



UNITED NATIONS  
INDUSTRIAL DEVELOPMENT ORGANIZATION



**SUSTAINABLE DEVELOPMENT GOAL 9**  
INDUSTRY, INNOVATION AND INFRASTRUCTURE

# Marine plastic litter and resource efficiency

Can the marine plastic litter problem be reduced  
by circular economy?

**Keynote address**

at

UNIDO-Japan Multi-Stakeholder Cooperation Dialogue

Tokyo, Japan

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# Introduction

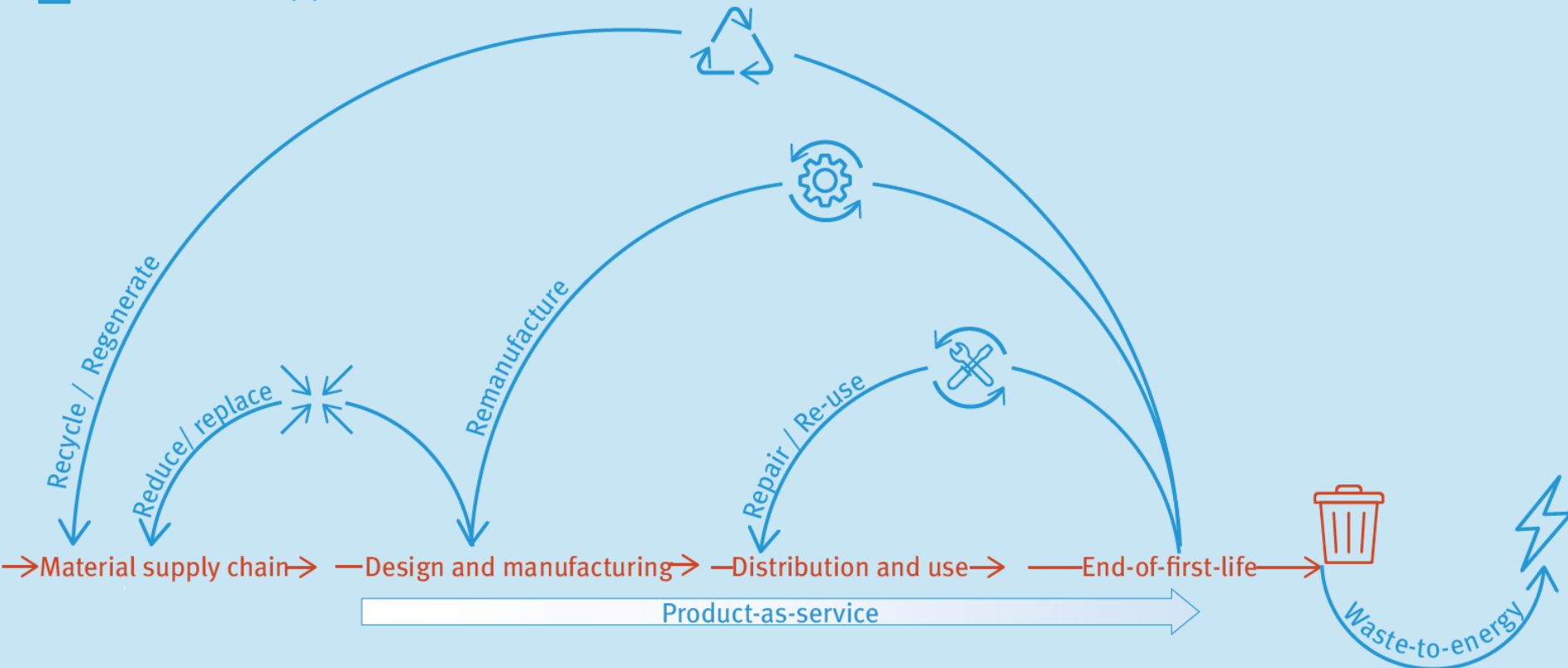
- Basis: Working paper  
*“Addressing the challenge of Marine Plastic Litter using Circular Economy methods - relevant considerations”*

Prepared for consideration for the G20 Ministerial meeting on Energy Transitions and Global Environment for Sustainable Growth



# Circular Economy for plastic litter

- Linear supply chain
- Circular economy practices





# UNIDO's Plastics approach – Basic Principles



**Issue of marine plastic litter is closely linked to lack of proper land-based waste management**



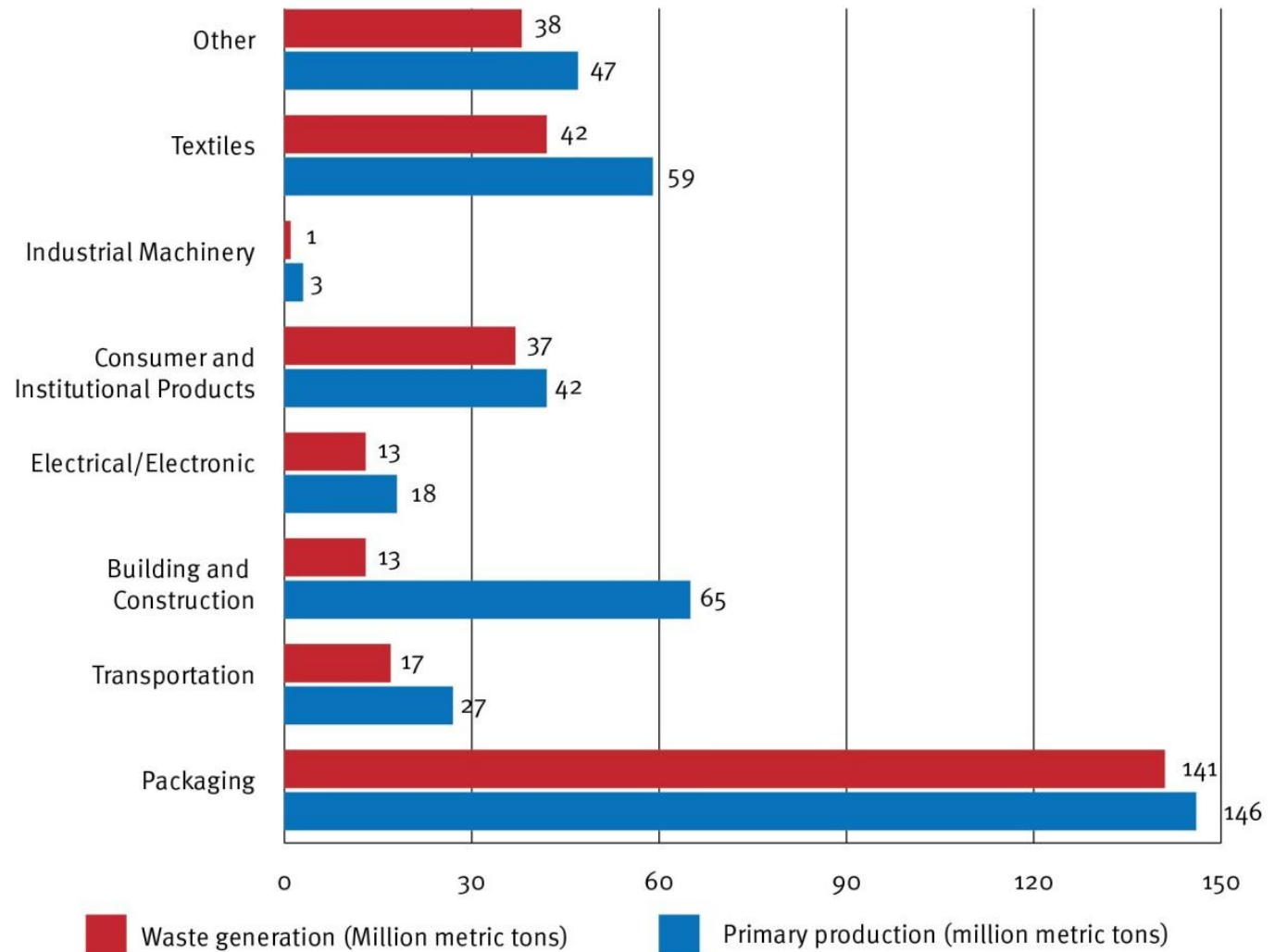
# UNIDO's Approach to the issue

- **Marine Plastic Litter reduction: Focus on**
  - Industry
  - Materials and their flow
  - Resource efficiency and Circular Economy
- **Aims to contribute to today's discussion:**
  - How can Circular Economy practices help?
  - How can partnership of public, private and academic sectors contribute to reduce Marine Plastic Litter?



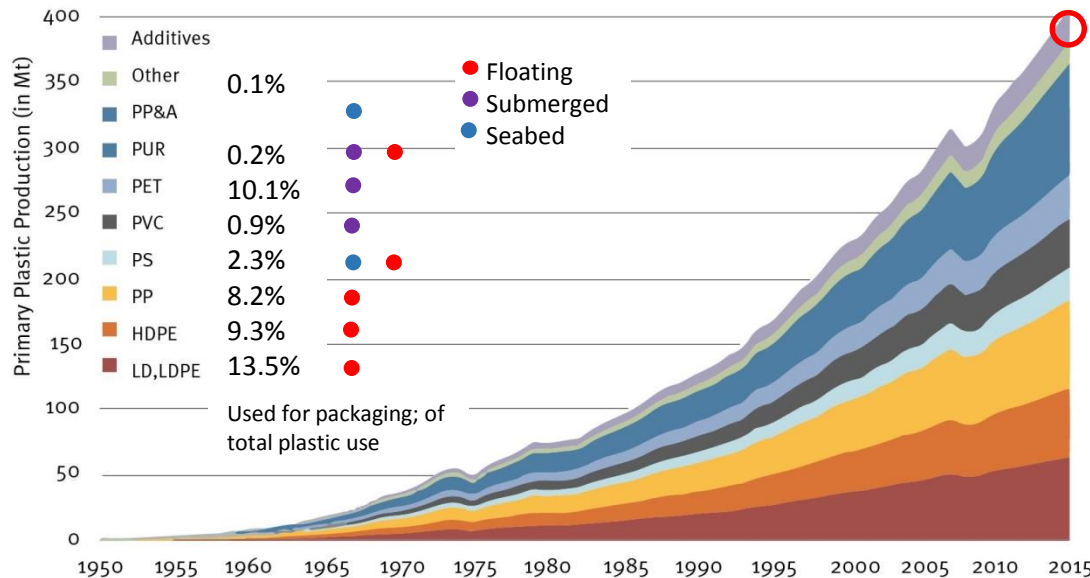
# Plastics

• by sector

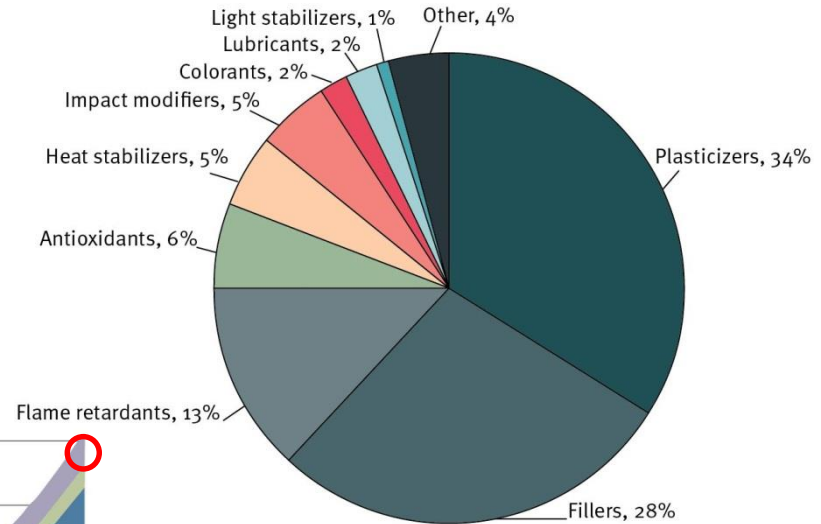


# Plastics

- Universally used
- Very differentiated group of materials

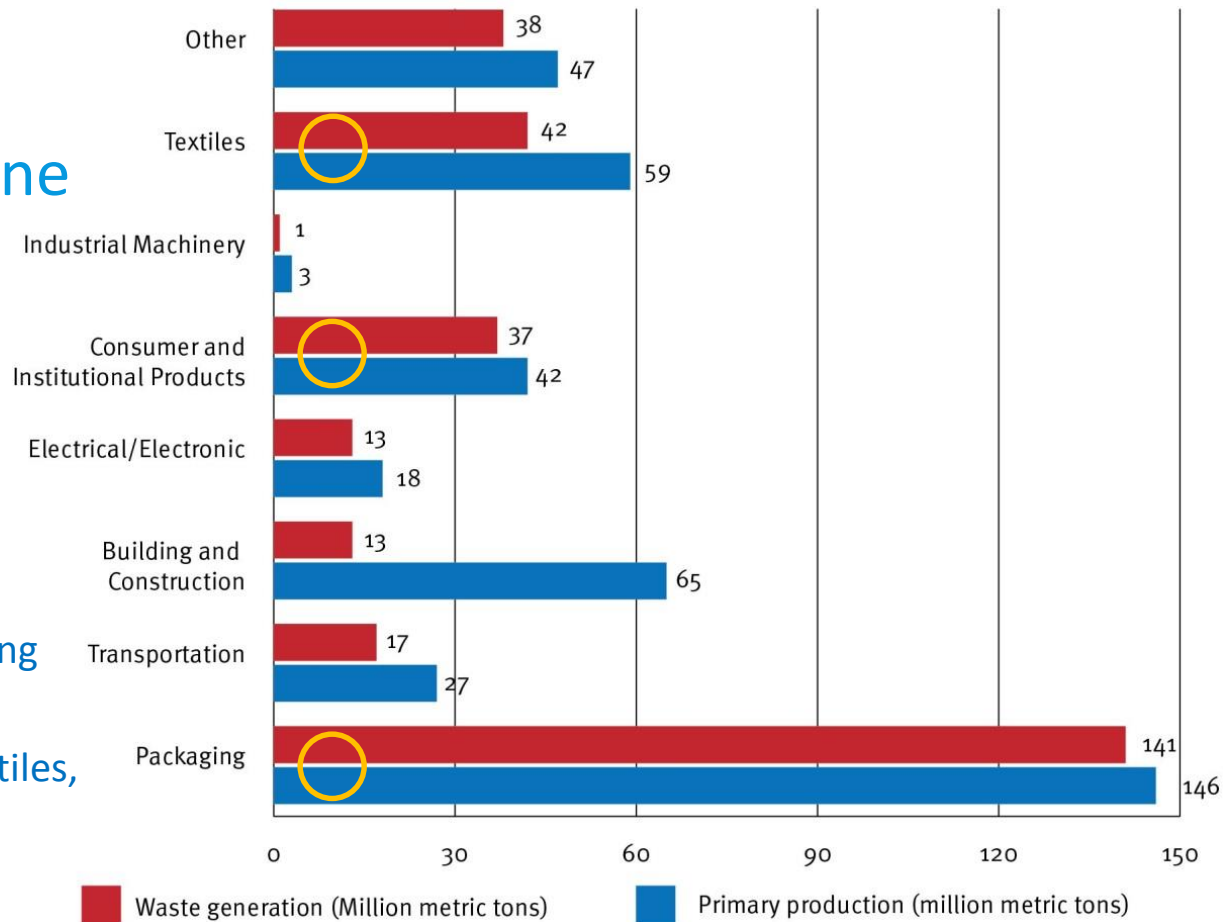


## Additives used in Plastics



# Plastics

- By sector
- Relevant for Marine Plastic Litter:
  - Plastic packaging
    - Short lived plastic consumer products
      - Souvenirs, ...
      - Some textiles
      - ...
  - Microbeads:
    - Intentionally: cleaning and personal care products
    - Unintentionally: textiles, ...





# Circular Economy for plastic litter

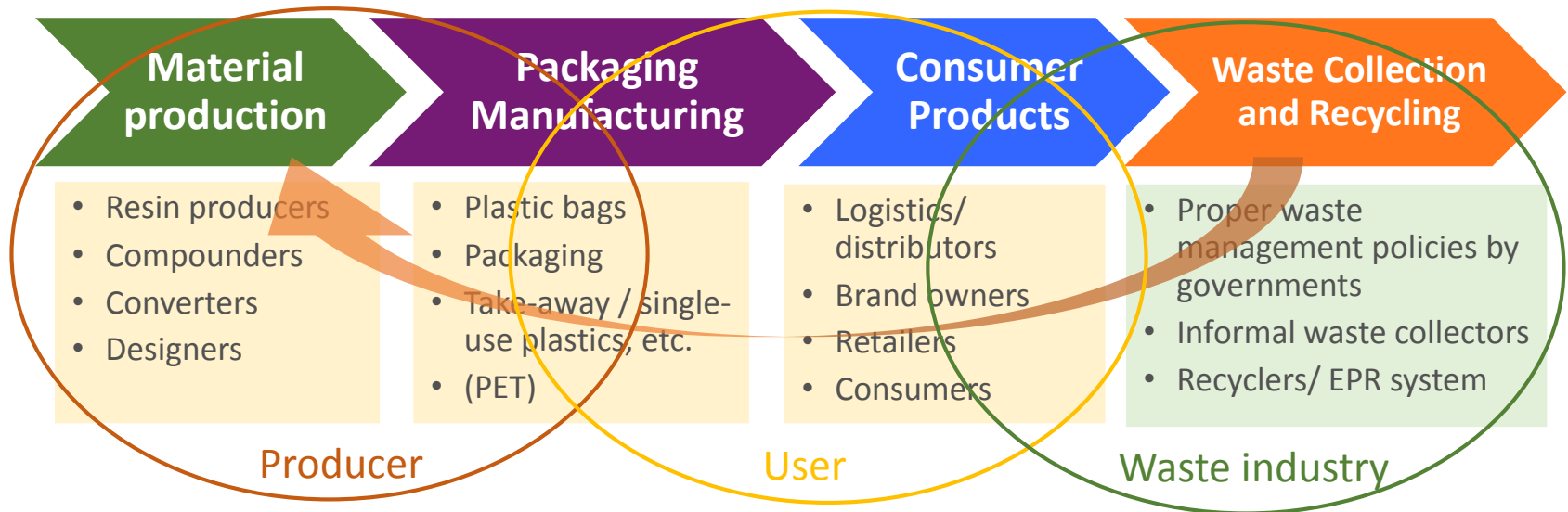
## UNIDO promotes Resource Efficiency on industry and Circular Economy practices

- Waste=Resource
- Japan promotes 3Rs (reduce, reuse, recycle)
- Importance of **Product Design**
- From industrial development point of views, it is imperative to work with private sector in value chain



a new opportunity for developing a new **green business model**

# Plastic Value Chain



# Single Use Plastic Products



Even with well established collection & recycling systems

Single use plastic products could easily leak to the environment

Product Design is the key

..and enabling environment by policy/ regulations is driver

- No Packaging
- Biodegradable or alternative material use
- Less material use
- Easier to recycle plastic products (e.g. single resin)

# Design challenges

- Designing products is challenging:

Needs to incorporate considerations on

- **Utility**
- **Enterprise related issues**  
(production equipment, experience, strategy, ...)
- **Market demand, profitability, ...**



- **Regulatory task: Influence design choices to minimize Marine Plastic Litter**

# End of first life and Final disposal

- Collection and, where possible, separation at household level is critical
  - Involves also the informal sector where existing
- **Recycling options:**



## Thermal

- Using plastics as fuel and utilizing the heat generated
- Substantial value loss, emission risks/challenges,
- but possible solution for all plastics

## Mechanical

- Separates main groups of plastics
- Best current option for retaining value
- but limited # of cycles; typically “downcycling”

## Chemical

- Transforms recycles into virgin-like raw materials by chemical process
- Conceptually ideal solution but: Not yet large-scale used;
- overall environmental footprint unclear

# Conclusion

1. **Waste disposal**
2. **End-of-pipe solution = cleaning the oceans**
3. **Only some plastics and sectors have significant impact on Marine Plastic Litter**
4. **Bans (plastic bags, ...), levy's...**
  - Will help significantly
  - Will not address the full bandwidth of Marine Plastic Litter

# ...and 5. Unleash the power of economics

