switchasia
REGIONAL POLICY ADVOCACY

Funded by the European Union

Evolution of Circular Economy

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Presented by Dr. Prasad Modak

ekonnect

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CEE PERDO Center of Excellence on Energy Technology & Environment

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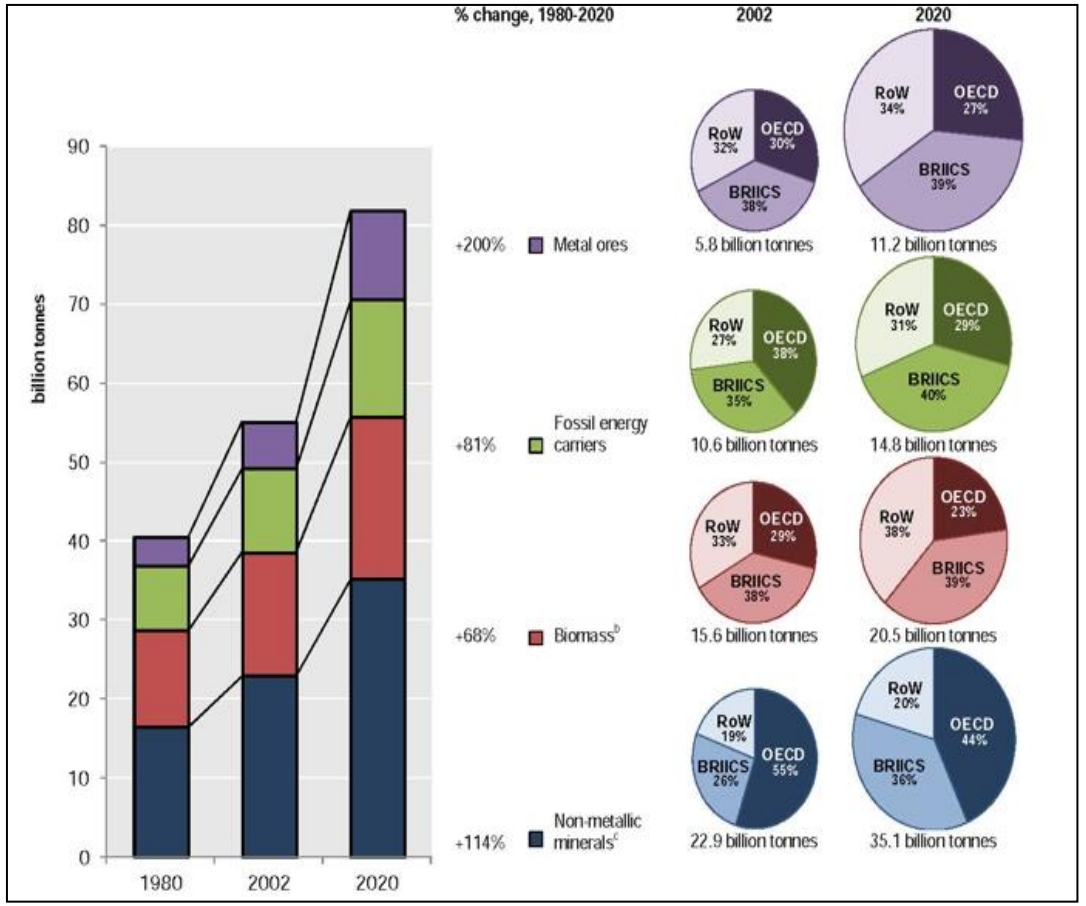
Today's Topics

1. Challenges with Linear Economy
2. Important concepts paving way towards Circular Economy
3. Understanding Circular Economy

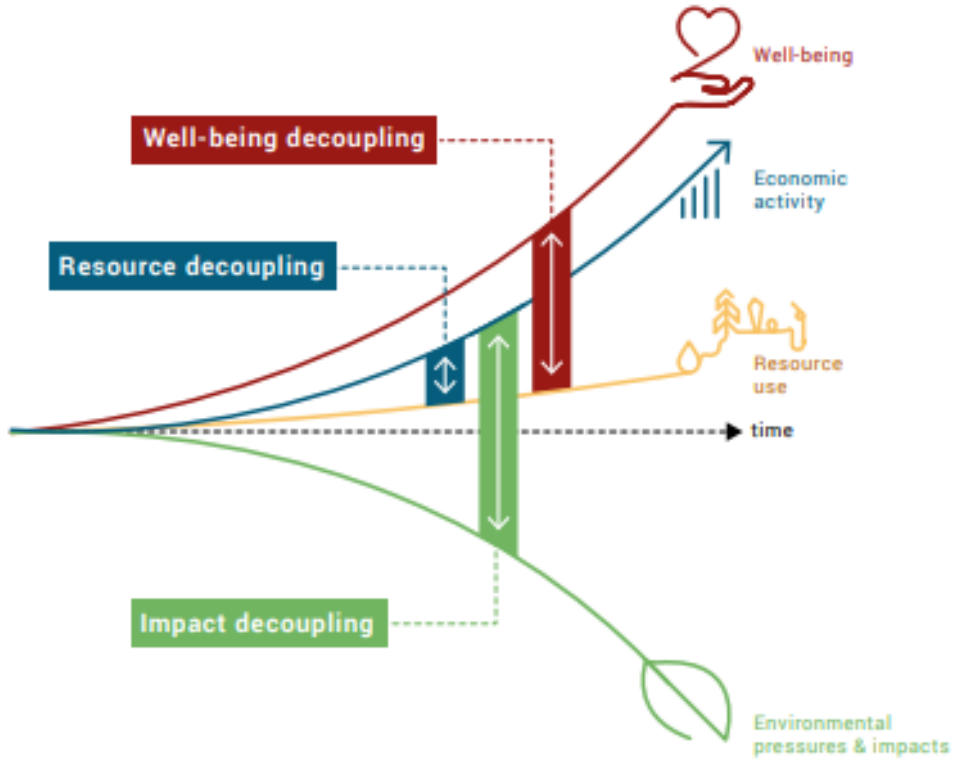
Challenges with Linear Economy

- Extraction level increased from **27 billion tons in 1970 to 92 billion tons in 2017**
- **10 economies** responsible for **68% of world's extraction** – unequal distribution of benefits
- **30% of river** basins are in severe stress since 2010
- Currently **1.75 times** the **Earth's carrying capacity** is consumed
- Extraction and processing of natural resources has led to **90% of global diversity loss** & contributed to almost **half of global GHG** emissions



Need to Decouple

Decoupling is when **resource use** or some **environmental pressure** either grows at a **slower rate** than the **economic activity that is causing it** (relative decoupling) or declines while the economic activity continues to grow (absolute decoupling)



Source: International Resource Panel 2017

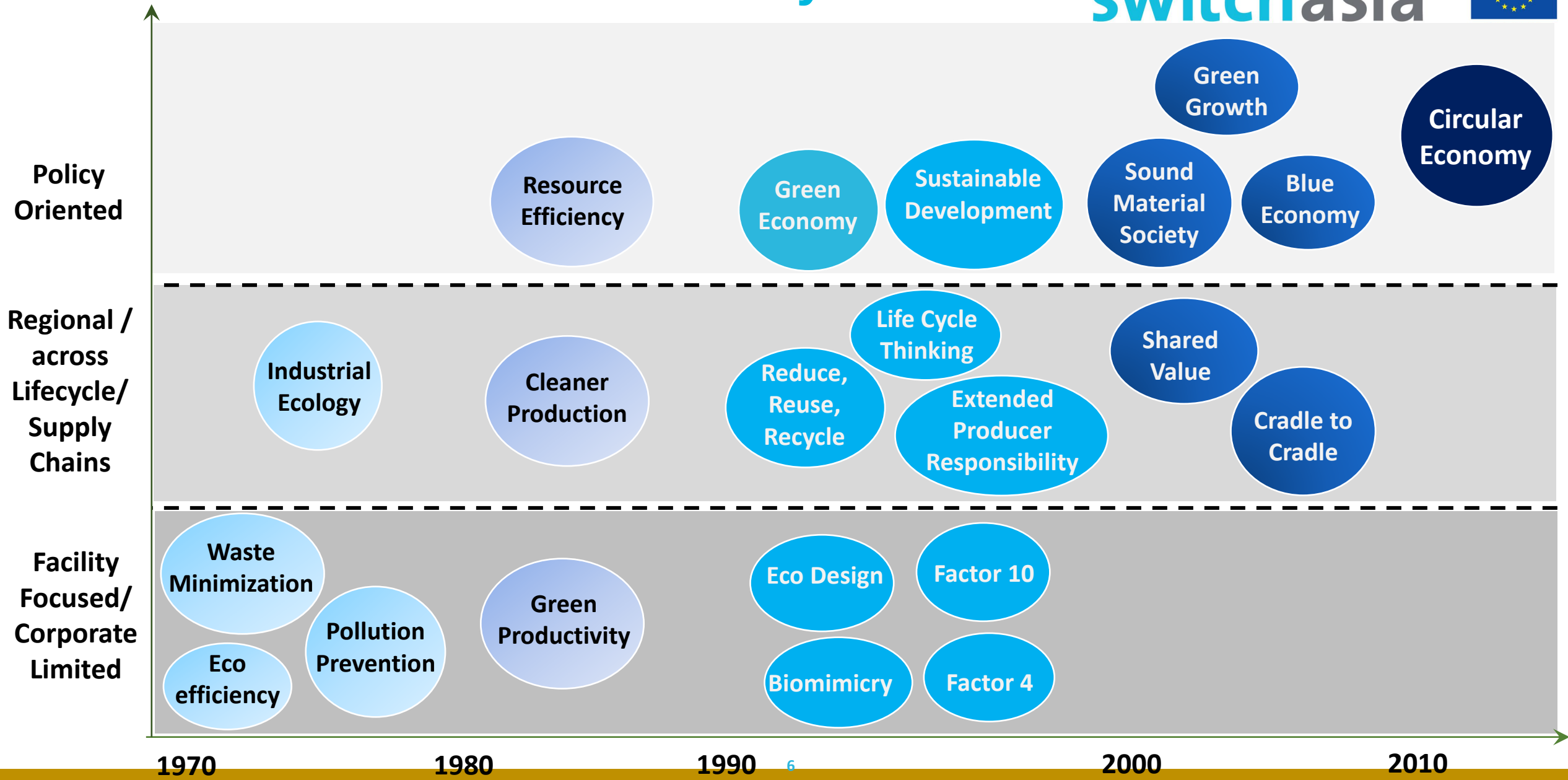
Linear Economy

Circular Economy

- Use of Local and Renewable Resources
- Dematerialization
- Increase virtualization
- Inclusive Growth
- Recovery of resources
- Extending life of products

Responsibile society!!!!

Evolution of Circular Economy

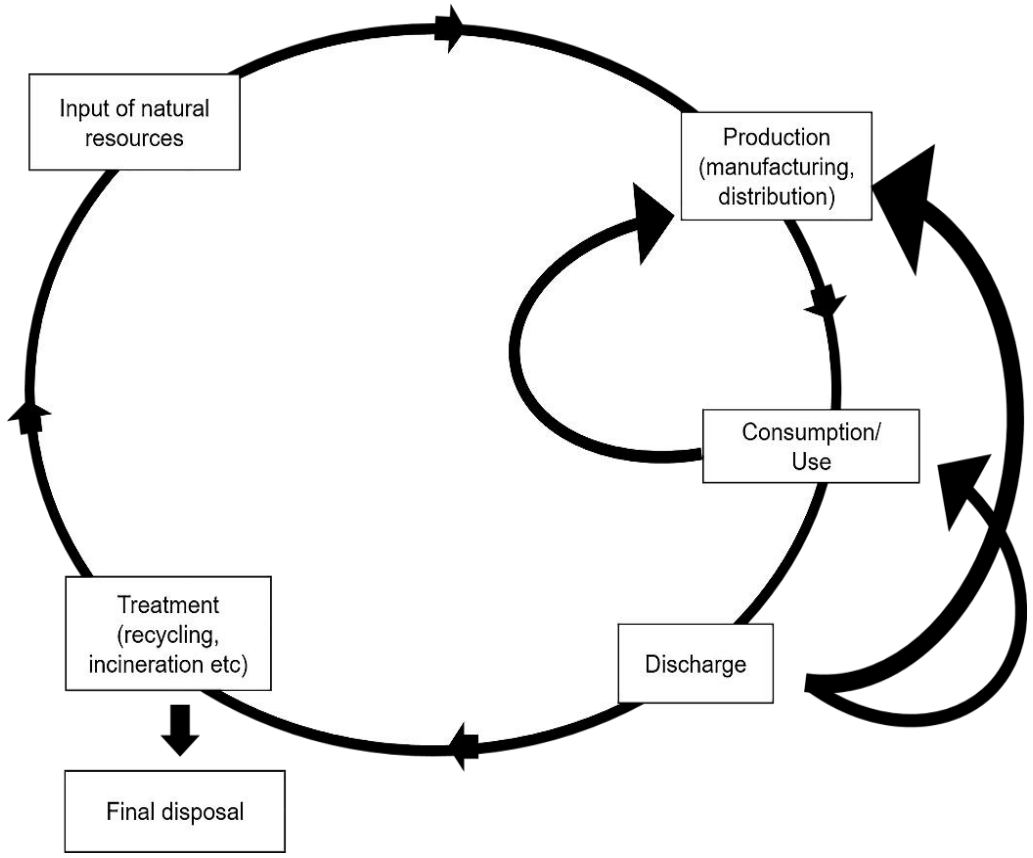


Eco Efficiency

- Creating **more value** with **less impact** across the life cycle
- Management philosophy that encourages businesses to search for **environmental improvements that yield parallel economic benefits**
- Emphasized **economics**, in addition to **environmental protection** and improvement

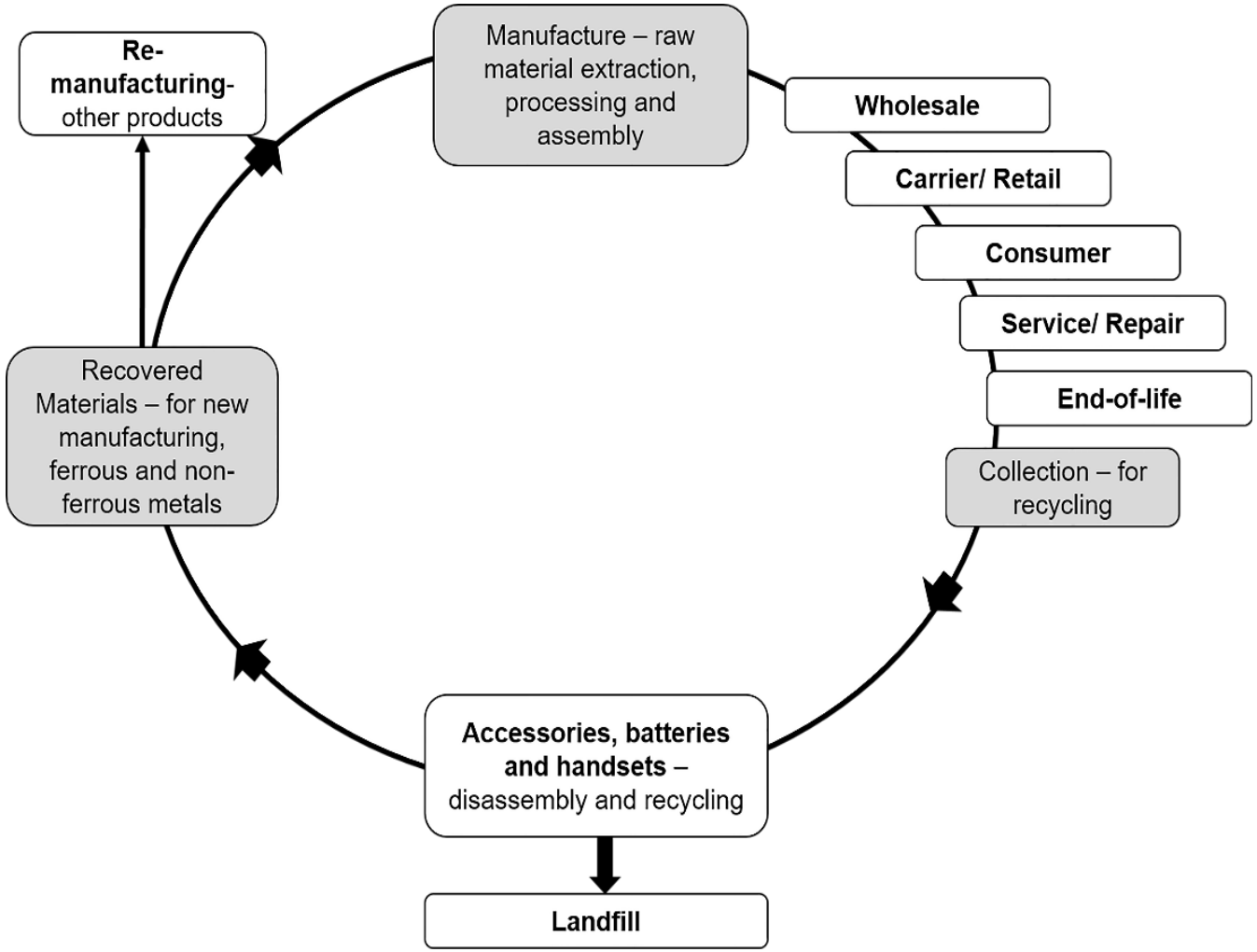
Life Cycle Thinking

- Address the **environmental, social, and economic impacts** of a product over its entire **life cycle**
- Reduce a product's **resource use** and **emissions** to the environment
- Improve its **socio-economic performance** across the value chain through its life cycle



Typical Life Cycle of a product

Life Cycle of a Mobile Phone



Eco-design

- LCT provides direction to developing Eco-design
- Integrates environmental aspects into the **product design and development process**
- While meeting **functional product requirements** and consumer needs

Adidas Parley – result of partnership between sport and eco-awareness company to fight plastic pollution

IKEA's Kungsbacka - kitchen is made from recycled plastic and wood

Extended Producer Responsibility

- Producers are given a significant responsibility – **financial and/or physical** – for the collection, processing and disposal of post-consumer products
- Producer/Importer pays a **fee**-used for **collecting, recycling and disposing**
- Incentivizes **to prevent wastes** at the product life cycle through eco-design
- What about **Extended Consumer Responsibility?**

Green Dot System in the EU that originated in Germany

Cleaner Production Program

- Launched in 1990 by UNEP and UNIDO
- Integrated environmental strategy - **processes, products, and services with LCT**
- Increase eco-efficiency and reduce risks to humans and the environment
- Influenced national policies across the world
- Established **National Cleaner Production Centres** (NCPC)
- 58 NCPs in 56 countries by the end of 2014

Resource Efficient Cleaner Production (RECP) – UNIDO & UNEP- developing and transition countries

Addresses **three sustainability dimensions**:

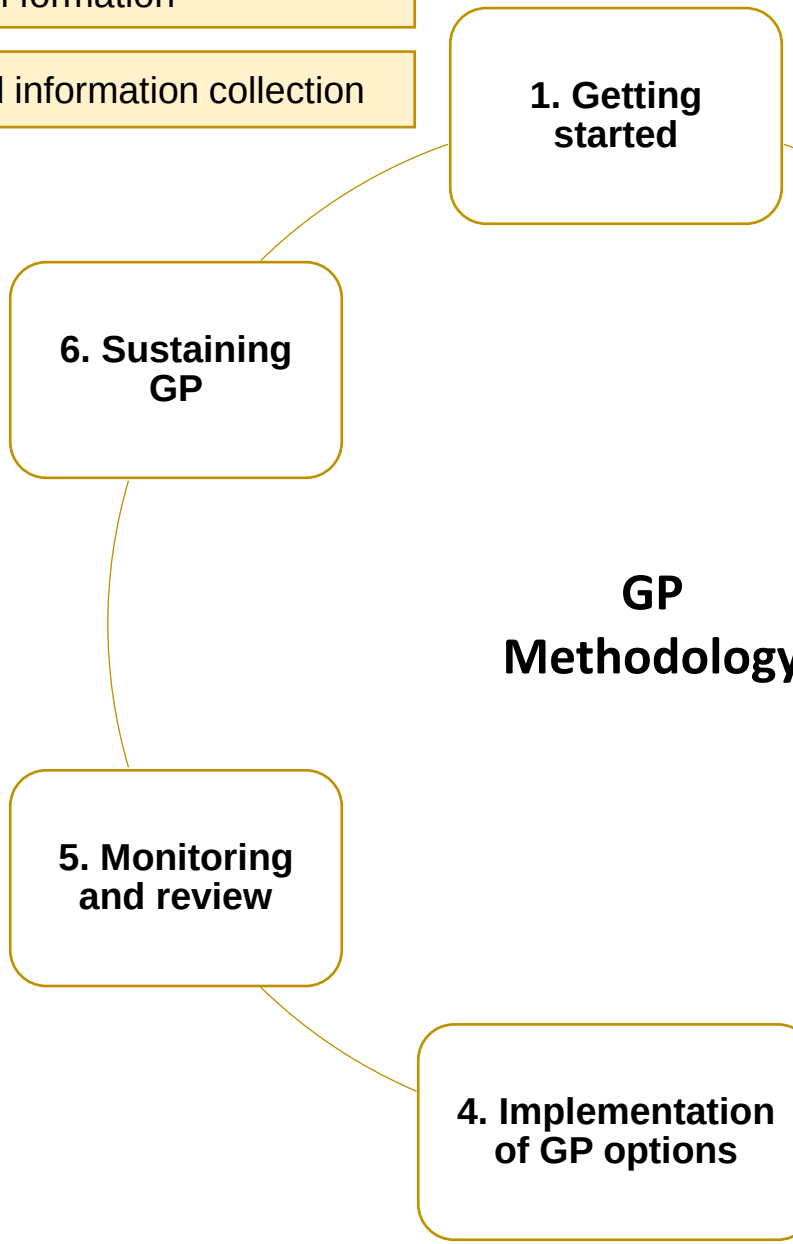
1. Economic performance
2. Environmental protection
3. Social enhancement

RECPnet- knowledge sharing – 70 RECP providers

Green Productivity Program

- Launched in 1995 by Asian Productivity Organization
- Address the growing **concern of consumers and stakeholders** of business communities
- Strategy for **enhancing productivity and environmental performance** for sustainable socioeconomic development
- Encourages application of **productivity and environmental management tools**
- **Capacity building** and **development of trainers** – to institutionalize GP promotion
- Expanded to address more topics – Greening supply chains, energy efficiency etc

GP Methodology



Task 1: Team formation

Task 2: Walk through survey and information collection

Task 3: - Identification of problems and causes

Task 4: Setting objectives and targets

Task 5: Generation of GP options

Task 6: Screening, evaluation and prioritization of GP options

Task 7: Formulation of GP implementation plan

Task 8: Implementation of selected option

Task 9: : Training, awareness building and developing competence

Task 10: Monitoring and evaluation of results

Task 11: Management review

Task 12: Incorporating changes into organization's system of management

Task 13: Identifying new/ additional problem area for continuous improvement

Resource Efficiency

- RE is a key component of **EU's 2020 strategy**
- To generate **growth and jobs** over the next 10 years
- Enhance **certainty for investment** and innovation
- Ensure all relevant **policy areas** factor in resource efficiency in a consistent manner

EU Commission definition - Resource efficiency means using the Earth's limited resources in a sustainable manner while minimizing impacts on the environment. It allows us to create more with less and to deliver greater value with less input.

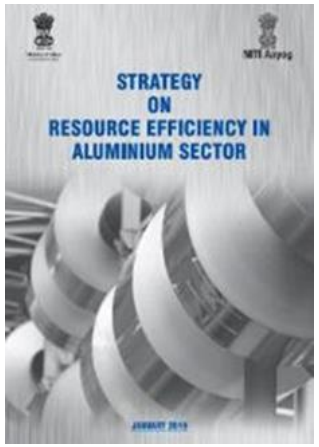
ProgRess I, II, III

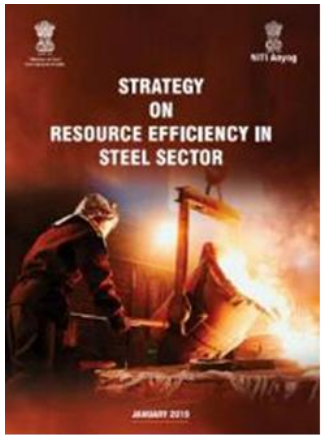
- German Resource Efficiency Program
- Increase energy efficiency **along value chain**
- Raw material **extraction** and **product design** to **production**, **use**, and **circular economy**

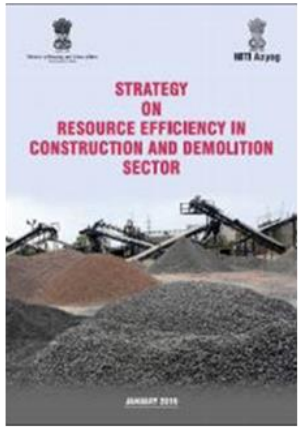
Resource Efficiency in India

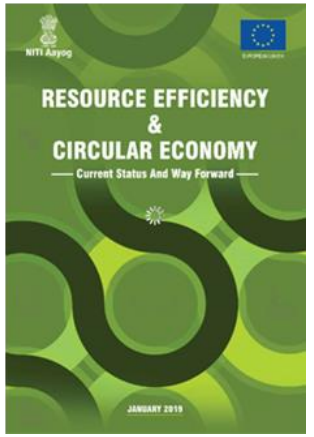
- **Indian Resource Panel (InRP)** established at Ministry of Environment, Forest and Climate Change (MoEFCC)
- Support by **Indo-German bilateral cooperation –** under EU Resource Efficiency Initiative
- National Resource Efficiency policy by MoEFCC in 2019
- Resource Efficiency Action Plan for State of Goa, 2020

EU-REI









Green Growth

- Strategy of **sustaining economic growth** and job creation necessary to **reduce poverty** in the face of **worsening resource constraints and climate crisis**
- Republic of Korea (RoK) adopted **'low carbon green growth'** as a response to 2008 **global financial crisis**
- RoK has been instrumental in promoting the concept
- OECD Ministerial Council Meeting in June 2009, declared '**green' and 'growth**' can go hand in hand

Global Green Growth Institute

Formed to support developing countries to achieve sustainable economic growth

As of 2020, GGGI has **37 members** and delivers programs for more than 30 members and partners

Offers **technical support, capacity building, policy planning and implementation**

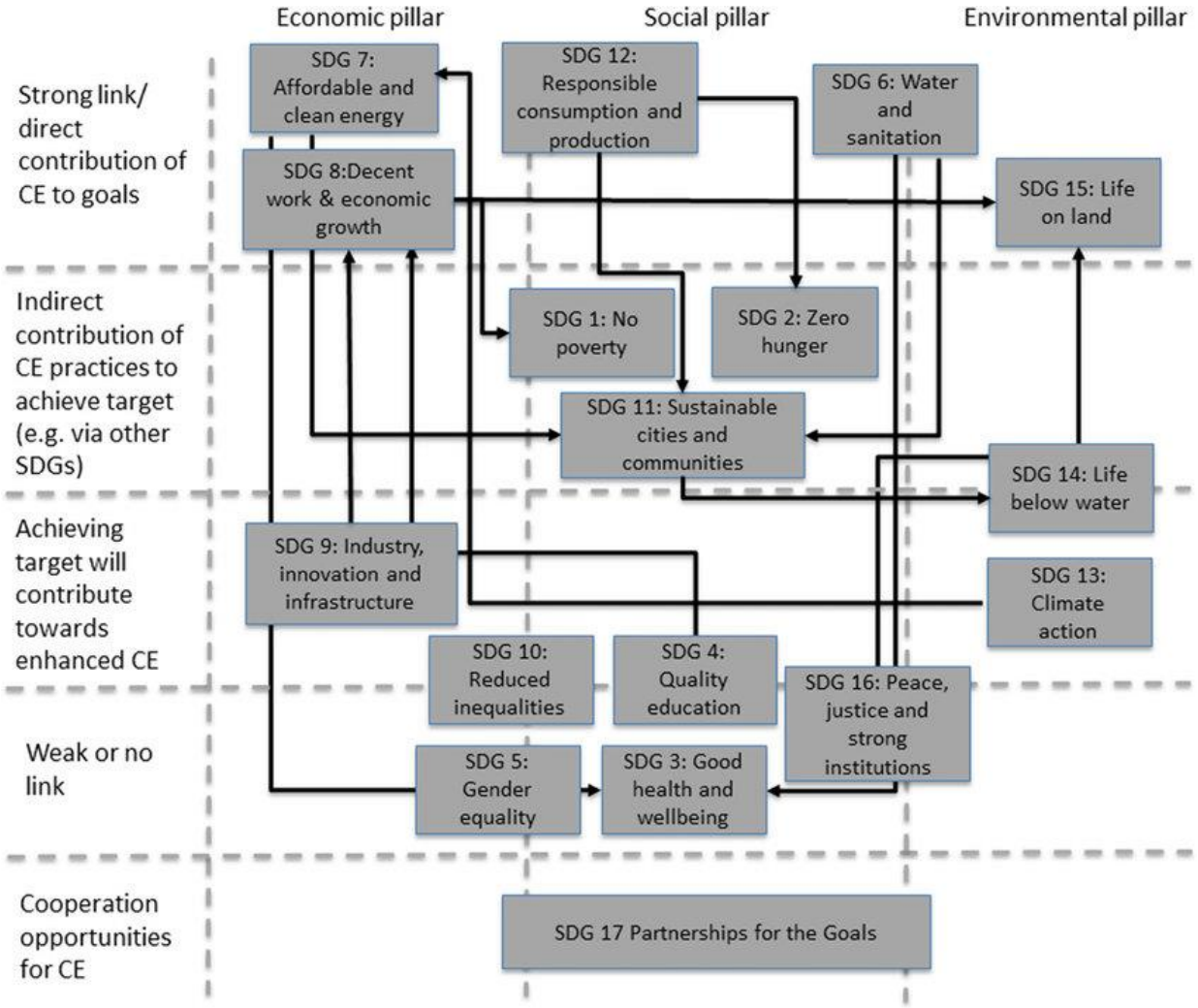
Green Economy

- Launched to respond to **2008 Global financial crisis**
- **UNEP definition** - A green economy is defined as low carbon, resource efficient and socially inclusive
- **PAGE** (Partnership for Action on Green Economy) was launched in 2013 to **institutionalize the concept**

PAGE brings together 5 UN bodies

SDGs and Circular Economy

- Circular Economy could be a **'policy toolbox' to achieve SDG targets**
- **Strongest relationship** exists between CE practices and targets of:
  - **SDG 6** (Water and Sanitation)
  - **SDG 7** (Affordable and Clean Energy)
  - **SDG 8** (Decent Work and Economic Growth)
  - **SDG 12** (Responsible Consumption and Production)
  - **SDG 15** (Life on Land)

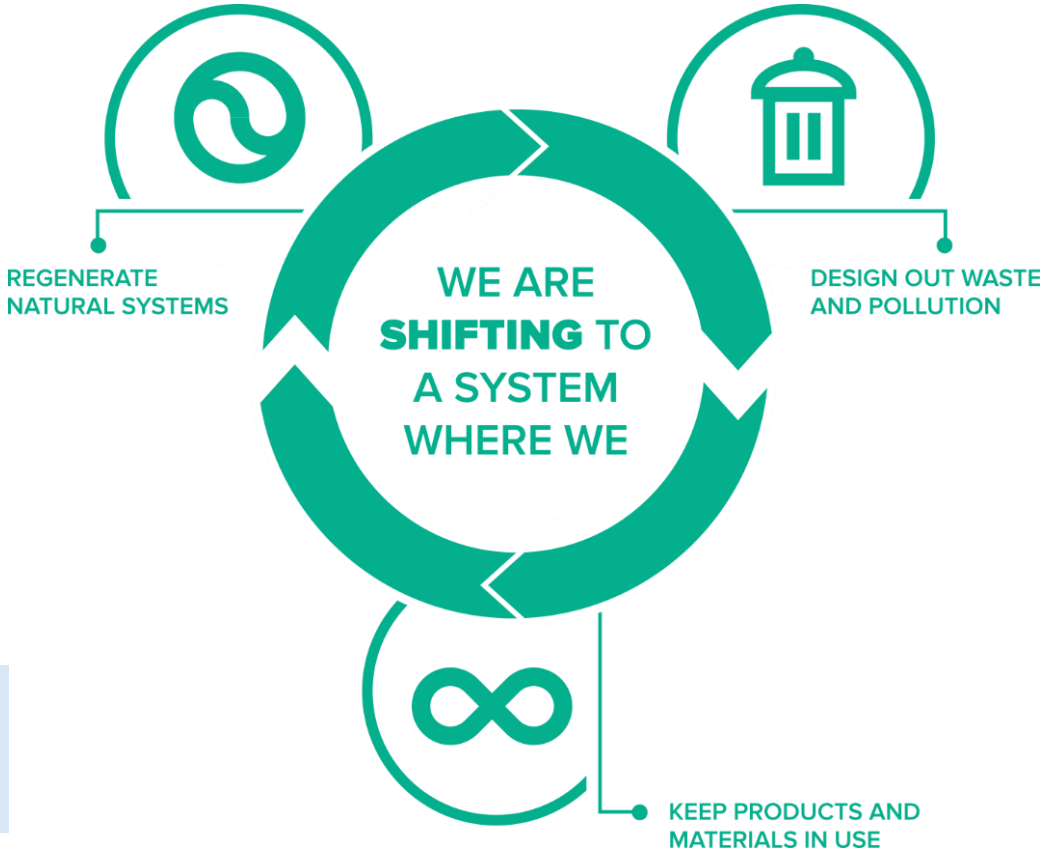


Source: [Relevance of CE practices to Sustainable Development Goals]

Circular Economy

- **Regenerative** and **restorative** economy that is **inclusive**
- Aims to **redesign the production and consumption systems**
- Integrates social, environmental, economic and cultural aspects, **especially behavioral change**

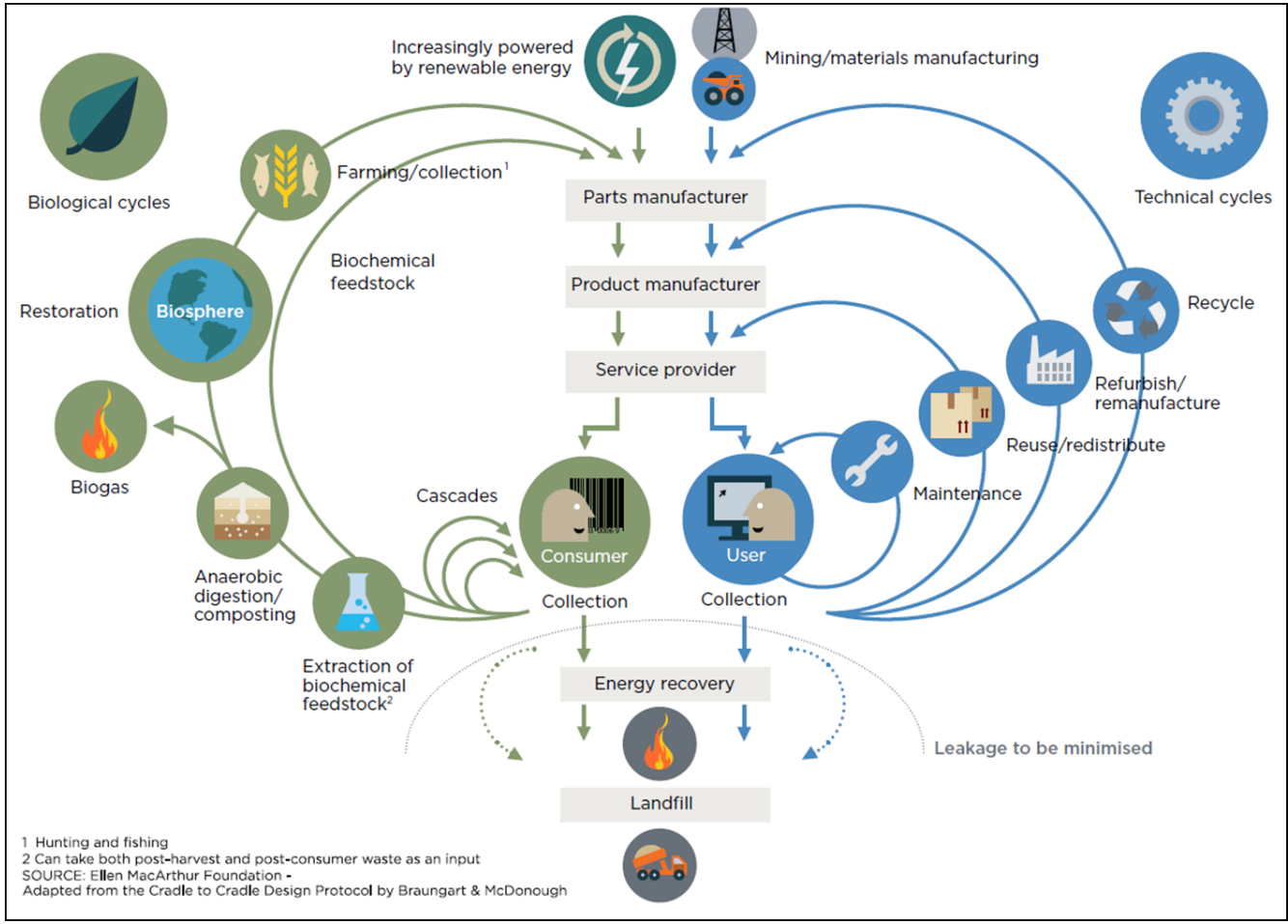
A paradigm shift from degenerative to regenerative systems



Source: Ellen Macarthur Foundation

The Butterfly Diagram

Biological Nutrient cycle	Technical Nutrient cycle
'Consumable' Materials – Re-enter the biosphere to build natural capital	'Durable' or 'Service' Materials – High quality, high added-value. Designed to circulate and not enter biosphere
Can be consumed	Cannot be consumed/Can only be borrowed
Food, Shampoos, Soaps	Cars, Furniture, Machines

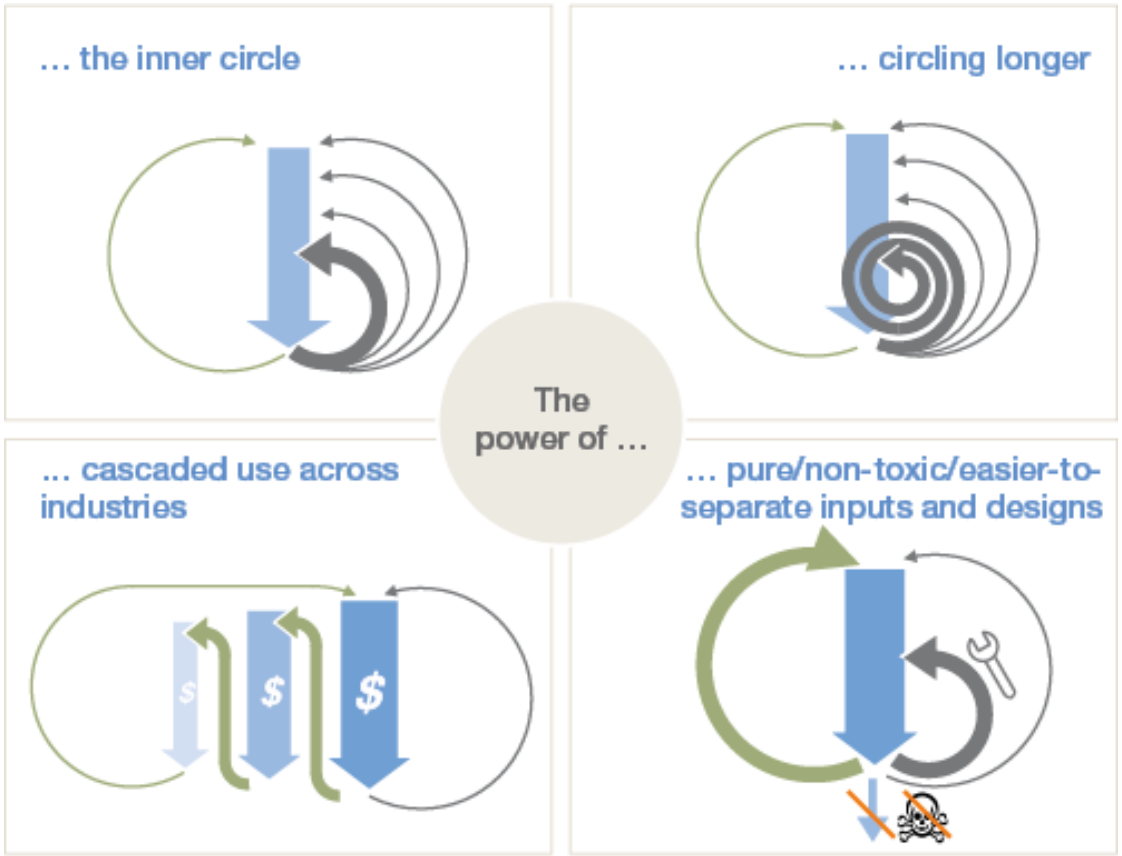


Source: Ellen Macarthur Foundation

Key strategies on value chain creation while closing the loop

Inner Circle – Minimising comparative materials use, through re-use. The tighter the circle, the less it has to be changed to be returned to use (with higher savings)

Cascading– Diversified re-use across the value chain, substituting previously used virgin materials with existing materials (including symbiosis

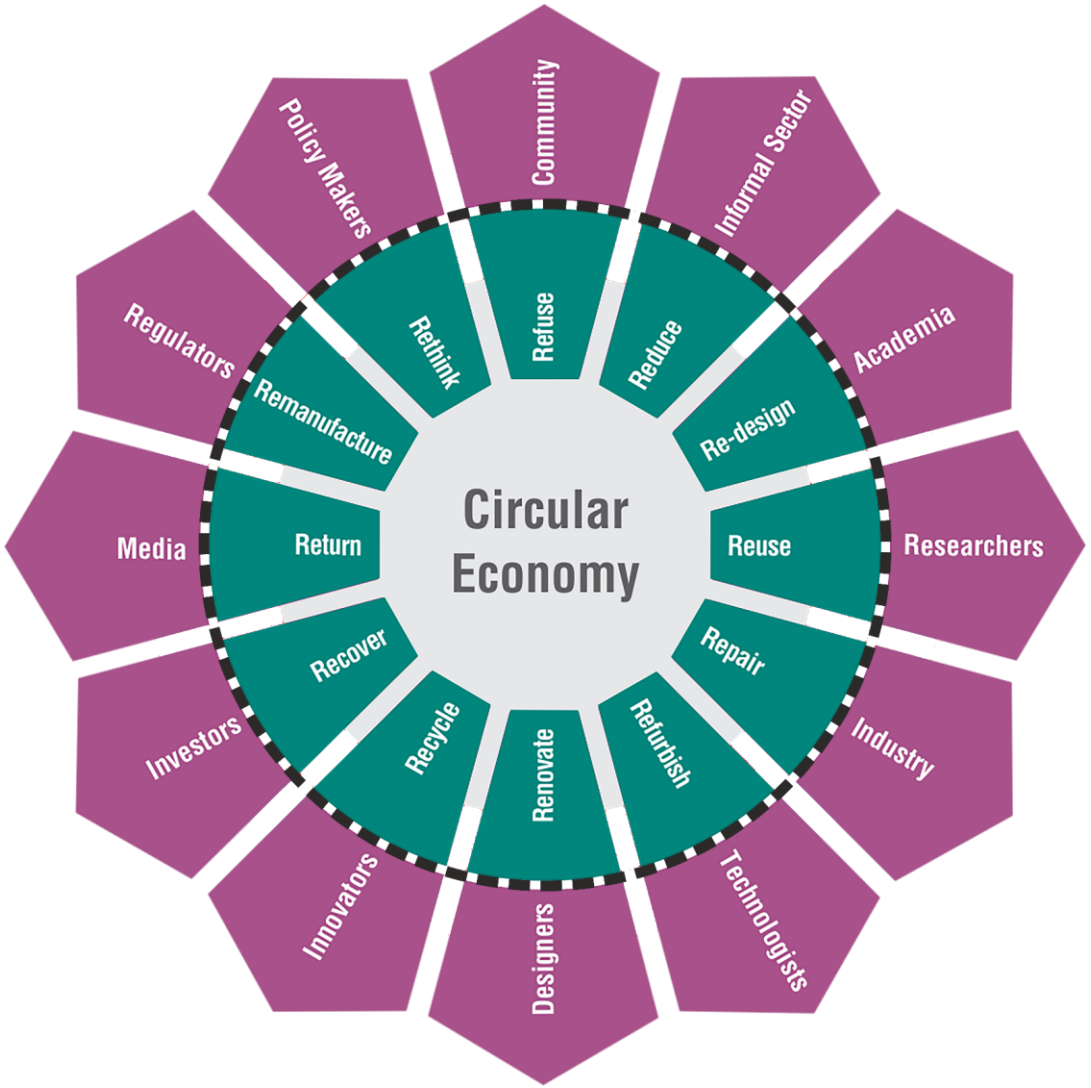


Source: Ellen Macarthur Foundation

Circling Longer – Maximising the number of consecutive cycles of reuse, to avoid production of a new component

Pure inputs – Avoidance of contaminated materials to increase collection and re-use efficiency whilst maintaining quality

12 Rs and Key Stakeholders



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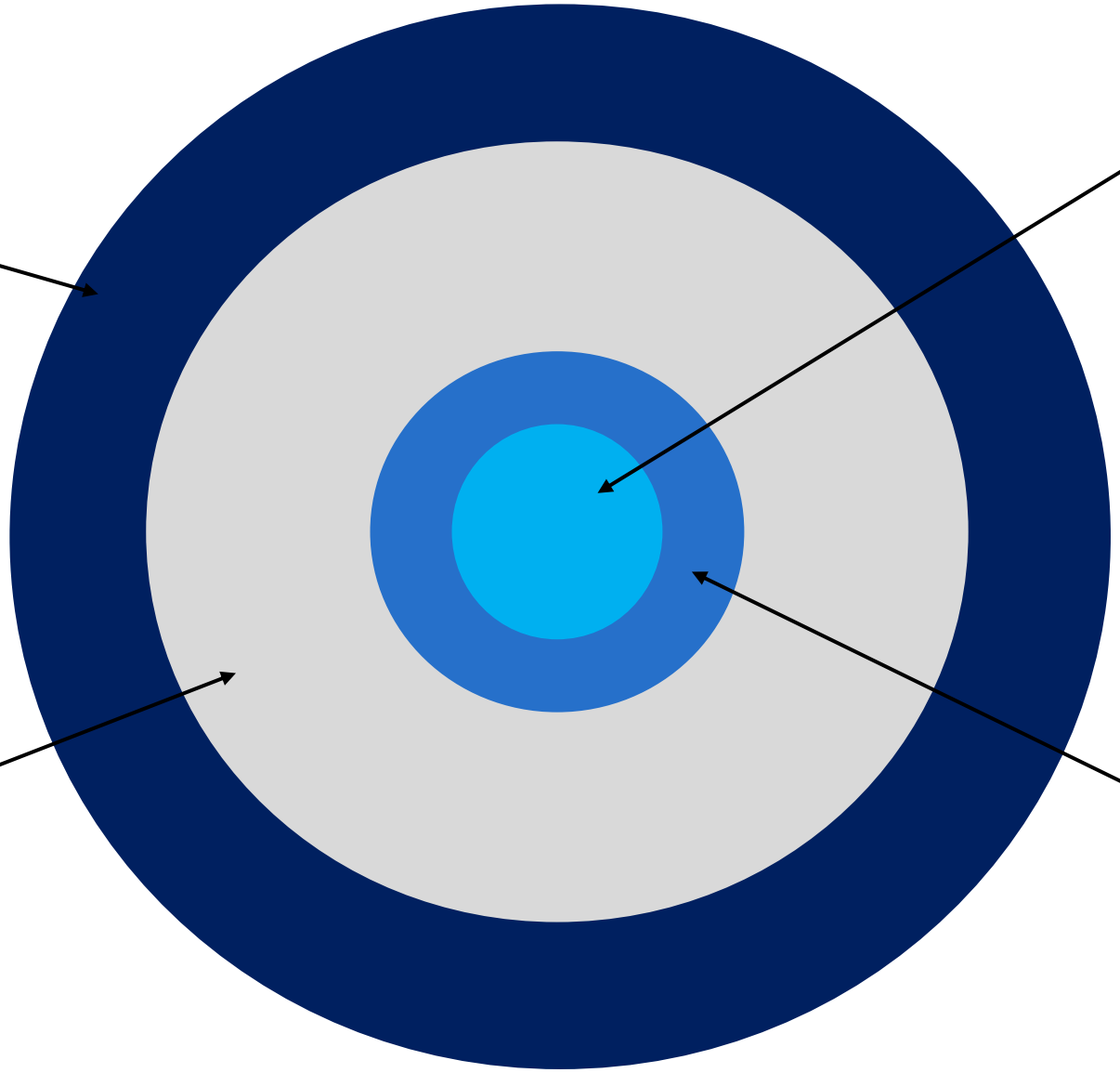
Four Circles of Circular Economy

Transformative with innovation
Re-Design, Rethink

Cutting down consumption of virgin resources
Refuse , Reduce, Reuse



Adding value with tech/ creating green jobs
Return , Recycle, Recover, Remanufacture

Extending product life
Repair, Refurbish, Renovate

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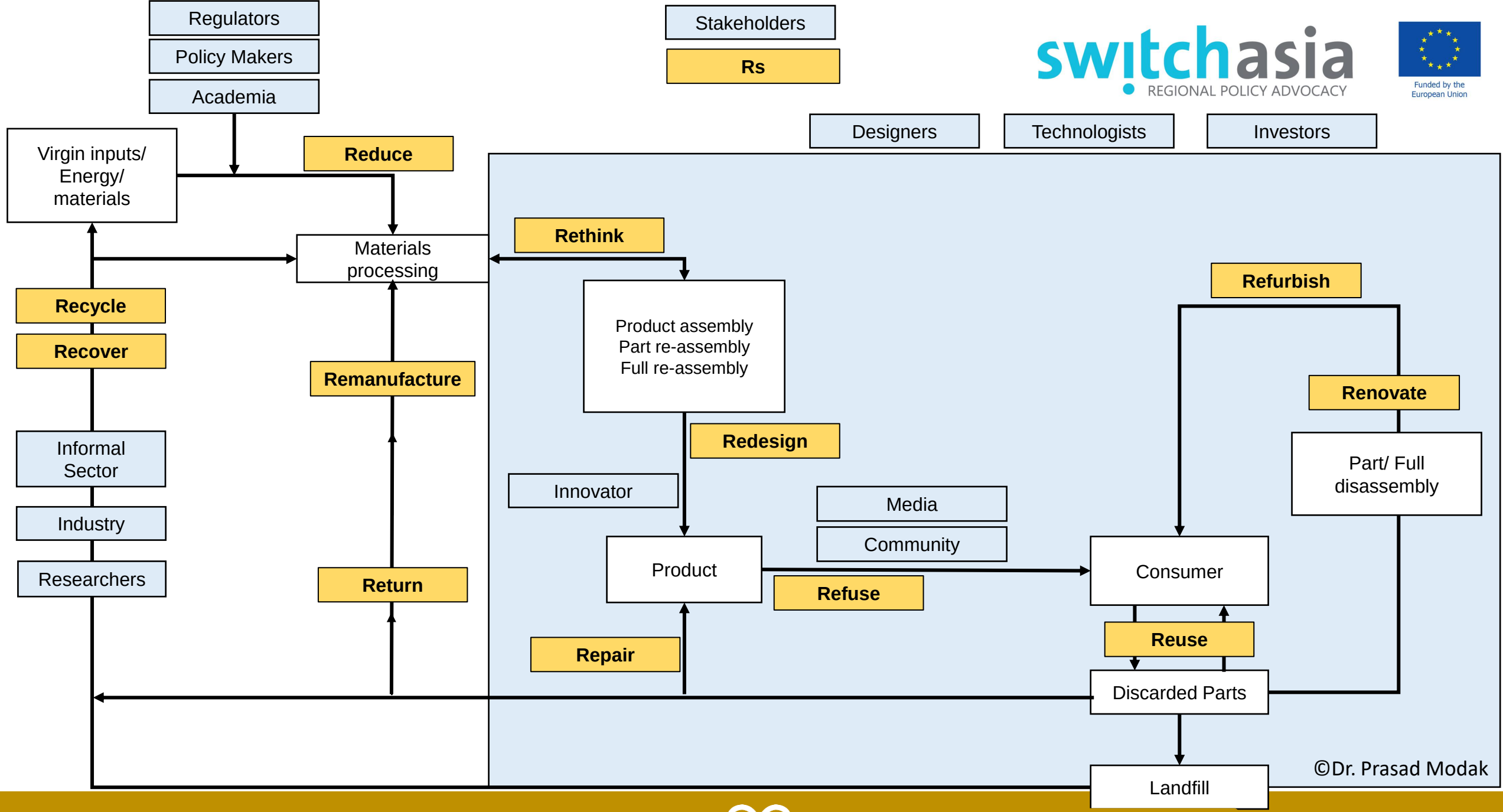
Regulators
Policy Makers
Academia
Stakeholders
Rs
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REGIONAL POLICY ADVOCACY
Funded by the European Union
Designers
Technologists
Investors
Virgin inputs/ Energy/ materials
Reduce
Materials processing
Rethink
Recycle
Recover
Remanufacture
Product assembly
Part re-assembly
Full re-assembly
Refurbish
Renovate
Part/ Full disassembly
Redesign
Informal Sector
Industry
Researchers
Innovator
Media
Community
Product
Consumer
Refuse
Return
Repair
Reuse
Discarded Parts
Landfill
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Concluding remarks

- The global economy is just **9% circular**
- All instruments and strategies have **commonalities, overlaps and inter-linkages**
- Should not be thoughts in silos - need for **integrated and holistic approach**
- Need for some one to conduct the orchestra

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