



# Participatory recycling business model: where the informal and the formal meet




Janya Sang-Arun

Policy researcher  
Sustainable Consumption and Production Group  
Institute for Global Environmental Strategies (IGES)



IGES-SCP  
*Participatory recycling business model*



## A. How the informal sector contributes

### 1) Solving constraints of local governments

Lack of budgets for SWM → unsanitary waste disposal development  
Lack of personnel → Cannot manage the disposal site properly  
Land for disposal site is scarce → high investment is required

**Local government**

↓

**Reduction of waste for collection, transportation and disposal is essential**

**Solution need**

↑

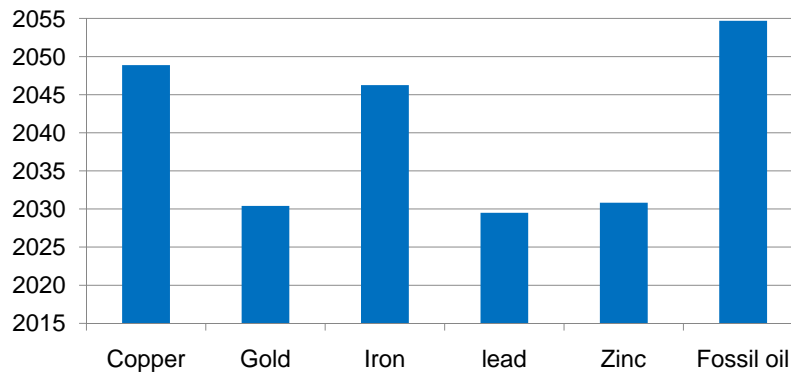
Reduction of recyclable materials for collection, transportation and disposal

**Informal sector**

Janya Sang-Arun | IGES | <http://www.iges.or.jp> | ISWA Beacon Conference on Waste Prevention and Recycling, 21-22 June 2011, Buenos Aires, Argentina | 2

## 2) Circulating recyclable materials to the production side

### Estimated exhausted year of virgin resource



Note: Analysed based on data on natural reserves vs mine production from USGS, 2011 and BP, 2010

### Status of metal recycling

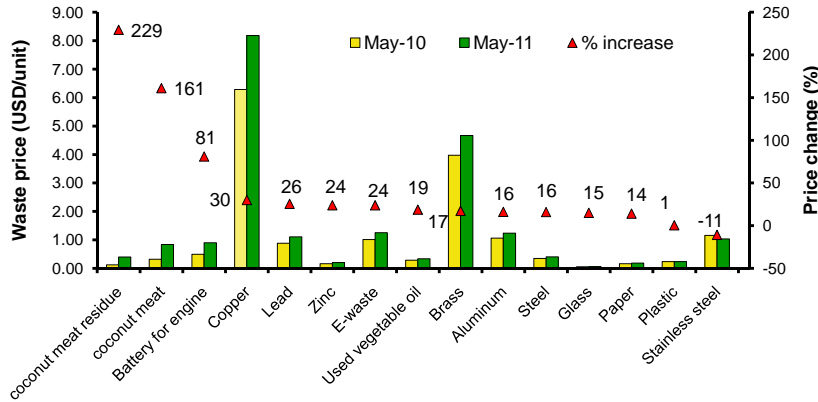
- The extracted natural resources are stored in the society. Therefore, recycling is a key strategy for a sustainable future.
- However, recycling rate of many metals are lower than 50% (e.g. molybdenum, vanadium, magnesium).

Source: International resource panel, 2011



Photo by Yasuhiko Hotta

## Price of recyclable materials is increasing due to higher demands

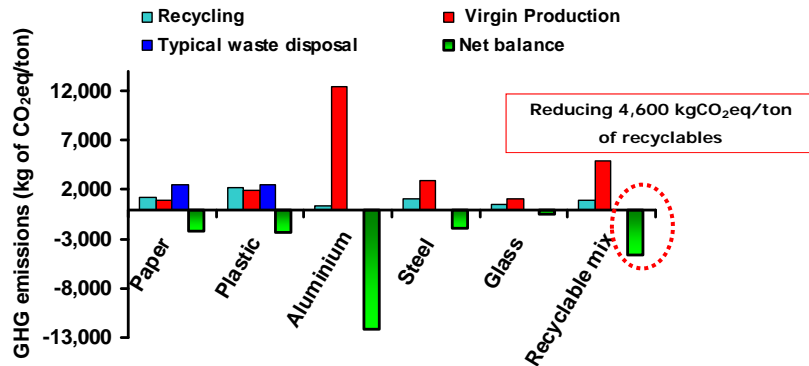


Note: Domestic price of recyclable materials in Thailand (Wongpanit's price)

1 unit = 1 kg for most of materials expect for E-waste and glass

## 3) Avoiding greenhouse gas emissions from natural resource extraction and processing

### GHG emissions from recycling activities in Nonthaburi, Thailand



Source: Developed after Menikpura et al., 2010

1 Ton = 1,000 kgs

## B. Case study: Phitsanulok Municipality, Thailand

- Municipality cooperates with local waste buyers  
→ Public-private partnership
- Provide trainings to waste pickers  
(e.g., how to add-value to waste, how to avoid health risk)
- Provide vaccine to prevent tetanus disease
- Improve social status (register and upgrade waste pickers to volunteers for environment; certification and jacket)
- Allow scavenging at waste bin but request for return non-sellable items to the bin properly
- Allow scavenging at dumpsite but not allow to stay overnight
- Promote separation of sellable waste at household and community levels and allow residents to sell the waste to waste buyers → generator owns the recyclables



## Achievements: Win-win solutions for all (1)

### The formal sector/local government

- Reduced waste flows to disposal site
  - 45% decreased of waste at the dumpsite within 5 yrs (142 → 78 tons/day)
  - 1.8 folds increased of landfill lifetime (16 → 29 years)
- Reduced government budget for waste collection, transportation and disposal
  - Reduced 67,000 USD/yr for waste collection
  - Reduced 33,500 USD/yr for waste transportation
  - Reduced 100,500 USD/yr for waste disposal
- Reduced number of waste pickers
  - 75% decreased at the downtown (200 → 50)
  - 50% decreased at the dumpsite (40 → 20)
- Improved sanitation of the city
- Received more waste management fee from larger numbers of residents

**Saving  
210,000 USD/yr**



## Achievements: Win-win solutions for all (2)

### The informal sector

- **Generating income**
  - Some earned higher than low skill labourers employed by the municipality (54-215 USD/month for waste pickers (Sunthornchai, 2003) : 180 USD/month for employee)
  - Some are employed at waste sorting facility owned by a big waste buyer
- **Improving social status of waste pickers and junkshops**
  - Recognised as volunteers for environmental conservation
- **Improving working condition**
  - Some become door-to-door waste buyers and junkshop's owners (>430 USD/month)
  - Less discrimination and received supports from residents
- **Reducing health's risk**
  - Used protective gears such as hand gloves and footwear
  - Vaccinated to prevent tetanus



Photo by Suthi Hantrakul

## Achievements: Win-win solutions for all (3)

### The business sector

- **Increase recyclable materials available for the production side**
  - Quantity of recyclables increased
- **Increase business opportunity**
  - Numbers of junkshops increased (4 → 9 shops)
  - Numbers of tricycle waste buyers increased

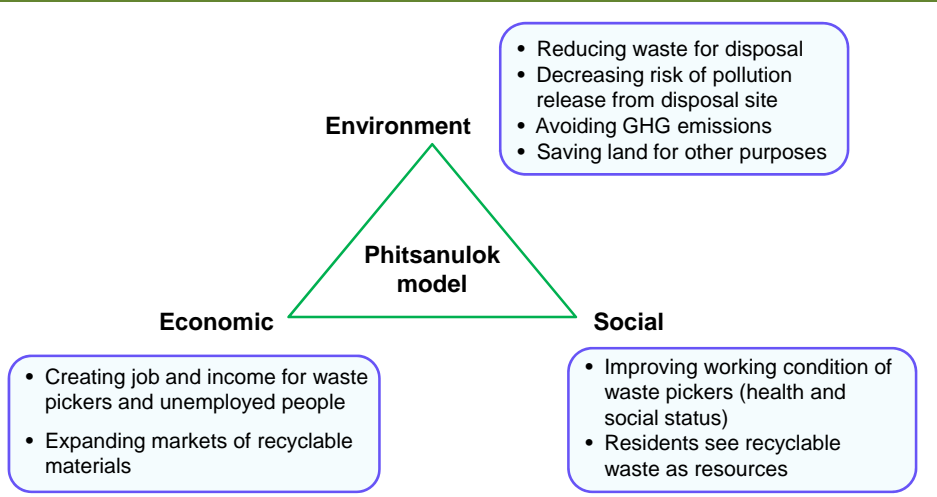
### The residents

- **Earn from selling recyclable wastes**  
→ (3.3-13.3USD/month)
- **Possible to pay for waste management fee**  
(1USD/month)



Photo by Suthi Hantrakul

## Sustainability of the Phitsanulok Participatory Recycling Model



## C. Phnom Penh Model (Cambodia)



## Conclusion

- Even with limited budgets, local governments can improve MSW management through engaging the informal sector and promoting markets for recyclable wastes, e.g. through recognising the contribution of waste pickers, training, and providing essential inputs.
- A participatory recycling business model is a sustainable approach as it benefits all stakeholders.
- Support from national and local government remains essential to further improve and stimulate the extension of the informal recycling activities.

## What should central and local governments do?

- Set recycling targets at national and local levels and promote use of products made of recycled materials,
- Promote and implement waste separation at source (esp. for recyclables and organic waste),
- Assist waste pickers and waste buyers to have an accident and health insurance,
- Recognise the waste pickers and waste buyers as providing a valuable social service and give them guidance on social responsibility and health issues,
- Implement environmental controls for junkshops and waste recycling facilities,
- Reduce tax barriers for import and export of recyclable materials (certification may be required to ensure the quality of the materials and avoid waste trafficking) to promote the recycling business

## IGES/SCP New Projects in 2011

- Promoting recycling in municipal solid waste management through suitable business models
- A typology of involvement of informal sector to recycling business in Asia
- Recycling certification in Asia
- Measurable, Reportable and Verifiable (MRV) capacity building in Asia for the establishment of new market mechanisms (solid waste management and energy efficient building)
- For details : [sang-arun@iges.or.jp](mailto:sang-arun@iges.or.jp)



**Thank You**