



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



# RESOURCE EFFICIENCY

## IN THE CONTEXT OF GREEN ECONOMY

### MODULE “RE”

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Cairo, Egypt



# 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**

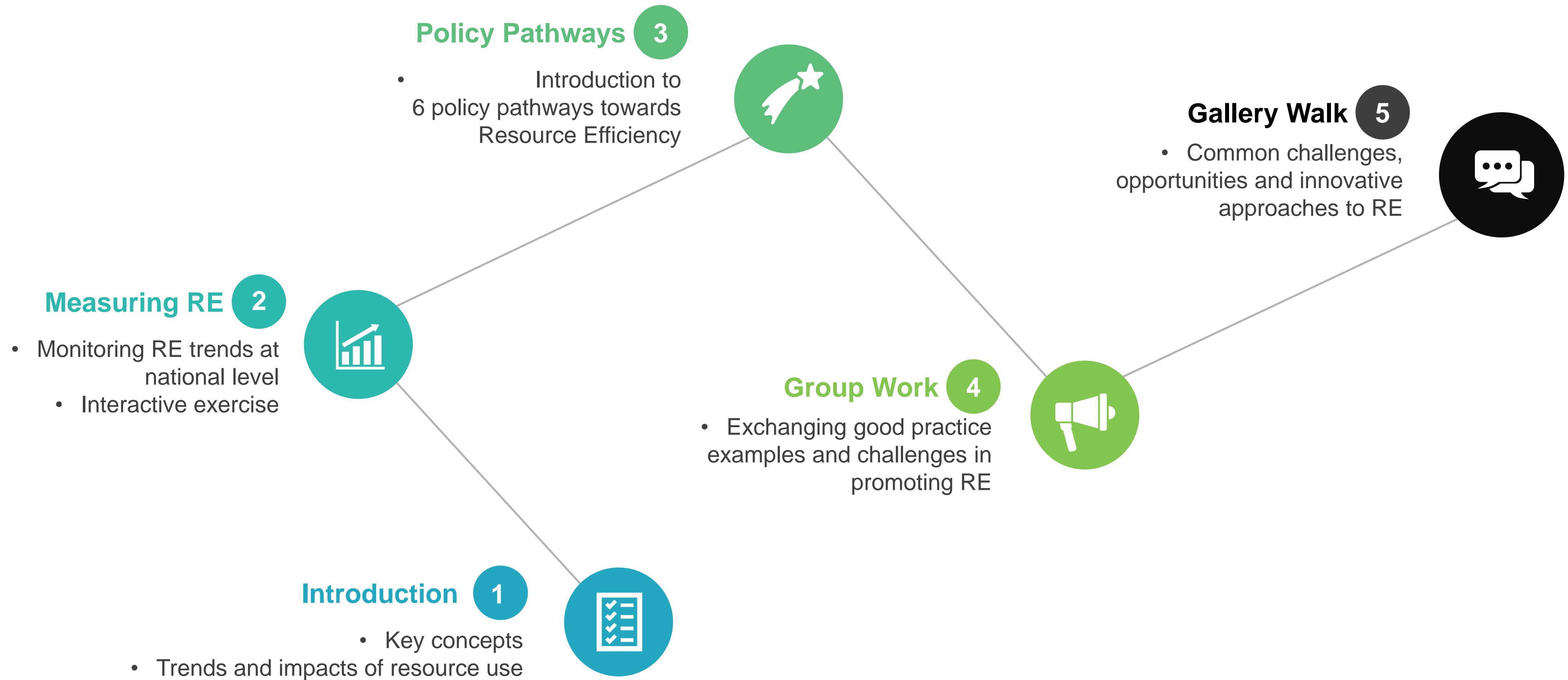
Policy pathways to promote Resource Efficiency



## **Be able to**

Monitor trends in Resource Efficiency at national level

# Module structure



# 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**

+

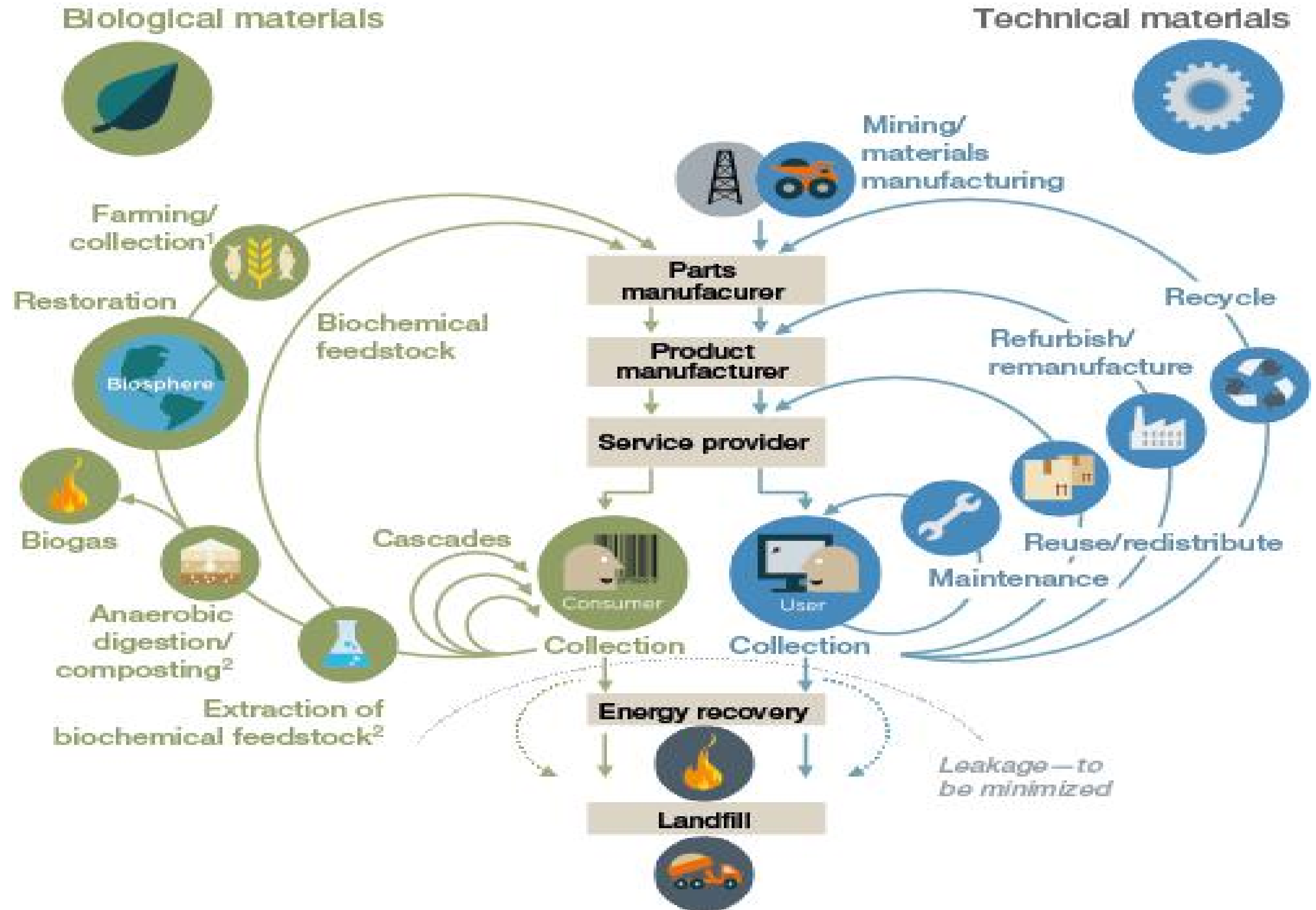


**Resources**

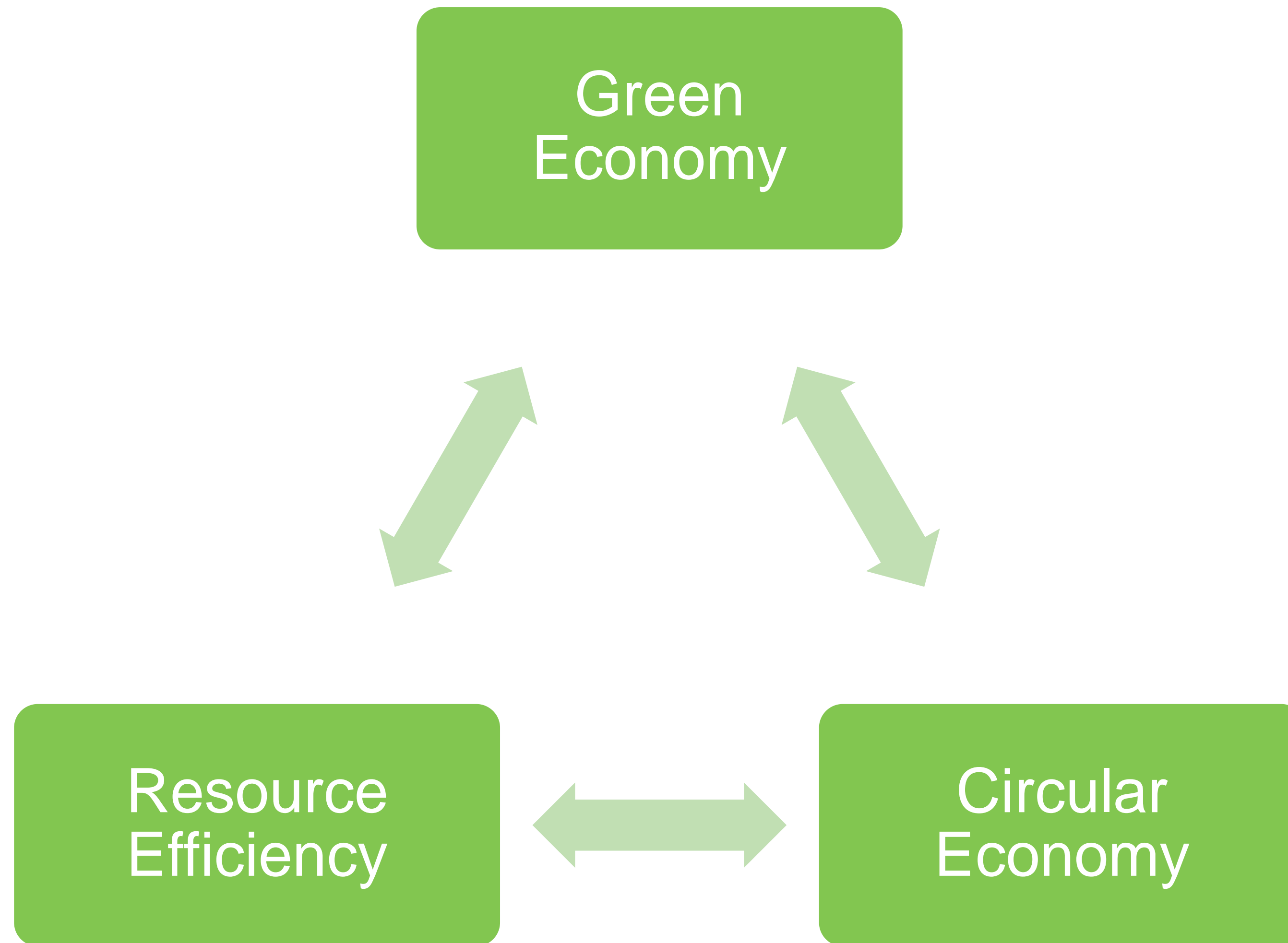
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OVER TIME

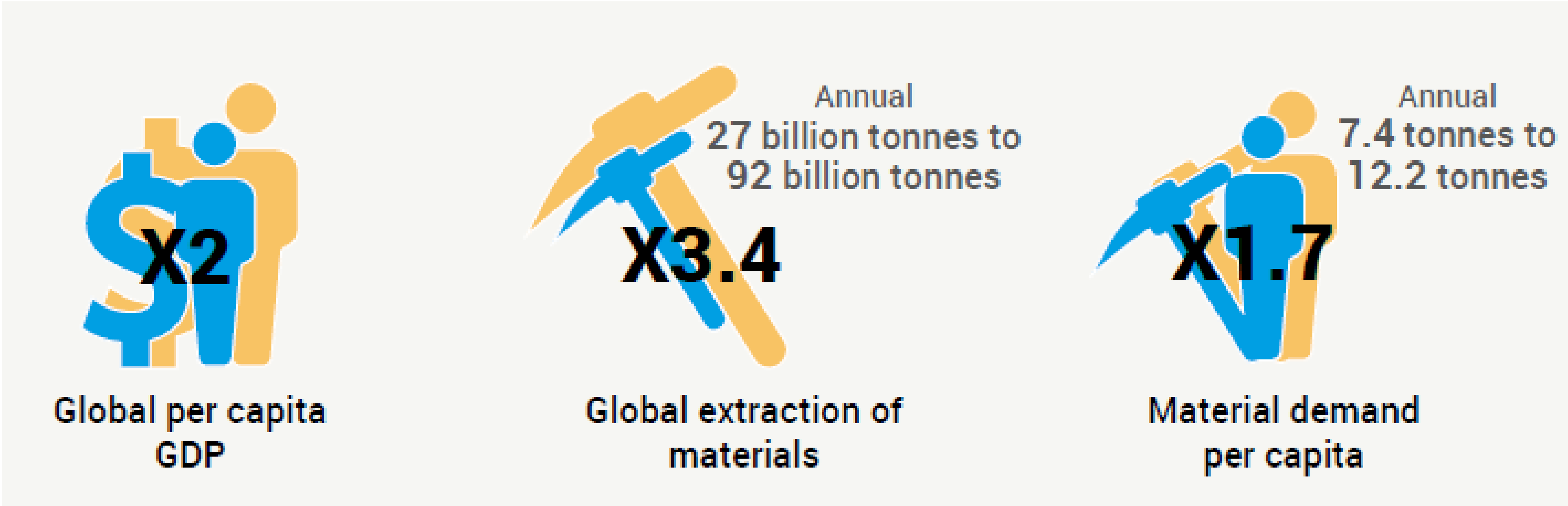
# Circular Economy



# 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 :

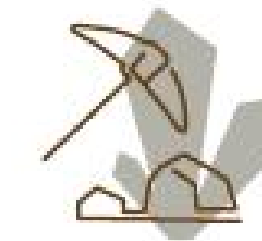
1/2 of total global GHG emissions

> 90 % of biodiversity loss and water stress.

Source : Global Resources Outlook 2019



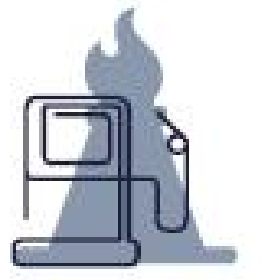
Biomass



Metals



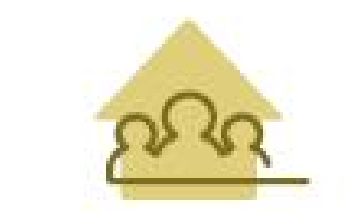
Non-metallic minerals



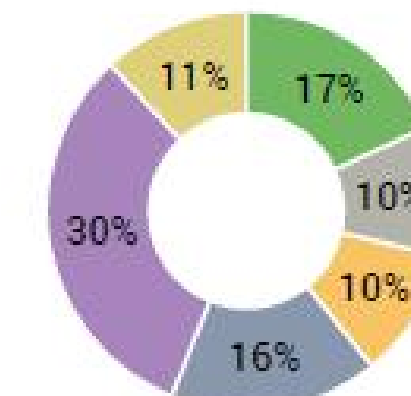
Fossil fuels



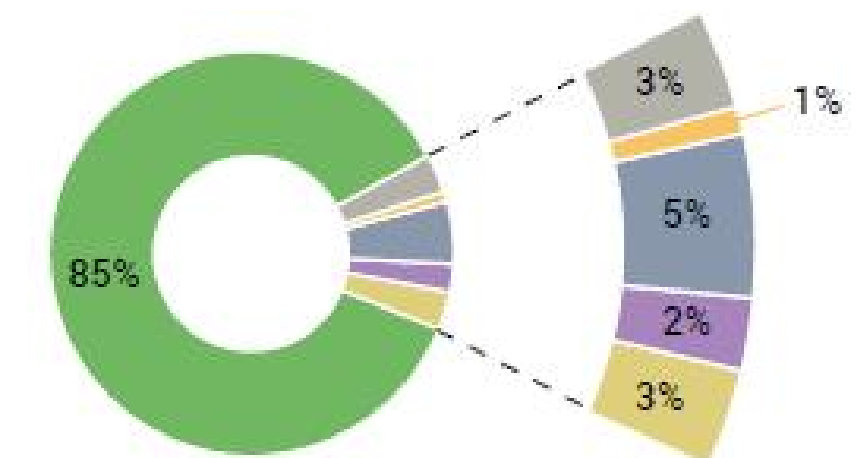
Remaining economy



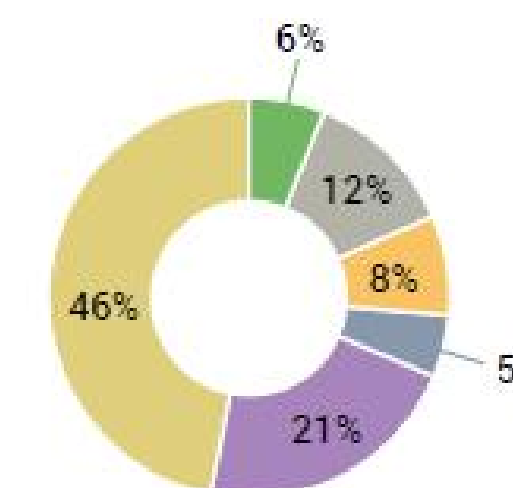
Households



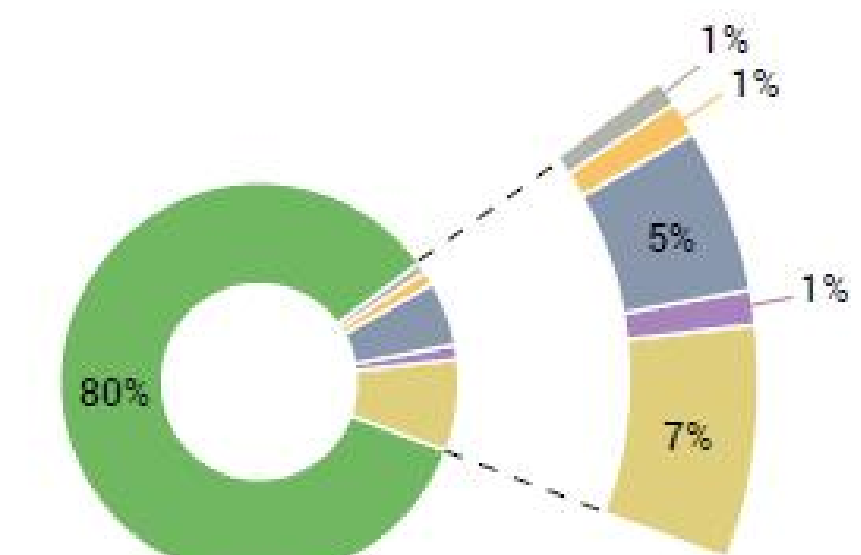
Climate change impacts



Water stress

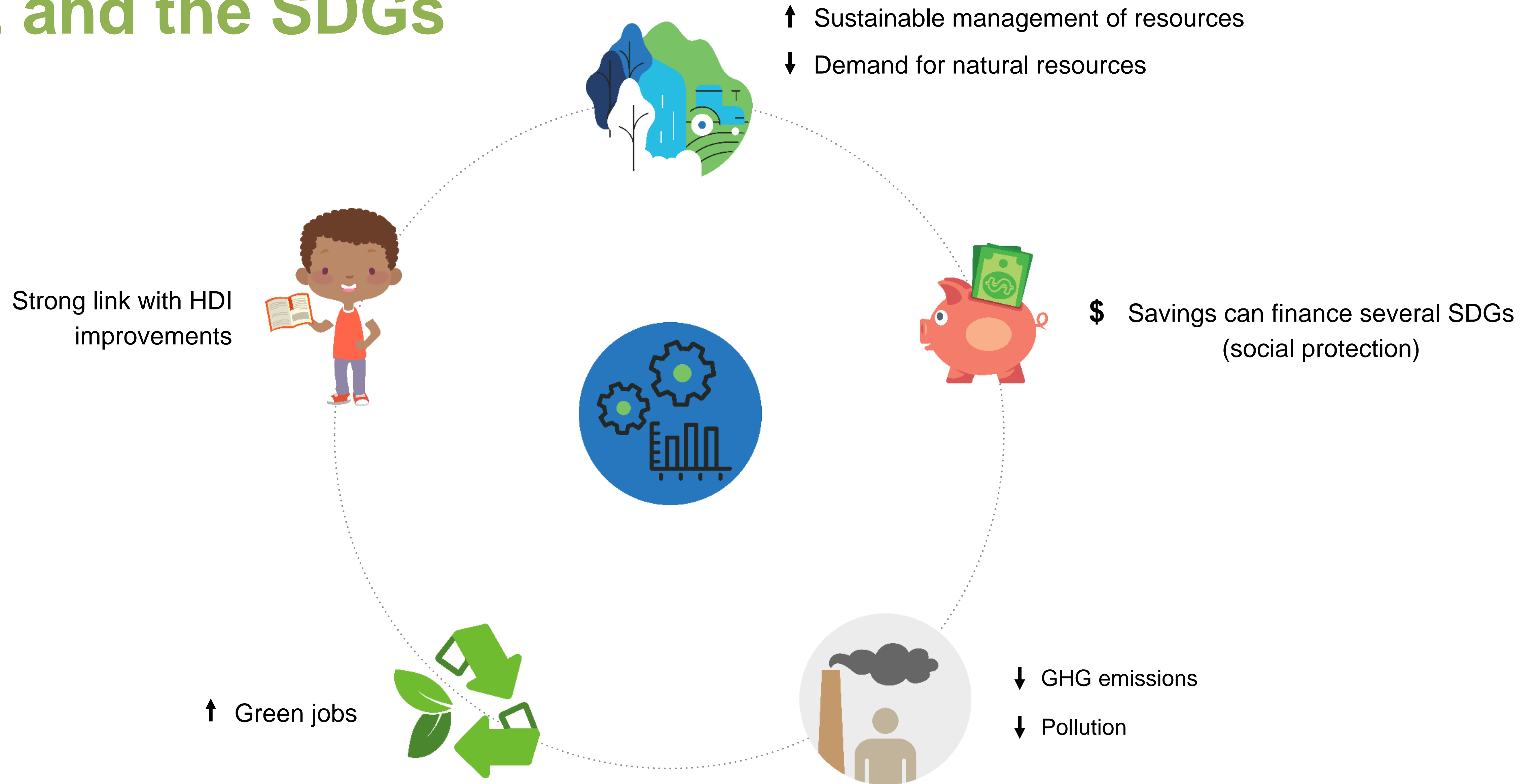


Particulate matter health impacts

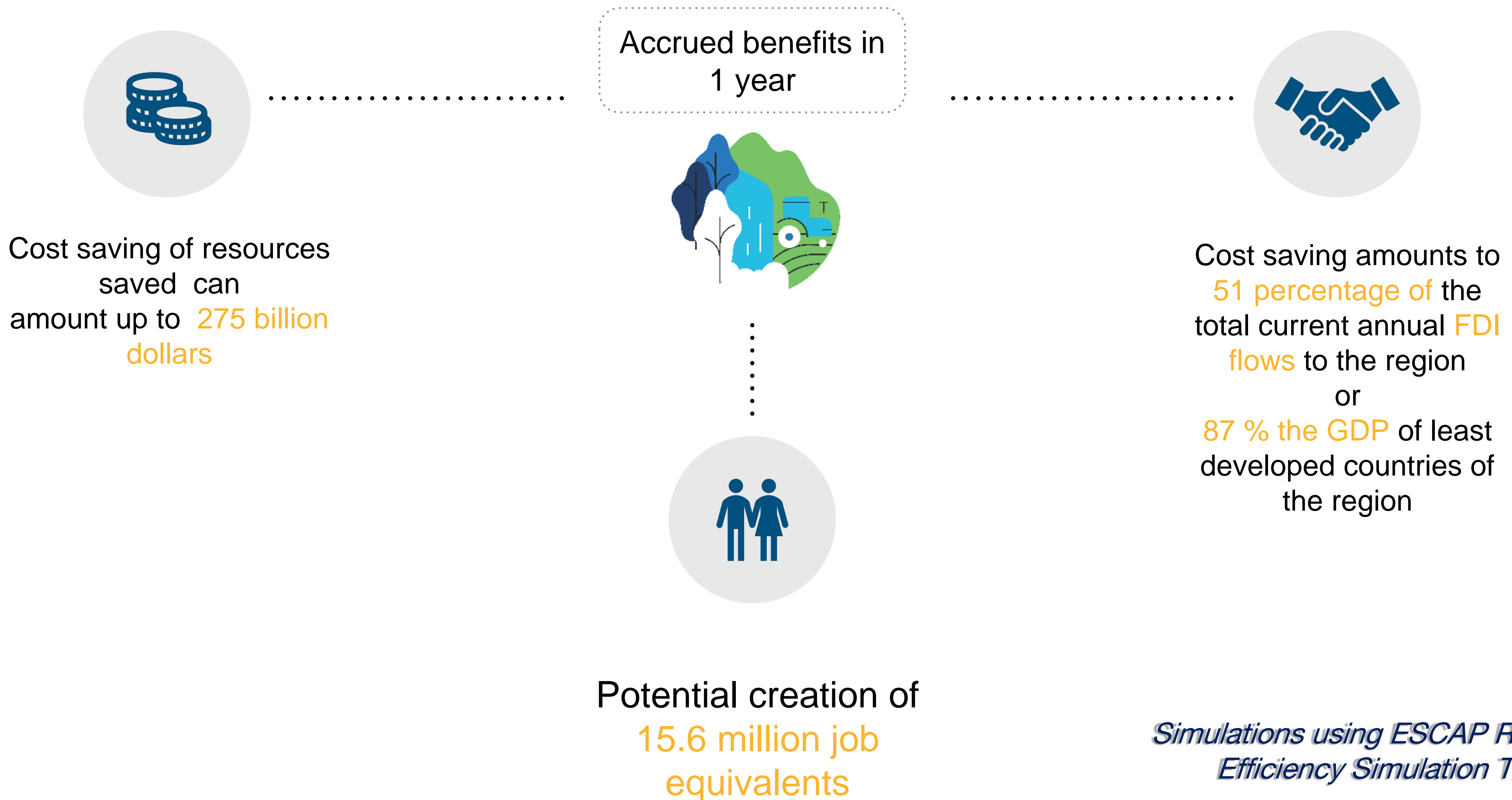


Land-use related biodiversity loss

# RE and the SDGs



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





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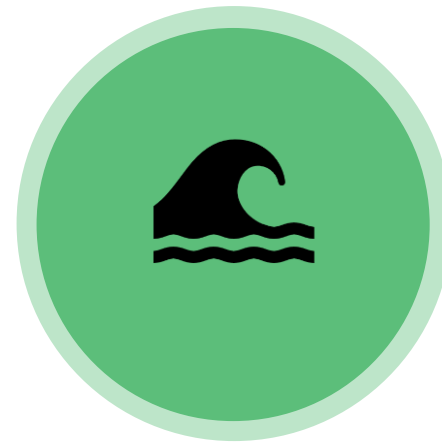
# Measuring Resource Efficiency

# Measuring Resource Use

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## Water

- Recorded volume of water withdrawals, measured in cubic meters



## Energy

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



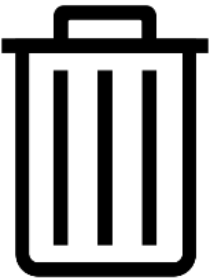
## Material Resources

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

# Domestic Material Consumption (DMC)



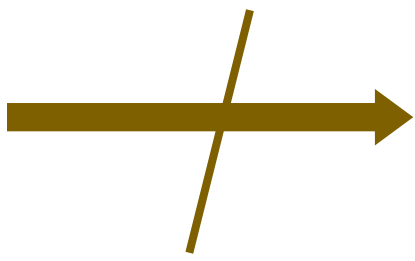
**Domestic environmental pressure**



**Final waste and emissions**



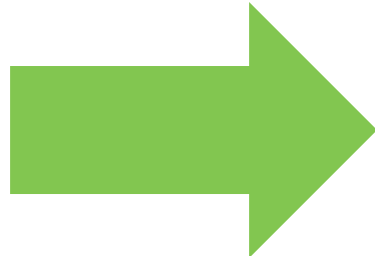
**Total volume of resources**



**Total consumption demand**



# Material Footprint (MF)

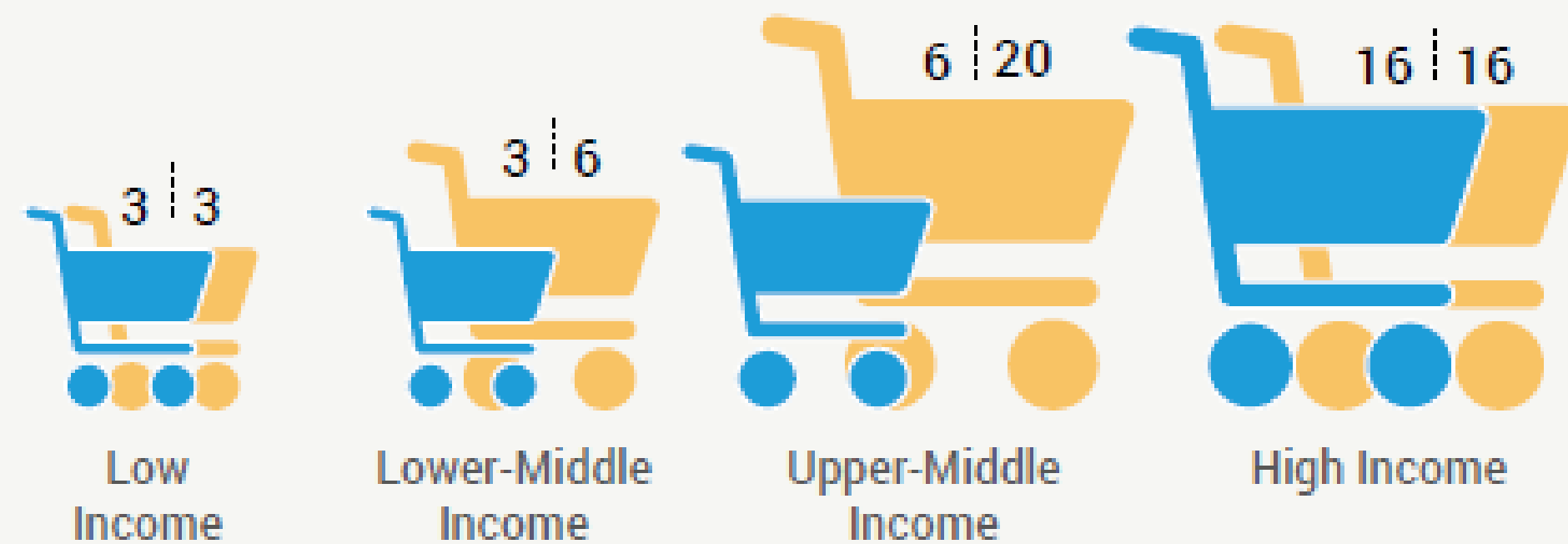


**High income countries**

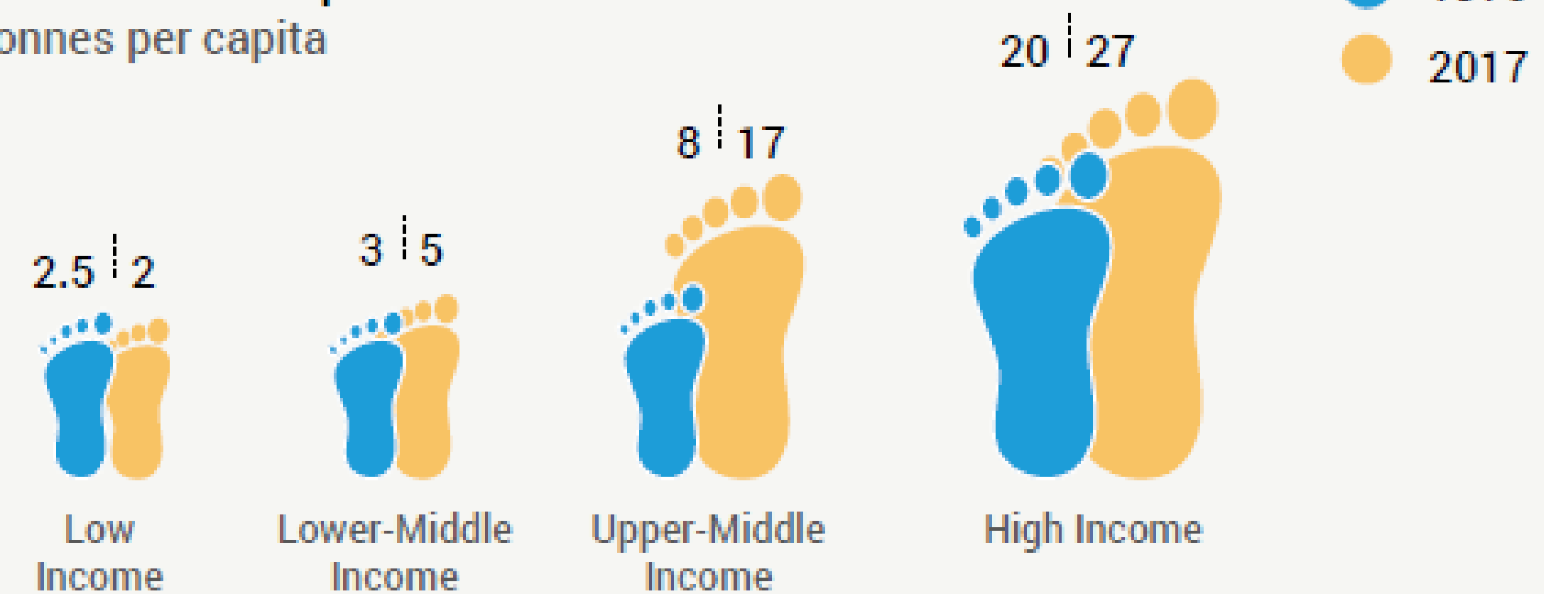


# Evolution of resource use by country-income groups

## Domestic Material Consumption tonnes per capita



## Material Footprint tonnes per capita





# 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



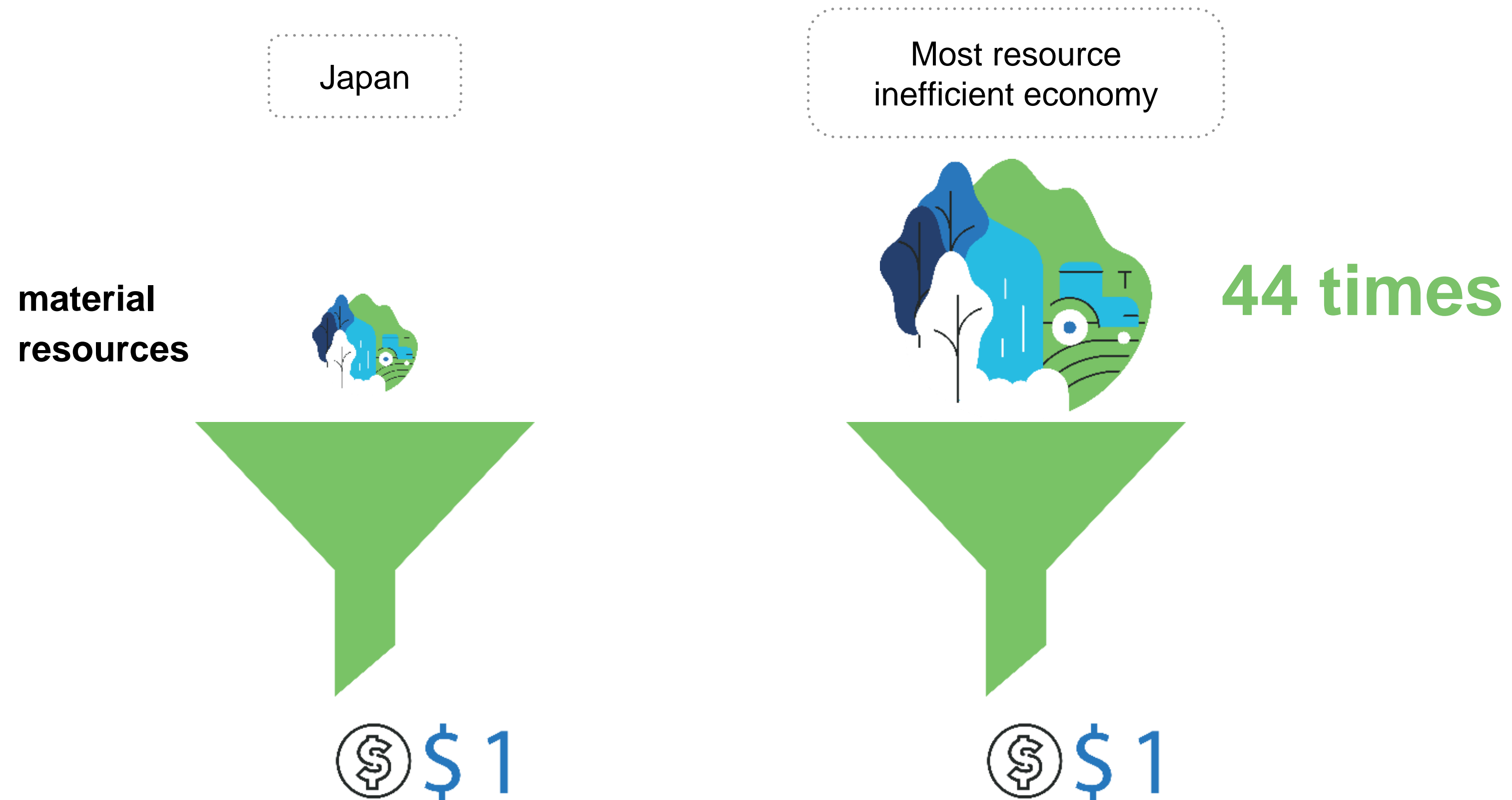
Rest of  
the world

\$1

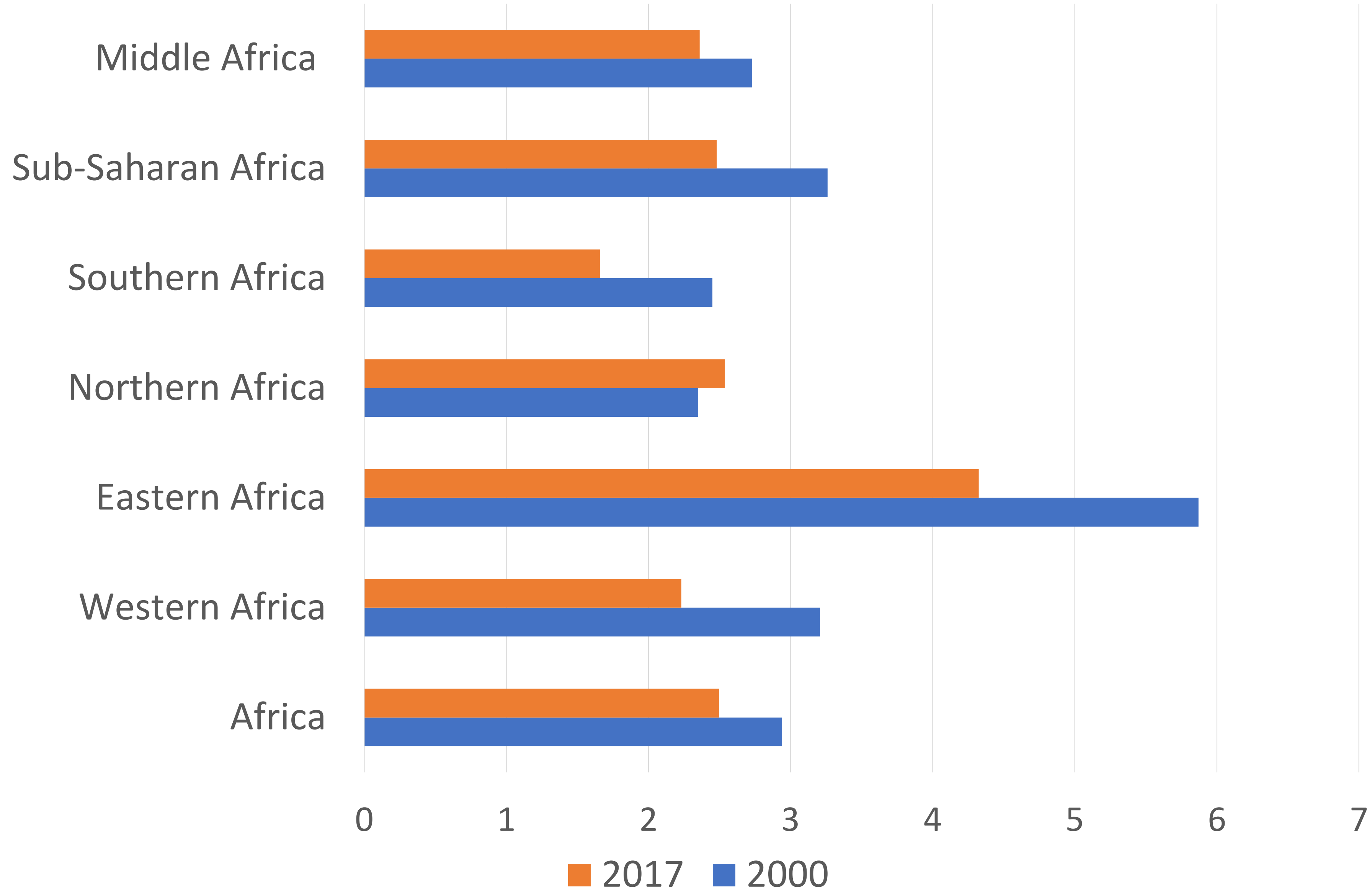


# Where does the region stand?

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

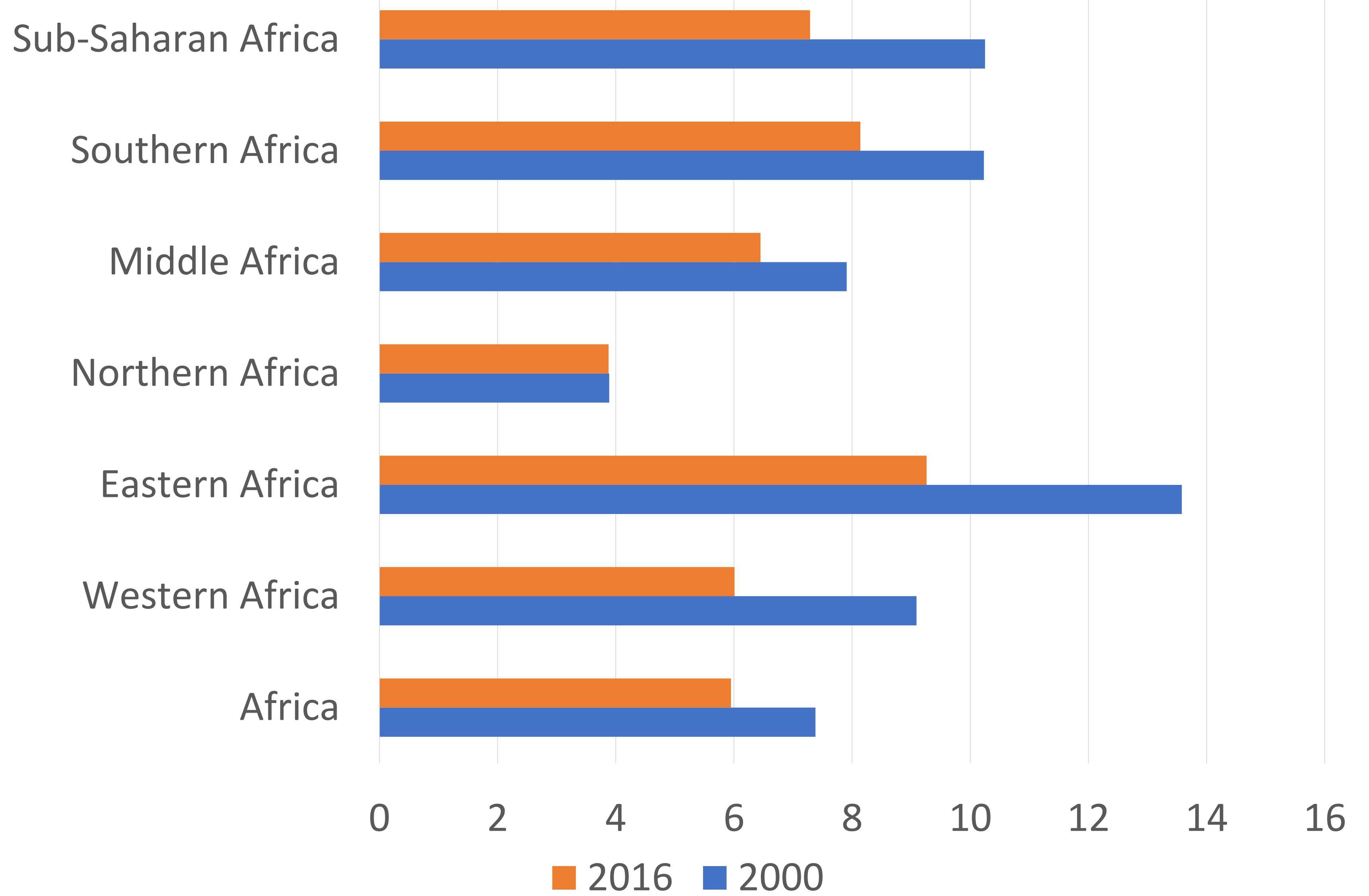


### DMC per GDP (Kg per US\$)



Source: [unstats.un.org](https://unstats.un.org)

# Energy Intensity [MJ per GDP]



Source: [unstats.un.org](https://unstats.un.org)



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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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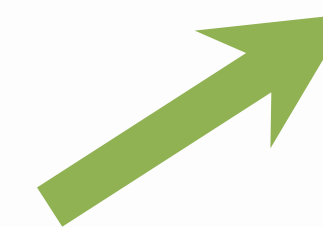
# Policy Pathways



## **Integrating RE Targets Within National Development Agendas and Sectoral Plans**



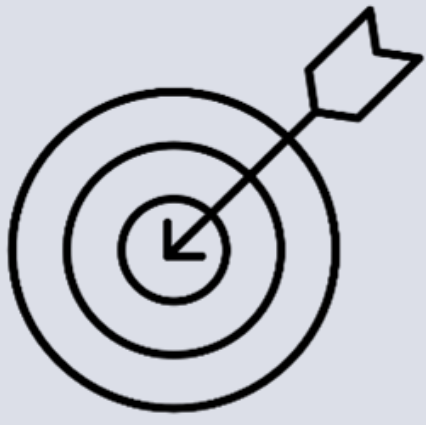
Guiding  
principles



Promotes  
transformations

**INDIA:** Zero Effect and Zero Defect

- Guidance to manufacturer to reduce defects
- Certification Scheme



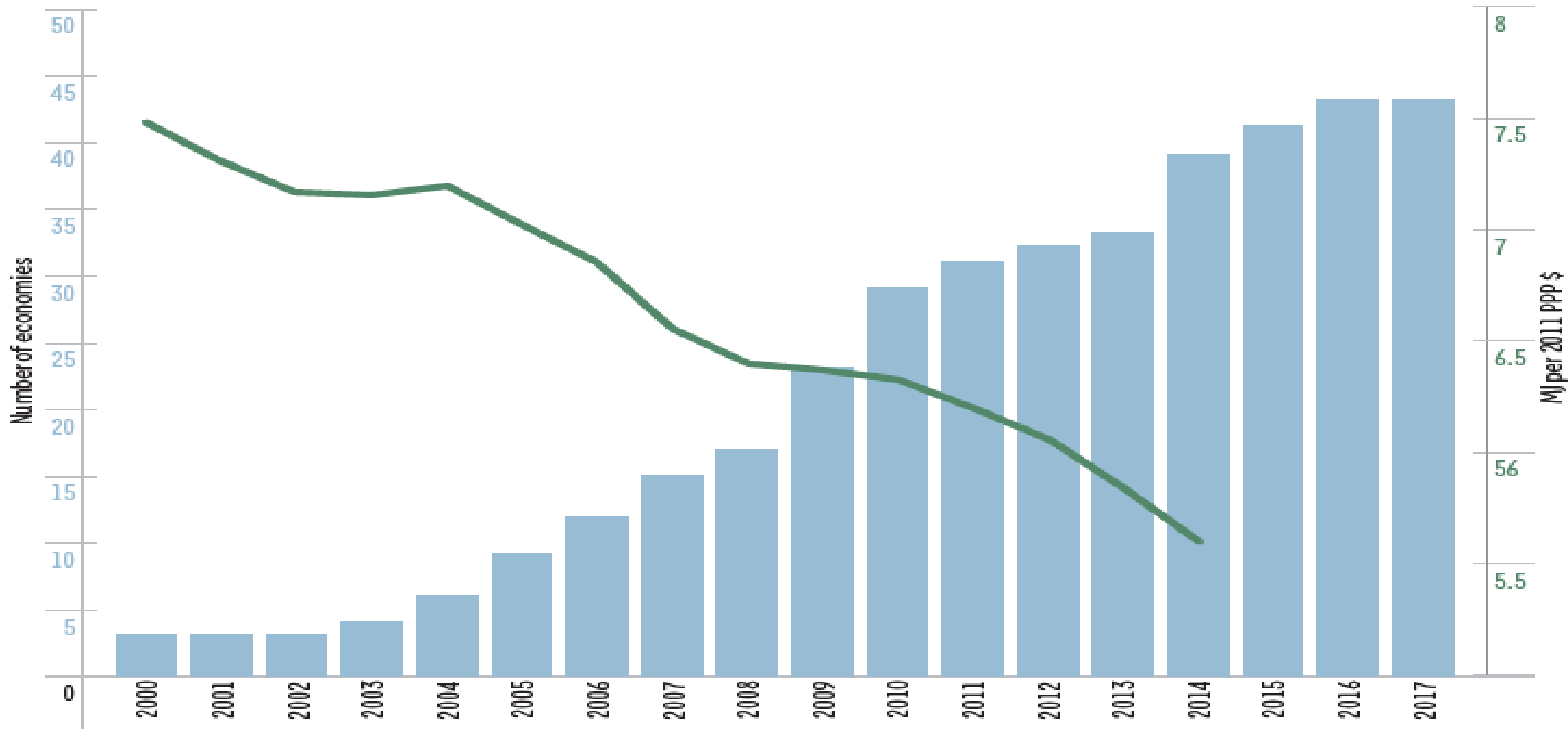
**CHINA:** Resource Efficiency targets within 5 year plan

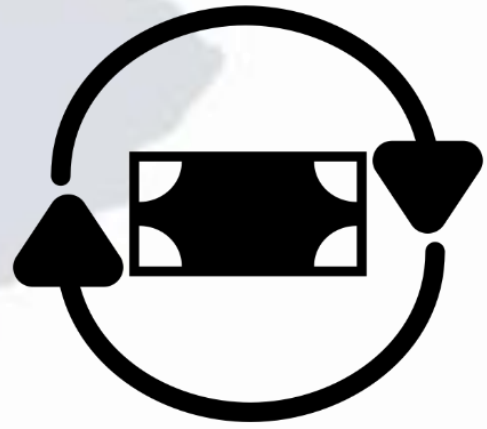
- Last plan includes provision to improve energy efficiency by 15%

**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

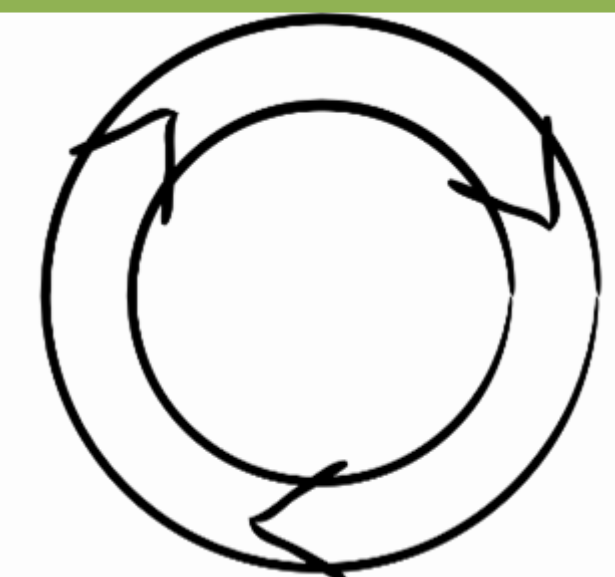
Introduction of smokeless bricks to improve air quality



**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



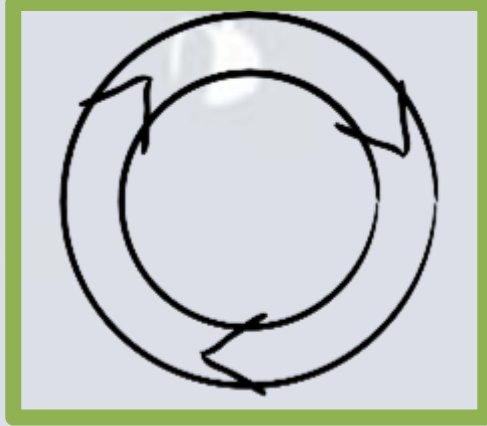
**Transitioning to a Circular Economy**



**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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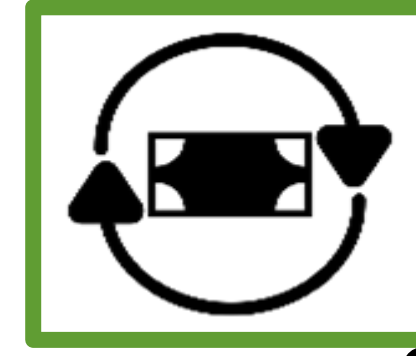
# Group Work

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

**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>

# 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**

**THANK YOU**

