

International Fund for Sustainable Materials Management

To completely decouple economic development and material consumption, a strong incentive for sustainable use of resources and dematerialization could be introduced. However, strong policy incentives such as virgin material taxes or taxes for inefficient use of materials in industrial sectors may raise financial concerns as regards international competitiveness, higher dependence on foreign resource supply by shifting material extraction industries, or hollowing out of domestic industries, as well as environmental concerns such as higher incentives for illegal waste exports. To avoid such consequences, it is crucial to maintain harmony and coordinate policy on an international level.

For international collaboration to work, there needs to be a sustainable source of funding, and based on current policy attention on climate issues the most likely international funding opportunity would be through seeking co-benefits with climate mitigation. Conversely, the current climate-related finance and aid tends to focus on end-of-pipe technical solutions such as methane recovery from landfill-site or waste-to-energy approaches, which do not provide a strong economic incentive to promote efficient use of materials.

Phase	Examples of Policy Tools and Concepts
International Collaboration	<ul style="list-style-type: none">Multi-lateral financial mechanism for sustainable materials management and materials circulationPolicy collaboration on resource reductionInternational collaborative scheme for contributing part of national recycling funds

It is therefore important to initiate discussions on a multilateral funding mechanism for sustainable materials management. The major existing mechanisms for international cooperation on environmental protection, such as the Global Environment Facility (GEF) and the Clean Development Mechanism (CDM), are focused mainly on climate change, POPs and biodiversity and do not fit with the funding needs for SMM. In this context, UNEP's ongoing consultative process on financing options for chemicals and wastes is a major step

Endnotes

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- Hotta, Y. (2011) "Asia ni okeru Jizoku Kanou na Shigen Junkan ni muketa Dankai-betsu Approach - 3R Initiative no kokusai-tenkai no keiken ni motozuite- (Step-wise Approach for 3R Policy Implementation in Asia -Based on the experience of international promotion of the 3R Initiative-)" in Haikibutsu Shigen Junkan Gakkaiishi (Material Cycles and Waste Management Research), Vol. 22 No.2
- IGES (2012), Heisei 23 nendo Kankyo Keizai no Seisaku Kenkyu: Ajia wo chushin to shita Shigen Junkan System no Kankyoteki, Keizaiteki, Shakaiteki Eikyoku Hyoukani Kanusuru Kenkyu Saisyuu Kenkyu Houkokusho (FY 2011 Policy Studies on Environmental Economics: Evaluation of Environmental, Economic, and Social Impacts of Resource Circulation System in Asia, Final Research Report), Hayama, Japan: Institute for Global Environmental Strategies.
- UNEP (2011a), *Resource Efficiency: Economics and Outlook for Asia and the Pacific*, Nairobi: UNEP.
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forward but it is of great importance that a future fund is designed based on a life-cycle perspective so that it can provide financial support not only to waste and chemical management but also to investments in resource efficiency and dematerialisation.

As a short term approach, reflecting resource efficiency/productivity with pollution prevention measures in project appraisals by multi-lateral aid agencies or bilateral aid agencies may help here, and in particular, planning tools for improving product/service/project-level material footprinting or communication tools such as ecological footprinting.

As a steering mechanism for a global resource-efficient economy, developed countries could direct part of the recycling fees (or other materials management tax income that the countries involved will collect in order to finance bilateral and multilateral cooperation programmes) as a stimulus for sustainable materials circulation and management (Hotta 2011). Making available such funds for technological development and equipment investment for material recovery activities with pollution prevention measures in developing countries would raise the possibility of changing the current pattern of material usage to one based on higher efficiency and stability.

Conclusion

Without changes in the current pattern of materials use a resource crisis in the near future is inevitable. Thus, innovative approaches are needed to achieve higher productivity in the use of materials and to reduce total environmental impacts from material consumption. This brief argues for introduction of a phased approach adoptable for recycling markets of developing countries and highlights the insufficiency of international funding mechanisms in promoting sustainable materials management to harmonize efficient material use and environmental protection, and, by extension, argues for establishment of a dedicated fund.

The issues presented above will be discussed in more detail in IGES White Paper IV, to be published in July 2012.

IGES Proposal for Rio + 20

IGES Rio+20 Issue Brief **vol.4**

Global Resource Crisis or Sustainable Resource Management? Proposals towards Resource-efficient Global Economy

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Key Messages

- 01** Efficient use of materials is becoming a major policy concern for rapidly emerging economies due to the risk of resource crises and price hikes in resources.
- 02** A "phased approach" would promote a resource-efficient global economy as different countries face different challenges in the management of waste and materials. Such programs should be country-specific and reflect the level of economic development, recycling industry capacity and capacity for implementation and enforcement of regulations in the policies and actions decided on.
- 03** An international fund should be set up for multilateral cooperation programmes on sustainable materials management with funding from, e.g., income generated through economic instruments such as virgin material taxes or Extended Producer Responsibility, which would stimulate evaluation of material reductions and efficiency criteria to assist in socio-economic development with less material burden and environmental pollution.

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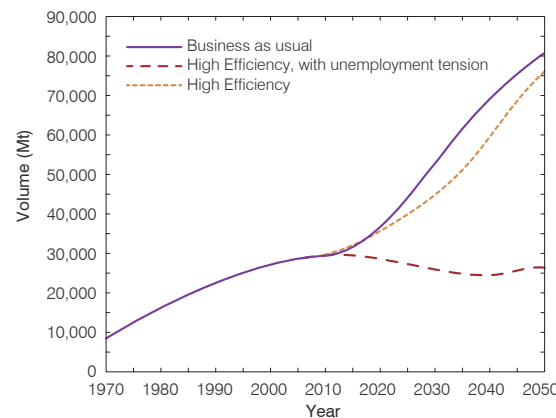
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Resource Crisis or Sustainable Materials Management?

Faced with continuous economic growth and escalating materials demand, international society urgently needs to invest more in systems and technical solutions contributing to decoupling. A recently published UN Environmental Programme (UNEP) report warns that under a business-as-usual scenario the material consumption of the Asia-Pacific region will be at least three times higher in 2050 compared to 2005 (UNEP 2011a); see Figure 1. It also shows that the amount of materials needed to generate one unit of gross domestic product (GDP) has increased in the Asia Pacific region over the last two decades; i.e., that the resource efficiency is dropping.

Figure 1. Domestic Material Consumption: Asia-Pacific Region 1970–2050



Source: UNEP 2011a

For Asia and the Pacific Region—dubbed the “factory of the world”—this all means that there is a higher risk of global resource crises emerging in the near future. When coupled with the rising demand for products and infrastructure in developing economies, it is obvious that resource efficiency needs to drastically rise throughout the region.

For example, in the iron and steel sector, although a recently study (IGES 2012) found that any short-term gaps between supply and demand will mainly be met through increased scrap recycling, it also found that the supply of scrap is nearing its limit. If this trend continues this market will be at the brink of a resource crisis which could precipitate spikes in resource prices. Further, more consumption leads to more waste, and if the means to deal with this waste are lacking, a crisis in waste management will also result, with widespread water and soil contamination from open dumping, worsening air pollution from open burning, or increasing environmental and health impacts on those in the informal materials-recovery sector.

If we are to continue to chase the chalice of Green Economy under the banner of a low-carbon, resource-efficient and socially-inclusive economy (UNEP 2011b), a policy concept that directs investment towards synergising economic development with environmental conservation is needed; one that focuses international attention on, in addition to climate change and low carbon, sustainable materials circulation and management. This will avoid the preconditions for resource crises emerging.

Key Challenges for Sustainable Materials Circulation and Management (Hotta 2011)

Table 1 gives examples of legal frameworks for materials circulation and improvements in resource efficiency in Asia.

Table 1: Examples of Materials Circulation Policies in Six Asian Countries

Japan	Fundamental Law (2000) and Fundamental Plan (2003 revised in 2008) for Establishing Sound Material Cycle Society The Fundamental Plan sets targets and indicators to monitor overall progress via the Policy for Sound Material Cycle Society, including resource efficiency.
	Five product-specific recycling laws: Container and Packaging Recycling Law (1995, rev. 2006), Electric Home Appliance Recycling Law (1998), Construction Material Recycling Law (2000), Food Waste Recycling Law (2000, rev. 2007), and End of Life Vehicle Recycling Law (2002).
	Eco-town Programme* As a subsidy programme for local planning to develop recycling businesses or facilities, generated 5.89 million tons of recycling capacity and added 20% to the average national recycling capacity.
China	Circular Economy Promotion Law (enacted in January 2009) Advancement of a circular economy has been established as a major policy task Eco-Areas Approx. 50 areas (provinces, cities, towns) were designated model Eco-Areas and 20 model cities designated for promotion of a local-level circular economy (as of February 2011).
Malaysia	2007 Solid Waste and Public Cleaning Management Act (2007) Responsibility for solid waste management transferred from local government to central government; 3Rs introduced; privatisation of waste management encouraged. Five-year Plan “Malaysia 2011-2015” calls for raising rate of resource recovery from household waste from 15% to 25% by 2015.
Philippines	Ecological Solid Waste Management Act (2001) 3Rs introduced: all municipalities required to achieve 25% diversion of solid waste (recycling and reduction) by 2006. Recycling rate in Manila was 33% in 2010.
Thailand	Recycling-oriented society initiated 3Rs implemented in over 200 communities, some showing a 30–50% or higher reduction in waste generation.
Viet Nam	3R National Strategy (approved by the Prime Minister) Targets for year 2020: 30% recycling of collected waste; separation-at-source: 30% for households, 70% for businesses.

* For the effect of eco-town programme, see METI’s report (http://www.meti.go.jp/policy/policy_management/14fy-jigohyouka/14fy-5.pdf)

However, many challenges in policy implementation and systems operation still exist: (i) weak governance capacity, (ii) insufficient industrial infrastructure, and (iii) lack of a well-organised recycling market.

(i) Governance capacity
 To improve sustainable materials circulation, collected recyclables must not pass through environmentally-unsound processing. To this end, 3R and materials circulation need to be high on any nation’s agenda, and securing relevant stakeholders for all stages—from planning to review—is key to successful implementation of policy. Collaboration and clear role-sharing between central and local government is needed to create collection and management mechanisms, an industrial infrastructure, and a recycling market (as in Japan’s

enactment of the fundamental law for a “Sound Material-Cycle Society” and China’s national policy for a “Circular Economy”).

(ii) Industrial infrastructure
 Materials circulation also requires the systematic construction of facilities and technologies for the treatment and recycling of collected recyclables, and for this environmental and materials circulation policies as per those used for Japan’s eco-town programme (Table 1), for example, are needed, as well as technology and business transfer from developed countries.

(iii) A well-organised recycling market
 Expectations are growing for the recycling sector to contribute to a “Green” economy in terms of local economy and green jobs. However, recycling markets tend to focus only on acquiring the end resource, and not on the by-product of environmental pollution caused by adopting inappropriate, low-cost processes to clawback value. Thus, recycling mechanisms that use economic instruments such as Extended Producer Responsibility (EPR) for specific end-of-life products would help shift the underlying economic concept from that of informal, “dirty” recycling to a well-organised market with stable job opportunities.

A Phased Approach towards a Resource-efficient Economy

To overcome the above-mentioned priority challenges for sustainable materials circulation and management we propose a differentiated “phased approach”, illustrated in Figure 2. The phases proposed are: i) improvements in materials recovery and capacity development of the actors, ii) internalisation of environmental externalities, and iii) promotion of design for the environment—all of which need to be backed up and facilitated by international collaboration. Adopting a phased approach into governmental strategies and bilateral/multilateral collaboration for sustainable materials circulation and management would lead to better integration of regulations,

better development of the required industrial infrastructure, and result in a more organised recycling market. A phased approach also sits well with developing economies, which have differing recycling market structures and challenges related to resource management. More details on application of the phased approach for EPR Policy in developing countries can be found in Akenji et al. 2011 and IGES Rio+20 Issue Brief vol.3 on “Applying EPR in developing countries”. The policy concepts shown below are only illustrative, and can be adopted by a country according to its national priorities.

The first phase should aim to identify and nurture a core group of industrial sectors and business enterprises to enable sound recycling to emerge from the conventional informal recycling market and economy. Examples of policy tools and concepts in this phase are shown below:

Phase	Examples of Policy Tools and Concepts
Phase 1 Improvement of Materials Recovery and Capacity Development	<ul style="list-style-type: none"> Improvement of organic waste management through pursuit of climate co-benefit Integration of the informal sectors for formal collection of recyclables Nurturing formal industries for materials recovery Certification of good recyclers

For a rapidly emerging country the second phase applies, and provides solid economic incentives for the industrial sector to improve material productivity. A specific example is the EPR mechanism, whereby various actors share the associated burden of treating end of life products as recyclables. Examples of policy tools and concepts in this phase are shown below:

Phase	Examples of Policy Tools and Concepts
Phase 2 Internalising of Environmental Externalities	<ul style="list-style-type: none"> Involvement of major stakeholders to policy-making process EPR or other market instruments Zero waste factory Eco-industrial parks Quality standards for recyclables Product replacement campaign

For countries with large manufacturing bases the third phase applies, and enables new business models for dematerialisation. For example, Design for the Environment can be applied through closer collaboration between chemical and waste management or materials circulation and natural resource management, which enables safe and easy dismantling of products, materials recovery, and dematerialisation. Examples of policy tools and concepts in this phase are shown below:

Phase	Examples of Policy Tools and Concepts
Phase 3 Promotion of Design for the Environment	<ul style="list-style-type: none"> Greening of supply chain Green purchasing Ban of throw-away products Virgin material tax as a price signal for global sustainable resource management EPR to IPR Local production and consumption

Considering the looming resource crisis, developed countries need to take a bold direction with policy and greater responsibility towards dematerialisation and socio-economic reform for a globally less resource-intensive society. This would act as a role model for other economies at lower levels of development to find innovative, less resource-intensive development pathways (Figure 2).

Figure 2. Phased Approach towards a Resource-efficient Global Economy

