; (3) problems of boundaries; and (4) problems of common interest'. (See Bruggemeier, G (1994) "Enterprise Liability for Environmental Damage: German and European Law", in G Teubner, L Farmer and D Murphy (eds) *Environmental Law and Ecological Responsibility: The Concept and Practice of Ecological Self-Organisation*, (London: John Wiley and Sons Ltd.), p. 81.) In addition, when several pollution arises, there must be proof to 'identify which of the multiple polluters caused the damage suffered and the proportion'. It has been proved in most cases that '... medical uncertainties regarding these effects of exposure to hazardous substances and practical difficulties in either identifying the specific source of the hazardous substances of the responsible party may individually or in the aggregate create an insurmountable barrier to many plaintiffs'. Therefore, professional evidence in the specific area is especially decisive and the victim's 'incapacitation may form an obstacle in the way of effective proof'. (See Alcom (1988) "Liability Theories for Toxic Torts", *National Resources and Environment*, Vol. 3 No. 2, p. 3.)

At present, in regarding to allocating liability towards environmental damage, Taiwan adopts the 'fault-based liability approach'.<sup>195</sup> This, however, often results in justice being delayed or denied from the plaintiff since the latter is usually short of the financial resources and technical facilities to establish fault on the part of the defendant. This is the main reason for most of the environmental disputes<sup>196</sup> in Taiwan being resolved by alternatives processes rather than litigation in courts. Moreover, civil liability in tort is extremely difficult to provide a resolution to complex environmental problems, such as, 'historic pollution'<sup>197</sup> or in the debate regarding contaminated land.

In addition, before 19 November 2002, Taiwanese environmental statutes contain no 'action-forcing' provisions.<sup>198</sup> As a result, the environmental authorities have proved almost all environmental standards which they set up were unaffected by 'external pressure'.<sup>199</sup> These institutional deficiencies have kept average citizens and probably most environmental groups<sup>200</sup> outside 'the standard-setting processes'.<sup>201</sup>

Moreover, in Taiwan, only the Administrative Court has jurisdiction over environmental cases. Under the Administrative Proceeding Act,<sup>202</sup> persons with standing in Taiwan have no right

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<sup>195</sup> Article 184 of the Civil Codes. (Also see Cheng, C (1993) "A Comparative Study of the Formation and Development of Air & Water Pollution Control Laws in Taiwan and Japan", *Pacific Rim Law & Policy Journal*, Vol. 3 (special edition), p. 73.)

<sup>196</sup> Based on the statistics carried out by local governments, most environmental disputes in Taiwan fall into the following categories. First, the competent authority was required by the public (victims) 'to control the pollution sources to avoid recurrences'. Secondly, the public demanded the competent authorities 'to appraise the causation of pollution and damage', so as to claim compensation. Thirdly, public appeals to the court 'to assert civil damage compensation'. Fourthly, the public appeal to the hsien, and city mediation committees 'to request mediation'. Finally, the public appeal through other channels (such as opinion leaders and council members) 'to require the abatement of a nuisance'. (See *Environmental White Paper*, (1997), p. 313.)

<sup>197</sup> See *Contaminated Land, Government Response to the First Report of the House of Commons Environment Committee*, Cm 1161, July 1990. (Also see Wilde, M (2001) "The EC Commission's White Paper on Environmental Liability: Issues and Implications", *Journal of Environmental Law*, Vol. 13, No. 1, p. 25.)

<sup>198</sup> Tang, T C (1993) "The Environmental Laws and Policies of Taiwan: A Comparative Law Perspective", *Pacific Rim Law & Policy Journal*, Vol. 3 (special edition), p. 101. Although the 'citizen suit' regime is now included in the Environmental Protection Basic Act 2002 (Article 34), the effect remains to be seen.

<sup>199</sup> *Ibid.*

<sup>200</sup> Such as: the Taiwan Environmental Union, the New Environmental Foundation, the Beautiful Taiwan Foundation, the Homemakers' Union and Foundation, and the Green Consumers' Foundation.

<sup>201</sup> Tang, T C (1993) "The Environmental Laws and Policies of Taiwan: A Comparative Law Perspective", *Pacific Rim Law & Policy Journal*, Vol. 3 (special edition), p. 102.

<sup>202</sup> Shyng-jen Suh-song Fa [Administrative Proceeding Act] (promulgated and effective on December 12, 1975, amended on 28 October 1998) in *Six Laws Collection*, (1999), p. 1678.

to obtain judicial review of administrative rule making.<sup>203</sup> Given the absence of a judicial review of administrative decisions in Taiwan, nearly all-environmental litigation has involved in the facts of enforcement.<sup>204</sup> Calls for greater variety of legal remedies are now starting to appear in Taiwan.

As noted earlier, to employ the role of tort as a means of environmental protection, in most cases it is necessary for the plaintiff to establish fault on the part of the defendant in order to claim environmental damage. Moreover, the plaintiff must prove causation between the defendant's activity and the harm. These noticeable limitations may direct the plaintiff to stay away from pursuing litigation. Hence, exercising the rule of 'fault-based liability' to claim remedies with regard to environmental disputes maintains to be extremely limited.

In addition, the current trend towards protect environment has gradually moved from the protection of private interests to the protection of the environment as a whole. Thus, in certain instances, where the need to safeguard the public and the environment outweighs the need to establish any form of responsibility on the part of the defendant, 'strict liability' may imposed.<sup>205</sup> However, by and large the application of the traditional rule of 'fault-based liability' still remains an important role in remedies for environmental damage.

But 'strict liability' is an ambiguous concept and in reality can mean either 'absolute liability' or a high 'standard of care'.<sup>206</sup> Placing weight on the 'standard of care' raises 'the role of foreseeability and fault in the allocation of liability in nuisance'.<sup>207</sup> However, 'strict liability' is not a 'fixed standard'.<sup>208</sup> In addition, 'strict liability' is different from 'absolute liability' in

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<sup>203</sup> Articles 2 and 3 of the Administrative Proceeding Act.

<sup>204</sup> Tang, T C (1993) "The Environmental Laws and Policies of Taiwan: A Comparative Law Perspective", *Pacific Rim Law & Policy Journal*, Vol. 3 (special edition), p.111.

<sup>205</sup> See general discussion in Wilde, M (2001) "The EC Commission's White Paper on Environmental Liability: Issues and Implications", *Journal of Environmental Law*, Vol. 13, No. 1, pp. 21-36.

<sup>206</sup> Brearley, J S (1995) "Public Welfare v Natural Use of Land as The Basis for Liability in Environmental Damage Cases: Some Perspectives on The Past and Possible Future Roles of Tortious Remedies", *Journal of Environmental Law*, Vol. 7, No. 2, p. 123. The 'standard of care' varies with each situation. However, as a general rule, the 'standard of care' is that of a reasonable person who uses ordinary care and skill. (See Brown. W J (1993) *GCSE Law*, (5<sup>th</sup> edn), (London: Sweet & Maxwell), p. 198.)

<sup>207</sup> Wilde. M (2002) *Civil Liability for Environmental Damage*, (London: Kluwer Law International), p. 202.

<sup>208</sup> In fact, 'strict liability' increases 'the distributional functions of tort', however, 'strict liability' is also consistent with 'the corrective functions of tort' in that it affords certain defenses. (See Wilde. M (2002) *Civil Liability for Environmental Damage*, (London: Kluwer Law International), p. 223.)

that ‘strict liability’ allows ‘scope of defences’.<sup>209</sup> The ‘duty of care’ can be increased or lessened subject to the range of defences. For example:

On the subject of foreseeability, the court may request the seemingly universal reasonable man test. Where the activity in question is of a technical or specialist nature, the applicable standard may be that of a reasonable skilled operator exercising due diligence commensurate with the standards expected of his profession. If management has delegated responsibility for health and safety and pollution control on certain actors, then strict liability can reasonably be imposed on those actors.<sup>210</sup>

Thus, it appears that if the environment is to be protected, liability must be assured ‘regardless of the existence of fault or otherwise in those engaged in the activity of disposal’.<sup>211</sup>

Usually, in England, to employ the role of tort as a means to claim remedies, the plaintiff must show that the defendant ‘owed him or her a duty of care’.<sup>212</sup> An additional very important factor revealed by the English law is that ‘the foreseeability of harm is a vital aspect of determining to whom a duty is owed and whether it could have been anticipated that the defendant’s actions would give rise to the harm in question’.<sup>213</sup> On the whole, the rule of ‘fault-based liability’ in the law of torts still plays an important role in recovering damages. This can be seen from the Lord Goff, in the leading judgment of the court in *Cambridge Water Company v. Eastern Counties Leather Limited*.<sup>214</sup> The court’s view clearly expressed that:

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<sup>209</sup> Wilde. M (2002) *Civil Liability for Environmental Damage*, (London: Kluwer Law International), p.197. ‘Absolute liability’ acts as ‘a purely distributional device, while strict liability needs to strike a difficult balance between maximizing the proportion of the damages costs that must be met by the polluter whilst retaining incentives to take care’.

<sup>210</sup> Ibid.

<sup>211</sup> Ibid.

<sup>212</sup> Zweigert, K and H Kotz (1998) *An Introduction to Comparative Law*, (3rd edn) (Oxford: Clarendon Press, trans.: A. Weir.), p. 666.

<sup>213</sup> Wilde. M (2002) *Civil Liability for Environmental Damage*, (London: Kluwer Law International), p. 200. For example, in *Purhus v. Minister of Defence* it was held that ‘where the pollution is caused by the intervention of a third party, it must be foreseeable that a lack of due care by the third party could give rise to the release of hazardous substances’. A further aspect of foreseeability concerns ‘the extent to which the operator is expected to be aware of the general state of scientific knowledge regarding the likely long-term effects of his activity’. Such as the case of *Cambridge Water v. Eastern Counties Leather*, it was held that ‘the damage in question was not foreseeable in that, at the time the damage occurred, there was no appreciation that the solvents used in the defendant’s tanning process were potentially harmful’.

<sup>214</sup> [1994] 2 AC 264, CA; [1994]1 All ER 53, HL. Pre Lord Goff, [1994] 2 AC 264 at 305 E-H; (also see Woolley, D (QC), J Pugh-Smith, R Langham and W Upton (2000) *Environmental Law*, (Oxford: Oxford University Press), p. 710.)

It does not follow from these developments that a common law principle, such as the rule in *Rylands v Fletcher*, should be developed or rendered stricter to provide for liability in respect of such pollution. On the contrary, given that so much well-informed and carefully-structured legislation is now being put in place for this purpose, there is less need for the courts to develop a common law principle to achieve the same end, and indeed it may well be undesirable that they should do so.

However, the major advantage of 'strict liability' is that, 'given that compliance with a set standard of care will not absolve the operator of liability; he or she must investigate alternative means of reducing the risk of accidental escapes'.<sup>215</sup> To this extent, he or she must either restrain the activity levels or capitalize on the most suitable technologies. Under these circumstances, 'strict liability' undoubtedly 'accords more closely with the polluter pays principle than fault in that liability requires the polluter to internalise a greater proportion of the pollution costs'.<sup>216</sup> Therefore, it seems fair to say that 'strict liability', to certain extent, can be considered as a more 'adequate and fair' channel to allocate liability concerning environmental damages, while some 'reservations and restriction effects continue exist in the strict liability'.<sup>217</sup>

Based on similar reasons, 'strict liability' has already been introduced to the EU member states. First, European proposals on Civil Liability for Environmental Damage reveal that 'there is an assumption that strict liability is a prerequisite of an environmental liability regime'. Also, the Council of Europe Convention on Civil liability<sup>218</sup> calls for participants to bring in strict liability regimes 'in respect of dangerous activities which includes the production, handling, storage, use, destruction, disposal of dangerous substances'.<sup>219</sup> Secondly, the White Paper on Environmental Liability<sup>220</sup> 'reiterates' numerous of the issues mentioned in the Green Paper,<sup>221</sup> for example, 'the

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<sup>215</sup> Wilde. M (2002) *Civil Liability for Environmental Damage*, (London: Kluwer Law International), p. 206.

<sup>216</sup> *Ibid.*

<sup>217</sup> *Ibid.*

<sup>218</sup> The Council of Europe Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment (the *Lugano Convention*) agreed in March 1993 and opened for signature at Lugano, Switzerland on 21 June 1993. (See Wilde. M (2002) *Civil Liability for Environmental Damage*, (London: Kluwer Law International), p. 175.)

<sup>219</sup> Article 2(2)(a) of the *Lugano Convention*.

<sup>220</sup> Commission of the European Communities, White Paper on Environmental Liability, COM (200) 66 final, Brussels, 9 February 2000. (See Wilde. M (2002) *Civil Liability for Environmental Damage*, (London: Kluwer Law International), p. 176.)

<sup>221</sup> Commission Green Paper on Remedying Environmental Damage, Communication from the Commission to the

possibility of easing the burden of proof on causation and the imposition of strict liability as a means of implementing the polluter pays principle'. Thirdly, the 1991 draft proposal of Directive on Civil Liability for Damage Caused by Waste<sup>222</sup> provided that 'producers of waste should be strictly liable for environmental harm caused by such waste and justify this approach on the grounds that: Whereas, in view of the risk inherent in the very existence of waste, the strict liability of the producer constitutes the best solution to the problem'.<sup>223</sup>

In the usual course of events, tort is referred to 'loss allocation' in which the long-established point of view is based on principle of 'corrective justice'.<sup>224</sup> However, the latest trend for the protection of the public interest considerations would also be an essential component of any civil liability regime. To this end, it is important to consider the extent to which tort may carry on 'distributional considerations'.<sup>225</sup>

The rapid growth in insurance markets, since the last century, has increased 'the distributive role of tort'.<sup>226</sup> Although, the English courts have turned out to be 'more ambivalent' in their approach concerning the exercise of insurance, on a few occasions, Lord Denning 'openly based certain decisions, at least in part, on the fact that the insured party would be better able to bear the loss'.<sup>227</sup>

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Council and Parliament on Environmental Liability, COM (93) 47 final. (See Wilde. M (2002) *Civil Liability for Environmental Damage*, (London: Kluwer Law International), p. 174.)

<sup>222</sup> OJ No C 192/6 (See Wilde. M (2002) *Civil Liability for Environmental Damage*, (London: Kluwer Law International), p. 215.)

<sup>223</sup> Ibid. However, the scope of the proposal was constrained by the fact that 'there can be no liability in respect of pollution occurring prior to the introduction of the legislation. This precluded the possibility of retroactive liability for historic pollution'.

<sup>224</sup> The principle of 'corrective justice' suggests 'the moral obligation of one individual to compensate another for the loss he or she has caused'. (See Wilde. M (2002) *Civil Liability for Environmental Damage*, (London: Kluwer Law International), p. 116.)

<sup>225</sup> The 'distributive justice' reveals that 'a loss should be borne by the defendant as opposed to the plaintiff. Therefore, it must inevitably absorb societal preferences regarding the distribution of such losses'. To certain extent, the development of strict liability, in certain areas, 'represents a move towards a distributional approach in that when allocating liability invites consideration of at whose risk should an activity be conducted as opposed to whose fault was the accident'. (See Wilde. M (2002) *Civil Liability for Environmental Damage*, (London: Kluwer Law International), p. 128.)

<sup>226</sup> Wilde. M (2002) *Civil Liability for Environmental Damage*, (London: Kluwer Law International), p. 128.

<sup>227</sup> Ibid, p. 129.

In recent years insurance companies in England have developed ‘specialist environmental impairment liability policies designed to fund clean up costs associated with accident’.<sup>228</sup> It is indeed that the growth of insurance may lessen ‘individual accountability’<sup>229</sup> to a certain extent. However, if costs are inevitably forwarded to insurers without taking into consideration individual conduct, ‘the remedies from insurance system for assessing environmental risk such as contaminated land will be meaningless’.<sup>230</sup> In addition, if polluters without carrying out appropriate degree of the duty of care, they should bear certain liability so as to limit the cost that passed to their insurers. Or else, ‘the insurance industry is likely to withdraw insurance cover altogether, as it threatened to do in the run up to the Cambridge Water decision’.<sup>231</sup> For that reason, it would be essential to incorporate ‘defences to strict liability that affords operators certain opportunity to ease their losses’.<sup>232</sup>

Based on the above findings, it seems fair to say that although civil liability has the potential capacity to accomplish the role of a ‘constructive measure’ in environmental protection; obstacles to set up liability have limited the ‘corrective function which is embraced inside the system’.<sup>233</sup> On the contrary, strict liability not only retains ‘corrective functions’, but also allows for certain ‘scope of defences’ to be carried out. This safeguards ‘an element of individual accountability and affords the polluter the opportunity to internalise costs in accordance with the polluter pays principle’.<sup>234</sup> As to the issue regarding causation, strict liability could ‘enable the court to reach a common sense decision, founded on the circumstances of the case, without the need to establish a causal link with scientific certainty’.<sup>235</sup> Therefore, even if the debates in relation to the norm of ‘strict liability’ will continue, I conclude that to some extent, ‘strict liability’ may

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<sup>228</sup> Wilde, M (2001) ‘The EC Commission’s White Paper on Environmental Liability: Issues and Implications’, *Journal of Environmental Law*, Vol. 13, No. 1, p. 35.

<sup>229</sup> *Ibid*, p. 36.

<sup>230</sup> Wilde, M (2002) *Civil Liability for Environmental Damage*, (London: Kluwer Law International), p.129.

<sup>231</sup> *Ibid*.

<sup>232</sup> *Ibid*, p. 161.

<sup>233</sup> *Ibid*, p. 223.

<sup>234</sup> *Ibid*, p. 311.

<sup>235</sup> *Ibid*.



provide resolutions to deal with ‘the consequences of sudden and accidental escapes incidents’.<sup>236</sup>

In addition, if environmental liability regime clearly embraces ‘strict liability’, the pursuit of a public interest objective such as environmental protection might be achieved.

At present, environmental laws and regulations in Taiwan contain no such ‘strict liability’ provision. In order to achieve a more comprehensive liability regime in fostering ‘corrective and distributive functions’ towards environmental protection, a legal regime which clear embraces ‘strict liability’ would be the next logical step in a process upon which the Taiwan government need to embark on.

## **7.6 The recommendations to the Environmental Protection Basic Act 2002**

Recently passed by the Legislative Yuan, the Environmental Protection Basic Act 2002<sup>237</sup> marks the beginning of a new era in Taiwan’s environmental protection law. The legislation of the Environmental Protection Basic Act 2002 began with the issue of a draft version by the TEPA in 1988<sup>238</sup>. This was subsequently withdrawn for further revision in 1996, and resubmitted to the Legislative Yuan for review in 1999. The act was finally passed by the legislature on 19 November 2002. The Environmental Protection Basic Act 2002 divides into five chapters and comprises of 41 articles.

The Environmental Protection Basic Act 2002 is the most fundamental environmental protection law in Taiwan. The Act expressly declares that ‘economic, technological and social development must give consideration to environmental protection. When economic, social development and technological has a severe, negative impact on the environment, or is

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<sup>236</sup> Wilde, M (2001) ‘The EC Commission’s White Paper on Environmental Liability: Issues and Implications’, *Journal of Environmental Law*, Vol. 13, No. 1, p.35.

<sup>237</sup> Huan-jing Bau-fu Ji-bern Fa [Environmental Protection Basic Act] (promulgated and effective on 19 November 2002). ([www.epa.gov.tw/lawandregulation](http://www.epa.gov.tw/lawandregulation))

<sup>238</sup> See Chapter Two, footnote No. 79.

suspected of causing environmental damage; environmental protection must take priority'.<sup>239</sup>

Hence, the Environmental Protection Basic Act 2002 mandates the importance and superiority of environmental protection.

In addition, the Act not only explicitly expresses that environmental protection is 'the joint duty and share responsibility' of the public and the government, but also embraces the 'polluter pays principle',<sup>240</sup> and thereby reflects a right to a clean environment. Moreover, the Act provides 'the enforcing authority ability to undertake remedial measure itself in the case of an emergency or where no responsible party can be found'.<sup>241</sup> Furthermore, in order to improve the compliance with environmental laws, the 'citizen suit' regime is included in the Act.<sup>242</sup> Under the 'citizen suit' system, if government agencies at any level are negligent in implementing their responsibilities, the Act authorizes citizens or public interest groups to sue the responsible agency in an administrative court. It is hoped that the 'citizen suit' regime will spur on all levels of government to vigorously carry out their environmental protection duties.

With regard to the controversial issue of nuclear energy, the Act specifically proclaims the goal of a 'non-nuclear homeland', and makes appeals to the government to formulate a plan for the gradual attainment of this goal.<sup>243</sup> In response to the greenhouse effect problem, the Act urges all levels of government to draft plans for reducing carbon dioxide emissions in order to avoid the further degradation.<sup>244</sup> In addition, with the purpose of preventing and alleviating environmental damage, the Act stipulates that the establishment of an 'environmental health risk assessment system',<sup>245</sup> an effective EIA system<sup>246</sup> and an environmental monitoring and auditing system<sup>247</sup> is urgently required. Moreover, all government procurement must, whenever

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<sup>239</sup> Article 3 of the Environmental Protection Basic Act 2002.

<sup>240</sup> Ibid, Article 4 (1) and 4(2).

<sup>241</sup> Ibid, Article 4(3).

<sup>242</sup> Ibid, Article 34.

<sup>243</sup> Ibid, Article 23.

<sup>244</sup> Ibid, Article 21.

<sup>245</sup> Ibid, Article 22.

<sup>246</sup> Ibid, Article 24.

<sup>247</sup> Ibid, Article 27.

possible, give first priority to products made with renewable resources and environmentally friendly 'Green Mark' products.<sup>248</sup> Last but not least, the Act appoints June 5 as 'World Environment Day' in Taiwan in order to keep in line with the UN's declaration.

As mentioned above, the Act authorizes the Taiwan government to establish a 'polluter-pays' system to collect pollution prevention and environmental restoration charges from polluters. The Act, additionally, also laid down in Article 32, permits the relevant authorities to collect appropriate fees from users or beneficiaries of public environmental protection facilities. At the same time, the central government must establish various types of 'environmental funds' in accordance with existing regulations; such funds will 'bear responsibility for environmental cleanup and restoration, the tracking down of pollution sources and the implementation of development projects beneficial to the environment'.<sup>249</sup>

In accordance with the Act, the Executive Yuan must set up 'National Council for Sustainable Development' to oversee national sustainable development policy. Although the Executive Yuan has already established its own 'National Council for Sustainable Development', Article 29 of the Environmental Protection Basic Act 2002 provides a legal basis for the foundation of such a council.<sup>250</sup> In accordance with Article 29 of the Act, the membership of the 'National Council for Sustainable Development' shall consist of equivalent numbers of 'government personnel, experts and specialists, and representatives of private organizations'. In addition, in order to establish comprehensive environmental systems and to

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<sup>248</sup> Article 38 of the Environmental Protection Basic Act 2002.

<sup>249</sup> Ibid, Article 31.

<sup>250</sup> In order to implement the various international environmental conventions and tackle the related activities of sustainable development, on 19 August 1992, the Executive Yuan established an inter-agency organization, "Global Environmental Change Task Force". The Task Force has been proactively taking part in and co-operating in international environmental protection tasks. Further, to unify the related tasks of domestic sustainable development and to define the national guidelines for sustainable development, on 23 August 1997, the Executive Yuan expanded the Committee into National Council for Sustainable Development (NCSD). Later on, in October 2000, the NCSD set up a website ([www2.epa.gov.tw/nsdn](http://www2.epa.gov.tw/nsdn)) to transmit information about the NCSD's various accomplishments and policies to the international societies through the Internet. Also the NCSD's network provides an instant and integrated Internet query service for the various sectors of society in order to enhance people's knowledge about the trend of sustainable development. (See *2000 Annual Report of National Sustainable Development*, (Taipei: Executive Yuan, NCSD), p. 8 and p. 21.)

insure that environmental duties are carried out in a more integrated manner, the central government is required to establish a Ministry of Environment and Natural Resources.<sup>251</sup> This new ministry would be in charge of the planning and implementation of land development, environmental conservation, management of energy and mining, and maintenance of natural scenery and water resources, and so on.

Moreover, in order to resolve various environmental disputes, the central government is in need to establish an environmental disputes resolution system and also is under pressure to enhance available resources to support the emerging profession so as to effectively resolve environmental disputes.<sup>252</sup> Furthermore, so as to resolve environmental disputes, the Act authorized the government to set up an executive court or a specific Committee to settle special environmental cases.<sup>253</sup>

Taken as a whole, the Environmental Protection Basic Act 2002 is endeavouring to comprehensively preserve the environment so as to aim at achieving sustainable development. Indeed, provisions of the Environmental Protection Basic Act 2002 do bring in the issues of rights to information, public participation and legal remedies regarding the environment. However, the Act makes no concrete provisions for environmental rights, the greater use of alternative dispute resolution, and also poses some regulatory problems and is ambiguous. Therefore, I propose the following reforms:

First, the Act does not mention the issue of environmental rights.<sup>254</sup> In many jurisdictions around the world, there has been a remarkable growth in legal claims for both human rights and environmental protection since the late twentieth century. There is a growing trend for ‘human rights activists and environmentalists’ to cooperate with each other in order to draw near common objectives. Although the link between human rights and environmental protection is intricate, the

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<sup>251</sup> Article 30 of the Environmental Protection Basic Act 2002.

<sup>252</sup> Ibid, Article 33.

<sup>253</sup> Ibid, Article 14.

<sup>254</sup> Churchill, R R (1996) “Environmental Rights in Existing Human Rights Treaties”, in A E Boyle and M R Anderson (ed) *Human Rights Approaches to Environmental Protection*, (Oxford: Clarendon Press), p. 89.

connection relating these two may be reflected on in two main ways.<sup>255</sup> First, ‘environmental protection may be cast as a means to an end of fulfilling human rights standards’. Secondly, ‘the legal protection of human rights is an effective means to achieving the ends of conservation and environmental protection’.<sup>256</sup> Generally speaking, human rights approaches to environmental protection ‘offer many attractions and could play a key role in fostering equitable and sustainable human communities’.<sup>257</sup>

Many NGOs in Taiwan have made every endeavour to achieve a goal, namely, characterizing in law the right to environmental protection as a fundamental human right. Although it seems that this NGO pressure has had some effects, as Article 10 of the Additional Articles of the ROC Constitution endorsed that ‘environmental and ecological protection shall be given equal consideration with economic and technological development’. However, at present, there does not exist any provision, which clearly states that there is an ‘environmental right’, in any Taiwanese law or regulation. Unfortunately, without having been endorsed by the Environmental Protection Basic Act 2002, environmental right as a fundamental right still suffers from not having satisfactory ground to fit into a hierarchy of human rights. It is clearly a weakness for future development.

Secondly, as mentioned in above Section 5.4 of Chapter Five, although traditional legal and political processes have solved many disputes in the environmental field, there is a need to improve the use of alternative dispute resolution techniques and a procedural reform. By and large various alternative forms of dispute resolution have become an expected part of the legislative and policy-making process. In general, alternative dispute resolution involves methods of resolving disputes ‘other than litigation’. In some ways, this informal and flexible resolution may enhance the success in settling environmental disputes.

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<sup>255</sup> Anderson, M (1996) “Human Rights Approaches to Environmental Protection: An Overview”, in A E Boyle and M R Anderson (ed.) *Human Rights Approaches to Environmental Protection*, (Oxford: Clarendon Press), p. 3.

<sup>256</sup> Ibid.

<sup>257</sup> Ibid, p. 23.

Documented evidences have indicated that a mixed process of administrative decision-making and negotiation settles approximately 90 to 95 per cent of environmental disputes in Taiwan, with little or no court litigation. By and large the government forced the settlement. Such an approach is unlikely to achieve anything constructive in the long term. Hence, the lack of a firm legal framework is a significant barrier to the successful use of alternative processes for dealing with environmental disputes. Given the desirability and necessity of improving the usage of alternative dispute resolution on a large scale, law reform in this area is a current need in Taiwan. Formalising a new legislation for some sort of alternative dispute resolution would ensure 'consistency between alternative dispute resolution processes and might, in addition, be used to ensure fairness to participants'.<sup>258</sup> Unfortunately, the Environmental Protection Basic Act 2002 does not make any concrete provision for the reform in the area of alternative dispute resolution.

Thirdly, the public needs information about its government in order to hold government accountable. Such information is essential if the public is to be able to participate in decision-making and to play any role in monitoring government. Although Article 12 of the Environmental Protection Basic Act 2002 provides the right of free access to information, it is still not precisely clear who is obligated by the Act, particularly whether and to what extent it applies to. Currently, in Taiwan there is no provision for a general right to information. At present, the practice of accessing environmental information varies from authority to authority and access to information can be difficult to obtain. In particular, information is only available in some location or to certain people and often is treated as confidential. In addition, in many cases the information will be too complicated to be comprehensible to the amateur and may be rather expensive to process by general public. Thus, in spite of the Article 12 contained in the Environmental Protection Basic Act 2002, it does mean that in such a case the right to information proves to be an empty one and the information is a closed book. Therefore, in my view, the establishment of an information

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<sup>258</sup> Swanson, E J (1995) "Alternative Dispute Resolution and Environmental Conflict: the Case for Law Reform", *Alberta Law Review*, Vol. 34, No. 1, p. 277.

network should improve distributing data regarding the environment although the relevant authorities have, as yet, no enforcement or policing powers. Only then, may the information network provide an opportunity to remedy some of the weaknesses detailed above.

Fourthly, rights to information are important but not enough. Although there exists the Environmental Impact Assessment Act 1994, participatory rights have existed more in name, rather than in substance.<sup>259</sup> In addition, rights to information and to participate in environmental decision-making would be ‘rendered nugatory’ if individuals or NGOs ‘did not also have the right to challenge certain measures’.<sup>260</sup> With this in mind, thus, the Environmental Protection Basic Act 2002 provides a ‘citizen suit’ system in Article 34.

Under the ‘citizen suit’ regime, private persons, NGOs, and other organizations have the opportunity to make ‘formal complaints in writing’ to the different levels of government if the public, NGOs, or other organizations who think that environmental law or regulation is being violated. The government then investigates the complaint and decides whether to institute formal proceedings against certain environmental agencies under Article 34 of the Environmental Protection Basic Act 2002. However, the procedure might take a very long time and bring no guarantee that the government will actually initiate proceeding under Article 34 of the Act. The decision to embark on legal action against certain environmental authorities is completely within the discretion of the government. Furthermore, although the government will notify the result of complaint of its action, there is no obligation for the government under Article 34 of the Act to publish its opinion. Therefore, in my view, in order to remedy the shortcoming of the ‘citizen suit’ system, a certain monitoring or detecting regime needs to be set up with the aim of inspecting and making sure that a preliminary reference is sent to the relevant authorities, which will give a ruling on the complaint in question. And then, the ‘citizen suit’ system can be an effective way of

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<sup>259</sup> See detailed discussion of the issue of environmental impact assessment in above Section 3.3 of Chapter Three.

<sup>260</sup> Douglas-Scott, S (1998) “Environmental Rights in the European Union – Participatory Democracy or Democratic Deficit?”, in A E Boyle and M R Anderson (ed.) *Human Rights Approaches to Environmental Protection*, (Oxford: Clarendon Press), p.120.

challenging the traditional 'soft approach' towards any measure violating environmental law or regulation.



## **Chapter 8 Conclusions**

The purpose of this thesis has been twofold. First, the dissertation set out to examine legal dimensions of the current system of waste management in Taiwan. Chapter Two to Chapter Six describe and discuss the critical issues in the state of waste management and looks at the prospect for 'sustainable development' in Taiwan. Secondly, this thesis has provided some suggestions as to what future directions the Taiwanese government can take in pursuit of a more cohesive and integrated waste management regime. Based on the selective examination of English waste management laws and regulations, Chapter Seven presents recommendations that might be through the processes of legal transplants to achieve law reform.

The results of this research appear to indicate that the history of waste management in Taiwan is not straightforward. Certainly, attempts have been made to improve the conditions of waste management and in some respects these efforts have been highly effective. Various interviews and surveys clearly revealed that public concern about the environment remains strong in Taiwan. Although it appears that there are periodic rise and fall in general interest about environmental issues, there is no sign of any shifting back to lower levels of concern. Regardless of the immediate pressure on the government for environmental improvement may not close by, there is a general feeling among the public that government action has often been too little and too late.

Environmental problems on Taiwan will never be completely overcome unless measures are actively taken to protect, improve, manage and create an environment that meets public needs. Given certain shortcomings remain in the Waste Disposal Act 2001, the Taiwanese government now faces the challenge of establishing comprehensive waste management legislation for the purpose of creating an 'integrated prevention and pollution control' system.

In Chapters Two and Three, I examined various issues concerning the state of Taiwan's waste management law and its implementation and enforcement, and concluded that a sound environmental management system should both ensure regulatory compliance and support by certain management fundamentals. Given that the development of pollution control has shifted from 'end-of-pipe' technology and treatment to 'pollution prevention at the source', it has become essential to provide more funds for R&D and improve greater understanding of the relevant technology so as to determine how best to achieve environmental compliance within the economic realities of the facility. This is what Taiwan urgently needs.

In addition, enforcement and compliance policies play a crucial role in accomplishing governmental administration in environmental matters. These policies must be set out in legislation written in imperative language so as to ensure certainty, consistency in enforcement, while still allowing for a certain administrative flexibility in order to deal with unusual situations. In this respect, much remains to be done in Taiwan.

As has been noted in Chapter Three, the root cause of the environmental crisis in Taiwan can be traced to the national strategy for promoting economic development. During the past two decades of rapid industrialisation and economic growth, the government tended to encourage foreign investment without paying adequate attention to environmental protection. Emphasis was placed on economic performance. Little if any attention was paid, through formal regulations, laws, or even guidelines, to protecting the environment. As a result, economic growth over the years has caused severe degradation of the environment. A major component of the environmental crisis, and probably the one most familiar to the public, is the waste disposal problem. The volume of waste is increasing at a rate far more rapid than the rate of establishment of landfill sites or the introduction of alternative methods to carry out appropriate waste management.

Traditionally, most waste in Taiwan is disposed in landfills. Various nuisances such as foul odours and fumes very often release from these landfill sites. However, more serious problems have also developed. For instance, 'leaching liquids' from the site tend to contaminate groundwater and surface water supplies. In addition, the production of landfill gas has also been recognized as a major problem. Yet, these are the very nuisances that the passing of the Waste Disposal Act 1974 was designed to prevent. That Act introduced a 'command and control' system, which has remained the basis of waste regulation in Taiwan to this day. However, some eleven years after the introduction of the 1974 Act, there seemed to be a general consensus that the system had not worked effectively. In response to its critics, the Taiwan government instituted an amendment through the Waste Disposal Act 1985. The main emphasis of the 1985 Act is the tightening of enforcement over the act of disposal and the extension of control to the whole waste stream. More recently, in order to improve the pollution control, the Waste Disposal Act 1985 was undertaken a major amendment on 24 October 2001. The new version of the Waste Disposal Act 2001<sup>1</sup> applies an integrated approach towards the performance of waste management and also require operators to take 'all measures necessary' to prevent pollution.

Waste management is, in fact, a very complex process that calls for proper control to be effectively carried out through the whole practice. Yet, as indicated in Chapter Three, not only has a considerable amount of the waste been disposed of in an untreated condition but also, due to faulty management, the long history of the mishandling of waste has given Taiwan a record of pollution that cannot be ignored. It would seem that the various dangers that often arise from improper handling of solid waste have manifested themselves from time to time in Taiwan. A common concern of many Taiwanese people is that current standards of waste management need to be raised. The standards must improve to ensure that all waste management facilities

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<sup>1</sup> The *TEPA Register*, No. 168, (December 2001), pp. 44-65.

operate within the law. In addition, in order to build public confidence in the government, these facilities need to be safe and properly controlled.

Due to the difficulty normally experienced in finding suitable sites and gaining public acceptance, the Taiwan government believes that modern incinerators have an essential role to play in the system of integrated sustainable waste management.<sup>2</sup> Thus, a substantial number of new incinerators for dealing with general municipal, industrial and commercial waste, and with particular waste streams, will be required over the next few years. This presents a challenge to the Environmental Protection Administration of the Executive Yuan (TEPA) in terms of providing the necessary infrastructure for diverting waste from landfill over the next decade. In order to sufficiently accommodate these changes within the timescales in question, the capacity to plan, approve, and build the facilities required must be ably provided by the framework inherent in the planning system.

Moreover, the Taiwan government clearly wishes to see stronger policies on waste management emerging at countrywide and local levels. Under this circumstance, local authorities will need to work out their own comprehensive municipal waste management strategies, with clear objectives and time scales for action.<sup>3</sup> In particular, major facilities may require operating at the local level. Hence, waste management authorities should then take account of local policies in preparing their waste development plans. The need to win public trust and acceptance for regional waste policies has been seen as critical by a number of counties<sup>4</sup>.

However, it is clear that the waste management authority's primary duty is to prevent harm to the environment from occurring or continuing. As noted in Chapter Three, empirical evidence suggests that waste management authorities have failed to apply and enforce the waste disposal provisions on those operators who manage waste without a waste management licence.

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<sup>2</sup> Interviewed with Dr. Y R Chen, Secretary General of the TEPA on 12 February 2001.

<sup>3</sup> Interviewed with Dr. Y R Chen, Secretary General of the TEPA on 12 February 2001.

<sup>4</sup> There have been numerous cases of 'rubbish war' between different neighboring boroughs.

Therefore, urgent attention must be given to targeting unlicensed operators. One option would be to ensure that waste management authorities are more responsive to public complaints. This more responsive approach would, however, require the presence of an adequate number of enforcement officers to undertake field inspections. Also, having regard to 'both the types and quantities of waste handled and the geographical position of the operating site, there is an unprecedented need to ensure that licences or permits are tailor-made to each individual operator'.<sup>5</sup>

Furthermore, since most environmental litigation in Taiwan has focused only on enforcement problems, it is very important to apply the 'principle of transparency'. This principle is imperative in maintaining public confidence. Therefore, the waste management authority should do as they can to ensure that wherever remedial action is involved, it is clearly explained why the action is necessary and when it should be carried out.<sup>6</sup>

In response to the rapid increase of municipal waste that has occurred in Taiwan in recent years, control plans for general solid waste recovery and recycling have been established. Nevertheless, without an accessible facility to deposit the recyclable materials, the public's willingness to participate in recycling projects has remained limited. Hence, the outcomes of recovery and recycling schemes are far from satisfactory. Before 1997, 'collective organisations and recycling funds' were established to carry out recycling programmes. Since each of these recycling programmes has been developed separately, no systematic, comprehensive recycling and control system exists. It is also doubtful whether the regulated enterprises did indeed carry out the specified annual rate as indicated by their statistics. Together with the ambiguous scope of responsibility for recycling programmes, the existing 'deposit-refund' recycling projects have encountered many difficulties and problems.

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<sup>5</sup> Abbot, C (October, 2000) "Waste Management Licensing: Benefit or Burden?", *Journal of Planning & Environment Law*, p.1010.

<sup>6</sup> *Ibid*, p, 1005.

In order to improve the existing recycling projects, the TEPA initiated a new 'Four-In-One Recycling Programme' on 1 January 1997. A 'certification system' was employed in order to improve inspection and checking of all enterprises handling general containers. The 'certification system' entrusts a financial institution, which is usually a government-sponsored special committee, with responsibility for operating and maintaining the recycling programmes. In addition, the certification system includes an incentive mechanism for improving and promoting the recycling and reusing programmes<sup>7</sup>.

As stated in this thesis at Chapter Three, the long history of the mishandling of waste has given Taiwan a record of pollution that cannot be ignored. The costs of rectifying these problems will be high, but have to be met. Although it seems clear that the 'polluter pays principle' applies to the costs of measures to prevent and control pollution, it is not clear whether the cost of clear-up or decontamination should also be included. No financial limitations have been forced on a defendant's potential liability, nor has any provision been made for compulsory insurance.<sup>8</sup> As a result, many local communities worry that the law provides no assurance that such liabilities will be met. Therefore, there is no doubt that the way forward should be to share out liability through legislative measures. Exactly how this issue is to be solved is a complexity for the legislative process. Numerous obstacles -- for example, how to identify of the proper defendant, proof of causation and the existence of limitation periods -- frequently hold back the possibility of recourse. On this point, I examined whether or not there is a reasonable and feasible midpoint by which liability could be imposed, as it should be in cases of 'historic pollution'.<sup>9</sup>

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<sup>7</sup> See above Section 3.2.1.2 of Chapter Three.

<sup>8</sup> In general, the insurance community is not likely to be involved in this field unless legislation can deliver greater certainty as to the potential liabilities that it would be expected to cover. Unfortunately, no such case exists in Taiwan. However, in recent years insurance companies have developed 'specialist environmental impairment liability policies designed to fund clean up costs associated with accident'. At present the product is only offered by a limited number of companies in the UK. (See Wilde. M (2002) *Civil Liability for Environmental Damage*, (London: Kluwer Law International), p. 129.)

<sup>9</sup> Wilde. M (2001) "The EC Commission's White Paper on Environmental Liability: Issues and Implications", *Journal of Environmental Law*, Vol. 13, No. 1, p.25

The recent trend shows that 'strict liability' has been increasingly adopted in many jurisdictions to deal with environmental damage. But 'strict liability' is an ambiguous concept and can mean either 'absolute liability' or a 'high standard of care'.<sup>10</sup> Placing weight on the 'standard of care' raises the role of foreseeability and fault in the allocation of liability in nuisance.<sup>11</sup> In deciding the 'standard of care' it would be rational to refer to the knowledge of that period. To this extent, the 'public welfare theory', which developed in the Anglo-American common law system, may stand for a valuable mode in determining the 'standard of care'. Due to the very rapid growth rate in knowledge and technology, a case that decided a few years ago might be inappropriate for present-day analogous to be concluded from its evidences. The idea of 'public welfare theory' bears an inclination towards the 'precautionary principle' and the concept of 'BATNEEC (best available techniques not entailing excessive cost)'.<sup>12</sup> The viewpoint of 'public welfare theory' emphasizes, 'in keeping with the traditional focus of nuisance, on the effects of activities on the plaintiff and provides an additional factor in the objective reasonableness balance'.<sup>13</sup> Adopting 'public welfare theory' raises the possibility of a finding for the plaintiff without 'conceptual inconsistency' and without initiating 'wholesale liability' for historic pollution.<sup>14</sup> In addition, 'public welfare theory' is 'potentially of conceptual importance to the law of tort as a clarifying and rationalising principle and as a means of allocation of liability that is appropriate in terms of modern knowledge and foreseeable development in processes and technologies'.<sup>15</sup> Whether the Taiwanese judiciary will positively evaluate the potential of this mechanism in Taiwan remains uncertain.

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<sup>10</sup> Lord Macmillan's statement in *Read v J. Lyons & Company* [1947] 2 AC 156. (See Brearley, J S (1995) "Public Welfare v Natural Use of Land as the Basis for Liability in Environmental Damage Cases: Some Perspectives on the Past and Possible Future Roles of Tortious Remedies", *Journal of Environmental Law*, Vol. 7, No. 2, p.123.)

<sup>11</sup> Wilde, M (2002) *Civil Liability for Environmental Damage*, (London: Kluwer Law International), p. 202.

<sup>12</sup> Brearley, J S (1995) "Public Welfare v Natural Use of Land as the Basis for Liability in Environmental Damage Cases: Some Perspectives on the Past and Possible Future Roles of Tortious Remedies", *Journal of Environmental Law*, Vol. 7, No. 2, p.121.

<sup>13</sup> *Ibid*, p.125.

<sup>14</sup> *Ibid*.

<sup>15</sup> *Ibid*, p.135.

Indeed, it must be said that there is no suggestion here that 'public welfare theory' has been adopted in Taiwan. On the contrary, if management has delegated responsibility for health and safety and pollution control on certain actors, then 'strict liability' can reasonably be imposed on those actors. Therefore, it is evident that a primary concern of the issue is that in order to ensure protection of the environment, there must be assurance for rectification of damage notwithstanding the existence of fault or otherwise of those active in disposal. At present, environmental laws and regulations in Taiwan contain no such 'strict liability' or 'duty of care' provision. In order to achieve a more comprehensive liability regime in fostering 'corrective and distributive functions' towards environmental protection, a reform in legal liability regime which clearly embraces 'duty of care' and 'strict liability' would be the next logical step in the process upon which the Taiwan government needs to embark on.

The other serious and complicated pollution source that undermines general waste management in Taiwan is domestic sewage. Most cities and counties in Taiwan are not equipped with domestic sewage treatment plants. The problem of the discharge of domestic sewage has dramatically affected the ecosystem of many rivers and caused irrigation pollution. In order to prevent further pollution, the sewage authorities should plan a long-term sewage system projects and thereby reduce sewage pollution and related pollution problems. The basic construction of the sewage system should be initiated and the relevant authorities on all levels compelled to implement effective maintenance and stringent control. Most importantly, the planning for sewer, water and solid waste facilities should be coordinated with comprehensive land use plans.

In the past three decades, the 'Taiwan miracle' has brought rapid economic growth. Some economic policies, while strengthening economic development, have also contributed to environmental pollution. One such policy has been rural industrialisation. With the location in the countryside of various industrial estates, as well as thousands of unlicensed small factories,



this process has brought both benefits and costs, especially, environmental degradation. The very nature of the industrial structure has also played a role. Taiwan is well known for the fact that most of its industrial output comes from thousands of small and medium sized enterprises in both rural and urban areas. These factories operate within narrow profit margins. Therefore, they are not inclined to invest in anti-pollution equipment or to observe pollution control regulations and laws. To this extent, it is important that regulation is applied both reasonably and fairly, so that these important but low-profit businesses are not overburdened. Thus, on the one hand, for the most effective waste measures to be implemented on a large scale, the government must address the capital and research-development needs of medium and small businesses. On the other hand, any action taken by the waste management authority to secure compliance should be 'proportionate to the associated environmental risks involved and the benefits obtained'.<sup>16</sup> In addition, three other principles of enforcement, namely, 'consistency of approach',<sup>17</sup> the 'targeting of enforcement action',<sup>18</sup> and 'transparency',<sup>19</sup> must always be put into practice by the waste management authority.

The implementation of many waste regulations and policies requires a high degree of technical knowledge. The government has made strenuous efforts to find independent sources of funds to support its efforts in the research, development and application of new waste management techniques. Nevertheless, in these efforts the government has suffered from a shortage of knowledgeable personnel necessary to carry out these activities. In order to expand the implementation of sound waste management, I can say with certainty that there is a special need to promote a variety of training courses that must be met. At the same time, instituting

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<sup>16</sup> The 'concept of proportionality' is 'included in much of the regulatory system through the balance of action to protect the environment against risks and costs'. (See Abbot, C (October, 2000) "Waste Management Licensing: Benefit or Burden?", *Journal of Planning & Environmental Law*, p.1005.)

<sup>17</sup> Ibid. The 'principle of consistency' entails that 'a similar approach must be taken in similar circumstances to achieve similar ends. Consistency must be maintained in any advice offered, the use of powers, decisions on whether to prosecute and responses to pollution incidents'.

<sup>18</sup> Ibid. The 'concept of targeting' requires that 'those activities that give rise to serious environmental damage or uncontrollable risks are made the primary target of inspections'.

<sup>19</sup> Ibid. Under the 'principle of transparency', 'the regulates have a right to be informed as to what is expected of them and what they should expect from the waste management authority'.

intensive environmental education should also be attempted in the interests of promoting sound waste management. Strengthening environmental education will teach the public how to make responsible reactions in the face of environmental problems, and to encourage increased public participation in environmental protection activities. Only by a successful consolidation of action and co-operation between the government and the people can sound waste management measures be achieved.

Advances in medical care in Taiwan have contributed to improve the quality of life. As a result, many chronic illnesses diseases have diminished in significance over the past two decades. Under the current regime, the Hazardous Waste Measures Standards (HWMS) and the Industrial and Commercial Waste Storage, Clean up and Disposal Treatment Methods and Facilities Standards (I&CWMS) specifically regulate medical waste. However, these regulations suffer from a number of weaknesses. For instance, the I&CWMS do not address long-term risks associated with different treatment and disposal systems, nor do they clearly specify any preferred mode of disposal. While the TEPA suggests that incineration may be the best means of treatment, the I&CWMS do not address problems surrounding medical waste incinerators. In addition, the I&CWMS do not tackle certain basic issues such as operator training and monitoring specifications, and ash disposal requirements. Nor do the I&CWMS prohibit the disposal of medical waste through sewage systems. The I&CWMS are also unclear as to whether incinerated waste was to be completely exempt from the tracking system, or whether waste incinerated 'off-site' was to be tracked. As indicated above in Chapter Three, HWMS and I&CWMS provide some guidance to those who handle medical waste, yet their incomplete scope means that they fail to lay down the law for a proper management to tackle hazardous waste. Thus, much remains to be improved in the area of regulation of hazardous medical waste.

Currently, hazardous household waste is exempt from the hazardous waste regulations imposed under the Waste Disposal Act 2001 (WDA 2001). At present, the WDA 2001 is the legal base for solid waste management. It empowers the TEPA to meet its objectives by promulgating necessary standards. However, the TEPA has not yet introduced any bill to set such standards. The ambiguity that has characterised control of hazardous household waste disposal remains unchanged.

In general, household waste is not considered to be hazardous waste, and is thus exempt from the stringent regulations that control hazardous waste. Instead, hazardous household waste is included in the definition of municipal solid waste and may be disposed in landfill sites. Once it reaches the landfill, hazardous constituents of the hazardous waste leach into and contaminate the soil and groundwater.

The TEPA has acknowledged that the hazardous household waste and the 'home health care' community are the most significant unregulated hazardous waste sources that need to be dealt with. Efforts to target and educate the consumer are in progress. In order to take appropriate steps in preventing waste and encouraging maximum recycling and the development of an infrastructure for safe disposal, I strongly recommend that a packaging label system should be introduced. Under this new measure, responsibility for taking proper safeguard measures would fall on manufacturers and importers dealing with substances in products. Accordingly, every product should contain a label of declaration as to its hazardous constituents, their impact on the environment, and proper disposal of the product and its container. In my view, this particular measure -- the introduction of an accurate labelling system -- could be used as an alternative method to encourage proper management. However, establishment of a 'packaging label system' or 'collective program' will not automatically remedy all the problems, which arise as a result of hazardous household waste. In many cases, hazardous household waste is mixed with other types in ways that make separation impractical

or impossible. Although it is virtually impossible to regulate individual households to determine how best to dispose of hazardous household waste, hazardous household waste management should in my view be regulated at the point of collection. Once the waste is collected, it must be properly disposed of in order to avoid liability. Hence, the need for a hazardous household waste management regulatory scheme is reinforced by the need for a clear policy allocating liability to the wrongdoer.

The 'home health care' industry is growing at a fast rate. It is likely that proper disposal of hazardous household waste will become increasingly important. The need to regulate 'home health care' waste is apparent in important given that 'home health care' waste continues to be dumped in landfill sites in significant quantities. As there are currently no regulations in place for dealing with home health care waste, the TEPA is unable to enforce any national standards for management and disposal, nor can it apply the penalties available under relevant regulations for infectious waste mismanagement. In light of the above, it is obvious that hazardous waste, especially infectious waste, must be clearly and definitively regulated so that all those involved in its production, transport, and disposal are well aware of the responsibilities. With the aim of putting an end to these shared problems, the government and legislators, industry, as well as the healthcare profession must all work together, instead of continuing to act in their current often-uncooperative manner with each other.

Based on the above-mentioned findings, unless the laws relating to the disposal of medical waste are extended to include situations other than hospitals, it is unlikely that the perceived medical waste problems will be solved. On this issue, I strongly propose that the scope of medical waste regulation should be broadening to cover 'home health care' waste and hazardous household waste. On the one hand, such a course of action would permit reasonable and rational methods for the treatment and disposal of infectious waste in these settings.

Overall, this would avoid the problems associated with discharging waste in the general household waste stream.

It is acknowledged that the planning system carries an affirmative role in improving internal relationship within the government. The planning system is one of the few current mechanisms which clearly 'links national goals with local ones'; which offers a potential possibility for issues to be considered 'in the round'; and which 'allows, encourages, public participation in decision making'.<sup>20</sup> In fact, planning can be 'a strategic, proactive force for economic prosperity, social cohesion and environmental protection'.<sup>21</sup> On the other hand, environmental assessment -- an integral component of environmental regulatory system -- has been recognized as an effectual and powerful tool in integrated planning system with economic development.

It was with these needs in mind that the Environmental Impact Assessment (EIA) Act was introduced in 1994. Under the regime introduced by this Act, projects likely to have significant environmental impacts must subject to an assessment before planning consent is given. It is hoped that EIA will offer the possibility of better co-ordination between different governmental departments to achieve 'sustainable development'.

Unfortunately, the EIA regime in Taiwan contains many deficiencies, especially in respect of environmental impact assessment processes. In practice, the EIA frequently serves only to appraise irreversible impacts, not to reduce or remove them from the beginning. Hence, it is necessary to introduce amendments which would improve the EIA Act 1994 including, for example, inserting one or more articles to extend the scope of EIA and addressing vital issue of integrated relationship with the planning process. In addition, in order to avoid conflicts at a later stage, public participation should be involved as early as possible. The public may also play a key role in post-activity monitoring. However, the absence of effective agencies and

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<sup>20</sup> UK Round Table on Sustainable Development (2000) *Planning for Sustainable Development in the 21<sup>st</sup> Century*, A contribution to a study by the Royal Commission on Environmental Pollution, p. 1.

<sup>21</sup> Ibid.

accessible dispute processes has also proved to be the major limitation on improving the performance and extent of environmental impact assessment.

In light of the above, I firmly suggest that certain reforms to Taiwan's current EIA system be carried out. For instance, the notice and comment procedure should be employed all the way through scoping process. Moreover, specific 'oversight screening process' should be set up in order to detect if an unlisted activity, or another government policy proposal, actually causes a significant environmental impact or harm to the environment. It has been shown that 'without some sort of oversight (whether administrative, judicial, or both) screening processes, a great many significant actions will simply avoid serious scrutiny.'<sup>22</sup> Furthermore, in Taiwan, the system of screening and scoping does not apply categorical exclusions but relies instead on a list, which takes the form of a 'statutory annex'. Overall, there is a natural tendency to list only large-scale actions and thereby limit the application of EIA to large projects. Many small projects, however, may cause serious problems. To amend this shortcoming, perhaps the best technique would be one that combines the two approaches of 'categorical exclusion' and 'listing'. That is, in the majority of cases, an EIA will be required. In some special cases, proposals may require one or more screening and scoping processes. In addition, an environmental impact statement (EIS) should be provided out if the project is likely to have a significant environmental effect. Otherwise, various proposals may require close review by local authorities to determine if they are likely to have a significant impact on the environment.

Moreover, any request for development consent and the information to be supplied by the developer must be made public. Access to information is a key issue in enabling the general public to take an active and informed part in decision-making, especially where a proposal may have an adverse impact on health, property values, or quality of the environment around the site of the proposed development. In addition, the evaluation of plans or projects must take place

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<sup>22</sup> Andreen, W (2000) "Environmental Law and International Assistance: The Challenge of Strengthening Environmental Law in the Developing World", *Columbia Journal of Environmental Law*, Vol. 25, No.1, p. 45.

before any approvals are issued. Above all, flexible and active public participation schemes need to be developed which encourage the public to get involved. Public participation in the EIA process could prevent methodical inaccuracy or any possible bias in the process. Together with consistent quality control, the environmental impact assessment process will provide a constructive and useful passage to achieve 'sustainable development'.

After the detailed examination of the state of waste management in Taiwan, Chapter Four provides a review of the special problem of nuclear waste management. Currently, the management of radioactive waste arising from nuclear energy utilizations is one top priority of government responsibility in Taiwan. In addition to abiding by those principles and requirements commonly existing in the international community, due considerations of Taiwan's specific circumstances have been taken into account in handling radioactive waste. Most of the radioactive wastes arising in Taiwan generated from the commercial nuclear power industry -- low level radioactive waste (LLRW) and spent fuel -- are generally stored where they take place. As three national nuclear plants (NPP) operation continues and the fourth NNP is under construction, the needs for sufficient facilities for nuclear waste are becoming more urgent. In order to achieve the goal of making Taiwan 'a nuclear-free homeland'<sup>23</sup>, final disposal for the LLRW and spent fuel must be implemented.

In general, radioactive waste management in Taiwan is mainly carried out by three different measures -- reviews, inspections, and regulatory meetings. Stringent standards apply to all relevant processes of radioactive waste management which include reduction, treatment, transport, storage, and data reporting. Additionally, in line with the N&RWM Act 2002, the RWMP 1997, and the AEADP 1991, the objective of radioactive waste management is twofold. First, the 'polluter pays principle' is applied -- the management cost should be brought directly to the producers of radioactive waste. And, radioactive wastes should be managed and disposed

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<sup>23</sup> Article 23 of the Environmental Protection Basic Act 2002.

of in ways which protect the public, workers and the environment so as to maintain the quality of environmental ecology and prevent suffering from unwanted threats from radioactive waste. Secondly, the control and licensing system for ionizing equipment and radioactive material for medical, academic and industrial applications are focusing on effective occupational radiation protection schemes or other measures to ensure that the health and safety of the work force are satisfactorily protected by keeping up individual and collective radiation doses below regulatory limits.

With regard to current practice of radioactive waste management, Dry LLRW is separated and handled either by incineration or compressed and sent in special containers to the Radioactive Waste Volume Reduction Centre. Solidified LLRW from three NNPs are stored at nuclear power plants sites. When radioactivity of the waste falls to within levels permitted for transport, the drums are shipped to the Lan-yu Storage Site. Before wastes are transported, transport plans and emergency response plans were required to be approved by the FCMA, which will send inspectors to monitor the operations.

However, with difficulties to continue transporting solidified radioactive waste to the Lan-yu Storage Site, the TPC commenced repository constructions at each nuclear power plant. All constructions are carefully supervised and inspected and the completed facilities are subject to final approval before they can be operated.

As to the issue of final disposal facilities for radioactive waste, since 1990, a series of research and R&D program plans have been undertaken to sustain and extend the need for the relevant authorities to develop their capabilities for dealing with radioactive waste. In addition, the FCMA began essential research work to draw up regulatory procedures for final disposal. At present, the draft of 'LLRW Final Repository Site Selection Act' is pending in the Legislative Yuan for approval. In order to smooth the progress of the selection process, the AEC has urged the TPC not



only to publicize the selection criteria, to draft a communication and dialogue plan and an incentive program, but also to explain the selection process to the public in the earliest stage to avoid protest.

Overall, there is adequate statutory and institutional authority for ensuring safe management of radioactive waste in Taiwan. However, the current varieties of regulations are complex and many working group members themselves had difficulty in understanding the regulations well enough to discuss the system and its applications -- which has led to examples of ineffectual management practices and possibly in some cases increased risk overall. Hence, certain amendments of the N&RWM Act 2002 need to be carried out. First, in order to prevent any unacceptable risks, while the regulatory system has been developed primarily to control radiological risks of LLRW, non-radiological hazards are also important. Secondly, naturally occurring radioactive materials<sup>24</sup> waste has received little attention from policy makers or the public in Taiwan. But this kind of radioactive waste brings potential long-term hazards to the environment if the radio nuclides are allowed to migrate. With the aim of avoiding further environmental threat, the need for recognizing and more consistently controlling the radiological hazards of naturally occurring radioactive materials is clearly needed. Thirdly, in developing current requirements for how LLRW are managed or disposed of, risks of transportation accidents; and environmental risks and costs have not been analysed. In addition, utilized sites remedial action program is not included in the current regime. With the purpose of overseeing the safety of the final disposal site, it is necessary to establish a supervising scheme to identify, investigate, and take appropriate cleanup action at the site whenever radioactive contamination results from inadequate management.

The subject I set out to examine in Chapter Five is the issue of dispute settlement and their resolution in Taiwan. The objective of that chapter is to identify how the processes of alternative dispute resolution might help to solve environmental disputes in Taiwan and to identify obstacles to the effectiveness of access to environmental justice. I conclude that there

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<sup>24</sup> Naturally occurring radioactive materials arise in many mineral extraction operations and are often discarded as waste – examples include phosphate industry residues, scale and sludge from oil and gas production, and coal ash residues.

are no clear solutions for Taiwan; however, it is essential to start to consider the applicable possibilities.

In general, there are three major dispute resolution mechanisms available in Taiwan, namely litigation, arbitration<sup>25</sup> and mediation. By reasons of the cost and duration of litigation, and heavy burden of proof on the plaintiff, environmental disputes in Taiwan have usually been solved without recourse to litigation,<sup>26</sup> and reliance is placed instead on “self-help” (*tzyh-lih jiow-jih*).<sup>27</sup> To discourage incidents of ‘self-help’ and to accelerate the dispute resolution process, the Public Nuisance Dispute Resolution Act 1992 was promulgated. Within the framework of this Act, there are three levels of dispute resolution: mediation (*tyau-chuh*), re-mediation (*tzay tyau-chuh*), and arbitration (*tsair-jyue*) as administered by committees at hsien government, Taiwan Provincial (or Municipality) government and the TEPA levels. Filing fees, are required.<sup>28</sup> In addition, a settlement proposal accepted by the parties must be submitted to a court for approval.

Given that a traditional Chinese anti-litigation attitude commonly exists in Taiwan society, and the nature of mediation as ‘a consensus-based dispute resolution mechanism’, mediation should be encouraged as the preferred dispute resolution procedure. Nevertheless, as the Public Nuisance Dispute Act 1992 relies on the voluntary mediation of the parties involved.

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<sup>25</sup> Arbitration has been generally acknowledged as a successful alternative to litigation in relation to resolving commercial disputes in Taiwan. However, the Commercial Arbitration Act (Shan-wu Zong-chai Tiao-li, see Chapter Five, footnote No.24.) does not include environmental dispute in its coverage. Therefore, arbitration is not a feasible approach to resolve environmental dispute in Taiwan.

<sup>26</sup> In Taiwan, a plaintiff or an appellant is required to pay court filing fees in the amount of 1 per cent of the claim in dispute at the district court level, 1.5 per cent at the appellate level and an additional 1.5 per cent at the Supreme Court level. (See the Code of Civil Procedures (Min-shi Shu-song Fa) Articles 78-106 and the Civil Procedure Costs Act (Min-shi Shu-song Fey-young Fa) Articles 2 to 16 and Article 18) The excessive court filing fee requirement has often discouraged victims from taking legal action against polluters. Due to the difficulty in pursuing legal actions, Taiwan citizens often resort instead to ‘self-help’ methods, which include ‘public accusations, demonstrations, blockades, and in some cases, violence’. For example, a landmark incident in 1988 (the “Lin Yuan incident”, detail see the Section 5.3 in Chapter Five).

<sup>27</sup> The meaning of ‘self-help (*tzyh-lih jiow-jih*)’ in accordance with Article 151 of the Taiwanese Civil Code refers to as that ‘a person who, in order to protect his or her rights, exercises constraint over the liberty, or seizes or destroys the property, of another person, is not liable to make compensation, provided that the assistance of the Court or other related authorities could not be obtained in due time and there was a danger that if the person did not act immediately, the exercise of his or her right would be rendered impossible or obviously difficult’.

<sup>28</sup> The percentages of filing fee range from 0.05 to 0.3, depending on the amount of the claim. See Article 43 of the Public Nuisance Dispute Resolution Act 1992.

The filing fee requirement has also played an important role in discouraging private parties from using such proceedings. As a result, the Public Nuisance Dispute Resolution Act 1992 has not been effective in resolving environmental disputes.

Once major environmental disputes have occurred in Taiwan, usually, polluters and government authorities are involved in dispute with communities claiming damages for losses stemming from pollution. For example, between August 1987 and December 1996, a total sum of more than NTD 2 billion (approximately US\$58,000,000) was paid by polluter companies to persons and communities whose property rights and financial capacity had been affected by various pollutions.<sup>29</sup> In general, a common practice for settling environmental dispute in Taiwan is to allow statutory provisions to guide a process of consensual dispute resolution.<sup>30</sup> Under a mixed process of administrative decision-making and negotiation, the environmental agency officers have to ensure that regulations have been implemented firmly but fairly<sup>31</sup>. Thereafter, the quantum of compensation is left for the parties to decide through negotiation. Unfortunately, the outcome in most cases, as stated in Chapter Five, is unsatisfactory in terms of environmental welfare standards.

Undoubtedly, the flexibility in the enforcement process may lead to the successful implementation of environmental regulation. Given this, alternative dispute resolution processes seem to bring in the possibility of 'more flexible and creative results'. Environmental mediation aims to 'resolve the dispute by mutual consent through a process of assisted negotiation'.<sup>32</sup>

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<sup>29</sup> *White Paper on Public Dispute Settlement*, 1997, p. 316.

<sup>30</sup> The Public Nuisance Dispute Resolution Act 1992 provides a legal basis for settling environmental disputes. Additionally, in order to establish the rule of determining the cause and responsibility of public nuisance dispute, and to enhance the ability to conduct evaluation in all levels of the TEPA authorities, the TEPA compiled the "Public Nuisance Determining Technology Manual" in June 1992. (See *White Paper on Public Dispute Settlement*, 2000, pp.48-50.) Furthermore, Article 1 of the Civil Code states that 'in civil matters, if there is no provision of law applicable to a case, the case shall be decided according to custom. If there is no such custom, the case shall be decided in accordance with the general principles of law'. (See *Compendium*, (1999), p.139.) The 'principles of equity' are a part of the general principles of law.

<sup>31</sup> Article 26 and 27 of the Public Nuisance Dispute Resolution Act 1992.

<sup>32</sup> Harrison, J (1997) "Environmental Mediation: The Ethical and Constitutional Dimension", *Journal of*

Although mediation brings several advantages, the development of environmental mediation in Taiwan has been hindered by the lack of available resources to support the emerging profession of mediation. At present, the mediator is usually employed in the executive branch of the government department either at a local level or central governmental level,<sup>33</sup> with a mission to ‘encourage and promote the use of mediation to resolve environmental, land use and other public policy disputes’.<sup>34</sup> The positive aspect of this situation is that the mediator is generally familiarized with the relevant regulations. The negative aspect is that the mediator might be less liable to the parties, and the process might be less transparent, as the mediator is not necessarily independent in every respect. Although lawyers in Taiwan are gradually developing environmental mediation as a new area of professional practice, their involvement is still very limited due to the high fees they charge and only some trained mediator-lawyers who are willing and able to take on mediations themselves. In addition, the difficulty of unequal access to mediation resources stays as an obstacle. However, regardless of these weaknesses, alternative dispute resolution is a better way than adjudication.

In order to improve current situation and reform the ‘ADR’ regime, I make here some suggestions. For instance, the government could amend certain statutes and regulations so that technical assistance grants are accessible for those participating in negotiations, especially environmental pressure groups and local community groups. In addition, the Taiwanese Law Society (*liuh-shy gong-huey*) may also play a part in backing the scheduling of academic and independent institutions that are willing to offer mediation services at little or no cost to local groups. If these possibilities are to become reality, mediators ‘shall conduct environmental disputes fairly, diligently, and in a manner consistent with the principle of self-determination by the party’.<sup>35</sup> Subsequently, if Taiwan aspires to integrate the practice of environmental

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*Environmental Law*, Vol. 9, No. 1, p. 80.

<sup>33</sup> Articles 4 to 8 and Article 44 of the Public Nuisance Dispute Resolution Act 1992.

<sup>34</sup> Article 1 of the Public Nuisance Dispute Resolution Act 1992.

<sup>35</sup> Harrison, J (1997) "Environmental Mediation: The Ethical and Constitutional Dimension", *Journal of*

mediation into the resolution of public dispute, mediators in Taiwan will need to cultivate their own 'ethical principles' to go well with the relevant administrative arrangements.

Given the desirability and the necessity of improving and expanding the usage of ADR on a large scale, a reform in the dispute resolution regime is indispensable. In my view, this can be carried out in two ways. First, a pressing need in the current stage is 'to prepare lawyers and the specialists for participation in various alternative modes by developing skills in respect of such matters as counselling, negotiation, mediation.'<sup>36</sup> This will not only improve understanding of the problems associated with the current heavy dependence on extra-judicial dispute resolution processes, but also foster an effective and fair use of alternative dispute resolution to resolve environmental disputes in Taiwan. The second stage would be for Taiwan to adopt the policy of 'the multi-door courthouse'<sup>37</sup> where, in effect, 'the parties in disputes have a clear range of choices as to what dispute resolution procedure they can follow'. This model has all the 'doors' -- that is, all the 'processes of dispute resolution -- under one roof, as an integrated dispute resolution system'.<sup>38</sup> Access to this environmental 'multi-door courthouse' could include 'a screening and referral clerk who would seek to diagnose incoming cases and refer them to the most suitable alternative dispute resolution mechanisms'.<sup>39</sup> Such a 'multi-door courthouse' service would contain an effective network to provide comprehensive dispute processes. However, there exists a critical difficulty. That is, whether or not those specialists have adequate skill and proper ability to categorize of the specific characteristics of various dispute processes and mechanisms.<sup>40</sup> In addition, until a firm legislative basis for

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*Environmental Law*, Vol. 9, No. 1, p. 93.

<sup>36</sup> Twining, W (1993) "Alternative to What? Theories of Litigation, Procedure and Dispute Settlement in Anglo-American Jurisprudence: Some Neglected Classics", *Modern Law Review*, Vol. 56, p. 381.

<sup>37</sup> Sander, F E A (1985) "Alternative Methods of Dispute Resolution: An Overview", *University of Florida Law Review*, Vol. 37, No. 1, p. 12.

<sup>38</sup> *Ibid.*

<sup>39</sup> *Ibid.* The available mechanisms might contain 'mediation, arbitration, court adjudication, fact-finding, mal-practice screening, media action lines or an ombudsman'.

<sup>40</sup> *Ibid.*

alternative dispute resolution is achieved, alternative dispute resolution is not likely to be seen by government and the public as ‘the vehicle for pursuing strategies of settlement dispute’.<sup>41</sup>

Following the discussion of disputes and their resolution, in Chapter Six I review sustainable development in Taiwan. Without doubt, the past few years have seen a spectacular change in the environment and development debate within Taiwan. Political and economic leaders, as well as environmental groups, have endorsed the concept of ‘sustainable development’. The general public is much more aware of and concerned about environmental issues. This has broadened and improved the prospects for environmental protection. However, in practice, what should be done to meet the requirements of sustainable development? In my view, a number of general measures are particularly worthy of consideration. First, environmental assessment legislation is a crucial component of any effective environmental management strategy. Hence, the need to integrate environmental assessment into national socio-economic planning should be a top priority because it can, when appropriately designed and implemented, be the most effective mechanism for integration development within the principles of sustainability.<sup>42</sup> Secondly, Taiwan needs to develop environmentally sound planning policies. Therefore, I strongly suggest, ‘parallel consents with relevant authorities’ might be a better way forward for the Taiwan government. Thirdly, the Taiwan government should undertake an active environmental education programme. This includes investment not only in environmental hardware, but also to make plans for a broad range of pilot projects and experiments involving as many different participants as possible. Finally, it is necessary to promote the widest possible public participation both in the formulation of environmental policy and in its implementation. Taken as a whole, in order to

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<sup>41</sup> Palmer, M and S Roberts (1998) *Dispute Processes (ADR and the Primary Forms of Decision Making)*, (London: Butterworths), p. 1.

<sup>42</sup> Lee, N (2000) “Environmental Assessment in its Developmental and Regulatory Context” in N. Lee and C. George (ed.) *Environmental Assessment in Developing and Transitional Countries*, London: John Wiley & Sons Ltd. p. 31; Also see Wilson, P (1995) “Emerging Trends in National Environmental Legislation in Developing Countries” in *New Way Forward: Environmental Law and Sustainable Development*, UNEP, p. 202. In addition, a detailed discussion of EIA regime is given in Section 3.3 of Chapter Three.

achieve sustainable development, information, techniques and appropriate policy instruments must be accessible to support the adoption of these schemes.

It is clear that the 'command-and-control' regulatory strategy in Taiwan is doomed to fail and will not achieve its environmental protection goals in the long run. Although the traditional hypothesis signifies that economic and environmental goals are conflicting, in fact, the two goals are not certainly in contradiction. Instead, foremost foci should be put on the development of a new generation of environmentally sensitive technologies, and on the economic incentives needed to encourage their adoption.

Since the beginning of promoting the implementation of sustainable development, the TEPA in Taiwan has made strenuous efforts to achieve sound waste management policies. However, the current implementation of certain policies is undermined by a shortage of personnel with which to carry out inspections and enforcement activities. To expand the implementation of sound waste management, I strongly suggest that there is a special need to promote a variety of training courses that must be met. In addition, it is also important to increase environmental manpower and strengthen the administrative system at the local level. This would involve recruiting more environmental specialists to environmental agencies in hsien or city levels.

In addition, environmental protection requires more than just governmental effort. The public must participate to assure long-term success. As stated earlier, public participation in the fulfilment of sound waste management measures needs to be strengthened. Therefore, successive consolidations of action and collaboration between the government and the public remain much to be done.

As has been demonstrated in this research, in questions of environmental protection in Taiwan there exists a large performance gap between what the public is encouraged to expect and what the public actually gets. Although Taiwan has made notable progress in developing a system of environmental law, it has not yet succeeded in controlling pollution problems. A

number of difficulties can be found in the current stage of development -- for example, there is a need to reform the development plans system. Secondly, many of the environmental statutes were drafted by civil servants with a non-legal or limited legal background and, as a result, most environmental legislation lacks sound legislative technique -- in particular, it is marked with rather ambiguous phrasing. Thirdly, the concept of environmental rights needs to be more clearly defined in the laws of Taiwan. Lastly and most importantly, as mentioned earlier, administrative standards are the major components of environmental regulations in Taiwan. However, judicial review of administrative rule making is unavailable in Taiwan. This deficiency delays the progress of legislative measures over current and future environmental activities.

In the light of the above-mentioned factors, this paper offers a few suggestions that may help to create the necessary improvements. First, the planning system in deciding the siting of development proposals plays a key role in the allocation of societal hazards and risks. Hence, the planning system needs to address proper 'material considerations'. During the planning process, public concern has to be recognised by the authorities to be a 'material consideration'. In addition, the participants should be responsive to the regional nature of many environmental problems.<sup>43</sup> Those who are in charge of 'analysing pollution problems and setting priorities' must have knowledge of the special needs in the particular area.<sup>44</sup> Moreover, every project should be aimed at an integrated approach to pollution control or, at least, at better co-ordination among programmes.

Secondly, in order to enhance legislative efficiency and keep consistency among policies contain in various statutes, an integrated legislative consideration may prove to be an effective measure. For example, 'a bill submitted by the Executive Yuan to the Legislative Yuan for review should propose all necessary provisions for implementing a specific policy as a package, including

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<sup>43</sup> For example, the establishment of the fourth nuclear power plant of Taiwan Power Company was given consent to go ahead without real assessment of the potential impacts to the environment. (Also see Andreen, W L (2000) "Environmental Law and International Assistance: the Challenge of Strengthening Environmental Law in the Developing World", *Columbia Journal of Environmental Law*, Vol. 25, No. 1, p. 34.)

<sup>44</sup> *Ibid*, p. 35.



new statutory provisions and amendments to or revisions of existing laws'.<sup>45</sup> When the 'integrated bill package' passes review, the specific provision contained therein should be 'codified into appropriate statutes separately'.<sup>46</sup>

Thirdly, a periodic survey is essential in order to identify problems. This can be done by reviewing whether 'there are problems with 'over-lapping' authorities, whether there is a lack of coordination between different waste management authorities, or whether any inadequate institutional capacities exist'.<sup>47</sup> The outcome may offer a good opportunity to begin collaboration between government and other technical and specialists, even the public. Efforts should be made to seek participation at the local and regional levels as part of the straight effort to enhance coordination between government and local and regional authorities.

Fourthly, statutory and regulatory adjustments should be made. Although some general guidance may well exist, legal reform will have to plan for the future. This should include broad proposals for legal and institutional transformation. Additionally, it is vital to ensure that the actual drafting proceeds are in a consistent but gradual fashion. Such a process should allow the participating party enough grace time to coordinate and assign specific responsibilities among themselves.

Moreover, I also anticipate that a transformation will most likely take on the following dimensions. First, there will be intensified campaigning to enforce existing legislation more vigorously. The pressure from the general public and non-governmental organisations is having the effect of encouraging the TEPA to prosecute more offenders. Secondly, there will be great demand, mainly from the public and non-governmental organisations, to introduce new legislation to eliminate the gaps that remain in Taiwan's environmental regulation. Thirdly, the government has been increasingly compelled to build up a comprehensive environmental policy

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<sup>45</sup> Tang, D (1997) "New Developments in Environmental Law and Policy in Taiwan", *Pacific Rim Law & Policy Journal*, Vol. 6, No. 2, p.279.

<sup>46</sup> *Ibid.*

<sup>47</sup> Andreen, W L (2000) "Environmental Law and International Assistance: the Challenge of Strengthening Environmental Law in the Developing World", *Columbia Journal of Environmental Law*, Vol. 25, No. 1, p. 32.

for 'sustainable development'. This pressure is likely to enhance the status and power of the TEPA, and other departments of state.

Above and beyond, I predict that emerging areas of debate on the following concerns between the government and the public will occur. First, there will be additional demand on the government to set environmental welfare objectives for industrial, manufacturing and construction operations to accomplish. Subsequently, more regular and systematic reports on these achievements will also be called for. Secondly, there will be continual public demands that ask for a greater flow of environmental information into the public domain. A greater transparency will arise to some extent from the government itself, and partially from non-governmental organisations. Thirdly, the influence of more effective public participation on decision-making is expected to be substantial. This pressure will come from both non-governmental organisations and local voluntary groups based on the need to become more involved in decisions that they see as directly affecting their lives.

As second basic purpose of this thesis is to recommend to Taiwan the adoption of some of the basic aspect of waste management laws and regulations found in English and Wales. The research has so far suggests that while there are certain similarities between the two jurisdictions there are also enough differences to raise the issue of whether or not there are 'nationally distinct styles'<sup>48</sup> of law and regulation that might rule out successful transplantation of the relevant norms and institution of the English system to Taiwan. Within the 'legal transplant' processes, it is impossible to ignore the disparity of culture, political and legal systems between different jurisdictions. As a result, there is no doubt that between their scope and practice exist great variation. Therefore, the adoption of foreign processes inevitably presents difficulties.

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<sup>48</sup> Lange, B (1999) "National Environmental Regulation? A Case Study of Waste Management in England and Germany", *Journal of Environmental Law*, Vol. 11, p. 79.

Nevertheless, comparative law studies indicate that ‘legal transplants’ are the most productive source of modernisation and do not ‘cause instability in the pre-existing legal or socio-culture’.<sup>49</sup> The prerequisites for achieving harmony will not be necessarily ‘similarity or regularity’, but may also be ‘difference and diversity’.<sup>50</sup> Many legal systems in transition observe and are ‘inspired’ by other systems, which are ‘socio-culturally or legal culturally’ diverse from their own.<sup>51</sup> Generally speaking, the law as implemented and practised in Taiwan today includes ‘Imperial Chinese law’, part of a set from ‘Contemporary China’, as well as ‘heavily borrowing and adopting from civil law jurisdiction (such as Germany and Japan) and the common law in United States’.<sup>52</sup> It seems that different legal systems often provide similar answers to similar questions, even where their traditions and methods are quite different. In other words, dissimilar legal systems often reach the same ‘destination’ by different routes.<sup>53</sup> Since ‘borrowing’ is the most productive source of legal transformation,<sup>54</sup> I have argued that the reception of foreign legal institutions is a matter of usefulness and need, rather than a concern of national identity. In this spirit, Chapters Seven adopts a comparative analysis of ‘legal transplants’ with a view to appraising the capability of the legal rules and possibility of Taiwan’s adopting externally-derived norms.

Overall, this area of my research concludes that there are ‘nationally distinct styles’ of regulation, in many cases change in a legal system or rule-of-law are due to ‘legal transplant’. In fact, law in Taiwan has developed to a very significant extent out of legal transplantation, and this process has been quite successful. The history of the law in Taiwan is largely a history

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<sup>49</sup> Orucu, E (2000) “Critical Comparative Law: Considering Paradoxes for Legal System in Transition”, *Electronic Journal of Comparative Law*, Vol. 4.1. ([www.law.kub.nl/ejcl/41/art41-1.html](http://www.law.kub.nl/ejcl/41/art41-1.html)).

<sup>50</sup> *Ibid.*  
<sup>51</sup> Orucu, E (2000) “Critical Comparative Law: Considering Paradoxes for Legal System in Transition”, *Electronic Journal of Comparative Law*, Vol. 4.1. ([www.law.kub.nl/ejcl/41/art41-1.html](http://www.law.kub.nl/ejcl/41/art41-1.html)).

<sup>52</sup> Chiu, H and J. Fa (1994) “Taiwan’s Legal System and Legal Profession”, in M A Silk (ed.) *Taiwan Trade and Investment Law*, (Oxford: Oxford University Press), p. 21.

<sup>53</sup> Harding, A (2000) “Comparative Public Law: A Neglected Discipline?”, in I Edge (ed.) *Comparative Law in Global perspective*, (Ardsey, New York: Transnational Publishers. Inc.), p. 101.

<sup>54</sup> Orucu, E (2000) “Critical Comparative Law: Considering Paradoxes for Legal System in Transition”, *Electronic Journal of Comparative Law*, Vol. 4. ([www.law.kub.nl/ejcl/41/art41-1.html](http://www.law.kub.nl/ejcl/41/art41-1.html)).

of borrowing of legal materials from other legal systems.<sup>55</sup> Various foreign codes or the principle of the rule-of-law were chosen, translated, adapted and adjusted in order that they might be introduced or applied in Taiwan despite the ‘social and legal divergences’. It is clear that foreign laws and regulations have been successfully modified to suit Taiwan’s needs. Large-scale foreign models have characterised much of Taiwan’s legal history. The overall experience of the transplantation of law to Taiwan has been generally successful. However, the purposes and effects of the transplant may not have always remained the same or achieved precisely what was intended, because ‘global doctrine’ becomes clothed in local knowledge.

As Watson has pointed out, ‘legal transplants do not depend on similarity of underlying social or economic conditions’.<sup>56</sup> In fact, a great deal of law has been borrowed even where the social, economic, and political circumstances of ‘the recipient’ were completely different from those of the ‘donor’ system.<sup>57</sup> In addition, Watson also indicated that the moving of a rule or a system of law from one country to another has been shown to be the most effective way of legal development since the majority of changes in most systems are ‘the result of borrowing’.<sup>58</sup>

Also, ‘globalising processes’ have created a wide-reaching system of legal communications that tends to downgrade ‘the laws of the national state to the states of mere regional parts of this network which are in close communication with each other’.<sup>59</sup>

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<sup>55</sup> Between 1928 and 1937, the Criminal Act (1928, revised 1935), the Code of Criminal procedure (1928, revised 1935), the Civil Code (1929), the Code of Civil Procedure (1929), the Insurance Act (1929), the Company Act (1929), the Maritime Law (1929) ‘borrowed heavily from Japan’. Since the 1950s Taiwan has enjoyed close relations with the United States, and the American law has great influence. Amendments of commercial statutes - the Company law, the Law of Negotiable Instruments, the Maritime Law, and the Insurance Law - have drawn mostly from American theory and practice, and the Chattel Secured Transactions Act, an important appendix to the Civil Code, is said to follow the American Model. (See Ma. H (1985) “General Features of the Law and Legal System on the Republic of China”, in H. Ma (ed.) *Trade and Investment in Taiwan*, (2<sup>nd</sup> edn), (Taipei: Institute of American Culture, Academia Sinica), pp. 16-20.)

<sup>56</sup> Watson, A (1974) *Legal Transplants: An Approach to Comparative Law*, (Edinburgh: Scottish Academic Press), pp. 95-96.

<sup>57</sup> Wise, E M (1990) “The Transplant of Legal Patterns”, *American Journal of Comparative Law*, Vol. 38, p. 6.

<sup>58</sup> Watson, A (1974) *Legal Transplants: An Approach to Comparative Law*, (Edinburgh: Scottish Academic Press), p. 94.

<sup>59</sup> Teubner, G (1998) “Legal Irritants: Good Faith in British Law or How Unifying Law Ends Up in New Divergences”, *Modern Law Review*, Vol. 61, p. 16.

The rapid social, economic and political change which took place in Taiwan after the 1970s, and the 'globalising processes' in legal development, indicate that Taiwan needs better and quicker responses to the practical problems of waste management. 'Legal transplants' have been an important channel, and provided 'inspiration and stimulus' for legal reform in Taiwan for many years.<sup>60</sup> Legal borrowing plays a vital role in modernization. This approach has a positive symbolic value in Taiwan. It appears undoubtedly that the role of 'legal transplant' in the process of creation of Taiwan's law has been important and will continue.

However, there is no evidence that 'one kind of law is more easily transplanted than another'.<sup>61</sup> This dissertation has adopted a comparative approach -- the issue being studied must be set in the context of the best solutions obtaining from a different legal system. In addition, comparative study provides an 'inspiration' to develop the thought of how the law can be improved. It follows from this that Taiwan must either adopt the best existing variant or find a new solution that is better and more easily applied than any of the existing ones. This means that Taiwan no longer can confine itself to reform a national law only in an effort to see what can be use to Taiwan itself. Taiwan must go beyond this limitation. Even if the legal institutions in different systems are 'historically and conceptually quite different, they may still perform the same role in the same way'.<sup>62</sup> Taiwan, therefore, needs to abandon 'national doctrines' and come directly to grips with the demands for suitable rules. Other types of legal systems can, and should also be considered. In these circumstances, English law offers Taiwan a whole new dimension. It may well enable, through selective legal transplanting, Taiwan to develop more critical standards which may lead to a more comprehensive legal regime. Hence, I strongly suggest that Part IIA of the EPA 1990 in relation to contaminated land, the regime of 'duty of care', and the system of 'Integrated Pollution Prevention Control' which are found in the

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<sup>60</sup> Ibid.

<sup>61</sup> Harding, A (2002) "Global Doctrine and Local Knowledge: Law in South East Asia", *International and Comparative Law Quarterly*, Vol. 51, p. 45.

<sup>62</sup> Zweigert, K and H Kotz (1998) *An Introduction to Comparative Law*, (3<sup>rd</sup> edn) (Oxford: Clarendon Press, trans: A. Weir), p. 37.

English waste management laws and regulations are areas that Taiwan may find especially helpful for reform purposes.

To a substantial degree, foreign laws and legal institutions have influenced Taiwan's legal development over the past five decades. But Taiwan law has also over the past 50 years developed a 'national identity' within the setting of the evolving international legal regime. Success or failure in such transplantation will be influenced by successive collaborations among government, local authorities and general public in order to adapt unfamiliar ideas to local condition.<sup>63</sup> How exactly English waste management laws and regulations might have an impact on the Taiwan waste management legislation will be largely determined by giving the English regulations a local shape so that they fit in with Taiwan's society and culture.

Without doubt, Taiwan has in the past few years made considerable progress, especially in moving forward its environmental legislation and fostering technological upgrading. In practice, however, what should be done to meet the requirement of localisation of other countries' law and policy and to promote a comprehensive and constant environmental protection? In my view, the foremost need is effectively implementing the existing laws and regulations, followed by evaluating the effectiveness of the environmental protection efforts of local governments as a central consideration to decide which are the major shortcomings in the current legislation. Subsequently, the evaluation results can be employed to determine which foreign environmental laws or regulations are likely to get hold of a 'local dimension'.<sup>64</sup> On the other hand, those conclusions can also be used as a basis on which to apportion and to distribute subsidies in order to encourage local administrators to attach greater importance to environmental issues.

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<sup>63</sup> Cotterrell, R (2001) "Is There a Logic of Legal Transplants?", in Nelken, D and J Feest (ed.) *Adapting Legal Cultures*, (Oxford: Hart Publishing), p. 80.

<sup>64</sup> Lange, B (1999) "National Environmental Regulation? A Case Study of Waste Management in England and Germany", *Journal of Environmental Law*, Vol. 11, p. 84.

Over and above this, Taiwan must also raise the environmental protection awareness and 'foster environmental ethics of the citizenry'.<sup>65</sup> This should include boosting common understanding of environmental protection and natural conservation, intensifying environmental education, and cultivating 'environmental ethics' among the public so that make environmental protection an integral part of everyone's daily life.

Furthermore, 'access to environmental information' is indispensable to environmental protection. By law, the enforcing authorities maintain public registers containing detailed information. In practice, the general public hardly ever consults these registers. To set up nation-wide on-line information system might help to enhance and reach the purpose of localising certain foreign environmental laws and regulations into local dimension.

In summing up my research, I have concluded that although each country bases its legislation on its particular political, cultural, economic and social experiences, similar problems frequently need similar legal solutions regardless of the particular jurisdiction. In addition, it is possible to 'transplant' one national or international law and regulation to another state or jurisdiction. In fact, law in Taiwan in general has developed out of legal transplantation, a process that has hitherto been quite successful. Accordingly, the selective adoption of English waste management laws and regulations may well offer important possibilities for the Taiwan government in its unfolding efforts to develop an integrated waste management regime.

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<sup>65</sup> Hu, J (ed) (1994) *Quiet Revolutions on Taiwan, Republic of China*, (Taipei: Kwang- Hwa), p. 206.

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