ESTABLISHING E-WASTE MANAGEMENT IN MONGOLIA

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Objectives of the research

1. To create realizable scenarios of e-waste management system in Mongolia
2. Chose the best scenario for current situation
3. Chose recommendable scenario for future planning

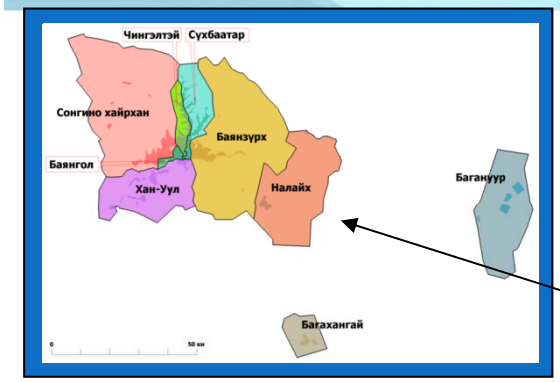
- How to achieve the aim
  1. Practices of foreign countries-Literature review
     a) Japan – Good practices
     b) European Union – Good practices
     c) China – better situation and previous similar practices
  2. Analyze the Information found during the research
     a) Choose applicable regulations and practices
     b) Select the most suitable regulations and technologies – Best scenario
     c) Select suitable steps for developing the best scenario – Future plan

Study area - Mongolia

MONGOLIA

- **Population** -2.6 million
- **Urbanization** – 62%
- **Territory** - 1.5 million square kilometer
- **GDP per capita** - 2470 USD
  - **Government plan** - 5000 USD in the end of 2012
- **Main industry** – mining
- Weak waste management system
- No e-waste management system

Study area - Mongolia



Ulaanbaatar
Capital city of Mongolia

Population – 44% = 1.1ml

Territory – 0.3% = 45 000

Probability of waste and e-waste problems

E-waste management in Japan

- Good management system regulated by legislations, regulations and standards
  - Electric Household Appliance Recycling Law 2001
  - Law for Promotion of Effective Utilization of Resources
  - Law on Promoting Green Purchasing
  - Other regulations and standards (corporate standards)
- Take back system mandatory for TV, refrigerator, air conditioner, and washing machine:
  - Collected by retailers
  - Consumers pay fee when bring back to retailer
  - Producers set the take back fee for their products

E-waste management in Japan

- Recycling is producer's obligation – penalty by law
- Producers co-operate on recycling
  - Association for Electric Home Appliances
- Many recycling facilities (46 as of 2005)
  - Collected e-waste transferred to collection places (380 as of 2004) and distributed to recycling facilities
- Eco town projects – Kitakyushu city
- Uniqueness of recycling
  - Hand disassembly before automated recycling
  - Safe handling of large, heavy products

E-waste management in EU

- Good management system regulated by regional legislations, regulations and standards
  - WEEE Directive (2002/96/EC)
  - RoHS Directive (2002/95/EC)
  - EuP Directive (2005/32/EC)
  - Use of international, regional standards
- Take back system mandatory for 10 categories of e-waste:
  - Recycling fee is added on newly supplied products
  - Producer should take back e-waste from customer – transport, keep, recycle, and safely dispose them by its own finance

E-waste management in EU

- Recycling is producer's obligation – different ways
  - UK – Producer compliance scheme - the Network of approved authorized treatment facility – Approved exporters

- German – Elektro-Altgeräte Register collect, sort – Private or socially subsidized recyclers
- Recyclers depend on state's policy
  - Authorized, certified, and approved
  - Socially subsidized or private company
- Uniqueness of recycling
  - Less manual dismantling
  - Shredding
  - Automated recycling

E-waste Management in China

- Basic legislations, regulations and standards:
  - Technical policy providing guidance for the State Environmental protection administration's management of e-waste (1996)
  - Cleaner Production Promotion Law (2002)
  - Law on Prevention and Control of Environmental Pollution by Solid Waste (2004)
  - Circular Economy Promotion Law (2008)
  - "Measures for the Administration of the Control of Pollution by Electronic Information Products" March 1, 2007
  - "Draft Catalogue of Electronic Information Products" 2009
  - "Draft measures for the pollution control of electrical and electronic products" released by Ministry of Industry and Information Technology. 2010
  - "Implementation Rules of Voluntary Certification on the Pollution Control of Electronic Information Products" 26 July 2011
  - Revised Draft "Measures for Administration of the Pollution Control of Electronic and Electrical Products" June 2012
  - SJ/T 11363-2006: Requirements for Concentration Limits for Certain Hazardous Substances in Electronic Information Products (Standard)
  - SJ/T 11363-2006: Test methods for RoHS analysis (Standard)

E-waste Management in China

- Legislations mostly concentrated on illegal import, RoHS, and Eco Labeling of product
- Basic legislations approved, implementation guides are in trial period
- Starting the take back system – Not so effective
  - Citizen's willingness to bring back is weak – preference is to sell
  - Too many informal recycler business – China trying to control by certification, legal regulation
- Recycling technology – quality uncertain
  - Mostly manual/physical recycling
  - Less use of automatic recycling (magnetic separation and copper separation)
  - Existence of environmental and health impact

Waste management in Mongolia

- Basel convention ratification 1997
- Few legislations:
  - "Law on prohibition of importing, transit and export of hazardous waste" in 2000
  - "Law on household and industrial waste" in 2003
  - Government plan (improvement of waste management, RoHS)
- Municipal management organizations responsible for waste management
- Household waste sorting – building waste and others
- Waste treatment:
  - Few informal recyclers and recycling shops
  - Final disposal is Landfilling, only **1** sanitary landfilling facility
  - Planning to build more 13 sanitary landfills

Waste management in Mongolia

- Advantages:
  - Less e-waste than other countries – less population
  - Use of foreign good practices
  - Safe landfilling possibility (existing 1, planned 13 as of 2010)
  - Ways to use existing waste management system
    - Medical waste incineration facility?
    - Plastic to RDF plant on landfill site?
    - Faster development?
- Disadvantages:
  - No initial basis for the e-waste management system
  - Political instability
  - Renewing a group of legal regulation
  - Informal recyclers only – Safe technology issue
  - Inadequate public awareness

Discussion

- National policies, legislations and regulations needed
- Waste management system improvement needed foremost
  - Waste collection and separation problem
  - Hazardous substances control
  - Improving unofficial recyclers and public awareness
- Collection possibilities:
  - Take back system is not so effective in Mongolia – no producer
  - Municipal management organization can collect e-waste
  - Retailers' and recyclers' participation in collection of e-waste /start voluntary
  - Recycling fee can be charged at acquisition (EU) for financing recycling facility
- Hazardous substances control: Official recycling facility needed
  - Environmental impact and human health issues
  - Recovering of valuable materials
- Improvement of existing recycling methods in unofficial recyclers
  - Compulsory certification and legal and standard requirements (China)
  - Safe recycling technology and corporate standard requirement (Japan)
- Adopting the foreign good practices
  - China – similar condition, step forward from MGL, example
  - EU – different condition, far forward from MGL, plan
  - Japan – different condition, far forward from MGL, plan

Further study

- Detailed comparison of the foreign e-waste systems with Mongolian condition (Based on assessment table)
- Research on legal regulations
  - Categories of e-waste
  - Role of participants in e-waste management system
  - Common regulations /for the adoption/
- Study the Practices of initial establishment of e-waste management systems
  - Success and mistakes
- Further plans of Japan, EU, China
- Possible scenarios

Assessment of E-waste management system

"Global perspectives on e-waste"
Rolf Widmera,*, Heidi Oswald-Krapf a, Deepali Sinha-Khetriwalb, Max Schnellmannc, Heinz Bo¨nia

Aspect	Criterion	Indicator
Structural framework	Political and legislation	Ratification of Basel convention National legislation Corruption index
	Economy	Capital cost (industrial investment) Secondary raw material market
	Society and culture	Social and political liberties NGO activities Recycling culture Public awareness
	Science and technology	Knowledge in e-waste recycling technologies Research on e-waste management and technologies
Recycling system	Material flow	E-waste generation per capita Closed loop of recycling management
	Technologies	Efficiency of material recovery Quality of recovered material
	Financial flow	Financial coverage Externalities coverage Financial incentives for eco design
Impacts	Environment	Final disposal of e-waste in unsafe landfills Emission of hazardous substances
	Human health	Health and safety implementation at workplace, Exposure of neighboring population to Hazardous substances
	Labor	Number of jobs generated Income distribution

THANK YOU FOR YOUR ATTENTION