EU-REI

Creating a Resource Efficient India

EU-REI
Creating a Resource Efficient India

Resource Efficiency and Circular Economy in the Indian Context

Module 3

Towards RE and CE through sectoral strategies in India

adelphi
Confederation of Indian Industry
CII-ITC Centre of Excellence for Sustainable Development
giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
teri

Course overview

Basic modules

1	Introductory session
2	Foundations of RE and CE in the international context
3	Towards RE and CE through sectoral strategies in India

Applied and advanced modules

4	Tools, standards and indicators for RE and CE	
	4a	Material Flow Analysis
	4b	Life Cycle Assessment
	4c	RE and CE Standards
	4d	RE and CE Indicators
	4e	Public Procurement
	4f	Circular Business Models
	4g	RE and CE Funding

Recap and evaluation

5	Summary, outlook and evaluation

Learning objective: module 3

After completion of module 3, participants will be able to

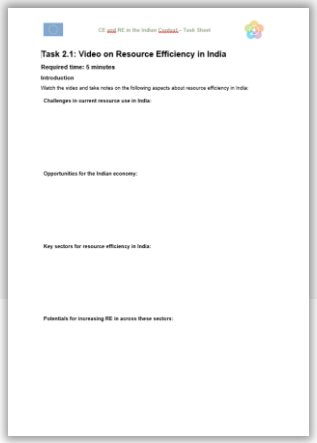
- contextualize challenges and opportunities of RE and CE in India;
- outline the existing policy context along the entire lifecycle;
- capture the key elements of the RE strategy and four sectoral strategy papers; and
- map out the stakeholders involved in the implementation of sectoral strategies at the national level.

RE and CE: challenges and opportunities in India

Exercise 3.1: Video analysis

- Watch the following video and take notes on the following aspects:
  - Challenges of current resource use in India
  - Opportunities for the Indian economy
  - Key sectors for increasing RE
  - Potentials for increasing RE in across these sectors

Estimated time requirement: 5 min



CE and RE in the Indian Context – Task Sheet

Task 2.1: Video on Resource Efficiency in India

Required time: 5 minutes

Introduction

Watch the video and take notes on the following aspects about resource efficiency in India:

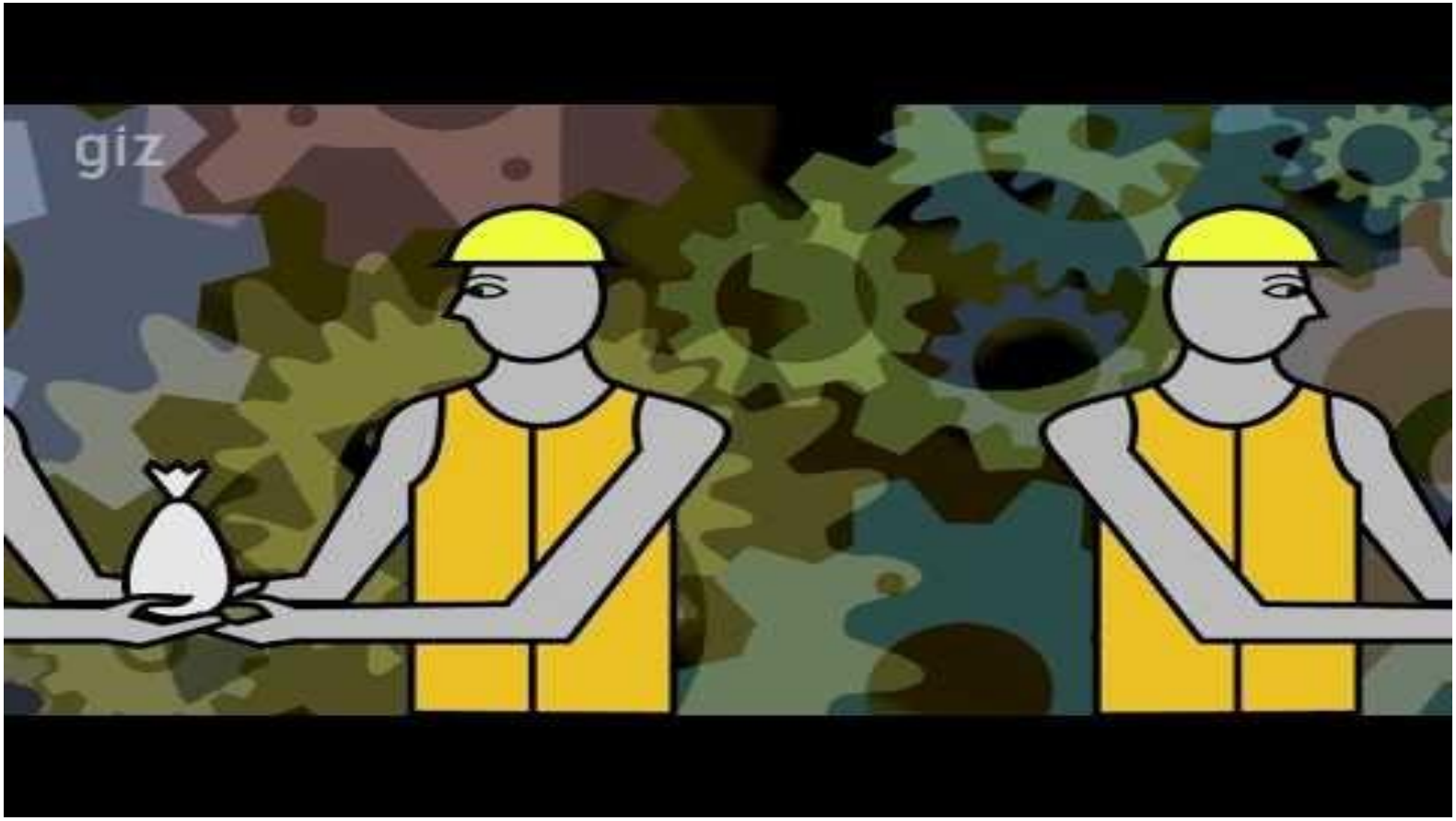
Challenges in current resource use in India:

Opportunities for the Indian economy:

Key sectors for resource efficiency in India:

Potentials for increasing RE in across these sectors:

RE and CE: challenges and opportunities in India

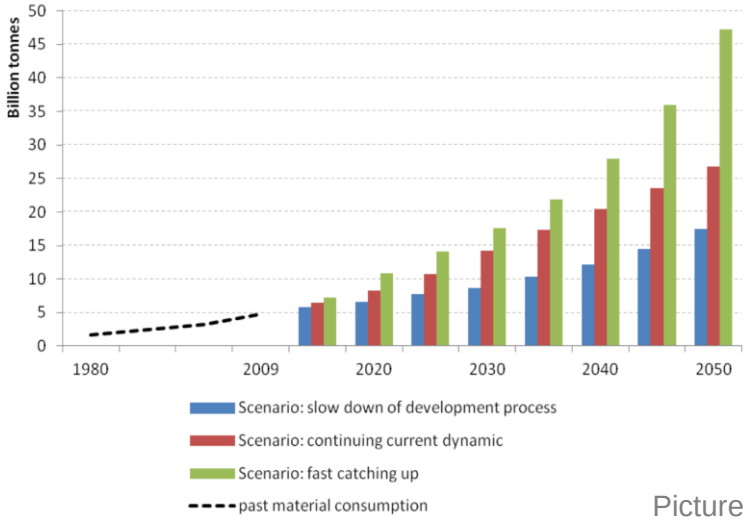


https://www.youtube.com/watch?v=gqhJ4IUhhak

RE and CE: challenges and opportunities in India

India's growing middle income class, urbanization and industrialization are major drivers of resource consumption.

- Almost 1.4 billion people as of 2019; projected to overtake China and become the most populous country by 2027
- Steady economic growth fuelled resource consumption: 1970 – 2015 saw a sixfold increase in annual material consumption, from 1.8 billion tonnes to 7 billion tonnes



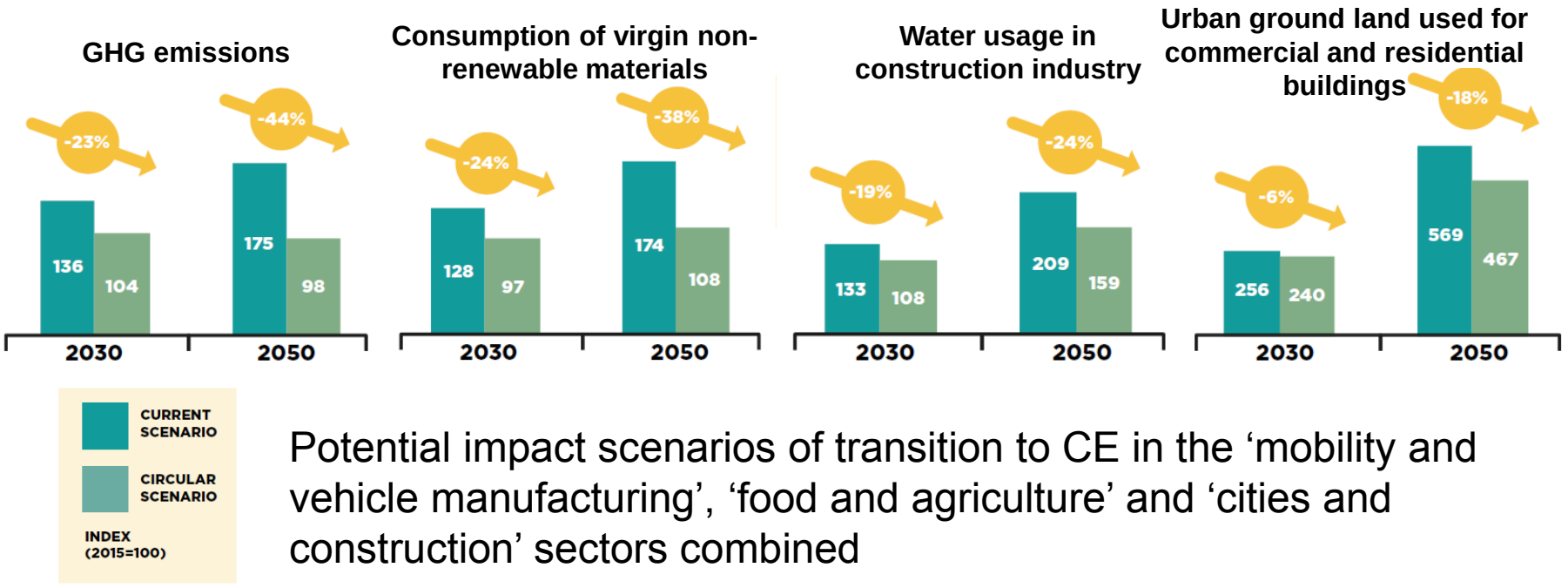
India's raw material demand might increase **tenfold** by 2050. Without further actions, scarcity may create shocks to the Indian economy.

Picture source: https://www.iastoppers.com/pib-daily-27th-august-2019-iastoppers/

RE and CE: challenges and opportunities in India

"The usage of natural resources especially raw materials in the entire value chain - from extraction to end-of-life - leads to environmental threats like GHG emission, pollutants in various media viz. air, water and soil, and risks to ecology and biodiversity."

A circular economy development path could significantly mitigate negative environmental externalities.



Potential impact scenarios of transition to CE in the 'mobility and vehicle manufacturing', 'food and agriculture' and 'cities and construction' sectors combined

Picture source: https://www.ellenmacarthurfoundation.org/assets/downloads/publications/Circular-economy-in-India_5-Dec_2016.pdf

RE and CE: challenges and opportunities in India

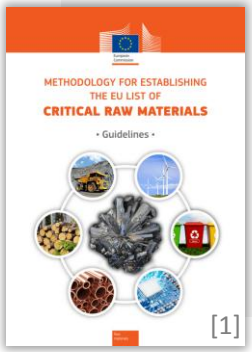
How do we determine priority materials?

EU definition of "critical raw materials":

- Raw materials which are economically and strategically important for the European economy, but have a high risk associated with their supply
- Economic importance, supply chain disruptions, price volatility, environmental issues

Example: RHENIUM

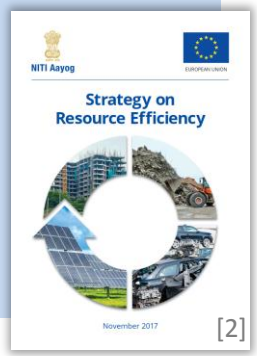
- super-alloys in aerospace & manufacturing → **high economic importance**
- **India is 100% import dependent** with no declared reserves



[1]

Parameters as per the Indian RE Strategy:

- Economic importance of the material based on its usage across different sectors
- Environmental impact due to extraction and production
- Embodied energy
- Supply risks determined through:
  - Limited geological availability and criticality
  - High import dependency for critical resources
  - Geopolitical constraints

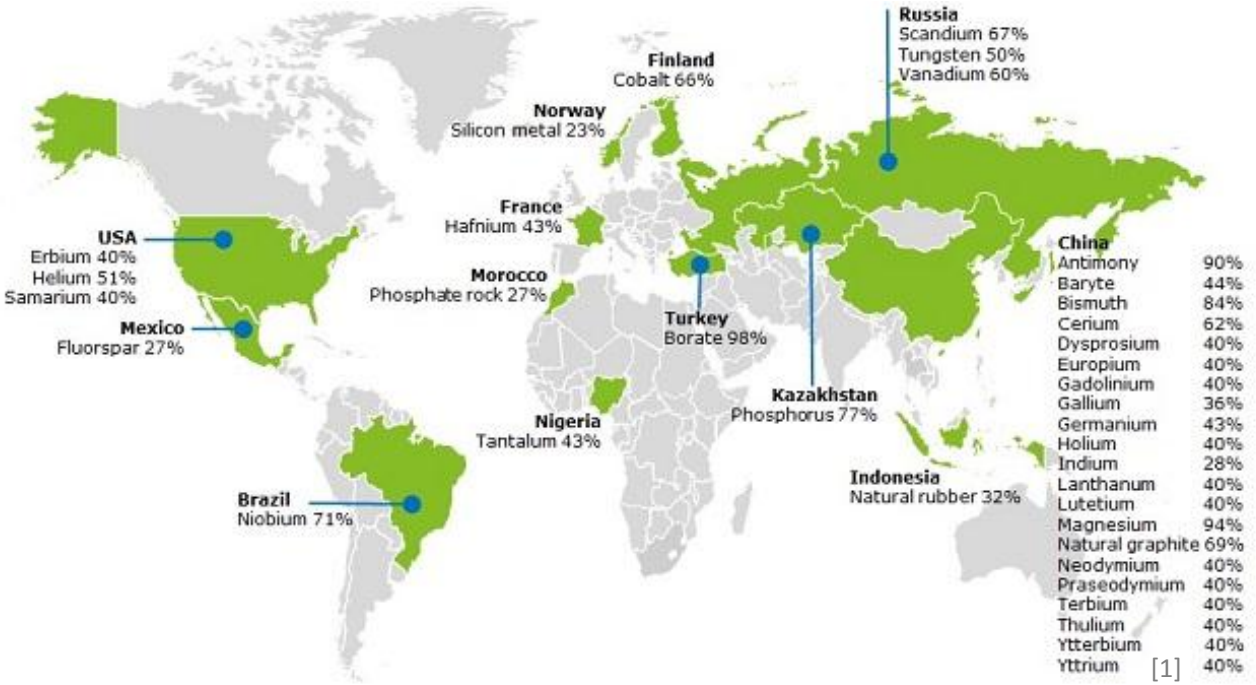


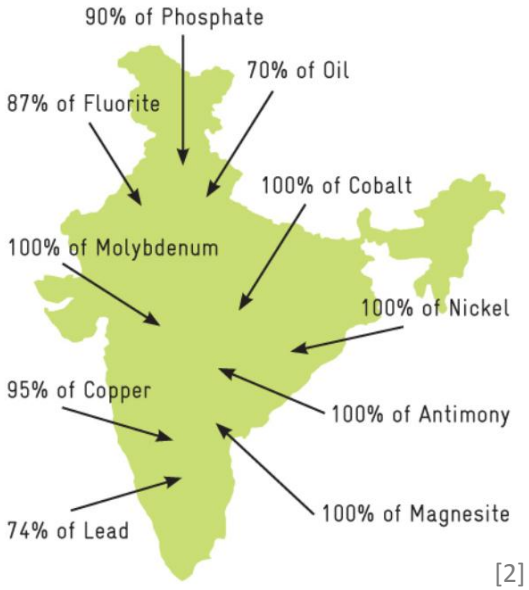
[2]

Picture sources: [1] https://op.europa.eu/en/publication-detail/-/publication/2d43b7e2-66ac-11e7-b2f2-01aa75ed71a1/language-en/format-PDF/source-32064602 [2] https://www.eu-rei.com/publications.html

RE and CE: challenges and opportunities in India

Although 97% of India's resources are produced domestically, it is highly dependent on the import of critical raw materials.

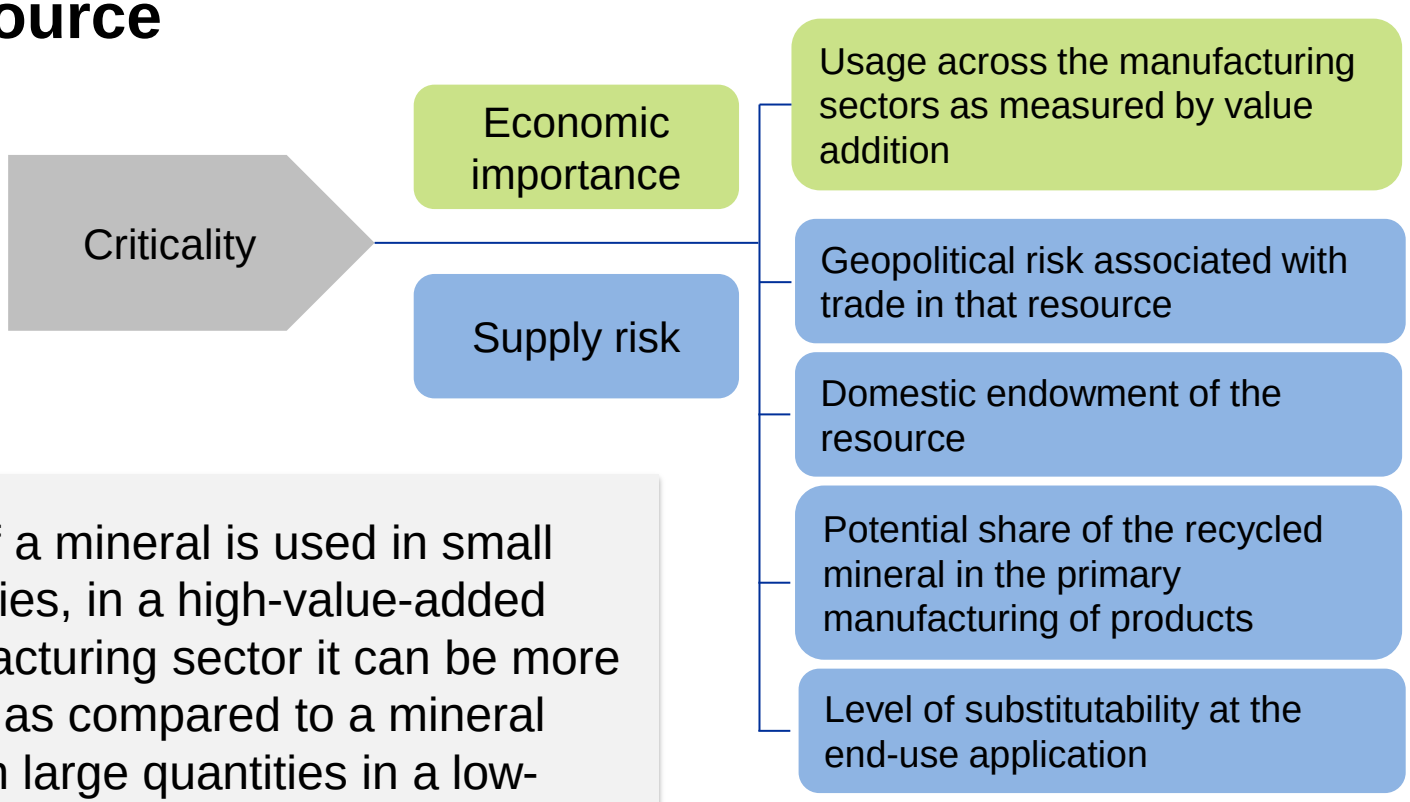




Picture sources: [1] https://ec.europa.eu/growth/sectors/raw-materials/specific-interest/critical_en
[2] http://re.urban-industrial.in/live/hrdpmp/hrdpmaster/igep/content/e64918/e64922/e67075/e67084/DMS_GIZ_IREP_PolicyBrief.pdf

RE and CE: challenges and opportunities in India

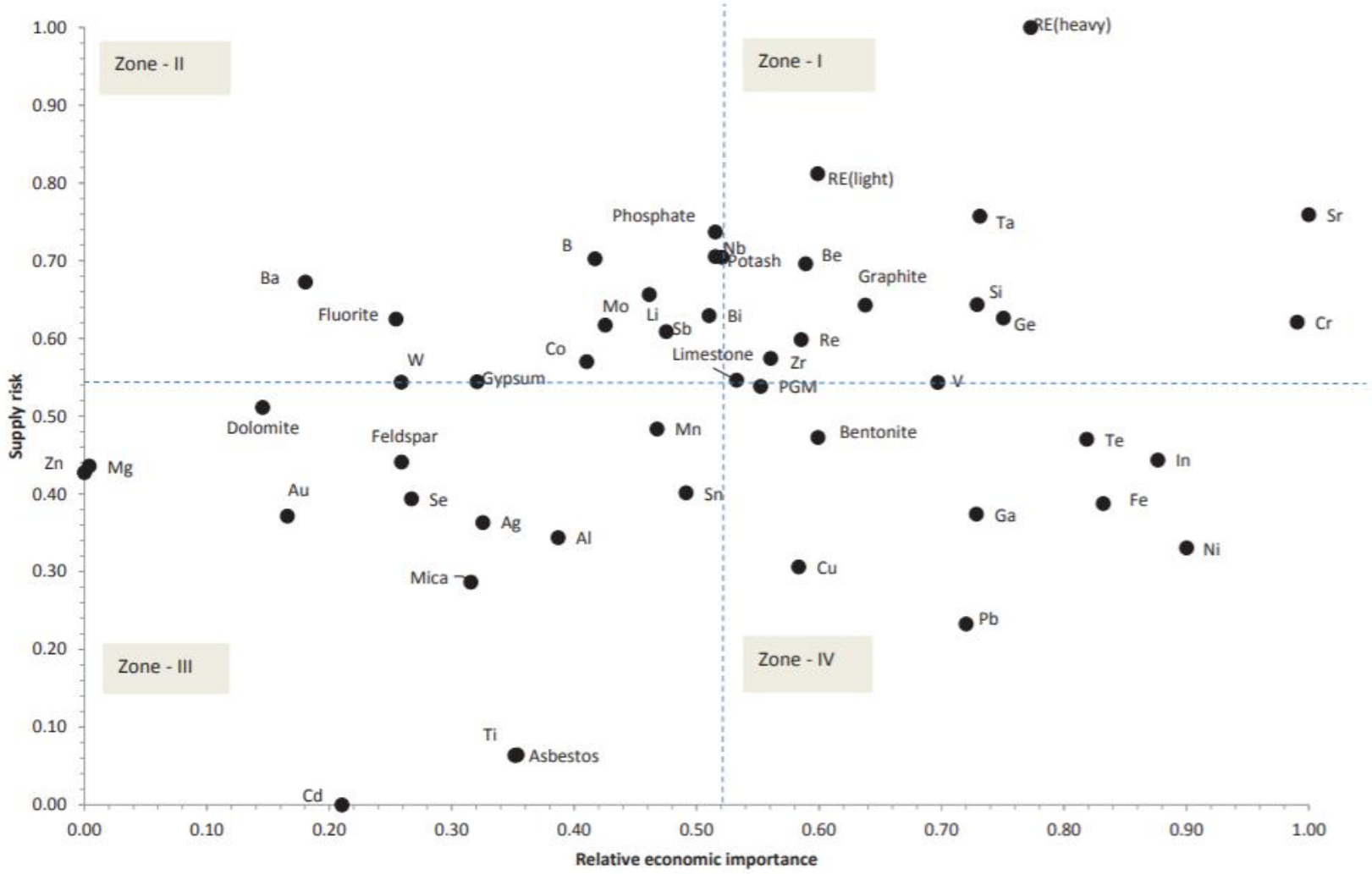
How to determine the level of "criticality" of a resource



! Even if a mineral is used in small quantities, in a high-value-added manufacturing sector it can be more critical as compared to a mineral used in large quantities in a low-value-added manufacturing sector

RE and CE: challenges and opportunities in India

Critical minerals for 2030 regarding the Indian manufacturing sector



Picture source: https://dst.gov.in/sites/default/files/CEEW_0.pdf

RE and CE: challenges and opportunities in India

Economic benefits of CE and RE

- Development of CE and RE in India could create annual value of 14 lakh crore (US$ 218 billion) in 2030.
- Secure long-term material needs and increase resilience of Indian economy.
- Businesses could achieve material cost savings and increase their profit.
- Making use of digital technology to enable CE could reinforce India's position as a hub for technology and innovation.

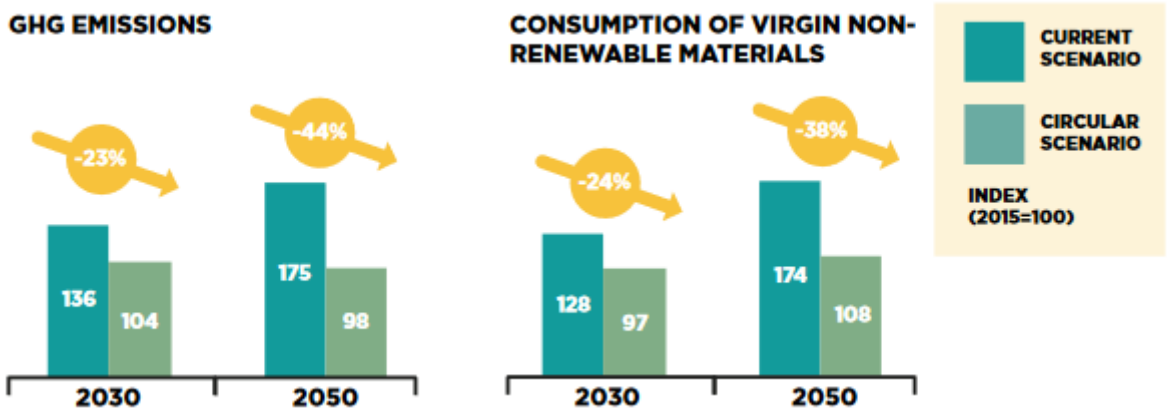
Example: Vehicles as service

- New revenue stream for automotive industry
- Increased utility (in terms of total km driven) & decreased running costs
  - more intensive use of each car
  - easier maintenance and boosted fuel efficiency through innovative vehicle design

RE and CE: challenges and opportunities in India

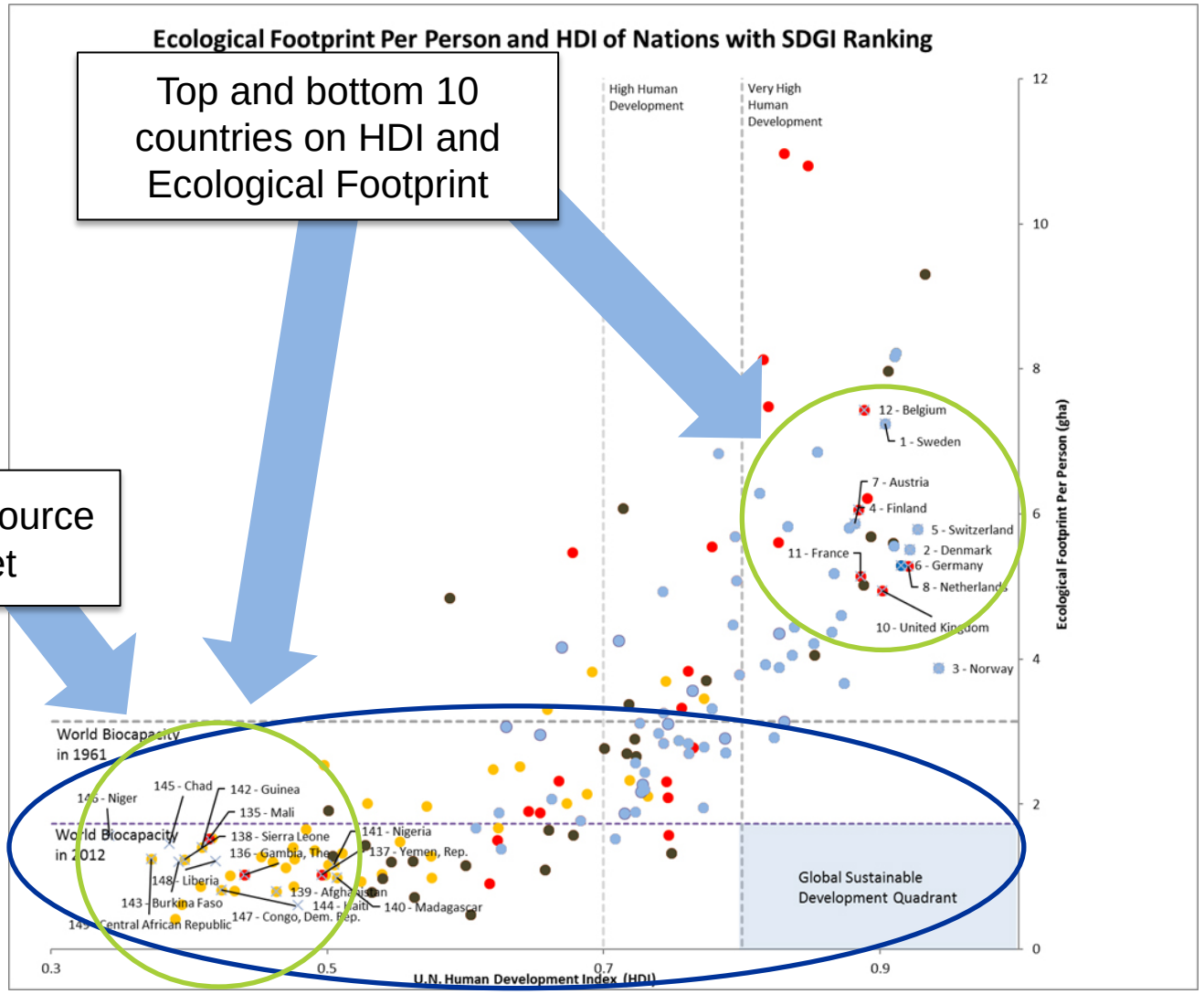
Environmental and social benefits of RE and CE

- A circular economy development path could significantly mitigate negative environmental externalities.
- Cheaper products and services for India`s population while reducing congestion and pollution



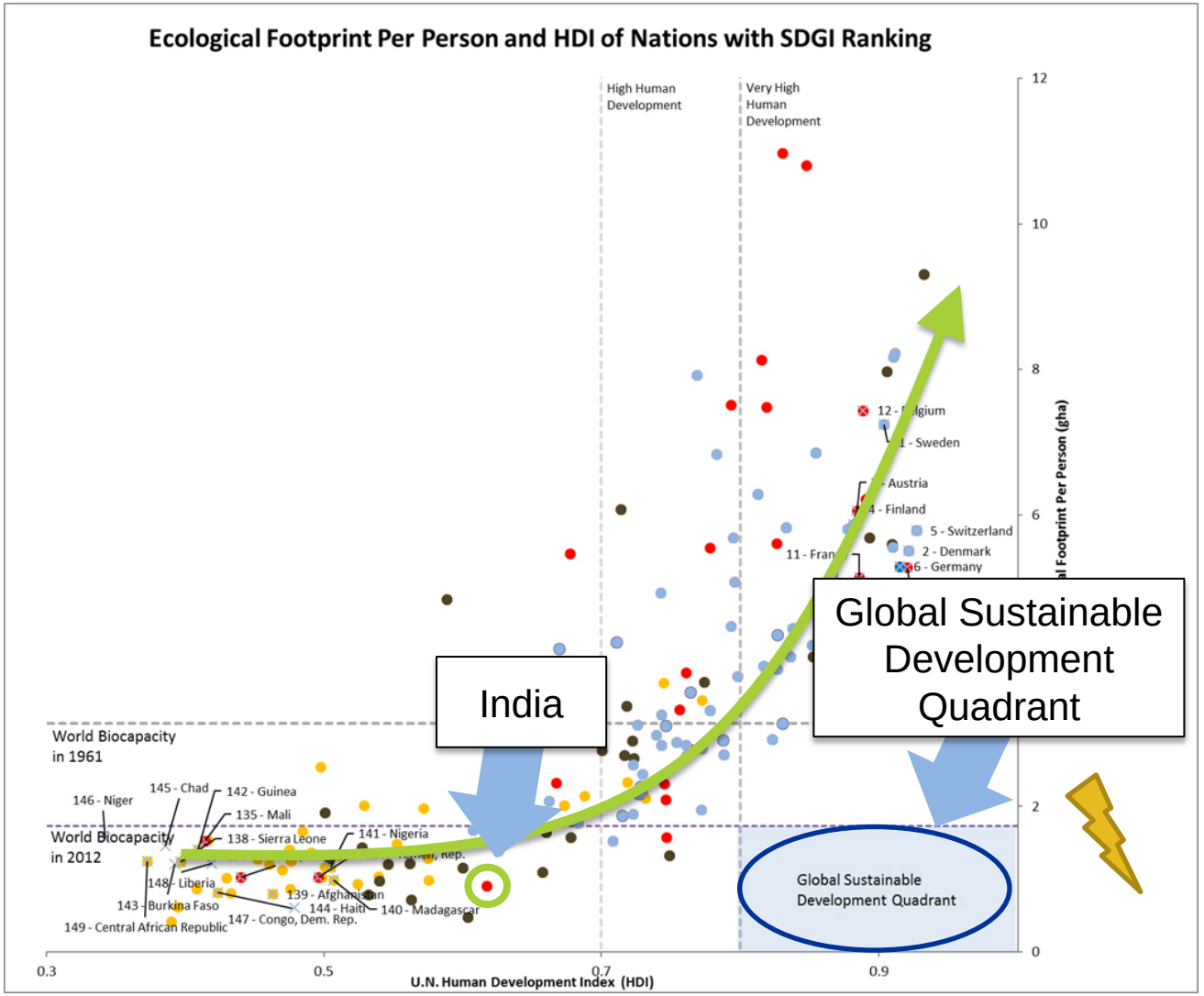
Picture source: https://www.ellenmacarthurfoundation.org/assets/downloads/publications/Circular-economy-in-India_5-Dec_2016.pdf

National progress on RE and CE



Picture source: https://www.footprintnetwork.org/2016/07/20/measure-sustainable-development-two-new-indeces-two-different-views (adapted)

National progress on RE and CE



World Biocapacity in 1961

World Biocapacity in 2012

Picture source: https://www.footprintnetwork.org/2016/07/20/measure-sustainable-development-two-new-indeces-two-different-views (adapted)

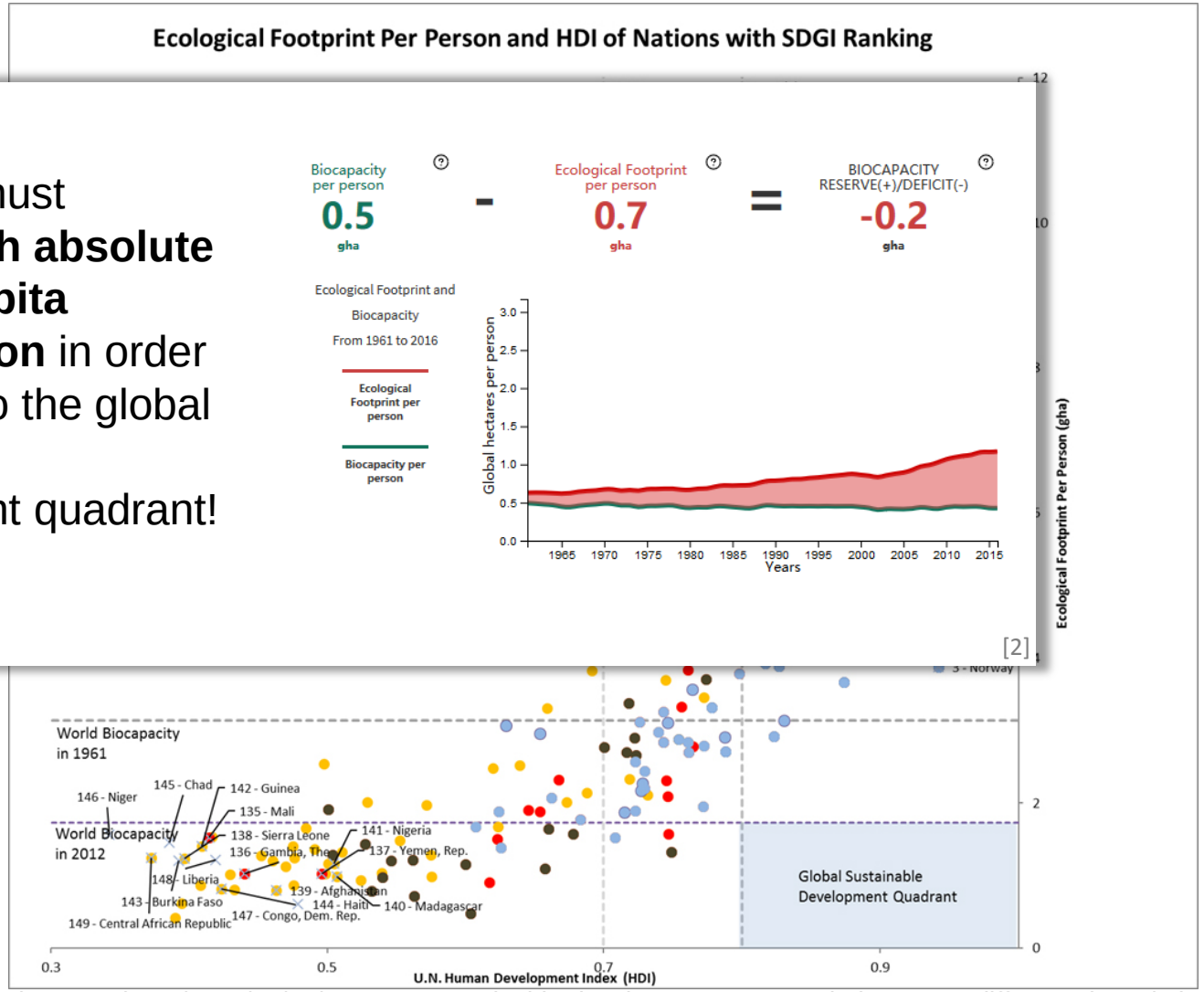
National progress on RE and CE

Countries must **reduce both absolute and per capita consumption** in order to move into the global sustainable development quadrant!

[2]

World Biocapacity in 1961

World Biocapacity in 2012

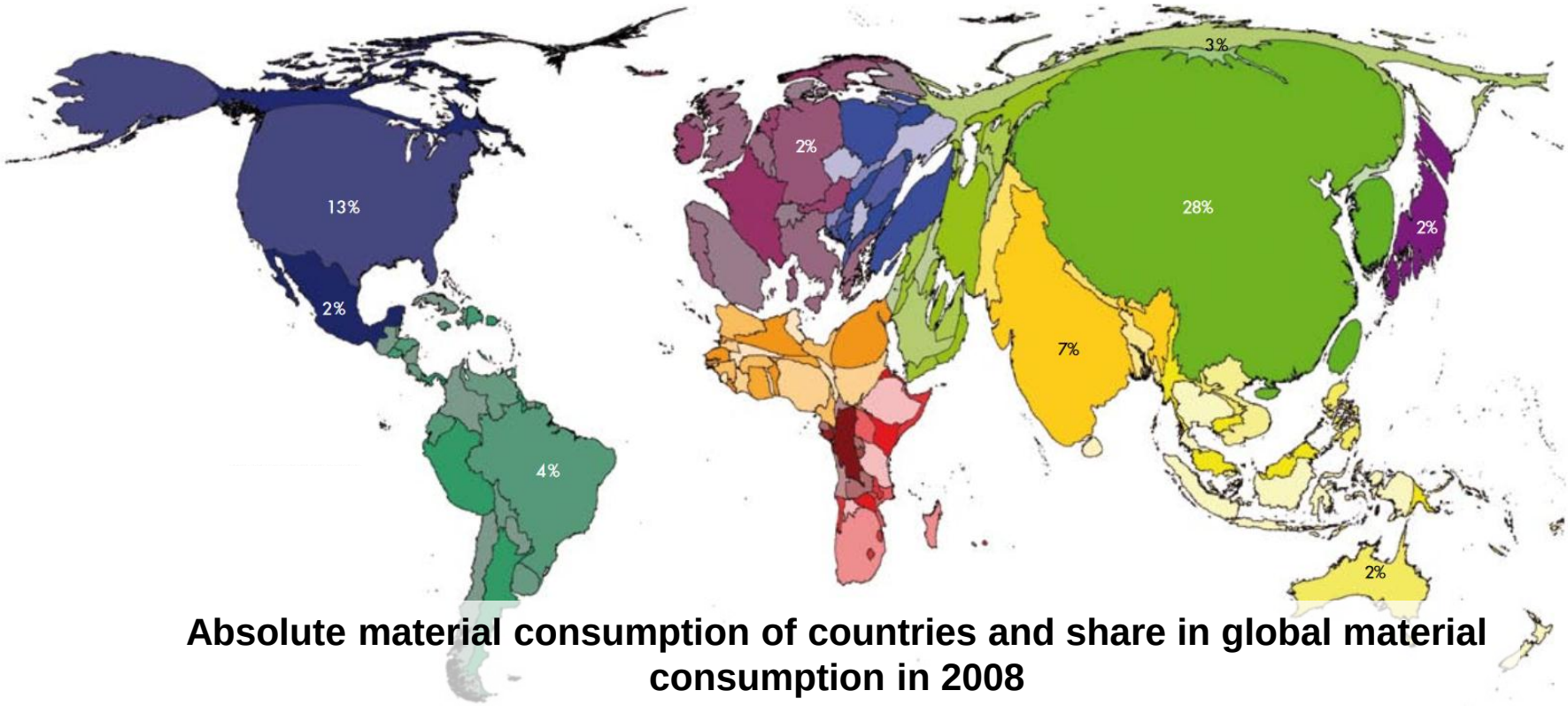


[1]

Picture sources: [1] https://www.footprintnetwork.org/2016/07/20/measure-sustainable-development-two-new-indeces-two-different-views (adapted)
[2] http://data.footprintnetwork.org/?_ga=2.16269430.196531191.1573637476-527890571.1573637476#/

National progress on RE and CE

Globally, the “big five” material consuming countries – China, the United States, India, Brazil and Russia – are responsible for 55% of total material requirement.



Absolute material consumption of countries and share in global material consumption in 2008

Country size is proportional to its share in global material consumption

Picture source: https://www.boell.de/sites/default/files/201207_green_economies_around_the_world.pdf

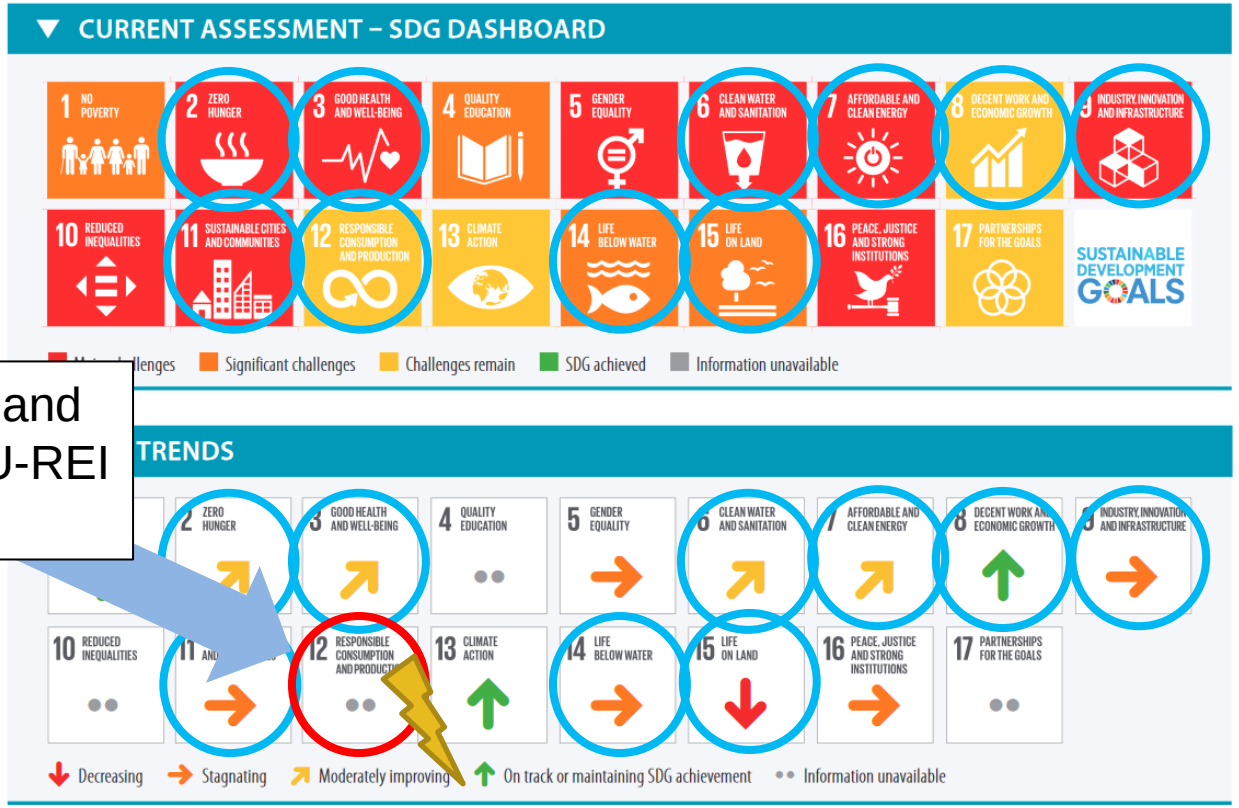
National progress on RE and CE

Find out what your personal Ecological Footprint is at:
https://www.footprintcalculator.org/

Picture source: https://www.footprintcalculator.org/

National progress on RE and CE

India's Performance on the SGDs: making progress, but acute lack of data on SDG 12.

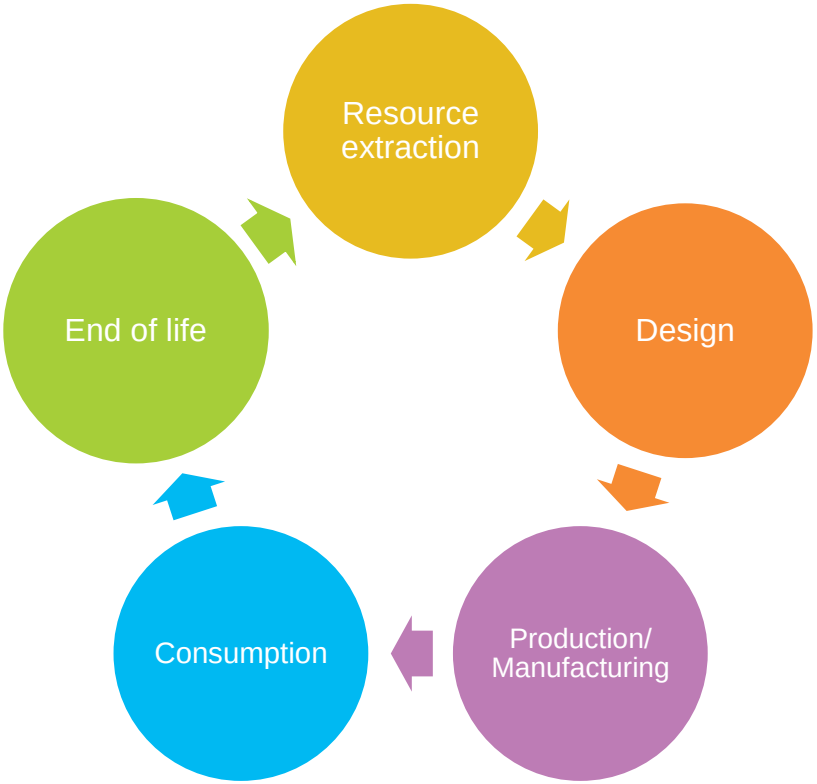


Intervention and support by EU-REI project

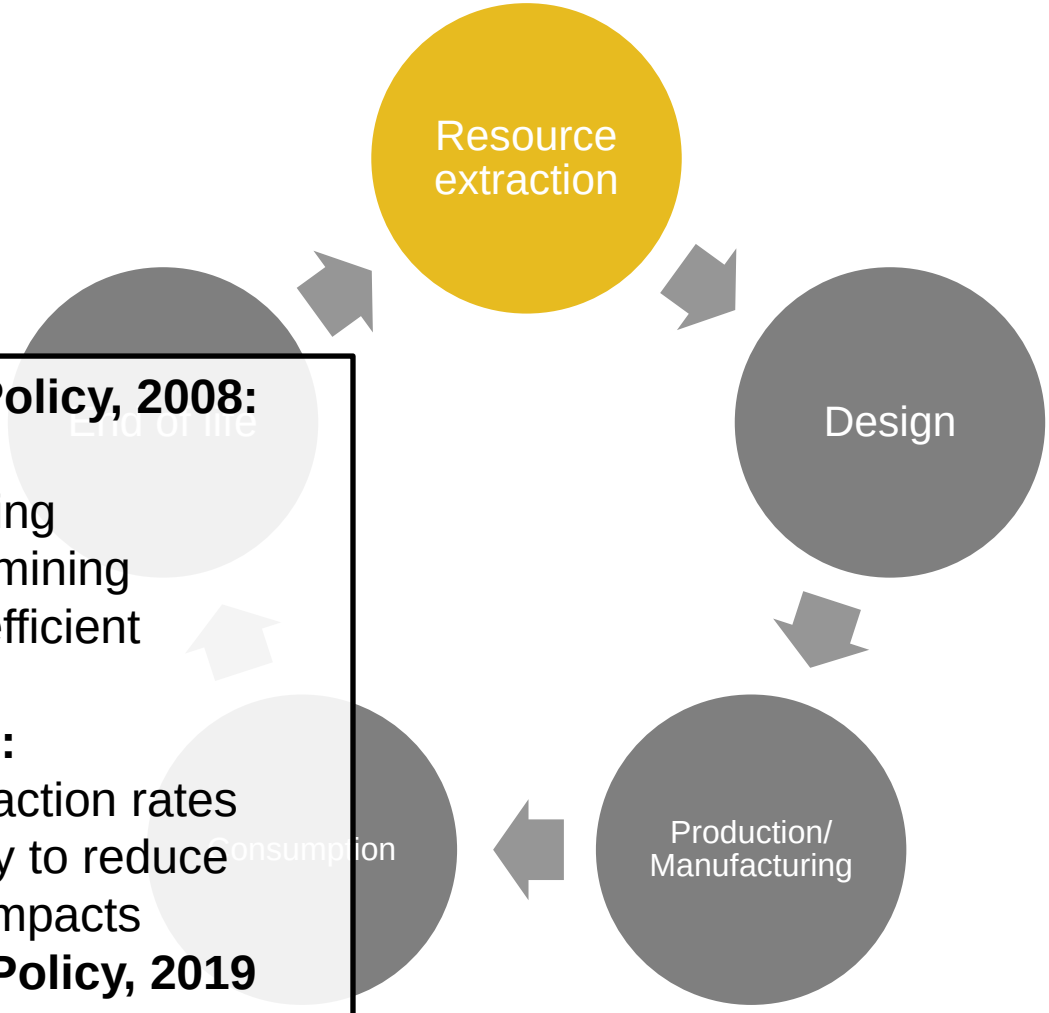
Picture source: https://s3.amazonaws.com/sustainabledevelopment.report/2019/2019_sustainable_development_report.pdf

National progress on RE and CE

Current policies and legislations in India seek to create change across various lifecycle stages



National progress on RE and CE



National Mining Policy, 2008:

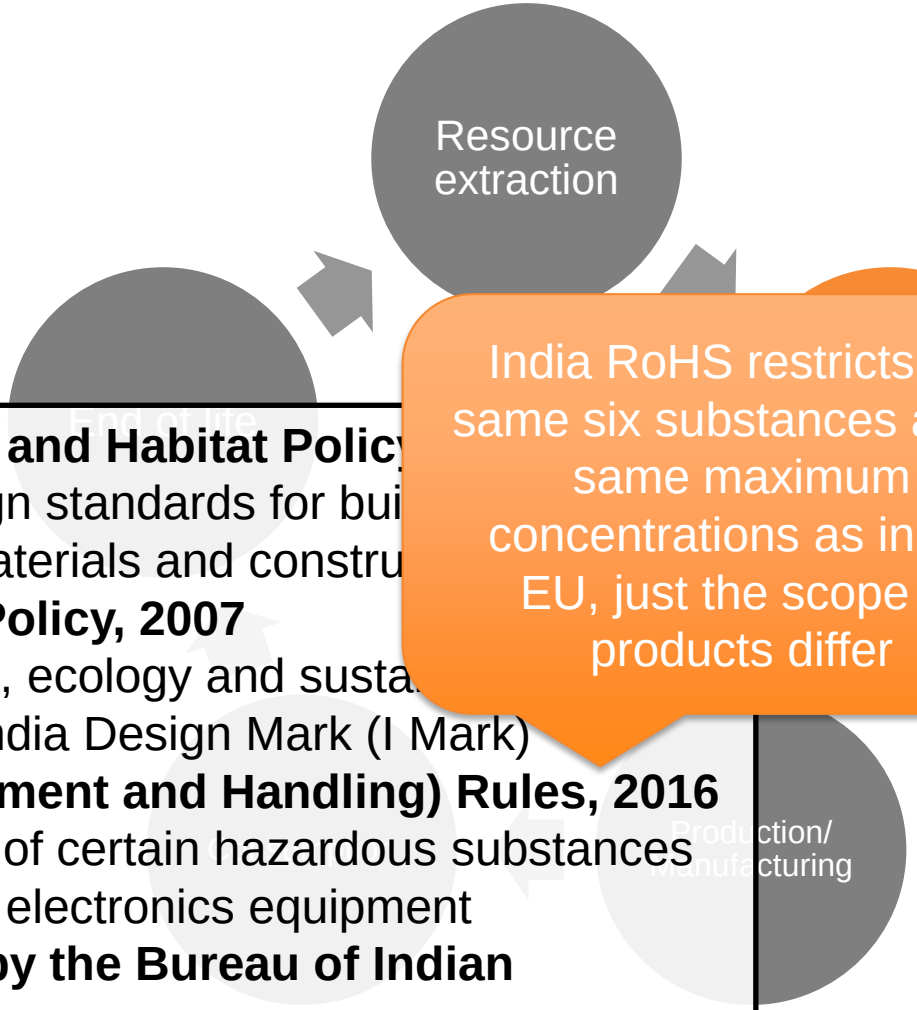
- New draft 2018
- Zero-waste mining
- Upgradation of mining technology for efficient extraction

Steel Policy, 2017:

- Increase in extraction rates
- Higher efficiency to reduce environmental impacts

National Mineral Policy, 2019

National progress on RE and CE



India RoHS restricts the same six substances at the same maximum concentrations as in the EU, just the scope of products differ

National Housing and Habitat Policy
- Ecological design standards for bui components, materials and constru

National Design Policy, 2007
- Eco-friendliness, ecology and susta criteria for the India Design Mark (I Mark)

E-Waste (Management and Handling) Rules, 2016
- Restricts usage of certain hazardous substances in electrical and electronics equipment

Ecomark issued by the Bureau of Indian Standards

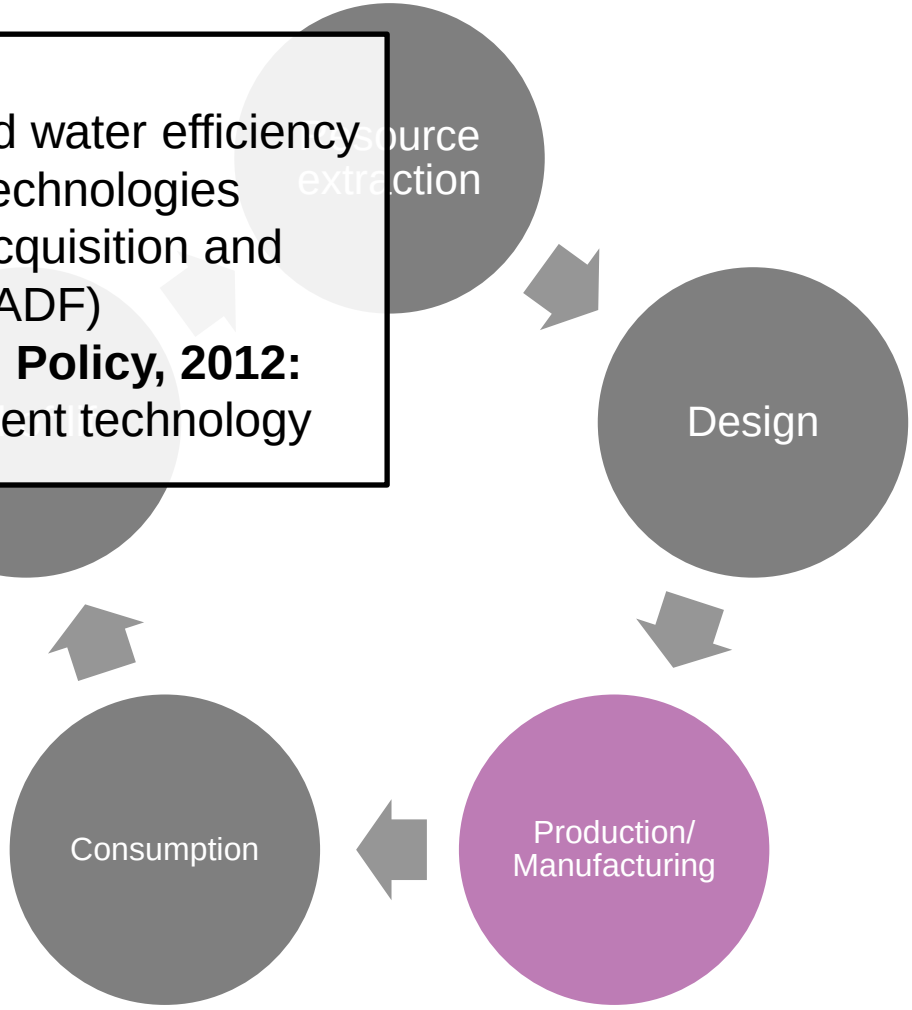
National progress on RE and CE

Make in India, 2014:

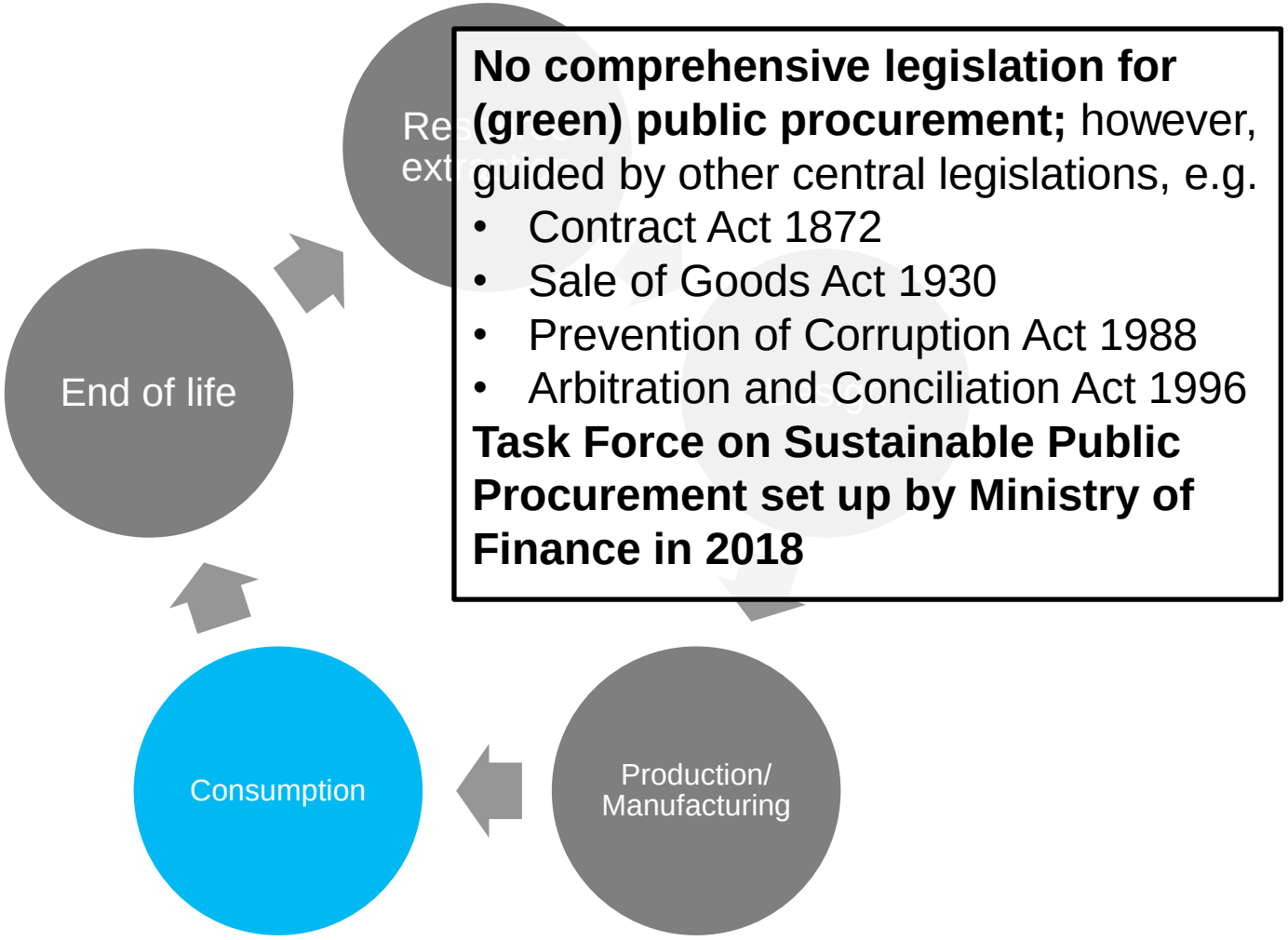
- Increase in energy and water efficiency and pollution control technologies through Technology Acquisition and Development Fund (TADF)

National Manufacturing Policy, 2012:

- Use of clean and efficient technology



National progress on RE and CE

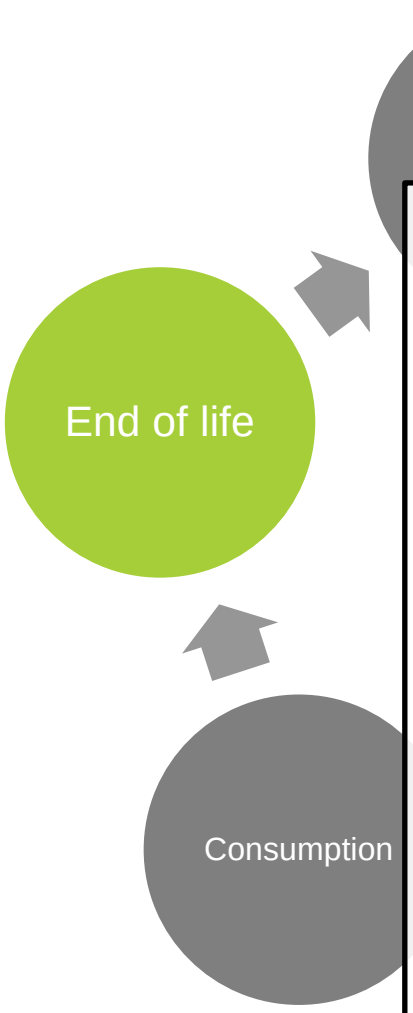


No comprehensive legislation for (green) public procurement; however, guided by other central legislations, e.g.

- Contract Act 1872
- Sale of Goods Act 1930
- Prevention of Corruption Act 1988
- Arbitration and Conciliation Act 1996

Task Force on Sustainable Public Procurement set up by Ministry of Finance in 2018

National progress on RE and CE



Clean India Mission (Swach Bharat):

- Overarching programme for sanitation and waste management

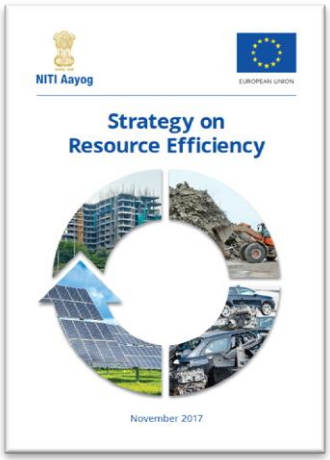
Legislations protecting the environment, human health and ensuring sound management of waste streams, in part incorporating on **Extended Producer Responsibility (EPR)**:

- Solid Waste Management Rules, 2016
- E-waste Management & Handling Rules, 2016
- Plastic Waste Management Rules, 2016
- Batteries (Management and Handling) Rules, 2001 (and subsequent amendments)
- Construction and Demolition Waste Management and Handling Rules, 2016 (no EPR)
- Steel Scrap Recycling Policy, 2019 (no EPR)

Strategies on RE and CE across selected sectors in India

EU-REI

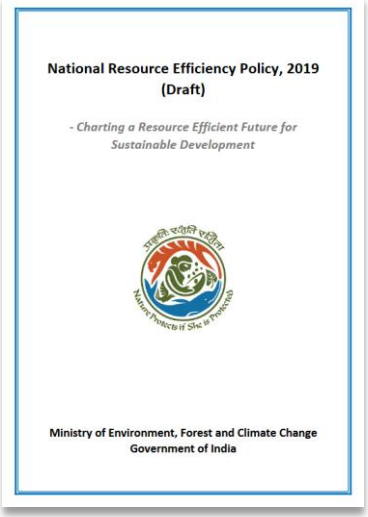
2017



2018

2014 - 2017

2019



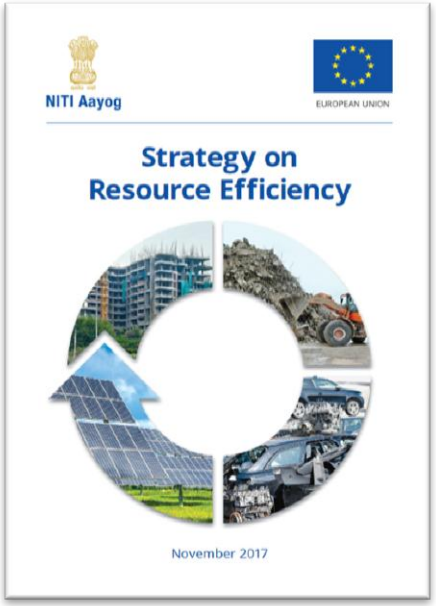
Picture source: http://www.eu-rei.com/publications.html

Strategies on RE and CE across selected sectors in India

Year	Name	Actors
2014	BMZ-funded project on formation of InRP	MoEF&CC, BMZ Germany
2017	Strategy on Resource Efficiency	NITI Aayog, EU-REI
2018	Sectoral studies on RE and CE: • Electric Vehicles • Solar PV • Building and Construction • EPR for E-waste and Plastic Packaging	Ministry of Environment, Forests and Climate Change, EU-REI
	Strategy on Resource Efficiency in Aluminum Sector	Ministry of Mines, NITI Aayog, EU-REI
	Strategy on Resource Efficiency in Steel Sector	Ministry of Steel, NITI Aayog, EU-REI
	Strategy on Resource Efficiency in the Electrical and Electronic Equipment Sector	Ministry of Electronics and Information Technology, NITI Aayog, EU-REI
	Strategy on Resource Efficiency in Construction & Demolition Sector	Ministry of Housing and Urban Affairs, NITI Aayog, EU-REI
	Resource Efficiency & Circular Economy – Current Status and Way Forward	NITI Aayog, EU-REI
2019	National Resource Efficiency Policy (Draft)	Ministry of Environment, Forests and Climate Change, EU-REI

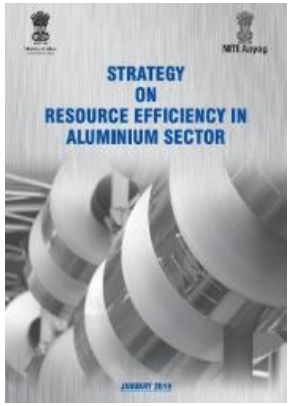
Strategies on RE and CE across selected sectors in India

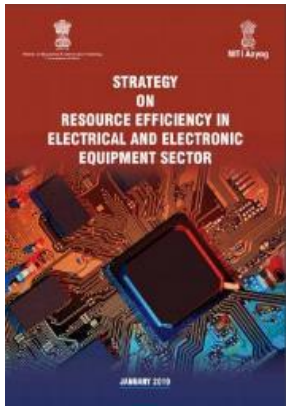
- The **Strategy for Resource Efficiency** by NITI Aayog (2017) establishes a broad framework for enhancing RE in the Indian economy
- Key recommendations addressing all lifecycle stages as well as cross-cutting issues:
    1. **Promotion:** Eco-labelling, standards, technology development, green public procurement, industrial clusters, awareness
    2. **Regulation**: economic instruments, viability gap funding, policy reforms across life cycle stages
    3. **Institutional development:** capacity development, institutional set-up and strengthening, database and indicators, resource index as a part of economic survey

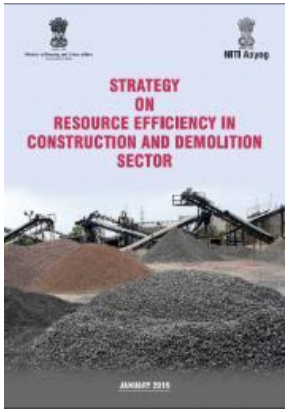


Picture source: http://www.eu-rei.com/publications.html

Strategies on RE and CE across selected sectors in India







NITI Aayog and Mo/Steel, Mo/Mines, MoHUA, MEITY release

- Strategy on RE in Steel Sector
- Strategy on RE in Aluminium Sector
- Strategy on RE in EEE Sector
- Strategy on RE in C&D Sector

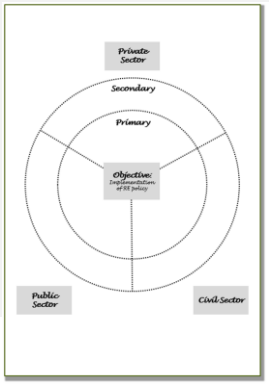
Picture source: http://www.eu-rei.com/publications.html

Strategies on RE and CE across selected sectors in India

Exercise 3.2: Identifying key stakeholders of India's Resource Efficiency Strategy

- Form groups of 4-5 persons
- Analyse the summary of India's Resource Efficiency Strategy with respect to status, concerns and opportunities.
- Identify and classify the key stakeholders in relation to the implementation of the strategy (objective) on the prepared flipchart.

Estimated time requirement: 55 min



Strategies on RE and CE across selected sectors in India

Methodology for classification:

Relevance
- Primary
- Secondary
- Veto player

Sector
- Private
- Public
- Civil society

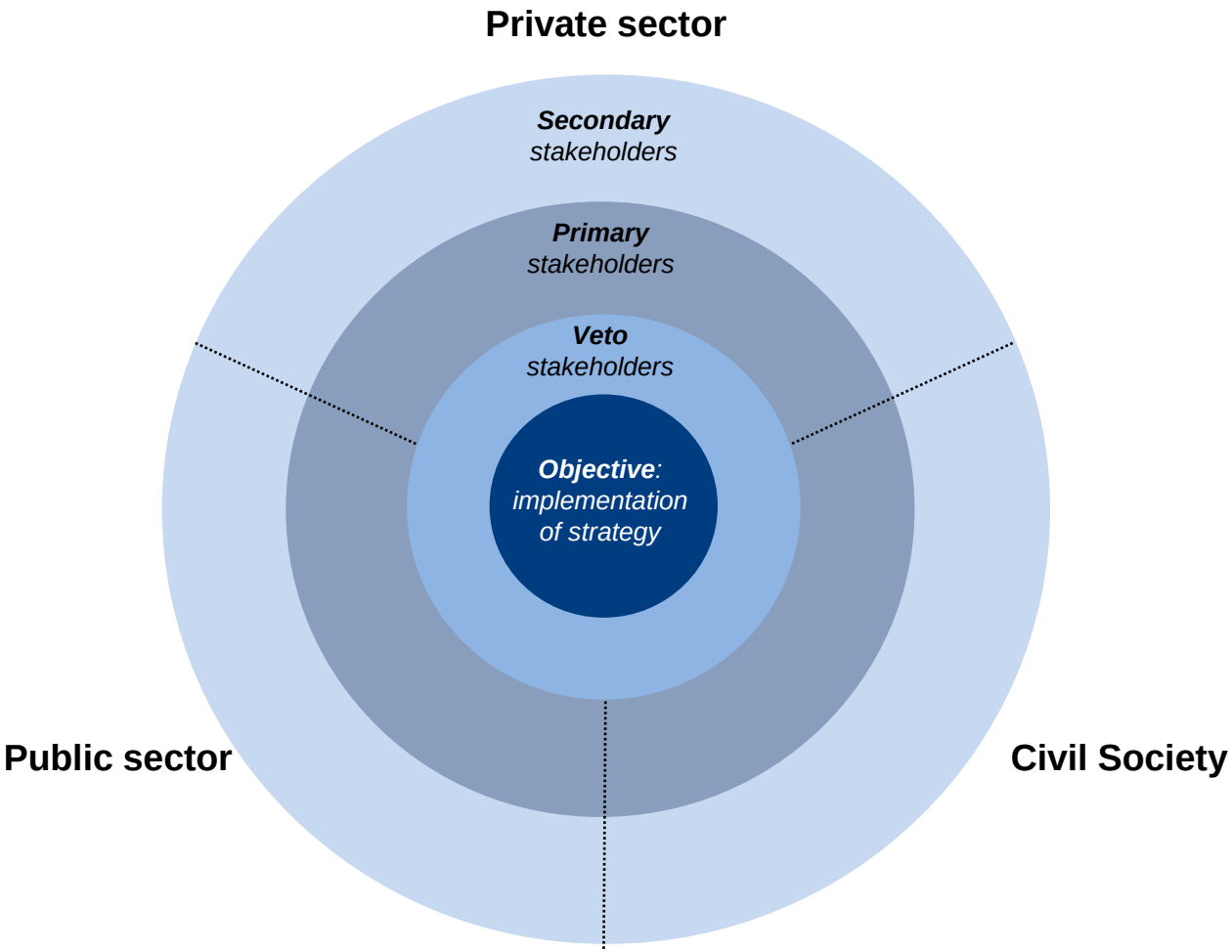
Relationship
- Strong ——
- Weak ·····

Relationships between

All actors that are affected by the policy or have a potential stake in the action to be brought about by the policy are considered to be STAKEHOLDERS.

- **Primary actors:** directly affected by the policy (i.e. will gain or lose power, privileges, etc. due to the implementation of the policy)
- **Secondary actors:** involvement is temporary or indirect
- **Veto players:** actors without whose support and participation the targeted result cannot be achieved

Strategies on RE and CE across selected sectors in India



Summary

Take-home messages:

- India’s growing middle income class, urbanization and industrialization are major drivers of resource consumption.
- Although most resources are extracted domestically, India remains highly dependent on critical raw materials, which are important for its long-term development.
- India has made important progress in moving towards the sustainable development quadrant by releasing overarching and sectoral strategies on RE and CE.
- However, most strategies are yet to be implemented; this will require concerted efforts from various stakeholders in order to be successful.

EU-REI

Creating a Resource Efficient India