Circular Economy

Setting the scene

Regional preparatory meetings for global consultations on circular economy

Nilgün Tas
Chief, Industrial Efficiency Division
Deputy Director, Department of Environment
November 2020
We consume millions of products

Nutrition  Housing and Infrastructure  Mobility
We consume millions of products

Consumer goods | Communications | Health, education, sports, services

- Yellow T-shirt
- Server rack
- Medical scanner
- Football and basketball
- Various appliances
- Laptop
- Conference room
- Clothing rack
Linear products: planned obsolescence

- Frequent cosmetic changes in products
- Non-durability is a feature!
Linear products: difficult to repair, reuse, remanufacture, recycle

Disassembly from 3 to 20 minutes, with special tools and skills
Linear products: Non-recoverable, non-recyclable
Global consumption of resources for societal needs (2015)

- Housing and infrastructure: 45%
- Nutrition: 23%
- Mobility: 13%
- Consumer goods: 10%
- Services: 5%
- Healthcare: 2%
- Communication: 2%

**Materials**: biomass, fossil fuels, metals and non-metallic minerals

**Resources**: materials, land and water

Source: Circularity gap reports 2018 & 2019, Circle Economy
Global solid waste composition in 2016

- Food and organics: 44%
- Paper & cardboard: 17%
- Plastic: 12%
- Glass: 5%
- Metal: 4%
- Wood: 2%
- Rubber & Leather: 2%
- Other: 14%

Source: “What a waste 2.0”, WBG, 2018
Lancet Commission on Pollution and Health main health findings*

Pollution killed an estimated 9 MILLION people in 2015...

3 TIMES MORE than AIDS, tuberculosis and malaria combined.

9 MILLION premature deaths = 16% of all deaths worldwide

*Supported by EU, UNIDO, USAID and Pure Earth, among others
GLOBAL ECONOMIC IMPACT OF POLLUTION

Estimated at $4.6 trillion per year, the equivalent to 6% of global GDP, using welfare cost analysis. Commission recommended Circular Economy practices to be deployed to deal with pollution.
Global impacts of resource extraction and processing

- ~50% of climate impacts
- ~90% of water stress
- ~90% of biodiversity loss due to land use

BUT
Production and consumption also created lots of value added and jobs

Circular economy is an “industrial economy”

- **Returns** products, parts and materials into use several times

- **Based on principles that**
  - Products are **designed to last**
  - Value is maintained for as long as possible
  - Generation of **waste and pollution** is minimized
  - **Renewable energy** is used along value chains, as much as possible

- **Enablers:** **Innovation, Stewardship, Partnership and Collaboration** between businesses, governments, and consumers
Circular economy practices are “business practices”

Along **global** and **domestic value chains**

- Eliminate/replace the product (→ single-use plastics)
- **Design** phase
  - Reduce amount of materials used
  - Eliminate/replace hazardous chemicals
  - Improve **Durability / Reusability / Upgradability / Reparability / Recyclability**
  - Increase **recycled** content in products
  - Ensure products use energy and other resources efficiently
- Maximize **resource efficiency** in manufacturing
- **Optimize/intensify use of products**
- Enable **remanufacturing**
- **Regenerate** biomass, **recycle** materials
- After maximizing circularity everywhere else, **recover energy** from remaining waste

Circular economy practices **strengthen resilience** of firms and economies!
Circular economy actors and benefits

- **Circular economy actors:**
  - Consumers
  - Businesses
  - Governments

- **Role of governments is to create favorable conditions**
  - Enable consumers to buy more circular products, have them understand their benefits
  - Move businesses to increasingly design & produce more circular and safer products, which also increase profitability

<table>
<thead>
<tr>
<th>Economic benefits</th>
<th>Environmental benefits</th>
<th>Social benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased productivity (with resource efficiency)</td>
<td>Reduced environmental impact</td>
<td>Improved well-being</td>
</tr>
<tr>
<td>Reduced production costs and improved competitiveness</td>
<td>Reduced emissions of greenhouse gases (GHG) and pollutants</td>
<td>New jobs and incomes</td>
</tr>
<tr>
<td>New business activities and models</td>
<td>Reduced pollution and end-of-life waste</td>
<td>Improved health and working conditions of people</td>
</tr>
<tr>
<td>New markets and investment opportunities</td>
<td>Higher quality of ecosystem services</td>
<td>Improved health of animals and plants</td>
</tr>
<tr>
<td>Enhanced consumer loyalty</td>
<td>Preservation of natural resources (water, land, materials)</td>
<td>New partnerships and collaborations</td>
</tr>
<tr>
<td>Reduced resource scarcity and better protection on resource price fluctuations</td>
<td>Safeguarding biodiversity</td>
<td>Innovations and technologies make life easier</td>
</tr>
</tbody>
</table>
Maintenance/Repair and Reuse

- Linear supply chain
- Circular economy practices

→ Material supply → Design and manufacturing → Distribution and use → End-of-first life

→ Reduce/Replace
→ Repair/Reuse
→ Remanufacture
→ Regenerate/Recycle
→ Waste to Energy
Product value during use

“New business opportunities, creating higher skilled jobs"
Recycle /Regenerate biomass

- Linear supply chain
- Circular economy practices

Material supply ➞ Design and manufacturing ➞ Distribution and use ➞ End-of-first life

Waste to Energy ➞ Regenerate/Recycle ➞ Remanufacture ➞ Repair/Reuse ➞ Optimize ➞ Reduce/Replace
Recycling rates

• **Metals**: In principle, infinitely recyclable. Some are well recycled (e.g., iron/steel – about 67% of steel is produced from recycled iron/steel; about 70% of aluminum). Others (e.g., rare-earth metals) are poorly recycled (one reason why governments are so keen to promote recycling of electronic equipment).

• **Other materials** have OK-to-good recycling rates:
  - About 50% of post consumer paper waste is recycled;
  - About 20% of glass produced is recycled (for container glass, it’s 30%, for flat glass it’s 10%).

• **Other materials** are much more problematic:
  - No more than 2% of plastics are recycled!
  - Only ~1% of textile waste is properly recycled. 19% is down-cycled (rags, stuffing, etc.). The rest is incinerated or landfilled, what a huge loss of value!
Regenerate biomass

Anaerobic Digestion

Composting

Production of uniform compost in windrows at a commercial composting facility.
Suggestions on how to move forward “together” at global level

• Develop a **concrete shared understanding** (government, business, civil society) for CE as a means to achieving important **global goals** (climate crisis, health and economic impacts of waste and pollution, creation of decent jobs, improving the well-being of people,...)

• Establish **on-going global dialogue** (at the consultations platform backstopped by UNIDO), exchanging information and experience on
  
  o **Barriers** to implementing CE practices (no one-size-fits all);
  o **CE solutions** that worked or did not work,
  o **Learning together** from success cases, how to monitor/measure progress and defining guidelines, etc.;
  o Setting up of **partnerships** (government-to-government, business-to-business, with financial institutions, ...)
  o Eventually, converging on **global actions** that will enable implementation of CE principles and practices
Suggestions on how to move forward at country level

• Develop a **concrete shared vision** for CE as a means to achieving important societal goals (government, business, civil society/consumers)

• Establish **an independent unit in government** to drive CE across interest groups and policies

• Establish a cross-sectoral, **pre-competitive space (for business, but not only)** for exchange of information, setting up of partnerships and definition of standards

• **In collaboration with the business community and consumer groups;**
  - Identify and **select areas of activity within focus sectors** which are economically, environmentally and socially relevant
  - Develop a system of **targets and indicators**, initially based on existing data/information
  - Systematically prepare **specific solutions to barriers and incentives for CE practices**

• **Build on existing strengths** as much as possible; e.g. (eco-)industrial parks where businesses cluster

• Launch an **educational initiative** to embed principles of CE in relevant curricula, introduce what CE means in practice to future generations of consumers
Circular Economy

Thank You

n.tas@unido.org