3R Policy Brief Series

3R Policy Brief

Examining Future Implementation of Waste Prevention and Resource Reduction Policies in Asia and the Pacific
– Referring Practices in European Countries

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1 Introduction

To achieve a resource-efficient and sustainable society, it is apparent that we have to avoid becoming a mass consumption and mass-recycling society. We have to seek to become a society that consumes fewer (primary) resources and generates less waste through various waste prevention and "resource" reduction approaches, including recycling.

Waste prevention and Waste (Resource) reduction has been prioritised in the hierarchy of waste management. For example, the hierarchy in the EU Waste Framework Directive is as follows: prevention, preparing for re-use, recycling, other recovery, e.g. energy recovery and disposal[1]. The hierarchy for Japan, as set out in its Fundamental Plan for Establishing a Sound Material-Cycle Society is: reduce, reuse, recycle, recovery, e.g. heat recovery and proper disposal.

However, recycling has been a major approach in waste management.

OECD countries and regions, such as Japan and the EU, have been aware of the importance of introducing prevention and reduction policies. They have begun to steer waste management policies in the direction of waste prevention and resource reduction in the context of resource efficiency. Japan states that the government will strengthen efforts to further push 2R (Reduce, Reuse) approaches in the Fundamental Plan for Establishing a Sound Material-Cycle Society (MOEJ, 2013). The EU has also started to strengthen its approach to waste prevention in the implementation of waste management[2]. The EU Waste Framework Directive required member states to develop Waste Prevention Programmes by December 2013 using the reporting format adopted in a Commission Decision 2013/727/EU. The Roadmap to a Resource-Efficient Europe sets the reduction of waste generation as an "aspirational target" for waste management to be achieved by 2020 (EC, 2011b). The 7th Environment Action Programme 'Living well, within the limits of our planet' indicates the major potential of improving waste prevention and management for better use of resources, new markets, new jobs and reduction of dependence on importing raw materials, while decreasing environmental impacts (EU, 2013).

Policy Brief from Asia Resource Circulation Policy Research Group

This project is conducted by the Asia Resource Circulation Policy Research Group, a collaborative research group focused on policy research on 3R promotion in Asia; coordinated by IGES with the participation of researchers from IGES, IDE-JETRO, NIES,University of Malaya, Asia Institute of Technology, Bandung Institute of Technology, Tokyo Institute of Technology and UNCRD.

Many developing countries in Asia and the Pacific have just started to develop policy packages of waste management, including environmentally-sound management of hazardous waste and EPR-based recycling policies. Considering the rapidly growing demand and consumption of resources in Asia, the generation of waste is expected to increase steeply at an unprecedented level. Thus, it is crucial for the region to incorporate effective waste prevention and reduction policies at earlier stages in waste management policy development, referring to existing best practices in developed countries.

The purpose of this policy brief is to examine a possible pathway to introduce waste prevention and reduction policies on (material) resources and waste in the Asia-Pacific and discuss the challenges when introducing waste prevention and reduction. The discussion is based on exploring policies and tools for prevention and reduction of (material) resources and waste conducted by various governments (especially in Europe) and the private sector.

1 http://www.prewaste.eu/index.php?option=com_k2&view=itemlist&layout=category&task=category&id=13&Itemid=41
2 http://ec.europa.eu/environment/waste/prevention/

2 Scope of the study on waste prevention and resource reduction

There are very few general consolidated definitions which comprehensively comprises both waste prevention and resource reduction. Regarding waste prevention, OECD and European Commission (EC) have some references. In OECD a Reference Manual on Strategic Waste Prevention (OECD, 2000), waste prevention does not cover waste management stages such as recycling, incineration and landfill; it refers to Strict Avoidance (the complete prevention of waste generation in production, consumption, and distribution), Reduction at Source (minimising toxics and/or material or energy use) and Product Re-use. However, the EC sets a wider scope for waste prevention as stated in a guidance document for the Waste Prevention Programme (EC, 2012), as shown in Figure 1. The guidance states:

> *"A waste prevention programme has its origin in the waste management sector, its scope, however, comprises the whole economy, all material flows and products used by a nation, from their respective cradles to their discarding. Thus, a comprehensive waste prevention programme*

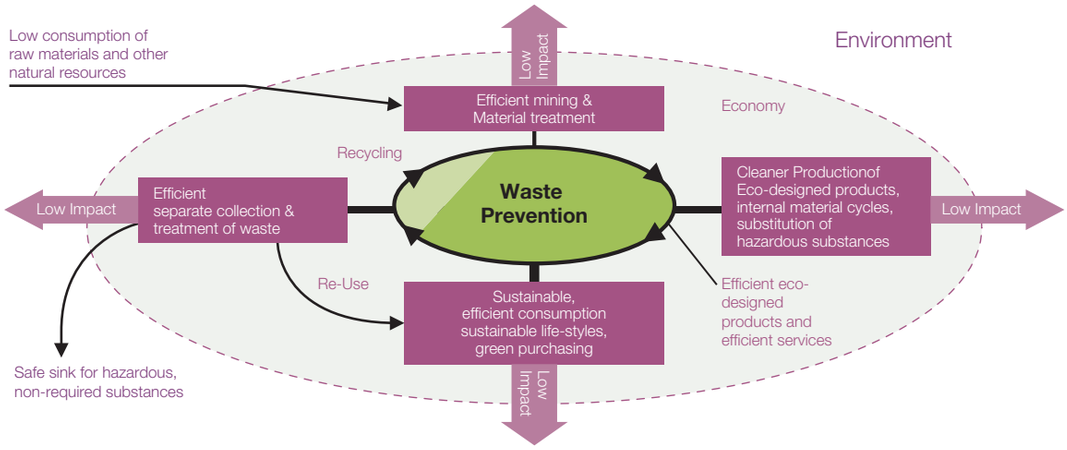

Figure 1: Scope of waste prevention in EU

Source: EC, 2012

should not only concern the waste management sector but also the mining sector and productive industries, designers and service providers, the public and private consumers. (EC, 2012)"

Any measures, especially if the author incorporates the reduction aspects, which can affect the reduction of primary resource use and waste generation can be categorised as waste prevention and resource reduction. Thus this brief also does not limit the coverage of waste prevention and resource reduction to a certain stage, but also tries to comprehensively discuss any measures which can affect the use of primary resources and waste generation at all stages of the whole lifecycle.

3 Overview of policies and tools for waste prevention and resource reduction

This section briefly overviews the policies and tools of waste prevention and resource reduction at each stage of the whole lifecycle. The stages are resource extraction, product design/production, consumption/use, waste generation/management and resource circulation. As shown in Figure 2, various tools are available, and there is also a policy framework to support the implementation of the tools which is applied to each stage of the lifecycle.

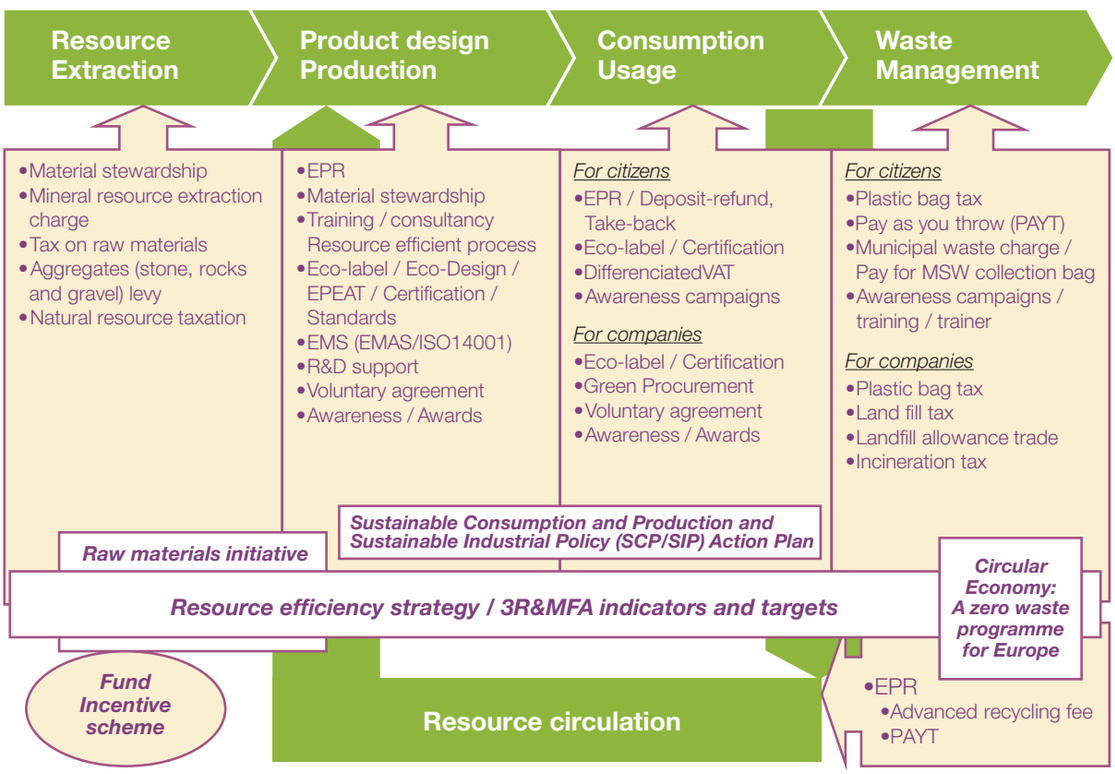

Figure 2: Overview of policies and tools for waste prevention and resource reduction

Source: Author

Looking at the types of tools for waste prevention and resource reduction, in addition to regulatory tools and economic instruments, consultancy in industrial process, incentive and awareness schemes are also major approaches for waste prevention and resource reduction (Figure 3).

	Economic instruments (incentives)	Awareness raising	Covenant / voluntary	Regulation	Incentives
Resource Extraction	• Mineral resource extraction charge • Tax on raw materials • Aggregates(stone, rocks and gravel) levy • Natural resource taxation		• Material stewardship		
Production Product design		• Training / consultancy on Resource efficient process	• Material stewardship • Voluntary agreement	• EPR • Recycling quota	• Eco-label/Eco-Design / EPEAT/Certification / Standards • R&D support • Awards
Consumption	• EPR / Deposit-refund, Take-back • Differentiated VAT	• Eco-label / Certification • Awareness campaigns/ Awards	• Voluntary agreement	• Green Procurement	• EPR / Deposit-refund, Take-back • Differenciated VAT
Waste Management & Resource Circulation	• Plastic bag tax • Pay as you throw (PAYT) • Municipal waste charge / Pay for MSW collection bag • Land fill tax • Landfill allowance trade • Incineration tax	• Awareness campaigns / training / trainer		• EPR - Advanced recycling fee - PAYT • Recycling quota	

Figure 3: Typology of waste prevention and resource reduction tools

Source: Author based on various resources

3.1. Whole lifecycle

Policy framework

The EU as a whole and some individual European countries such as Germany and Austria have developed comprehensive policy frameworks (EU: Resource-efficient Europe, Germany: Resource Efficiency Programme (ProgRess), Austria: Resource Efficiency Action Plan) (EC, 2011a, 2011b; BMU, 2012; BMLFUW, 2012). The frameworks cover whole lifecycle stages and provide strategies to strive for improvement of resource efficiency and sustainable resource management. The strategies include various policy approaches such as sustainable supply for raw materials, resource efficient production/industrial process and product design, sustainable consumption, and resource efficient waste management (circularity of resources or waste as resources).

In addition, these resource efficiency policy frameworks set material flow indicators and other resource efficiency targets to monitor and improve resource efficiency in the countries and region. Major indicators applied or considered are Domestic Material Consumption, Resource Productivity (GDP/DMC), TMR (Total Material Requirement), RMC (Raw Material (equivalent) Consumption).

3.2. Resource extraction stage

Policy framework

At the resource extraction stage, the EU and Germany have developed Raw Material Initiative/Strategies as

part of their policy framework for securing non-energy resources. For example, major components of the initiative in the EU are *1.Fair and sustainable supply of raw materials from international markets, 2.Fostering sustainable supply within the EU, and 3.Boosting resource efficiency and promote recycling.*[3] A list of critical material for EU is developed under the initiative. The EC promotes the transparency of extractive industries and best available techniques for the industry (EC, 2011c). National mineral policy and land-use policy is developed to ensure sustainable extraction (EC, 2011c). It also promotes tools for resource efficiency, waste prevention including promotion of secondary materials as well as tackling the issue of illegal shipments (EC, 2011c). Germany's strategy is similar but it not only developed a strategy, it also established the German Mineral Agency in 2010 (EEA, 2011). The initiative/strategy regards recycling as a critical component to secure no-energy raw materials for the region/country.

Major tools

Major tools at this stage are material stewardship, mineral resource extraction charge, tax on raw materials, aggregates (stone, rocks and gravel) levy and natural resource taxation.

Case example of tools

Material stewardship is, more precisely, not a policy tool but rather a programme conducted by the International Council on Mining & Metals (ICMM). According to the ICMM, it means responsible delivery of materials and monitoring material flows to maximise social value and minimise impact on humans and the environment, considering profitability, risk management, the internal (corporate) culture, and external (community) expectations[4]. Australia and Canada conduct governmental programmes which apply the concept of material stewardship.

Other tools are mainly taxes and levies. For example, some countries such the UK and Sweden have taxation on aggregates. UK charges tax weight on each tonne of aggregates extracted to mitigate the environmental impact of extraction and promote recycling and the use of substitutes (Rademaekers, et al. 2011). Introducing taxation on aggregates contributed to the promotion of recycling, which resulted that the UK achieved the high level recycling rate of Europe (Rademaekers, et al. 2011). Natural resource taxes (e.g. Finland, Latvia) are also conducted. Finland imposes mining license, fishing license, forest management license, and real estate tax for extracting companies to give incentives to the re-use of land to reduce pressure on undeveloped land (Rademaekers, et al. 2011).

However, concerns on illegal mining activities and illegal imports to avoid the taxes may arise when such taxes and duties are imposed on a pay-as-you-go basis for primary resources.

3 http://ec.europa.eu/enterprise/policies/raw-materials/index_en.htm
4 http://www.icmm.com/materials-stewardship-toolkit/about

3.3. Product design/Production stage

Policy framework

As an example of a policy framework at this stage, the EU has developed an SCP and Sustainable Industry Action Plan to promote a resource efficient production process and product design which can contribute to waste prevention and resource reduction. The plan aims to create a new sustainable product policy, in order to improve the environmental performance of products, encouraging eco-innovation, supporting the competitiveness of eco-industries and contributing to a low-carbon economy[5]. The plan supports the implementation of Eco-label, Eco-Design schemes and EMAS (eco-management and audit schemes) as well as promoting eco-innovation using a technology verification scheme (EC, 2008). The plan also covers consumption stages (issue for consumption stages will be described in next section).

EU's communication documents, Towards a Circular Economy: A zero waste programme for Europe (EC,2014), Japan's fundamental plan for establishing sound material cycle society (MOEJ, 2013) and China's circular economy policy (UNCRD, 2013) also cover the resource efficiency industrial process from the perspective of the 3Rs.

Major tools

Tools at this stage include Extended Producer

Responsibility (EPR), Material stewardship, Training / consultancy on Resource efficient process, Eco-label / Eco-Design / EPEAT / Certification / Standards, EMS (EMAS/ISO14001), Research & Development support, Voluntary agreement and Awareness / Awards.

Case example of tools

One interesting example is the provision of a consultancy service for industry on resource-efficient processes. Some countries such as Germany, Poland and Finland have developed an institutional set-up. The German Material Efficiency Agency was founded by the Federal Ministry of Economy and Technology to increase awareness on the importance and business potential of material efficiency (EEA, 2011). In 2009 the centre for Resource Efficiency was established by the Federal Environmental Ministry and the Association of German Engineers to reduce resource consumption and promote integrated technologies for preserving natural resource, environment and climate (EEA, 2011). The Finnish Ministry of the Environment together with the Ministry of Employment and the Economy established a Material Efficiency Centre as a part of the national programme for SCP in 2008 (EEA, 2011). The Centre provides material efficiency audit tools for companies, assists in environmental technology procurement and develops a material flow cost accounting standard (ISO 14051) (EEA, 2011).

Not only institutional set-ups, but information tools for companies have also been developed. For instance, Germany provides a self-check tool to help companies identify potential material efficiency improvement (EEA, 2011). In the UK, there is a registered charity established as a company called the Waste & Resources Action Programme (WRAP) which fosters partnerships and develops initiatives to encourage sustainable resource use in the UK[6]. WRAP's website provides guidance for resource efficiency improvement not only for companies but local authorities and citizens (EEA, 2011) WRAP also supports voluntary commitment between the Scottish government and the resource management sector which relates to Scotland's zero waste action plan7. Signatories have to conduct awareness on resource efficiency and provide advice on waste prevention and appropriate resource management [7].

5 http://ec.europa.eu/enterprise/policies/sustainable-business/environment-action-plan/index_en.htm
6 http://www.wrap.org.uk
7 http://www.zerowastescotland.org.uk/sites/files/zws/SRSC%20-%20SigPack%20-%2002.pdf

3.4. Consumption/Usage stage

Policy framework

As written above, an example policy framework at this stage is the EU's SCP and Sustainable Industry Action Plan. Under this plan, the EU promotes Green public procurement as well as retail collaboration. In collaboration with retailors, the EU expects to reduce the environmental impacts of the retail supply chain, as well as promote more sustainable products and better information for consumers.

In a similar way to the production stage, waste prevention in the consumption phase is promoted by EU's communication documents, Towards a Circular Economy: A zero waste programme for Europe (EC, 2014), Japan's fundamental plan for establishing sound material cycle society (MOEJ, 2013) and China's circular economy policy (UNCRD, 2013). For example, a zero waste programme for Europe aims to encourage consumer choice for renting, lending and sharing services as an alternative to owning products thereby leading to waste prevention (EC, 2014).

Major tools

Tools at this stage can be divided into those for citizens and those for companies (non-manufacturing).

For citizens, EPR (especially Deposit-refund, Take-back system), Eco-label / Certification, differentiated VAT and Awareness campaigns can be applied.

Tools for non-manufacturing companies/governments include Eco-label / Certification, Green Procurement, Voluntary agreement and Awareness / Awards.

Case example of tools

WRAP organises a voluntary agreement on food waste and associated waste packaging in Hospitality and Food service sector, which aims for a 5% reduction of food and packaging waste, and improved recycling (including composting) rate to a minimum of 70% by 2015 [8].

8 http://www.wrap.org.uk/content/hospitality-and-food-service-agreement-3

3.5. Waste management and Resource circulation stage

Policy framework

Policy frameworks at this stage are, for example, EU's communication documents, Towards a Circular Economy: A zero waste programme for Europe, Japan's Fundamental Plan for establishing Sound Material Cycle Society, and China's National circular economy development plan. These frameworks basically focus on waste management practices such as reduction of waste generation/landfill disposal and recycling. However, they cover the production and consumption phases from the perspective of waste prevention and resource reduction, while proposing further promotion of recycling and reduction of Landfill disposal (EC, 2014).

EU's zero waste programme for Europe promotes waste prevention at the production stage in particular. The programme emphasises the "design-out" waste approach with innovation throughout the value chain (EC, 2014). The approach focuses on lightweighting, durability, efficiency, substitutions, the recyclates market, eco-design, maintenance/repair, consumer efforts on waste separation and reduction and so on.

Major tools

Tools at this stage also can be divided into those for citizens and those for companies (non-manufacturing).

Those that apply to citizens are the Plastic bag tax, Pay-as-you-throw scheme (PAYT), Municipal waste charge / Pay for MSW collection bag and Awareness campaigns / training / trainers. For non-manufacturing companies, the Plastic bag tax, Landfill tax, Landfill allowance trade and Incineration tax are applied for direct waste prevention purposes. The EPR system, including advanced recycling fee as well as PAYT scheme under the system, is also applied for waste reduction through recycling.

Case example of tools

A Landfill tax is widely applied in European countries and is regarded as an effective measure. According to a report to the European Commission, 18 European countries have introduced such a tax (Watkins et al., 2012). The UK charges tax by weight of waste to reduce the environmental impact of landfills as well as for waste prevention and recovering value from waste (Rademaekers et al., 2011). Separated waste for recycling at a landfill site can be exempted from the tax (Schlegelmilch et al., 2010). After introducing the tax (in addition to other measurements), the amount of landfill changed from 27 million tonnes (1997) to 19 million tonnes (2007); recycling rate increased by 27% (2007) (Schlegelmilch et al., 2010). Another example is Austria which implements a landfill ban for non-pre-treated MSW and charges waste weight to finance the remediation of contaminated sites and provide incentives for improved waste management. A report by Watkins et al. (2012) shows that waste generation is reduced as the tax rate increases.

In part of the UK (England) a Landfill Allowance and Trading Scheme (LATS) has been conducted for biodegradable municipal waste since 2005 (Schlegelmilch et al., 2010). 1.2 million tonnes of waste reduction was found as the result of introducing LATS (Schlegelmilch et al., 2010). Under the scheme, an allowance is allocated to each Waste Disposal Authority (WDA) in England, depending on each WDA's percentage contribution to the total waste (Schlegelmilch et al., 2010). The allowance will be reduced progressively until 2020. Performance of this scheme is monitored by the Environment Agency (Schlegelmilch et al., 2010).

The UK also implements certificate trading for packaging recovery note (PRNs) for packaging waste[9]. PRNs are the evidence required by producers of packaging waste to comply with the Producer Responsibility (Packaging Waste) Regulations 1997 in the UK. The scheme is applied to packaging producers handling 50 tonnes of packaging materials or packaging in the previous calendar year, and that have a turnover of more than £2 million a year (based on the previous financial year's accounts). Obligated producers can trade PRNs to fulfill their Producer Responsibility Obligations on Packaging Waste.

A plastic bag tax is implemented in Ireland and Denmark. In Ireland, citizens are charged a levy on each plastic bag at the point of sale. Retailers are responsible for collecting the tax, and will be fined if

they do not charge (Rademaekers et al., 2011). Revenue from the levy will be transferred to the Environment fund for environmental programmes including waste prevention measures (Rademaekers et al., 2011). Denmark charges a tax by weight on manufacturers, suppliers and importers, to encourage them to improve resource efficiency and reduce waste (Rademaekers et al., 2011). Revenue is used for the general public budget.

Other interesting examples are the "Innovation in Waste Prevention Fund" and "National Industrial Symbiosis Programme, both in the UK. The Innovation in Waste Prevention Fund system is funded by Defra as part of their Waste Prevention Programme for England to support communities' innovative waste prevention, re-use and repair activities with local businesses, councils, charities and voluntary groups[10]. The system is expected to facilitate new business ideas or local re-use rates, resulting in potential new jobs and volunteering and training opportunities[11].

The "National Industrial Symbiosis Programme[12]" has developed a market to encourage transactions of waste to use as a new purpose for businesses, in which various sectors come together. The market has been successful in turning waste into electricity, converting fatty acids into biodiesel, and so on. The programme is estimated to boost the UK economy by about €3 billion (EC, 2010).

9 https://www.gov.uk/packaging-producer-responsibilities
10 http://www.wrap.org.uk/content/innovation-waste-prevention-fund-england
11 http://www.wrap.org.uk/content/innovation-waste-prevention-fund-england
12 http://ec.europa.eu/environment/waste/prevention/pdf/NISP_Factsheet.pdf

4 Key areas for implementing waste prevention and resource reduction towards resource-efficient Asia and the Pacific

Through exploring the EU practices for Waste prevention and primary material resource reduction, several areas are identified as keys for addressing waste prevention and resource reduction. Considering the steep increase of resource consumption and the fact that 3R policies are under development, these areas are "a policy framework which covers the whole life cycle and ministerial coordination", "ways to address the risk of illegal activity and inequality of economic instruments", "capacity development for the private sector" and "awareness and incentive approaches at the consumption stage".

Life cycle policy framework and ministerial coordination

Developing a policy framework can be effective for waste prevention and resource reduction through whole lifecycle as a basis for implementing various tools. As shown in Figure 4 and section 3, several types of policy framework are on-going along with lifecycle. For example, the EU applies a raw material initiative/strategy for resource extraction stages (and resource circulation stage); an SCP and Sustainable Industry Action Plan mainly for production and consumption stages; a Circular Economy: a zero waste programme for Europe mainly for waste management and resource circulation; and Resource Efficient Europe for whole lifecycle.

Governments should consider what type of policy frameworks are suitable and/or should be arranged for resource-efficient society. In addition, inter-ministerial / institutional cooperation is crucial to effectively implement waste prevention and resource reduction. This is because each policy framework is basically managed by different ministries/institutions. Thus, approaches to coordinate the inter-ministerial / institutional cooperation are critical for governments.

If a government wants to develop a comprehensive resource efficiency policy framework which covers the

whole lifecycle, a government firstly begins inter-ministerial coordination to develop and discuss how their collaborating work will be effectively implemented (Option1 in Figure 5). If a government selects to firstly develop a specific policy framework at each lifecycle stage by each supervisory ministry, the government should begin to promote each ministry's efforts as well as bi-ministerial cooperation to identify collaborative area between the ministries (Option 2 in Figure 5). After bi-ministerial collaboration gets on the right track, multi-ministerial collaboration can be established to shift more comprehensive policy framework on resource efficiency as a whole (Option 2 in Figure 5).

In addition, focus areas in the context of each country should be selectively considered, taking into account the socio-economic situation in each country in terms of being a resource consumer and manufacturer or being a resource producer of primary and/or secondary resources. Example intervention areas are sustainable mining/resource extraction, sustainable resource supply, resource-efficient industrial process, sustainable consumption and industrial waste/MSW management.

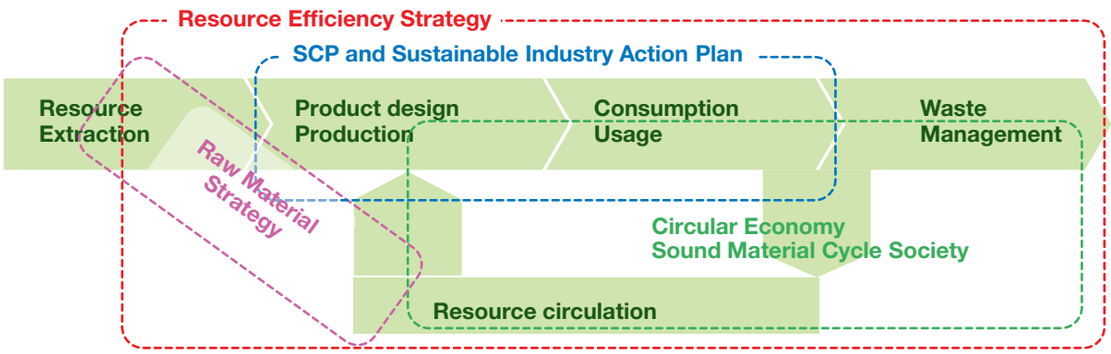

Figure 4: Coverages of policy framework relevant to waste prevention and resource reduction

Source: Author

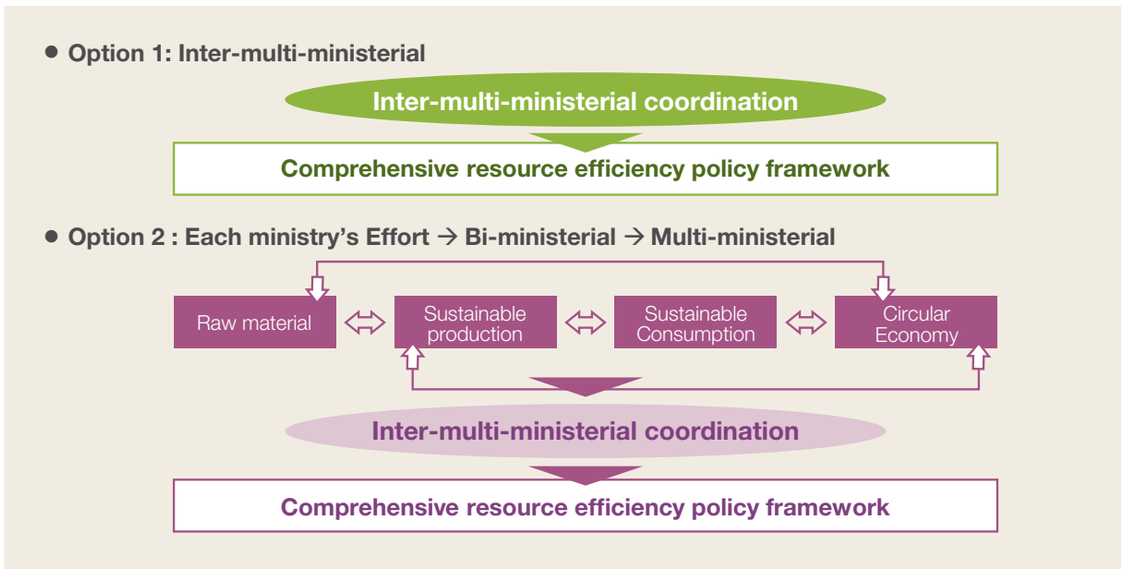

Figure 5: Approaches for inter-ministerial coordination for resource efficiency policy framework

Source: Author

Addressing risk and inequality of economic instruments

As written above, economic instruments such as tax, allowance trading and charge schemes are widely applied in Europe. However, there is still concern about illegal disposal and transferring industrial waste overseas to avoid the taxes/bans. This is crucial especially for developing Asia where the market power of the informal sector in waste management is still strong. To avoid such illegal/informal activities, developing public acceptance for such economic instruments is crucial. One quite basic but important approach is raising awareness to promote the fact that waste management is for the public good.

On the other hand, in the case of economic instruments for citizens, Brown and Johnstone (2014) finds that people who are exposed to pay-as-you-throw (PAYT) systems tend to be significantly more supportive of the system. This indicates public acceptance can be nurtured through the introduction of the system. Thus, governments can probably promote awareness-raising in parallel with introducing economic instruments.

In addition, concerns on the inequality of economic instruments should be noted. Environmental tax in general has the regressivity of taxation (OECD, 2014). This could cause overburden for the poor as compared to the rich, which leads to inequality (OECD, 2014. Thus, there needs to be policy design which avoids regressive effects and considers the re-distributional effects and the development of institutional arrangements for appropriate allocation of revenues (OECD, 2014).

Furthermore, some other concerns for economic instruments such as natural resource tax on companies have been discussed. For example, Hotta (2012) reviews concerns on higher burden for the manufacturing sector which can result in lower international competitiveness and transfer of the sector to other countries; on incentives to increase the illegal dumping of waste due to increasing waste management cost as well as increased export of waste; and on decreased employment in natural resource mining due to increasing costs by the tax.

Capacity development for the private sector

Approaches for manufacturers are another major area to implement waste prevention and resource reduction. In the future, reflecting waste prevention and resource reduction aspects will be crucial in implementing these approaches.

Application of incentive approaches for companies such as certification Eco-label and Eco-design regulations has been disseminated not only at the European level but at the global level. In addition, as shown in Section 3, EU and several European countries have been keen to promote a resource efficient industrial process not only to reduce environmental impact but also to strengthen their economic competitiveness. To more effectively promote waste prevention and resource reduction through the approaches, governments should increase ministerial wider collaboration to incorporate such aspects in the approaches. Linkages between the resource circulation stage and production stages should be further strengthened. In line with this, developing a comprehensive resource efficiency policy framework would be crucial.

For developing and transition countries, the Resource Efficient and Cleaner Production Programme has been conducted jointly by the United Nations Industrial Development Organization (UNIDO) and United Nations Environment Programme (UNEP)[13]. This programme focuses on the efficient use of natural resources, minimisation of waste and emissions, and reduction of risks to humans and environment due to chemicals. Thus, governments in developing countries that implement the programme should consider how much the programme reflects waste prevention and production aspects, and effectively utilise the programme for their policy development.

Awareness and incentive of consumption

Incentives for companies at the consumption stages as well as awareness for consumers such as eco-labelling/ certification and awards have been widely applied worldwide even in Asian developing countries. Deepening their understanding on and incorporating waste prevention and resource reduction aspects should be considered further from now on. In the case

of Asian developing countries, increasing recognition that waste management is for the public good, and that waste prevention and resource reduction is crucial for sustainable development would be important first steps.

13 http://www.unido.org/cp.html

5 Conclusion

This study explores waste prevention and resource reduction policies and tools mainly in EU countries. Based on the survey, this study tries to identify the key areas for implementation of waste prevention and resource reduction in Asian countries, mainly "policy framework which covers whole life cycle and ministerial coordination", "ways to address the risk of illegal activity and inequality of economic instruments", "capacity development for private sector" and "awareness and incentive approaches in consumption stage". Additionally, further incorporating resource efficiency perspectives in the area is important. To further deepen the study, the following issues should also be analysed: existing examples on policies, measurement and other activities on waste prevention and resource reduction in Asia and the Pacific and finding the implementation gap between Asia and Europe/OECD countries; identifying other concerns, challenges and barriers; examining the advantage of developing countries, which can reflect lessons learned from developed countries, to implement the development of policies and tools for waste prevention and resource reduction.

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