

# Capacity Development and Institutional Strengthening for Transitioning to Low Carbon and Resource Efficient Society

- Views from Technical Cooperation in Waste Management Sector -

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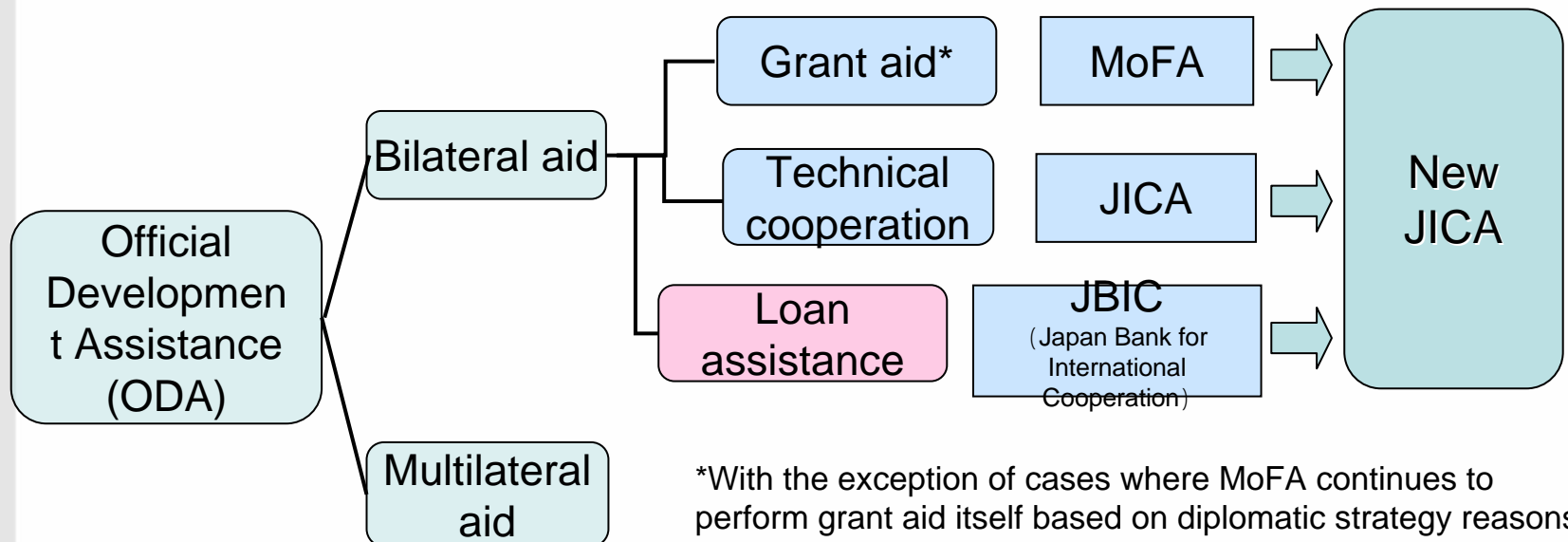
**Second Meeting of the Regional 3R Forum in Asia, Kuala Lumpur, Malaysia, October 2010**

**Theme: “3Rs for Green Economy and Sound Material-Cycle Society”**

Plenary Session 2: Partnerships for Realizing Low Carbon and Resource Efficient Society

# Outline of JICA Cooperation

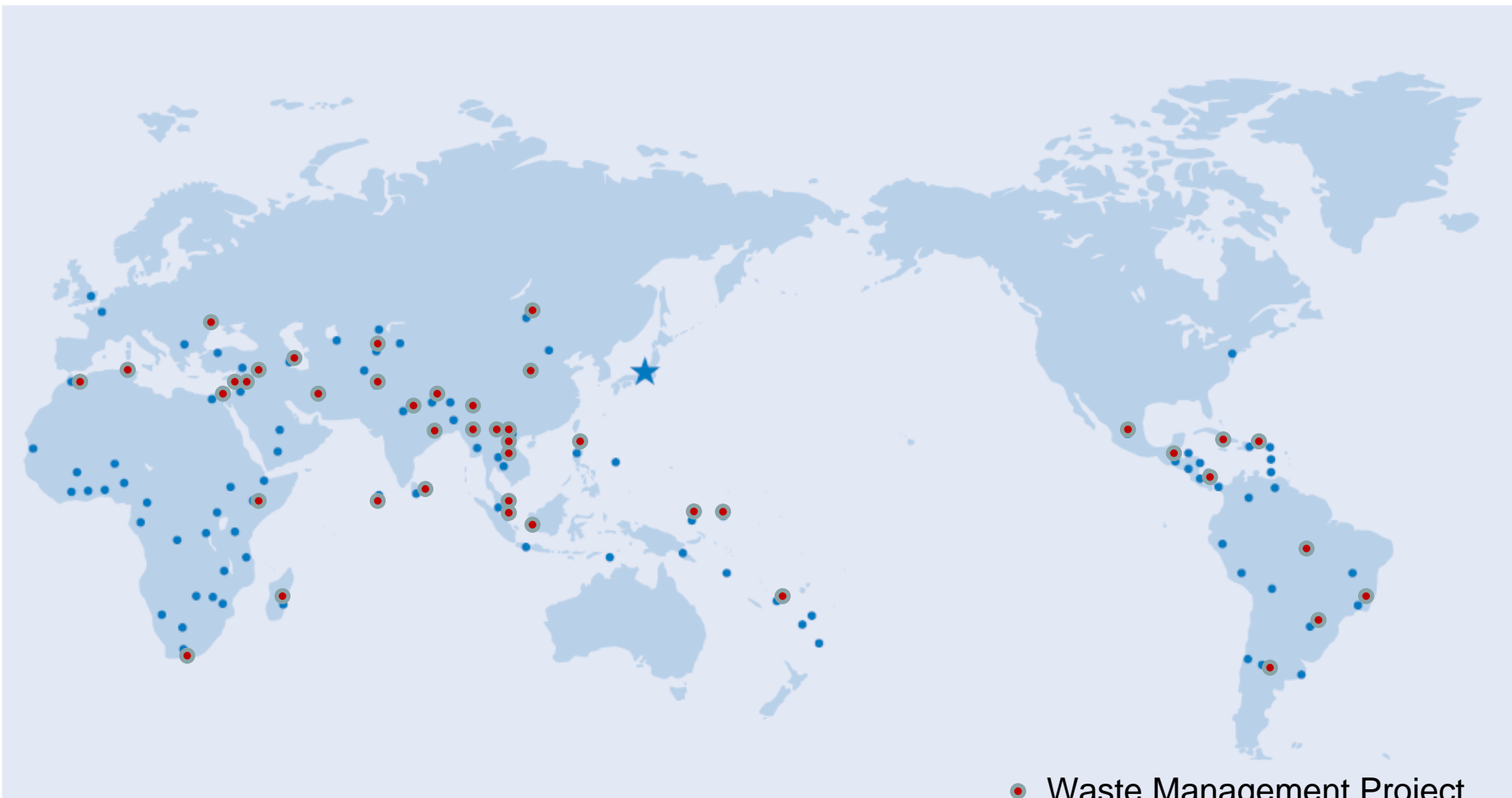
- New JICA founded on October 1, 2008
- Creation of a framework to centrally manage technical cooperation, loan assistance and grant aid through the unification of organizations performing ODA
- Effective and efficient aid through the organic linking of aid methods
- Performing aid to over 150 countries with a total project scale of over 1 trillion yen, and roughly 1600 employees



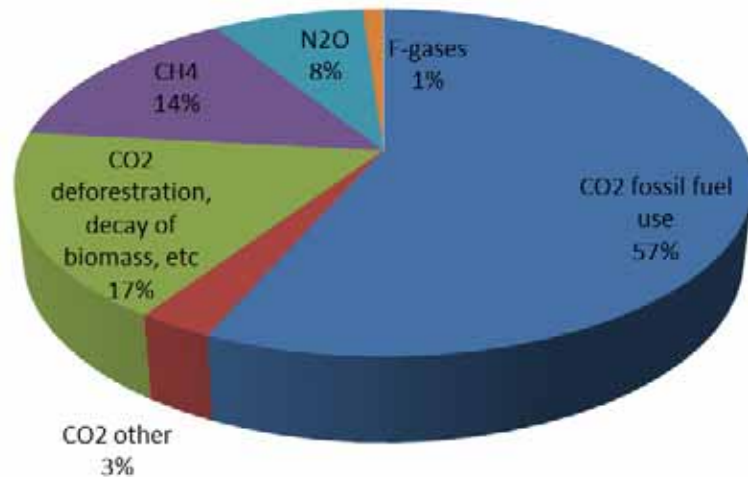
\*With the exception of cases where MoFA continues to perform grant aid itself based on diplomatic strategy reasons.

# Cooperation Scheme under Technical Cooperation

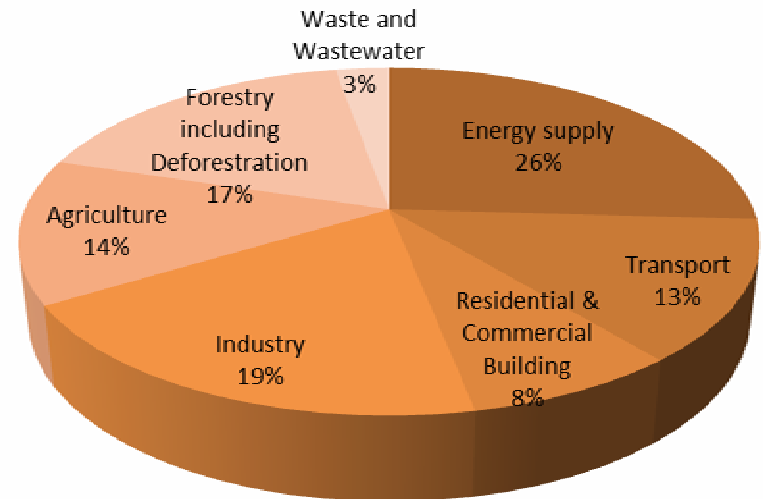
- Technical Cooperation Project
- Cooperation for Development Planning
- Expert Dispatch
- Provision of Equipment
- Technical Training in Japan or Third Country
- Volunteers Dispatch Programs
- Citizens Partnership Program



# Transitioning Low Carbon Society - from a View of Solid Waste Management



Share of different anthropogenic GHGs in total emissions in 2004 in terms of CO2 -eq

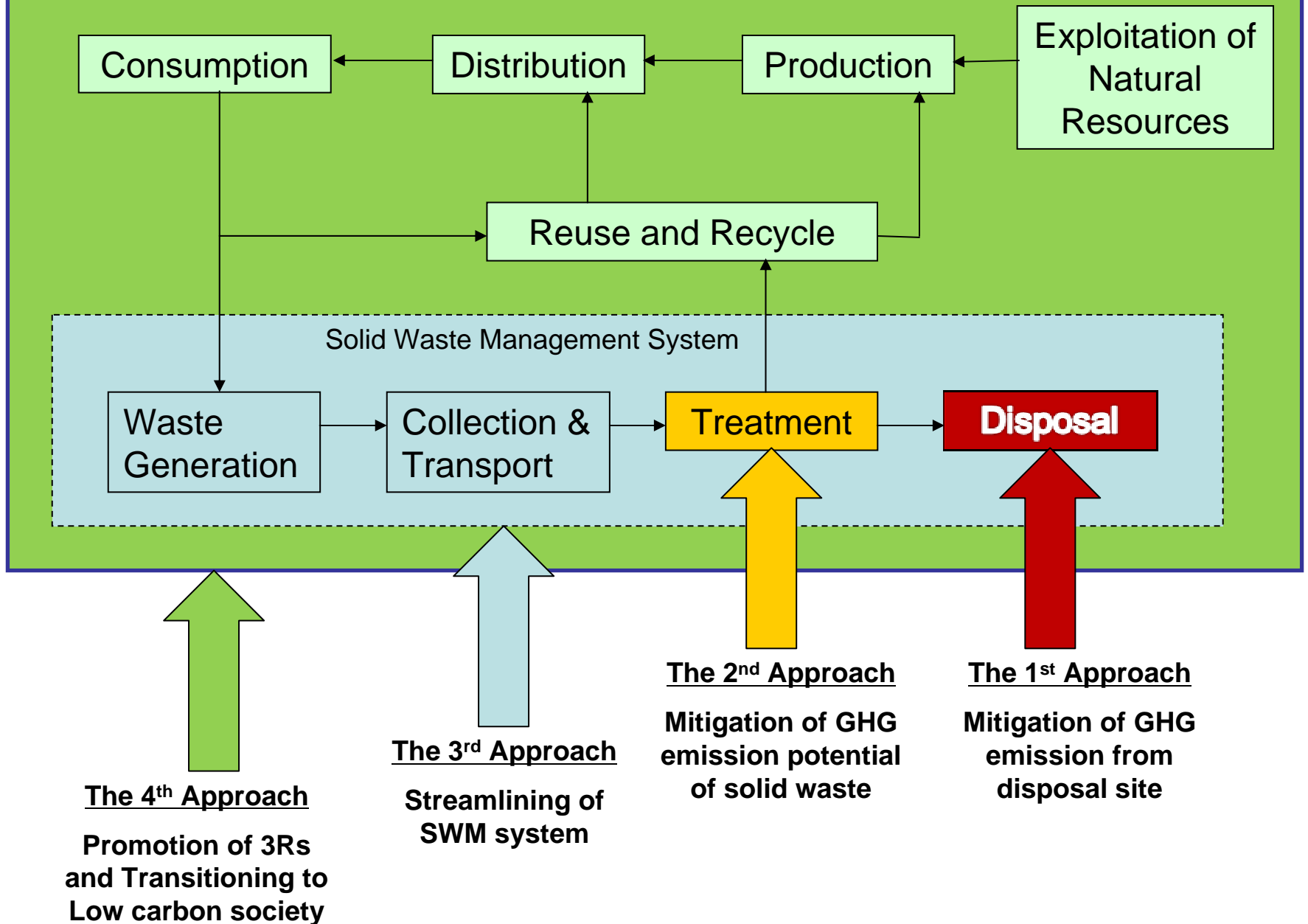


Share of different sectors in total anthropogenic GHG emissions in 2004 in terms of CO2 -eq

“The effect of solid waste for global warming and climate change is comparatively small, but the improvement of Solid Waste Management can contribute to mitigate green house gas (GHG) emissions with relatively low cost.”

- discussions from IPCC 4<sup>th</sup> meeting in 2007

# “Metabolism” of Economic Society



# The 1<sup>st</sup> Approach for Mitigation of GHGs Emission

## I-1. Landfill gas recovery



Mitigation of GHG methane emission to atmosphere from landfill (Buenos Aires)



Gas recovery pipe network

Methane gas recovery from anaerobic landfill (CDM project, Buenos Aires)

# The 1<sup>st</sup> Approach for Mitigation of GHGs Emission

## I-2 GHG inhibitory landfill structure



Mitigation of GHG methane emission to atmosphere from landfill applying semi-aerobic landfill method (JICA project, Palestine) Pictures by Yoshida (2008)

Mitigation of GHG methane emission to atmosphere from landfill applying leachate recirculation method (JICA project, Oceania)



# The 2<sup>nd</sup> Approach for Mitigation of GHGs Potential

## II-1. Biogas recovery from biodegradable waste

### Waste Biogas Project in Kirgizstan



JICA Experts, Prof. Okamoto and Prof. Sasaki.

Small-scale biogas plant.

Gas is supplied for households.

(<http://www.jica.go.jp/project/kyrgyz/0605711/>)



# The 2<sup>nd</sup> Approach for Mitigation of GHGs Potential

## II-2. Compost plant using biodegradable wastes from household



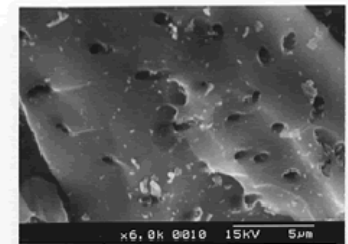
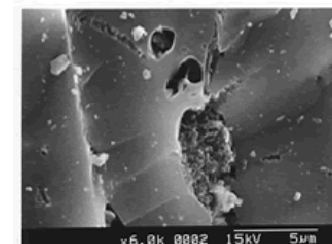
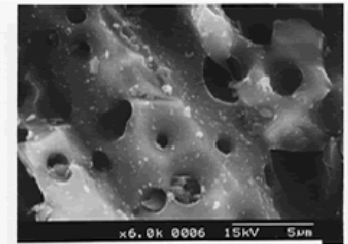
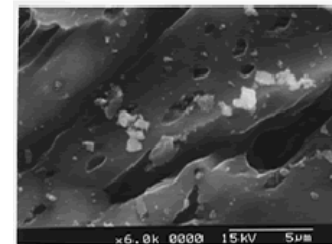
# The 2<sup>nd</sup> Approach for Mitigation of GHGs Potential

## II-3. Mitigation of methane emission by carbonization

- Sri Lanka CDM Project under the cooperation of JICA
- Adsorbent and Charcoal



活性炭表面SEM写真



Balangoda Compost Plant

Pictures by Yoshida (2008)

Electron microscope images from <http://www.ngk.co.jp/C1/c1/gijyutsu/index.html>

# The 3<sup>rd</sup> Approach

## Streamlining of SWM

- Waste discharging and collection
  - Discharging system
  - Collection points and method
- Waste transportation
  - Collection/Transportation Routing
  - Operation frequency
  - Vehicle type
- Operation of intermediate treatment
- Operation of final disposal

**Optimizations  
for  
Mitigation of GHGs  
and  
Resource Efficiency**



System analysis with Life Cycle Assessment (LCA)

# Phased Development in Solid Waste Management

## Stage1

- Planning
- Organization setup
- Institution building
- Enhancement of collection and transport

## Stage2

- Expansion of service area
- Improvement or control of dump site
- Pollution protection from dump site

## Stage3

- Sanitary landfill
- Partial introduction of 3R
- Proper Treatment
- Social consideration and partnership

## Stage4

- Total introduction of 3R
- Recycle- oriented society
- Sustainable society

## Capacity Development

Survey and Planning

National policy/plan

Institution & Organization

Partnership (citizen, community, private)

Technical training

Incinerator, thermal fac.

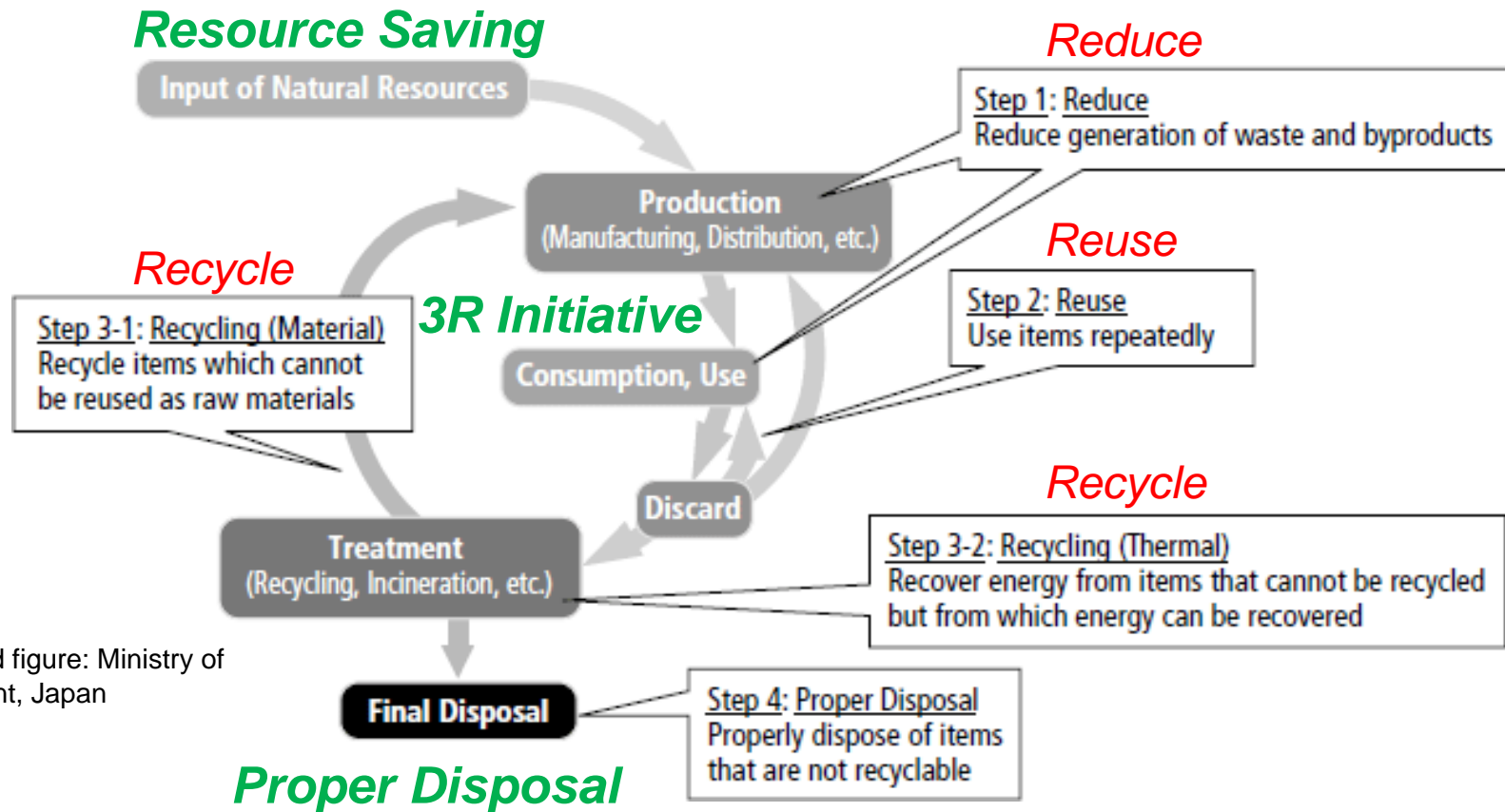
Collection vehicles, facility

Intermediate/recycling facilities

Closure of open dumps and construction of landfill

# The 4<sup>th</sup> Approach

## Sound Material-cycle Society

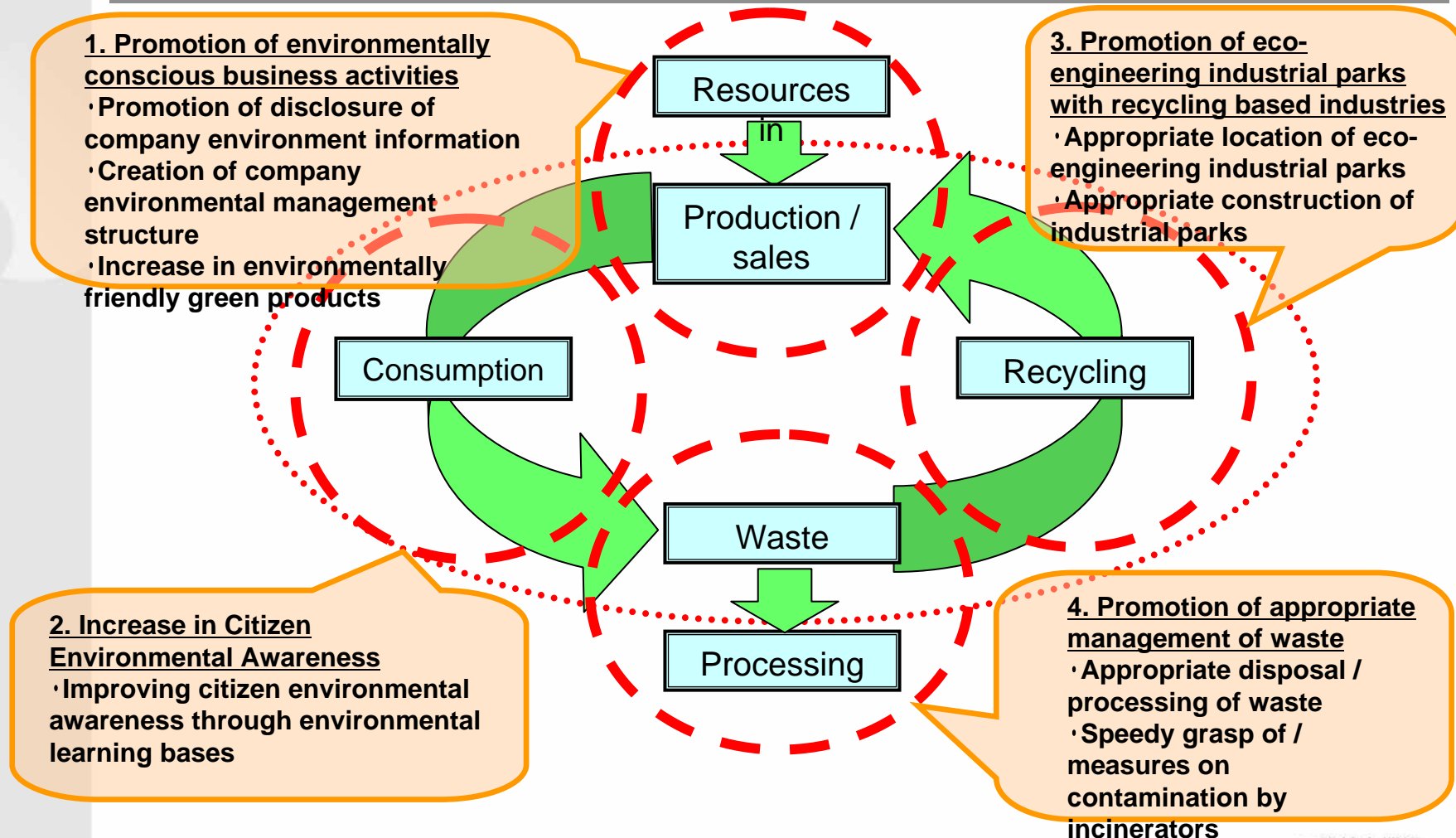


background figure: Ministry of Environment, Japan

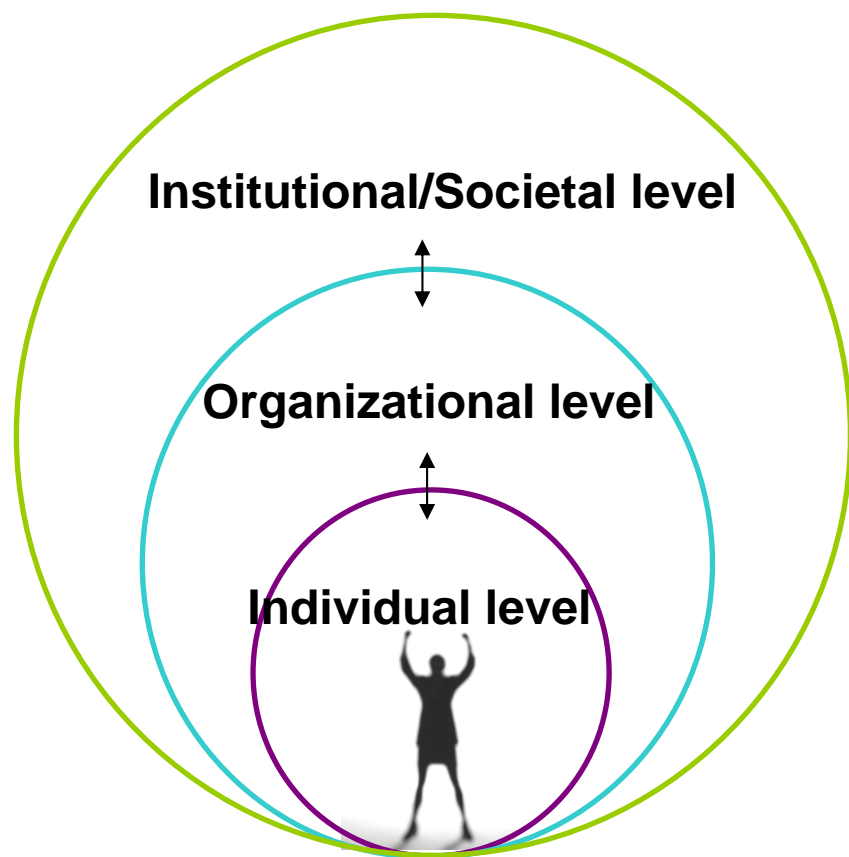
- Well-documented material flow and balance in country/region
- Overall Life Cycle Assessment
- Comprehensive Capacity Development at all levels

# China “Project for Promotion of a Recycling Society”

In order to promote recycling economic measures from the perspective of environmental protection, increases in implementation ability of a range of environmentally conscious measures in each step of the material cycle are targeted.



# Capacity at different three levels

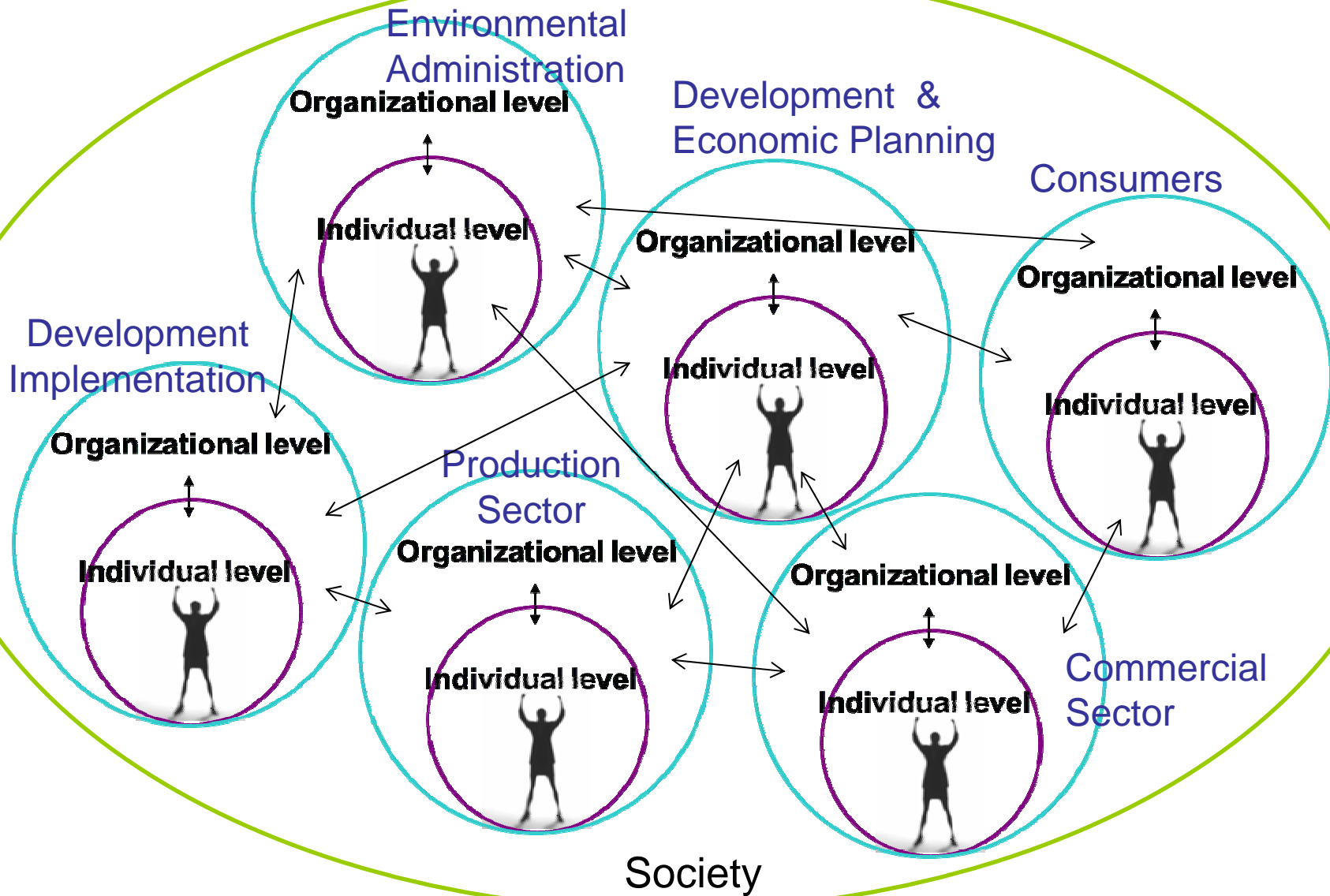


## **Comprehensive:**

Capacity Development (CD) refers to the ongoing process of enhancing the problem-solving abilities of a country/ society by taking into account all the factors at the individual, organizational, and societal levels.

## **Endogenous:**

Defining capacity as the ability of a country to solve problems on their own and considering it as a complex of elements including institutions, policies, and social systems, the concept of CD attaches great importance to proactive and endogenous efforts (ownership) on the part of the country.



Institutions are structures and mechanisms of social order governing the behavior of individuals within a given human collectivity. Institutionalization is the process of embedding something within an organization/society as a whole.

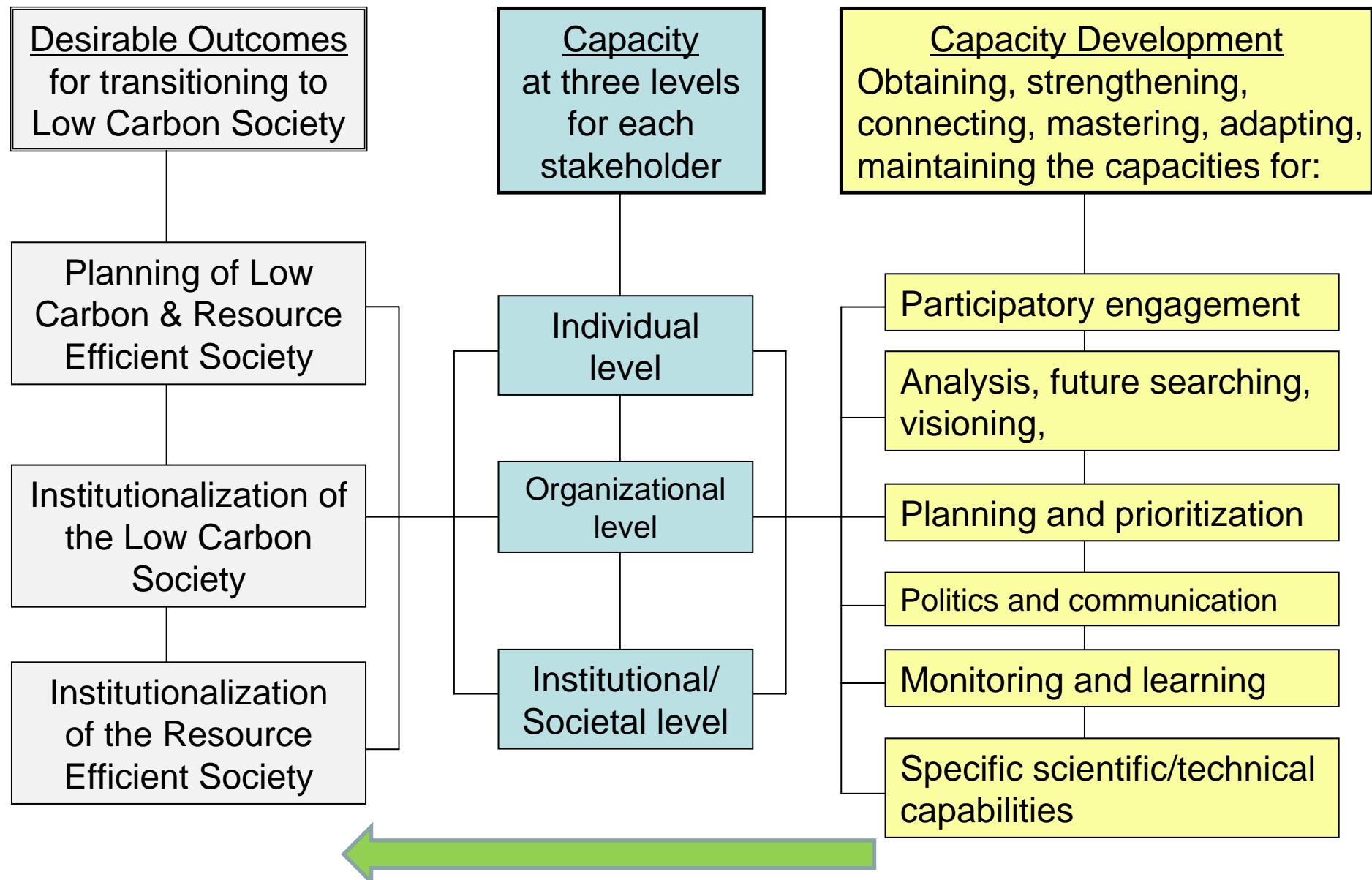


# Needed Capacity Components for Institutionalization of 3Rs

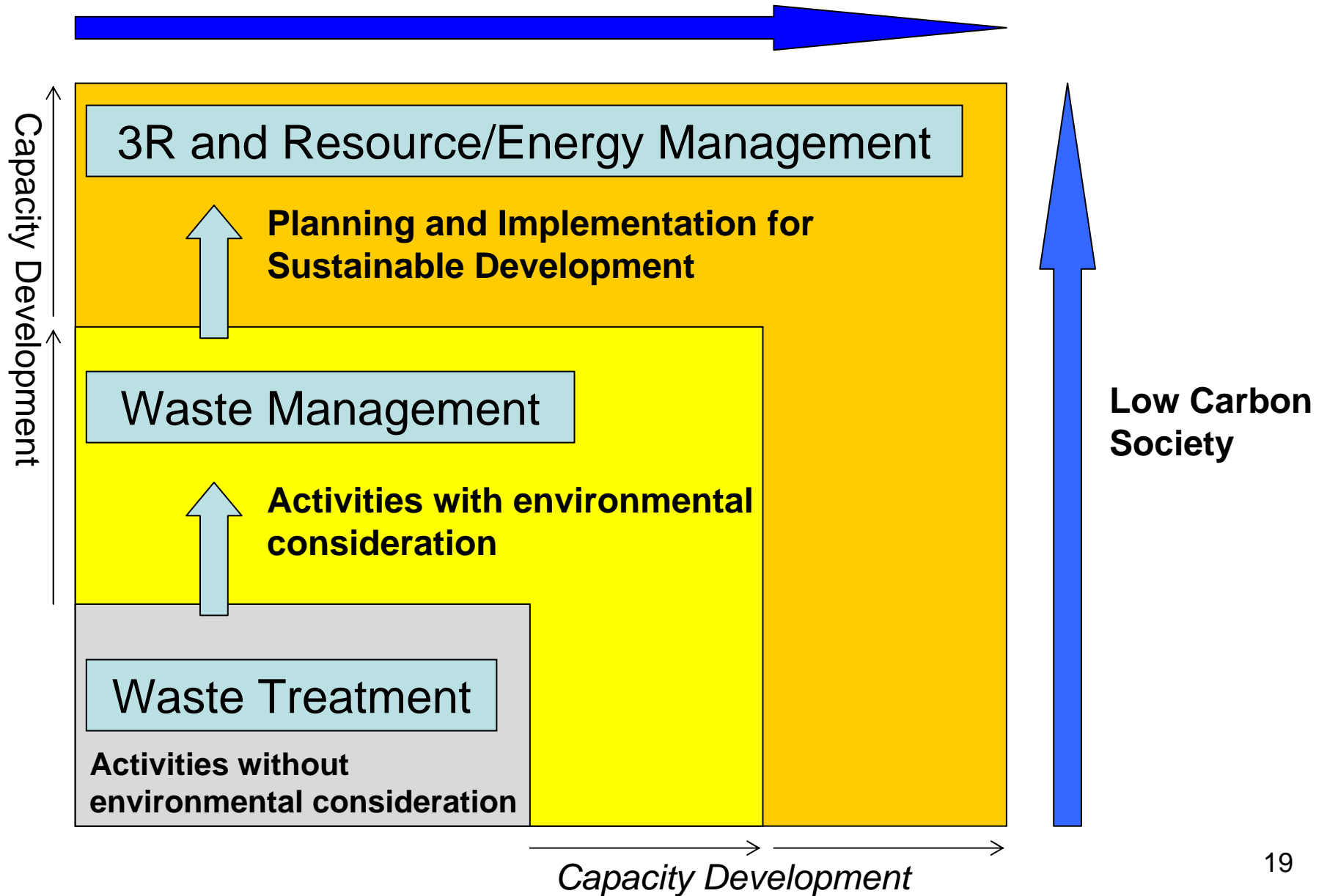
- **Ability for participatory engagement and empowerment** to all the stakeholders, including government, private sector and citizens.
- **Ability for analysis** particularly to address environmental trends and the economic impacts with different options, including future-searching.
- **Ability for planning and prioritization**, including management skills.
- **Ability for political action and communications** for transitioning Low Carbon and Resource Efficient Society.
- **Ability for monitoring, evaluation and learning** for handling complex phenomena such as environment-development links.
- **Specific scientific/technical capabilities** on given issues (Sen).



# Framework for the Capacity Development for Low Carbon & Resource Efficient Society



**Resource Efficient Society**



# Conclusions

- 1. Comprehensive Support - Capacity Development support in individual, organizational and institutional/societal levels**  
Holistic support through technical cooperation, loan assistance and grant aid including soft and hard components
- 2. Continuous Support - Capacity Development as a relative long process**  
Seamless support under a cooperation program
- 3. GHGs Mitigation for Low Carbon Society - GHGs mitigation in Waste Management**  
Technical cooperation through 4 approaches in SWM
- 4. Promotion of 3Rs in Cross-Border Region for Resource Efficient Society**  
**Implementation of wide-area technical cooperation support**  
Optimization of SWM system and material recycling through participatory approach under technical cooperation and policy support

This presentation can be freely downloaded from the following web site:

**[www.geocities.jp/epcowmjp/3RAsia2010.pdf](http://www.geocities.jp/epcowmjp/3RAsia2010.pdf)**