



Chair's Summary of Circular Economy: Development of Recycling Industries

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Policy context

Circular Economy (CE) & recycling:

- Circular Economy - UNIDO definition: Extending improved design and servicing, and relocating waste from the end of the supply chain to the beginning, enjoying high-level policy support
- Recycling recognized as a key driver for CE

Sustainable Development Goals (SDGs) & recycling

- SDGs are the core of Agenda 2030, a blueprint for achieving a sustainable future for all; enjoying universal support. Sustainable Development Indicators serve to monitor and review progress towards achieving the SDGs
- Recycling is linked to 6 SDGs, which are Goals 7 (affordable & clean energy), 8 (decent work & economic growth), 9 (industry, innovation & infrastructure), 11 (sustainable cities & communities), 12 (responsible consumption & production) and 13 (climate action)
- Recycling is especially linked to Indicators 11.6 (municipal & other waste management), 12.4 (environmentally sound management of chemicals & wastes throughout their life cycle), 12.5 (reducing waste generation through prevention, reduction, recycling and reuse)

Barriers to the development of a sustainable recycling industry

Despite the policy support accorded to the role of recycling in the SDGs and the transition to a CE, barriers to the development of recycling industries exist at different levels, especially in emerging economies and developing countries.

A. Barriers related to institutional, structural and economic issues

A.1. Lack of infrastructure for collection, storage, dismantling and processing

A.2. Limited investment possibilities for value chain establishment

A.3. Unfavourable market forces affecting recycling: volatility of commodity prices (e.g. copper, tin); large proportion of essential primary resource controlled by one country (e.g. cobalt / DRC, rare earth metals / China)

A.4. Impact on population and economic growth

A.5. Mode of consumption patterns- throwaway society

A. Possible interventions to address barriers related to institutional, structural and economic issues

A.1. Infrastructure development

- Innovative green design, manufacturing and recycling systems (example: industry parks for e-waste recycling in China; industrial symbiosis);
- Waste treatment facilities that can handle multi-component wastes and different waste materials and streams

A. 2. Market interventions

- Extended producer responsibility (e.g. eco-tax on certain products, producer can get reductions for certain actions)
- Tax relief (e.g. for using recycled materials);
- Taxes on landfill;
- Subsidies, e.g. for recycling operations under specified conditions, or for purchase of material from informal sector by formal sector actors (*introduced in China for e-waste*);
- Recycled content standards (stipulating a ratio of recycled materials in a product to total materials used);
- Deposit refund schemes
- Green public procurement;
- Improved quality of recycling systems (high grade quality materials)

B. Barriers related to lack of support of recycling by policy and regulation

B.1. Lack of clear distinction between waste and secondary raw materials used in recycling processes and lack of clear distinction between hazardous and non-hazardous materials. This places a significant financial and administrative burden on recyclers.

Examples: Rubber granulate from used tyres used in sports fields, artificial turfs, rubber mats and moulded products; CTR glass used in production of ceramics

B.2. Lack of legal/ policy incentives for recycling

B.3. Lack of political support for recycling: Low level of awareness of environmental/economic benefits of recycling; recycling not considered a priority in government programmes and budgets, lack of support for collection systems to ensure that the demand for recycling is met.

B.4. Legislation are not enforced; policy decisions are not in line with legislation

B.5. Waste and chemical regulations are not working in sync: waste regulations aiming for high recycling rates, chemicals regulation restricting chemicals.

B. Possible interventions to address barriers related to lack of support of recycling by policy and legislation

B.1. Development or revision of legal instruments

- Introduction of clear definitions of waste and secondary raw materials, taking into account international legal instruments and broadly recognized definitions (e.g. Basel Convention, OECD, EU)
- Establishment of thresholds of contamination with hazardous substances that make recyclable materials hazardous (e.g. flame retardants in plastics, textiles and furnishing)
- Determine when recycled materials used for manufacturing cease to be waste (e.g. materials coming out of an interim process such as break-up of building waste)
- Governments to adopt International Regulation and scrap classification

B.2. Adoption of supportive policies

- Creation of incentives for recycling through: Recycling targets; take-back obligations and advance recycling fees; restrictions on landfill and incineration of recyclable materials; Third party environmental EHS certification; Labels and standards for secondary raw materials; EPR schemes, including targets for a minimum collection rate); Life Cycle Assessment (LCA), Deposit refund (when material is returned), Labelling (more informed choices for consumers), voluntary commitments (e.g. by major companies such as McDonalds, Coca Cola), zero-waste concepts
- Development of waste collection policies including collection and sorting systems; development of a value/supply chain approach to waste valorisation and management

B.3. Measures to raise awareness among politicians, private sector, SMEs and civil society

- Advertisements, campaigns (inclusion in school curricula);
- Research, studies (e.g. development of innovative technologies that do not depend on significant infrastructure and legal framework
- Policy declarations; creation of political will through showcasing contribution of recycling to broadly supported policy goals (e.g. protection of human health through avoiding land/water/air contamination; combatting climate change through reduction of methane emissions)

B.4. Strengthening enforcement through global, regional networks and partnerships

- Participation in global and regional enforcement organizations and networks, e.g. INECE, Green Customs Initiative, INTERPOL Environmental Crime Programme, Regional Enforcement Network for Chemicals and Wastes, Asian Network for Prevention of Illegal Transboundary Movement of Hazardous Wastes, Latin American Environmental Prosecutors Network
- Participation in international partnerships, e.g. ENFORCE under the Basel Convention
- Cooperate with skilled and professional traders able to sell materials at the top market price
- Strengthening of cross-border cooperation

C. Barriers related to international trade

Given that recyclable materials are subject to international trade, the development of a recycling industry can be impacted by:

C.1. Different national regulatory requirements for the management of recyclable materials:

- International legal framework provides limited harmonization, but
 - does not address all recyclable materials
 - not binding on all countries (e.g. US not a party to Basel Convention)
 - difficult of increasing complexity of products, global traceability of material flows (e.g. e-waste): control of illicit trade; classification schemes and data of material flows as a global knowledge base leaves flexibility for deviating national regulation, e.g. on
 - Definitions of wastes / hazardous wastes / secondary raw materials
 - Prohibition of export / import / transit
 - Procedures for international shipments

C.2. National import bans on certain types of materials: different views expressed by panel and the audience

- Effects on the recycling industry (no consensus on whether the effects are positive or negative)
 - Reduces availability of recyclable or recycled material in a country, forcing recyclers / manufacturers to find alternative materials; may lead to price increases
 - Volume of recyclable material available in a country does not allow economically viable recycling operations
 - Example: state of the art e-scrap recycling facility in a country banning e-scrap import not economically viable due to insufficient availability of material

C.3. Other trade barriers

- Obligation to recyclers to test materials (e.g. EU: obligation to test for materials covered by REACH legislation)
- Tariff barriers, e.g. customs/import duties; taxation border costs; duties applied to recycled or recyclable materials but not to primary materials, or to imported but not to domestic recyclables.
- Non-tariff barriers, e.g. standards used to eliminate competitors that are not certified; permits and licences; emission controls used as means to control import/export
- Changes in prices of metal products

C. Possible interventions to address barriers related to international trade

C.1. Harmonization of national laws through

- Adherence to the definitions, codes and import/export requirements established by international organizations and treaties (e.g. Basel Convention, OECD, EU, WCO Harmonized Commodity Description and Coding System)
- Use of existing guidance materials on management of wastes and recyclable materials developed by international treaties and organizations (e.g. Basel Convention, UNITAR)

Means to support harmonization

- Development of specific guidelines for recyclable materials by specialized organizations (e.g. UNIDO)
- Training and workshops organized by specialized organizations (e.g. UNIDO, Basel Convention Regional Centres for Training and Technology Transfer)
- Building of networks and partnerships to promote a harmonized approach to recycling
- Adopting a regional approach to wastes management/recycling through regional economic entities and business associations

C.2. Modification of national import bans

- Promote understanding that recyclable materials must move to maintain an international market and achieve a Circular Economy
- Exemption of recyclables from import bans if not hazardous; this requires
 - Clear definitions and distinctions between wastes/hazardous wastes/recyclable materials (see above)
 - Authorities and business to understand material composition

C.2./ C.3. Engagement through global or regional trade agreements

- Multilateral negotiations on liberalization of trade in secondary raw materials, machinery and equipment used by the recycling industry, e.g. under WTO or Regional Free Trade Agreements. Very difficult (e.g. WTO negotiations on Environmental Goods Agreement stalled)
- Engagement of WTO's dispute settlement mechanism to contest a trade barrier (examples: Brazil's import ban on re-treaded tyres successfully challenged by EU).
- Reduction of non-tariff trade barriers (textile recycling)

D. Barriers related to industrial activity

D.1. Barriers related to the informal sector

- Informal recyclers operate outside the regulatory system, in unsound (health effects, no social security, child labour) conditions and do only collect easily extractable materials, posing a threat to human health and the environment.
- Informal sector constitutes unfair competition to formal recyclers due to lower prices. This can hinder development of formal recycling industry
- Lack of clarity of the roles and responsibilities of different stake holder involved in recycling
- Burden on municipal waste management systems:

- Informal recyclers discard (hazardous) residues; these become the responsibility of the municipality
- Informal recyclers collect valuable recyclables, thus depriving the municipality or scrap yard of the income derived from these resources

D.2. Barriers related to manufacturing

- Recycling is not considered in the manufacturing of products
Example: high-technology products such as
- Manufacturers not disclosing components of products
Examples: Mercury content of flat screen TVs; materials contained in used tyres
- Prohibitive cost of management and disposal of non-recyclable residues; manufacturers shift the financial burden to recyclers
Example: tyre manufacturers
- The resilience of the recycling sector to market shocks is weak because the sector is characterised by SMEs
- Recovery of critical raw materials: technologies for specific materials and products; establishment of value chains (example metal recycling)
- Problems with implementation of „Product-Centric approach“: there is a gap in designing a product for recycling vs. rapidly changing designs and more complex products (e.g. example of metal recycling)

D.3. Barriers related to technical, financial and capacity constraints

- Limited availability of green public procurement to purchase technology/techniques for processing complex materials
- Lack of available technologies to separate all valuable materials from products (e.g. recovery of all metals from e-waste, textiles)
- Lack of data for recyclables, chemical composition of products used for recycling, and country-adaptive technologies
- Insufficient knowledge of collection/separation/processing techniques
- Lack of understanding of local recycling schemes
- Inadequate capacity/infrastructure to test, characterize and separate waste
- Financial constraints impede technically viable solutions
- Problems with ensuring quality standards of the recycled output product (to be internationally tradable)
- Lack of monitoring and provision for penal actions

- Different payment methods/incoterms (credit letter, in advance, 80% at the loading and 20% after the delivery); This creates risks coming from the fluctuations of the Metals Stock Exchange (as LME, etc.)

D. Possible interventions to address barriers related to industrial activity

D.1. Integrate informal recyclers in the process rather than trying to eliminate them

- Options include
 - Cooperation arrangements between formal and informal sectors, division of labour (e.g. collection by informal actors, delivery to formal recyclers for a higher price than could be obtained on informal market) and to ensure higher recycling rates.
 - Formalization / legalization (but: often rejected by informal recyclers)
- Strong legal and policy framework can prevent or diminish informal recycling

D.2. Introduction or clarification of obligations to manufactures and/or consumers

- Development and enforcement of an EPR scheme to ensure that manufacturers to focus on sustainable green design resources security and share/transfer the responsibility/cost of collection & disposal (e.g. eco modulation- taxes based on use of specified quantities of materials used in several EU countries)
- Development of new business models for sustainable recycling
- Consider recycling as an integral part of green design and manufacturing
- Obligation to manufacturers to use processes that facilitate recycling
- Obligation of manufacturers to disclose components of products
- Advance recycling fees (shifting costs to consumer)
- Standardisation of the product designed out of recycled materials
- Terminology of waste versus used material or material for recycling

D.3. Possible approaches to support capacity building and funding

- Development of cooperation projects, including training and technology transfer
- Demonstration and pilot projects
- Development of technologies that can be used in situations where legal/institutional framework and infrastructure is lacking, e.g. in remote/poor areas
- Introduction of government programmes to support recycling (example EU)
- Funding of recycling programmes through use of international financial mechanisms linked with environmental targets (e.g. for POPs, ODS and GHG / e-waste recycling)
- *Operational suggestions*: insurances and warranties (hedging) related to the material (sold or bought); adoption of police control in order to be sure that the load will arrive at the final destination

Results of audience polls

1. In your opinion, which of the following policies is the most efficient in the development of sustainable recycling industries?

- Waste management policies favouring recycling (63%)
- Awareness raising on environmental/economic benefits of recycling among government, private sector, SMEs and civil society (23%)
- Green design and manufacturing policy integrating recycling, and Green public procurement supporting recycling (15%)

2. Which enabling measures and incentives will be most supportive in developing recycling industries?

- Legislation providing incentives and clear definition (54%)
- Marketing interventions favouring recycling (Taxation, tax relief, subsidies favouring recycling) (23%)
- Manufacturing requirement favouring recycling (e.g. Material composition: clear definitions and good understanding of valuable versus non-valuable (hazardous) chemicals; Requirements for favourable green design and manufacturing)(23%)

3. Which international cooperation is the most supportive to the development of recycling industries?

- Harmonization of requirements and procedures for recyclables management (48%)
- Targeted technical assistance and capacity building (42%)
- Trade liberalization for recyclables (10%)

4. What should be the preferred policy options for steering supply side of recycled plastics?

- Extended producer responsibility (40%)
- Introduction of dual or multiple stream collection systems (29%)
- Incentives for better plastics design (22%)
- Restrictions on the use of hazardous additives (9%)

5. What should be the preferred policy options for steering demand side of recycled plastics?

- Tax on virgin plastics (38%)
- Recycled content rules (27%)
- Recycled content product labels (22%)
- Public procurement (13%)

6. In terms of barriers for metals recycling, which do you think is the most important (rating from 1 to 5 points)

(i) Price volatility? (rating from 1 to 5 points)

- 1 point = 22%

- 2 points = 12%
- 3 points = 27%
- 4 points = 30%
- 5 points = 9%

(ii) Lack of standards and certification schemes?

- 1 point = 25%
- 2 points = 11%
- 3 points = 17%
- 4 points = 28%
- 5 points = 19%

(iii) Cost of collection?

- 1 point = 6%
- 2 points = 25%
- 3 points = 25%
- 4 points = 22%
- 5 points = 22%

(iv) Virgin ores?

- 1 point = 6%
- 2 points = 25%
- 3 points = 25%
- 4 points = 22%
- 5 points = 22%

8. Other than policy measures, what do you consider as the most important factor that encourages metal recycling?

- Intelligent design for future recycling (32%)
- Improvement of recycling technologies (29%)
- Information and education (24%)
- Standardization (15%)