



CERTIFIED
EXECUTIVE
TRAINING
ON GREEN ECONOMY

WGEO EXECUTIVE TRAINING COURSE
ON SCALING UP TRANSITION TO
A GREEN ECONOMY ON A PATH TOWARDS
IMPLEMENTING THE UNITED NATIONS
2030 SUSTAINABLE DEVELOPMENT AGENDA

MODULE DELIVERED BY



ESCAP

RESOURCE EFFICIENCY

IN THE CONTEXT OF GREEN ECONOMY

MODULE “RE”

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By the end of this module you will:



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Understand

Concepts of Resource Efficiency, Green Economy, Circular Economy and their inter-linkages



Know

Policy pathways to promote Resource Efficiency



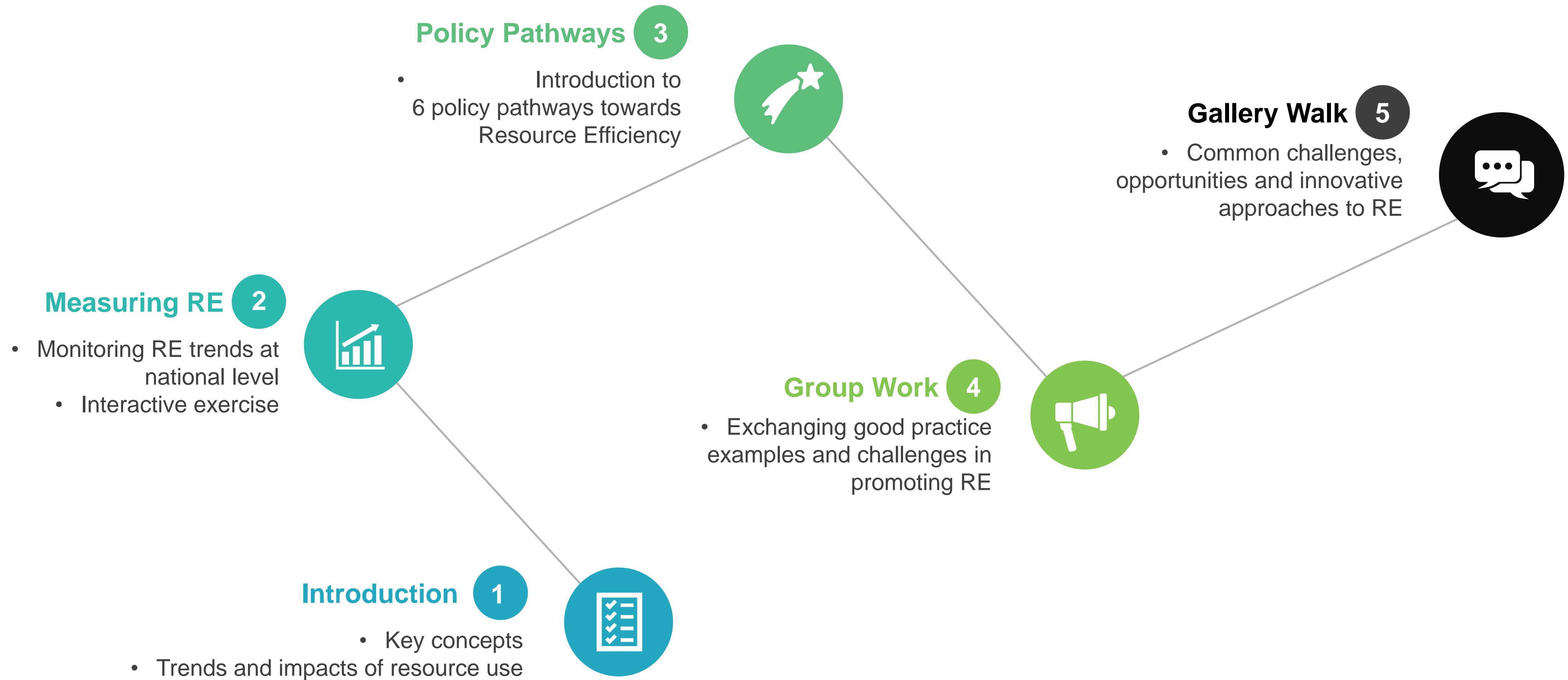
Be able to

Monitor trends in Resource Efficiency at national level

Module structure



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Green Economy

‘A green economy is defined as low carbon, resource efficient and socially inclusive’

UN Environment



Growth

Growth in income and employment



Investments

Public and Private Investments



Green sectors

- reduced carbon emissions, pollution
 - enhanced resource efficiency
 - prevention of the loss of biodiversity and ecosystem services

Resource Efficiency (RE)



**Resource
Efficiency
Improvement**

=



**Goods &
Well-being**

+

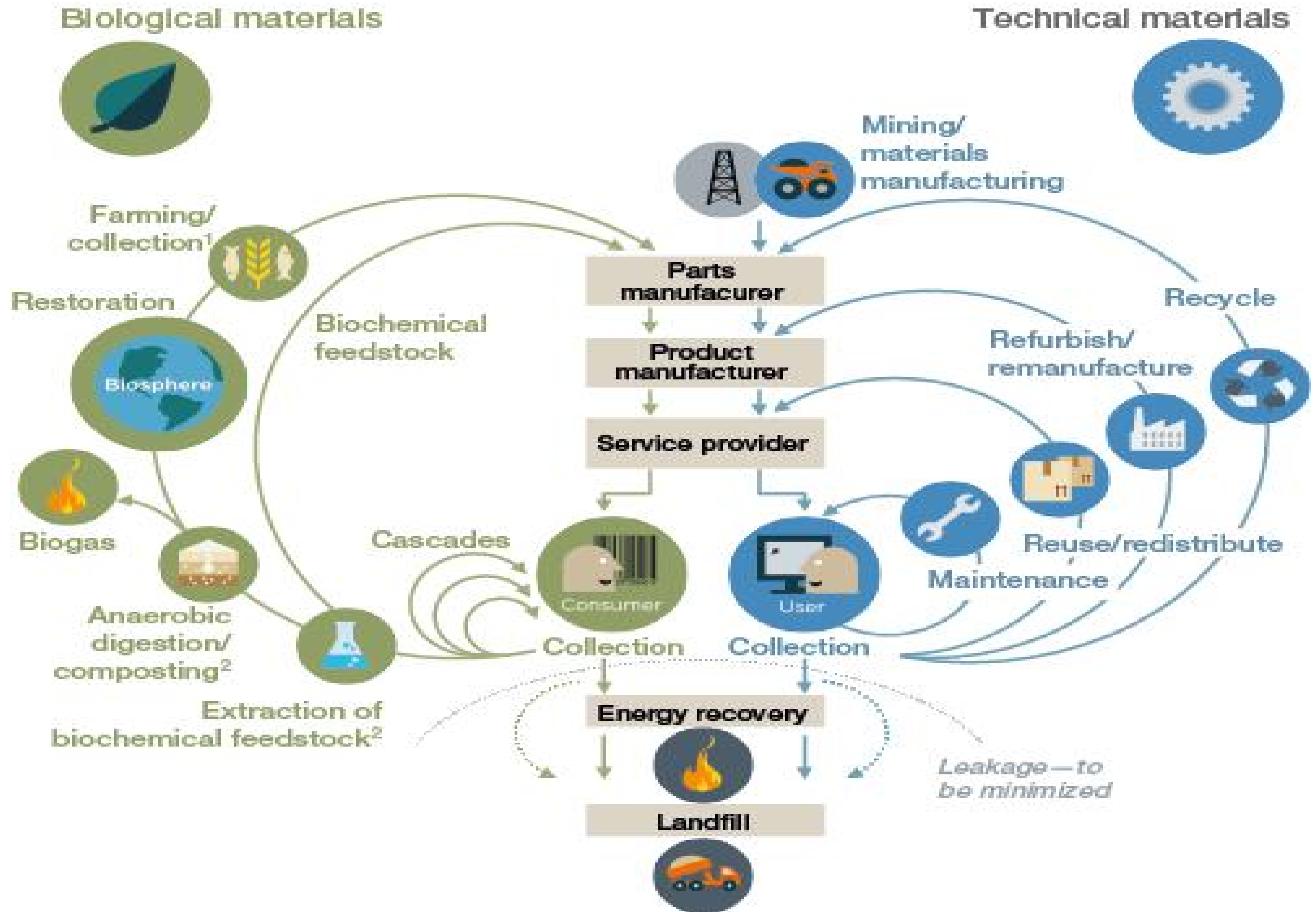


Resources

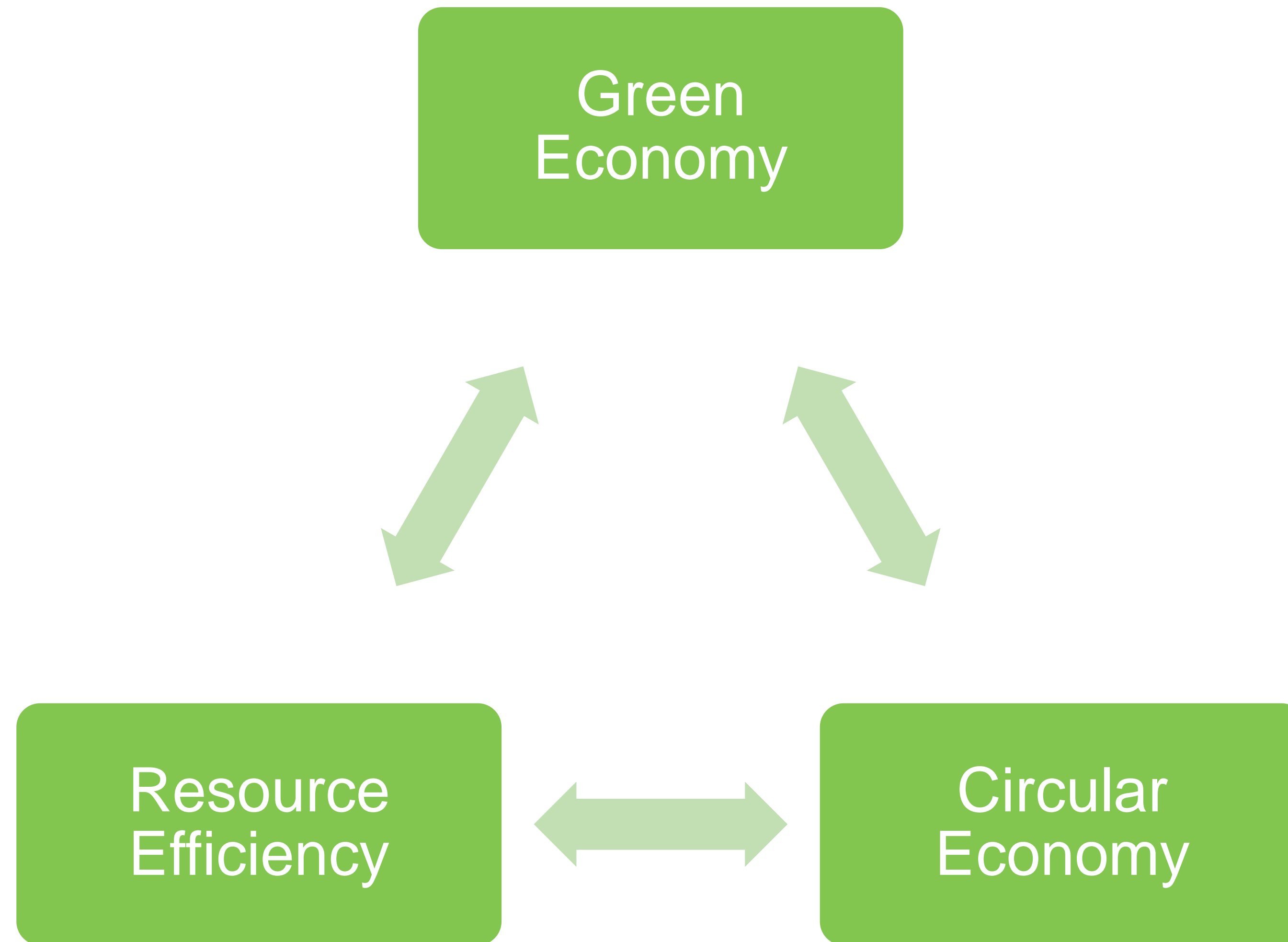
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OVER TIME

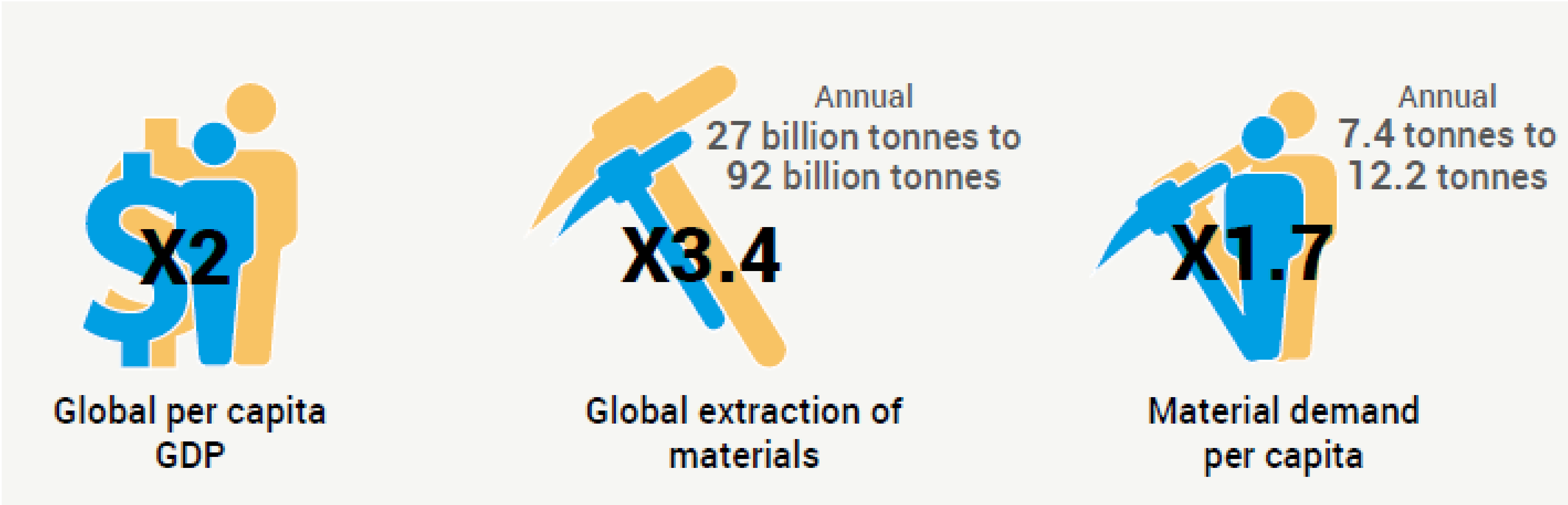
Circular Economy



Link between GE, RE and CE



Between 1970 and 2017



Source : Global Resources Outlook 2019

Impacts of Resource Use

- The extraction and processing of materials, fuels and food make up :

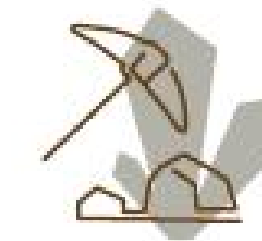
1/2 of total global GHG emissions

> 90 % of biodiversity loss and water stress.

Source : Global Resources Outlook 2019



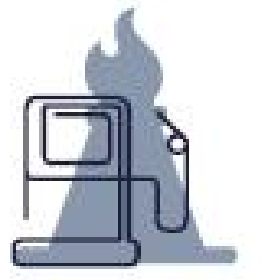
Biomass



Metals



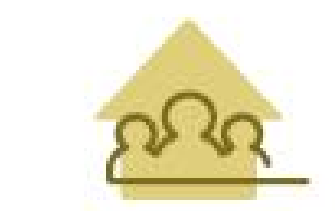
Non-metallic minerals



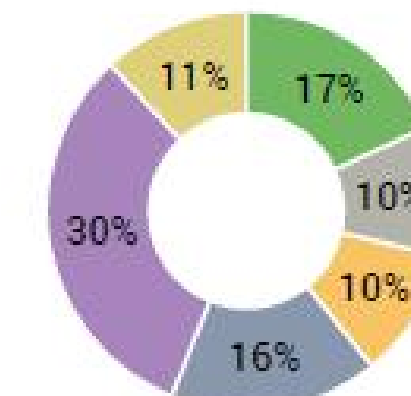
Fossil fuels



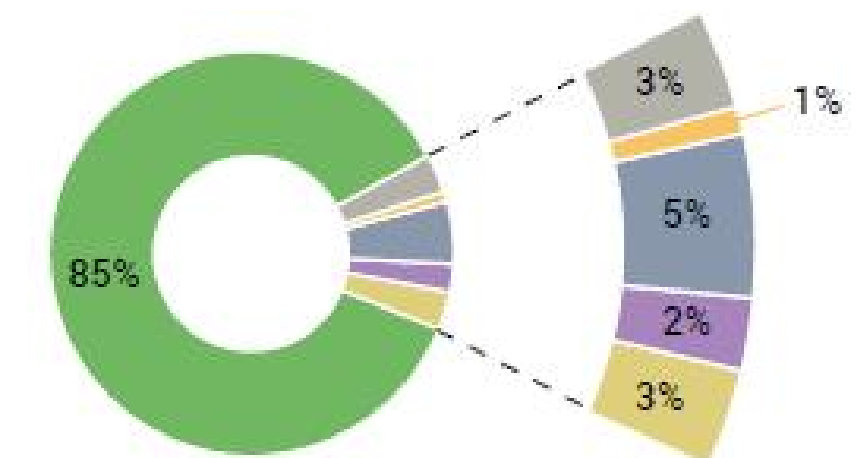
Remaining economy



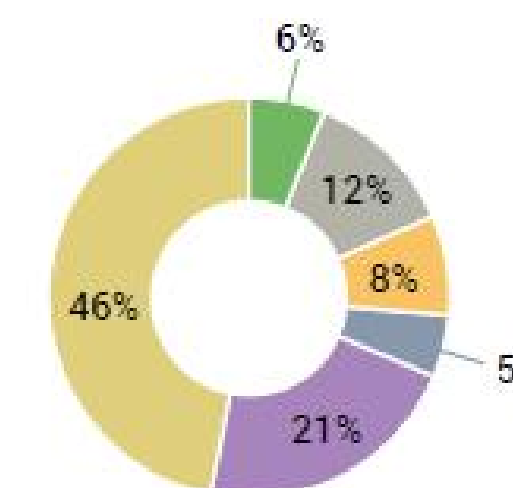
Households



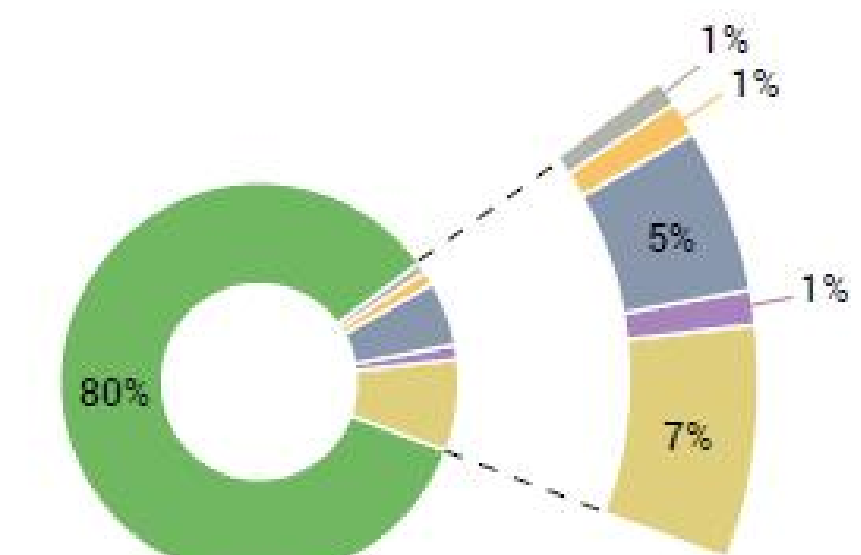
Climate change impacts



Water stress

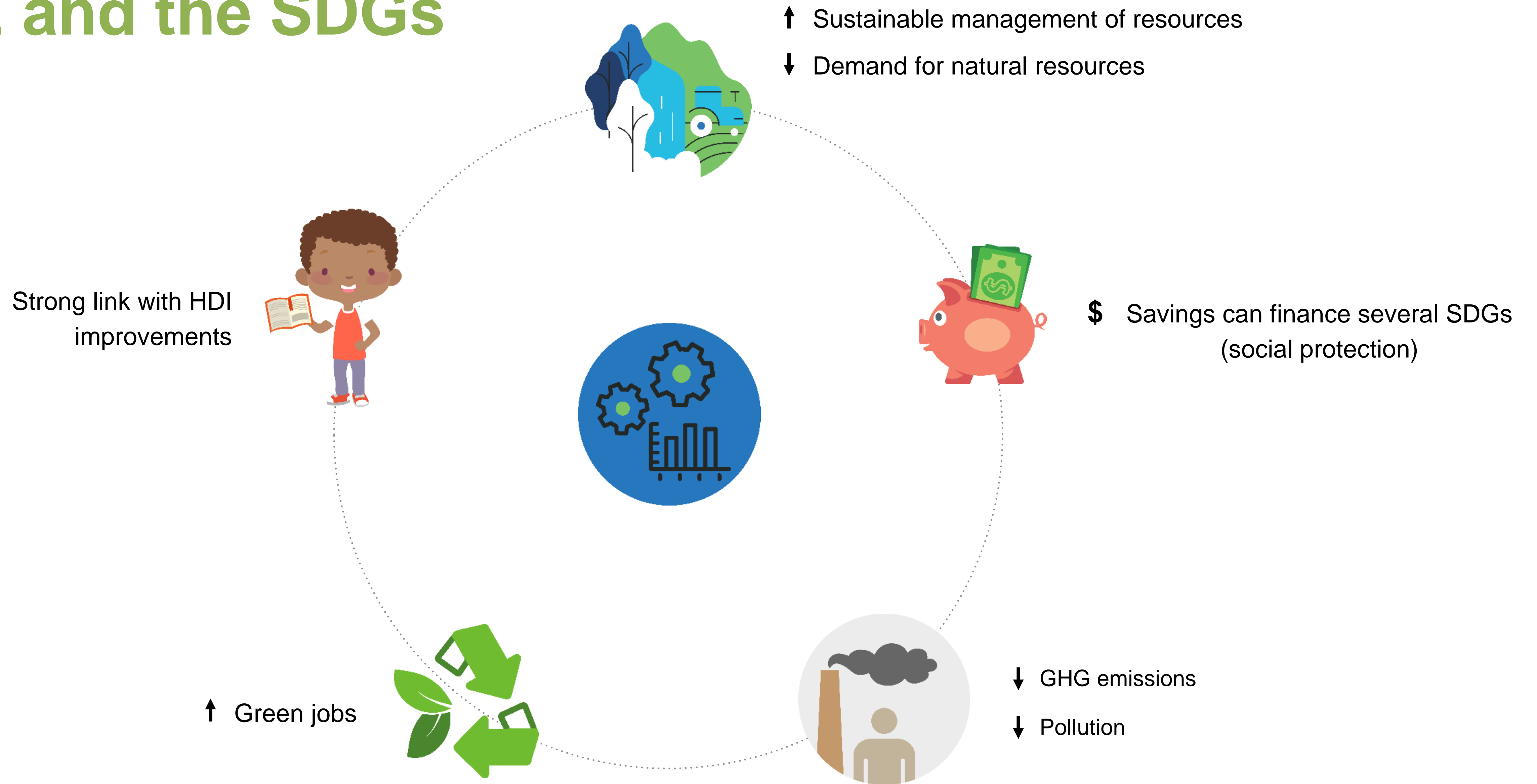


Particulate matter health impacts

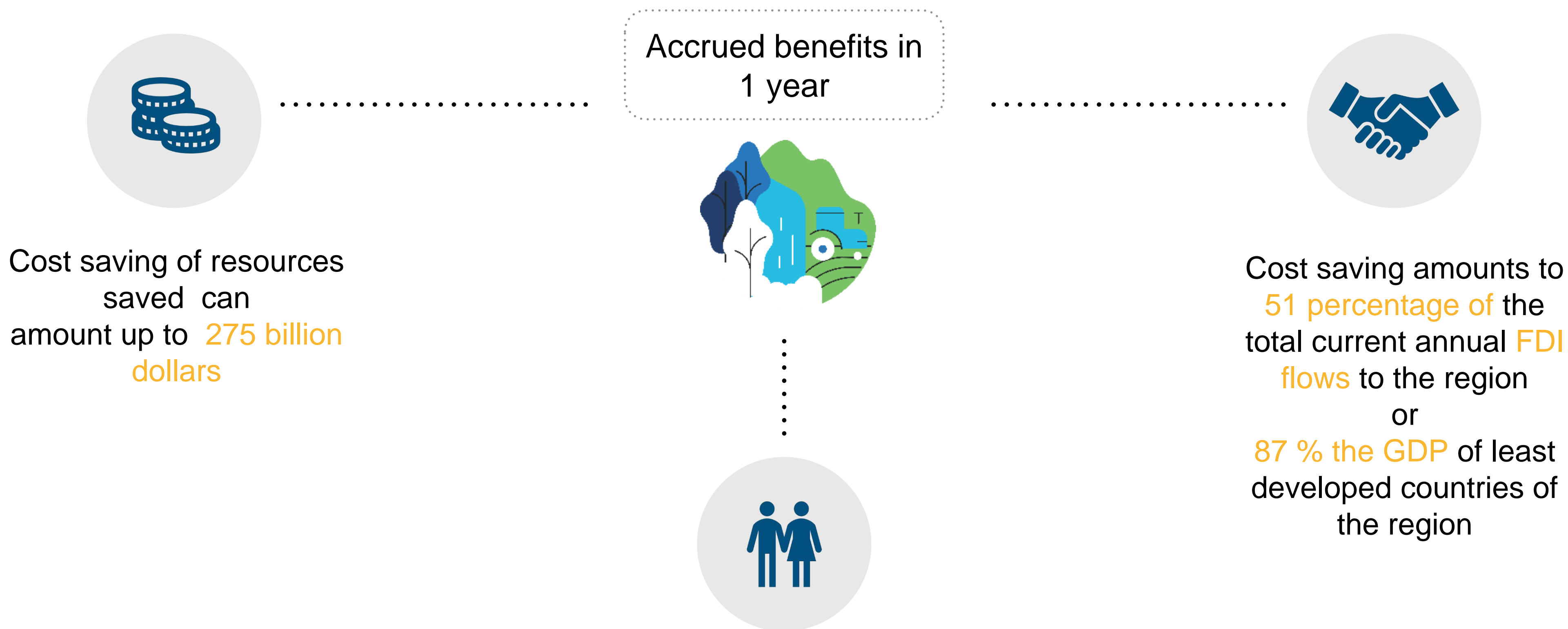


Land-use related biodiversity loss

RE and the SDGs



1% improvement in RE in energy and material resources in Asia-Pacific



Cost saving of resources saved can amount up to **275 billion dollars**

Accrued benefits in 1 year

Cost saving amounts to **51 percentage** of the total current annual **FDI flows** to the region or **87 % the GDP** of least developed countries of the region

Potential creation of **15.6 million job equivalents**

Simulations using ESCAP Resource Efficiency Simulation Tool



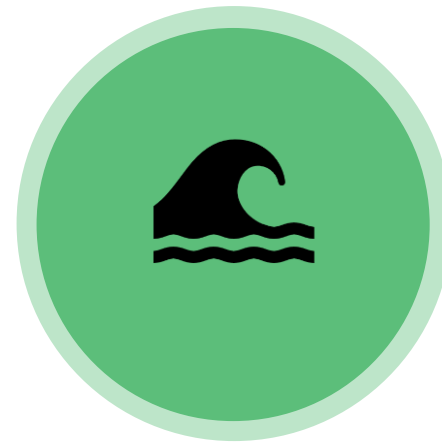
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Measuring Resource Efficiency

Measuring Resource Use



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Water

- Recorded volume of water withdrawals, measured in cubic meters



Energy

- $\hat{\text{Total Primary Energy Supply}}$ = quantity of energy produced domestically, plus imports, minus exports.



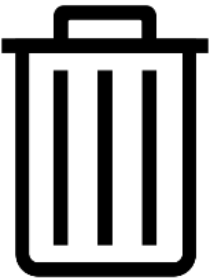
Material Resources

- Consists of Biomass, fossil fuels, metal ores, and non-metallic minerals
- Measured as domestic material consumption and material footprint

Domestic Material Consumption (DMC)



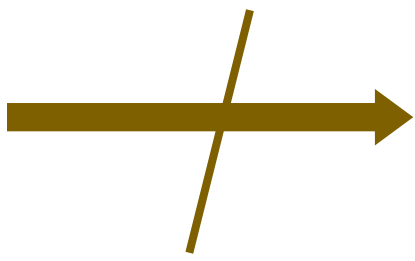
Domestic environmental pressure



Final waste and emissions



Total volume of resources

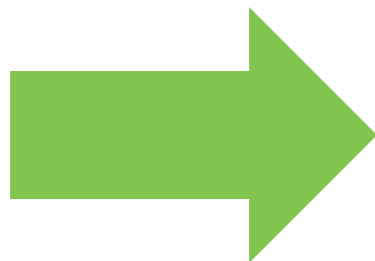


Total consumption demand

Material Footprint (MF)




Total global material extraction



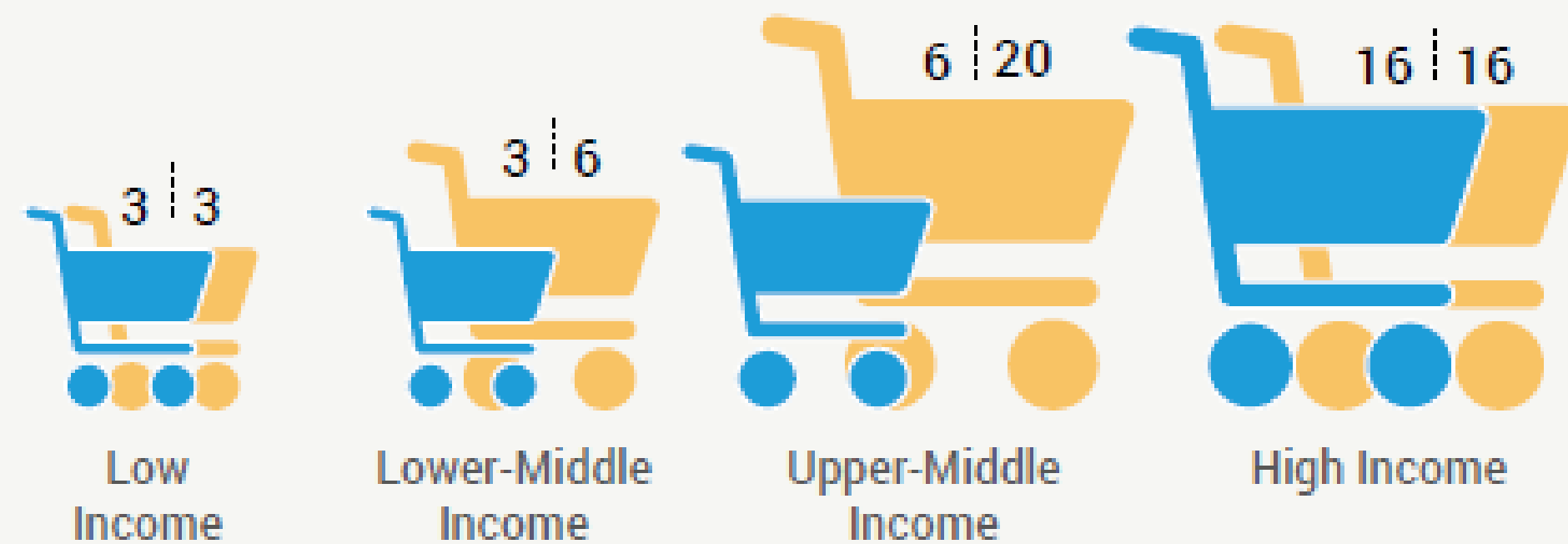

Domestic final consumption demand


High income countries

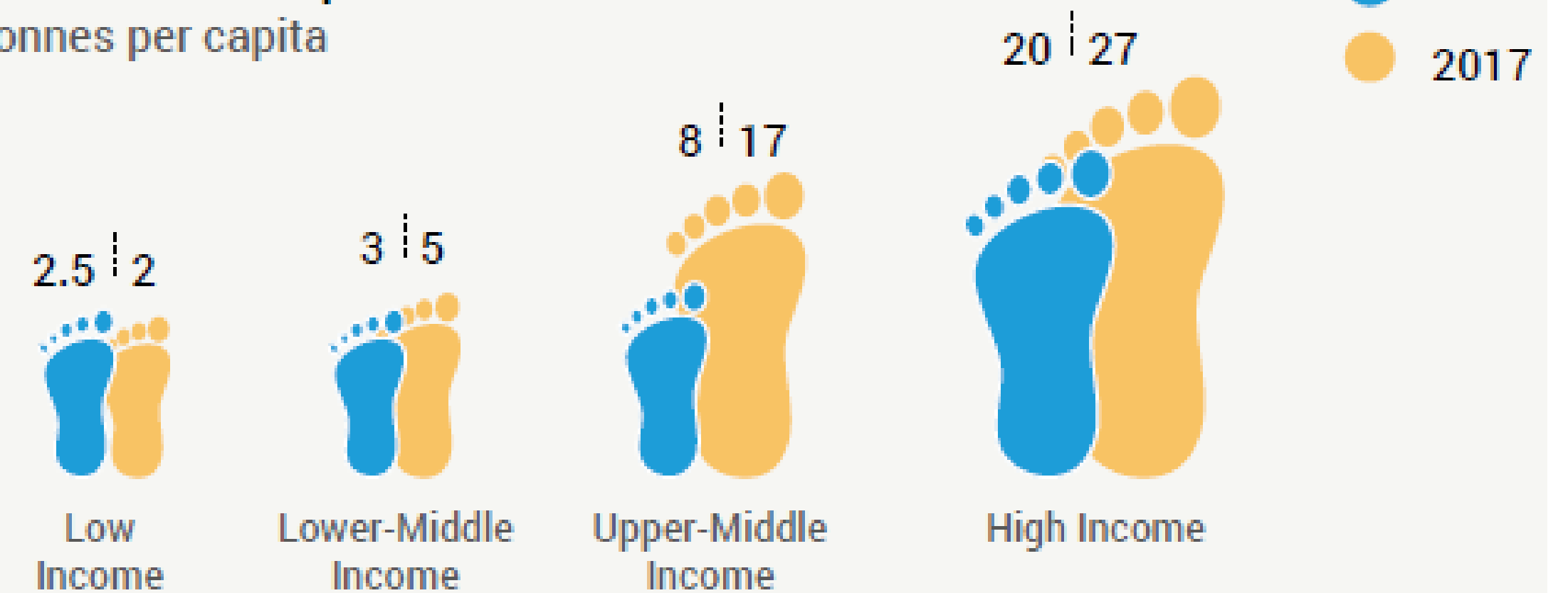


Evolution of resource use by country-income groups

Domestic Material Consumption tonnes per capita



Material Footprint tonnes per capita



Asia-Pacific Regional Trends

Domestic Material Consumption per capita (1990 to 2017)

+75%

Low income
Countries

+69%

Lower-Middle
income Countries

+315%

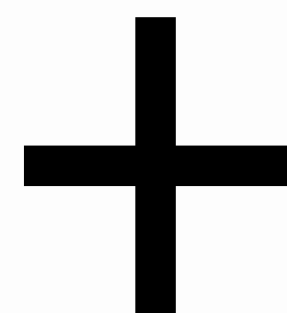
Upper-Middle
income Countries

-2%

High Income
Countries



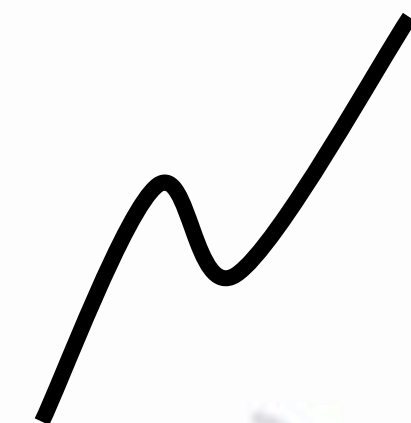
Consumption
pattern



Urbanization



Expansion of
manufacturing



Rising demand for
materials

Measuring RE

$$\text{Resource Intensity (RI)} = \frac{\text{Resource Use}}{\text{Economic Output (GDP)}}$$

Measuring RE



Variation of RI over time

- If RI reduces over time RE improves



At any specific point in time

- The sector (or country) with the lower RI is more resource efficient

Where does the region stand?

It takes approximately **double** the quantity of material resources as input to produce each dollar of **GDP** in the region, compared to the world average.

World average = 1.2 Kg per US\$ (DMC)

Asia Pacific = 2 Kg per US\$ (DMC)



Asia and
the Pacific

\$ \$1



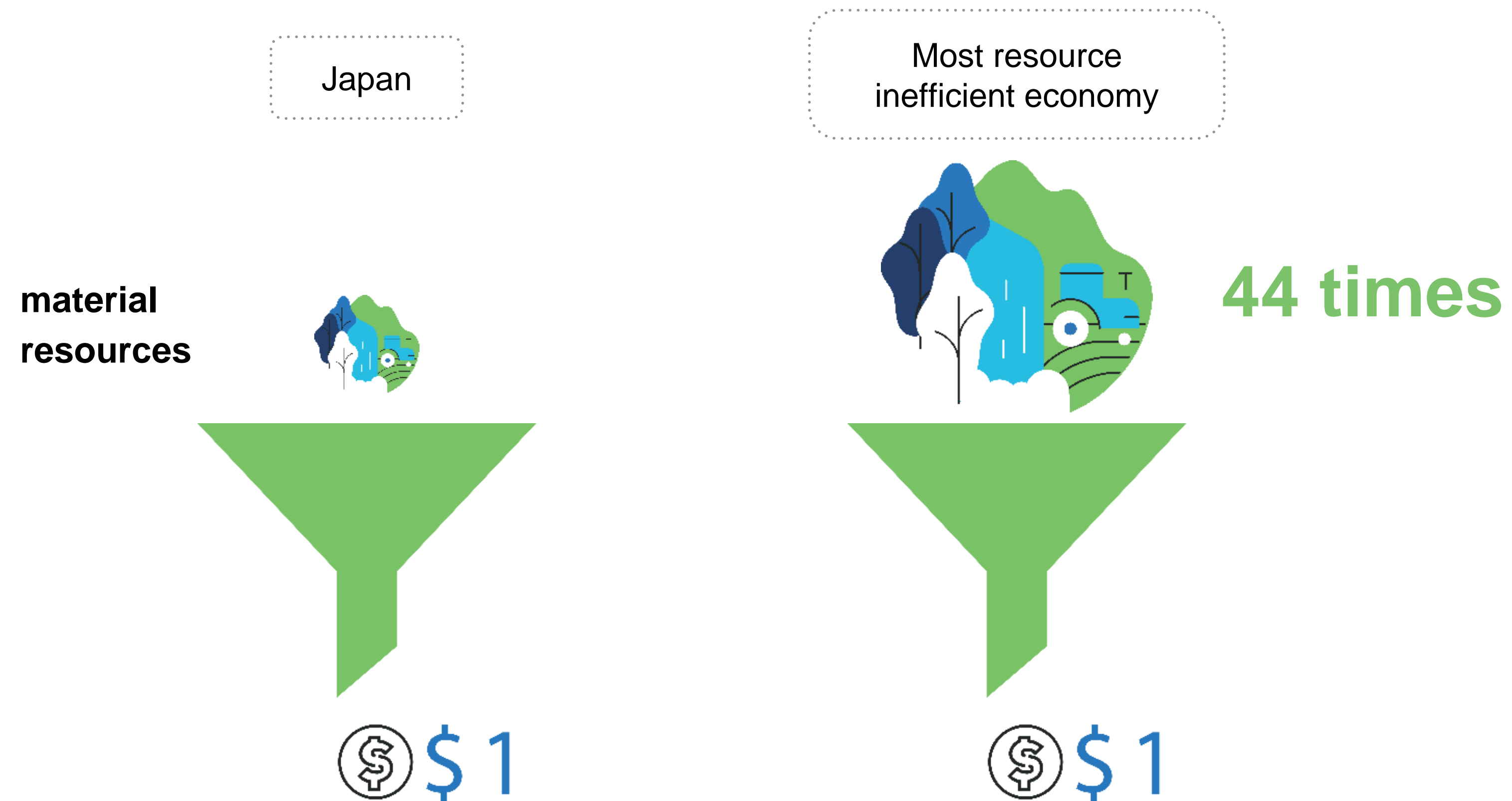
Rest of
the world

\$ \$1



Where does the region stand?

The most efficient economy (DMC) is performing **44 times better** than the least resource efficient economy!





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Interactive Exercise

Explore the Resource Efficiency Simulation Tool (REST)

- 1. Access ESCAP Resource Efficiency Simulation Tool**
- 2. Select a country (or sub-region) of interest and observe the resource efficiency trends and comparisons**
- 3. Simulate a scenario of benefits of resource efficiency**



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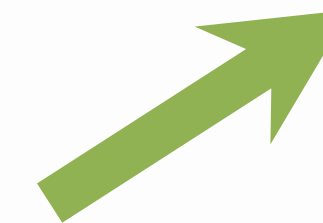
Policy Pathways



Integrating RE Targets Within National Development Agendas and Sectoral Plans



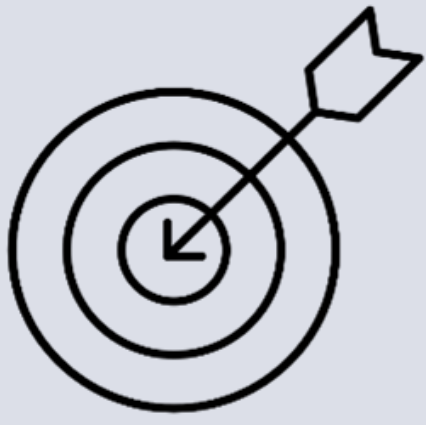
Guiding
principles



Promotes
transformations



INDIA: Zero Effect and Zero Defect



- Guidance to manufacturer to reduce defects
- Certification Scheme

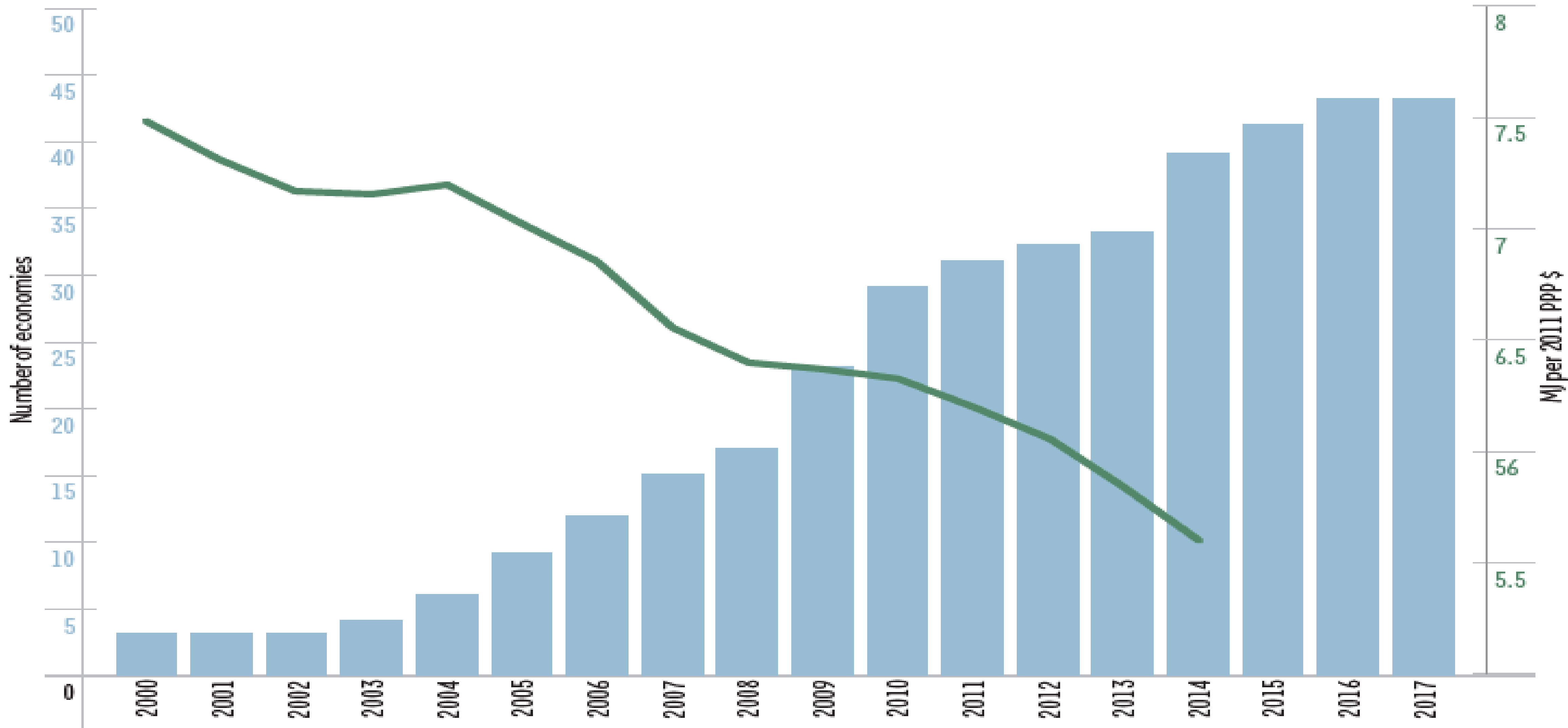
CHINA: Resource Efficiency targets within 5 year plan

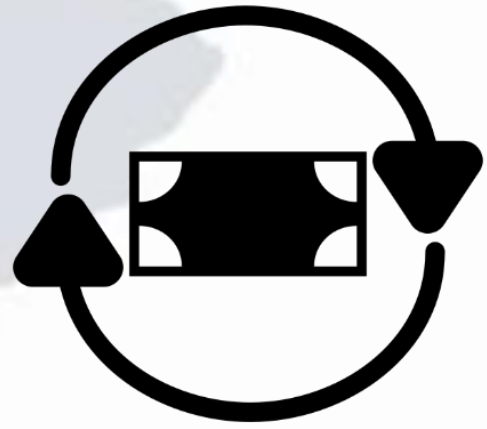
- Last plan includes provision to improve energy efficiency by 15%

JAPAN: Sound Material Cycle Society

- Monitors resource efficiency and supports state initiatives

Number of Asia-Pacific Economies with Active Energy Efficiency Targets and Regional Energy Intensity





**Creating a Macroeconomic and
Financing Framework that
promotes RE**



Incentive structure



Taxation/Fiscal Policy
Subsidies



Getting the
Price right



REPUBLIC OF KOREA:

- Tax incentives
- Low interest loans
- Greens Public procurements

IRAN: Fossil Fuel Subsidy Reform

- Removing fuel subsidies
- Incentives for resource efficient technologies

SINGAPORE: Water Pricing Reform to reflect ecological cost



Establishing targeted legal and regulatory measures to promote Resource Efficiency



Green Labels Standards



Awareness raising



Republic of Korea:
Energy Efficiency
Labelling Program
- 59% increase in energy
efficiency between 1996-
2010.

INDIA: Building Codes

India has adopted new building codes to reduce energy consumption and promote low carbon growth.

JAPAN: Extended Producer
Responsibility (EPR)

Japanese manufacturers have the responsibility for the whole life cycle of their products



Well functioning
innovation
ecosystem



**Leapfrogging to Efficient
Technologies and improving
Innovation capacity**



BANGLADESH: Green Bricks

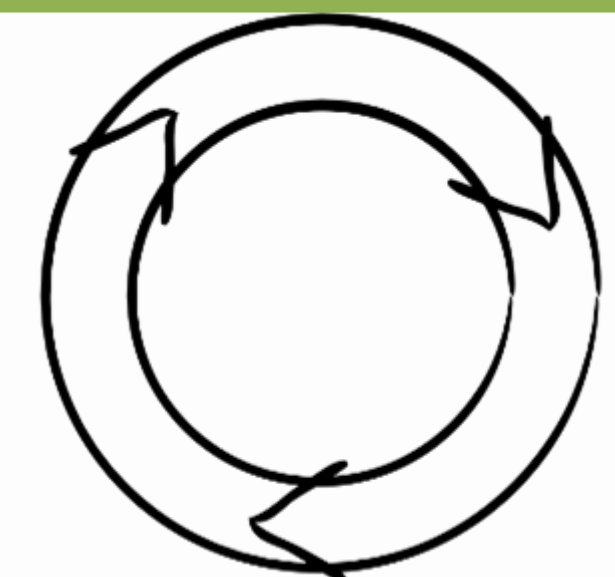
Introduction of smokeless bricks to improve air quality



JAPAN: Top Runner Programme

- Energy Efficiency standards to motivate firms to adopt innovative technologies

SRI LANKA: Addressing supply chain waste using UNIDO's Resource efficient and Cleaner Production Programme



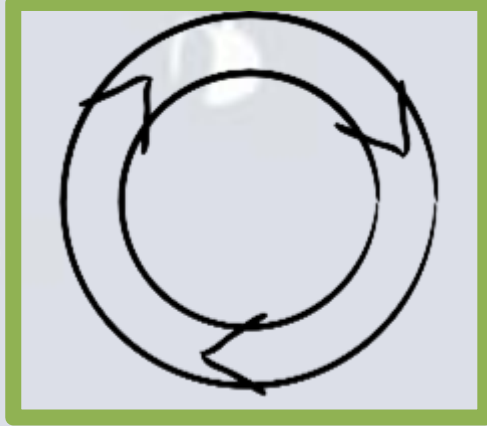
Transitioning to a Circular Economy



5 Rs

Promoting regenerative waste cycles

Reduce, Reuse, Refurbish, Repair and Recycle



CHINA: Circular Economy Promotion Law

INDIA: E-waste management

- All supply chain actors have responsibility in the e-waste management
- Helps the recovery of valuable metals

AUSTRALIA: Greywater use

- 50+% of Australians reuse greywater
- Subsidies for greywater system



Generating better Data and Indicators on Resource Efficiency



Importance of monitoring resource efficiency



Rebound effects



JAPAN: Creating and Monitoring Indicators for the Sound Material-Cycle Society

- Three material flow indicators: resource productivity, cyclical use rate and final disposal in a landfill

Three key takeaways from the module



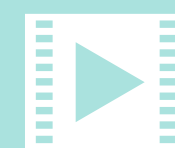
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RE can be a powerful enabler of Sustainable Development and Green Economy



RE and Circular Economy reinforce each other and promote realisation of Green Economy



Several policy pathways at macro and sectoral level exist to promote RE



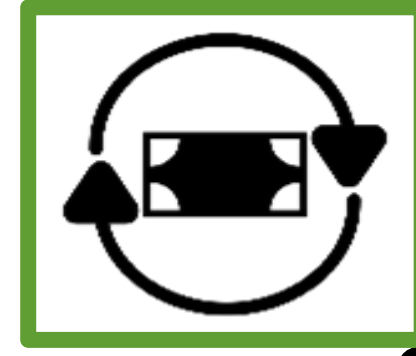
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Group Work

Promoting RE : policy pathways and challenges



**Integrating RE Targets
within National Development
Agendas and Sectoral Plans**



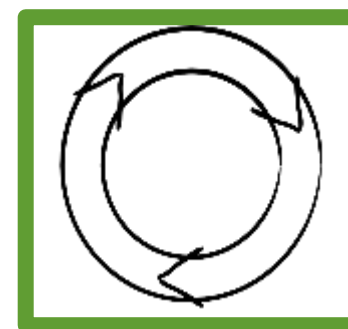
**Creating a Macroeconomic
and Financing Framework
that promotes RE**



**Establishing targeted legal
and regulatory measures**



**Leapfrogging to Efficient
Technologies and improving
Innovation capacity**



**Transitioning to a Circular
Economy**



**Generating better Data and
Indicators on Resource
Efficiency**



Policy pathways to promote RE



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Gallery Walk

Three key takeaways from the module



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RE can be a powerful enabler of Sustainable Development and Green Economy



RE and Circular Economy reinforce each other and promote transition to a Green Economy



Several policy pathways at macro and sectoral level exist to promote RE

**For a certified e-learning course on Resource Efficiency and opportunity
to join a global community of practice on Resource Efficiency**

<http://sdghelpdesk.unescap.org/e-learning/resource-efficiency-course>

THANK YOU

