出國報告(出國類別：國際會議)

出席 WTO 貿易與環境委員會(CTE)例行會議與環境技術擴散研討會出國報告書

服務機關：行政院環境保護署
姓名職稱：魏盟巽研究員、洪榮勳專業研究員
出國地點：瑞士
出國期間：101 年 11 月 10 日至 11 月 15 日
報告日期：101 年 12 月 14 日

目錄

出席 WTO 貿易與環境委員會(CTE)例行會議與環境技術擴散研討會出國報告

一、 出國目的

本次出國主要是參與 WTO 貿易與環境委員會例行會議與環境技術擴散研討會，本署人員除於研討會擔任講者，介紹我國廢棄物管理情形，並掌握環境措施對市場進入、環境標示要求等環境與貿易相關議題之最新發展趨勢並進行必要回應。

二、 會議時間：101 年 11 月 11 日至 100 年 11 月 12 日

三、 會議地點：瑞士日內瓦 WTO 總部

四、 會議進展情形

(一) WTO/CTE 環境技術擴散研討會（11 月 12 日）

1. WTO/CTE 環境技術擴散研討會(Workshop on Environmental Technology Dissemination)由我國常駐 WTO 代表團呂佩娟秘書、本署廢管處洪榮勳專業研究員及永續發展室魏盟巽研究員出席。

2. 本次研討會之召開緣起於沙烏地阿拉伯在 2010 年之建議，沙烏地阿拉伯於 2010 提出技術擴散(technology dissemination)文件(WT/CTE/W/247)，主要內容涵蓋需要消除技術擴散障礙、著重於碳捕捉及儲存技術(Carbon Capture and Storage, CCS)，表示此技術較傳統技術昂貴，所以需要誘因協助商業化並建議會員消除障礙，認為有許多非關稅障礙，例如標準與標示、提出 3 步驟以推動技術擴散，包括 CTE 可要求相關機構專家代表提出報告、分享國家經驗、CTE 舉辦研討會討論技術擴散與貿易障礙。

3. 本次研討會內容包括環境技術擴散、碳捕捉與儲存技術、低排放技術(Low Emission Technology)、廢棄物管理與水處理技術。本署廢管處洪榮勳專業研究員亦擔任講者介紹我國廢棄物管理情形。

（1）環境技術擴散

A. 主要是討論環境技術擴散現況、機會及挑戰包括環境技術擴散對永續發展之貢獻、智慧財產權的角色、貿易與投資、貿易障礙、技術協助、技術移轉及能力建構等。共有來自經濟合作暨發展組織(OECD)、聯合國貿易與發展會議(UNCTAD)、南方中心(South Center)、及 Innovation Insights 等 4 名講者。

B. OECD Mr. Ivan Hascic 表示，風力與太陽能發電技術為環境相關技術全球發展最快速項目。而影響技術擴散之公共政策包括創新能力、研發費用、及電價補貼政策(Feed-in-Tariff)等。技術擴散驅動力主要是技術輸出國之創新供給(supply of innovation)與技術輸入國之吸收能力(adsorptive capacity)。

C. UNCTAD Mr. Robert Hamway 指出，開發中國家輸出增加之環境技術

或產品包括生質能、太陽能發電、風力發電等。他並介紹如何應用產品空間地圖之工具來界定產品國際競爭力。此空間地圖是以貿易數據繪製而成，如此由此地圖看出該國產品之國際競爭力。例如巴西的例子，該國在熱幫浦(heat pump)與風力渦輪(wind turbine)等具國際競爭力。

D. 南方中心 Mr. Vicente Yu 指出，開發中國家因吸收能力的限制、基礎建設欠缺、缺乏技術知識等都將影響環境技術擴散。另環境技術專利主要集中在已開發國家，智慧財產權問題將影響開發中國家取得環境技術，例如 2005 年再生能源專利歐盟占 36%、美國占 20%、日本占 19%。

E. Innovation Insights Ms. Jennifer Brant 認為吸收能力、夥伴關係、市場誘因、政府政策將影響環境技術擴散。而智慧財產權將增進綠色技術開發與擴散。

F. 與會者針對智慧財產權對於技術擴散是助力或阻力有諸多討論。另外針對開發中國家在環境技術輸出占世界比例亦有進一步討論，尤其中國、印度及巴西等開發中國家亦扮演重要角色。

（2）碳捕捉與儲存(Carbon Capture and Storage, CCS)

A. 此單元共有來自 Global CCS Institute、挪威石油與能源部、英國 Sussex 大學等 3 位講者。

B. Global CCS Institute Mr. John Scowcroft 指出，全球應用在能源相關的二氧化碳減量技術主要是利用能源效率提升、再生能源及碳捕捉與儲存。而示範計畫將是降低碳捕捉與儲存技術費用的關鍵。目前應用碳捕捉與儲存技術之國家有美國、澳大利亞、歐盟、加拿大、英國、挪威等。

C. 挪威石油與能源部 Mr. Stig Svenningsen 指出，挪威的溫室氣體減量政策相當積極，2020 年將減量 30%至 40%，1991 年後就實施碳稅制度。挪威的 CCS 政策將該技術列為減量策略之一環並提供公共資金。挪威有 Sleipner 與 Mongstad 等大型 CCS 計畫。

D. 英國 Sussex 大學 Dr. Florian Kern 指出，政策與法規、經濟與財務、民眾接受度、大型化與推動速度、儲存可靠性與安全性等造成 CCS 不確定性的主要因素。

（3）低排放技術(Low Emission Technology)

A. 此單元共有來自瑞典 Flexenclosure 公司、歐盟研究與創新總署、國際再生能源中心、國際貿易與永續發展中心等 4 位講者。

B. 歐盟研究與創新總署 Mr. Martin Huemer 介紹歐盟之策略性能源技術

計畫(EU Strategic Energy Technology Plan)，該計畫主要是能源與氣候變遷政策之技術支柱。該計畫與歐洲工業倡議(European Industrial Initiatives)及歐洲能源研究聯盟(European Energy Research Alliance)結合，以促進能源技術發展與推動。歐洲工業倡議之主要重點技術領域為風力、太陽能、生物能源(bioenergy)、電網、碳捕捉與儲存等。

C. 國際再生能源中心 Mr. Francisco Boshell 就標準與智慧財產權於再生能源技術的角色進行探討。Boshell 認為技術標準將有助於市場進入、增加產品品質與消費者的安全、降低成本與增進技術移轉。

（4）廢棄物管理與水處理技術

A. 此單元共有 4 位講者，本署廢管處洪專業研究員榮勳介紹我國廢棄物管理，另外 3 位講者分別來自歐盟執委會共同研究中心、奧地利 Komptech 公司、及聯合國環境總署國際環境技術中心。

B. 歐盟執委會 Mr. Hans Saveyn 認為廢棄物管理之驅動力主要來自環境關切、市場力、法規、及技術發展。歐盟在推動廢棄物管理相關政策亦考量如何將環境政策與經濟成長脫鉤，儘量不讓環境政策影響經濟發展。歐盟在 1990 至 2008 年間，都市固體廢棄物減量達 35%，都市固體廢棄物部門亦希望達到碳中和。歐盟推動的廢棄物管理相關法規有包裝指令、廢棄車輛指令及廢電子電機設備指令等。

C. 國際環境技術中心 Dr. Mushtaq Ahmed Mermon 介紹位於日本大阪之聯合國環境總署國際環境技術中心之有關環境技術發展情形，廢棄物與農業生質物轉換為資源技術、廢塑膠轉化為資源、廢油回收技術、衛生廢棄物處理技術、電子廢棄物管理、廢棄物與氣候變遷、廢水回收技術、水使用效率等為主要環境技術展項目。

D. 本次會議，會議主席因中國大陸抗議，傳遞信息提醒本署洪榮勳專業研究員，有關我國在 WTO 之名稱應為 Chinese Taipei，盼在問與答時注意。而在問與答時，國際貿易與永續發展中心與會人員針對我國在環境保護工作成就表達讚許時，因其時有提到 Taiwan，會議主席出面打斷其談話並告知我國在 WTO 之稱呼應為 Chinese Taipei，此段實令人遺憾。

（5）綜觀本次研討會之討論與與會者之關切，智慧財產權是否會影響技術擴散有相當多討論。另外 CCS 未來發展與不確性以及提供開發中國家技術援助等也是討論重點。

(二) WTO/CTE 例行會議（11 月 13 日）

1. 本次會議由 CTE 主席前泰國代表團大使 Krisda PIAMPOMGSAMT 主持，我國由

駐 WTO 代表團林義夫大使、呂佩娟秘書及本署魏盟巽研究員出席。

2. 杜哈部長宣言第 32 段內容之討論，包括（1）環境措施對市場進入的影響-尤其是對開發中國家，特別是低度開發國家的影響-以及取消或降低對貿易、環境及發展均有利之貿易限制及扭曲措施；（2）與 TRIPS 協定之相關條文，以及（3）達成環保目的而應規定之標示等。

（1）韓國分享該國綠色成長策略與碳排放交易制度，韓國於本(2012)年通過推動碳排放交易制度，為亞洲第 1 個國家推行全國性碳排放交易制度(cap and trade system)，預計於 2015 年開始施行第 1 階段，除第 1 與第 2 階段為期 3 年，其他階段則為期 5 年，將納入年排放量超過 125,000 噸 CO_2e 的單位(entities)，以及年排放量超過 25,000 噸 CO_2e 的設備(installation)。

（2）挪威分享該國離岸設施碳稅(offshore carbon tax)，挪威近期將其油公司之離岸碳稅從每噸 CO_2 21 歐元提高至 45 歐元。

（3）會員國對於貿易與環境委員會是否應討論氣候變遷議題有不同看法，另外部分會員國對於碳排放交易與碳稅等措施是否會造成貿易障礙亦提出質疑，尤其是對開發中國家。韓國與挪威表示，該等措施為國內機制，將不會構成國際貿易障礙。

（4）歐盟在部門分析(sectoral analysis)部分，報告打擊非法、未申報、非受管制的捕撈(illegal, unreported, unregulated fishing, IUU fishing)：建立防止、阻止及消除 IUU fishing 之歐盟系統。(JOB/TE/27, 29 October, 2012)。會員國對於歐盟的報告，主要關切是否會造成另一個貿易障礙並造成漁業糾紛。歐盟強調，該措施之相關作為多是國際協定之相關規定，歐盟無新的規範讓會員遵守。

3. 杜哈宣言第 33 段針對開發中國家在貿易與環境領域之技術協助與能力建構

（1） WTO 秘書處報告 2012 年在貿易與環境之技術協助與能力建構活動，包括安哥拉及巴拉圭舉辦貿易與環境議題研討會，亦於非洲舉辦區域研討會邀請英語系國家出席，未來將續積極協助開發中國家或低度開發國家能力建構等工作。

4. 其他關切議題:

（1） 俄羅斯與澳洲報告 APEC 領袖宣言採認之環境商品清單，該清單涵蓋 54 產品，預計在 2015 年底前將所涵蓋商品之關稅降至 5%或以下。

（2） 多數 APEC 會員國（包括我國）之 WTO 會員發言表示，樂見 APEC 在環境商品議題的進展，並希望能夠給 WTO 帶來動能，並願在未來持續分享相關進展資訊。部分開發中國家則認為環境商品清單應考量國家發

展程度，且認為 APEC 通過之清單為自願性，並無約束力且無懲罰性，並不適合 WTO 場域。

（3） 有關 11 月 12 日環境技術擴散研討會，沙烏地阿拉伯表示該研討會之原始提案係沙國於 2010 年提出，著重環境技術擴散對發展之影響及挑戰，及部分發展中國家盼探討技術移轉及能力建構等議題，但卻未被納入，且沙國並未列入擔任講者，感到失望與可惜。玻利維亞、印度、南非、中國大陸、巴基斯坦、墨西哥等認為開發中國家之講者太少且認為研討會之規劃應更加透明。另外阿根廷與南非則認為智慧財產權不應成為技術擴散障礙。主席表示，未來還可能舉辦相關研討會，希望會員多提供建議。

（4） 下一次貿易與環境例行會議預定於 2013 年上半年召開。

六、觀察與建議

(一)本署過去曾就我國環保標章推動情形於貿易與環境委員會例行會議進行經驗分享，本次會議本署就廢棄物管理相關經驗與 WTO 會員國分享，讓各國瞭解我國在環保工作之進展與成就，未來如有機會，應就相關環境措施進行經驗分享。

(二)由於 WTO 杜哈回合談判進展緩慢，貿易與環境相關議題亦無進一步進展。本次會議澳洲與俄羅斯在會中報告 APEC 環境商品清單後，多數會員表示希望給 WTO 帶來動能，會員似乎希望有所進展，惟多邊談判要達成共識似乎不是短期可見，將持續關注其後續發展。

附件

JOB/TE/28 5 November 2012

Committee on Trade and Environment

MEETING OF 13 NOVEMBER 2012

Annotated Draft Agenda[1]

This annotated draft agenda is intended to assist participants in preparing for the forthcoming regular meeting of the Committee on Trade and Environment (CTE Regular) to be held on **Tuesday, 13 November 2012,** starting at **10.00**, in the Centre William Rappard. The meeting will be preceded by the Workshop on Environmental Technology Dissemination, which will take place on **Monday, 12 November 2012**.

The report of the last formal CTE meeting held on 14 November 2012 was circulated in document **WT/CTE/M/53**, dated 27 January 2012. The latest list of documents of the Committee was circulated in document **WT/CTE/INF/5/Rev.10**, dated 4 November 2011.

The following items have been proposed for the agenda:

1. Adoption of the Agenda

The airgram convening this meeting was circulated in document **WTO/AIR/4031**, dated 22 October 2012.

2. Paragraph 32 of the Doha Ministerial Declaration

(a) Paragraph 32(i)

> *"The effect of environmental measures on market access, especially in relation to developing countries, in particular the least-developed among them, and those situations in which the elimination or reduction of trade restrictions and distortions would benefit trade, the environment and development."*

(i) First part of Paragraph 32(i) – "The effect of environmental measures on market access."

Under this agenda item, the Republic of Korea will share information on its recently adopted legislation to establish a national emissions trading scheme. Also, Norway will share information concerning its CO_2 tax on offshore operations on the Norwegian continental shelf.

(ii) Second part of Paragraph 32(i) – "Sectoral analysis"

The debate on situations in which the elimination or reduction of trade restrictions and distortions would benefit trade, the environment and development ("win-win-win" situations) has been based on a sectoral approach, e.g. on energy, forestry, agriculture and fisheries subsidies.

Under this agenda item, the European Union will present its paper on "Combating illegal, unreported and unregulated (IUU) fishing: Establishment of an EU system to prevent, deter and eliminate IUU fishing", circulated in document JOB/TE/27 on 29 October 2012.

[1] This document has been prepared under the Secretariat's own responsibility and is without prejudice to the positions of Members and to their rights and obligations under the WTO.

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(b) Paragraph 32(ii)

"The relevant provisions of the Agreement on Trade-Related Aspects of Intellectual Property Rights."

No new submissions have been received under this item.

(c) Paragraph 32 (iii)

"Labelling requirements for environmental purposes."

No new submissions have been received under this item.

(d) Other items on the CTE's work programme (Items 1, 2, 3(a), 4, 5, 7, 9, and 10)[2]

(i) Item 4

The provisions of the multilateral trading system with respect to the transparency of trade measures used for environmental purposes and environmental measures and requirements which have significant trade effects.

The WTO Secretariat will circulate shortly its *Environmental Database of 2009* in document **WT/CTE/EDB/9 (and Add.1)**. Delegations are invited to give feedback on their use of this document.

3. Paragraph 33 of the Doha Ministerial Declaration

"We recognize the importance of technical assistance and capacity building in the field of trade and environment to developing countries, in particular the least-developed among them. We also encourage that expertise and experience be shared with Members wishing to perform environmental reviews at the national level."

There are two distinct aspects to be discussed under this agenda item:

(a) First Part of Paragraph 33 – Technical Assistance and Capacity Building

Any Members and intergovernmental organizations wishing to update the Committee on their technical assistance and capacity building activities in the field of trade and the environment are invited to do so. The WTO Secretariat will make a short presentation on its trade and environment technical assistance activities in 2012.

(b) Second Part of Paragraph 33 – Environmental Reviews at the National Level

Any Members and intergovernmental organizations wishing to share their expertise and experience on environmental reviews at the national level are invited to do so.

No new submissions have been received under this item.

[2] See Annex 1, the original CTE work programme which includes these items.

4. Paragraph 51 of the Doha Ministerial Declaration

"The Committee on Trade and Development and the Committee on Trade and Environment shall, within their respective mandates, each act as a forum to identify and debate developmental and environmental aspects of the negotiations, in order to help achieve the objective of having sustainable development appropriately reflected."

No new submissions have been received under this item.

5. Other Business

Under this agenda item, the Russian Federation and Australia will share information on "Annex C - APEC List of Environmental Goods" from the APEC 2012 Leaders' Declaration.[3]

Moreover, a representative of the Organisation for Economic Cooperation and Development (OECD) will report on recent activities.

Members wishing to raise any other matters under Other Business are invited to advise the Chairperson through the Secretariat.

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[3] The relevant document can be found at http://www.apec.org/Meeting-Papers/Leaders-Declarations/2012/2012_aelm/2012_aelm_annexC.aspx

ANNEX 1: ITEMS OF THE CTE WORK PROGRAMME

Item 1:	The relationship between the provisions of the multilateral trading system and trade measures for environmental purposes, including those pursuant to multilateral environmental agreements.
Item 2:	The relationship between environmental policies relevant to trade and environmental measures with significant trade effects and the provisions of the multilateral trading system.
Item 3(a):	The relationship between the provisions of the multilateral trading system and charges and taxes for environmental purposes.
Item 3(b):	The relationship between the provisions of the multilateral trading system and requirements for environmental purposes relating to products, including standards and technical regulations, packaging, labelling and recycling.
Item 4:	The provisions of the multilateral trading system with respect to the transparency of trade measures used for environmental purposes and environmental measures and requirements which have significant trade effects.
Item 5:	The relationship between the dispute settlement mechanisms in the multilateral trading system and those found in multilateral environmental agreements.
Item 6:	The effect of environmental measures on market access, especially in relation to developing countries, in particular to the least developed among them, and environmental benefits of removing trade restrictions and distortions.
Item 7:	The issue of exports of domestically prohibited goods.
Item 8:	The relevant provisions of the Agreement on Trade-Related Aspects of Intellectual Property Rights.
Item 9:	The work programme envisaged in the Decision on Trade in Services and the Environment.
Item 10:	Input to the relevant bodies in respect of appropriate arrangements for relations with intergovernmental and non-governmental organizations referred to in Article V of the WTO.

Workshop on Environmental Technology Dissemination

12 November 2012, WTO, Geneva

Final Programme

WTO OMC

10:00-10:15 Opening Remarks by Ambassador Krisda Piampongsant, Chair of the Committee on Trade and Environment

10:15-11:30 General Session: Dissemination of Environmental Technologies

Based on national experiences and presentations by relevant international institutions and the private sector, this session will discuss the current situation, opportunities and challenges related to environmental technologies dissemination, commercialization, and access, including: their contribution to sustainable development; the role of intellectual property; trade and investment; barriers to trade; technical assistance, transfer of technologies and capacity building activities.

Speakers:

- Mr. Ivan Haščič, Economist, Empirical Policy Analysis Unit, Organisation for Economic Co-operation and Development, Environment Directorate, Paris, France
- Mr. Robert Hamwey, Economics Affairs Officer, Trade, Environment, Climate Change and Sustainable Development Branch, United Nations Conference on Trade and Development (UNCTAD), Geneva
- Mr. Vicente Yu, Programme Coordinator, Global Governance for Development, South Centre, Geneva, Switzerland
- Ms. Jennifer L. Brant, Executive Director, Innovation Insights, Geneva, Switzerland

Q&As

11:30-12:30 Carbon Capture and Storage (CCS) Technologies

The session will discuss the various themes outlined in the general session as they apply to carbon capture and storage technologies.

Speakers:

- Mr. John Scowcroft, General Manager, Global CCS Institute, European office, Paris, Norway
- Mr. Stig Svenningsen, Assistant Director General, Norway Ministry of Petroleum and Energy, Oslo, Norway
- Dr. Florian Kern, SPRU-Science and Technology Policy Research, University of Sussex, Brighton, United Kingdom

Q&As

14:30-16:15 Low Emission Technologies

The session will discuss the various themes outlined in the general session as they apply to low emission technologies, including technologies to reduce energy consumption, and renewable energy technologies.

Speakers:

- Mr. Pär Olsson,Vice President Purchasing, Flexenclosure, Stockholm, Sweden
- Mr. Martin Huemer, Policy Officer, European Commission, DG Research and Innovation, Brussels, Belgium
- Mr. Francisco Boshell, Analyst, Innovation and Technology Centre, International Renewable Energy Agency, Bonn, Germany
- Mr. Joachim Monkelbaan, Programme Officer, Global Platform on Climate Change Global Platform, International Centre for Trade and Sustainable Development, Geneva, Switzerland
- Ms. Wanna Tanunchaiwatana, Officer-in-Charge, Finance, Technology and Capacity Building programme, United Nations Framework Convention on Climate Change, Bonn, Germany [Video Presentation]

Q&As

16:15-17:50 Waste Management and Water Treatment Technologies

The session will discuss the various themes outlined in the general session as they apply to waste management, waste water management and water re-use technologies.

Speakers:

- Dr. Harvey Houng, CIH, Researcher, Department of Waste Management, Environmental Protection Administration, Chinese Taipei
- Mr. Hans Saveyn, Scientific Officer, Institute for Prospective Technological Studies, Joint Research Centre, European Union Commission, Sevilla, Spain
- Dr. Martin Wellacher, Research Associate, Komptech GmbH, Frohnleiten, Austria
- Dr. Mushtaq Ahmed Memon, Programme Officer, International Environmental Technology Centre, United Nations Environment Programme, Osaka, Japan

Q&As

17:50-18:00 Concluding Remarks by Dr. Harsha Vardhana Singh, Deputy-Director General

18:00-19:00 Reception

WORKSHOP ON ENVIRONMENTAL TECHNOLOGY DISSEMINATION

Innovative Waste Management in Chinese Taipei

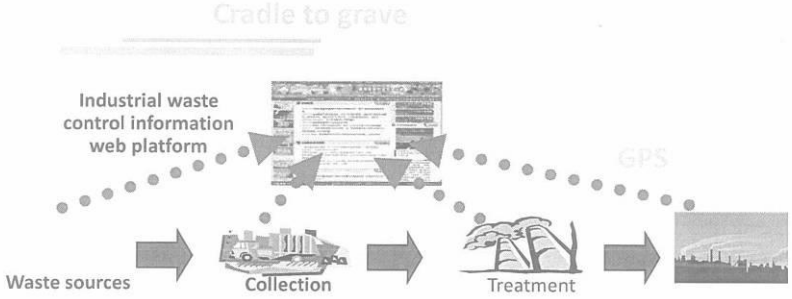
Harvey Houng, Ph.D., PE, CIH

2012.11.12

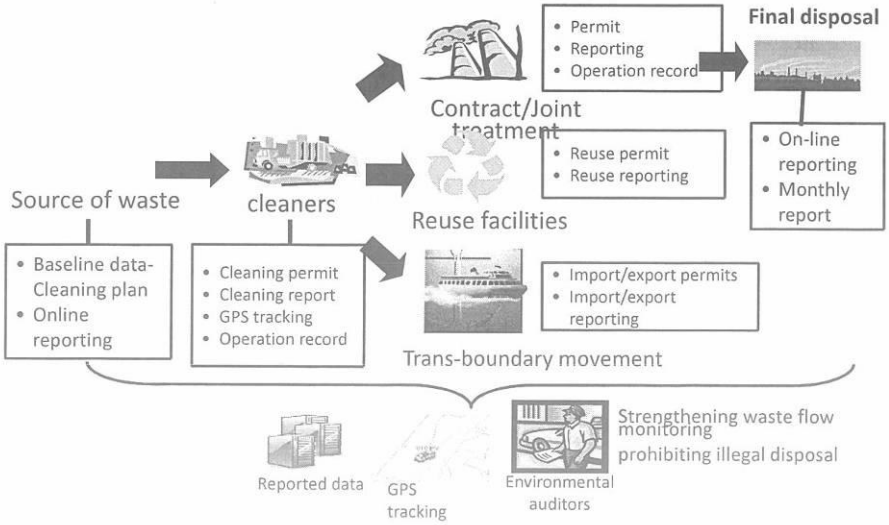
Outline

- Background
- Tracking System for Waste
- Four-in-One Resource Recycle Program
- Conclusions

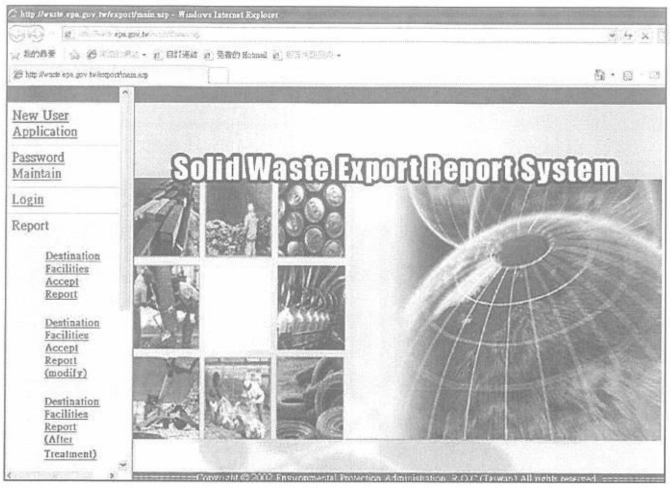
Industrial Waste Tacking System



Routes for Industrial waste treatment



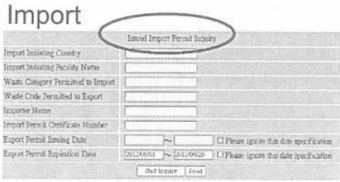
Solid Waste Export Report System



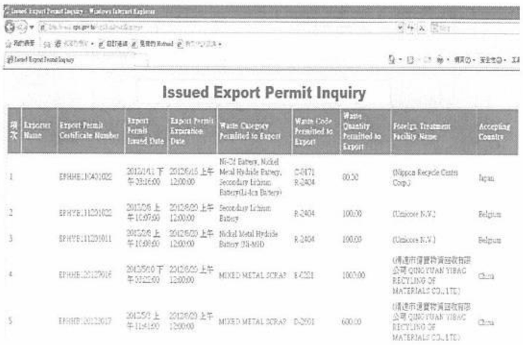
Please go to the web page http://waste.epa.gov.tw/export/main.asp

Permit Inquiry

Import



Export

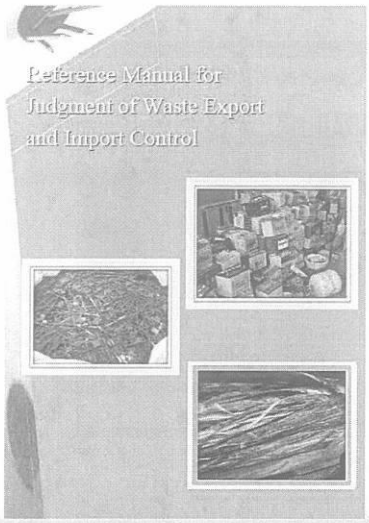


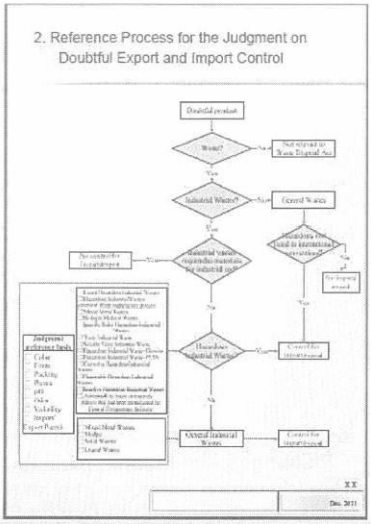
Please go to the web page

Export http://waste.epa.gov.tw/qry/ExpPermEng.

Import http://waste.epa.gov.tw/qry/impPermeng.aspx

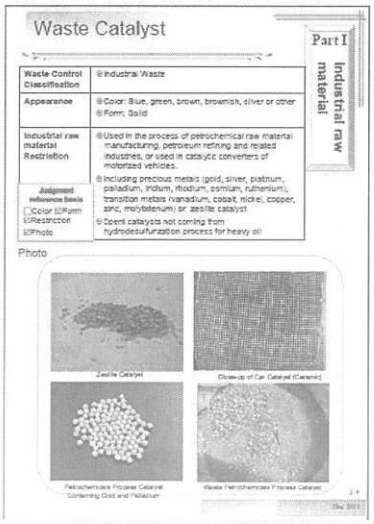
Reference Manual for Judgment of Waste Export and Import Control

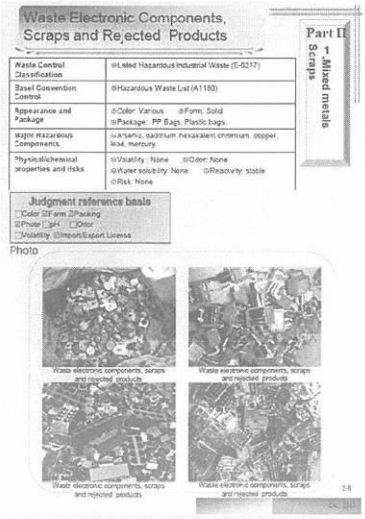




http://wm.epa.gov.tw/web/english/index.htm

Reference Manual for Judgment of Waste Export and Import Control





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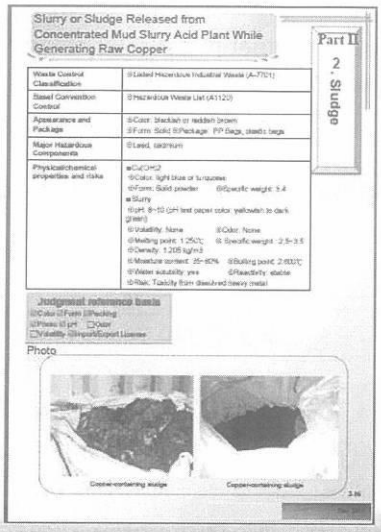

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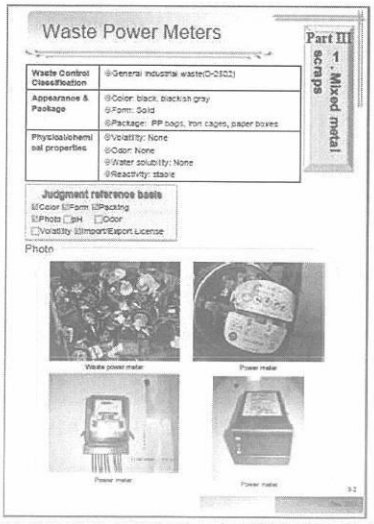
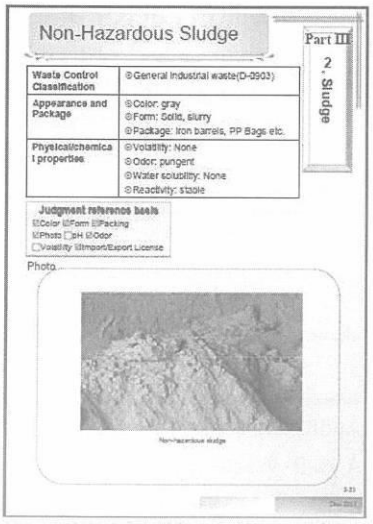


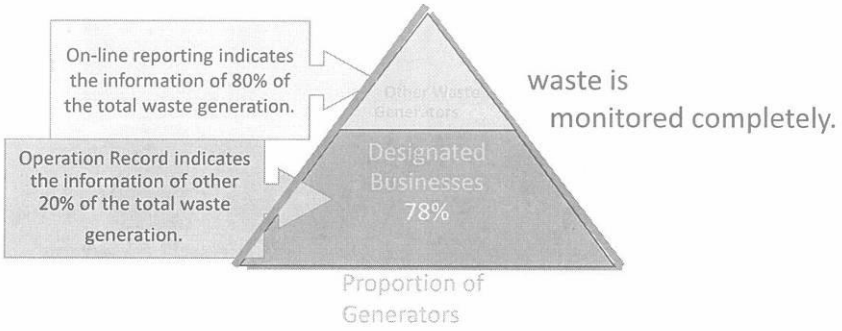


http://wm.epa.gov.tw/web/english/index.htm

Generator Management (80-20 Rule)

-To know who is the target to be monitored

- There have been over 20,000 generators designated as major sources. They must submit waste disposal plans for approval before waste generation; monthly report: production capacity, amount of temporary storage, and amount of shipment.
- The other 20% of waste generation is from disposal facilities that make monthly reports on waste generation without on-line reporting



waste is monitored completely.

Generator Management

- Emission Factor and False Report Auditing

- Understand the relationship between production capacity, raw material quantity, business type, and waste generation. Auditing will find out who is making false report.

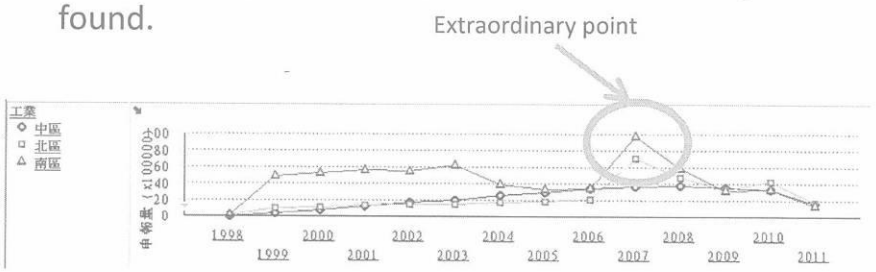
	Process	Raw Material	Product	Waste I	Waste II
Company A	Metal Smelting	Waste Iron	Iron Container	Waste Foundry Sand	EAF Dust
Company B	Metal Smelting	Waste Iron	Iron Container	Waste Foundry Sand	No Report Data

- Audit: The same business type--under the same production process
  A vs. B- Waste generation quantity/unit product should be similar.

Statistical Analysis and Strategy Support

-OLAP System (Web Based)

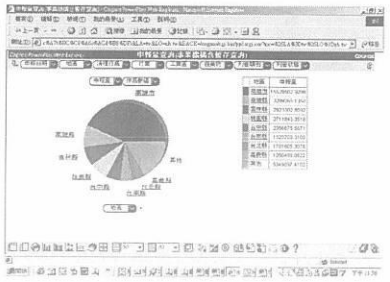
- Many kinds of analytical charts can be made rapidly.
- Extraordinary point of report data can be easily found.

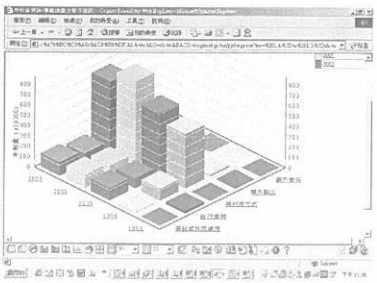


Statistical Analysis and Strategy Support

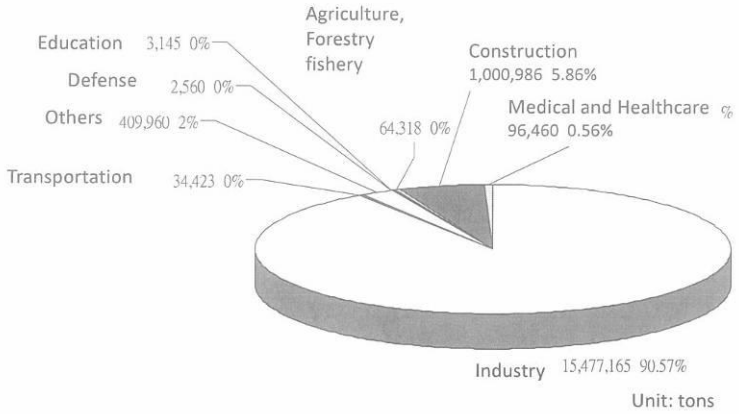
-OLAP (Online Analytical Processing) System (Web Based)

- OLAP real-time online analysis system offers excellent strategy support.
- Multi-dimension tables can be made promptly.
- "Information and data mining" is easy even with huge amount of data.





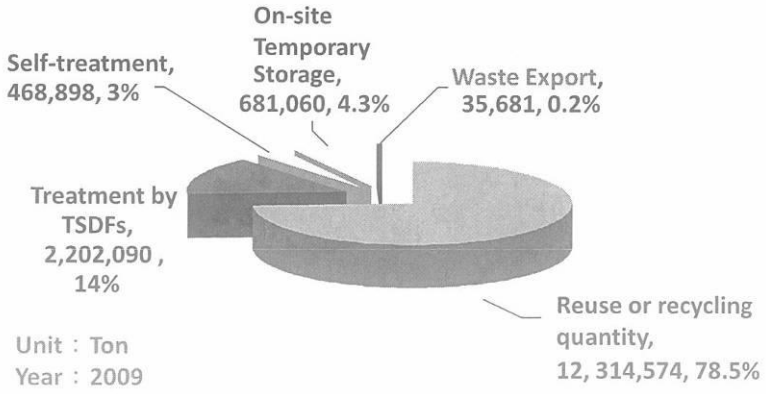
Waste Quantities by Departments



Statistical Analysis and Strategy Support

-Statistics of All Industrial Waste Generation

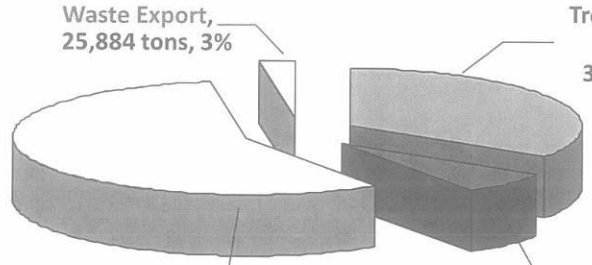
- There were about 15 million tons of industrial waste reported on-line in 2009.



Statistical Analysis and Strategy Support

-Statistics of Hazardous Waste Flow

- There were about million tons of hazardous waste reported in 2009.
- Most hazardous waste are controlled and well treated.



Waste Export, 25,884 tons, 3%

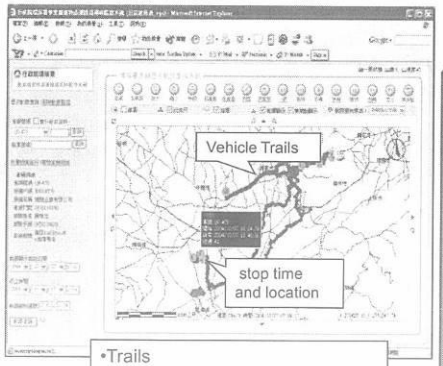
Treatment by TSDFs, 342,662 tons , 34%

Reuse or recycling quantity, 567,338 tons, 57%

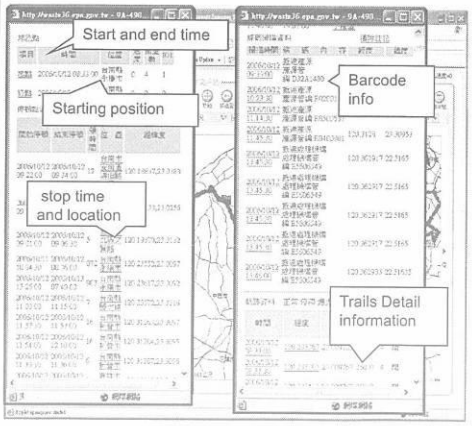
Unit : Ton
Year : 2009

Self-treatment, 63,324 tons, 6%

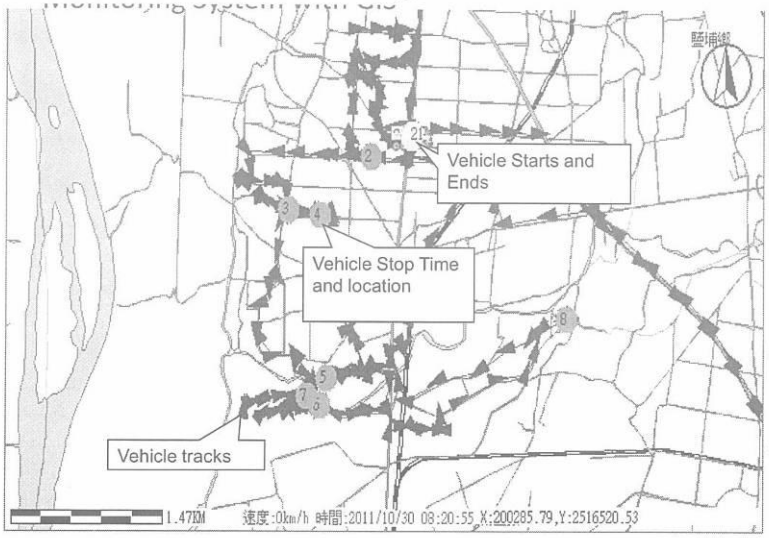
Historical Trails Monitoring Functions



- Trails
- Barcode
- Stop time and location
- Vehicle information



Historical Trails Monitoring Functions

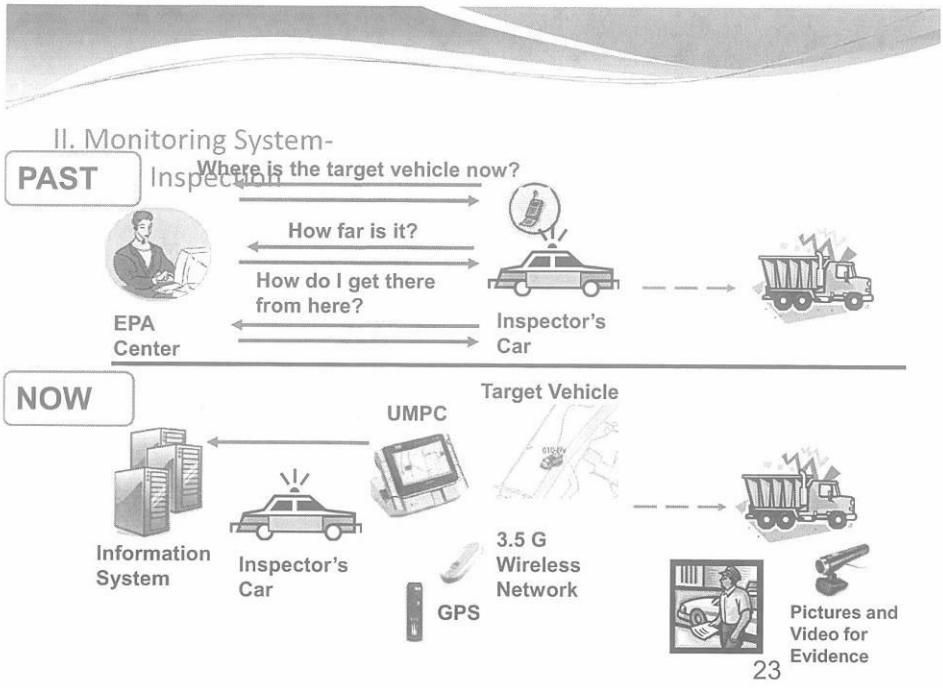


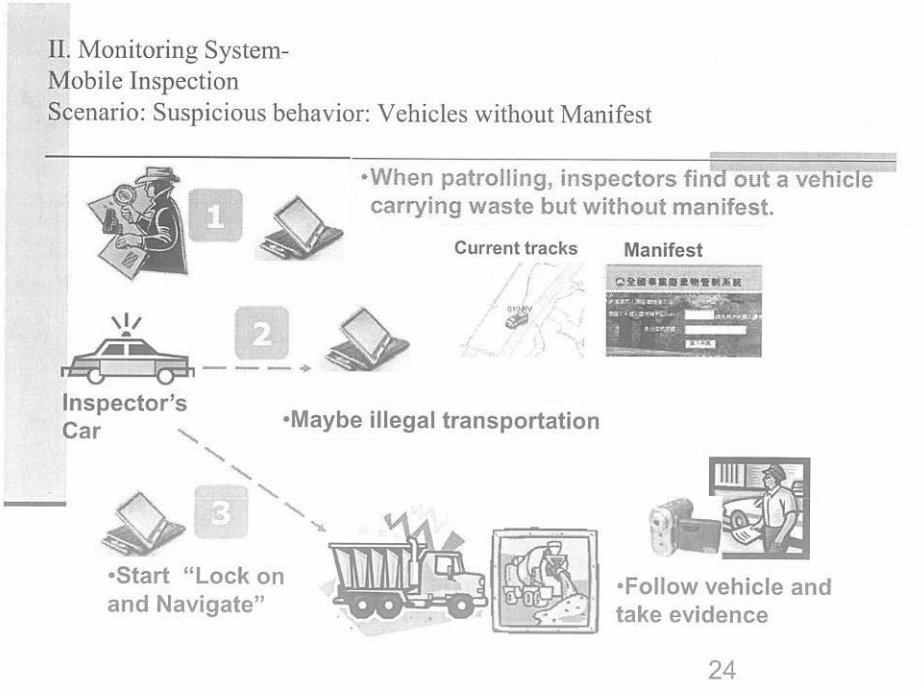
- Vehicle Starts and Ends
- Vehicle Stop Time and location
- Trails

II. Monitoring System-
Real time monitoring system / Alarm

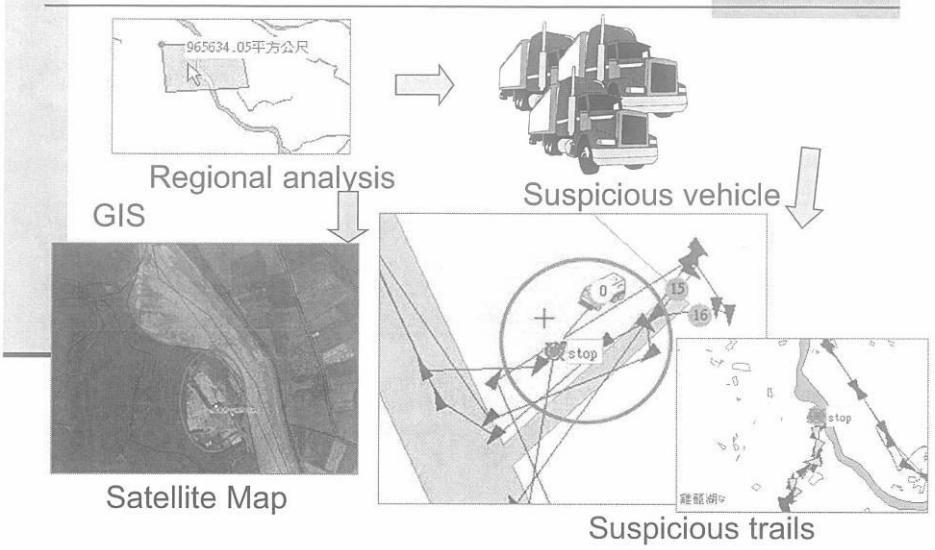
Area Analysis-Integrated with Information System

- **When monitoring illegal dumping, we can designate a specific area for automatic monitoring. Alarm will go off automatically when hauling trucks enter the area.**


II. Monitoring System-
Inspection
PAST
Where is the target vehicle now?
How far is it?
How do I get there from here?
EPA Center
Inspector's Car
NOW
UMPC
Target Vehicle
Information System
Inspector's Car
3.5 G Wireless Network
GPS
Pictures and Video for Evidence
23


II. Monitoring System-
Mobile Inspection
Scenario: Suspicious behavior: Vehicles without Manifest
•When patrolling, inspectors find out a vehicle carrying waste but without manifest.
Current tracks
Manifest
1
2
3
Inspector's Car
•Maybe illegal transportation
•Start "Lock on and Navigate"
•Follow vehicle and take evidence
24

III. Case Study



Estimated cost of building online reporting management system

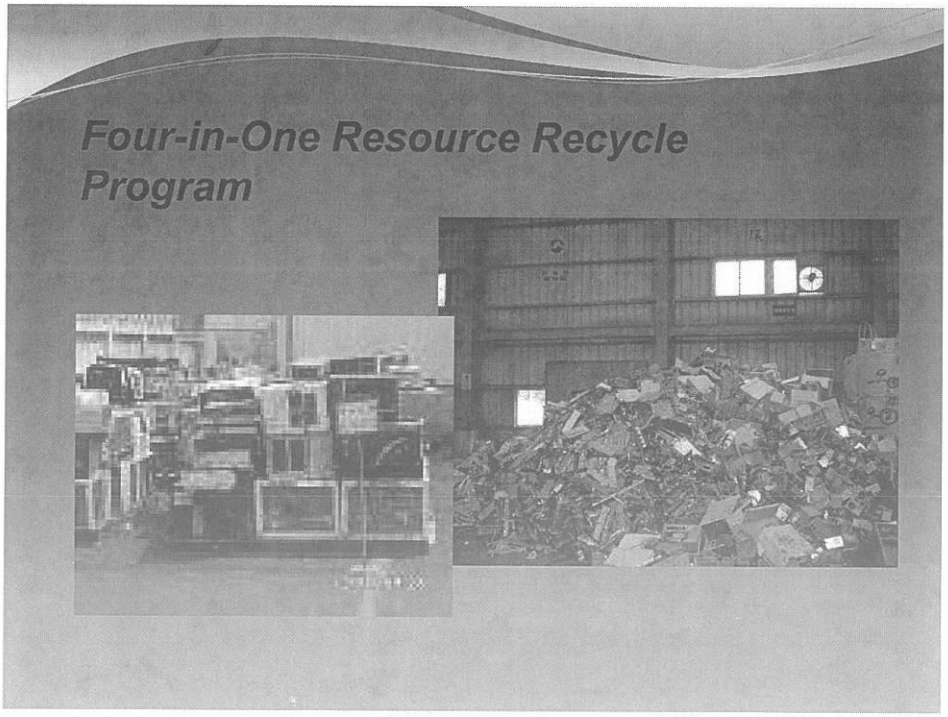
No.	item	content	cost
1	Manpower payroll	System and program engineers, environmental engineering staff, etc.	Depending on the local manpower costs
2	Software usage fees	2 sets of Windows Server 2008 1 SQL Enterprise Server 1 Visual Studio 1 Macromedia Dreamweaver MX	USD 15,000
3	Computer equipment usage fees	Database host (dual CPU, including database software) 1 WEB SERVER computer mainframe 3 sets of high-end servers	USD 50,000
Total			USD 65,000

Expense on the GPS system

(Excluding monitoring equipments set up by the companies , e.g. GPS)

No.	item	content	cost
1	Manpower payroll	System and program engineers, environmental engineering staff, etc.	Depending on the local manpower costs
2	Software usage fees	Database software, GIS engine platform software, development software	USD 20,000
3	Computer equipment usage fees	Database host (dual CPU, including database software) 1 WEB SERVER computer mainframe 2 sets of high-end servers	USD 40,000
Total			USD 60,000

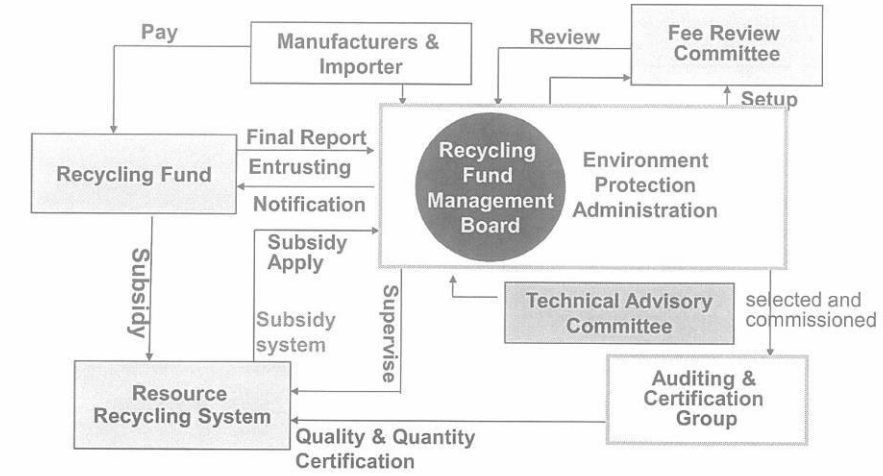
*The above is the initial estimates the system establishment within one year.



Four-in-One Program

- **Extended Producer's Responsibility**
  - **Manufacturers or Importers are responsible for the recycling of the following items:**
  - **Containers, Batteries, Motor Vehicles, Tires, Lubricants, Appliances, Computers/Printers, and Lamps.**
  - **Manufacturers or Importers are obliged by the law to pay recycling fees to TEPA's Recycling Funds, which are used to subsidize and promote recycling works.**

Scheme of 4-in-1 Program



公告應回收廢棄物
Regulated recyclable waste(RRW)

容器 Containers

1.鐵容器 Iron container

2.鋁容器 Aluminum container

3.玻璃容器 Glass container

4.紙容器 Paper container

5.塑膠容器 Plastic container

6.農藥廢容器 Pesticide container

物品 Objects

7.乾電池 General battery

8.機動車輛 Automobile\Motorcycle

9.輪胎 Tire

10.鉛蓄電池 Lead-acid battery

11.潤滑油 Lubricant (100.1.1停止列管)

12.資訊物品 IT equipment

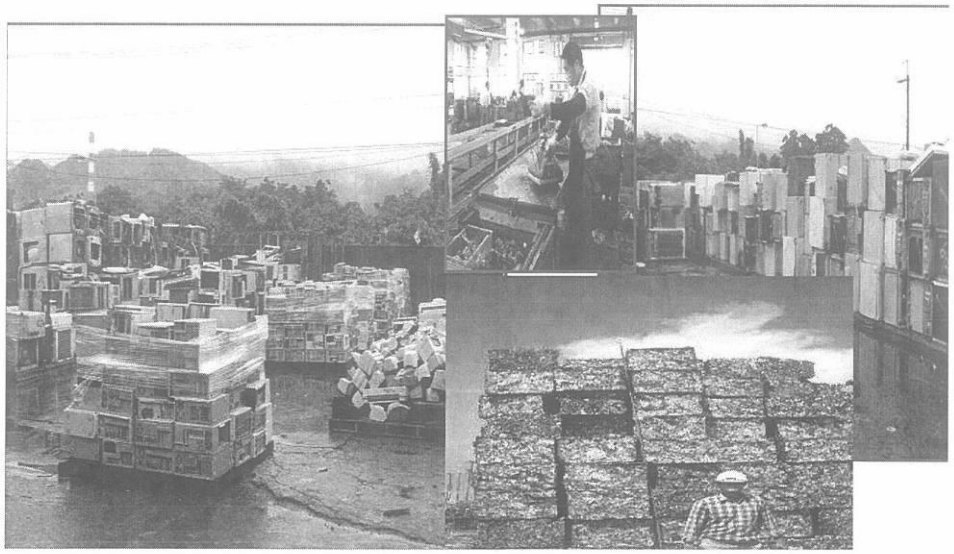
13.電子電器 Home appliance

14.照明光源 Light bulbs/tubes

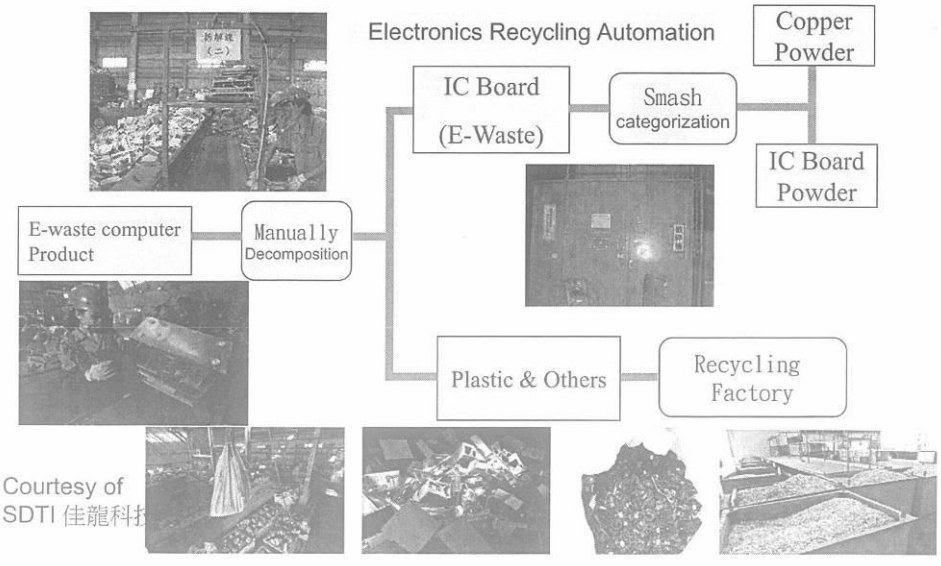
•責任業者需繳費 Recycling fee must be collected

32

E-Waste

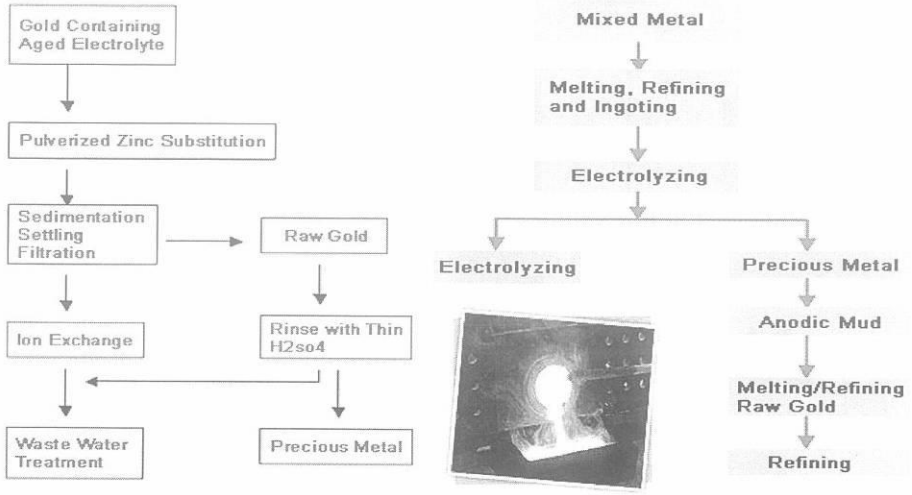


Handling Process for E-Waste Computer

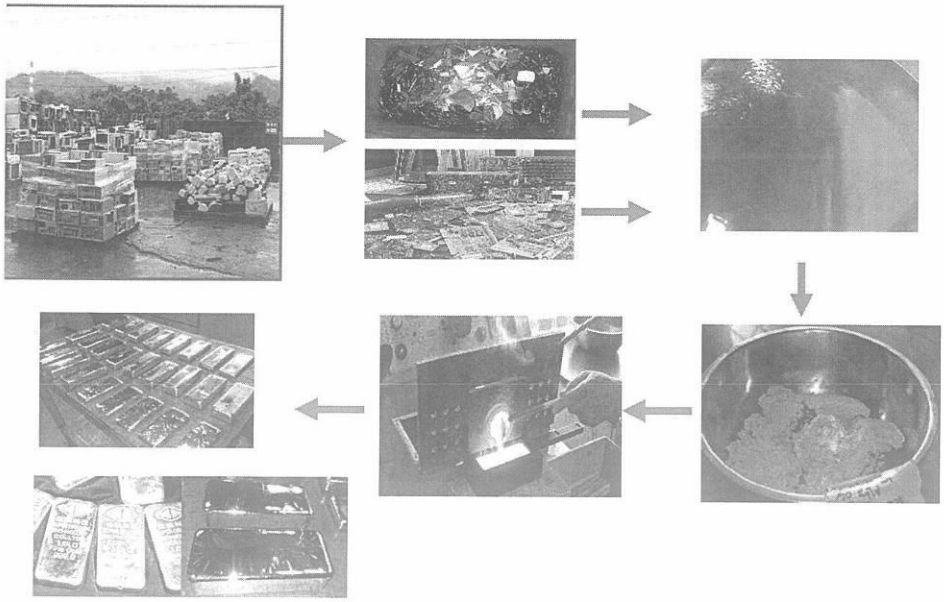


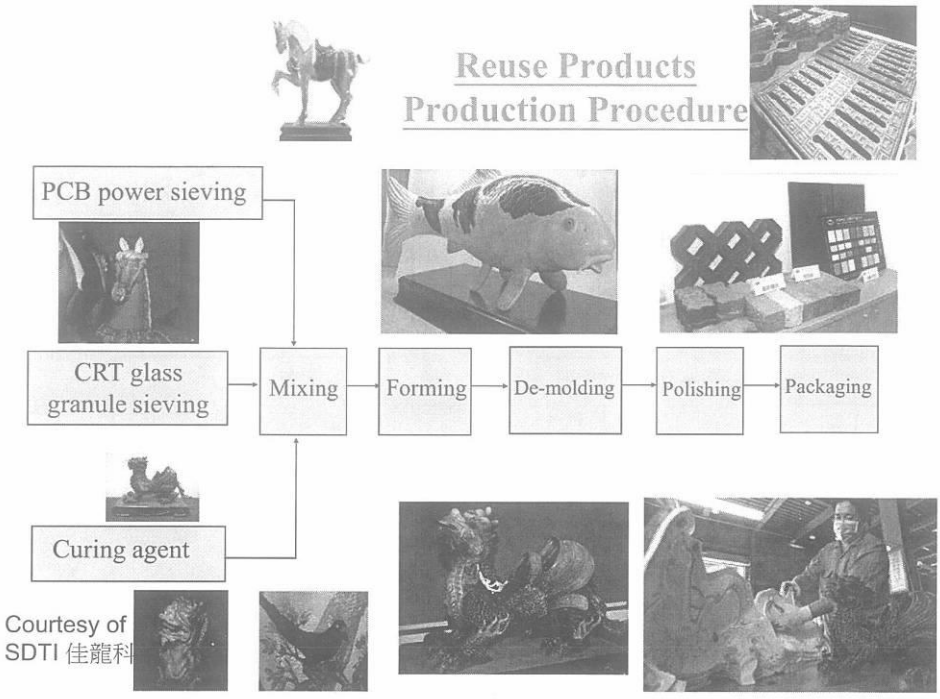
Super Dragon Technology Co.,Ltd.

Recycling for the Metal Resources

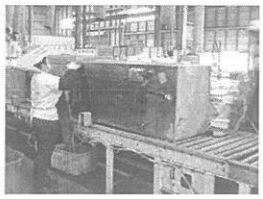


點廢成金Recycling for the Metal Resources

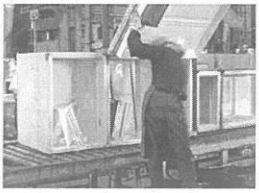




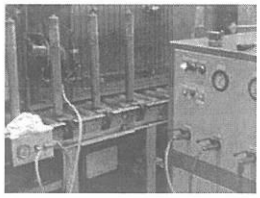
Refrigerator Recycling



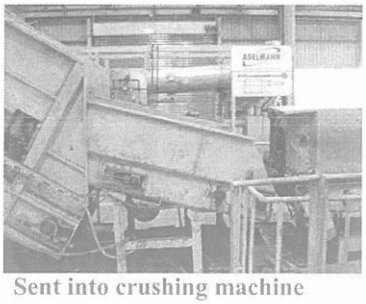
Placed on disassembly line



Removing the door

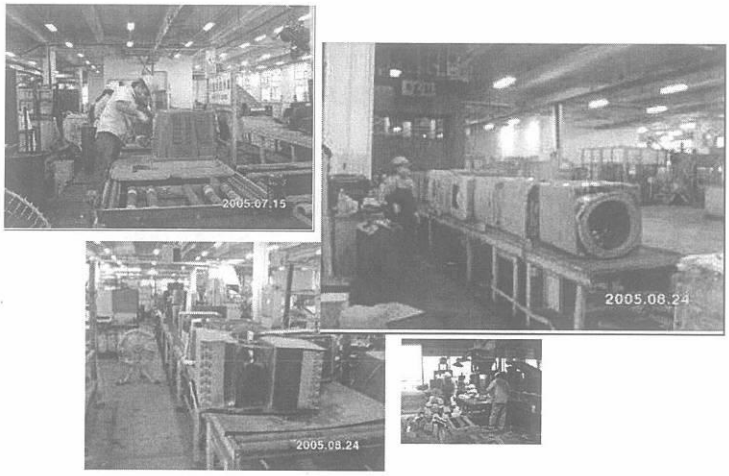


Extracting the refrigerant

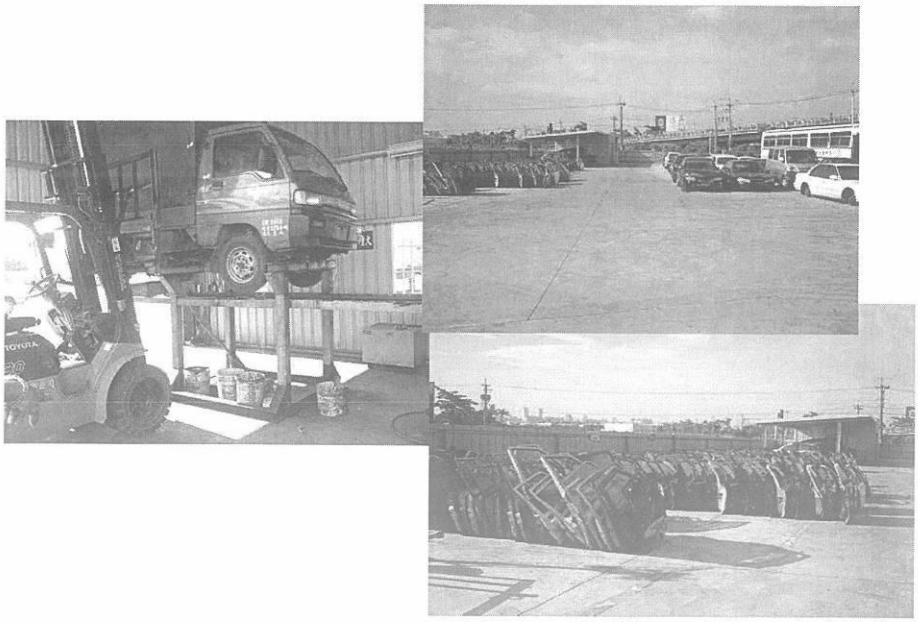


Sent into crushing machine

Collecting sorted scrapes



Automobiles Recycling



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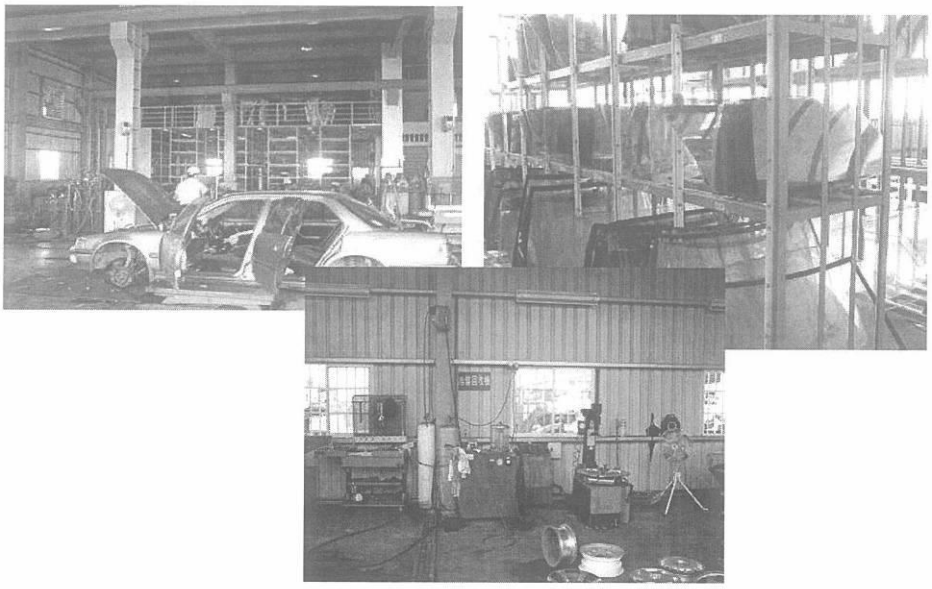

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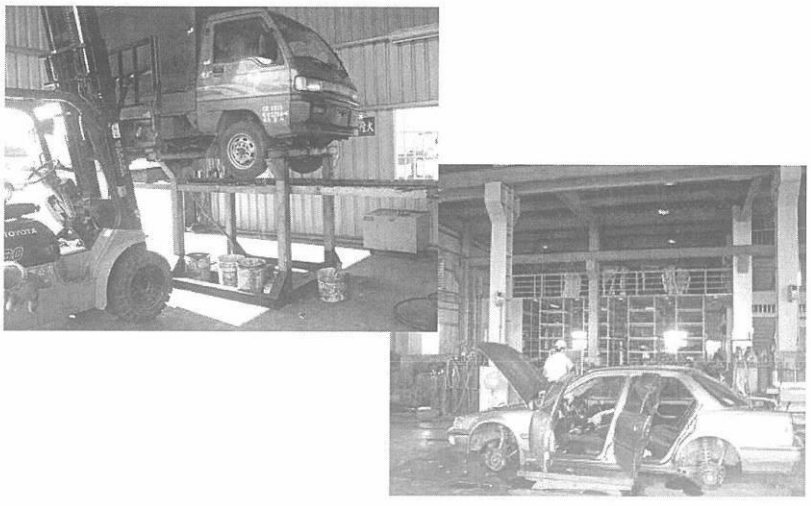
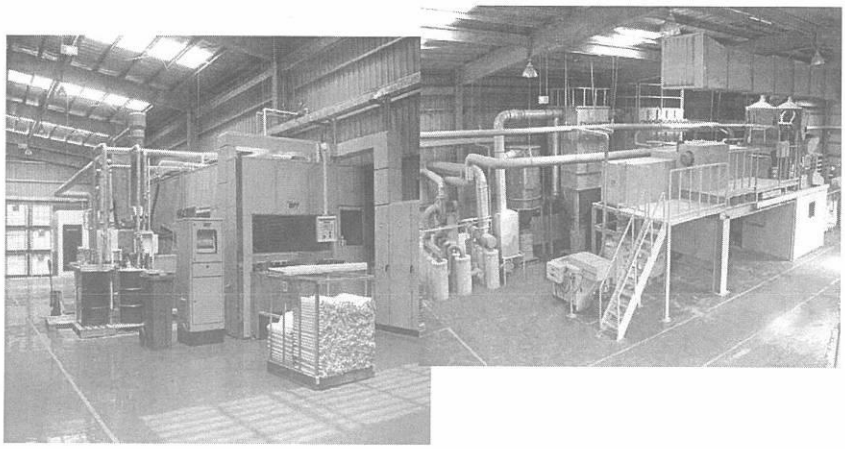


Chung Tai Resource Co.,Ltd.

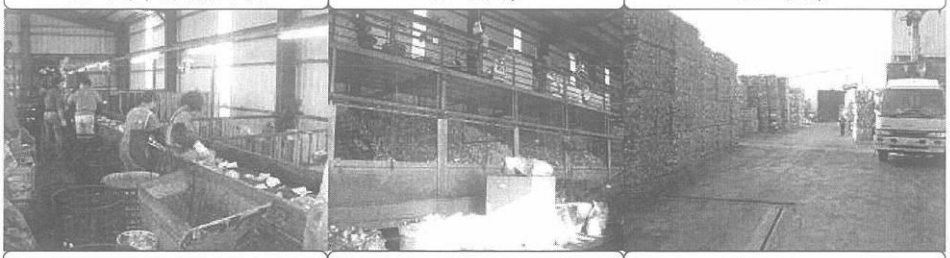
■ Recycling for the Glass Resources



廢容器回收分類

Used Container -- Sorting

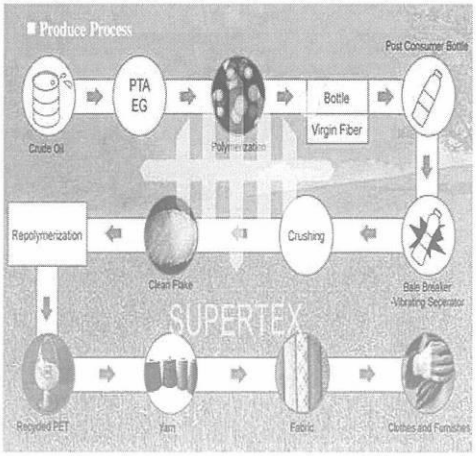
1. 民眾分類回收 | 2. 貯存 | 3. 收集



4. 人工分選 | 5. 分類貯存格 | 6. 分類打包成瓶磚

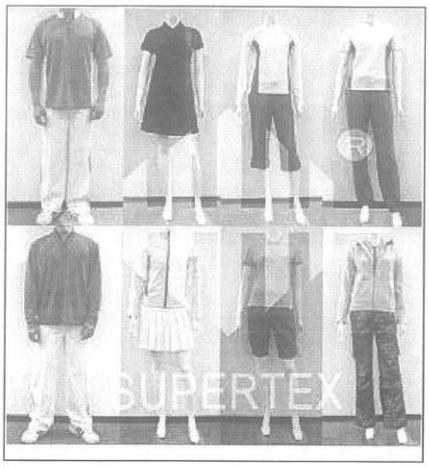
Super Textile Co.,Ltd.

■Recycle PET Bottle Eco Fabric



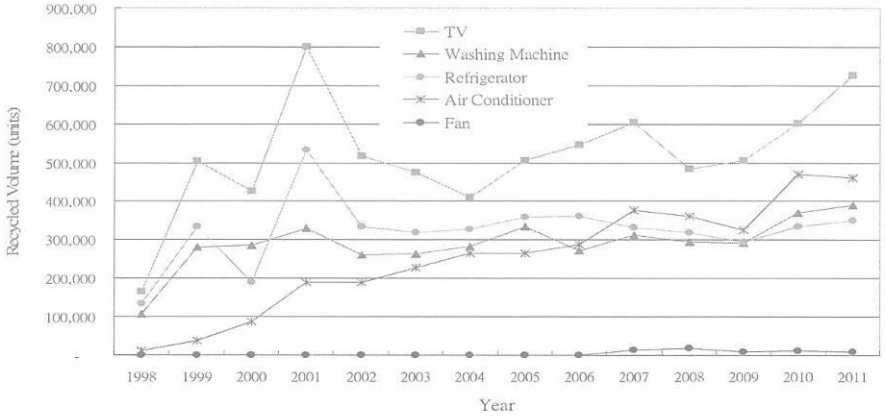
Super Textile Co.,Ltd. (Field Trip 3)

■ **Recycle PET Bottle Eco Fabric**



Performance

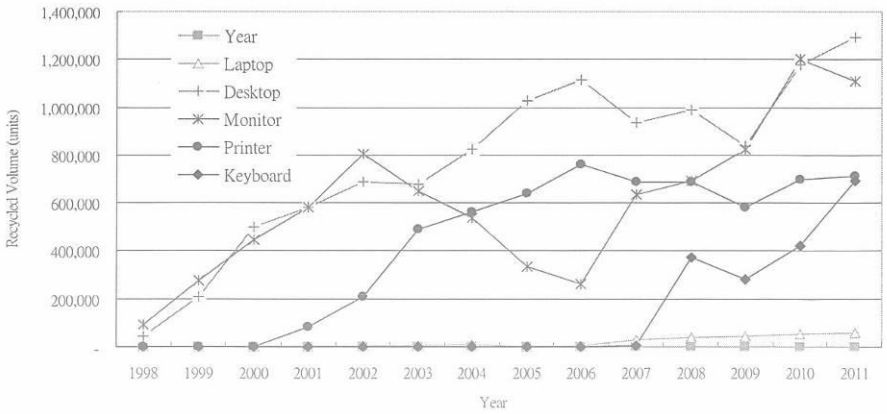
Volume of Waste Appliance Recycled from 1998 to 2011



the Waste Appliance recycling volume increased 4.65 times in 2011 , as compared to 1998.

Performance

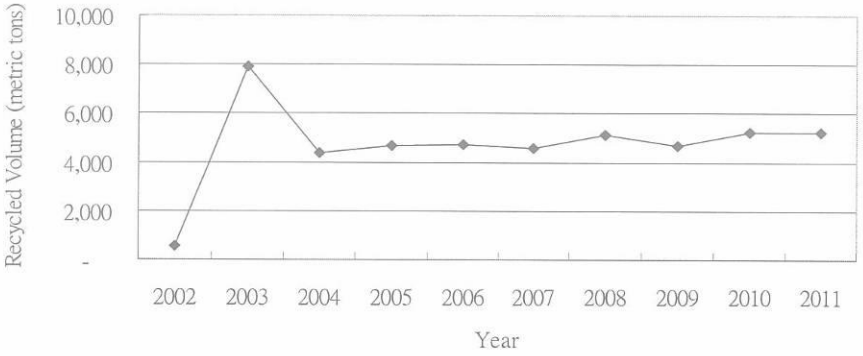
Volume of Waste IT equipment Recycled from 1998 to 2011



Waste IT equipment recycling volume increased 41.37 times in 2011 , as compared to 1998.

Performance

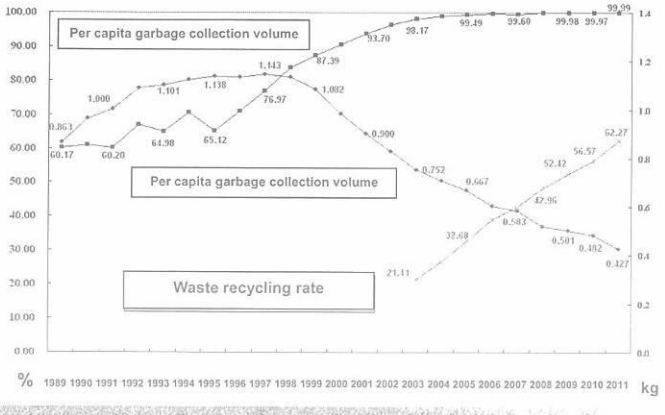
Volume of Waste Lamps Recycled from 2002 to 2011



Waste Lamps recycling volume increased 9.97 times in 2011 , as compared to 2002.

Achievements

In 2011, the daily per capita volume of garbage collected was reduced to 0.427 kg, and the recycling rate reached 62.27%



Estimated cost of building EPR program

$ 0

- Conclusions

Conclusions

- Managing the material flow for decision making and long-term planning.
- Online reporting and real-time tracking of waste activities, to prevent illegal operations and promote recycling.
- Offering generators and STDFs tools for self-management of waste activities.
- Little or No costs from public sectors.
- Glad to share experience and expertise with other member countries.

WORLD TRADE ORGANIZATION

WT/CTE/EDB/9/Add.1
6 November 2012

(12-6150)

Committee on Trade and Environment

ELECTRONIC ENVIRONMENTAL DATABASE FOR 2009

Note by the Secretariat

Addendum

This database has been prepared under the Secretariat's own responsibility and without prejudice to the positions of Members and to their rights and obligations under the WTO.

To facilitate usage of the Environmental Database (EDB), EDB 2009 has been prepared in two parts: a Word-format part, which contains a brief description of the 2009 environment-related notifications under the WTO Agreements and reference to environmental measures and policies mentioned in Trade Policy Reviews (TPRs) circulated as document WT/CTE/EDB/9; and, an Excel-format part, which provides more detailed information, and is circulated exclusively in electronic form[1].

The following paragraphs provide a short user's manual for the Excel-part of the environment database.

I. WHAT INFORMATION IS AVAILABLE IN THE ELECTRONIC EDB?

1. The electronic EDB compiles all environment-related notifications made under the various WTO Agreements and environment-related measures/activities reported in the TPRs in an Excel Workbook. It allows users to search through the EDB environment-related information according to specific criteria, for instance by Member, agreement, type of measure, product, activity, or environmental objective.

2. The Excel Workbook is divided into two main worksheets: "Notifications", listing all the environment-related notifications; and "TPRs", providing the environment-related information mentioned in TPRs. In addition, a third worksheet entitled "Summary" is included to allow users to retrieve pre-defined summary tables and graphs.

A. "NOTIFICATIONS" WORKSHEET

3. The "Notifications" worksheet displays the following information:

- Agreement: the WTO Agreement being notified;
- Document symbol: the symbol of the notification document (when available);
- Document link: the Web link to the notification document through WTO Documents Online website (http://docsonline.wto.org/);

[1] In English only.

- Notifying Member: the Member notifying the environment-related measure;
- Region group: the region of the notifying Member;
- Development status: the development status of the notifying Member;
- Year: the year of notification;
- Notification pursuant to: the provisions of the relevant Agreement under which the notification is made;
- Measure description: a description of the measure as indicated in the notification;
- Type of measure: the type of measure stated in the notification;
- Subject to the measure: products/activities subject to the notified measure;
- ICS - HS code: ICS or HS classification of the relevant products (when available);
- Implementation period: the implementation period or date of the entry into force of the notified measure;
- Environment-related objective: the environment-related objective of the measure; and
- Keywords: the environment-related keyword search included in the notification (see Annex II).

4. Three harmonized categories have also been created to facilitate research:

- Category of environment-related objectives;
- Category of measures; and
- Category of products/activities.

B. "TPRs" WORKSHEET

5. The "TPRs" worksheet displays the following information:

- Type of TPR: TPR reports prepared by either the Secretariat (S) or the Member (M);
- Document symbol: the symbol of the TPR document;
- Document link: the web link to the TPR document through WTO Documents Online website (http://docsonline.wto.org/);
- Document reference: the reference made to the paragraph number "§" of the original TPR document;
- Member: the Member subject to the TPR;
- Region group: the region of the Member;
- Development status: the development status of the Member;
- Year: the year of publication of the TPR;
- Type of information: the type of environment-related information found in the TPR;
- Type of measures or sectors: the measure or sector associated with the environment-related information;
- Relevant information: a description of the environment-related measure, provision or programme; and

– Keywords: the keyword search included in the TPR reports (See Annex II).

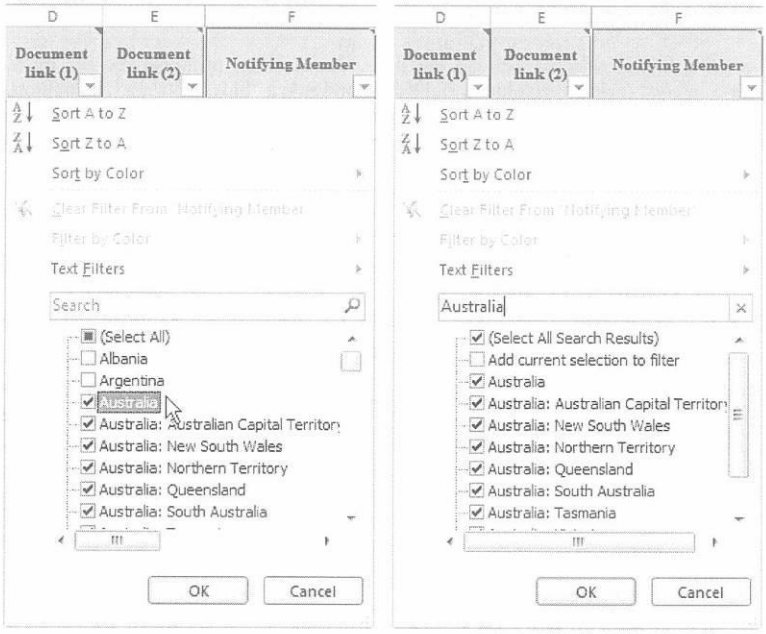
C. "SUMMARY" WORKSHEET

6. The "Summary" worksheet provides pre-defined information and graphs on environment-related notifications to each WTO Agreement and measures mentioned in TPRs.

II. HOW TO USE THE ELECTRONIC EDB?

7. The Excel Workbook allows searches through all the variables mentioned above by using the filter function. Users can, by clicking on the right-bottom arrow icon of the heading of the selected variable, either select the information on a drop-down list (see left Figure 1) or type in the relevant information (see right Figure 1).

Figure 1: Search function



8. Multiple criteria search is also possible, for instance, to search all notifications made by a given country or region/development status group with a specific environment-related objective or a specific type of measure.

9. For example, retrieving all TBT notifications that contain performance/efficiency specification measures to promote energy conservation and efficiency, can be done as follows:

1. select the "Notifications" spreadsheet;
2. select the TBT Agreement in the column "Agreement" by clicking on the bottom-right arrow icon and typing "TBT" in the search box;

3. select the type of measure in the column "Category of type of measure" by clicking on the bottom-right arrow icon of the heading and typing "performance/efficiency specification" in the search box;

4. select the type of measure in the column "Category of environment-related objective" by clicking on the bottom-right arrow icon of the heading and typing "energy conservation and efficiency" in the search box.

10. After the search, to go back to the full database, it is important to follow the reverse order of the selection:

1. click on the bottom-right arrow icon of the heading of the variable "Category of environment-related objective" and select the "Select All" box;

2. click on the bottom-right arrow icon of the heading of the variable "Category of type of measure " and select the "Select All" box; and

3. click on the bottom-right arrow icon of the heading of the variable "Agreement" and select the "Select All" tick box.

11. Once the data is selected through the filter, the user can print the records by hiding the variables of no interest (select the column, right-click and select "hide" option). In addition, the user can apply the scaling option available with the printer to fit all the selected columns on one page.

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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BETTER POLICIES FOR BETTER LIVES DES POLITIQUES MEILLEURES POUR UNE VIE MEILLEURE

October 2012

Illegal Trade in Environmentally Sensitive Goods

In Brief

Key messages

- The ***illegal trade of goods such as wildlife and timber is a serious economic and environmental problem*** that can disrupt whole economies and ecosystems, undermine environmentally sustainable activities, and reduce future options for the use of resources. Although hard to quantify, the global value of this international environmental crime is estimated to be around USD 30-70 billion a year.

- The ***drivers of illegal trade are primarily economic***, where the expected returns exceed the expected costs. More generally, illegal trade may also take place if the demand exceeds the supply of legal products. Strong demand from specific consumer countries may be a significant driver in some cases.

- The ***environmental and economic impacts of illegal trade vary*** from country to country and for different types of goods. Trade in natural resources (timber and fish) may have the most significant economic impacts, while illegal dumping of hazardous waste may have the greatest health impacts, and poaching may have the greatest impact on species survival. Illegal trade in ozone-depleting substances has slowed the resolution of a significant global concern. There can also be spillover effects. For instance, in fragile states illegal trade can undermine the rule of law and can fuel armed conflict.

- By its very nature, ***the size of illegal trade in environmentally sensitive goods is difficult to quantify*** and further efforts are required to address the data problem. Data comparisons between import and export statistics and licensing systems can be enhanced by further elaboration of the Harmonized System codes. Inadequate taxonomic information has been recognised as a problem, and the Global Taxonomy Initiative can help to overcome this barrier to conservation.

- ***Licensing schemes can be an important tool in helping to detect and regulate illegal flows of environmental goods***. Examples include the Convention on International Trade in Endangered Species of Wild Flora and Fauna, and the EU's Forest Law Enforcement, Governance and Trade Initiative. While the schemes reviewed in this report have helped to address the problem of illegal trade, none work perfectly. A systematic analysis of their operation and successes and failures would be a useful measure, and there is also scope for improving the process for sharing information between the schemes, instituting independent verification of licensing, and exploring possible economies of scope.

- ***National environmental policy regimes can have a significant impact on illegal trade***. The greater use of economic incentives can complement traditional command and control approaches to regulation, and may help to reduce illegal trade flows. The use of revenues can reinforce enforcement capacity and improve the incentives for longer-term management of the resource base. However, such mechanisms only work in a framework of good governance and law enforcement, and as part of a package of measures to address the full range of causes of illegal trade.

For more information see www.oecd.org/environment

Over the past three decades, the national and international framework for the protection of the natural environment has evolved rapidly. As legislation expands, however, so too have the incentives and opportunities for individuals and companies to evade restrictions on the exploitation or trade of environmental goods such as wildlife and timber. Deliberate evasion of environmental laws and regulations by individuals and companies in the pursuit of financial benefit can have serious transboundary and global impacts. Such international environmental crime is a major issue and presents significant challenges for national and international efforts to control the trade.

Five areas are generally considered to be of major importance: illegal trade in wildlife; illegal logging and its associated timber trade; illegal, unreported, and unregulated (IUU) fishing; illegal trade in controlled chemicals (particularly in ozone-depleting substances); and illegal disposal of hazardous waste. There are of course no accurate figures on the extent of these activities, but best guesses put their combined global value at about USD 30-70 billion a year, equivalent to perhaps 10-20% of the value of the illegal trade in narcotics or 15-30 % of the value of the trade in counterfeit goods. This illegal trade in environmentally sensitive goods often leads to environmental damage. Other commodities such as oil, diamonds and coltan are also the subject of illegal trade and while the scale is considered to be less significant, the environmental (and social) impacts can be significant.

This publication reviews the evidence on the key drivers of illegal trade in environmentally sensitive goods. It also provides an overview of the main economic, social and environmental impacts. The report reviews the data collected by customs and licensing schemes for selected environmentally sensitive goods, including wildlife, fish, timber, ozone-depleting substances (ODS) and hazardous waste, and examines the extent to which this information can be used to identify and measure illegal trade. The role of national and international policy mechanisms to reduce illegal trade flows is also assessed, with a focus on international licensing schemes (and associated trade restrictions). In addition, the role of national environmental policy measures on illegal trade is discussed, focussing on property rights-based systems and economic incentives.

Drivers and Impacts of Illegal Trade

It is important to understand what drives illegal trade and the circumstances that cause it to thrive, so that effective policies can be developed to counter it. As this publication shows, the key drivers may vary over time and from one location or sector to another.

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Any form of trade (legal or illegal) arises when there are profits to be made for those involved. But illegal trade arises particularly when the expected returns are greater than for trade carried out within the law. For example, compliance with regulations concerning reforestation, waste disposal or the use of chemical products might incur costs that can be avoided by illegal trade.

Even if the legal alternative is not more costly, illegal trade might emerge when demand exceeds the supply of legal products. This is often the case for timber. It would, of course, also arise if demand exists for completely banned products and no legal alternatives exist. This is common in wildlife crime, where major sources of demand include the exotic pet and flower trade. Often, the trade in environmentally sensitive goods is driven by changes in consumption. In the illegal wildlife trade, poverty has been found to be relatively unimportant, whereas strong demand from consumer countries may be.

The impacts of illegal trade can be wide-ranging. These will, of course, vary from country to country and locality to locality, and the precise impacts will vary with the sector. Illegal trade in natural resources — timber and fish — may have the most significant economic impacts, while illegal dumping of hazardous waste may have the biggest health impacts, and poaching may have the greatest impact on species survival. Illegal trade in ozone-depleting substances has slowed the resolution of a significant global environmental concern.

The economic and environmental impacts of illegal trade can be sufficiently important to disrupt whole economies and ecosystems, undermining environmentally sustainable activities and reducing future options for the use of resources. There can be spillover effects, with indirect consequences. For instance, in fragile states illegal trade can undermine the rule of law and can fuel armed conflict. Any serious attempt to tackle illegal trade in the sectors examined here would benefit from a systematic evaluation of the impacts.

Evidence of Illegal Trade

It should in principle be possible to identify illegal trade in some environmentally sensitive products by examining import and export data and analysing discrepancies between the two sources. Wide variations between different countries' statistics may indicate illegal trade in some form. However, such an approach is imperfect, and there is great uncertainty about the scale of illegal trade in all areas. Such discrepancies may merely be a reflection of differing measurement methods, data inputting or conversion errors and inconsistencies.

In this publication three sets of data comparisons are undertaken:

- Between customs data and data recorded by licensing systems.
- Between customs data from importing and exporting countries.
- Between licensing-system data from importing and exporting countries.

Different methods need to be used for different sectors and products, depending on the nature of the goods concerned, the associated control mechanisms in place, and on the extent to which customs records distinguish controlled goods from uncontrolled goods. In the case of timber and fish, for instance, no international control system exists, so the analysis is normally confined to customs data. For threatened wildlife products listed on CITES appendices, licensing data for both exports and imports are sometimes available, but customs data are rarely sufficiently precise to be of use. For ozone-depleting substances (ODS), some licensing system data are available and some customs codes are sufficiently correlated to provide useful information. For hazardous waste, data are available on 'movement documents' issued by governments, and useable customs data are also available for certain categories of waste.

The general conclusion is that while more data could be analysed in some of these areas, it is by no means a straightforward task. The further elaboration of the Harmonized System codes would prove of use in many cases. In the area of biodiversity, inadequate taxonomic information has been recognised as a problem, and the Global Taxonomy Initiative has been launched to overcome this barrier to conservation (http://www.cbd.int/gti/). More generally, there is an ongoing dialogue between different international bodies such as the Secretariats of different Multilateral Environmental Agreements, the Food and Agriculture Organisation, the World Customs Organisation, and specialized bodies such as the International Tropical Timber Organisation. The benefits can be considerable, and examples in which this has been the case (e.g. Tanzanian timber) are provided.

Table 1. Types of impacts examined

IMPACT	SECTOR	EXAMPLES
Economic impacts		
National level		
Loss of government revenue, natural resource base, and value of goods traded	IUU fishing	Worldwide economic losses in 2003 estimated at USD 10-23.5 billion Total value of IUU fishing in sub-Saharan Africa estimated to be USD 0.9 billion per year
	Timber	Global annual loss of USD 5 billion in government revenues Tanzania: government losing up to USD 58 million per year in revenues (2007) Indonesian government estimated in 2003 to be losing USD 3.7 billion per year
	Wildlife	Caspian Sea range state governments estimated to be losing USD60 million due to the illegal trade in caviar in 2001
Undermining legitimate industry	Timber	Global annual loss of over USD 10 billion in market value of timber due to illegal trade Depression of global prices of timber due to illegal trade estimated at 7–16 %, costing US firms USD 460 million in foregone exports Honduras: illegal felling of mahogany jeopardising the commercial viability of community forests
	ODS	Reduced incentives for industry to introduce substitutes and replacement technologies
	Hazardous waste	Undermining the legitimate waste treatment and disposal industries
Loss of income and employment in related industries and activities	IUU fishing	Illegal fish catches from Liberia being imported to Côte d'Ivoire for sale and processing
Local level		
Provision of income for rural communities	Wildlife	Vietnam – income from the wildlife trade for rural communities
Low income for producers	Timber	Nicaragua – forest owners and local cooperatives receive 5–10% of timber's value Indonesia – rural communities receive less than 10% of export value of merbau
Low profitability of illegal production	Timber	Cameroon – outlawing of small-scale logging in 1999 increased informal taxes and reduced market prices
Unsustainable profits	Wildlife	Vietnam, Pu Mat National Park – decline in hunters following crash in wildlife populations (in 1990s)
Undermining local / subsistence livelihoods	Wildlife	Mongolia – illegal trade in animals has undermined subsistence hunting and impacted local economy
Loss of future opportunities	Wildlife	Poaching undermining potential for wildlife tourism

Environmental impacts		
Loss of biodiversity	IUU fishing	Depletion of fish stocks and reduction in biodiversity due to poor fishing practices, *e.g.* use of small mesh-size, longlines, destructive fishing practices (e.g. explosives), fishing in protected areas and over quota, etc.
	Wildlife	Decline in populations of rhino, elephant, etc. from poaching
Damaged ecosystems	Timber	Degraded forests are less productive, and so less effective at carbon storage; they are also more vulnerable to other factors (*e.g.* pests; invasive species; fire) Deforestation results in carbon emissions, and loss of habitats and biodiversity.
Pollution	ODS	Damage to the ozone layer – increased UV radiation damages organisms and affects ecosystem productivity
	Hazardous waste	Soil and water contamination from hazardous waste can damage ecosystems
Social impacts		
Corruption	Timber	Honduras, Nicaragua – collapse in civil governance associated with illegal logging
Organised crime	Wildlife	Use of the same smuggling networks for smuggling arms, drugs and wildlife; laundering of drug money through the wildlife trade; growing involvement of organised crime syndicates in ivory trade
	Hazardous waste	Involvement of crime syndicates in trafficking hazardous waste from Italy to eastern Europe and west Africa
	IUU Fishing	Russian crime syndicates earn as much as USD 4 billion a year from the illegal export of seafood South Africa: illegal fishing of abalone has strong links with illicit trade networks, drug trafficking and money laundering
Conflict	Timber	Illegal trade of timber provided a source of funds for Khmer Rouge, Cambodia Unregulated timber trade financed the Liberian civil war and rebels in Sierra Leone
Livelihoods	Timber	Tanzania: small-scale traders of illegal timber bearing the brunt of enforcement efforts Clashes between local communities and illegal loggers
	IUU fishing	Loss of livelihoods, particularly in coastal small-scale fisheries, clashes between artisanal fishers and illegal fishers, *e.g.* coastal areas of Africa
Health	IUU fishing	Abuse of crew and bad working conditions in illegal vessels
	Wildlife	Risk to poachers of being shot or imprisoned Spread of diseases carried by smuggled animals
	Hazardous waste	Harmful effects of electronic waste – *e.g.* lung and kidney disease, lead poisoning, cancer Case of Trafigura – illegal dumping of chemical waste in 2006 in Côte d'Ivoire
	ODS	Higher levels of radiation linked with suppression of the immune system, increased incidences of skin cancer and eye disease

For more information see www.oecd.org/environment

International Licensing Schemes and Trade Restrictions

The growth both in the volume of international trade and in the practice of containerisation renders it increasingly more difficult to detect illegal trade. Licensing schemes can be an important tool in helping to detect and regulate flows. They have become increasingly common in recent years and can be regarded as an attempt to regulate particularly problematic trading sectors in a world where trade barriers are steadily being removed. They can also have important ancillary benefits, such as improving levels of governance and domestic policy.

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In the publication six licensing agreements are reviewed: the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), the EU's Forest Law Enforcement, Governance and Trade Initiative (FLEGT), the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR), the Rotterdam Convention on chemicals, the Montreal Protocol on ozone-depleting substances, and the Basel Convention on hazardous waste.

None of the schemes reviewed have worked perfectly, although all can claim some measure of success. It will be interesting to see how the FLEGT licensing scheme performs, as to a certain extent it has been designed with an eye to overcoming some of the other schemes' weaknesses. The following measures would be helpful in improving licensing schemes further:

- A systematic analysis of their operation and successes and failures; although in general most of the systems seem to be working, there are relatively few comprehensive data.
- A process for sharing information among those responsible for operating the systems, perhaps *via* the Green Customs Initiative, the UN Environment Programme (UNEP), or the G20. This could be of particular value to those systems new or just coming into existence (e.g., the Rotterdam Convention, FLEGT).
- Independent verification of the issuance of licenses, increased cross-checking of licenses, and a switch from paper-based electronic systems could increase the effectiveness of the majority of licensing systems studied. More resources could usefully be targeted at these functions.
- There may also be some potential for the realisation of economies of scope, with some organisations carrying out the same functions for more than one agreement (e.g., the WCMC could play a central monitoring role for CITES).

Implications of National Policy Measures for Illegal Trade

Policies introduced at the national level can have implications for illegal trade in environmentally sensitive goods. The effects of national environmental policy regimes on illegal trade depend largely upon the incentives for sustainable (or unsustainable) management of the resource or pollutant generated by the policy. A regulatory system which imposes costs on those exploiting the resource or emitting the pollutant will generate price differentials, which can provide incentives for non-compliance, with some of

the output entering into international trade flows. This is, of course, a function of national enforcement capacity, supported in some cases by the international licensing schemes discussed above.

In recent years increased interest has been expressed in using economic incentives in the pursuit of environmental objectives, for example, to reduce pollution, protect biodiversity and habitats, and promote the sustainable use of natural resources. Such an approach is in contrast to, or complementary with, more traditional command-and-control regulatory approaches. In this publication the focus is on the effect of such measures on illegal trade.

While the evidence is partial there is some reason to suppose that the use of economic incentives at the national level may reduce illegal trade flows. On the one hand, some of the revenue generated by economic instruments (i.e. environmental taxes) can be used to reinforce enforcement capacity. On the other, the 'formalisation' of property rights implicit with the use of economic instruments can provide incentives for a longer-term view of resource management, and can even provide incentives for self-enforcement among those exploiting the resource.

However, the use of economic incentives is not a panacea and in order to ensure that their implementation does not lead to illegal trade it is important to note that:

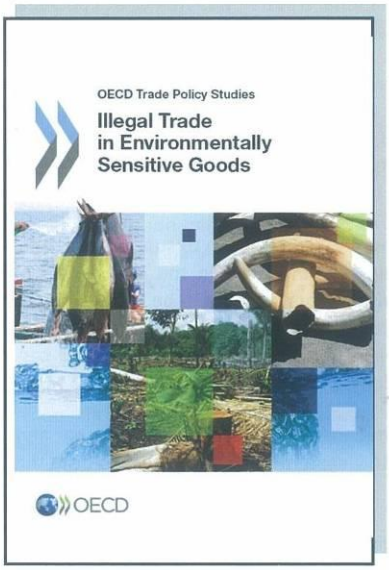
- Economic incentives can only work fully in a framework of good governance and law enforcement. Otherwise they risk exacerbating illegal activity, creating new opportunities for it, or shifting it to other regions or countries.

- As well as general good standards of governance, new governance structures can prove effective — *e.g.* community-based natural resource management, where local communities are given incentives to protect and manage the resource. Security of tenure or other forms of resource ownership will be an important factor.

- Economic incentives will be more effective when they form part of a co-ordinated range of interventions — e.g., where alternatives to illegal behaviour are provided (*e.g.* legal alternatives to poaching, or legal means to dispose of waste).

- Where international trade is a factor, co-ordination with other countries is an important means of ensuring the effectiveness of economic incentives, either to avoid displacement of illegal activities or to facilitate the creation of new incentives.

In general, when designing national environmental policy measures it is imperative that the potential for encouraging illegal behaviour (including trade) is considered, so that the consequences can be assessed and considered (*e.g.* whether ivory sales are likely to lead to increased poaching) and enforcement activities and other possible interventions can be better targeted.



Illegal Trade in Environmentally Sensitive Goods
The full report is available at *http://www.oecdbookshop.org*

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