參加 2013 OECD 會議摘要報告

摘要

11 月 12 日至 14 日於巴黎 OECD 總部舉行一年一度 OECD SMM 定期專家會議。本次主題包括奈米廢棄物、環保設計(Design for Environment, DfE)、生產者延長責任（Extended Producer Responsibility, EPR）、營建廢棄物、廚餘及農業廢棄物。會員國並對接下來 2015 年至 2016 年，SMM 工作的主要工作範圍作進一步的討論，再由各國代表針對日後的重點作出規劃，最後投票決定，選出廢棄物的預防(Waste Prevention)、經濟機制(Economic Instruments)及奈米廢棄物(Nano Waste)為日後規劃重點。

首次參與本次專家大會的中國大陸代表，與我國有良好互動，並於會中報告該國自 2009 年開始執行 EPR 延長製造者責任的制度。目前納入管理系統包括四機一腦，與我國在 1998 開始執行情形類似。

我國與 OECD 代表分享延長生產者責任制 EPR 之執行成果，尤其是差別費率收費政策。另外也介紹我國廚餘回收及強制分類之政策及特色，以及近幾年與新加坡生質能源協會之互動。此外，亦介紹我國規劃將屆齡之焚化爐轉為生質能源中心構想。加拿大及法國代表，對於此構想特別有興趣，希望我們能持續與各國代表分享這方面成果，並且非常欽佩　署長能有此創新想法。

總監 Principal Administrator Peter Borkey 於大會休息時間表示，負責 OECD 國際關係新主管非常保守，對我國參與 OECD 活動很敏感，非常介意於 OECD 與中國大陸在 2008 年所簽訂【對台七不】備忘錄。雖然他極力支持我國參與，也表示與這位主管為了我國參與有過嚴肅的對話，但要進一步發展與 OECD 關係，有待我們繼續努力，其他部會的配合也是關鍵因素。

目　次

參加 2013 OECD 專家會議報告

出國計劃名稱：參加 2013 OECD SMM 專家會議

會議地點：法國巴黎

參加人員：廢管處洪榮勳 博士

會議時間：102 年 11 月 12 日至 11 月 14 日

行程內容：

11 月 11 日啟程前往法國

11 月 12、13、14 日參加會議

11 月 15 日返國

會議過程：

1. 本次 OECD SMM 專家會議於 11/12-14 日 在巴黎 OECD 總部舉行，這是每年一次的定期專家會議。共有來自會員國、OECD 總部、OECD 夥伴國家（中國）及顧問公司等 60 餘人參加。我國是唯一與會的非會員、非夥伴國家也非觀察員國家，會議全程以英語、法語同步進行。
2. 這一次 OECD 專家會議涵蓋的主題包括奈米廢棄物，環保設計(Design for Environment DfE)，生產者延長責任（Extended Producer Responsibility, EPR)，營建廢棄物，廚餘，以及農業廢棄物。會員國並對接下來 2015-2016 年，SMM 工作的主要工作範圍作進一步的討論，再由各國代表針對日後的重點作出規劃，並且投票決定，選出廢棄物的預防 waste prevention ，經濟機制 economic instruments ，及奈米廢棄

物 nanowaste 為重點。

3. 這一次的專家大會，有中國大陸來的代表，第一次參加，他在會中報告了中國在 2009 年開始執行的 EPR 延長製造者責任的制度。目前納入管理的系統包括了四機一腦，他們目前執行的情形就跟我國在 1998 剛開始的執行情形如出一轍。不同的是，中國財政部是一般的管理者，負責協調收集、利用和基金的管理。中國稅務總局和海關總署負責從 EEE 及其分支機構的幫助下，向中國各地的生產商和進口商收取基金。環境部管理回收機關，負責制定和實施電子廢物回收商認證標準，監控其是否符合環保要求。2010 年，共生產電視、冰箱、空調和個人電腦等超過 5.46 億單位到 2020 年，據估計，電子垃圾在中國將增長到 1.37 億台，大型和對環境產生較低問題的電子廢棄物將拆解為再生材料。

4. 在這一次的會議裏，正式的定義，奈米廢棄物(nanowaste)為含有奈米物質的廢棄物（waste containing nano material），叫奈米廢棄物。因為在過去有很多國家對奈米廢棄物的了解不是很清楚，所以這一次他們對它真實的定義。根據 OECD 委託的研究報告，根據這個報告，在化妝品裡面百分之九十五的奈米顆粒最後都是被流到廢水，而事實上在廢水裡，研究也發現奈米銀的存在。美國環保署研究指出某中西部之污水廠污泥，其銀粒子含量達 856(mg/kg)，主要係物理及化學之變化，較廣泛研究的包括：Ag2S、ZnO、TiO2、CeO、SiO2 及奈米碳等。由於增加表面積的影響以使奈米物質引入一般產品，可能會讓化學物質其於污水處理程序中的轉換程序變慢，如此將使其氧化或還原的力量維持原樣，因而限制其與細菌接觸的能力

5. 另外一個討論的主題是，焚化爐中的奈米顆粒。雖然奈米物質在焚化的過程裡可以被摧毀，但是在後續的飛灰跟底灰可以看到奈米顆粒的存在。人為添加奈米物，其分布於底碴(53-81%)、飛灰(19-45%)、水淬(0.02-1.7%)及尾氣(<0.0004%)。但是有一些奈米物質是沒有辦法用焚化來摧毀的。焚化的過程也有可能把一些原來比較小的顆粒，進一步變成奈米顆粒。研究也發現高於一百奈米的顆粒是可以在空氣污染設備裡面移除的，但是小於一百奈米的顆粒有可能移除率會不到百分之八十。雖然現在對這方面的研究跟數字非常的有限，但是可以確定的是，奈米顆粒的數量會越來越多。歐盟委員會證實，露天焚化含 CNT 的布料，可能釋放奈米物質，且要在 850℃以上焚化者，才能去除 CNT。OECD 因此彙整了目前最新的科技做了一本 BAT(best available technology)的參考文件，也建議焚化爐的空污設備能夠參考這份文件的內容，盡量防範奈米物質對環境的危害。
6. 總計此次 OECD 各國會議簡報分類，EPR(延長生產者責任)計 8 篇 ，包括歐盟、日本、瑞典、中國、比利時等、全球論壇-EPR 概念(ORCD) 、 OECD 之 EPR 計畫介紹 ；奈米廢棄物計 4 篇 ，包括奈米廢棄物於污水處理廠及農業用途之風險、奈米物質製造的相關安全活動(OECD) 、含奈米物質製造的焚化、廢棄物含奈米物的回收 ；營建廢棄物計 1 篇 ，永續利用營建廢棄物 ；廚餘計 7 篇 ，包括德國、韓國、瑞典、加拿大、芬蘭、OECD 食物鏈廢棄物管理 ；環保標章計 2 篇 ，包括環保標章與產品環境資訊系統之特性分析、 OECD 對於環保標章與產品環境資訊系統之努力 ；其它計 5 篇 。簡報及摘要翻譯詳見附件

4.

7. 我國與 OECD 代表分享的內容包括了我國延長生產者責任制 EPR 的執行成果。尤其是我們的差別費率的收費政策 (Green Differential Fee System for Regulated Recyclable Waste) 在獎勵環保設計的過程中，發揮的作用以及碰到的困難，還有環保標章 (Green Mark) 的認證以及其他節能產品的認證在裡面發揮的作用。我國近期推動的搖籃到搖籃 (C2C) 政策；以及利用 Legal Instruments, Social Instruments, and Economic Instruments，推動我國環境政策也做了口頭報告。
8. 另外在廚餘的回收方面也向各國代表報告了我國廚餘回收的政策特色，以及這幾年與新加坡生質能源協會主席裡的一些互動。也簡單的報告，我國將屆齡的焚化爐轉為生質能源中心的構想 (Proposed Bio-energy Reaction Centers)。加拿大的代表，對於我們的構想特別有興趣，希望我們能夠持續與各國代表分享這方面的成果。對我國能夠有這種創新的想法也表示欽佩。會後 OECD 的總監表示如果我們有意願，可以參加 EPR 專家小組，營建廢棄物專家小組或廚餘專家小組。
9. 會議過程中以色列的新任代表特別提出，對我國在 2013 年的 Super COP 大會上，週邊會議裏面所作的報告印象非常深刻，一再的讚揚我國電子電機廢棄物的管理有非常傑出的成就。可見我國在聯合國巴塞爾公約跟其他三大公約大會裡面舉辦的週邊會議，已經收到了一定的成果。建議以後在我國參加聯合國的公約大會應該更加強對於成果的發表。
10. 在整個會議的過程，我國的發言意見，不但得到與會代表的肯定，而且多位代表也表示高度的興趣。我國在資源回收方面

的管理政策能與 OECD 國家同聚一堂一起討論。尤其是，我們有些政策更是領先在 OECD 國家之上，是我國人之驕傲。

11. 大會主席瑞典代表 Cecilia Mattsson 建議，我們可以和中國大陸一起做一個 case study 的報告。大陸的代表也欣然同意，但我相信這個事情要能進行，有關名稱的制定還有對方內部的認可以及我方的認同，困難一定很多，若真能執行，對於我國在 OECD 內部及國際的能見度一定有幫助

12. 這一次在我國鄰座的是一位美國科羅拉多大學的教授 Dr. Daniel Kaffine，他接受 OECD 的委託做了 OECD 國家在 EPR 方面的研究，並且搜集了各國不同的制度加以比較。他在聽完我們的報告後，非常訝異，在他的原始 358 筆資料裏，竟然沒有將我國的制度納入。在聽完我國報告後，他非常有興趣，在會後，也希望我們提供他更多的資料，希望能把這部分的資料納入他的報告裡面。但是，這份資料是否能夠得到 OECD 內部的認可不得而知，我們只能盡我們的努力。

13. 這次 OECD 環境部來了位新部長，全程參與會議，也表示歡迎我國的參與。我們也邀請他在適當的機會訪問台灣，他欣然同意，但是目前時機敏感，建議我們靜觀待變。

14. 在大會休息時間總監 Peter 表示，OECD 內部來了一位新的負責國際關係的主管，非常保守，對我國的參與很敏感，雖然他極力支持我國的參與，並跟這位主管為了我國的參與，有過嚴肅的對話。並表示，目前 OECD 內部的氣氛，極力的想要拉攏中國。

15. 最後 OECD 為了順利推動接下來幾年對 SMM 的工作，草擬了 10 個主題，要求會員投票。這是我們在整個會議過程中唯一沒

有參加的項目。最後，經由在場會員國投票，選出三個主題作為接下來兩年 OECD 工作的主要項目。

一、廢棄物的預防 waste prevention

二、經濟機制 economic instruments

三、奈米廢棄物 nanowaste

建議事項：

1. 今年是我國第 2 次以同僚(colleague) 身份參與 OECD 專家會議，如果沒有意外，今後我國將可以同樣身份，持續參與 OECD 資源生產力與廢棄物工作小組會議。2013 年，本署能資方案室成立 OECD 小組，提供後勤支援，並將 OECD 相關資料定期彙整、翻譯，供有關方面參考，有助於我國維持並拓展與 OECD 之關係。
2. OECD 除了固定年會外，2014 年 6 月將在日本舉行另一次全球 SMM 大會，我國如獲邀請，當積極參與，了解國際新趨勢，提高我國能見度。
3. 我國先後於 2009 年及 2011 年，舉辦第 1 屆及第 2 屆 SMM 國際研討會，邀請國際著有聲譽及影響力的官員、專家與會，我國的政策與經驗也受到這些官員、專家高度的肯定。今年也將舉行第 3 屆國際研討會，建議繼續邀請 OECD 官方、OECD 會員國、及其他專家與會，加強與各國際重要組織及國家的聯繫。
4. 持續與接受 OECD 委託做各個國家在 EPR 方面的研究的美國科羅拉多大學的教授 Dr. Daniel Kaffine 保持聯繫，並提供必要的資訊。

附件 1

議　　程

Organisation de Coopération et de Développement Économiques
Organisation for Economic Co-operation and Development

17-Sep-2013

English - Or. English

ENVIRONMENT DIRECTORATE
ENVIRONMENT POLICY COMMITTEE

Working Party on Resource Productivity and Waste

DRAFT AGENDA OF THE 4TH MEETING

12-14 NOVEMBER 2013, OECD CONFERENCE CENTRE

PETER BÖRKEY, ENV/EEI. Tél. +33 (0) 4524 1385 ; Peter.Borkey@oecd.org

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ENV/EPOC/WPRPW/A(2013)1
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DRAFT AGENDA

4TH MEETING OF THE OECD WORKING PARTY ON RESOURCE PRODUCTIVITY AND WASTE (WPRPW)

12-14 November 2013, OECD Conference Centre, Paris

Tuesday 12 November 2013			
1.	*9:00*	**Welcome and adoption of the agenda**	ENV/EPOC/WPRPW/A(2013)1
2.	*9:05*	**Report from the Secretariat** The Secretariat will briefly report on the key activities and major developments that have taken place since the last WPRPW meeting (November 2012), including: 1. Report to OECD Council on implementation of Recommendation on Resource Productivity; 2. Key output and Secretariat activities; 3. Main outcomes of EPOC's October 2013 meeting; 4. Other relevant information.	Oral report ***Action required:*** For information
3.	*9:30*	**WPRPW 2015-16 Programme of work (part I)** The Secretariat will introduce a paper that proposes a set of activities that could be carried-out by the WPRPW in 2015-16. For this, the meeting should take account of EPOC's strategic directions for the 2015-16 PWB that will have been discussed at an EPOC meeting on 29-31 October 2013 and that the Secretariat will present. The proposal will also draw on the conference call of October 2013 in which WPRPW delegates discussed ideas for its 2015-2016 work programme, as well as on discussions that took place in the framework of WPRPW Bureau conference calls. It is proposed that the discussion on this item be split in two parts: a discussion of the *substance* of the proposals (plus any additional items that may be proposed by delegations) under this agenda item; and a discussion of *priorities* under agenda item 10 (Day 2 afternoon). Under this agenda item, delegates are invited to discuss the work proposals in [ENV/EPOC/WPRPW(2013)1] and suggest any additional ideas for future work.	ENV/EPOC/WPRPW(2013)1 ***Action required:*** For discussion and decision
	11:00	**Coffee break**	

Tuesday 12 November (cont'd) – ***WORK PROGRAMME PRIORITIES IN 2013-14***			
4.	***11:30***	**Work on Nanowaste** WPRPW's work on waste containing nanomaterials focusses on sharing information about this emerging issue across OECD countries in order to understand the particular risks that may arise from the increased presence of nanomaterials in waste streams. The Lead countries will briefly introduce the reflection papers they've prepared on potential issues with nanomaterials in four waste management treatment operations (i.e., landfilling, incineration, wastewater treatment, recycling). Then delegates will be invited to comment on the papers, discuss and decide implications for WPRPW activities on nanowaste in 2014 and beyond.	ENV/EPOC/WPRPW(2013)2 ENV/EPOC/WPRPW(2013)3 ENV/EPOC/WPRPW(2013)4 ENV/EPOC/WPRPW(2013)5 ***Action required:*** For discussion and guidance on future work
	12:30	**Lunch break**	
4.	***14:30***	**Discussion on Nanowaste** (continued)	See above
5.	***15:00***	**SMM case study on sustainable construction materials** WPRPW launched work on construction materials in order to improve the understanding of the environmental merits of alternative construction materials, as well as the policy measures that are available to encourage a shift towards the most environmentally benign materials. Mr Arpad Horvath (University of California, Berkeley) will present the SMM case study that he has elaborated on sustainable construction materials. Following this, delegates will be invited to comment the paper and discuss potential additional work to be undertaken on this topic.	ENV/EPOC/WPRPW(2013)6 ***Action required:*** For discussion
	16:30	**Coffee break**	
6.	***17:00***	**Economic instruments for SMM: Extended Producer Responsibility (part I)** The Secretariat will introduce this session by providing an overview of the project and an update on the implementation of this work stream. Following this, the meeting will discuss: 1) A paper that surveys the use of EPR across the globe as well as a review of the economic literature on EPR prepared and presented by Daniel Kaffine of University of Colorado Boulder. 2) Two or three case studies, if available at time of meeting. These would be presented by the authors. Delegates are invited to discuss each of these items.	ENV/EPOC/WPRPW(2013)7 ***Action required:*** For information and discussion
	18:00	**End of Day 1**	

Wednesday 13 November 2013			
6.	*9:00*	**Economic instruments for SMM: Extended Producer Responsibility (part II)** 3) Draft recommendations on EPR that are coming out of a European Commission study; 4) Presentation of plans (and agenda) for the 2014 Global Forum on Environment event focussing on Extended Producer Responsibility Delegates are invited to discuss each of these items.	***Action required:*** For information and discussion
		ITEMS FOR INFORMATION AND EXCHANGE OF EXPERIENCE	
7.	*10:30*	**Environmental labelling and information schemes** Guillaume Gruère (Directorate for Trade and Agriculture) and Andrew Prag (Environment Directorate) will present a report that characterises environmental labelling and information schemes currently in use across the world. This work was prepared for the Working Party on Integrating Environmental and Economic Policies (WPIEEP) in conjunction with the Joint Working Party on Trade and Environment (JWPTE) and was circulated to WPRPW for comments. Delegates are invited to discuss the report and possible follow-up work.	ENV/EPOC/WPIEEP(2013)2/FINAL ***Action required:*** For discussion
	11:15	**Coffee Break**	
8.	*11:45*	**Food waste under the Committee for Agriculture and roundtable discussion** 1) Morvarid Bagherzadeh (Directorate for Trade and Agriculture) will present a summary of the discussions that took place at the 4th meeting of the OECD Food Chain Analysis Network, 20-21 June 2013, as well as an outlook on possible future work; Delegates are invited to discuss the conclusions of the workshop and the proposed directions of future work;	***Action required:*** For discussion
	12:30	**Lunch**	
8.	*14:30*	**Food waste roundtable discussion** (continued) 2) Building on the discussion of the Food Chain Analysis Network, delegates will be invited to share information about initiatives in the area of food waste in their respective countries;	***Action required:*** For discussion
	15:30	**Coffee Break**	

9.	*16:00*	**Roundtable discussion on recent developments** Delegates are invited to share important recent developments in their waste management and resource productivity policies.	***Action required:*** For information and decision
		WORK PROGRAMME FOR 2015-16	
10.	*17:00*	**WPRPW 2015-16 Programme of work (part II)** Building on the discussions on the substance of possible work in 2015-16 that took place under agenda item 3 on Day 1, delegates are asked to discuss and decide which of the proposed projects should be prioritised.	***Action required:*** For decision
	18:00	**End of Day 2**	

Thursday 14 November 2013			
11.	*9:00*	**Closed Session** Secretariat report: Update on accession and post-accession processes.	ENV/EPOC/WPRPW/ACS/A (2013)1 ***Action required:*** For information
12.	*9:30*	**Closed Session** Post accession progress reporting of Chile.	***Action required:*** For information and decision
	10:45	**Coffee break**	
13.	*11:15*	**Closed Session** Post accession progress reporting of Israel.	***Action required:*** For information and decision
	12:30	**End of meeting**	

附件 2

我　國　簡　報

行政院環境保護署
Environmental Protection Administration
Executive Yuan, R.O.C. (Taiwan)

Extended Producer Responsibility in Taiwan

November 2013

Environmental Protection Administration

Executive Yuan R.O.C.(Taiwan)

Outline

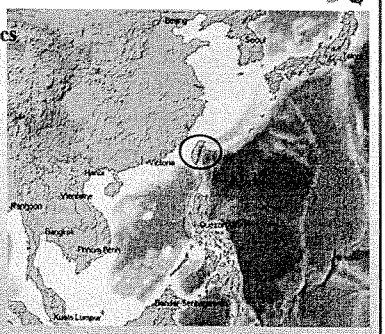
I. INTRODUCTION
II. EPR SYSTEM FOR WEEE
III. ACHIEVEMENTS
IV. FUTURE VISIONS

I. INTRODUCTION

Introduction of Taiwan

➢Taiwan Demographics

- Population: 23.2 million
- Area: 36,000 square kilometers
- Population Density: 641 persons/km²



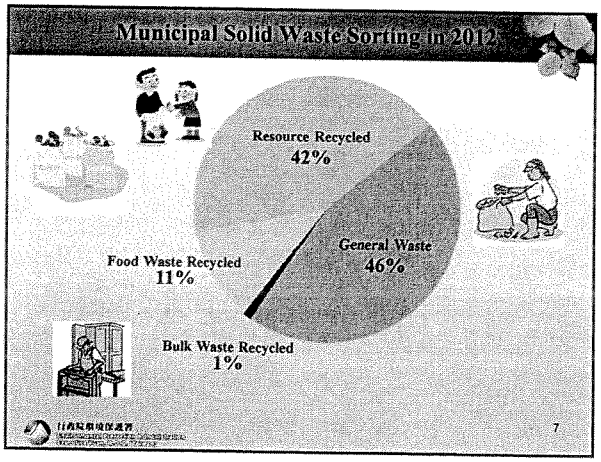
Major Regulations Related to EPR

Law	Supplemental regulation	Effective date	Brief description
Waste Disposal Act		26/07/1974	1st law for SW(solid waste) management Definition of solid waste and its categories Clarifies the obligations and responsibilities of SW management
	Charge of clean-up and treatment charge for MSW	31/07/1991	The charge for MSW treatment on the basis of the polluter pays principle
	Recycle, clean-up, and treatment of MSW	23/04/1997	Classification of collection, treatment technology, and treatment facilities for SW recycling
	Recycling Management Fund (RMF)	01/07/1998	Recycling and treatment Due Recycled Waste items Including WEEE
	Recycling general waste items by implementation agency	17/04/2006	Designates resource items that should be collected by the local government
	Management criteria for public landfill facilities	01/01/2007	Combustible MSW not be dumped in landfill sites except the treated SW
Environmental Fundamental Law		11/12/2002	Law for sustainable development. Green consumption, recycling, reuse, life-cycle analysis of product, and clean production in waste management systems.
Resource Reuse & Recycling Act		03/07/2002 01/07/2006	Definitions of recycling items and fundamental principles Obligation and responsibilities of the recycling of goods. Restricts the size and weight of specific commodities including

Major Administrative Measures Relate to EPR

measure	Period	Brief description
Keeping trash off the ground	1995 to date (first officially adopted by local municipalities)	The households waste has to be directly dumped in the collection truck. To ban temporary dumping at the collection sites
Resource recycling four-in-one project	01/1997 to date	To build an integrated recycling network among community, private recycler, local government, and Recycling Management Fund To increase the material value of reuse, recycling, and treatment
Restrictions on the use of plastics bags	01/07/2002 to date	To impose restrictions on the utilization of packaging and tableware that are composed of Styrofoam and plastics
Review and prospect of solid waste treatment	12/2004 to date	To examine the previous solid waste generation trends and treatment capacity. To use the "zero-disposal society" as the final goal of SW policy
Mandatory recycling of MSW	01/2005 to date	To make a strict classification of households waste before collection by the local government To categorize items that can be sorted, including the following: (a) Combustible general waste (b) Food waste (c) Waste of potential resources (d) Furniture and waste of large size
Recycling of general plastic bags	05/2006 to date	To recycle plastic bags with the MSW collection system in 14 major counties
Recycling of waste food oil	09/2007 to date	To regard "Waste food oil" as an item on the mandatory recycle substance list for specific food and service companies. To collect waste used oil as a raw material in the biofuel production industry

Municipal Solid Waste Sorting in 2012



7

II. EPR SYSTEM FOR WEEE

8

Regulated Recyclable Waste(RRW)

Containers

- ➢Iron container
- ➢Aluminum container
- ➢Glass container
- ➢Paper container
- ➢Plastic container
- ➢Pesticide container

Objects

- ➢General battery
- ➢Automobile\ Motorcycle
- ➢Light bulbs/tubes
- ➢Tire
- ➢Lead-acid battery
- ➢IT equipment
- ➢Home appliance

9

Recycling Management Fund Functions & Operations

➢Community residents

Form Community-based Recycling organizations and promote separation of waste and recyclables.

➢Recycling Fund

- Financed by producers
- RFMB plans and implements recycling programs.

➢Recycling Industries

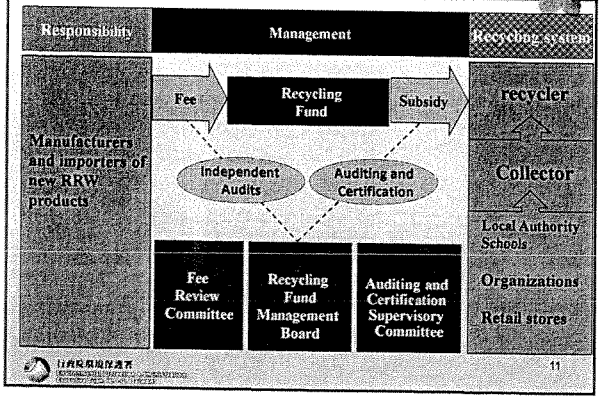
Collect and recycle recyclables from households, communities, sellers and municipalities.

➢ Local Authority

- Collect and sort recyclables
- Part of the revenues from selling recyclable must feed back to the general public.

10

Recycling Management Fund Functions & Operations



11

Evolution of Manufacturer and Importer Responsibilities in Taiwan

Year	Features	Milestone
Prior to 1988	Market-driven recycling only	▶ 1987: "Polluter Pays Principle" introduced
1988 - 1997	Manufacturers and importers were responsible physically and financially for recycling	▶ IT equipment was not widespread ▶ Computer recycling Alliance established in October 1996
1997 - 1998	Manufacturers and importers pay recycling fees to eight recycling funds	▶ 1997: **"4-in-1" Recycling Program** ▶ Waste Appliances Recycling Fund Management Board established in December 1997 ▶ IT Equipment Recycling Fund Management Board established in March 1998

12

Evolution of Manufacturer and Importer Responsibilities in Taiwan

Year	Features	Milestone
1998 - now	The eight Recycling Funds are administered by EPA's Recycling Fund Management Board	► March 1998: Home appliances were listed as Regulated Recyclable Waste (RRW) by EPA ► June 1998: Subsidization of waste appliance storage sites (44 companies with 67 sites) ► June 1998: Established waste IT equipment collection stations(Subsidizing the public) ► 2002: EPA promulgated standards for the methods and facilities for the collection, storage, and recycling of waste appliances and waste IT equipment ► 2007: Electric fans and keyboards were listed as RRW by EPA ► 2010: EPA promulgated the waste home appliance takeback policy

13

EEE Subject to Taiwan's EPR Law

The year each item was listed as RRW	EEE Item
March, 1998	
June, 1998	
January, 2001	
July, 2002	Light tubes
July, 2007	Light bulbs
October, 2007	
July, 2008	High Intensity Discharge
Jan, 2014 (draft)	Tablet, CCFL

14

EEE's Green Differential Fee Rate

Home appliance (enforced 2013)	✓Green Mark by EPAT ✓Energy Label ✓ Grade 1 or 2 of the Energy Efficiency Grade Standard ✓ Water Conservation Mark only for Washing machine	30% discount	To encourage the development of environmentally friendly products
IT equipment (draft)	✓Green Mark by EPAT	30% discount	

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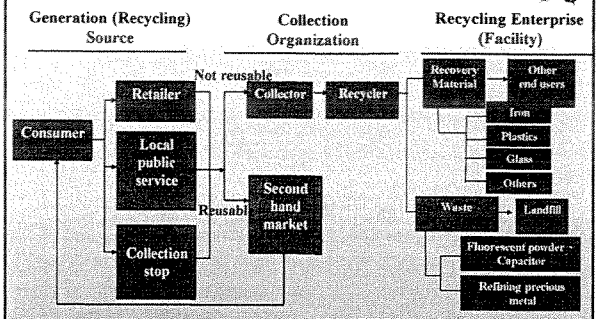
WEEE Recycling Flow-chart



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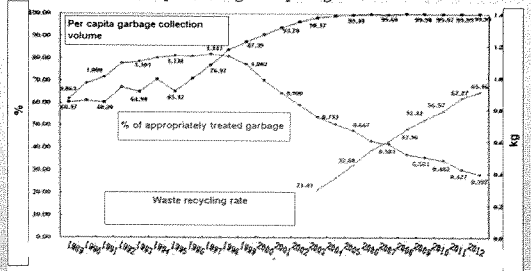
III. ACHIEVEMENTS

17

Waste Reduction

- Daily per capita garbage collected was reduced to 0.397 kg while recycling rate reached 65.16% in 2012
- National Resource Recycling Program recycled 4,704,000 tons of materials in 2011, representing a recycling rate of 62.27%



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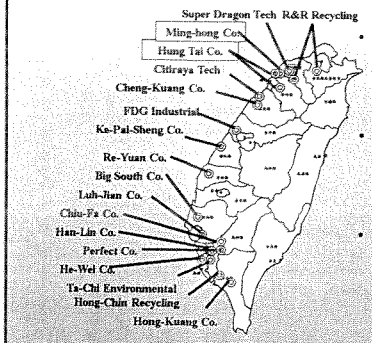
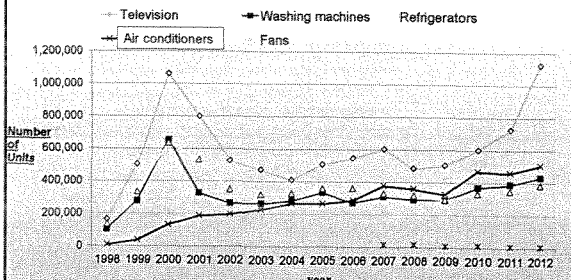
Distribution of WEEE Recyclers



- There are 12 waste appliance recycling enterprises (13 plants) and 241 collection enterprises
- There are 16 waste IT equipment recycling enterprises (17 plants) and 236 collection enterprises
- There are 5 waste fluorescent lamp recycling enterprises (6 plants) and182 collection enterprises

19

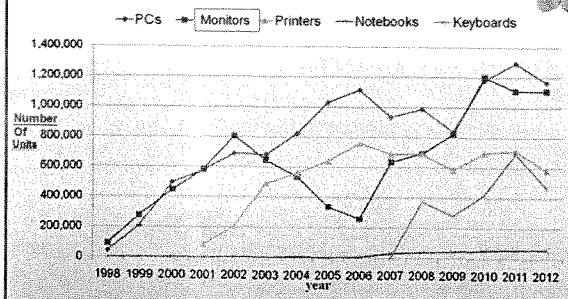
Household Appliance Collection Amounts



The number of appliances recycled was 5.9 times higher in 2012 than in 1998.

20

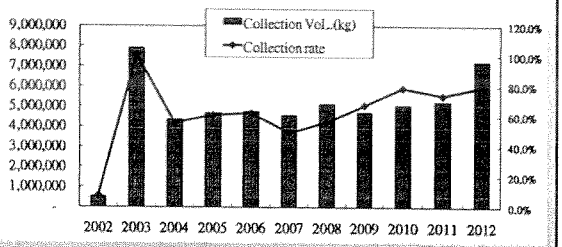
IT Equipment Collection Amounts



The waste IT equipment recycling volume increased 24.4 times in 2012 , as compared to 1998.

21

Fluorescent Lamp Collection Amounts



The waste fluorescent lamp recycling volume increased 13.7 times in 2012 , as compared to 1998.

Total WEEE collection in 2012 reached 5.45 kg per Capita

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WEEE Recycling Rate in 2012

Recycling rate	Household appliance	IT equipment	Fluorescent lamp
Targets	70.0%	70.0%	90%
Achieved	81.3%	82.3%	98%

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Recycling Fee Rate-A Successful Example

- **From June 2000, zinc-carbon batteries and non-button type alkaline batteries (disposable) containing more than 250ppm of cadmium (Cd > 250ppm) or more than 4,000ppm of lead (Pb > 4,000ppm) were charged four times higher on their recycling fee than general dry batteries. This policy is to urge battery producers to move towards product green design and reduce environmental impacts.**
- **PVC containers are charged much higher rate, even non-PVC container contains PVC attachments were charged 130% in 2005. The rate then again increased by 100% in 2008. This policy effectively reduced the use of PVC in containers.**

24

Private Sector Model - DA AI Technology

- There are 5,462 Tzu Chi recycling stations and more than 80,000 environmental volunteers
- Example: 280 million PET bottles have been recycled since 2009, equivalent to reducing 17,800,000 kg of CO_2 .
  - Equivalent to saving 4,560,000 L of oil
  - Equivalent to saving 758,000,000 L of water.

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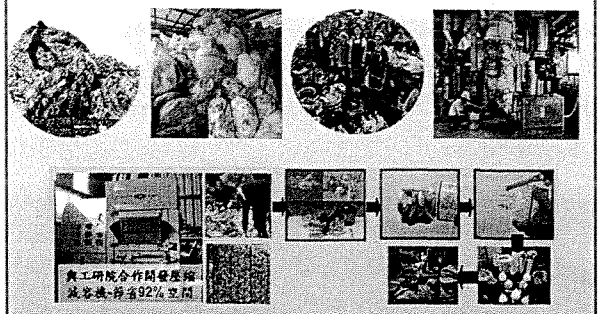
DA AI Resource Recycling



26

Green Consumption-System

- Promotion of the Green Mark
  - Since its inauguration in 1982, 14 classes and 124 product categories have been set up. Over 9000 products have been certified.
  - The classes of recycled products include products made with recovered resources such as waste paper, glass, rubber, PET bottle etc.

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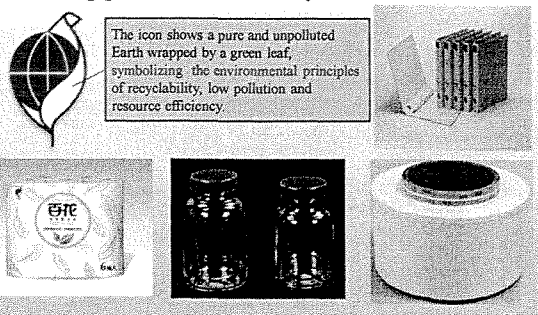
Green Consumption-Approaches

Producing products from recycled materials



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Green Consumption-Promotion and Achievements

- Promotion
  - Done mainly through well-established marketing channels, enhanced green procurement in public and private sectors and nation-wide information campaigns on green purchasing
- Achievements
  - Marketing channels: over 10,000 retailers have participated and converted to Green Stores. Sales of green products reported by Green Stores in 2012 reached over 900 million USD.
  - Green procurement in public/private sectors: government green procurement reached over 300 million USD, while private enterprises and organizations reported over 250 million USD.
  - National information campaigns: mainly through the events with green hotels, star-rated green restaurants, green weddings etc. Also through daily activity campaigns to encourage the use of green products, low-carbon meals etc.

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IV. FUTURE VISIONS

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Waste Management Policies

- Implementing Resource Circulation Policies
  - Source Reduction
  - Promoting Reuse
  - Material Recycling
  - Energy Recovery
  - Land Reclamation
- Maximizing resource efficiency and minimizing environmental impact

Resource Circulation Act (Draft)

- Regulations combined, adding recycling as an extended producer responsibility
  - Article 29 of the combined act: responsible enterprises should pay to the recycling fund
    - Responsible enterprises should register and report sales and import quantities, and pay for the recycling costs.
    - Fee rates and amounts are reviewed and determined by the Resources Recycling Fee Rate Review Committee.
    - Establishes the minimum percentage of the Resource Recycling Management Fund that should be invested in a trust fund and authorizes competent authorities to establish relevent regulations
  - Article 38, Clearance of recyclables: in addition to the paying scheme, a self-managed scheme is added
    - In addition to the current scheme of paying recycling fees to the Resource Recycling Management Fund, the central competent authority can designate the responsibility for recycling of certain wastes according to the wastes, impact on the environment, clearance status and other related factors, implementing the self-managed scheme.

Recycling Fee Rate Scheme Incorporated into EPR

To encourage the development of environmentally friendly products, the Green Differential Fee Rate may lower the recycling fee rate for green products, or increase the recycling fee rate to discourage production of less environmentally friendly products.

Announced Classes	Green Fee Rate Status	Notes
Containers	✔	
Dry Batteries	✔	
Motor Vehicles	✔	
Lead Acid Batteries	—	
Tires	—	
Electronics and Electric Appliances	✔	
Computer Appliances	—	
Light Sources	—	

✔ : Implemented, — : yet implemented

Items Subject to Green Differential Fee Rate

- Containers
  - No PVC materials in container attachments
  - Designed with easily removable labels
- Motor Vehicles
  - Green design as a criterion for differential fees applied to motorcycles from 2010, and cars from 2011.
- Electronics and Electrical Appliances
  - From 1/1/2013, TVs, refrigerators, ACs and heaters, washing machines, and fans had 30% off from the fee rates if certified to any related ecolabeling standard.
- Dry Batteries
  - Based on the hazardous metal contents of the batteries
  - Batteries containing mercury, cadmium or lead that exceed standards require higher fee rates.
  - Lower fee rates for low-mercury batteries.

Green Purchase and Consumption

- Establishing Green Purchasing Alliance
  - EPA established the Green Purchasing Alliance in 2013.
  - To establish a selling venue for large quantity procurement by businesses and organizations.
  - Combining the purchasing powers of businesses, organizations, and communities etc.
- Promoting service sector Green Marks
  - Hotels, travel agencies, restaurants, building cleaners, car rentals, and car washing services
- Planning Green Mark point schemes
  - Using tools such as point cards or credit cards, combining public and private resources to reward purchases of green products.

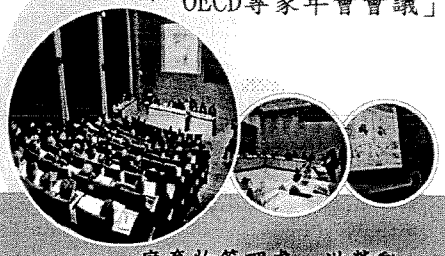
Thank you for your attention!

附件 3

活 動 成 果 簡 報

行政院環境保護署
Environmental Protection Administration
Executive Yuan, R.O.C(Taiwan)

參加2013年「OECD專家年會會議」報告



廢棄物管理處　洪榮勳

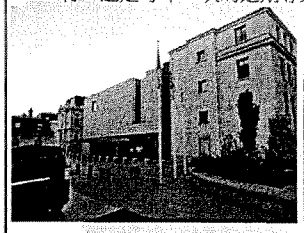
102年12月5日

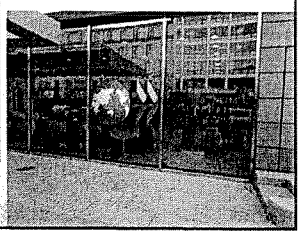
簡報大綱

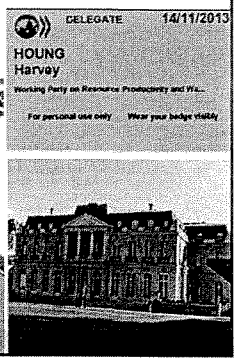
- 一、背景
- 二、會議過程
- 三、我國的參與和貢獻
- 四、結論

一、背景

- 這一次OECD專家會議於11/12-14日 在巴黎OECD總部舉行，這是每年一次的定期專家會議。

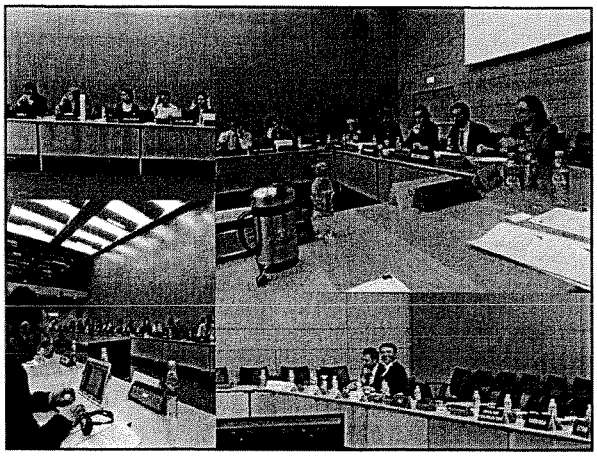




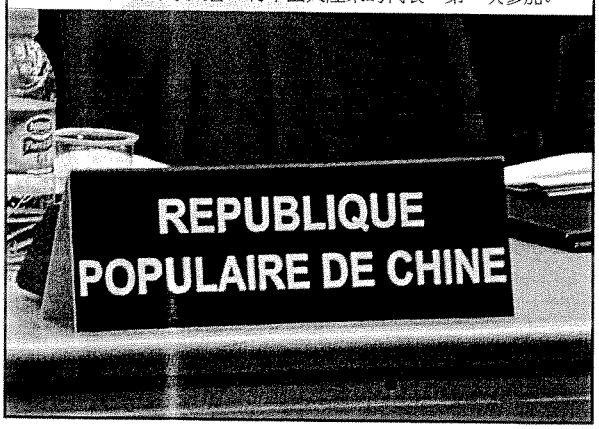


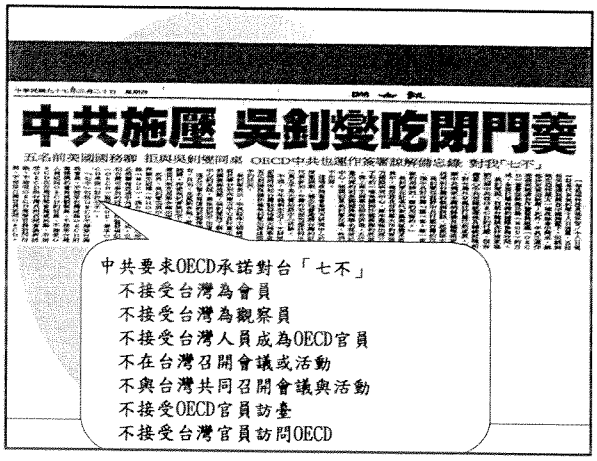
二、會議過程

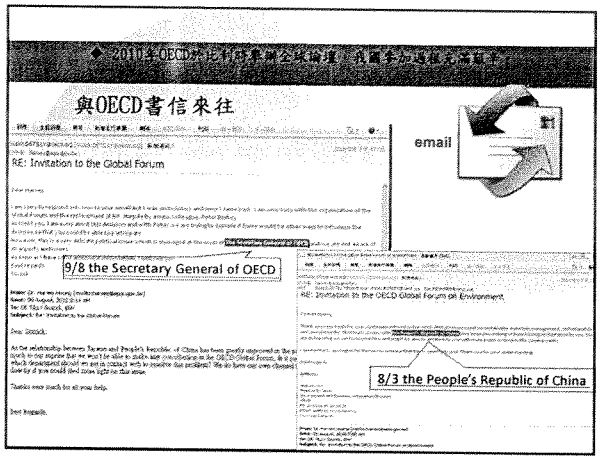
- 涵蓋的主題包括奈米廢棄物，環保設計(Design for Environment DfE)，EPR，營建廢棄物，廚餘，農業廢棄物，以及接下來兩年，SMM工作的主要工作範圍，由各國代表針對日後的重點作出規劃，並且投票表決。

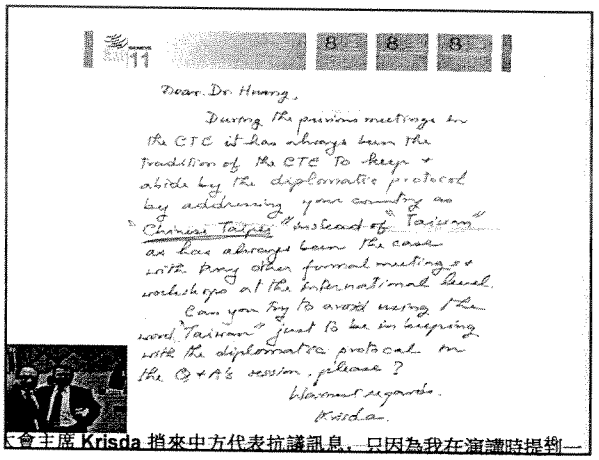


❖ 這一次的專家大會，有中國大陸來的代表，第一次參加。









會主席 Krisda 捎來中方代表抗議訊息，只因為我在演講時提到—

Steps

- Former "Old for new" Plan works well
- *Ordinance for Administration of Collection and Disposal of Waste Electronic and Electrical Products* , 2009, introduces the EPR principle
- *Measures for the Collection and Administration of the Funds for Recovery and Disposal of Waste Electronic and Electrical Products* , 2012, which involves the Ministry of Finance (MoF), the Ministry of Environmental Protection (MEP), the National Development and Reform Commission (NDRC), the Ministry of Industry and Information Technology (MIIT), the General Administration of Customs (GAC) and the State Administration of Taxation (SAT) of China

Responsibilities of key players

- MoF is the general administrator, who is responsible to coordinate the collection, utilization and administration of the fund;
- SAT and GAC are the collectors of the fund, who are responsible for collecting the fund from the producers and importers of EEE respectively with the help of their branch agencies all over the country;
- MEP is the administrator of the recyclers, who is responsible to develop and implement criteria for certification of e-waste recyclers, monitor their environmental compliance, monitor and check the production data they provide for the application of the subsidy with the help of the local environmental protection agencies;
- NDRC, MIIT, and the National Audit Office provide their help or supervision to ensure the healthy operation of the scheme.

How about the rate

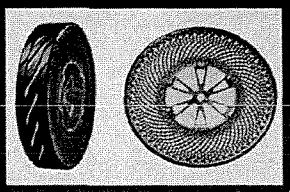
Products or e-waste\rate	Rate of Charge (CNY/unit)	Rate of subsidy (CNY/unit)
Television	13	85
Refrigerator	12	80
washing machine	7	35
air conditioner	7	35
personal computer	10	85

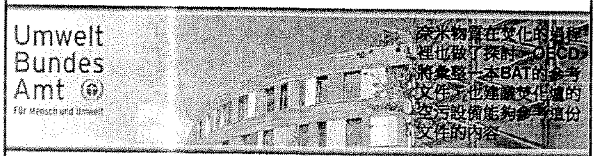
Criteria to certify a qualified recycler

a. Sufficient capacity

Location\requirement	Total capacity of recycling and disposal (tons/year)	Total building area (m^2)	Total workshop area (m^2)
East and central region of China	≥10,000	≥20,000	≥10,000
West region of China	≥5,000	≥10,000	≥5,000

在這一次的會議裏，正式的定義，奈米廢棄物為含有奈米物質的廢棄物（**waste containing nano material**）。奈米科技在輪胎上的運用及日後影響也將進行研究。

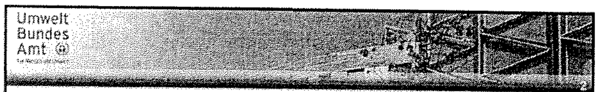




INCINERATION OF WASTE CONTAINING NANOMATERIALS

4th WPRPW Meeting OECD Conference Centre, Paris

12.-14. November 2013



Aim of the document

- Providing an overview of the first scientific findings on the behaviour and exposure of engineered nanomaterials (NM) during the waste incineration process and
- Indentify the current lack of knowledge regarding specific aspects of the disposal of waste containing nanomaterials.

Waste incineration | Federal Environment Agency (UBA) | 12.- 14. November 2013

鄰座的是一位美國科羅拉多大學的教授，他接受OECD 的委託做了OECD國家在EPR裡面的研究，並且搜集了各國不同的制度加以比較。他在聽完我們的報告後，非常訝異，在他的原始358筆資料裏，竟然沒有將我國的制度納入。

21

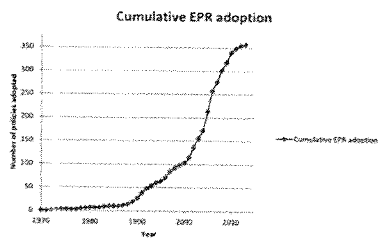
What Have We Learned About Extended Producer Responsibility in the Past Decade?

A Survey of the Recent EPR Economic Literature

Daniel Kaffine
University of Colorado Boulder
11/12/2013

EPRs in practice – 358 policies with dates

- Over two-thirds of EPR policies implemented since 2001



RE: - 日文 (自動選取)

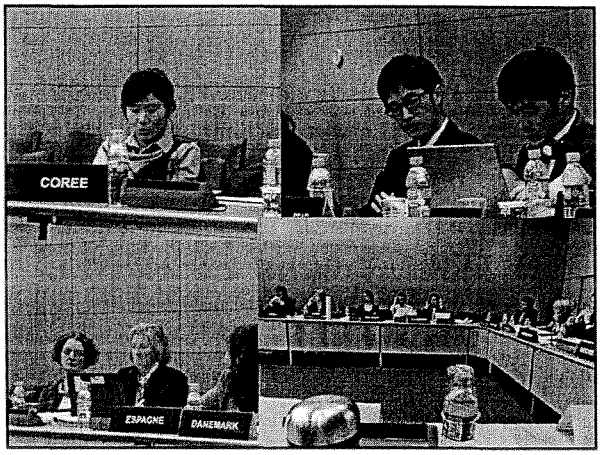
RE:
Daniel Thomas Kaffine (Daniel.Kaffine@colorado.edu) 新增連絡人 2013/12/6 上午 02:35

Hi Harvey,

Great to hear from you, and it was a pleasure to meet you in Paris. It looks like my schedule this month is going to be packed, but I appreciate the invite. I will be including EPR policies from Taiwan (as Chinese Taipei :)) in my revised draft, which I will forward to you once I've completed it this spring.

Best,
Dan

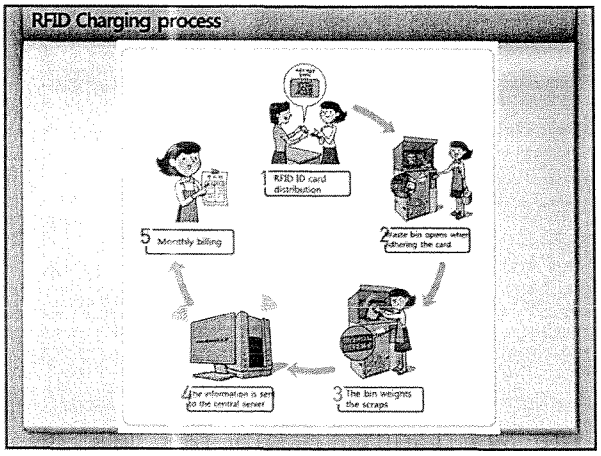
Daniel Kaffine
Associate Professor
Department of Economics
RASEI Fellow
University of Colorado Boulder
303-492-6652

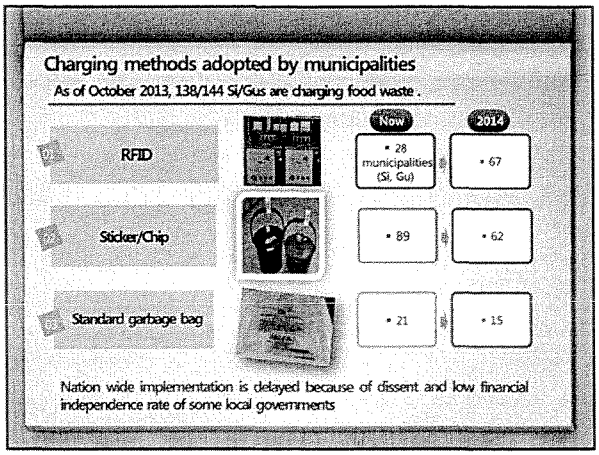


Strengths and weaknesses of charging methods

Initial facility cost		S	W
RFID	1,750,000 (won/bin)	·Accurate measurement ·User-friendly ·Advanced data management	·High initial cost
Chip /Sticker	4,500 (won/30)	·Low cost	·Discomfort
Plastic bag	150 (won/5ℓ)	· Lowest initial cost	·Low recyclability · Not available since June 2015

資源永續立目標 循環利用創新局 28

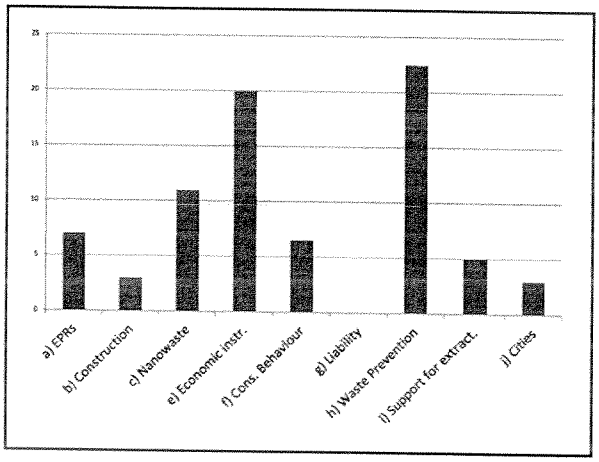




Proposed WPRPW activities 2015-16

A - Policy dialogues on Extended Producer
B - SMM case study on construction materials
C - Improving information on nanowaste
E - Economic instruments for SMM
F - Analysis of consumer behaviour
G - Environmental liability schemes and SMM
H - The promotion of waste prevention for SMM
I - Support for material extraction and processing (primary and secondary)
J - Cities and SMM

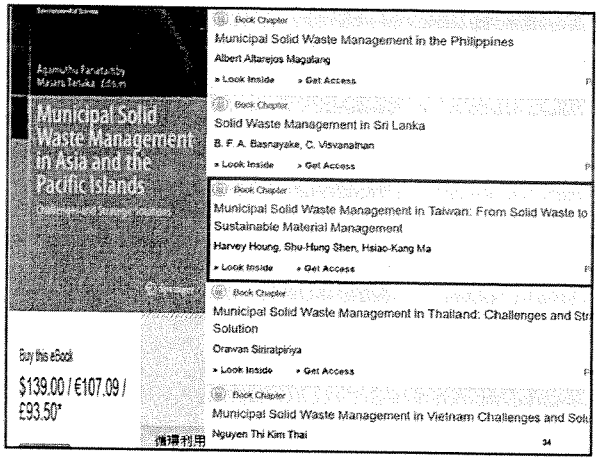
OECD為了順利推動接下來幾年對SMM的工作，草擬了10個主題，要求會員投票。

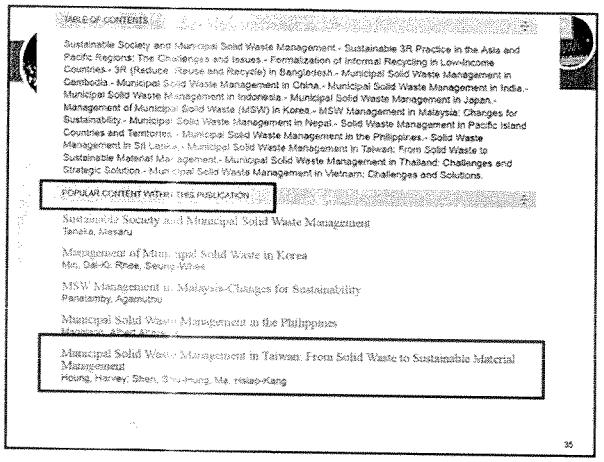


三、我國的參與和貢獻

我國與會發言主要內容:

- EPR
- Food Waste
- Green Differential Fee System for Regulated Recyclable Waste, Green Mark & C2C
- Legal Instruments, Social Instruments, and Technical Instruments (Economic Instruments)
- Proposed Bio-energy Reaction Centers





- OECD環境部來了位新主任，全程參與會議。
- 會後總監Peter表示，OECD來了一位新的國際關係的主管，非常保守，對我國的參與跟這位主管有過嚴肅的對話。
- OECD的總監徵求我們意見是否參加EPR專家小組，營建廢棄物專家小組或廚餘專家小組。
- 大會主席瑞典代表建議我國和中國大陸一起做case study。

四、結論與建議

- 會議過程，我國的發言，不但得到與會代表的肯定，而且多位代表也表示高度的興趣。我國在廢棄物及資源管理政策能與OECD國家同聚一堂討論。尤其是，我們有些政策更是領先OECD國家，是我國人之驕傲。
- 美國教授來信，答應將我國EPR納入OECD報告中。
- 雖然目前我國參加OECD的年會沒有太大問題，但要進一步發展與OECD關係，有待我們繼續努力，其他部會的配合也是關鍵因素。
- OECD除了固定年會外，明年6月將在日本舉行另一次全球大會，將會邀請我國與會。
- 我國在聯合國三公約大會裡面舉辦的週邊會議，收到的成果大於預期。建議日後在我國參加聯合國的公約大會或其他國家會議加強對於我國努力成果的發表，提高我國在國際上的能見度。

附件 4

會議參考資料及摘要翻譯

全球論壇-EPR 概念(OECD)

1. 重點與目標

-重點在延長生產者責任(Extended Producer Responsibility, EPR)

- 對近期執行 EPR 的經驗做出判斷
- 在一個多方利益相關者論壇(其中包括合作夥伴國家)討論指南草案
- 主要預期成果：一套指導綱要(EPR 的使用與設計)

2. 議程

-開幕

-延長生產者責任背景說明

-從已開發經濟體中學習使用 EPR

-從新興經濟市場中學習使用 EPR

-建立全球 EPR 政策指導綱要

-總結與閉幕

3. 關鍵文件、格式與日期

主要文件：

-EPR 指導綱要草案

-各國實例研究

-文獻調查和 EPR 使用概述

格式：約 120 位來自 OECD 經合組織和夥伴國家的專家(包括各國政府、私營部門和非政府組織)。

4. 問題討論

GLOBAL FORUM ON EPR - CONCEPT

OECD

Focus and Objectives

- Focus on extended producer responsibility
- take stock of recent experience in implementing EPRs
- discuss draft guidance in a multi-stakeholder forum that includes partner countries
- Key expected outcome: a set of guiding principles for the use and design of EPRs

Agenda

1. Opening
2. Setting the scene for Extended Producer Responsibility
   - Presentation of key insights and global use of EPR
3. Lessons learned from the use of EPR in advanced economies:
   - Presentation of OECD country case studies
4. Lessons learned from the use of EPR in emerging market economies:
   - Presentation of case studies from emerging market economies countries
5. Towards global EPR policy guidance:
   - Plenary: Presentation of existing EPR guidance
   - Discussion in break-out groups
6. Wrap-up and close of meeting

Key documents, format and dates

- Key documents:
  - Draft guidance on EPRs
  - Country case studies
  - Literature survey and overview of EPR use
- Format: About 120 experts from OECD and partner countries, including Governments, private sector and NGOs
- Dates: 21-23 May 2014

Issues for discussion

- Any questions for clarification?
- How can the Global Forum concept be improved?

OECD 之 EPR 計畫介紹

1. OECD 延長生產者責任(Extended Producer Responsibility, EPR)計畫

   目標：

   - 協助正在考慮引入新的或重新審查現有 EPR 的各國政府
   - 建立與歐盟委員會 EPR 平行的制度
   - 更新 2001 年 OECD 延長生產者責任的指導手冊

2. 工作敘述

   EPR 的理論框架：

   大約 40 個計畫的深度案例研究，包括 5 個產品群：

   - 電子廢棄物
   - 包裝
   - 電池
   - 輪胎
   - 二手油

   重點：

   - EPR 的設置與法律上許可的背景
   - 環境效益
   - 成本效益
   - EPR 制度對整體社會的利益

3. 關鍵里程碑

   - 2013 年底的個案研究
     - 日本、韓國、加拿大、澳大利亞、中國、智利、比利時、斯洛伐克
   - 2013 年 5 月的建議草案
   - 2013 年 5 月在全球論壇上對 EPR 政策討論及建議
   - 2014 年年底的最終 EPR 報告
   - 整個 2015 年之若干國家的國家政策對話

4. 本次會議結構

   - 文獻回顧與全球使用概述
   - 歐委會近期工作
   - 各國案例研究

INTRODUCTION TO EPR PROJECT

OECD

OECD Project on Extended Producer Responsibility

- Objective
  - Assist Governments that are considering introducing new or revisiting existing EPRs
  - Build on parallel EU Commission work on EPRs
  - Update 2001 OECD Guidance Manual on Extended Producer Responsibility

Description of work

1. Theoretical framework of EPRs
2. In-depth case studies of around 40 EPR schemes covering 5 product groups:
   - e-waste
   - Packaging
   - Tyres
   - Batteries
   - Used oil

   focusing on:
   - legal context and set-up of EPR
   - environmental effectiveness
   - cost efficiency
   - overall benefits to society of EPR system
3. Policy recommendations, derived from 1 and 2

Key milestones

- Case studies by end 2013
  - Japan, Korea, Canada, Australia, China, Chile, Belgium, Slovak Republic, PSI, (possibly India and Brazil)
- Draft recommendations by May 2013
- Global Forum on EPR to discuss policy recommendations, May 2013
- Final EPR report, end 2014
- National policy dialogues with selected countries, throughout 2015

Structure of this session

- Literature review and overview of global use
- Recent work in the European Commission
- Country case studies
- Proposal for Global Forum event

過去十年我們從延長生產者責任制學到什麼?

1. 目標：
   - 對學術經濟學文獻中延長生產者責任(Extended Producer Responsibility, EPR)的評估
     -縮小焦點-其他觀點也很重要！
     -採用 2001 年經合組織對 EPR 的定義，被視為 EPR 政策工具
   - EPR 在世界各地的實踐調查
     - 385 EPR 政策（國家、產品、政策、年份）
     -我們所知道的最全面的全球 EPR 政策
2. EPR 目標和政策

   從 2001 年的經合組織指導手冊

   - EPR 的目標

   •源頭減量（節省材料）

   •廢棄物預防

   •為環境而設計（DfE）

   •封閉性材料循環使用（提升回收）

   - 政策手段

   •產品回收與循環利用的目標

   •儲存/償還

   •事前處置費（ADF）

   •初次材料稅

   •上游的稅及補貼合併（UCTS）

   •回收內容標準
3. 經濟文獻的 EPR 摘要
   - EPR 文獻相對較少
     - 與現有環境法規有某些相似處
     - 與 EPR 細節的重大差異性值得關注
   - 考慮 4 大領域
     - 政策的選擇
     - 環境效益
     - 成本效益
     - 不勞而獲者/未被照管的產品/貿易問題
4. 政策選擇

   文獻結論摘要

   - 儲存/償還、上游的稅及補貼合併、回收標準均優於事前處置費、初次材料稅/內容標準
   - 政策水平應反映不同產品的外部成本
   - 集體專業人員可以利用規模經濟的優勢，可為市場力量創造誘因

- 多數 EPR 政策為環境設計創造誘因
- 直接針對回收再利用的政策將為環保設計提供更強而有力的誘因-需更多實證研究

5. 環保和成本效益
   - 一般的共識是在以下 EPR 政策行得通情況下來實現環境目標
     - 更多的經驗證據是必要的
   - 關於混雜因素和需小心注意的政策效果定義
   - 以市場為基礎的政策實證研究
     - 缺乏對回收成本效益的學術研究
   - 會計成本和經濟成本區別的重要性
   - 缺乏對 EPR 政策了解導致的不必要損失和經濟代價
6. 不勞而獲者、未被照管的產品及貿易
   - 此領域小部份學術工作具體應用在 EPR 政策
   - 相關工作建議
     - 不勞而穫-公共物品常見問題，需要機關或監管單位協力確保其遵法
     - 未被照管的產品-結合可能是潛在的解決辦法
   - 貿易
     - 同樣適用於國內與國外企業的政策應 a)避免經濟扭曲，b)符合 WTO 規則
7. EPR 的實行-385 項政策調查
   - 廣泛蒐集存在世界各地的政策
   - 依所蒐集國家及政策全面列表
   - 必定已遺漏一些政策
   - 幸運的是，因為政策的蒐集量成長，隨後的成果改變很少。
8. EPR 的實行-產品類型
   - 電子類是 EPR 最常見的產品
9. EPR 的實行-政策
   - 回收利用是目前最普遍的政策類型
10. EPR 的實行-385 項政策中，自 2001 年起有超過 2/3 被執行

從歐盟的角度看生產者責任制

1. 大綱：

1.背景

- 歐盟 2020 年目標
- 目標回顧

2.生產者責任制

- 為何對延長生產者責任(Extended Producer Responsibility, EPR)有新行動?
- 主要課題
- 新研究
- 初步想法-主要原則和實施手段

2. 2020 歐盟目標

- 廢棄物發電在下降，尤其是廚餘
- 回收和再利用對經濟具吸引力，並在「最大合理的水平」
- 能源回收侷限於非可回收材料
- 逐步淘汰掩埋
- 充分利用市場手段

3. 目標回顧

目標-轉化路線圖及將第七環境行動計畫渴望達到的目標納入立法

方法-兩階段(擴大範圍與深入評估)，支持締約與參考模型(歐洲環境署)

擴大範圍-回顧 3 項指令條款

時機-建議在 2014 年

4. 為何對 EPR 有新行動?

最先進的微軟公司經驗：適當結合不可或缺的經濟/法律工具

- 掩埋與焚燒課稅/禁令
- 對市政當局激勵/懲罰
- 按廢棄量收費制度

5. 主要課題

1. EPR 計畫已獲准其經營所需資金以符合高回收/再生目標
2. 在微軟以下方面之間有具大的差異：
    - 範圍和目標
    - 覆蓋廢物流
    - 系統的成本效益
    - 不勞而獲者的控制制度和水平
    - 市政當局/生產者的角色
    - 集中/多數參與

6. 額外的 EPR 研究

目標：確定「黃金規則」和/或健全的 EPR 計畫最低要求

途徑：為現有 EPR 成果做比較，為 6 項廢棄物流深入分析 6 項計畫，及最佳做法的鑑定

時間：2014 年 9 月 18 日在布魯塞爾舉行研討會

7. 關鍵原則
    1. 初步方法研究，2014 年 3 月最後確定
    2. 藉由以下方面的確認，提升 EPR 計畫之成本效益/可接受度：
        - 所有參與者之間的長期對話：生產者/零售商/公民/廢棄物收集者/直轄市、私營運營商/分類者/回收者
        - 透明度
        - 適當的控制
        - 公平競爭
        - 全面和真實成本的應用
8. 實施原則
    1. 歐洲水準(立法、建議、指導綱要)
        - 達到的目標定義
        - 明確的 EPR 目標
        - 納入國家立法的最低要求
        - 激勵使用 EPR 計畫
        - 最佳實踐指導
9. 國家立法
    1. 明確定義所有相關者責任
    2. 可靠的認可制度
    3. 以歐盟最低目標漸進
    4. 集體計畫的認可程序
    5. 真正的成本原則-費用必須連結精確的產品成本/可回收性，並包括總價
10. 認可程序
    1. 藉高密度集合網路完全覆蓋範圍
    2. 與市政當局的關係
    3. 由第三方審核
    4. 公平對待生產者/進口商
    5. 指定營運商的明確程序(公開招標/標準成本補償)
    6. 特定廢棄物流/產品的具體規則
    7. 未獲利/獲利?
11. 組織有效控管
    1. 基於風險-結合公共與自動控管
    2. 足夠的公共資源
    3. 明確驗證和可使用的報告
    4. 採取有效行動對抗不勞而獲的行為

5. 專注在統計/質量/可靠性
6. 廢棄物出口

配套措施：掩埋/焚燒課稅/禁令，按廢棄量收費，獎勵/處罰

12. 結論-下一步驟
    1. 進行中的特定利益相關者諮詢
    2. 2014 年目標檢討
    3. 將額外納入協助使用經濟手段的倡議
        - 預警程序/事前條件
        - 藉由最佳實行的指導綱要完成 EPR 之最低條件

What Have We Learned About Extended Producer Responsibility in the Past Decade?

A Survey of the Recent EPR Economic Literature

Daniel Kaffine
University of Colorado Boulder
11/12/2013

About the authors

- Daniel Kaffine
  - Associate Professor, Department of Economics, UC Boulder
  - Education
    - Ph.D. Environmental Science and Management, 2007 UCSB
    - M.A. Economics, 2003 UCSB
  - Research interests related to EPR: Cost-effectiveness of waste and recycling policy
- Patrick O'Reilly
  - Ph.D. Student, Division of Economics and Business, CSM
  - Education
    - M.A. Economics 2009 CU-Denver
    - M.S. Mineral and Energy Economics 2013 CSM
  - Research interests related to EPR: Consumer response to waste and recycling policy

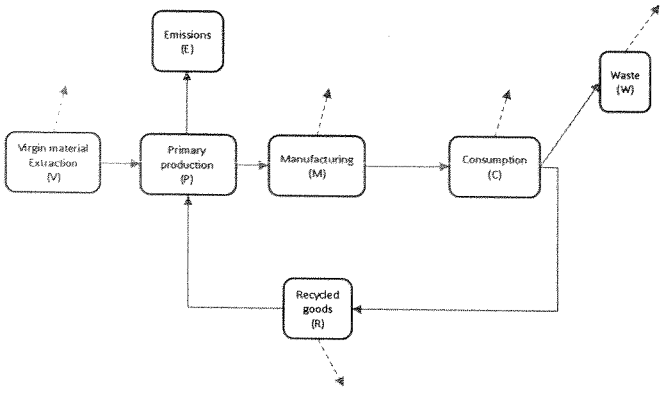
Objectives

- Assessment of academic economics literature on extended producer responsibility
  - Narrow focus – other perspectives also important!
  - Adopts 2001 OECD definition of EPR and policy instruments to be considered as EPR
- Survey of EPR in practice around the world
  - 385 EPR polices (country, product, policy, year)
  - Most comprehensive collection of global EPR policies that we're aware of (in terms of number of countries/policies considered)

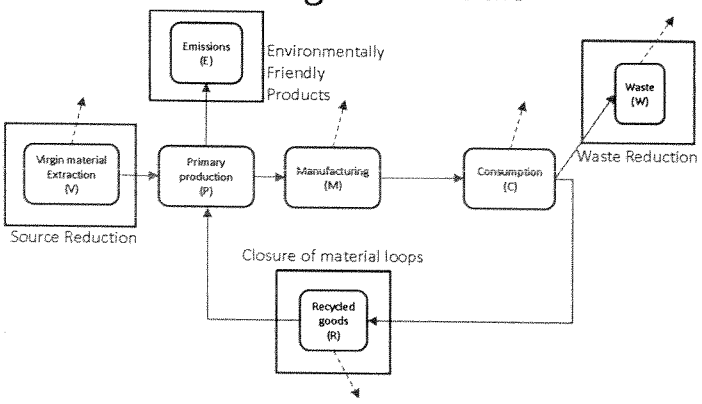
EPR Goals and Policies

- From the 2001 OECD Guidance Manual
  - Goals of EPR
    - Source reduction (material conservation)
    - Waste prevention
    - Design for the environment (DfE)
    - Closure of material use loops (increased recycling)
  - Policy instruments
    - Product take-back with recycling targets
    - Deposit/Refund
    - Advance disposal fees (ADF)
    - Virgin material taxes
    - Upstream Combined Tax and Subsidy (UCTS)
    - Recycling Content Standards

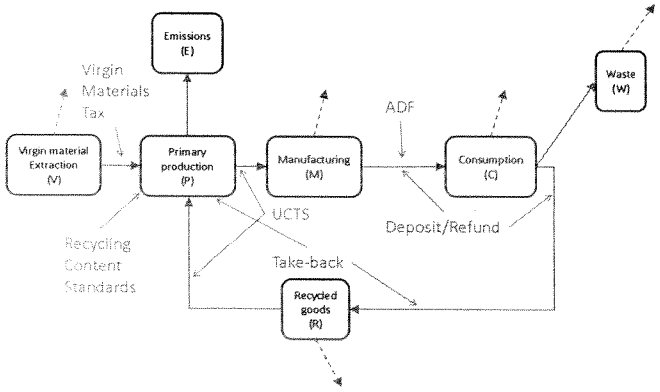
EPR diagram



EPR diagram - Goals



EPR diagram - Policies



Summary of economic literature on EPR

- EPR literature is still relatively small
  - Some similarities with existing literature on environmental regulation
  - Important differences however warrant attention to the specifics of EPR
- 4 major areas considered
  - Policy choice
  - Environmental effectiveness
  - Cost-effectiveness
  - Free-riders, orphan products and trade concerns

Policy Choice

- Summary of conclusions from the literature
  - Deposit/Refund, UCTS, take-back standards are superior to ADF, virgin materials tax, content standards
  - Policy levels should reflect differences in external costs for different products
  - Collective PROs can take advantage of economies of scale, but create incentives for collusion and market power
  - Most EPR policies create some incentive for Design for the Environment (DfE)
  - Policies that directly target "recyclability" will provide stronger incentives for DfE - More empirical research needed

Environmental and Cost Effectiveness

- General consensus that EPR policies "work" in terms of achieving environmental goals
  - More empirical evidence is needed
    - Concerns about confounding factors and need for careful identification of policy effects
- Empirical studies of market-based policies generally confirm the superiority of deposit/refund relative to ADF
  - Lack of academic studies of cost-effectiveness of take-back and recycling content standards
    - Important to distinguish between accounting costs and economic costs
    - Deadweight loss and economic costs of EPR policies poorly understood

Free riders, orphan products, trade

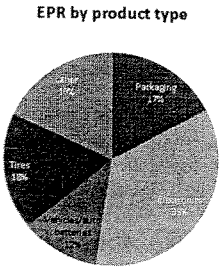
- Little academic work in these areas applied specifically to EPR policies
- Related work suggests:
  - Free-riding – common problem for public goods, need for institutional or regulatory efforts to ensure compliance
  - Orphan products – bonding may be a potential solution
  - Trade – policies applied equally to domestic and foreign firms should generally a) avoid economic distortions and b) be consistent with WTO rules

EPRs in practice – 385 policies surveyed

- Collection of a wide range of EPR policies in place around the globe
  - Most comprehensive list in terms of countries and policies collected
  - Undoubtedly have missed some policies
  - Fortunately, the qualitative results that follow have changed very little as the collection of policies has grown

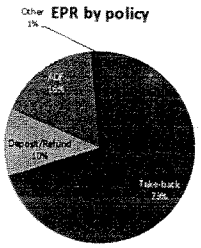
EPRs in practice – product type

- Electronics is the most common EPR product



EPRs in practice – policy

- Take-back most common type of EPR policy (by far)



EPRs in practice – 358 policies with dates

- Over two-thirds of EPR policies implemented since 2001