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Municipal Solid Waste Management Practices and Challenges in Cambodia



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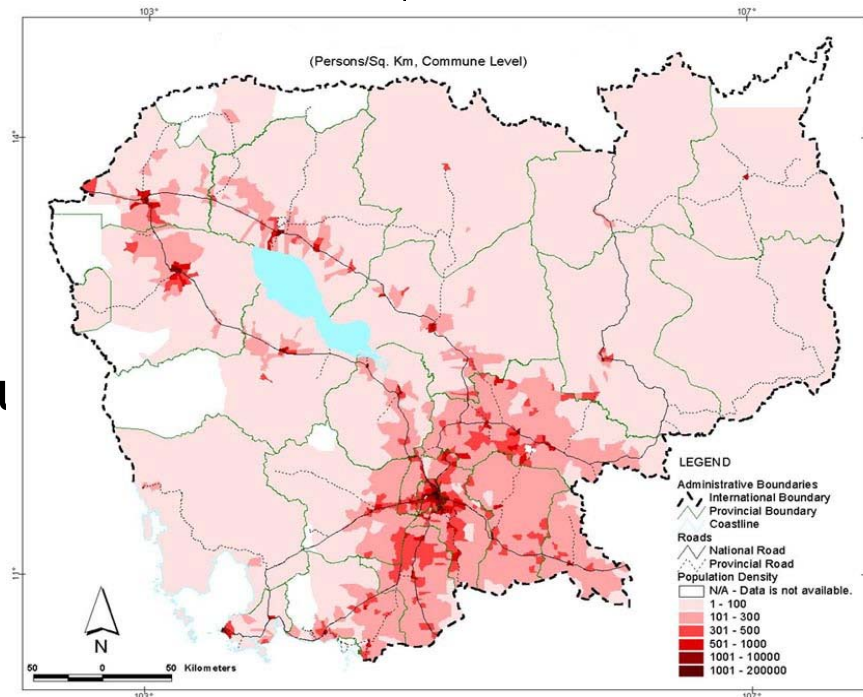
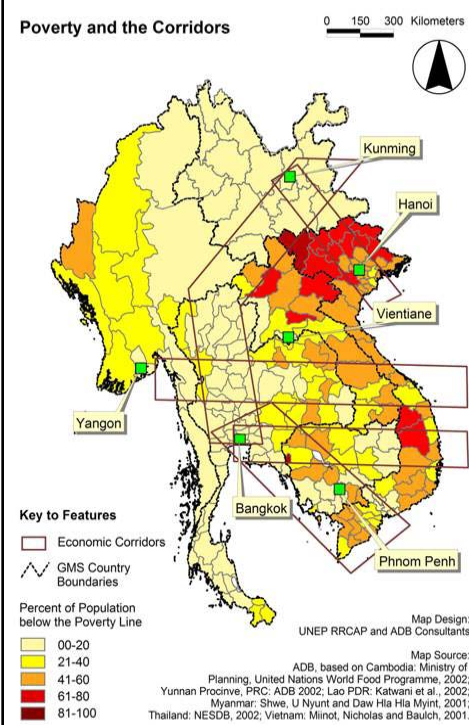
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Part 1

Current Status and Emerging Trends of Municipal Solid Waste Management

1. Introduction

- Cambodia is covered 181,035 sq. kms
- Population
 - 13.4 mil. as of March 2008 Census
 - 14.1 mil. projected in 2010
- Annual Pop. Growth Rate
 - 1.54% in 2008 and
 - 1.35% in 2010
- Economics growth
(Agriculture, Industrials and To



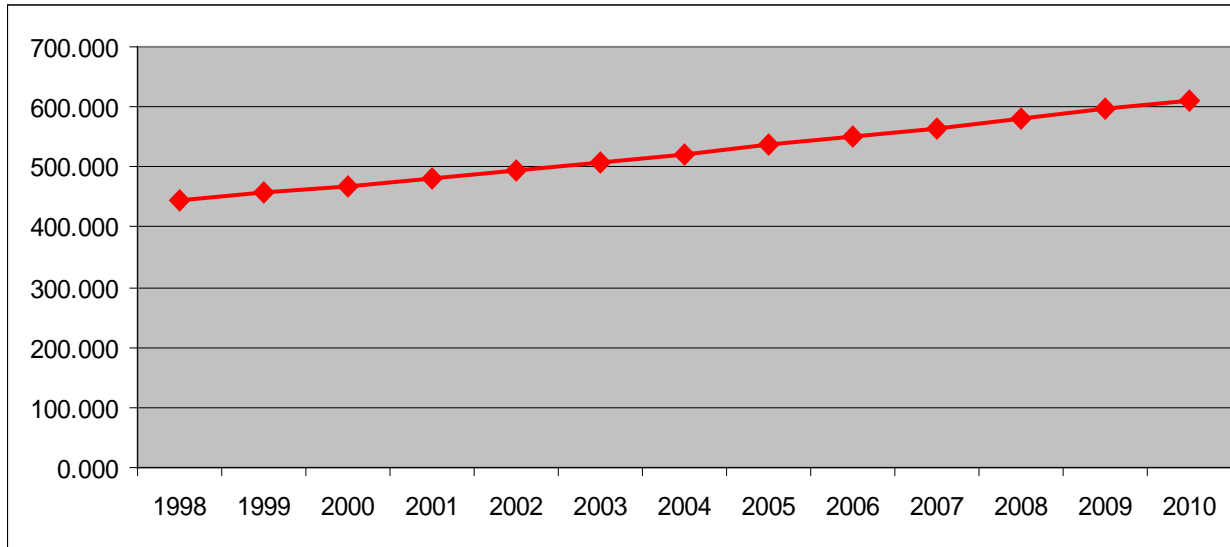
2. Most visible Environment problem



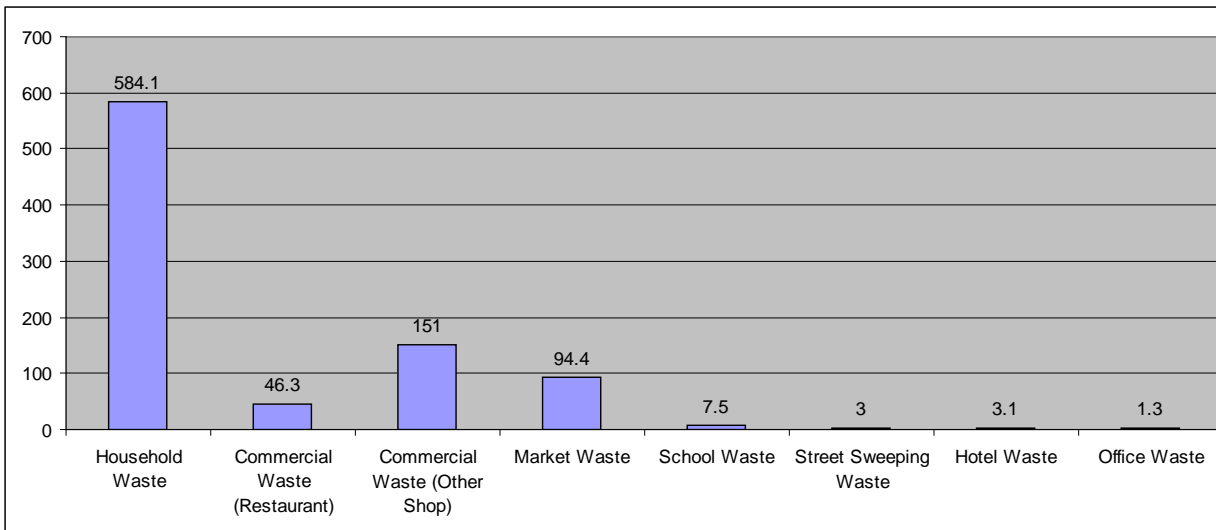
Generation:

- Total annual waste generation = 450 000T
- Urban areas - 0.54-0.6 kg/capita/day
- Rural areas - 0.40 kg/capita/day
- To increase by 40% in next
- Mostly from households and Commercial establishments
- Collection rate: 80%

3. Solid Waste Generation



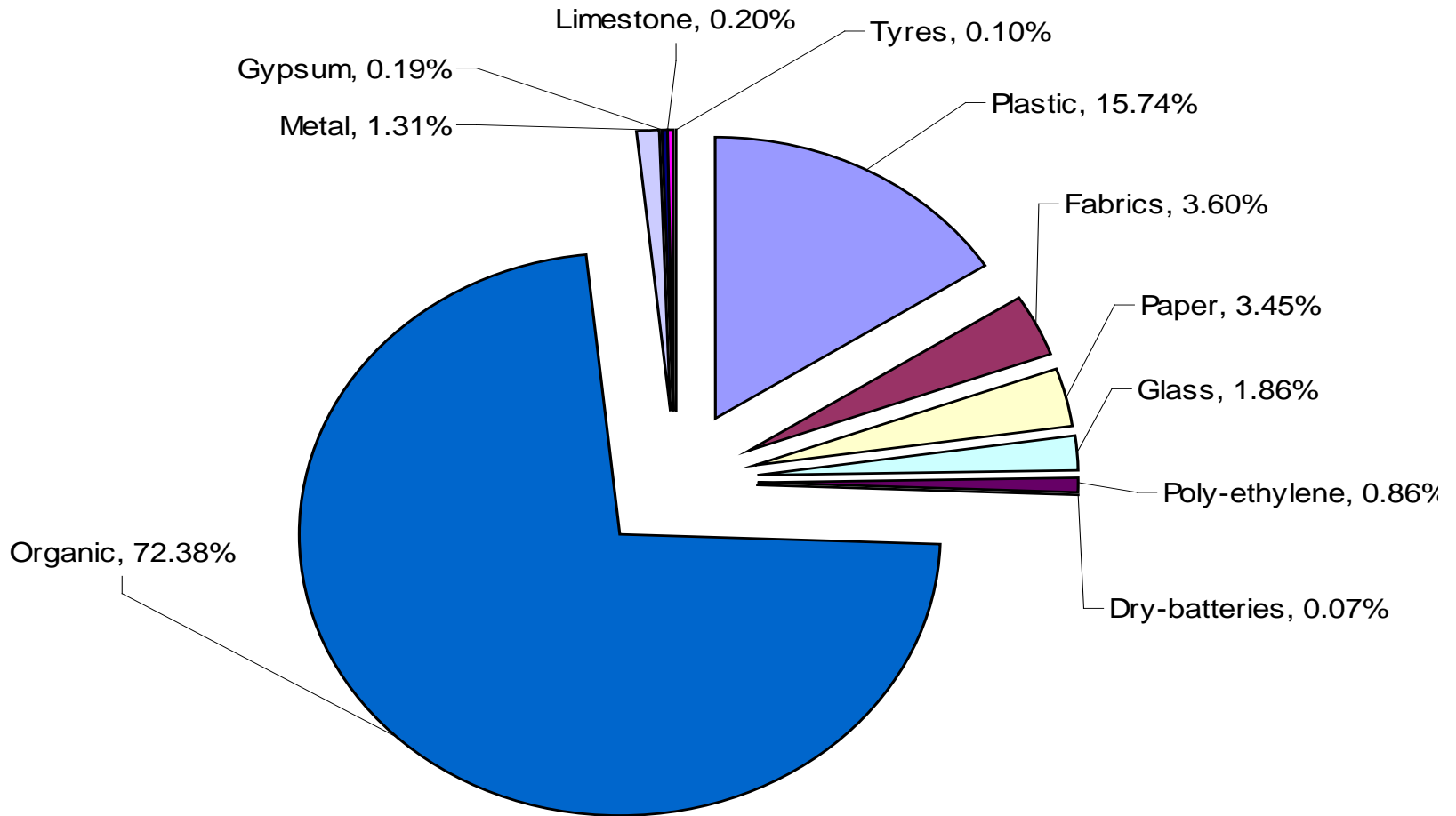
➤ Annual generation growth



➤ Source of Solid Waste generation in the Municipality

Data Source: Municipal Solid Waste Study by JICA in 2005

4. Composition of Solid Waste



5. Municipal solid waste management

The problems are being confronted include:

- Solid waste classification has not implemented yet, so combined solid wastes (industrial and domestic wastes) are disposed at a same dumping site.
- Deficiency of proper dumping site, especially for toxic and hazardous wastes from industrial hospitalized and pharmaceutical sources.
- In practical terms, the dumping site is not available to environmentally sound management. It means dwellers who live surround dumping sites are at high risks.
- Less effective solid waste collection and truck insufficiency is a reason of waste pile/mess existing at public areas and market places.

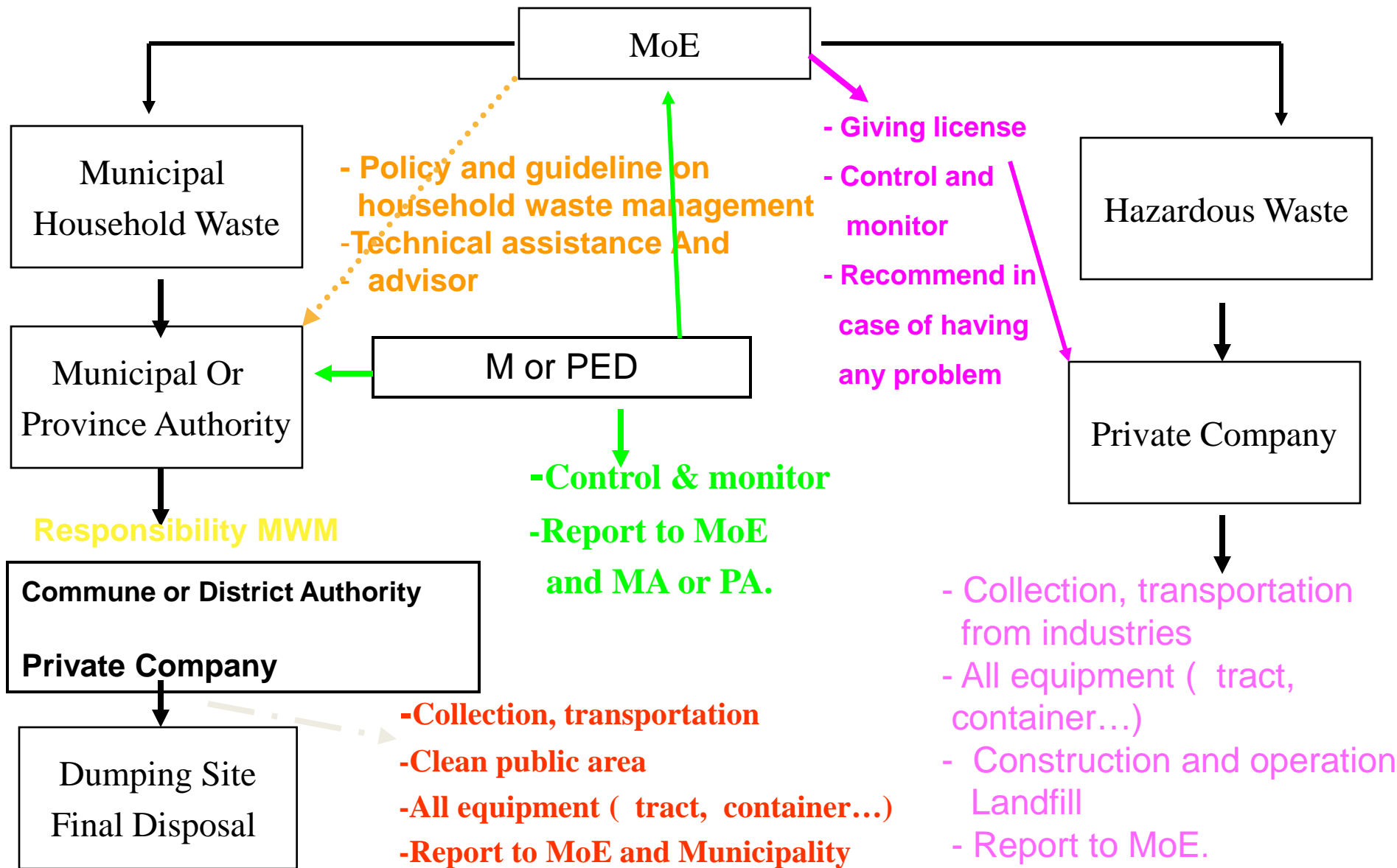
Municipal solid waste management cont.

- Due to the insufficiency as stated above, it causes a risk to public health directly or indirectly, especially, scavengers that seek available things/items at dumping sites or people who live closed to dumping sites.
- The huge pile of solid waste and garbage still found and decayed at public, residential, and low-land area...etc.
- The intrusion of scavengers (such as waste pickers, domestic animals) at dumping site is not forbidden. This event is exposed to health risks.
- During rainfall solid waste and garbage were washed out and clogged sewage system at urban area, and finally flooded to adjacent low level residential areas.
- Usually solid waste were burned and fired at dump-site and some areas.

Uncontrolled combustion activities

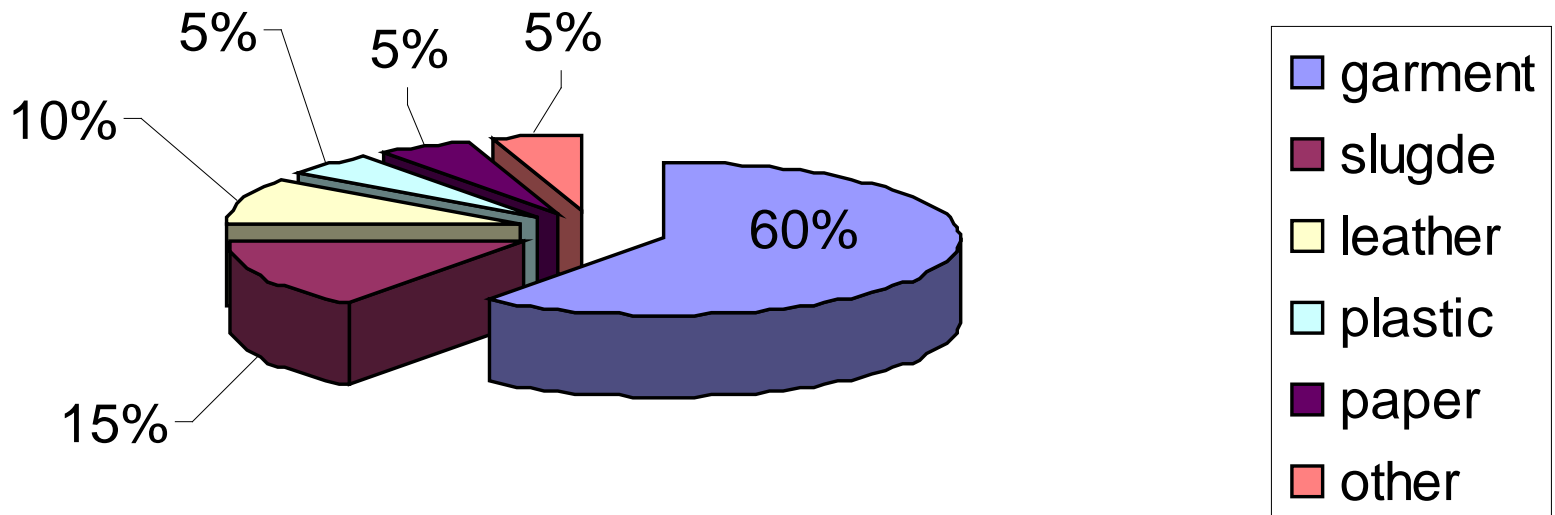


6- Institute Responsible Overview



Industrial Waste

Composition of industrial waste



Part II

Current Capacity and Constraints

7- Current Capacity Building

- ❖ There are many projects related to Solid Waste Management which was supported by various agencies have been conducted so far, such as:
 - Project on Lead Acid Battery inventory, Advance Waste Management, Development a National Strategy on 3R for Waste Management, Capacity Building and Awareness Raising on 3R initiative, The project on preparation of guideline to manage plastic waste conforming to the Green Growth Concept, E-waste Inventory and public awareness on E-waste management in Cambodia.

8- Existing Legislations

- Law On Environmental Protection and Natural Resources Management Which was promulgated in 1996
- Sub-decree on Solid Waste Management (MoE) approved in 1999;
- Directive on Industrial Hazardous Waste Management (MoE) May 26, 2000;
- Directive on Industrial Sludge Management (MoE) -- October 9, 2000;
- The Joint Declarations on Solid Waste Management witch was approved by MoE and the Ministry of Interior and
- The "Directive on Managing Health Wastes in the Kingdom of Cambodia" approved in 2008 by the Minister of Health.
- Consistent with the solid waste management process under the 1996 environmental Law and related statutes, for both national and local levels are still confront with some constraints that should be considered, including the amendment concept of legal instruments.

9- Constraints & Challenges

The constraints are recognized dividing into: (1) environmental constraints; (2) socio-economic constraints; and (3) institutional and legal constraints.

1- *Environmental Constraints* are occurred within waste management including as follows:

- Waste treatment and disposal facilities currently is still facing for example, lacking sanitary landfill or treatment technology/facility or incinerator for special wastes such as industrial hazardous wastes/hospital wastes.

2- *Socio-Economic Constraints*

- Increased risks to human health for people who live closed or surround the waste transporting roads and dumping sites due to toxic smoke absorption

Constraints & Challenges cont.

- Increased costs of human health protection or maintenance as well as increased costs of preventive medicines.
- Increased suitable sources of infectious diseases include housefly, harmful insect, rat, etc. as well as encourage the generation of infectious disease agents.

3- Economic Constraints

- Inadequate national budget for establishment of waste disposal facilities .
- Without implementing waste reuse reduce and recycling or cleaner production technology can be high costs for cleaning or rehabilitation of deteriorated environmental quality.

Constraints & Challenges cont.

4- Institutional and Legal Constraints

- Parallel with above two aspects of constraints, the constraints occurring from implementing processes are also recognized as given below.
- The Lack of capacity and awareness raising program / knowledge pertaining the solid wastes management. This is because the financial and facility support for program implementing is limited.
- Unclear roles and responsibilities among inter-ministries and agencies, including national framework for waste management causing less effective in management process, noticeably, the occurrence of conflict of interests among these institutions.
- Collaboration and coordination among line-ministries and agencies is still limited, especially in data and information sharing.
- Lack of collaboration and cooperation amount and public participation

Part III

Significant Achievements and Future Vision

9-Waste Reuse Reduction and Recycling



- Waste sorting is a key principal of waste reduction and recycling. This case plays an important part in generating income for many waste pickers and recyclers.
- Composting is also a crucial method towards the waste reduction. Most of residential and commercial wastes are organic wastes that can make composting with high quality for agricultural purpose.
- As description above, waste reuse reduce and recycling concept provides more benefits for the poor . Additionally, it can reduce environmental risks and hazards due to appropriate waste management. Based on this interpretation, waste reuse reduce and recycling program would be developed and promoted entire the country and incentives would be provided to somebody/community that can achieve this program.

Composting in Community



- Composting Activity
600 kg/month
- Supported by NGOs

Composting (Cont.)



Small Scale of Composting plant is operated by Cambodian Education and Waste Management Organization (COMPET). Annual production is more than 200 t / year.

Recycling activities of plastic waste and other waste



Recycling of other waste cont.



Strip cloths/rage activities before export



Case study on recycling of Lead Acid Batteries



Recycling activities of e-waste



Mobile phone



Recycling products



Recycling products cont.



10-Future Vision

- To develop national strategy on integrating of solid waste management
- To determine appropriate landfill and technologies for waste storage and final disposal.
- To encourage and boost the application of solid waste classification/sorting for effective disposal, recycling, re-use, composting, etc.
- To co-operate and co-ordinate with inter-ministries, agencies, including with IOs and NGOs in waste management process and planning establishment.

Future Vision cont.

- To assess the actual and potential living environmental effects of all existing waste management in provinces and cities.
- To disseminate waste management guidelines and standards to all stakeholders, including local communities, NGOs, etc.
- To set up emergency response towards occurred incident within toxic/hazardous waste management, for example, transporting, storage, incineration, treatment, etc.

11- National Strategy Plans In Cambodia

- For effective waste management the DEPC has being developed a National Strategy Plans on Integrating Solid Waste Management by setting long-term target (2011- 2025) for implementing as given below.
- The Draft National Strategy Plans will be submitted to the Council of Minister for approval
- This National 3R Strategy will be accomplished by two different specific target years, by 2015 and 2025. The two target years were summarized below.

National Strategy Plans In Cambodia cont.

A. Target Year-2015: Achieve an appropriate Integrating solid waste management and practices through:

❖ Solid waste and garbage collection in urban area for disposal and treatment:

- 80% of municipal wastes,
- up to 70% industrial wastes, and
- medical wastes around 50%.

❖ waste separation for recycling purpose:

- at households for 20%,
- at business areas 30%, and
- 50% at industrial wastes.

❖ Organic waste composting:

- 20% household organic wastes, including business centers
- 30% appropriate dump sites

National Strategy Plans In Cambodia cont.

b. Target Year-2025: Achieve an appropriate integrating solid waste management and practices through:

- ❖ **Solid waste and garbage collection for disposal at landfills:**
 - around 90% of municipal wastes,
 - 80% industrial wastes, and
 - 70% medical wastes.
- ❖ **Solid wastes generating from industrial and health will be treated before disposal at security landfills.**
 - 80% industrial wastes, and
 - 70% medical wastes

National Strategy Plans In Cambodia cont.

❖ Solid waste separation for recycling purpose:

- 80% at households at business areas and
- 80% at industrial wastes.

❖ Organic waste composting

- up to 50% household organic wastes,
- 40% organic wastes generating by business centers.
- ❖ 30% appropriate sanitary landfills

12- Conclusion and recommendation

- We recognize that waste sorting at pollution sources as well as at receiving sources is very important case not only for environmental pollution reduction, but also for contributing in poverty alleviation.
- The encourage on 3R implementation from stakeholder has limited both national and local level.
- To recommend the industrial sector in waste minimizing, and wastes/materials/products re-using and recycling, including by-products.
- To minimize or eliminate the use of toxic or hazardous wastes with the industrial process if possible.
- To review an existing regulations and develop guidelines and standards relevant to waste management, but in according to the national and local requirement.
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Conclusion and recommendation cont.

- Awareness, knowledge and technical skills should be improved for the staffs of DEPC and Provincial/Municipal Environmental Departments and other inter-ministries in order to reach the achievement of the designated objectives and goals, based on National Strategy Plan
- Technical guidance and regulatory (definition, classification, labeling, temporary storage, prevention/protection, cleaning technology, etc.) regarding hazardous and toxic waste management should be developed.
- Establish a central incinerator or professional landfill or treatment facilities for final waste disposal is an appropriate key solution of waste management.
- Strengthening the implementation of law enforcement as well as regularly control and monitor various pollution sources for emphasizing whether the master or person who responsible for pollution sources abide by the environmental sound or not.

Thank you

