-提供有關城市固體廢棄物有機物管理處理的科學為基目標與使用者友善資訊
-北美有機物管理領域所學到的課題與專家知識
下載網站: http://www.ec.gc.ca/gdd-mw/default.asp?lang=En&n=3E8CF6C7-1

Environment Canada Environnement Canada

Canada

Selected developments on waste management in Canada: Roundtable Discussion

OECD WPRPW-4 (12-14 Nov. 2013)
Paris, France
Presented by: Jacinthe Séguin
13 November 2013

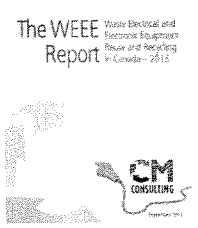
2010 Waste Management Industry Survey: Business Sector and Government Sector

- Statistics Canada released the 2010 survey of waste management practices of businesses and government sectors in Canada in 2013
- The report presents information on the financial characteristics and waste management activities undertaken by companies, local governments and public waste management bodies
- Survey questionnaires were mailed to a total of 1,353 businesses and local governments. The overall response rate was 75% for the business sector and 87% for the government sector.
- Highlights:
  - Decrease by 4% in the amount of non-hazardous waste sent to private and public waste disposal facilities between 2008 and 2010
  - Amount of waste diverted to recycling or organic processing facilities decreased by 3% from 2008 to 8.1 million tonnes (236kg per person) in 2010
  - Operating revenues for governments from the provision of waste management services reached $2.3 billion in 2010
  - Revenues of Canadian businesses providing waste management services increased 2% from 2008 to nearly $6 billion in 2010

Environment Canada Environnement Canada

Canada

The WEEE Report: Waste Electrical and Electronic Equipment Reuse and Recycling in Canada – 2013



- Released in September 2013
- Describes the management of end-of-life electronics in Canada and offers important considerations for planning for the future
- Outlines specific details of WEEE programs in Canadian provinces, including program costs, performance measurements, and responsibility

Electronic copies available at: http://www.cmconsultinginc.com/2013/09/cm-consulting-releases-canadian-weee-report-2013-waste-electrical-electronic-equipment-reuse-recycling-canada/

Environment Canada Environnement Canada

Canada

CEC Workshop for Canadian E-refurbishers & E-recyclers on environmentally sound management

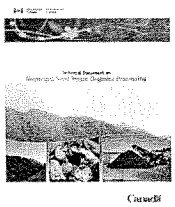
- Hosted by Canada in June 2013
- The Commission for Environmental Cooperation (CEC) is a joint collaboration among Canada, Mexico and the United States
- Topics discussed include the importance and benefits of ESM, implementing ESM, assessing and managing risks, etc.
- Online training materials for small and medium-size enterprises (SMEs)
  - Available online at: http://www.cec.org/Page.asp?PageID=1226&SiteNodeID=1282
  - An online training module will be available in January 2014 from the CEC website

Environment Canada Environnement Canada

Canada

Technical Document on Municipal Solid Waste Organics Processing

- Released in 2013 by Environment Canada
- Provides science-based, objective and user-friendly information on municipal solid waste organics management processing
- Lessons learned and expert knowledge in the field of organics management across North America



Available online at: http://www.ec.gc.ca/gdd-mw/default.asp?lang=En&n=3E8CF6C7-1

Environment Canada Environnement Canada

Canada

日本根據 EPR 概念的家電回收法

1. 內容：家電回收法在日本是延長生產者責任(Extended Producer Responsibility, EPR)應用的特殊案例
   - 法律架構
   - 性能(資源循環與危險廢棄物的管理)
   - 系統的管理
   - 對環境設計的貢獻
   - 計畫產生的多重效益
   - 結論
   - 兩個案例研究
2. 法律架構-建立良好的物質循環社會

   基本環境法
   - 基本法為建立良好的物質循環社會
     - 廢棄物管理和公共清潔法
     - 促進資源有效利用法
       - 容器和包裝再利用法
       - 小型電子產品回收法
       - 家用電器回收法
       - 營建材料回收法
       - 廚餘回收法
       - 報廢汽車回收法
3. 該制度特色
   - 主要生產者分成 A、B 兩組以滿足 EPR 要求，A 組利用現有的回收人員，和 B 組建立新的回收設施。
   - 全日本共有 49 個指定回收工廠及 300 個指定收集點
4. 制度的執行力
   - 2012 年總回收量：468000 噸
   - 2012 年人均回收重量：3.7 公斤
   - 2001~2012 回收總量：1.6 億單位
   - 日本二手家電物流的估計
     - 依回收法經官方途徑回收約 50%
     - 國內再利用市場或非正式廢料市場約 20%
     - 以產品再利用輸出或以回收為最終目的而當成廢料輸出約 30%
5. 對環境設計的貢獻
   - 回收義務-操作和管理回收系統
   - 回收工廠與製造商之間的定期訊息交換與互動
   - 分享拆解技術的資訊
   - 由製造商協會出版指引

- 企業的企業社會責任公關活動

6. 治理機制實例

日本環境省及經濟、貿易和工業部組成聯合專家小組，自 2001 年起已舉辦超過 25 次小組會議

- 有計畫的蒐集回收成果數據
- 反映利益相關者的意見
- 對於有效的收集之建議
- 調整回收費
- 設定目標
- 透過網路公開會議上的互動資訊

7. 2006~2007 年利益相關者在審查小組評估及回顧該制度的意見

製造商：

- 分工明確
- 提供製造商環保設計的動機正發揮良好的功效

零售商：

- 使物流更有效率
- 設置適當的回收費用及提升訊息揭露
- 擴大項目涵蓋範圍至液晶電視

消費族群：

- 回收費的制度更透明
- 為方便在購買時支付回收費用
- 擴大項目涵蓋範圍

8. 多重利益

社會利益：藉由移轉笨重廢棄物為可回收物預估總成本約降低 54 億日圓

溫室氣體減排：全球環境戰略研究所已執行生命週期評估系統並獲得結論，相較於用原生材料製造，透過資源回收則可使溫室氣體顯著減量

9. 結論

- 家電回收法已被證明可成功實現廢電子電機設備(Waste Electrical and Electronic Equipment, WEEE)指令的健全環境管理和適當的資源回收，以及技術創新的目標。
- 透過引入 EPR 原則，此政策已成功闡明，利益相關者間的角色及成本分擔。大多數由地方政府承擔管理的 WEEE 實質責任已成功轉移到生產者上。
- 這促進信息流動(從回收者回到製造商)，貢獻更好的環境設計。該制度的設計，重點在於實質的責任，可為其他國家提供有益的經驗參考。
- 即便消費者在延期付款制系統下支付回收費用，估計廢電子電機設備(WEEE)中有超過 50%在此制度下循環回收。

- 其餘的挑戰包括如何進一步增加收集率，和減少目前因不當管理所造成的廢電子電機設備之數量，以及如何對於在此制度外進行不正當管理和回收的企業進行更嚴格之管制。
- 此外仍然存在回收費如何被使用的透明化問題。為獲得消費者的信任，更透明化是必要的。

Home Appliances Recycling Act Under the EPR Concept in Japan(Enactment 1998-, Full implementation 2001-)

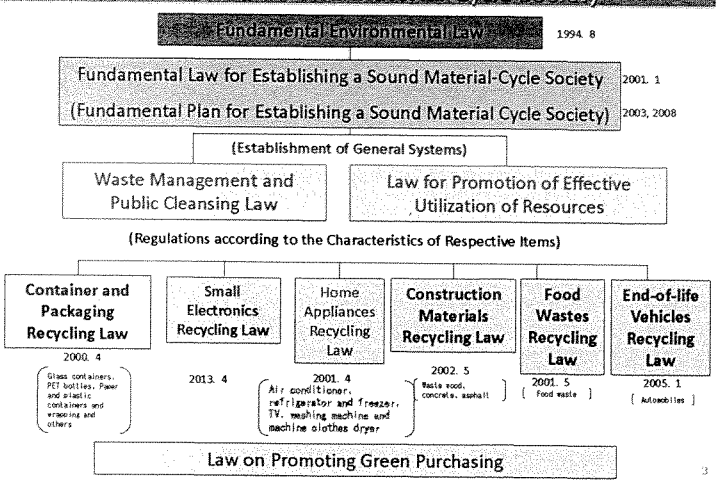
A case study of EPR Application in Japan

Dr. Yasuhiko Hotta
Area Leader/Senior Policy Analyst
Sustainable Consumption and Production Area
Institute for Global Environmental Strategies (IGES)

Contents

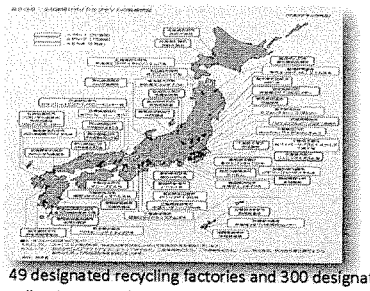
Home Appliance Recycling Act is a unique case of application of EPR in Japan

1-1. Legislative Framework to Establish a Sound Material-Cycle Society



1-2 Characteristic of the system

Major producers are divided into two groups to fulfill EPR-requirements (Group A and B) .Group A to use existing recyclers and Group B to establish new recycling facilities. And two PROs were established.
(physical and financial responsibility)



49 designated recycling factories and 300 designated collection point (stock yard) based on area-coverage

Recycling Fee(USD/Unit):
Different recycling fee for different manufactures. But leading ones set uniform fee.

FY		2013
Air conditioners		15.75
TV sets	16 inch~	28.35
	~15 inch	17.85
Refrigerators	171 L~	48.30
	~170 L	37.80
Washing machines		24.20

Post-consumption recycling fee
Consumer's responsibility

2. Performance of system

Amount of collection × 1,000Unit)

FY		2012
Air conditioners		2,359
TV sets	CRT	2,282
	LCD	491
Refrigerators		2,919
Washing machines		3,145
Total		11,196

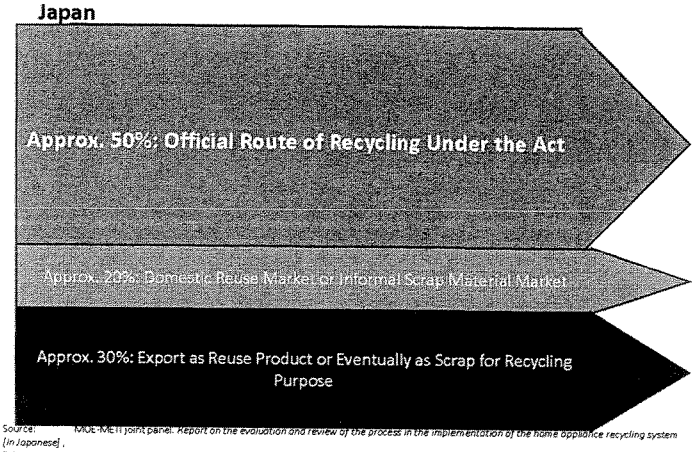
Total weight of recycling: 468,000t(FY2012)
Per Capital weight for recycling : 3.7kg(FY2012)
Total amount of recycling (2001～) : 160million-unit

Recycling rate for collected items

		Target		Achievement
		2001-2008	2009-	2012
Air conditioners		60	70	91
TV sets	CRT	55	55	82
	LCD	-	50	87
Refrigerators		50	60	80
Washing machines		50	65	86

※Materials not recycled
Mixed plastics metals not suitable for recycling, urethane foam, CRT glasses, waste oil, CFCs/HCFCs

Estimate of Material Flow of Used Home Appliances in Japan

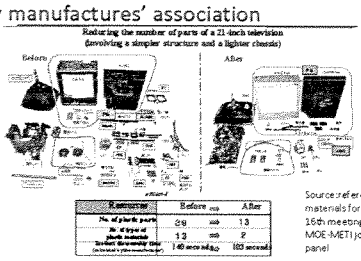


Source: METI-MLIT joint panel. *Report on the evaluation and review of the process in the implementation of the home appliance recycling system [in Japanese]*, February 2008.
http://www.aeha.or.jp/recycling_report/pdf/kadenrenji24.pdf
p.61

3. Contribution to DfE

- Obligation of recycling→Operation and management of recycling system
- Regular information exchange and interaction between recycling plant and manufacturers
- Some cases of engineers/designers of manufacturers posted at recycling plant
- Sharing information on technologies for dismantling
- Publication of guideline by manufactures' association
- PR for CSR activities of manufacturers

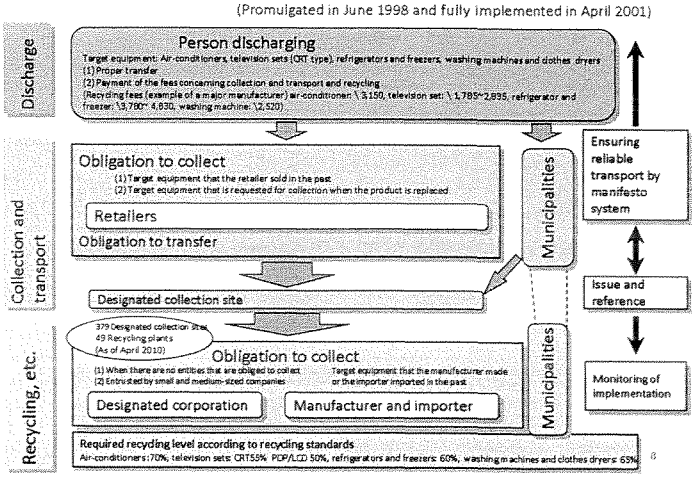
Promotion of DfE



Source:reference materials for the 16th meeting of the MOE-METI joint panel

4. EPR system under Home Appliance Recycling Law

(Promulgated in June 1998 and fully implemented in April 2001)



4-1. An example of governance mechanism

Joint Expert Panel of Ministry of the Environment of Japan and Ministry of Economy, Trade and Industry

Panel meeting has been organized more than 25 times since 2001.

- Data gathering on performance of recycling under the scheme
- Reflecting opinions from stakeholders including manufactures association and consumers
- Recommendation for effective collection
- Revision of recycling fee
- Target setting
- Interactions at the meeting is publically open information accessible via web.

4-2. Stakeholders' opinion at Joint Panel during evaluation and review of the system during 2006-2007

Manufacturers
1. Clear division of responsibilities among stakeholders worked successfully.
2. Incentive for DfE is functioning well.
3. Deferred payment system is optimal
4. Items coverage should be limited to those delivered by retailers to consumers

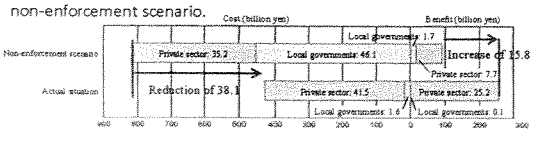
Retailers
1. Introduce ADF
2. Make logistics more efficient
3. Set an appropriate recycling fee and promote information disclosure
4. Expand the items coverage to LCD TVs

Consumer groups
1. More transparency for recycling fee setting
2. Payment of recycling fee at purchase for convenience
3. Wider coverage of items

→ ADF was not introduced(not enough time to discuss the concrete system, weak logic for complete revision of the system). Stricter regulation of illegal dumping and improper export. More transparency in recycling fee setting

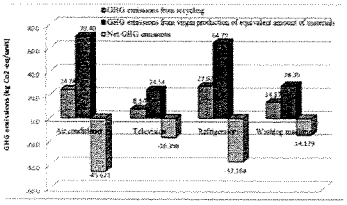
5. Multiple benefits

Social benefit: Effect of waste reduction by turning bulky wastes into recyclables is estimated as 5.4billion/yen total cost reduction and benefit is generated compared to non-enforcement scenario.



Source:reference materials for the 11th meeting of the MOE-METI joint panel

GHG Reduction: IGES has conducted life cycle assessment of recycling system and concluded that there is a significant GHG reduction effect through resource recovery compared to virgin material production.



Source:IGES (2013) Policy research on environmental economics for FY2012.

6. Conclusion

- Home Appliance Recycling Act **has proved successful** in terms of **achieving the original goals of both the environmentally sound management of WEEE and proper resource recycling**, as well as technological innovation.
- By introducing EPR principle, this policy has successfully **clarified the role sharing and cost burden sharing among stakeholders**. Most of **the physical responsibilities** for managing WEEE borne by local governments have successfully been **transferred to the producers**.
- This has facilitated the **flow of information from the recyclers back to the manufacturers**, contributing to better **Design for the Environment** (DfE). The system design centering on **physical responsibilities** can provide **useful lessons** for other countries.

6. Conclusion

- It is worth noting that **more than 50% of the total WEEE generation** is estimated to be **collected for recycling under this system**, even though consumers have to pay the recycling fee under a deferred payment system.
- The remaining challenges include **how to increase the collection rate** even further and reduce the amount of WEEE that is being managed improperly, as well as **how to impose stricter controls of businesses conducting improper management and recycling outside this system**.
- In addition, there remains a **transparency problem regarding the issue of how the recycling fee revenues are being used**. Greater transparency is needed in order to gain the trust of consumers.

Other case studies under preparation by Japanese experts

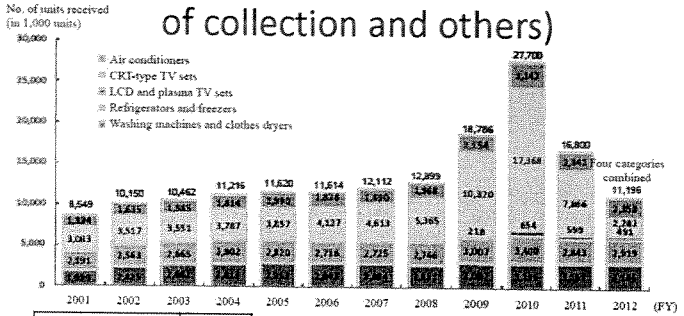
- **Packaging and containers recycling act (Enactment 1995-, Full implementation 2000)**
  by Dr. Hajime Yamakawa, Kyoto Prefectural University
- **Small secondary batteries (2001～)**
  by Dr. Tomohiro Tasaki, National Institute of Environmental Studies

IGES

Thank you very much for your attention

www.iges.or.jp
hotta@iges.or.jp

2-1. Performance of system (Amount of collection and others)

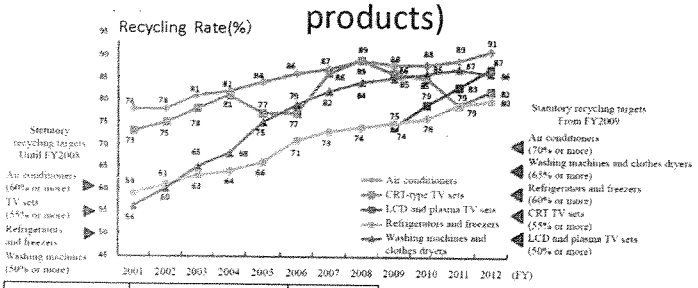


FY		2012
Air conditioners		2,359
TV sets	CRT	2,282
	LCD	491
Refrigerators		2,919
Washing machines		3,145
Total		11,196

Amount of collection × 1,000Unit)

Total weight of recycling: 468,000t(FY2012)
Per Capital weight for recycling : 3.7kg(FY2012)
Total amount of recycling (2001～) : 160million-unit

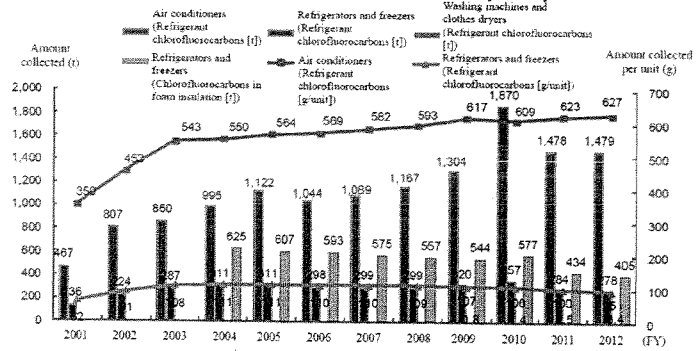
2-2.Performance (recycling rate for collected products)



		Target		Achievement
		2001-2008	2009-	2012
Air conditioners		60	70	91
TV sets	CRT	55	55	82
	LCD	-	50	87
Refrigerators		50	60	80
Washing machines		50	65	86

※Materials not recycled
Mixed plastics metals not suitable for recycling, urethane foam, CRT glasses, waste oil, CFCs/HCFCs

2-3. Performance (Amount of CFCs collected and destroyed)



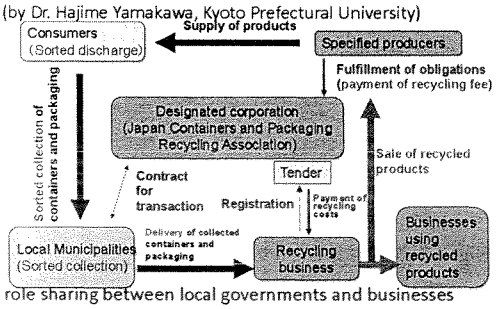
FY2012		t	g/Unit
Air conditioners	coolant	1479	627
Washing machines	coolant	278	95
	foam insulation	405	

Recovery of chlorofluorocarbons

Other case studies currently under preparation by Japanese experts

- **Packaging and containers recycling act (Enactment 1995-, Full implementation 2000-)**

(by Dr. Hajime Yamakawa, Kyoto Prefectural University)

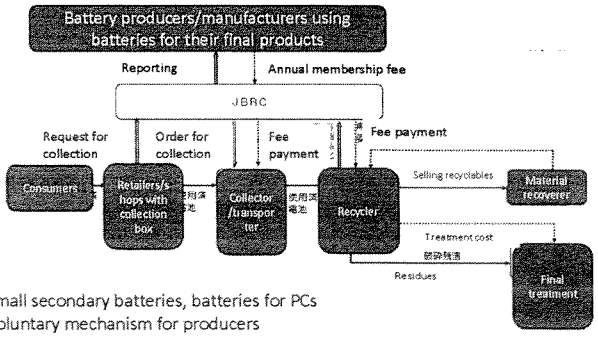


- Clear role sharing between local governments and businesses
- Contribution to extended life of final landfill site by strict and comprehensive source separation
- Increase in amount of recycling

Other case studies currently under preparation by Japanese experts

- **Small secondary batteries (2001～)**

(by Dr. Tomohiro Tasaki, National Institute of Environmental Studies)



- Small secondary batteries, batteries for PCs
- Voluntary mechanism for producers
- Achieved recycling target
- How to cope with expanding use of secondary batteries for automobiles

中國的電子廢棄物處理基金

1. 背景：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 億單位，大型和對環境產生較低問題的電子廢棄物拆解為再利用材料。
2. 步驟：
    1. 2009 年引用延長生產者責任(Extended Producer Responsibility, EPR)原則於其電子電器廢棄物徵收條例，其中生產商和電子及電器產品進口商必須根據單位數量支付基金，但並不包括產品輸出。
    2. 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電子電機設備(Electrical and Electronic Equipment, 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。
    3. 環境保護部(Ministry of Environmental Protection, MEP)是回收機關，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。
    4. 包含五種常見的家用電子和電器家電：電視、冰箱、洗衣機、空調、個人電腦。
3. 費率：

產品或電子廢棄物/費率	收取費率/(人民幣/單位)	補貼費率/(人民幣/單位)
電視	13	85
冰箱	12	80
洗衣機	7	35
空調	7	35
個人電腦	10	85

4. 申請補貼的要求

    通報省級環保部門，再由省級經濟夥伴關係協定驗證信息，背書後並將其發送到環境保護部。環境保護部檢查數據並提供給財政部，由財政部發放補貼。需要資料：電子廢棄物入出站記錄、回收再利用及電子廢棄物處置工作記錄、可被當作原料或殘渣再利用的回收產品之入出站記錄，也包含電子電器產品製造商自行建立的回收業務。
5. 更多的考量
    1. 擴大廢棄物種類
    2. 更有效處理高價值的廢棄物
    3. 推廣環保設計
    4. 擴及全球

E-waste Disposal Fund in China

Hou Guiguang
CAEP

Background

- In 2010, the total production of television, refrigerator, air conditioner and personal computer exceeded 546 million units
- By 2020, it is estimated that e-waste in China will grow to 137 million units
- Large scale and relatively low environmental concern of E-waste dismantling as materials recycled

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

Steps

- *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 the 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

- Producers and importers of electronic and electrical products must pay to the fund according to the number of units they produced or imported except those products which are exported. The producers declare and pay to the fund quarterly via the authority of taxation, and the importers pay to the fund when declaring their import products to the customs via the authority of customs
- The recyclers who are certified by the authorities and can provide all the necessary evidence for the e-waste they recycled or disposed of can apply to the fund for the subsidy.

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.

Which EEE included

five common household electronic and electrical appliances were covered

- Televisions
- refrigerators
- washing machine
- air conditioners
- personal computers

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

Criteria to certify a qualified recycler

- b. Central monitoring systems and facilities to deal with emergencies and provide first aid. The central monitoring system should be able to record the operation of the workshops 24 hours continuously.
- c. Compliance with environmental management regulations. Waste water discharges, waste gas and noise emissions must comply with the standards of pollution emissions, and solid waste must be sent to competent companies or landfill sites to be disposed of appropriately.
- d. A sufficient number of technicians with qualifications in occupational safety and health, quality control and environmental protection.

Information publication procedure for 10 days

Requirements to apply for subsidy

Report to the province-level environmental protection authorities; province-level EPAs verify the information, endorse and send it to MEP. MEP checks the data and provide it to MoF, MoF makes the disbursement of the subsidy.

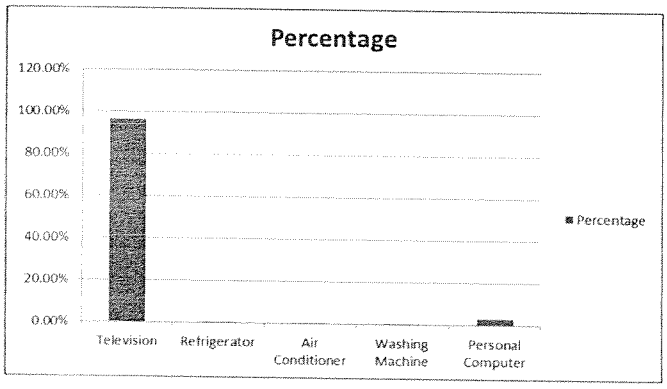
- a. Inbound and outbound record of the e-waste;
- b. Recycling and disposing work record of the e-waste (working process must be recorded 24 hours a day and the record must be kept for at least one year for check);
- c. Inbound and outbound record of recycled products that can be reused as raw materials and residues;
- d. Voucher of sale of recycled products or that of residue disposed of.

Producers of EEE to establish their own recycling operations is also included

Certified companies

No.	Area	Enterprises	No.	Area	Enterprises
1	Beijing	1	17	Hubei	5
2	Tianjin	4	18	Hunan	4
3	Hebei	0	19	Guangdong	4
4	Shanxi	3	20	Guangxi	1
5	Neimenggu	0	21	Hainan	0
6	Liaoning	1	22	Chongqing	2
7	Jilin	2	23	Sichuan	5
8	Heilongjiang	1	24	Guizhou	2
9	Shanghai	4	25	Yunnan	0
10	Jiangsu	8	26	Xizang	0
11	Zhejiang	4	27	Shan'xi	0
12	Anhui	0	28	Gansu	1
13	Fujian	2	29	Qinghai	0
14	Jiangxi	4	30	Ningxia	0
15	Shandong	4	31	Xinjiang	1

Case study



More considerations

- Extend the kind of waste
- More efficiency to those high valued wastes
- Promote the environmental design
- International wide

THE END

THANK YOU!

韓國食物廢棄物管理

食物廢棄情形：

食物準備：57%, 剩餘：30%, 購買但未煮：9%, 煮了但未食：4%

韓國食物廢棄物占城市固體垃圾(MSW)的 28%

食物廢棄物回收：

-13,537 噸/天食物廢棄物，95.3%被運至回收再利用設施

-目前共有 241 座食物廢棄物再利用設施，94 座為公營的, 147 為私營的
(114 座飼料生產設施+127 座堆肥設施)

-在設施中，食物廢棄物被打碎及壓擠以自固體廢棄物中分離出滲出水，乾燥後做成肥料及動物飼料。

-韓國 80%的食物廢棄物為水份，回收過程中會成為食物廢棄物滲出水。滲出水會被堆肥或最終被送入污水處理系統。

食物廢棄物減量：

-2013 年 6 月實施依體積/重量計算的食物廢棄物收費系統

-廢棄物管理法第 14 條：各省/郡/市可隨袋徵收垃圾清除費，食物廢棄物收費可根據廢棄物重量計算

目前平均收費約 40 韓元/公斤

收費方式： 射頻識別(RFID)系統、代幣/貼紙、標準垃圾袋

RFID：2011 及 2012 年共有 17 個市政府試行

收費方式優缺點比較：

	初始設施成本	優點	缺點
RFID	175 萬韓元/桶	準確、使用者友善、先進資訊管理	高初始成本
代幣/貼紙	4500 韓元/3L	低成本	不方便
塑膠袋	150 韓元/5L	最低初始成本	低回收性 2015 年 6 月前沒有

目前共有 **138/144** 個 **Si(市?)/Gu(區?)** 採用上述收費方式

全國實行延遲，因有異議以及某些地方政府的低財政獨立率

Food Waste Management in Korea

2013. 11. 13.

MOE 환경부

Food waste is

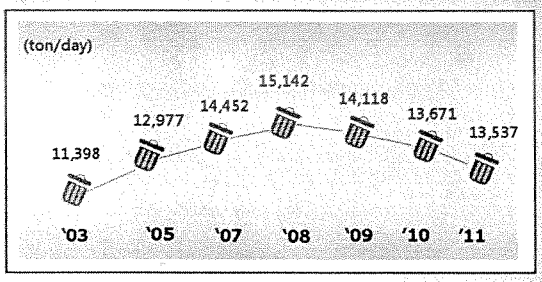
Generated during food preparation
57%

Leftover food
30%

Purchased but uncooked food
9%

Cooked but uneaten food
4%

Food waste generation in Korea



Five million tons/year, 28% of total MSW

Food waste Recycling

- Of 13,537 tons/day food waste, 95.3% is transported to recovery facilities.
- In Korea 241 food waste recovery facilities are operating, 94 are public facilities and 147 are privately owned.

114 Feedstuff production facilities + 127 Compost facilities

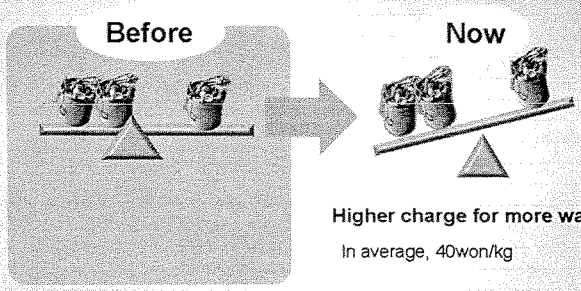
- In the facilities, food waste is crushed and press screwed to separate leachate from solid waste, and then dried to make fertilizer and animal feedstock.
- 80% of Korean food waste is water, and generated as food waste leachate in the process of recycling. The leachate is composted or ends up in sewage disposal system.

Food waste Reduction

- Weight/Volume based food waste fee system in effect since June 2013.
- Waste Management Act

Article 14 (Disposal of household waste)
④ The governor of a special self-governing province or the head of Si/Gun/Gu may collect service charges for collection, transportation, and disposal of household wastes. The charge should be collected by selling standard garbage bags according to the rate of charge prescribed in municipal ordinances. Food waste charge may be measured by the weight of the waste.

What is volume/weight based food waste fee system?

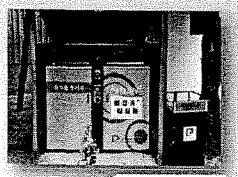


Higher charge for more waste

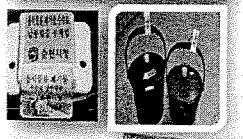
In average, 40won/kg

Charging methods

RFID System
(Radio Frequency IDentification)



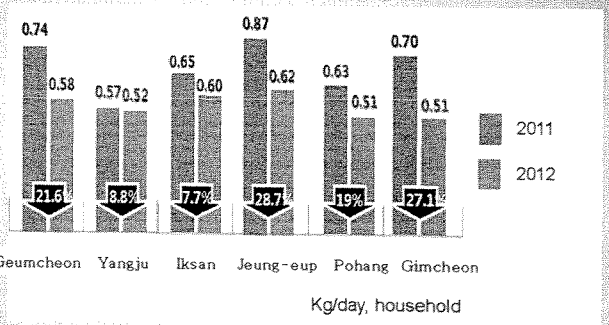
Chip, Sticker



Standard garbage bag

RFID pilot projects achivement

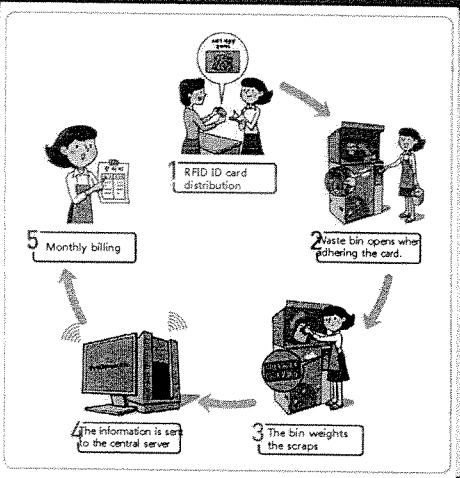
17 municipalities participated throughout 2011 and 2012.



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/3ℓ)	·Low cost	·Discomfort
Plastic bag	150 (won/50ℓ)	· Lowest initial cost	·Low recyclability · Not available since June 2015

RFID Charging process



Charging methods adopted by municipalities

As of October 2013, 138/144 Si/Gus are charging food waste.

		Now	2014
RFID		▪ 28 municipalities (Si, Gu)	▪ 67
Sticker/Chip		▪ 89	▪ 62
Standard garbage bag		▪ 21	▪ 15

Nation wide implementation is delayed because of dissent and low financial independence rate of some local governments

芬蘭廚餘計畫

國家層級：

「政府決策原則」：政府採購單位須在所有公共採購時遵守下列目標：
在機構廚房：2015 年前供應食物的 10%須是有機的, 2020 年前 20%須是有機的
機構餐飲服務須致力於系統性地減少食物廢棄物與改善能源效率。

全國性組織：

物質效率服務中心：License to eat! (許可你吃)方案，

網站：www.saasyoda.fi：

-食譜搜尋：找出可以利用使用者冰箱裏有的材料或食物的食譜
-菜量規劃器
-訣竅
-食物廢棄物相關事實

社區食物分享實驗先導計畫：

實驗由赫爾辛基社區的住房管理公司進行，看是否能藉由與鄰居分享多餘的食物達到減少食物廢棄物的目的。食物被置放於一冷窖中分享，200 位住民置放新鮮蔬果、未開過之包裝食物、或當天煮好的食物於其中。品項資訊藉由臉書及部落格傳送出去。

結果：由居民及當地超商分享的食物幾乎完全被取走享用，然而臉書與部落格並非是有效率的溝通管道，因為所有居民都沒有使用它們。住房管理公司發現此想法非常有用，並願意在先導計畫結束後由他們自己持續進行。

市政府層級：

赫爾辛基地區環境服務機關：It's smart with less waste-campaign (較少廢棄物較聰明宣導計畫)

網站：www.hsy.fi

-購買食物訣竅
-烹煮與貯存食物訣竅
-剩餘食物食譜

研究：

2012 年所進行的芬蘭食物鏈中食物廢棄物數量與成分調查
2013 年所進行的主要生產食物廢棄物調查

Food waste initiatives in Finland

Tarja-Riitta Blauberg
OECD WPRPW Meeting
12-14.11.2013

Food waste initiatives

- State level:
  - Government Decision-in-Principle on the promotion of sustainable environmental and energy solutions (clen tech solutions) in public procurement
- National organisations
  - Material efficiency service centre (Motiva):
    - Licence to eat! –project:
    - Website
    - Service design pilot
- Municipal level: Helsinki Region Environmental Services Authority
  - It's smart with less waste –campaign:
  - Website
  - Advertisement campaign
- Studies

Government Decision-in-Principle on the promotion of sustainable environmental and energy solutions in public procurement

- Government Decision includes also measurements concerning food waste:

"Government procurement units shall comply with the following goals in all public procurements:

...

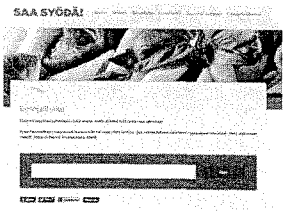
Kitchens and food services shall procure foodstuffs that are in accordance with nutritional recommendations, naturally organically produced, rich in vegetables or seasonal. In institutional kitchens, 10% of the food served shall be organic by the year 2015 and 20% by the year 2020. In institutional food services, an effort shall be made to systematically reduce food waste and improve energy efficiency."

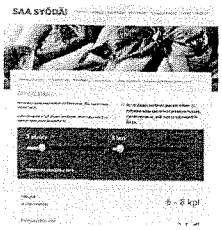
...

Licence to eat! Website

www.saasyoda.fi

- Recipe search -> Finds recipies containing the ingridients or left overs that users have in their refrigerator
- Portion planner
- Tips
- Facts about food waste





Living lab/service design pilot Neighbours share surplus food in Helsinki

A unique experiment was being launched at a housing company to find out whether it is possible to reduce the amount of household food waste by sharing any excess food with neighbors.

Food was shared in the cold storage cellar has been set up

200 resident were able to stock with fresh vegetables and fruit, unopened food packages that have not reached their 'best by' date or dishes that have been prepared the same day.

Information about the food left in the food sharing point was communicated through Facebook and a blog

Results: almost all food left to the share point by residents and local grocery store was taken and used. However Facebook and blog was not efficient communication channel, since all residents didn't use them.

Housing company found the concept very useful and they wanted to continue it after the piloting period by themselves.

10 step instructions how to start sharing surplus food in your own housing company.

Licence to eat! event in Helsinki 6.11.2013

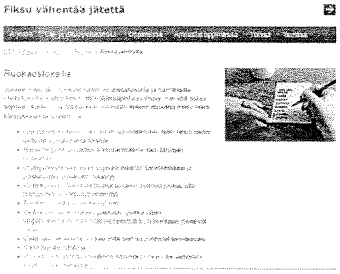
Awareness raising campaign followed "Feeding the 5000" concept
Great media coverage was accomplished.

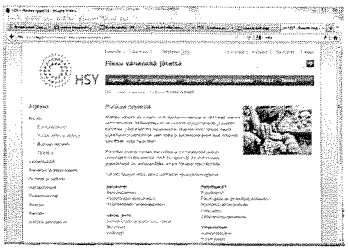
Food was made from grocery stores' leftovers.

It's smart with less waste-campaign

www.hsy.fi

- Tips for food shopping
- Tips for cooking and storing food
- Food from leftovers: recipes





Studies

- Food Waste Volume and Composition in Finnish Food Chain, MTT Agrifood Research Finland, 2012

Chart 1. Avoidable food waste in Finnish food supply chain.

Sector	Households	Food Services	Retail Sector	Food industry	Total
Total million kg/year	120–160	75–85	65–75	75 -140	335–460
Sector	Households	Food Services	Retail Sector	Food industry	Total
Per person kg /year	22–30	14–16	12–14	14-26	62–86

- Food Waste in the primary production, Nordic Council of ministers, 2013

德國食物廢棄物減量-狀況及目前行動

德國食物廢棄物情形：

估計：0.168 億噸/年, 約 205 公斤/居民/年(包括整個食物的生命週期，由農業生產至私人家戶)，約 40%是來自私人家戶

BMELV 研究：收成後糧食損耗：(不包含用於其他用途如飼料、能源供應、有機肥等)

小麥 ~3.2 % /年

馬鈴薯 ~5.0 % /年

蘋果 ~11 % /年

紅蘿蔔 ~4.2 % /年

目前(10/2012-09/2014)德國聯邦環境署執行的食物廢棄物減量相關研究計畫：

-找出不同生命週期階段特定食物廢棄物產生的原因

-評估食物廢棄物的環境影響

-根據食物廢棄物的環境影響發展最佳作法

計畫的目前狀況：

指標討論：對土地與土壤的影響、水使用、化學品/殺蟲劑使用、對生物多樣性的影響、潛在溫室氣體產生量

後續步驟：選擇案例研究以作生命週期評估、評估

德國廢棄物源頭減量計畫(2013/7/31)，食物廢棄物部分：

目標：

-推廣措施來極小化價值鏈每一階段的食物廢棄量

具體減廢措施：

-零售商與餐飲業者的自願性合約

-協調行動來極小化食物廢棄量

-在學校執行永續、資源保護的廢棄物源頭減量觀念

德國食物廢棄物減量計畫案例：

- "Too good for the bin"(丟進垃圾桶浪費) (-https://www.zugutfuerdietonne.de/
- "Foodsharing"(食物分享) - http://foodsharing.de/
- "Second Bäck" ("yesterday's pastry") (昨日糕點)www.trenntwende.de
- "culinary misfits" (烹飪不適)- http://culinarymisfits.de

Umwelt Bundes Amt
Für Mensch und Umwelt

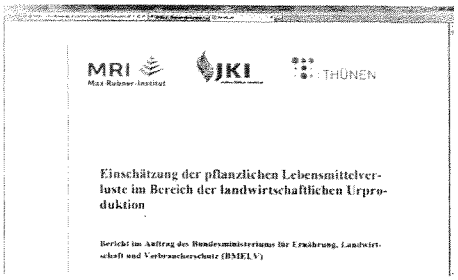
Prevention of food waste
– situation and current activities in Germany -

4th WPRPW Meeting 12.-14. November 2013,
OECD Conference Centre, Paris

Foodwaste in Germany

- collect/verify data on food waste in Germany already presented in other studies (i.e. BMELV, Kranert et al.; EU-studies, FAO);
- estimated amount of food waste:
  ~ 16,8 million t per year / ~ 205 kg per inhabitant * year
  → taking into account the whole life cycle (from agricultural production to private households)
- approx. 40 percent from private housholds

BMELV study on "Post-harvest losses in Agriculture" (May 2013)


MRI Max Rubner-Institut JKI THÜNEN

Einschätzung der pflanzlichen Lebensmittelverluste im Bereich der landwirtschaftlichen Urproduktion

Bericht im Auftrag des Bundesministeriums für Ernährung, Landwirtschaft und Verbraucherschutz (BMELV)

https://www.fh-muenster.de/fup/mad/media/2013/files/5819_Datei_1.pdf

What is meant by „post-harvest" losses?

Describes the loss of food within the phase of initial production, covering as well agricultural production of food and the upstream phase ahead of food processing (including gathering, sorting and packaging).

Scope, approach and key findings of the study

- The study identified post-harvest losses according to four different agricultural products:
  - Wheat ~3,2 % loss/a
  - Potatoes ~ 5,0 % loss/a
  - Apples ~11 % loss/a
  - Carrots ~ 4,2 % loss/a
- agricultural products being used alternatively (as for forage, energy supply, organic fertilizer or products that did not enter the food supply chain due to exigencies of specific trading standards) were **NOT** included

What are the environmental impacts of food waste?

Current research project on food waste prevention in Germany (conducted by UBA [10/2012-09/2014])

- identify the reasons for specific food waste amounts arising at different stages of the life cycle;
- evaluate the environmental impacts of food waste ;
- develop best practice according to the environmental impacts of food waste;

Current status of the project

- Indicators discussed: effects on land and soil; water use; use of chemicals/pesticides; effects on biodiversity; greenhouse gas potential;
- Next steps: selection of case studies for the life cycle assessment; evaluation

German Waste Prevention Programme (31.07.2013)
→ regarding food waste prevention:

objective

- promote measures to minimise food waste at every stage of the value chain

specific waste prevention measures

- voluntary agreement with retail and gastronomy;
- concerted actions to minimize food waste;
- implementation of sustainable, resource-conserving waste prevention concepts in schools

Umwelt Bundes Amt

Examples on initiatives on food waste prevention in Germany

- "Too good for the bin" - https://www.zugutfuerdietonne.de/
- "Foodsharing" - http://foodsharing.de/
- "Second Bäck" ("yesterday's pastry") www.trenntwende.de
- "culinary misfits" - http://culinarymisfits.de

Umwelt Bundes Amt

Initiatives in Germany - "Too good for the bin"

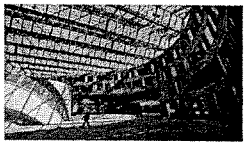
https://www.zugutfuerdietonne.de/

What is it about?

- information
- enabling

Umwelt Bundes Amt

Thank you for your attention!



contact:
susann.krause@uba.de
barbara.friedrich@uba.de

瑞典對潛在環境傷害的補貼

1. 以簡要清單做為第一步，2005 年首次研究，2012-2011 年陸續發布
2. 廣泛定義

   補貼：直接轉讓、長期低利貸款、稅務支出、污染者自付原則

   環境傷害：空氣、水污染、廢棄物及噪音等
3. 重點
   1. 補貼的目的與結構
   2. 次要的財政支出：國家層面的公眾支持、排除基礎失設施與區域支持
4. 資金來源
   1. 預算法案
   2. 財政部稅務開支
   3. 瑞典稅務機關調節稅收
   4. 與大量機關接觸
5. 確定 61 項補貼

   部門別：能源、運輸及農漁業
6. 困境
   1. 複雜的環境
   2. 缺乏共同的定義和方法
   3. 許多補貼缺乏明確目的
   4. 稅收和補貼間的水平關係-與國際間比較瑞典似乎有大量補貼
   5. 不願指出環境傷害
7. 下一步
   1. 更深入的分析：開發方法、確認支持的目的、對改革或可能改革研究其支持及可能的需求
   2. 定期鑑定
8. 目前工作

   國家環保總局制定了測繪和對環境有害的非稅收補貼分析指南。

   該指南：評估反應在補貼所需要考慮的參數提供指導、考慮此領域的國際工作、提供有關當局的支持，以在各自領域內識別和評估其補貼。

Potentially environmentally harmful subsidies in Sweden

Swedish Environmental Protection Agency

Brief inventory, as a first step

- First study in 2005
- Published follow-up in 2010-2011

http://www.naturvardsverket.se/Om-Naturvardsverket/Publikationer/ISBN/6400/978-91-620-6455-6/

Focus:
***Potentially* environmentally harmful subsidies**

Approach Wide definitions

Subsidy
- Direct transfers
- Soft loans
- Tax expenses
- Polluter Pays Principle

Environmentally harmful
- Pollution to air, water
- Waste
- Noise, etc.

Focus

1. Purpose and structure of subsidy
2. Financial costs secondary

- Public support on state level
- Infrastructure and regional support excluded

Sources

- The budget bill
- Inventory of tax expenses, Ministry of Finance
- Tax regulation, Swedish Tax Authority
- Contacts with a large number of authorities

61 subsidies identified

- **Direct and indirect support**
- **Sectors**
  - Energy
  - Transport
  - Agriculture
  - Fisheries

Dilemmas

- The environment is complex => effects of subsidies are complex
- Lack of common definitions and method
- Many subsidies lack a clear purpose
- Correlation between level of taxes and subsidies
  - Sweden may seem to have large subsidies in an international comparison
- Unwillingness to be pointed out as environmentally harmful

The next step

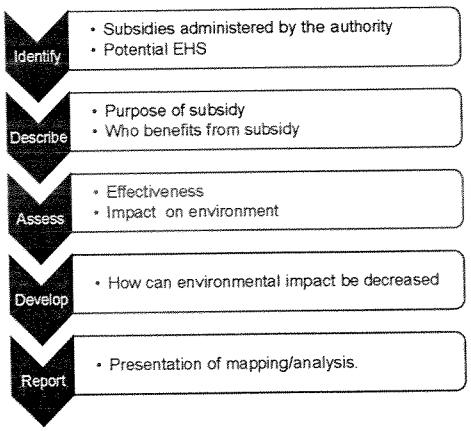
- **Deeper analysis**
  - develop methodology
  - clarify purpose of support
  - examine support and the potential need for reform and the possibility of reform
- **Regular identification**

Current work

SEPA has developed a guide for mapping and analysis of *non-tax environmentally harmful subsidies.*

The guide:

- provides guidance for assessing the parameters that should be considered in the mapping of subsidies
- takes account of international work in the area
- provides support for relevant authorities to identify and assess subsidies within their fields.



Questions?

Tomas Chicote
Email: tomas.chicote@swedishepa.se

For Official Use ENV/EPOC/WPRPW/A(2012)1

Organisation de Coopération et de Développement Économiques
Organisation for Economic Co-operation and Development 11-Oct-2012

English - Or. English

ENVIRONMENT DIRECTORATE
ENVIRONMENT POLICY COMMITTEE

Working Party on Resource Productivity and Waste

DRAFT AGENDA
3rd MEETING OF WPRPW

Paris, 27-29 November 2012

Contact person: Peter Borkey, Tel: +33-1-45 24 13 85; Fax: +33-1-44 30 61 79;
Email: peter.borkey@oecd.org

JT03328425

Complete document available on OLIS in its original format
This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

For Official Use ENV/EPOC/WPRPW/A(2012)1

DRAFT AGENDA

3RD MEETING OF THE WPRPW AND EXPERT MEETING ON SUSTAINABLE MATERIALS MANAGEMENT AND WASTE POLICIES

PARIS, 27-29 NOVEMBER 2012

3RD MEETING OF WPRPW

Tuesday, 27 November 2012			
1.	***Tuesday 27 November 9:00 am***	**Report from the Secretariat** The secretariat will briefly report on the key activities and major developments that have taken place since the last meeting of WPRPW, including: 1. Publication of SMM book and communication plan 2. Case study on critical metals in mobile phones 3. Paper on GHG emissions and the potential to mitigate 4. Plans for work on consumer labels and information schemes in JWPTE and WPEEP	Oral report ***Action required:*** For information
WORK PROGRAMME PRIORITIES IN 2013-14			
2.	***9:30***	**Work on Nanowaste** The secretariat will report about the outcomes of a workshop on nano waste that Germany and OECD jointly held on 9-11 May 2012 in Munich, Germany. The workshop proposed a number of ideas on future OECD work in this area. The working Party will be invited to discuss these ideas and decide about the activities that it wants to develop in 2013-14.	ENV/EPOC/WPRPW(2012)7 ***Action required:*** For decision
	11:00	**Coffee break**	

3.	***11:30***	**SMM case study on construction materials** The secretariat will present draft terms of reference for a first phase of work in 2013-14 that it has elaborated with the help of France and Finland. The Working Party will be invited to discuss the terms of reference.	ENV/EPOC/WPRPW(2012)2 ***Action required:*** For endorsement
4.	***12:00***	**Report to Council on recommendation on Resource Productivity** The secretariat will briefly introduce a draft outline of this report that will report progress in implementing Council Recommendation [C(2008)40] and will be submitted to Council in Q4 of 2013. The Working Party is invited to provide feedback.	ENV/EPOC/WPRPW(2012)2 ***Action required:*** For discussion
	12:30	**Lunch break**	
5.	***14:30***	**Work on economic instruments for sustainable materials management** The session will include the following elements: • Overview of economic instruments for SMM. Which ones should WPRPW be focusing on in its work? • Roundtable discussion on country experience with EPRs. Delegates will be invited to report on: o their experience with the use of EPRs so far, o the key challenges identified, o the key lessons learned on how these schemes can be improved and, o any plans to expand or modify the use of these tools. • Presentation of a project concept on Extended Producer Responsibility schemes [ENV/EPOC/WPRPW(2012)10]	ENV/EPOC/WPRPW(2012)10 ***Action required:*** For discussion and endorsement

	16:30	**Coffee break**	
ITEMS FOR INFORMATION AND EXCHANGE OF EXPERIENCE			
7.	***17:00***	**Food waste under the Committee for Agriculture** Colleagues from the Directorate for Trade and Agriculture will present a project on "Understanding the scope and nature of food waste along the food chain – building a harmonised dataset", currently being launched by the Working Party on Agricultural Policies and Markets (APM) of the Committee for Agriculture. The Working Party will be invited to provide feedback on this project.	Oral Report ***Action required:*** For information and discussion
8.	***17:30***	**OECD Household Survey on Environmental Behaviour** The Secretariat will present of paper on households and waste that uses data from the household survey. The Working Party will be invited to provide feedback on the paper.	ENV/EPOC/WPIEEP(2012)14/REV1 ***Action required:*** For information and discussion
	18:00	**Cocktail**	

Wednesday, 28 November 2012			
ITEMS FOR INFORMATION AND EXCHANGE OF EXPERIENCE			
9.	***Wednesday 28 November 9:00 am***	**Roundtable discussion on recent developments** This session will provide an opportunity for delegations to present recent developments in their national waste management policies. There will be two sessions, the first focussing on Belgium's experience with implementing sustainable materials management, the second focusing on countries' experience with waste prevention (ie in this case waste prevention is defined as strict avoidance of waste generation, qualitative and quantitative reduction at source, and reuse of products. It does not include recycling of materials and separate waste collection). 1. Implementation of SMM in the Flanders Region, Belgium 2. Efforts to develop waste prevention policies in OECD member countries. Delegates will be invited to report on: a. the focus and the set-up of their waste prevention policies, b. the challenges that they are meeting in their implementation, as well as c. the opportunities that they see to further improve waste prevention. d. EU Member States could also report on the status of the Waste Prevention Plans that they are developing for the Waste Framework Directive	Oral reports ***Action required:*** For information and discussion
	11:30	**Coffee Break**	

10.	***12:00***	**Confidential session: Global relations** In its recent meeting, EPOC welcomed the forthcoming more flexible rules for non-member participation in OECD official bodies currently proposed to Council and asked the Secretariat to develop a draft Participation Plan for EPOC's review at the February 2013 EPOC meeting [ENV/EPOC/M(2012)1/ANN1/FINAL]. EPOC also encouraged the EPOC Working Parties and joint bodies to discuss and identify potential partner countries with whom they would like to engage, as well as specific activities and possible forms of co-operation. Delegates are invited to discuss the ways in which WPRPW will be able to engage partner countries in its work, building on [ENV/EPOC/WPRPW(2012)11] and the Secretariat's oral presentation.	ENV/EPOC/WPRPW(2012)11 ENV/EPOC/M(2012)1/ANN1/FINAL Oral report from the secretariat ***Action required:*** For discussion
	12:30	**Lunch**	
11.	***14:30***	**Confidential Session** Russia's accession	
	15:45	**Coffee Break**	
12.	***16:15***	**Confidential Session** Russia's accession	
	17:45	**End of day two**	

Thursday, 29 November 2012			
13.	*Thursday 29 November 9:00 am*	**Confidential Session** Post accession reporting of Estonia and Slovenia	
	10:30	**Coffee break**	
14.	*11:00*	**Confidential Session** Post accession reporting of Chile and Israel.	
	12:30	**End of meeting**	

食物鏈廢棄物管理

貿易與農業總署

WPRPW

OECD

源起：

-2010 年農業部長們要求 OECD 研究限制食物鏈食物廢棄的方法。

-農業委員會於 2011 年開始針對食物廢棄物工作

目標：

-儘可能蒐集與調和 OECD 會員國與中國現存數據

-清查評估食物廢棄物相關政策

計畫時間表：

-2013 年 3 月起初稿流通

-2013 年 11 月修正後草稿送至 APM 以解除機密文件狀態

OECD 食物廢棄物資料庫：

-共收集 31 個國家 3300 數據

-每個數據依下列項目分類：國家及區域、使用的定義、經濟活動、商品或組別、測量單位。

數據：

數據在測量與涵蓋範圍的差異是各國食物廢棄物比較的主要障礙。

定義問題：

有需要為調和各種相抗的定義努力，如：

- 損失與廢棄
- 被廢棄物與廢棄
- 可食與非可食
- 可避免與非可避免 Avoidable and unavoidable
- 人類食用或其他使用如飼料

發現：**數據**

現有有關初級生產、製造與相關服務產業顯示在食物供應鏈的其他部分所產生的食物廢棄物很可觀，須獲得適當關切。

政府行動：
-意識提升計畫
-支持相互合作的民間網絡(生產者、製造者、零售商)
-移除捐獻或回收的障礙...同時保障食物安全。

法規架構：
-涵蓋廢棄物，而非食物廢棄物
-鼓勵源頭減量
-提倡具資源效率廢棄物管理系統
- 使用廢棄物作為資源(肥料、飼料、能源)
- 保護環境

工具:
-分類收集
-收集或棄置費用或稅
-禁止掩埋有機廢棄物
-強制性申報或回收
-給予能源回收財務誘因

食物鏈分析網絡：回收
電力收購能源回收：
-促成日本與英國所需基礎設施與工業的發展
-長期而言並不永續
需要提供能源、飼料與肥料之可行市場，然而引導這些市場發展的政策需要謹慎規劃以確保各政策領域得到平衡的對待。

WASTE MANAGEMENT IN THE FOOD CHAIN

Trade and Agriculture Directorate

Working Party on Resource Productivity and Waste
13 November 2013

OECD
BETTER POLICIES FOR BETTER LIVES

OECD work on food waste

- In 2010 Agriculture Ministers requested the OECD to explore ways to limit food waste in the food chain.
- In 2011 the GGS identified reducing food waste as a means to increase the available food supply and to reduce pressures on resources and the climate.
- CoAg started work on food waste in 2011.

2

Food waste along the food chain

Objectives:

- Collect and harmonise to the extent possible the data that currently exist in OECD member countries and China.
- Take stock of policies related to food waste.

3

Project timeline

- First draft circulated in March 2013.
- Food Chain Analysis Network meeting on 20-21 June 2013.
- Revised draft to APM for declassification in November 2013.

4

OECD food waste knowledge base: data

Country	Ad hoc request	Public sources	Eurostat
Australia	X	X	
Austria	X		X
Belgium	X	X	X
Canada		X	
Czech Republic	X		X
Denmark	X	X	X
Estonia			X
Finland		X	X
France		X	X
Germany		X	X
Greece			X
Hungary			X
Iceland			X
Ireland	X		X
Italy		X	X
Japan	X	X	
Korea		X	

Country	Ad hoc request	Public sources	Eurostat
Luxembourg			X
Mexico	X	X	
Netherlands	X	X	X
New Zealand	X		
Norway	X	X	X
Poland			X
Portugal		X	X
Slovak Republic	X		X
Slovenia	X		X
Spain	X		X
Sweden	X	X	X
Switzerland	X		
Turkey		X	X
United Kingdom	X	X	X
United States	X	X	
China	survey	X	

5

OECD food waste dataset

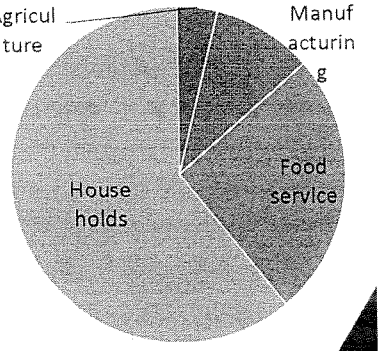
- Approximately 3300 data points for 31 countries were collected.
- Each data point is classified according to the:
  - Country and region
  - Definition used
  - Economic activity
  - Commodity or grouping
  - Measurement unit
  - Year

6

Findings: Data coverage

Data availability on food waste generated at household level is relatively good across OECD countries and time.

Sourced at municipal waste management stage.



7

Findings: Data

Data differences in measurement and coverage are major obstacles to comparability of food waste.

Example: 11 different measurement units are available for year 2010					
%	kcal/cap	kg	tonnes	10^6 kg	10^6 pounds
10^4 tonnes	10^6 tonnes	tonnes/day	tonnes/ 40 weeks	kg/day	kg/week
kg/capita	kg/household	kg/capita/ week	kg/ household/ week	g/capita/day	10^6 national currency
10^9 national currency	national currency	national currency/capita		national currency/household	

8

Findings: Data

Overview of food waste variables at household level for year 2010 (variables of more than two occurrences)

Variables	Occurrences
food waste	59
animal and vegetal waste	42
vegetal waste	38
animal and mixed food waste	33
food waste: avoidable (average weight)	5
food waste: avoidable	4
food loss	3
food waste: unavoidable (average weight)	3
food loss and food waste (minimum - weight basis)	2
vegetal municipal waste	2

9

Definition issue

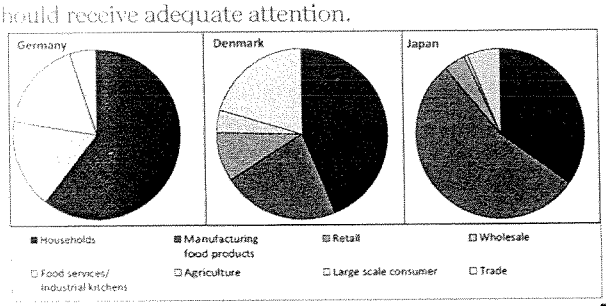
Efforts are needed to reconcile competing definitions:

- Loss and waste
- Wastage and waste
- Edible and inedible
- Avoidable and unavoidable
- Human consumption and other uses including feed.

10

Findings: Data

Available data on the primary, the manufacturing and related services sectors, suggests that food waste generated in other parts of the food supply chain is significant and should receive adequate attention.



11

OECD food waste knowledge base: policies

Country	Public sources	FCAN meeting or bilateral input
Australia	X	X
Belgium (Flanders)		X
Denmark	X	
Finland	X	X
France	X	X
Germany	X	
Ireland	X	
Japan	X	X
Korea	X	
Netherlands	X	
New Zealand	X	
Norway	X	
Portugal		X

Country	Public sources	FCAN meeting or bilateral input
Portugal		X
Spain		X
Sweden	X	X
Switzerland		X
United Kingdom	X	X
United States	X	X
EU	X	

12

Government actions

- Awareness raising initiatives
- Support to collaborative private sector networks (producers, manufacturing, retail)
- Removing obstacles to donation or recycling...

... while ensuring food safety.

13

Legal framework

- Cover waste, not food waste
- Encourage waste prevention
- Promote resource efficient waste management systems
  - Use waste as a resource (fertiliser, feed, energy)
  - Protect the environment

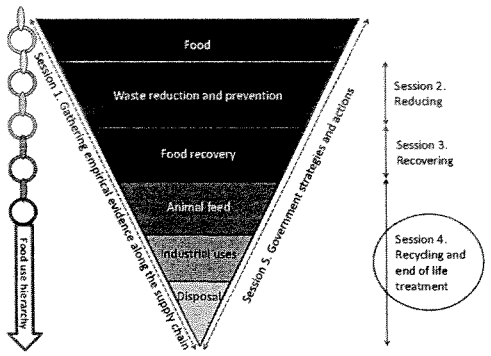
14

Instruments

- Segregated collection
- Fee or tax on collection or disposal
- Ban on landfill of organic waste
- Mandatory reporting or recycling
- Financial incentives for energy recovery.

15

Food Chain Analysis Network



16

Food Chain Analysis Network: recycling

Feed-in tariffs for energy recovery:

- enabled the development of the necessary infrastructure and industry in Japan & the UK.
- are not sustainable in the longer term.

Viable markets are necessary for energy, feed and fertiliser.

Policies guiding the development of such markets need careful planning to ensure a balanced treatment across policy areas.

17

Future work plans (scoping phase)

- Quantitative analysis of the reduction of food waste, using the Aglink-Cosimo model:
  - World prices
  - Markets and trade

Cross commodity and inter-temporal effects.

18

OECD documents

- Food waste along the food chain [TAD/CA/APM/WP(2013)4/REV1]
- Food losses and food waste in China [TAD/CA/APM/WP(2013)26]
- Trade and market impacts of food loss and waste reduction: Scoping paper [TAD/CA/APM/WP(2013)28]
- Food Chain Analysis Network: Summary report of the 4th meeting [TAD/CA/APM/WP/RD(2013)8]

Thank you!

Contacts:

morvarid.bagherzadeh@oecd.org
mitsuhiro.inamura@oecd.org
hyunchul.jeong@oecd.org

完全相同的一次料與二次料之間的競爭，
會因政府對其生產支持的差別受到何種程度的影響?

2013 年 11 月 13 日歐洲鐵回收協會(EFR)發表「評估歐盟鋼鐵行動計畫對鋼廢料生產與貿易之影響」報告

在歐盟 28 國(EU28)電弧爐法(EAF)生產正穩定成長中，舊方法已被完全淘汰

比較電弧爐法(EAF)與高爐-轉爐法(BF/BOF)：在北美自由貿易區 59%已轉用 EAF，而歐盟只有 42%轉用。

幾十年來，在 EU28 與美國 EAF 鋼的佔比已穩定成長，因此，鋼廢料的使用也穩定成長，特別是在 1990 年後。2013 年 EU28:7700 萬噸，美國:5000 萬噸。

廢料(scrap)與 EAF 產業比整合後的 BF/BOF 產業雇用更多工人
Scrap/EAF 產業共有 40 萬全時間員工(56%)
BF/BOF 產業共有 31 萬全時間員工(44%)
自 BF/BOF 轉用 EAF 可增加歐盟工作機會。

EU28 鋼廢料出口自 1970 年以來已大幅成長至近 2000 萬噸，同時 30 年來進口已降低至少於 500 萬噸。

2/3 的歐盟鋼廢料出口至地中海區域，22%至遠東。

EU28 及美國為未來已累積了 25 億噸鋼廢料，堪稱廢料巨礦!
EU28 每年使用 8000 萬至 9000 萬噸鋼廢料，相當於此「巨礦」的 3%，在美國則是 2.4%。

廢料與 EAF 產業創造 110 億歐元順差，而 BF/BOF 產業創造 190 億歐元逆差。

EAF 廢料回收相對於傳統 BF/BOF 熔煉所具有的環境優勢是很可觀的：
GJ/噸：EAF:8-11，BF/BOF:21-25
CO2 噸/噸：EAF:0.4-0.7，BF/BOF:2.1-2.5
噸原生料/噸：EAF:0.2-0.3，BF/BOF:2.8-3.0

EU 法規對鋼鐵產業的衝擊龐大，且大部分是由使用 EAF 的鋼廢料所承擔
法規總成本：23 億歐元，EAF 負擔 54%，BOF 46%。
產業二氧化碳總排放：2.36 億噸，EAF 佔 15%，BOF 85%。

歐盟 EAF 產業佔 42%的粗鋼產出，15%的 CO2 排放，但卻承擔了 54%的法規成本。

如果 EAF 業者所付的成本與其碳排比例相同，他們會比今天少付 7.63 億歐元，將相當於每噸成鋼 11 歐元的環境信用，比任何鋼廢料出口限制所帶來的利益要多很多。

歐盟廢料/EAF 產業正遭受新法規與限制的威脅!

...to what extent competition between identical primary and secondary materials may be affected by differences in the support that Governments are providing for the production of these materials ...

Presentation to OECD WPRPW

Ross Bartley
Environmental & Technical Director BIR
(Environmental & Technical Officer EFR)
13 November 2013

today 13 November 2013 EFR publishes its Study entitled..

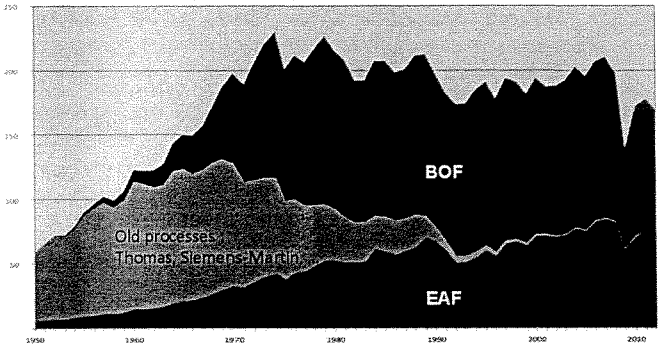
Evaluating the implications of the EU Steel Action Plan on steel scrap production and trade

Authored by LAPLACE CONSEIL

For **The European Ferrous Recovery & Recycling Federation**

EAF production is steadily growing in EU28 while old processes have been eliminated

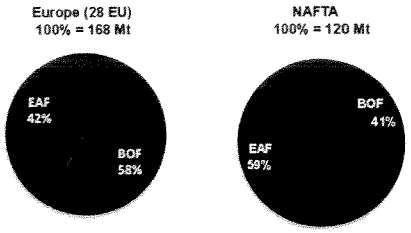
Evolution of Crude steel production by process in EU28 (Mt)



Source : Worldsteel, Laplace Conseil analysis

NAFTA mills have switched to EAF for 59% of their production, while EU mills for only 42%

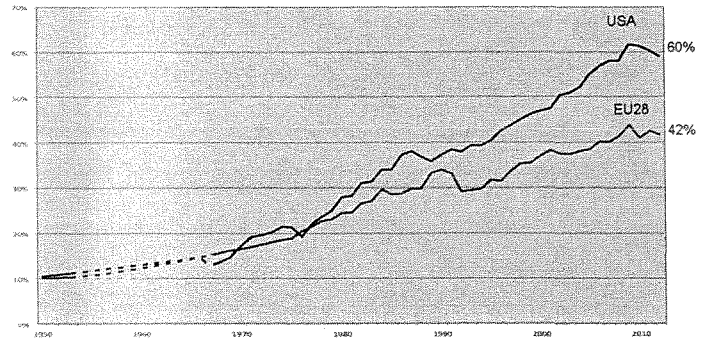
Breakdown of crude steel production by process BF/BOF vs EAF (%)



Source : Worldsteel, Laplace Conseil analysis

For many decades, the share of EAF steel has grown steadily in Europe and USA

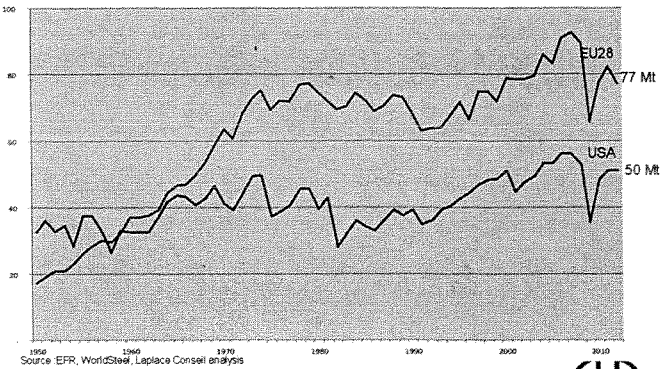
EAF share in crude steel production in EU28 and USA (%)



Source : WorldSteel, Laplace Conseil analysis

Consequently, the use of steel scrap has steadily increased especially after 1990

Evolution of steel scrap purchases in EU28 and US (Mt)



Source : EFR, WorldSteel, Laplace Conseil analysis

The Scrap and EAF industries employs more workers than the integrated BF/BOF sector

- Crude steel production in BF/BOF sector 98,4 Mt (58%)
- Crude steel production in EAF sector 70,0 Mt (42%)

- Employment in steel sector 410 000 FTE
  - Of which Integrated sector 310 000 FTE in 30 large mills
  - Of which EAF sector 100 000 FTE in 160 minimills

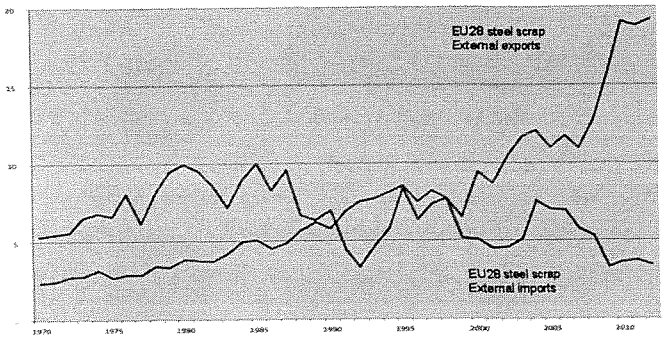
- Employment in scrap sector 300 000 FTE in 7000 plants

- Total employment in scrap/EAF sector 400 000 FTE (56%)
- Total employment in BF/BOF sector 310 000 FTE (44%)

=> Switching from BF/BOF to EAF will increase total EU employment

EU28 steel scrap external exports have increased since 1970, while imports have declined for 30 years

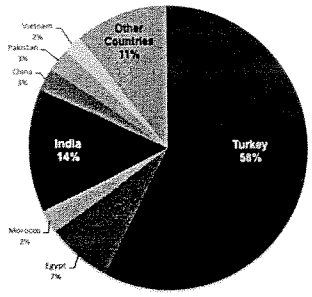
Evolution of the steel scrap external import and export in EU28 (Mt)



* External trade is net of intra EU trade, data are estimated prior to 1999
Source : EFR, WorldSteel, Laplace Conseil analysis

Two thirds of the EU steel scrap exports are sent to the Mediterranean area and 22% to the Far East

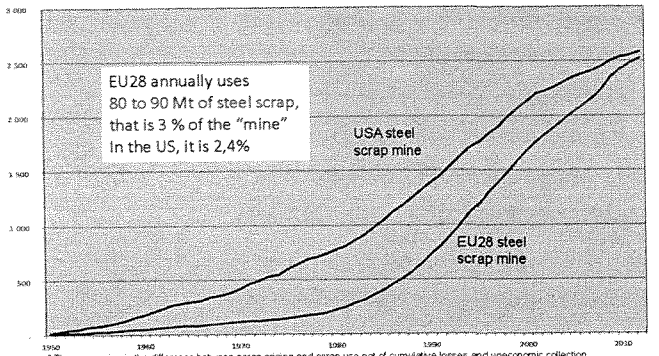
Repartition of EU External steel scrap exports in 2012 (100% = 19,2 Mt)



Source : EFR, Laplace Conseil analysis

EU28 and USA have accumulated a stock of steel scrap of 2500 Mt for the future, quite a scrap mine !

Growth of the EU28 and USA scrap mines* (Mt)



* The scrap mine is the difference between scrap arising and scrap use net of cumulative losses and uneconomic collection
Source : EFR, WorldSteel, Laplace Conseil analysis

The scrap and EAF sectors generate a trade surplus of 11 B€ that contrasts with the 19 B€ deficit of BF/BOF sector

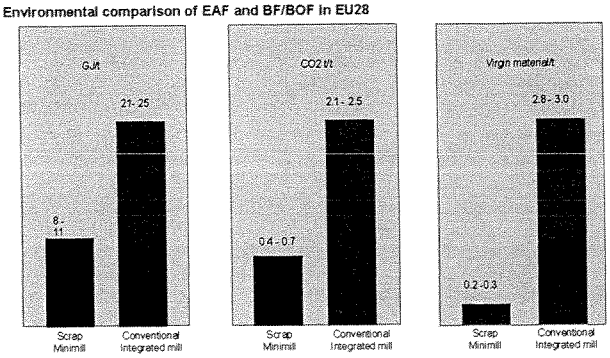
- Iron ore imports by integrated (124 Mt) - 14 B€
- Coking coal imports by integrated (38 Mt) - 5 B€
- Scrap net exports by scrap industry (19 – 4 Mt) 5 B€

- Long products net exports by EAF industry (11 Mt) 6 B€
- Flat products net imports by BF/BOF industry (-1 Mt) ~ 0 B€

- Trade balance of the scrap and EAF sectors 11 B€
- Trade balance of the BF/BOF sector - 19 B€

The environmental advantages of scrap recycling over traditional BF/BOF smelting are important

Environmental comparison of EAF and BF/BOF in EU28



Source : Industry data, Laplace Conseil estimates

The impact of EU regulations on the steel industry is large and borne mostly by steel scrap using EAF's

	BOF HRC	EAF WR	Steel Industry
ETS	0.74	5.85	2.79
Energy	3.67	8.12	5.46
Environment	6.15	3.39	5.04
Product (REACH)	0.10	0.05	0.08
Total	10.66	17.41	13.37

Source : CEPS, Assessment of cumulative cost impact for the steel industry, coordinated by Prof. Dr. Andrea Renda

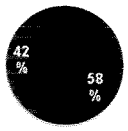
Total cost of regulation
100% = 2300 M€

Total industry CO2
100% = 236 Mt

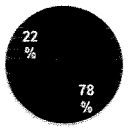
EU EAFs represent 42% of crude steel, only 15% of CO_2 but 54% of all regulation costs

Share of BF/BOF and steel scrap EAF production, energy consumption and CO2 emission (%)

Crude steel production
100% = 168 Mt



Energy consumption
100% = 63 Mtoe



CO_2 Emission
100% = 236 Mt

Cost of regulation
100% = 2300 M€

If the steel scrap EAF industry was paying its cost of regulation in proportion of its CO_2 emission, they would pay 763 M€ less than today. That would represent an environment credit of 11 € per tonne of finished steel and far more than any benefits to be derived from any steel scrap export restrictions !

Source : IEA, WorldSteel, BP Energy statistics, World Coal association, Midrex, Center for European policy studies, Laplace Conseil analysis

The paradox :

The EU Scrap/EAF industries :

- Produce 42% of all EU crude steel
- Employ 56% of total EU steel and scrap workers
- Generate a trade surplus of 11 B€ vs. a deficit of 19 B€ for BF/BOF
- Consume 22% of energy consumed by the steel sector
- Generate only 15% of the CO_2 emitted by the steel sector
- Require 1/3 of the capital costs and maintenance expenditure per tonne produced
- **Has to pay 54% of the total cost of EU Steel regulations.**
- **The scrap industry is now threatened with new regulations and restrictions**

Download the full report at... WWW.EFR2.ORG/ (link at top of welcome page)

UPDATE ON ACTIVITIES RELEVANT TO WPRPW

OECD
BETTER POLICIES FOR BETTER LIVES

In case you were wondering ....

It is Movember and we are aiming to raise money to help research into prostate cancer. Some scary facts:

- Over a lifetime, 1 out of 10 men develop prostate cancer in the US and the UK. The figure is 1 out of 6 worldwide.
- Prostate cancer is the second most common form of cancer affecting men in France.
- Almost 10,000 men die every year from prostate cancer in France, or put another way: one man dies of prostate cancer every hour.
- In 2011, 850,000 Movember participants raised 100 Million EUR for prostate cancer research.

You can help team MoECD in its quest to support men's health. Go to: http://fr.movember.com/en/team/4479?3

... and click on donate! It's that easy!

MoECD
BETTER MOUSTACHES FOR BETTER MEN'S HEALTH

Outline

- Update from relevant bodies
- Update on activities under WPRPW

Update from relevant bodies

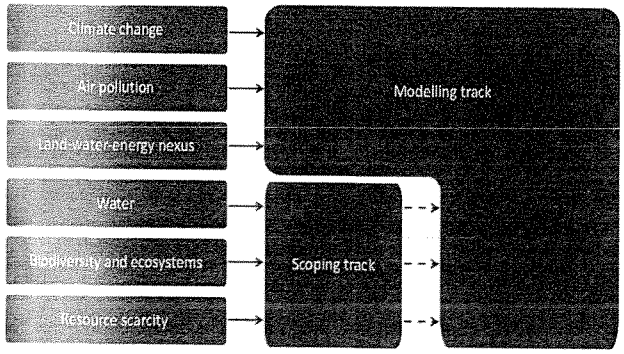
EPOC meeting 29-30 October 2013

- Discussed ideas for work in 2015-16
- Work on environmental policies and economic outcomes
- Cost of Inaction and Resource Scarcity: Consequences for Long-term Economic Growth – CIRCLE
  - Discussed scope of work
  - Role of EPOC Working Parties
- Survey of EPOC sub-structure

CIRCLE - Objectives

- Follow-up to the *Environmental Outlook to 2050*. Re-scoped following 2012 EPOC Ministerial and in view of EPOC's contribution to broader initiatives (NAEC and OECD@100).
- Two key objectives:
  - Quantify how changes in environmental quality, climate change, degradation and scarcity of natural resources affect the economy, and ultimately prospects for long-term growth (**costs of inaction**)
  - Assess the benefits, as well as trade-offs, associated with policy responses to these environmental challenges (**benefits of policy action**)

CIRCLE – Scope of work



CIRCLE – Resource scarcity

- Current status and progress:
  - **Biodiversity and ecosystems**: scoping work started with consultant Anil Markandya
  - **Water**: in process of identifying suitable consultant for scoping paper, and identify delineation with nexus analysis
  - **Natural resources**: (i) collaboration with LSE established for work on specific case studies; (ii) collaboration with Imperial College on productivity and resources is currently being scoped
- Outcomes of ad-hoc expert workshop:
  - Look at recycling and re-use
  - Pay attention to double-counting

CIRCLE - Oversight

- EPOC Oversight and strategic direction.
- Several working parties will be involved :
  - WPCID for climate change;
  - WPIEEP for general methodology, valuation aspects, and air pollution;
  - WPBWE and JWPAE for the land-water-energy nexus;
  - WPBWE for water, biodiversity and ecosystems;
  - WPIEEP and WPRPW for resource scarcity.
- Other groups will be informed on progress of the project as appropriate (e.g. CCXG, ECO WP1).
- Ad-hoc expert workshop(s) for technical discussions

Survey of EPOC sub-structure

- Survey carried-out over summer
- Circulated to EPOC and its Working Parties
- Responses from Canada, US and The Netherlands
- General satisfaction with sub-structure and new working methods
- Comments on WPRPW:
  - Established a lot of links to work outside WP
  - Helpful efforts to identify and prioritise work
  - Creation of expert groups is acknowledged
  - More could still be done
    - Greater emphasis on resource productivity
    - Use of Clearspace

Work in the Competition Committee

- Held roundtable on waste management services, 28 October 2015
- Last discussed waste management services about 15 years ago
- Objective to reassess competition authorities' approach to waste management services
- Focused on competition in:
  - Waste collection
  - Waste treatement
  - Extended producer responsibility
- Secretariat paper and about 20 country contributions available at: http://www.oecd.org/daf/competition/competition-issues-in-waste-management.htm

2. Green Growth

- Second annual conference of the **Green Growth Knowledge Platform** 4-5 April, at OECD headquarters
- Two themes:
  - Greening Global value Chains (GVCs),
  - Measurement & reporting on GG (private & public),
- 4 issue papers (now in special series of GG Working Papers),

Joint (OECD, GGGI, WB, UNEP) scoping paper "**Moving towards a common approach on Green Growth Indicators**"

- Organised along the lines of the OECD Indicator Framework,
- Launched at the conference

Update on activities under WPRPW

WPRPW projects in 2013-14

- Economic instruments for SMM (item 6)
- SMM material case studies (item 5)
- Nanowaste (item 4)
- Progress report on Council Recommendation on Resource Productivity
- Transboundary movements of waste
  - !Delegations need to remember to regularly update information in the TMW database!

Secretariat activities in a nutshell

- Hazardous
  - [illegible] groups established for:
    - [illegible]
    - Extended producer responsibility (3 meetings)
    - Construction materials (3 meetings)
  - [illegible] discussions with European Commission for a grant to support work on extended producer responsibility (EUR 300k)
  - [illegible] with Basel Convention Secretariat on update of data collection under the convention
- Ma[illegible]
  - [illegible] European Resource Efficiency Platform, January 2013
  - [illegible] Regional Asia Forum, Hanoi, Vietnam, April 2013
  - [illegible] 2013, Coffs Harbour, Australia, May 2013
  - [illegible] International Resource Panel, UNEP, Berlin, April 2013
  - [illegible] workshop on LCA for policy making, June 2013
  - [illegible] workshop of OECD Food Chain Analysis Network on Food Waste, Paris, June 2013
  - [illegible] Waste Management Outlook, UNEP, Paris, July 2013
  - [illegible] AMIX workshop, Brussels, October 2013

Council Recommendation on Resource Productivity

- Progress report under preparation
- 2 page summary will be key document
- Mini survey to help assess progress and usefulness of the recommendation
- To be circulated for written comments to WPEI and WPRPW this week with deadline for comments 15 December
- Then to EPOC with deadline by 15 January
- Council to discuss report in February 2014

Clearspace – Community website

- We shift our communications with you more systematically to Clearspace
- Make sure you switch email alerts on
- We will not be systematically circulating everything through emails anymore

PROPOSED ACTIVITIES FOR WPRPW WORK IN 2015-16

Peter Börkey

OECD

Structure of paper

- Background
- Outcome of EPOC discussion on directions of for future work
- Proposed activities in 2015-16
  - Continuation of work from 2013-14
  - Work not requiring significant collabortaion with other WPs
  - Collaborative work with other WPs

Background

- The paper draws on:
  - EPOC discussion of directions for 2015-16
  - Ideas discussed in two WPRPW conference calls

Overall objectives of WPRPW, so far

- Guidance for the implementation of SMM policies, e.g.:
  - relevant policies and policy instruments
  - waste prevention
  - at the level of cities
- Better understanding of issues related to nanowaste
- Work on transboundary movements of waste
- Input to the debate on resource productivity

Continuation of 2013-14 work

a. Policy dialogues on Extended Producer Responsibility
   - Dissemination of policy recommendations on EPRs developed in 2013/14
b. SMM case study on construction materials
   - Follow-on work
c. Improving information on nanowaste
   - Information sharing
   - Support for coordination of research efforts
d. Monitoring transboundary movements of waste
   - Regular updates of TMW database

Work requiring no significant collaboration (1)

e. Economic instruments for SMM
   - Overview paper on SMM and economic instruments
   - Most promising fields of application of innovative economic instruments
   - Key issues in the design and applicationof such instruments
f. Analysis of consumer behaviour
   - Key factors influencing effective collection and segregation by consumers
   - Policy recommendations
g. Environmental liability schemes and SMM
   - Important ex post incentives that influence the cost of accidental releases
   - Identify key characteristics of different liability schemes
   - Key elements of liability schemes that can help strengthen incentives for environmental protection

Work requiring no significant collaboration (2)

h. The promotion of eco-design for SMM
   - Review of waste prevention plans/policies
   - Review of key product policies that influence eco-design
   - Opportunities for better alignment of such policies within and accross jurisdictions

i. Support for material extraction and processing (primary and secondary)
   - Key question: are material prices distorted by different forms of public support
   - Focus on specific country and materials, eg those where secondary currently not competitive

Collaborative work with other WPs

j. Cities and SMM
   - Focus on financing municipal materials management
   - Appraoches for sound financial planning of municipal materials management infrastructure
   - In line with EPOC priorities
   - Cooperation with Investment Committee, Governance Committee and links to EPOC work on water
   - Key challenges that need to be addressed

k. Impacts on material resources from a low carbon economy
   - Input into EPOC's CIRCLE project (Cost of Inaction and Resource Scarcity – Consequences for Long-term Economic Growth)
   - Review and support work in resource scarcity track:
     - Resource scarcity case studies
     - Scenario analysis, using UNEP IRP findings
     - Demand for material resources in a low carbon economy
     - Resource scarcity and the role of materials management policies

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

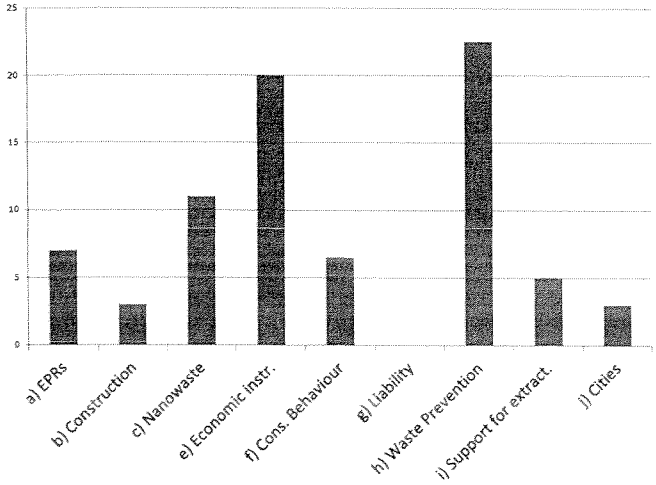
F - Analysis of consumer behaviour

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


25
20
15
10
5
0
a) EPRs
b) Construction
c) Nanowaste
e) Economic instr.
f) Cons. Behaviour
g) Liability
h) Waste Prevention
i) Support for extract.
j) Cities