The Economics of 3R in Generating Real Employment in Developing and Less Developed Countries

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Introduction

- Managing waste is a global problem with increasing amounts of waste in developing countries as well as industrialized nations.
- According to OECD by 2020 our society will generate 45% more waste than in 1995.
- There is clearly a need now for environmental sound solutions as well as local and international legislations and agreements that can prioritize these solutions.

Introduction

- Although in the past years there were efforts to perform Cleaner Production (CP), eco-efficiency, or Green Productivity (GP)
- There is a need to also look from a system point of view, sometimes referred to as the **Industrial Ecology** or its sub-component – **industrial metabolism**.
- **Sustainable Consumption and Production (SCP)** when placed together may trigger an out-of-box thinking vis-à-vis treating them separately.
- **Product Service System (PSS)** has been discussed much but perceived to encounter barrier factors.

Introduction

- These developments offer **opportunities** to people in developing countries enabling new economic activities through the **collection, sorting** and **recycling of waste material**; as well as **service-oriented business activities**.

Situationer

- The state was able to ratify RA 9003 (Ecological Solid Waste Management Act of 2000)
- The government was also able to set-up a National Solid Waste Management Commission (NSWMC)
- Recently, the Japan International Cooperation Agency (JICA) presented a Recycling Industry Development Study which aims to formulate a Master Plan and Action Plan that would clarify the policies, measures and actions to be taken by the Government to promote and develop the Philippines' Recycling Industry.

Solid Waste Generation Trends

- Closely attributed to the improving economies of the Philippines' business sectors and regions.
- In 2000, estimates show that the Philippines generated 10.67 million tons of garbage and it is expected that by 2010, the country would be generating up to 14.05 million tons of waste.
- A large percentage of the total generated wastes come from regions where the major cities of the country are located.

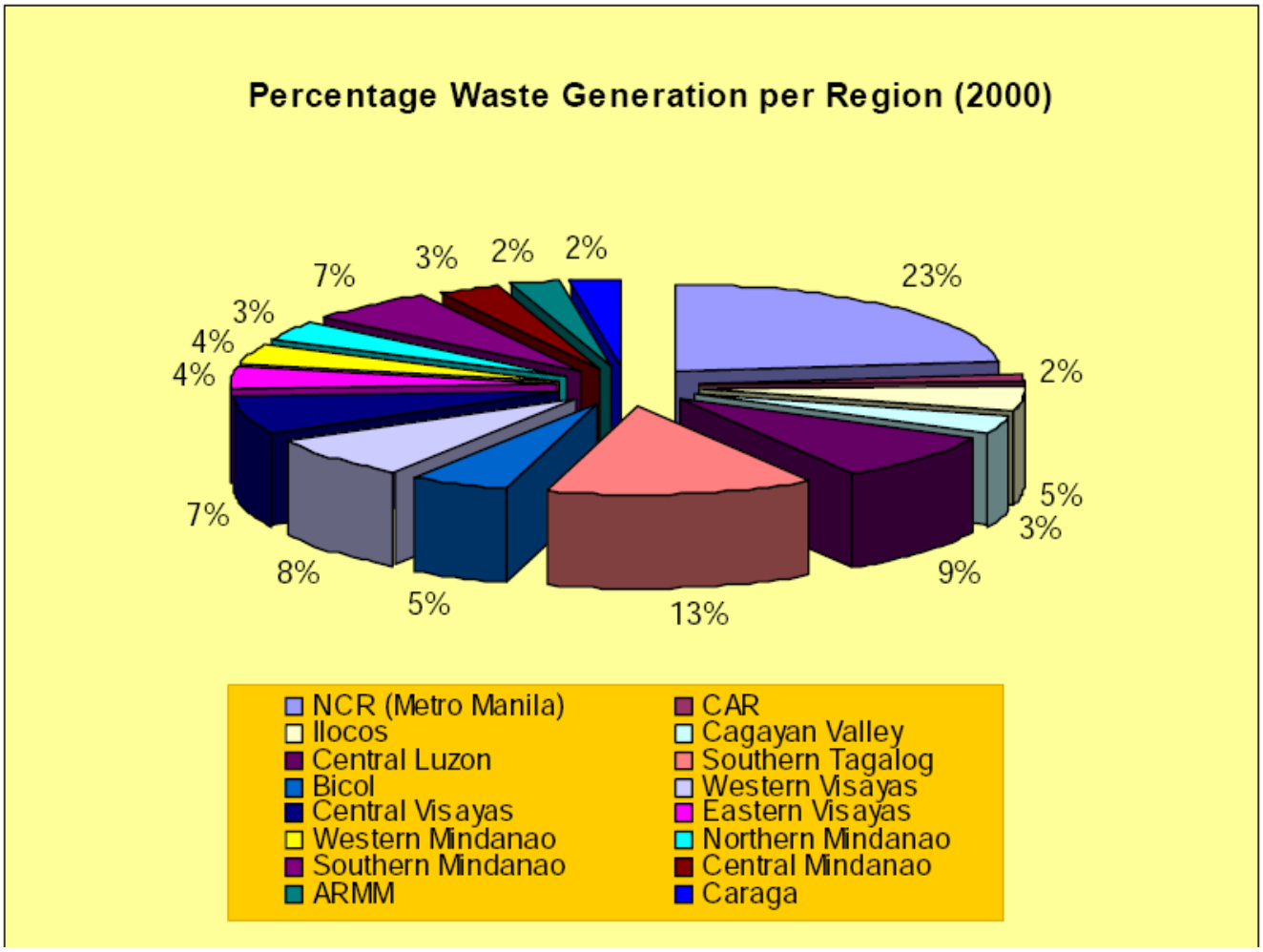
Waste Generation Estimates in the Philippines

Region	Waste Generation in 2000		Waste Generation in 2010	
	Million Tons/year	Percentage of Total	Million Tons/year	Percentage of Total
NCR (Metro Manila)	2.45	23.00	3.14	22.3
CAR	0.17	1.60	0.21	1.5
Ilocos	0.50	4.70	0.63	4.5
Cagayan Valley	0.32	3.00	0.40	2.8
Central Luzon	0.96	9.00	1.32	9.4
Southern Tagalog	1.42	13.30	2.11	15.0
Bicol	0.54	5.10	0.65	4.6
Western Visayas	0.82	7.70	1.00	7.1
Central Visayas	0.74	7.00	1.01	7.2
Eastern Visayas	0.43	4.00	0.51	3.6
Western Mindanao	0.40	3.80	0.53	3.8
Northern Mindanao	0.37	3.40	0.47	3.4
Southern Mindanao	0.70	6.60	0.97	6.9
Central Mindanao	0.33	3.10	0.41	2.9
ARMM	0.26	2.50	0.39	2.7
Caraga	0.26	2.40	0.31	2.2
National	10.67	100	14.05	100

Source: NSO, 2005

Solid Waste Generation Trends

- **National Capital Region (Metro Manila)**
  - Accounts for 23 percent of the total waste generated by the country
  - Economic distinction of Metro Manila as the country's economic, financial and administrative capital housing millions of Filipinos makes it the leading trendsetter in waste generation.
  - Generates 6,720 metric tons of Municipal Solid Waste (MSW) daily (ADB, 2003)
  - Much needed improvements on recycling initiatives, collection efficiency and sustainable disposal methods are thus becoming more critical issues as garbage production in the region continues to increase together with population and economic development.



Solid Waste Management Cost

- The total cost of solid waste management in Metro Manila for 2001, from collection to final disposal, is estimated to be P3.5 Billion or P1,700 per ton of waste (ADB, 2003).
- Reduction of solid waste generation by 10% can save about P 340 Million in terms of solid waste management cost. This clearly demonstrates the positive impacts of promoting recycling upon national as well as local budget. (BOI-DTI)

SWM Expenses and Costs in Metro Manila

Local Government Unit	Garbage Fees	SWM Expenses	Population (2000)	Percentage	Per Capita Cost
Caloocan	20,714	357,007	1,190,087	100%	300
Las Pinas	12,820	76,361	477,791	100%	160
Makati	13,835	418,577	449,583	80%	1,164
Malabon	3,777	22,067	342,447	100%	64
Mandaluyong	7,247	94,123	281,426	95%	352
Manila	57,589	574,990	1,597,841	100%	360
Marikina	7,053	52,804	395,316	100%	134
Muntinlupa	7,012	91,377	383,331	85%	280
Navotas	1,850	43,974	232,845	95%	199
Paranaque	3,114	182,893	454,579	100%	402
Pasay	5,473	243,807	358,670	100%	680
Pasig	11,414	160,458	510,412	100%	314
Pateros	406	2,988	58,016	80%	64
Quezon City	56,107	941,828	2,196,874	100%	429
San Juan	3,137	46,701	118,927	90%	436
Taguig	4,040	52,370	472,329	100%	256
Valenzuela	10,426	42,716	490,579	80%	109
Average/Total	226,014	3,558,345	10,011,053	98%	393

Source: ADB, 2003

Situationer

- Among the findings of the ADB (2003) study is the instability of the current domestic supply in terms of **quantity** and **quality**.
- Insufficient quantity causes the dependence to imported materials and disturbs business operation; while unbalanced quality causes decrease in productivity and efficiency of resource use of recycling industries.

Situationer

- Removal and treatment of impurities and residues increases the total operation cost and decreases the profitability of the business as a whole.
- Enhancing labor skill capability, in combination with the knowledge of grabbing advanced technology, is a value-added asset developing countries wish to achieve.

Other issues in the Philippine Recycling Industry

- High cost of electricity, collection and transportation which weaken its competitiveness in the international market
- Three critical issues highlighted in the Master Plan
  - Proper distribution of information on domestic recyclable materials and recycling industries among the relevant stakeholders
  - Establishment of local-based recycling system based on proper segregation at source and strong, sustainable linkage from the source to the final receiver
  - Introduction of incentives (financial and non-financial) to promote the recycling industry and other support activities. [BOI-DTI]

The To-Do List

- At the forefront of consideration is the extent and amount of potential employment that can be generated from undertaking recycling activities or 3R-related activities.
- An example would be the establishment or operationalization of a clean and lean sanitary landfill that can generate regular employment for a certain number of persons who will operate and manage the facility on a day- to-day basis.

The To-Do List

- Trading of recyclables, product development out of “wastes”, vermi-culture, bio-intensive gardening and natural farming are among the many possible income generation activities.
- Upstream recycling relies on strong network among industries. By-product exchange, utility sharing facilities, special waste treatment facilities, recycling node, technical training centers, and integrated resource recovery system (IRRS) are essentially the initial steps towards a close-loop sound material system.

The To-Do List

- All these components cater to the development of PSS and resource recovery strategies mentioned earlier. High level skill and knowledge would be demanded to operationalize such facilities, and therefore becomes a high value-added program of the society.
- Finally, on the consumption pattern to support 3R; strong information system should be in place, such as eco-label, to properly complement the Information and Communication Drive (ICD).

Questions to be answered

- How significant are these employment opportunities in the overall demand for employment in the country?
- Economic impact of these types of employment to the economy (expressed as a portion of GDP and GNP) as well as their social and environmental implications.
- What support systems (public and private) have been established to strengthen such efforts to generate employment opportunities that are geared towards a more sustainable environment?

Questions to be answered

- What government role or multi-stakeholders' role can be in store to guarantee fair trade of commodity pricing to sustain resource recovery program?
- How can advocacy efforts strengthen this gearing up for more employment opportunities that are environment friendly?
- What policy shifts are necessary at this point to increase job creations toward environment friendly and environment-supporting employment opportunities?
- What backstopping tools are in place to guarantee the sustainability of these programs?

The End