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

RESOURCE EFFICIENCY

IN THE CONTEXT OF GREEN ECONOMY

MODULE "RE"

This module is the contribution of ESCAP
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WORLD GREEN ECONOMY ORGANIZATION
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By the end of this module you will:

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Understand …..

Concept of Resource Efficiency and how to measure it

Know …..

Trends in Resource Efficiency and policy pathways to promote Resource Efficiency

Be able to ….

Monitor trends in Resource Efficiency at national level

Module structure

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Introduction 1

- Key concepts
- Trends and impacts of resource use

Measuring RE 2

- Monitoring RE trends at national level
- Interactive exercise

Policy Pathways 3

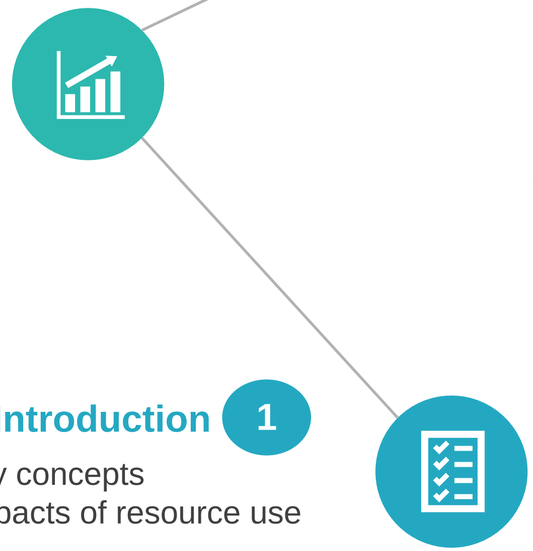
- Introduction to 6 policy pathways towards Resource Efficiency

Group Work 4

- Exchanging good practice examples and challenges in promoting RE

Gallery Walk 5

- Common challenges, opportunities and innovative approaches to RE



Resource Efficiency (RE)

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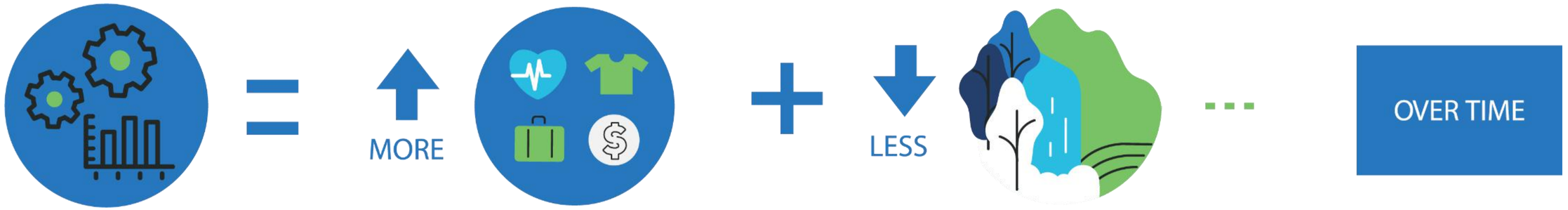


Resource Efficiency Improvement

Goods & Services Well-being

Resources Emissions

Natural Resource Use: 1970 - 2017

Global per capita GDP

Global extraction of materials

Material demand per capita

Source : Global Resources Outlook 2019

Impacts of Resource Use

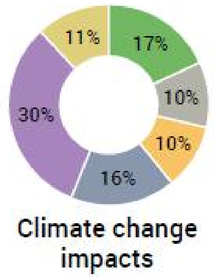
- **Negative for environment & human health**

- **Extraction & processing of materials, fuels & food make up:**

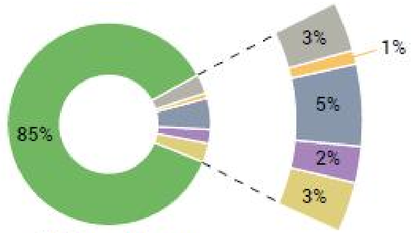
  1/2 of total global GHG emissions

  > 90 % of biodiversity loss & water stress

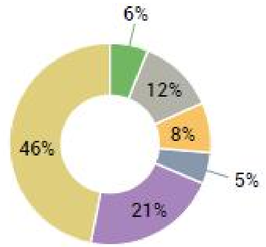
Source : Global Resources Outlook 2019



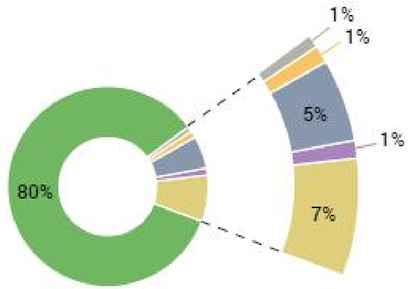
Climate change impacts



Water stress



Particulate matter health impacts



Land-use related biodiversity loss

RE and SDGs

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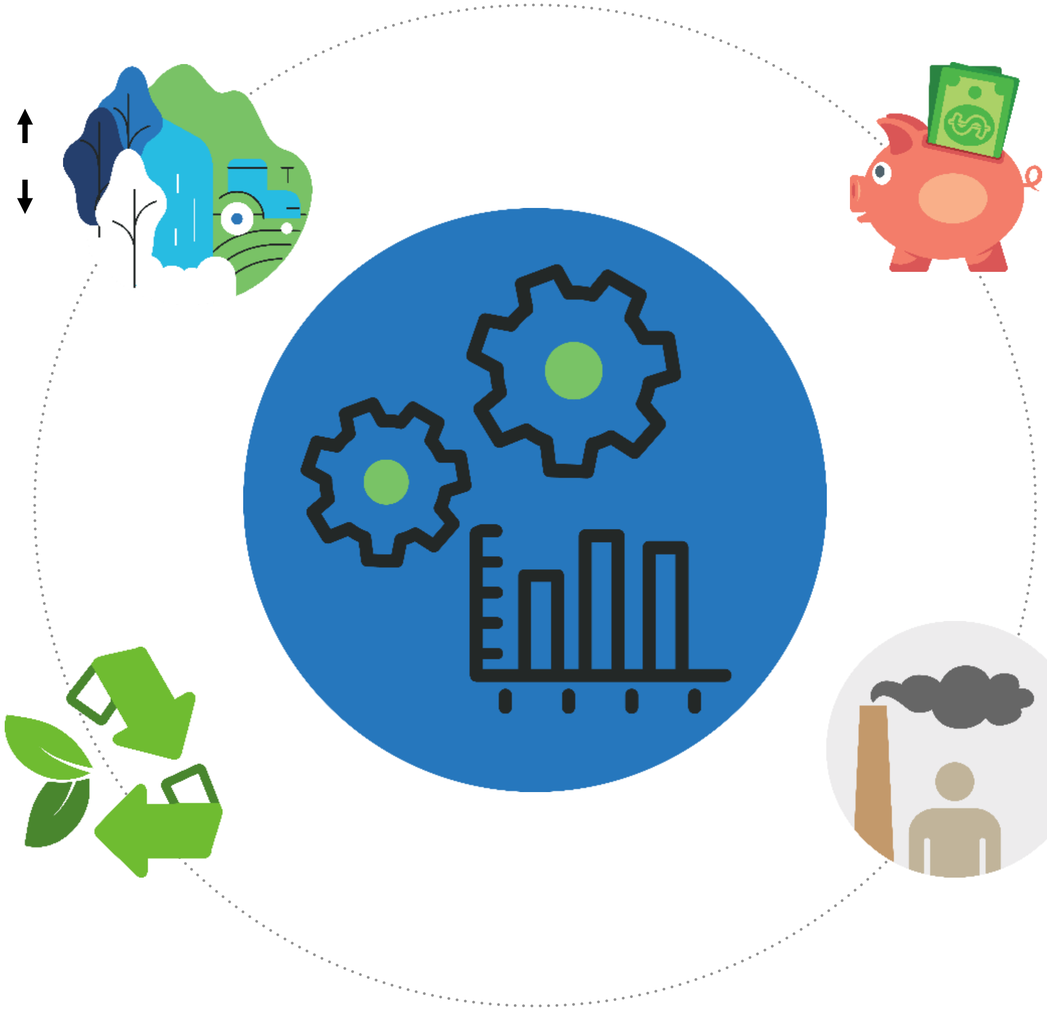
Sustainable resource management ↑

Demand for natural resources ↓



$ Savings can finance several SDGs

Green jobs ↑

↓ GHG emissions

↓ Pollution

Scenario

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

Accrued benefits in 1 year

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

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

Step 1: Measuring Resource Use

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Water

- Recorded volume of water withdrawals, measured in cubic meters

Energy

- “Total Primary Energy Supply” = quantity of energy produced domestically, plus imports, minus exports.

Material Resources

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

Domestic Material Consumption (DMC)

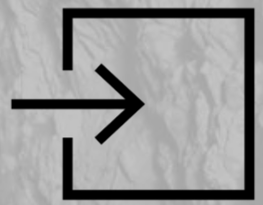
DMC = EXTRACTION + IMPORTS − EXPORTS

DOMESTIC ENVIRONMENTAL PRESSURE

FINAL WASTE AND EMISSIONS

TOTAL VOLUME OF RESOURCES ≠ **TOTAL CONSUMPTION DEMAND**

Material Footprint (MF)

MF =  +  − 

EXTRACTION

Total materials used for IMPORTS

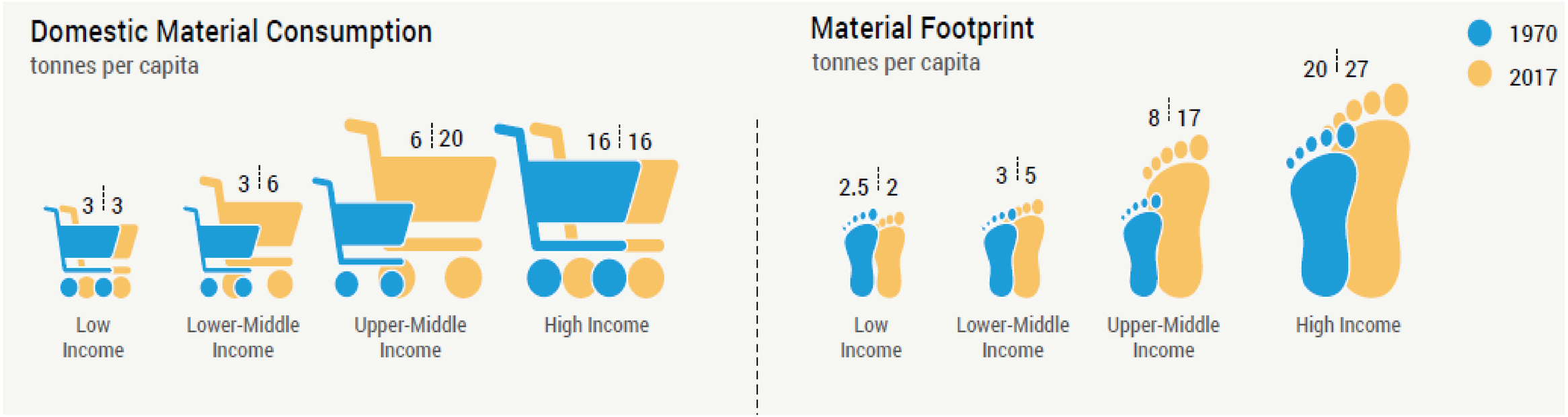
Total materials used for EXPORTS

TOTAL GLOBAL MATERIAL EXTRACTION

DOMESTIC FINAL CONSUMPTION DEMAND

HIGH INCOME COUNTRIES

Evolution of Resource Use by Country



Source : Global Resources Outlook 2019

Asia-Pacific Regional Trends

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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

Step 2: Measuring Resource Intensity

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

Measuring RE

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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?

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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

SDG indicators
United Nations Global SDG Database

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Interactive Exercise

Explore the Resource Efficiency Simulation Tool (REST)

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1. Access ESCAP Resource Efficiency Simulation Tool

dghelpdesk.unescap.org/re/

ESCAP Resource Efficiency Simulation Application

https://sdghelpdesk.unescap.org/re/index.html

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

6 Policy Pathways to promote RE

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1

Integrating RE Targets within National Development Agendas and Sectoral Plans

2

Creating a Macroeconomic and Financing Framework that promotes RE

3

Establishing targeted legal and regulatory measures

4

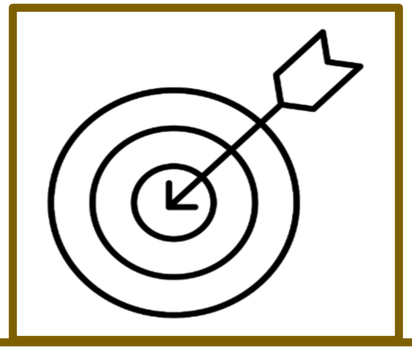
Leapfrogging to Efficient Technologies and improving Innovation capacity

5

Transitioning to a Circular Economy

6

Generating better Data and Indicators on Resource Efficiency



1

Integrating RE Targets Within National Development Agendas and Sectoral Plans

Guiding principles

Promotes transformations

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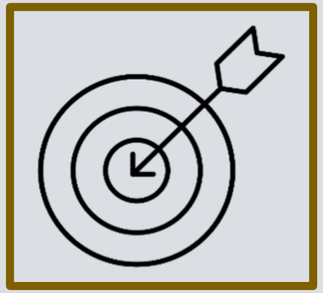
INDIA: Zero Effect and Zero Defect

- Guidance to manufacturer to reduce defects
- Certification Scheme



1

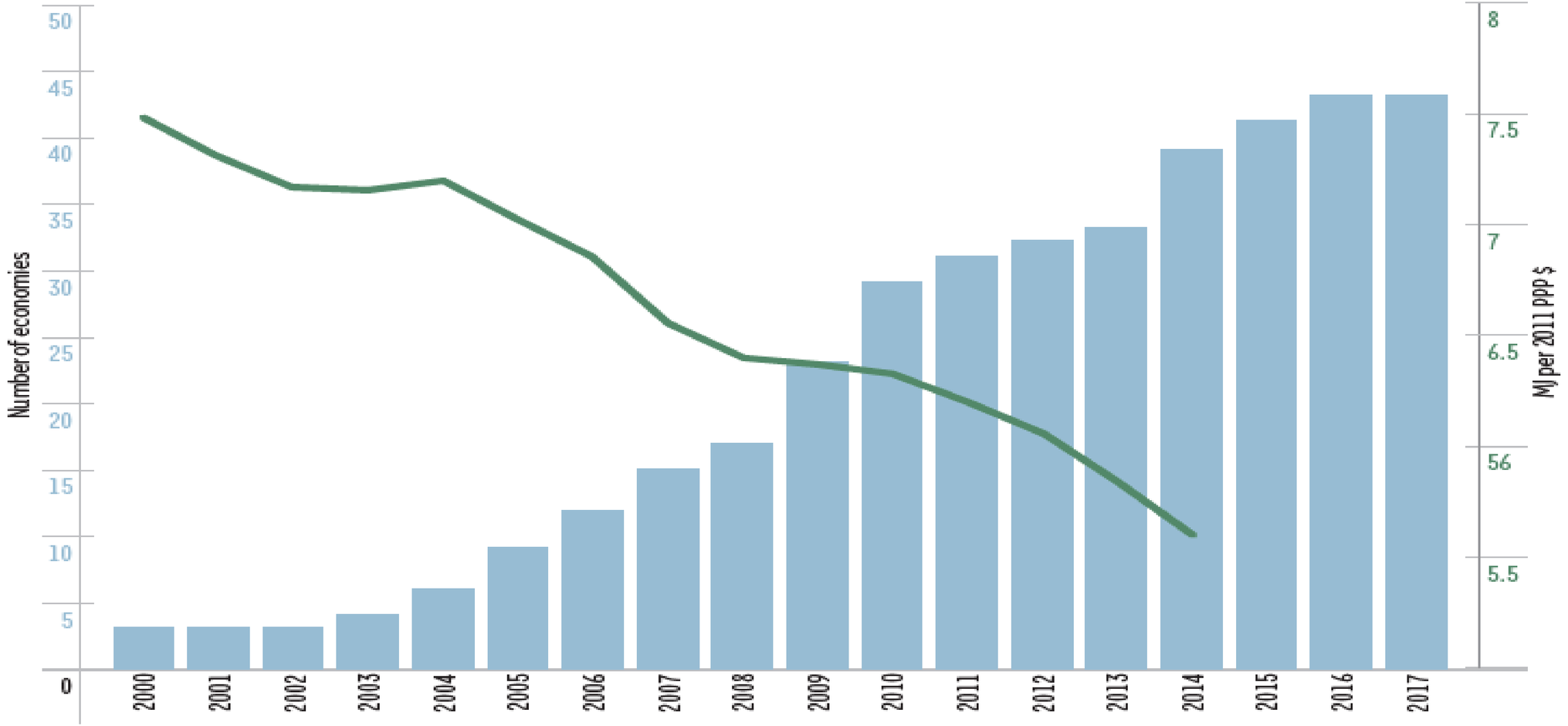
JAPAN: Sound Material Cycle Society

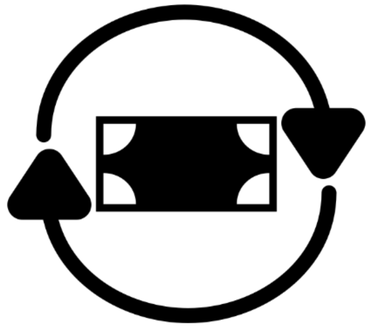
- Monitors resource efficiency and supports state initiatives

CHINA: Resource Efficiency targets within 5 year plan

- Latest (13th) 5 year plan includes provision to improve energy efficiency by 15%
- Targets translated to policies / actions in different sectors, e.g. energy efficiency of new buildings, strengthening building codes, introducing new standards for industrial energy conservation

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





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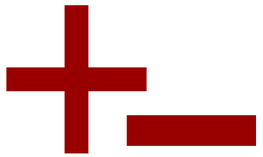
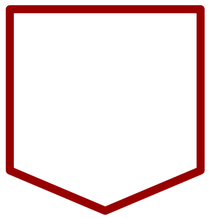
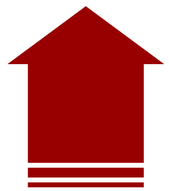
Creating a Macroeconomic and Financing Framework that promotes RE



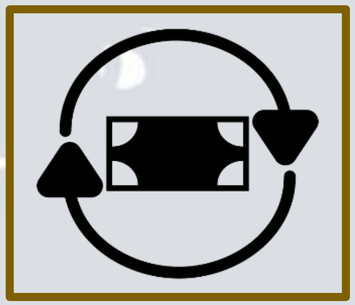
Incentive structure



Taxation/Fiscal Policy Subsidies



Getting the Price right



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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

3

Establishing targeted legal and regulatory measures to promote Resource Efficiency

Green Labels
Standards

Awareness raising

3

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

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Well functioning innovation ecosystem

4

Leapfrogging to Efficient Technologies and improving Innovation capacity

4

BANGLADESH:
Green Bricks

Introduction of smokeless bricks to improve air quality

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

JAPAN: Top Runner Programme

- Energy Efficiency standards to motivate firms to adopt innovative technologies

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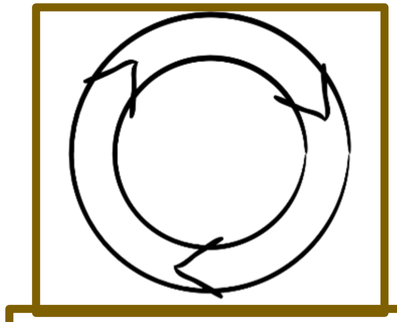

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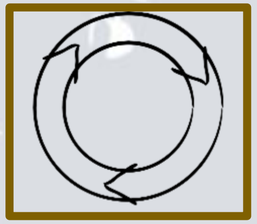
Transitioning to a Circular Economy

Promoting regenerative waste cycles

5 Rs

Reduce, Reuse, Refurbish, Repair and Recycle



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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

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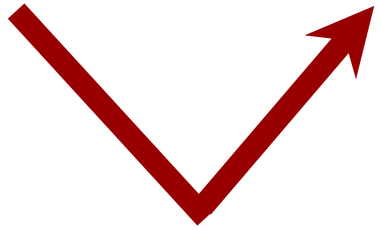
6

Generating better Data and Indicators on Resource Efficiency

Importance of monitoring resource efficiency



Rebound effects

6

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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

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Group Work

Promoting RE : policy pathways and challenges

6 Policy Pathways to promote RE

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Generating better Data and Indicators on Resource Efficiency

Q1: **Give an example of an RE policy in your country – what are its results so far, what has been challenging?**

Q2: **What RE policy could be implemented in your country & what opportunities / challenges do you foresee?**

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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

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For a certified e-learning course on Resource Efficiency and opportunity to join a community of practice on Resource Efficiency, go to this link:

http://sdghelpdesk.unescap.org/e-learning

THANK YOU