

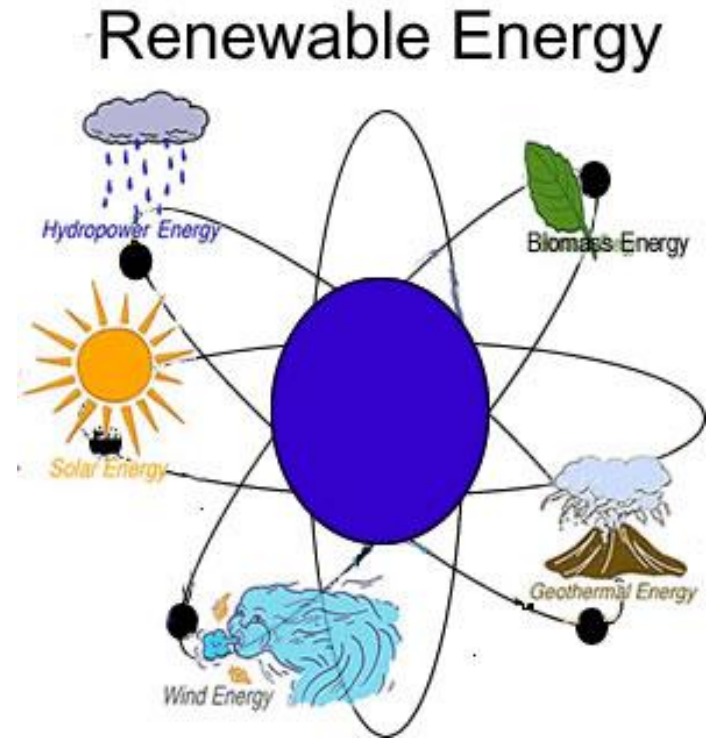


Biomass : Seizing the Opportunity of Renewable Energy Potential in Indonesia

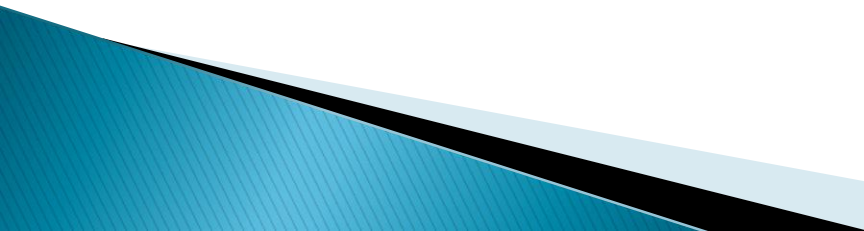
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Why should we consider Renewable Energy?

- ▶ The rising prices of fossil fuel
- ▶ To decrease energy dependency on imports
- ▶ Mitigation of 'peak oil'
- ▶ To achieve energy security
- ▶ To abate green house gases emission and to mitigate climate change



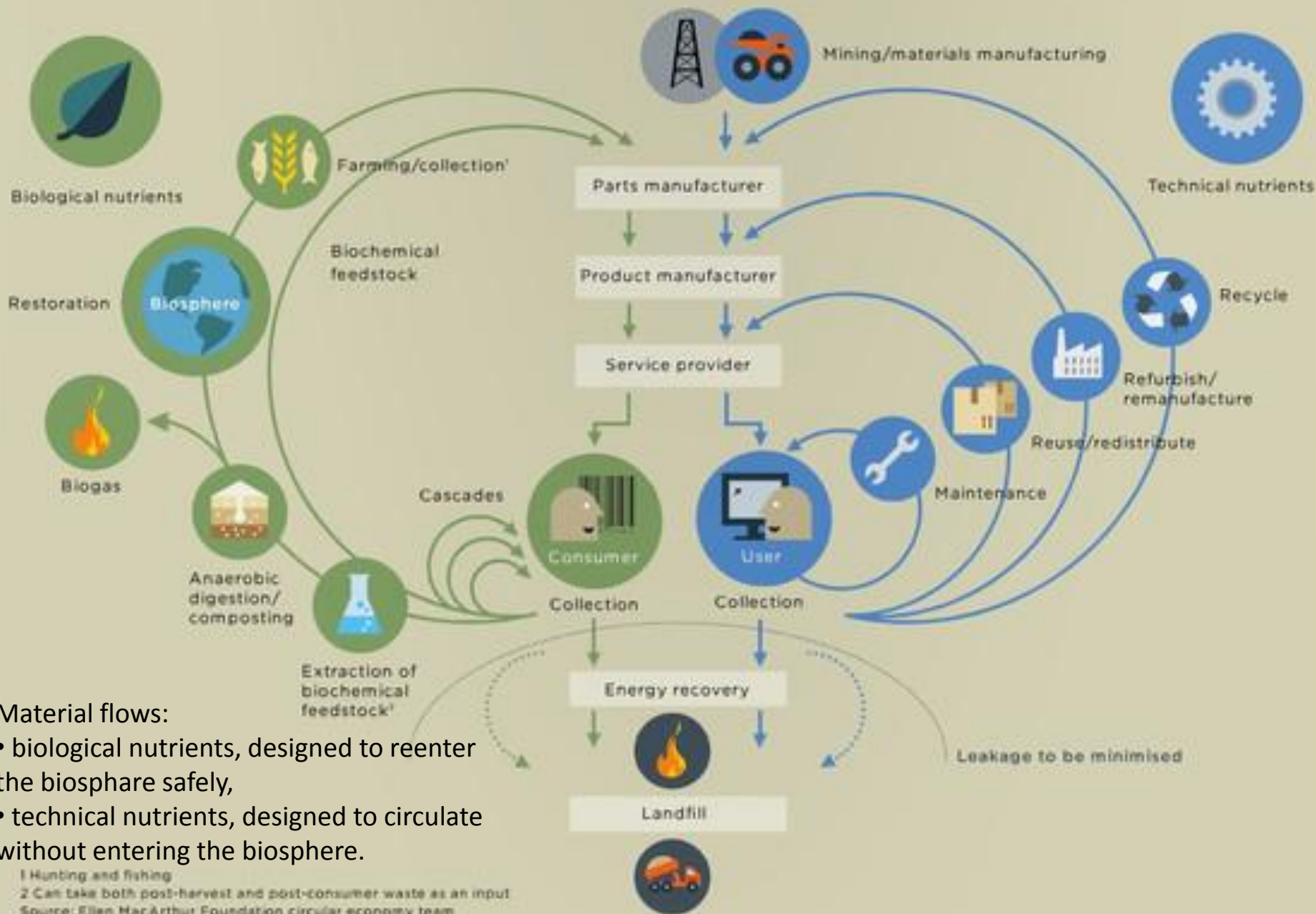
Biomass: Introduction

- Biomass energy is defined by any organic materials that can be used as a source of fuel
 - Biomass as a renewable energy potential in Indonesia is about of 49.81 GW, with installed capacity 1,618,4 MW
 - It is estimated that Indonesia produces 146.7 million tons of biomass per year, equivalent to about 470 GJ/y.
 - Potential for biomass extractions: Kalimantan, Sumatera, Irian Jaya and Sulawesi (KESDM, 2010)
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Renewable Energy-related terminologies

- **Green Economy:** one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities (UNEP, 2011).
- **Blue Economy** (Green Economy 2.0): business model will shift society from scarcity to abundance "with what we have", by tackling issues that cause environmental and related problems in new ways (by Gunter Pauli)
- **Circular Economy:** industrial economy that is restorative and in which material flows are of two types: biological nutrients, designed to reenter the biosphere safely, and technical nutrients, which are designed to circulate at high quality without entering the biosphere.

The circular economy—an industrial system that is restorative by design



Material flows:

- biological nutrients, designed to reenter the biosphere safely,
- technical nutrients, designed to circulate without entering the biosphere.

¹ Hunting and fishing

² Can take both post-harvest and post-consumer waste as an input

Source: Ellen MacArthur Foundation circular economy team

Biomass: Policy in Indonesia

- ▶ Presidential Decree no. 5 year 2006: National Energy Mix Target

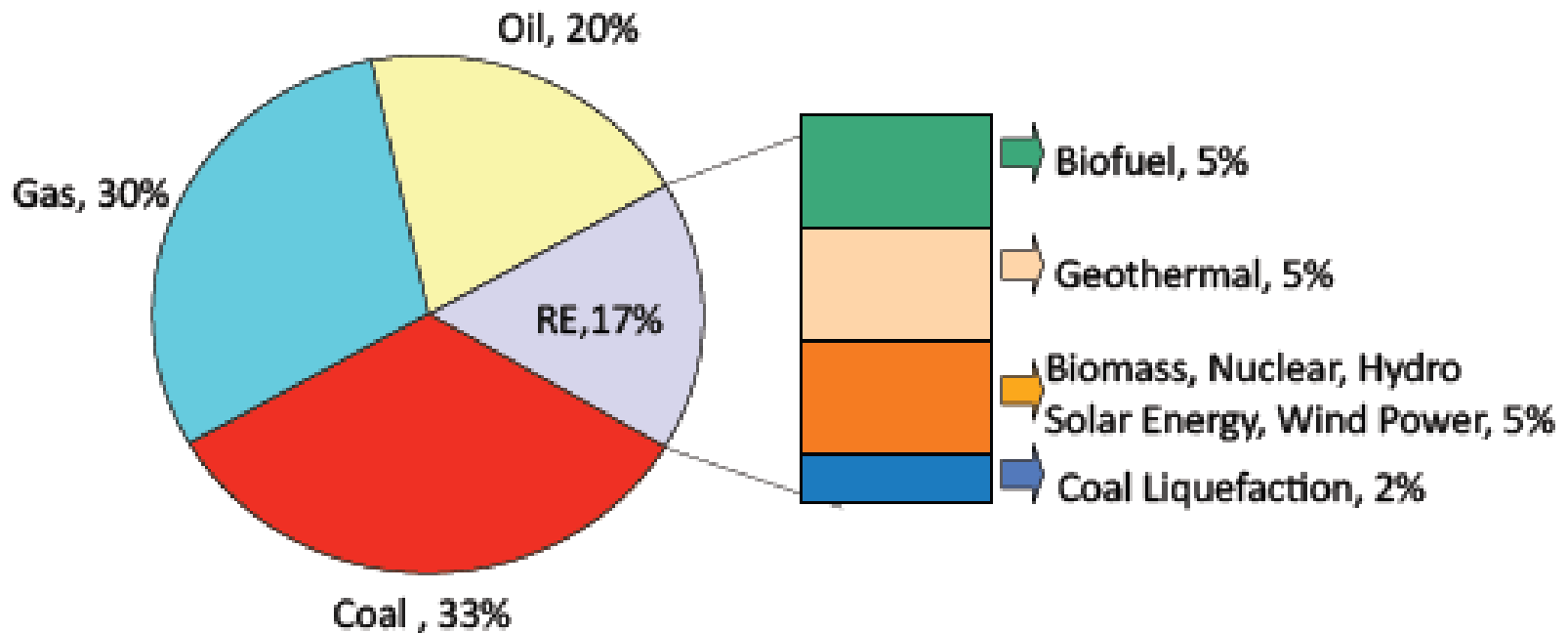
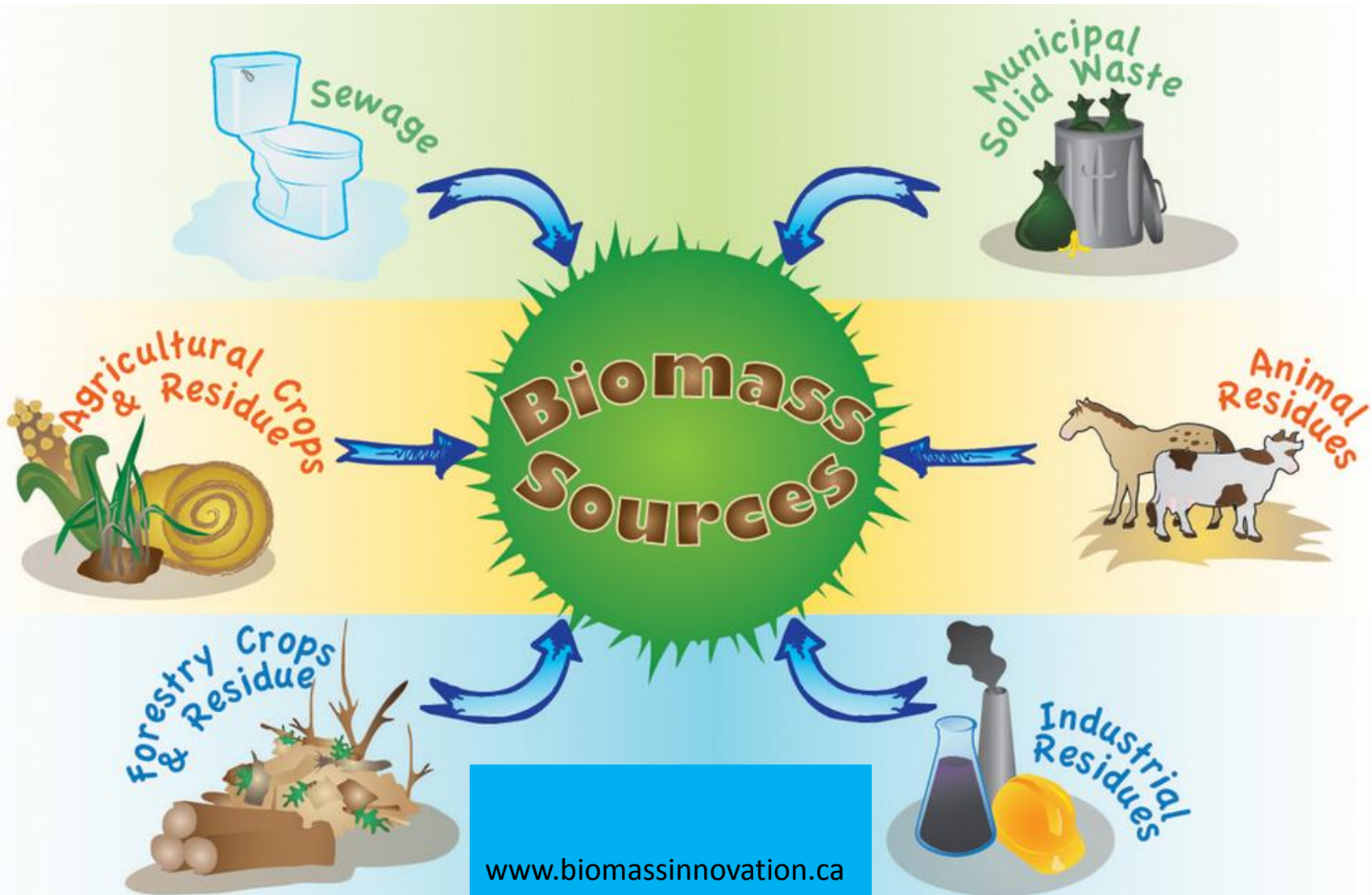


Fig.1. National Energy Mix 2025 (KESDM, 2010)

Where biomass is derived

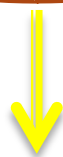


“Green” gold vs “Black” gold

“Green” gold



Biomass
(energy)



To the grid

“Black” gold



Compost
(product)



Market
(issue)

Conflict of feedstock from MSW

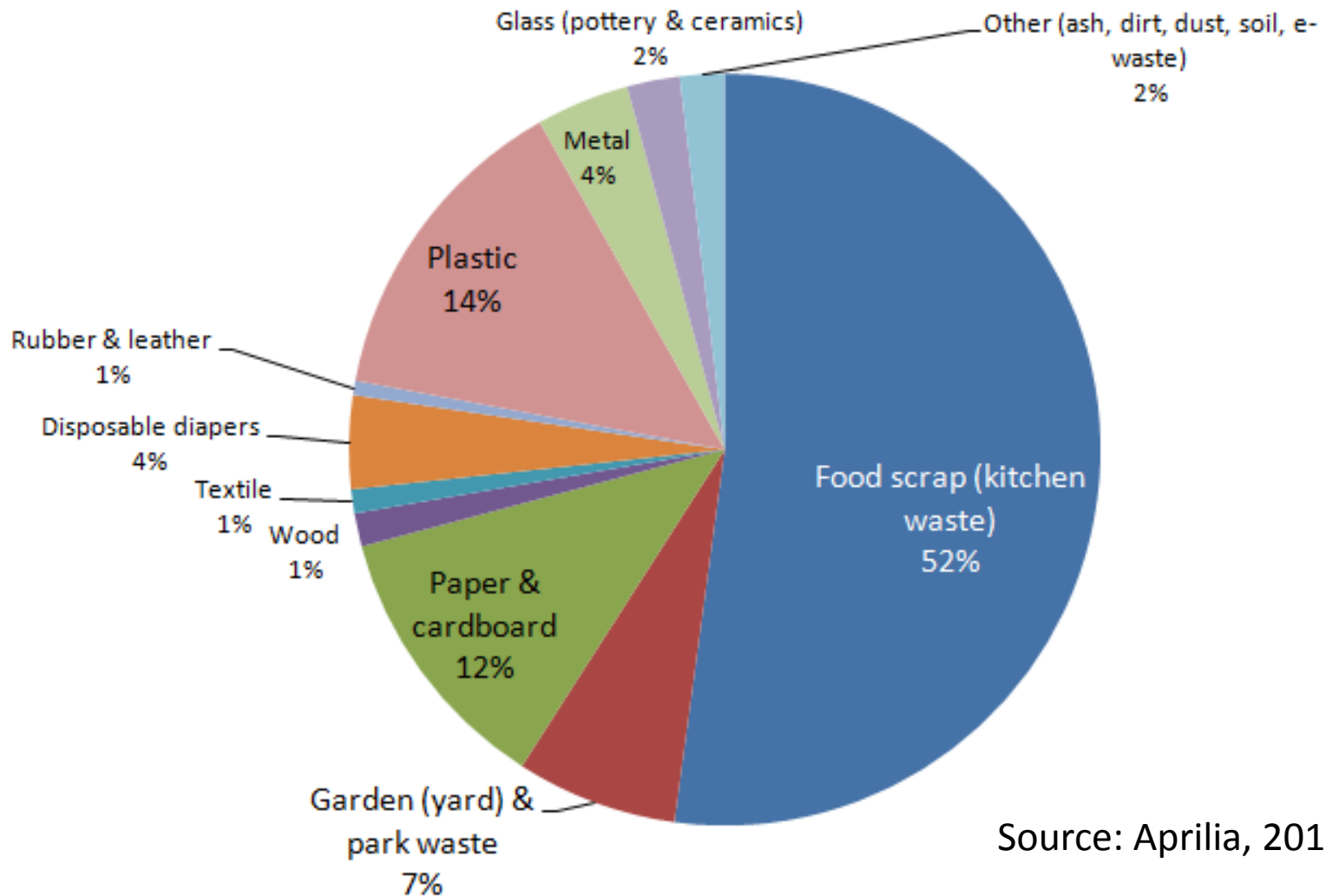
Biomass

Composting

Landfill gas
to energy

Incineration

Waste generation rate and composition in Jakarta (per category)



Source: Aprilia, 2011

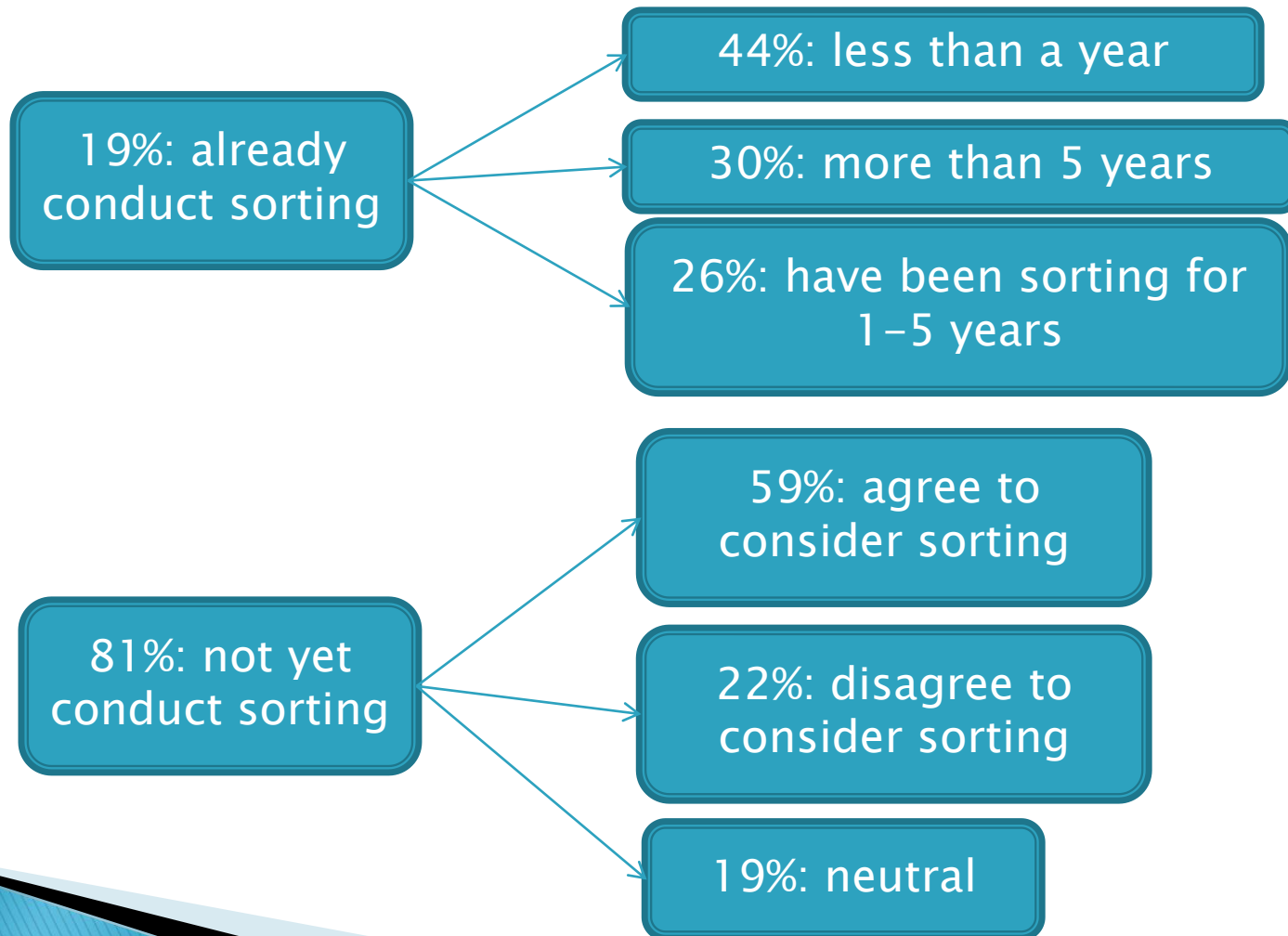
The question remains...

**Waste minimization
or
waste management system
optimization?**



Importance of waste separation
(manual/at-source or automated)

At-source waste sorting: practices and willingness to sort



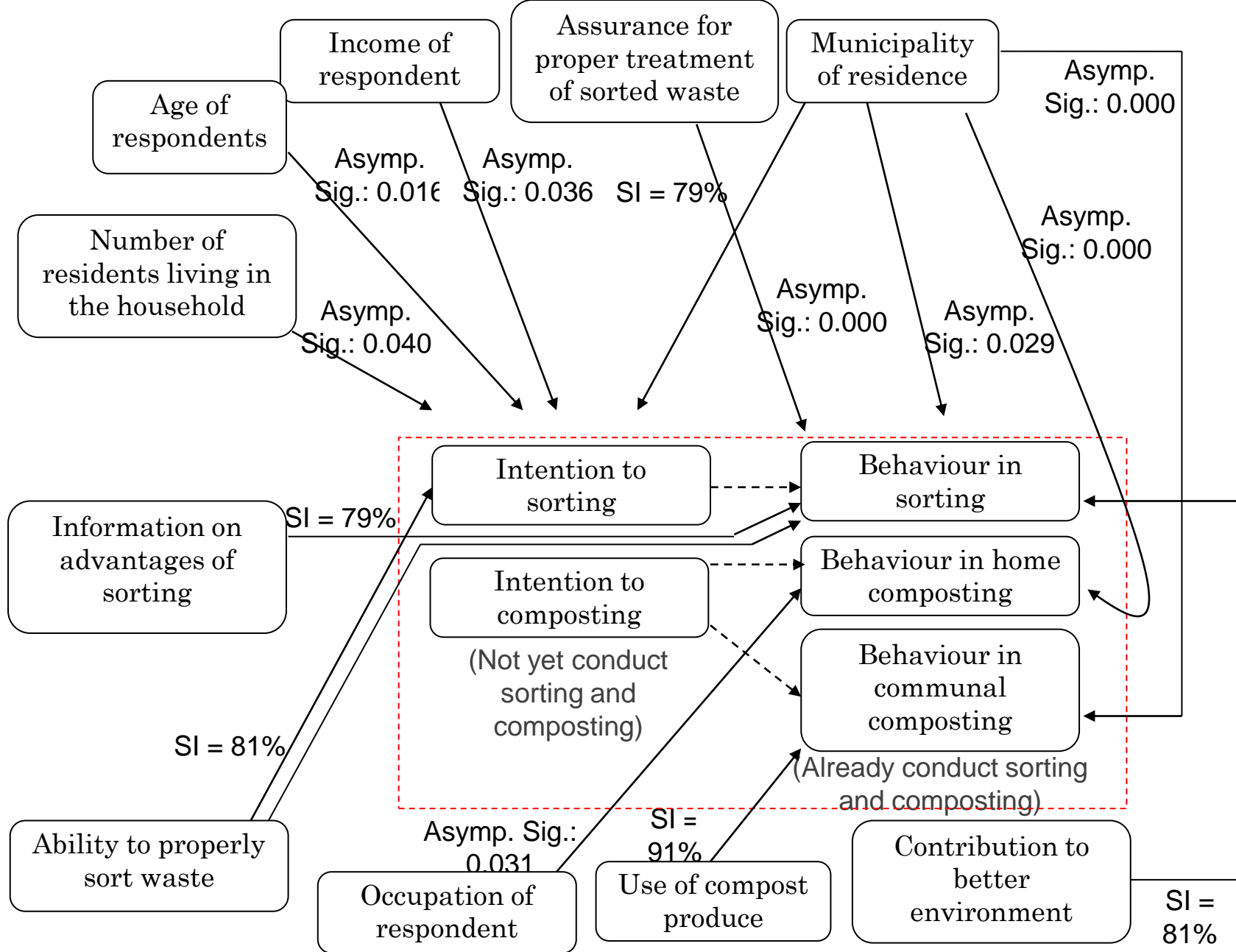


Fig.2. Main factors that influence the intention and behaviour in at-source waste sorting and composting

Conclusions

- Biomass: RE potential to foster green economy in Indonesia
- Waste sorting to separate biomass materials from MSW is required for optimised system
- Policy should be focused to address the issue on waste-energy nexus
- Biomass for energy, composting, and waste minimization → conflicting priorities that should be addressed
- Further exploration on biomass application and replication as untapped RE potentials is required

Launch of Indonesia Centre on SCP

IC-SCP : a think-tank on SCP and 3Rs



IC-SCP

Goals:

- ✓ Research and 'glocal' collaborations on SCP
- ✓ Contribute to policy action plan.
- ✓ Inputs for industries
- ✓ Trainings and workshops on SCP and SWM
- ✓ Increase public awareness.

Proposed activities of IC-SCP

No.	Activities / Outcomes	Year I		
		I - IV	V - VIII	IX - XII
1.	International seminar/conference on SCP and SWM in Indonesia to kick-off IC-SCP.			
2.	Publication at the international journal regarding greenhouse gas emissions and socio-economic analysis of incinerator and waste-to-energy in Indonesia			
3.	Book publication on “Guidelines for Household Waste Survey”.			
4.	Participate in the ‘Peoples Sustainability Treaty on Millennium Consumption Goals’ and establishing IC-SCP as the focal point of Indonesia.			

Collaborators:

- Wageningen University, the Netherlands
- Mitsubishi Research Institute Tokyo, Japan
- Kyoto University, Japan
- Sandec - Department of Water and Sanitation in Developing Countries at the Swiss Federal Institute of Aquatic Science and Technology.
- CARE Nederland, the Netherlands
- TOMRA Sorting, Norway
- Centre for Environment and Development, Sri Lanka
- Global Sustainability Solutions (GLOSS)
- World Resource Forum, Switzerland
- Ministry of Environment, Indonesia
- Jakarta Cleansing Department, Indonesia
- Universitas Diponegoro, Semarang
- Greeneration Indonesia

Thank You!



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