



Department Of Environment  
Ministry of Natural Resources and Environment 



# Current practice of recycling and treatment of hazardous wastes in Malaysia

Department of Environment  
MALAYSIA  
[www.doe.gov.my](http://www.doe.gov.my)



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- ✓ Criteria for ESM facilities defined in the national law/regulation
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- ✓ Information sharing on ESM facility and related waste streams
- ✓ The existing or currently considered E-waste recycling scheme



# Toxic and Hazardous Wastes Management in MALAYSIA



Petaling Jaya dumping ground (1982)



Aerial view of the Integrated Toxic and Hazardous Wastes Facility at Bukit Nenas, Port Dickson, Negeri Sembilan



# ESTABLISHMENT OF HAZARDOUS WASTES TREATMENT AND DISPOSAL FACILITIES

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- ❑ **INDUSTRIES ARE ENCOURAGED TO TREAT WASTE ON-SITE AND DISPOSED OFF THE WASTES AT APPROVED SITES.**
- ❑ **A PRIVATE COMPANY KUALITI ALAM SDN BHD WAS APPOINTED BY THE GOVERNMENT TO ESTABLISH AND INTEGRATED SCHEDULED WASTE TREATMENT AND DISPOSAL SYSTEM IN PENINSULAR MALAYSIA.**
- ❑ **KA WAS GIVEN AN EXCLUSIVE RIGHT TO CONSTRUCT AND TO MANAGE THE SCHEDULED WASTES IN PENINSULAR MALAYSIA FOR 15 YEARS UNTIL 2015.**
- ❑ **IN 2004 ANOTHER FACILITY WAS BUILT IN SARAWAK BY TRINIKENS SDN. BHD.**
- ❑ **3 PRIVATE COMPANIES WERE APPOINTED BY GOVERNMENT TO HANDLE CLINICAL WASTES.**

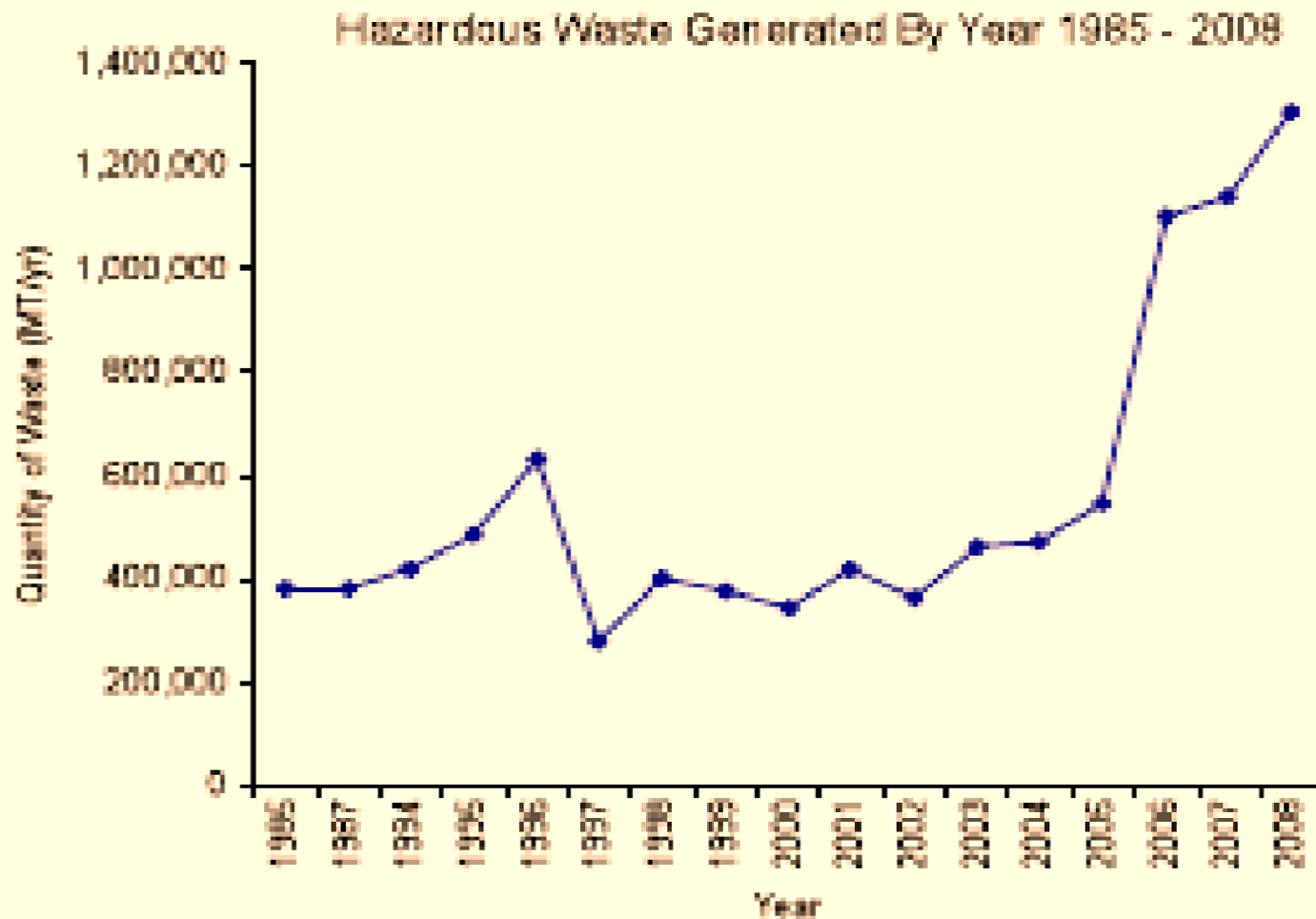


# ESTABLISHMENT OF HAZARDOUS WASTES FACILITIES

- ❑ **BESIDE KA, TRINIKENS (SARAWAK) SDN BHD, OTHER INDUSTRIES ARE LICENCED BY DOE TO REDUCE, REUSE AND RECYCLE THEIR SCHEDULED WASTES.**
- ❑ **UNTIL OCTOBER 2009, 613 LICENCED WERE ISSUED TO 327 PREMISES**
  - **TRANSPORT (284)**
  - **OFF SITE STORAGE (17)**
  - **FULL RECOVERY FACILITY FOR E-WASTE (16)**
  - **PARTIAL RECOVERY FACILITY FOR E-WASTE (126)**
  - **RECOVERY FACILITY FOR NON-E-WASTE (116)**
  - **INCINERATORS (41)**
  - **LAND TREATMENT FACILITIES (3)**
  - **SECURE LANDFILL (5)**
  - **OFF-SITE TREATMENT (2)**



# HAZARDOUS WASTES GENERATED, 1985-2008



# TREND OF HAZARDOUS WASTES MANAGEMENT, 2007-2011

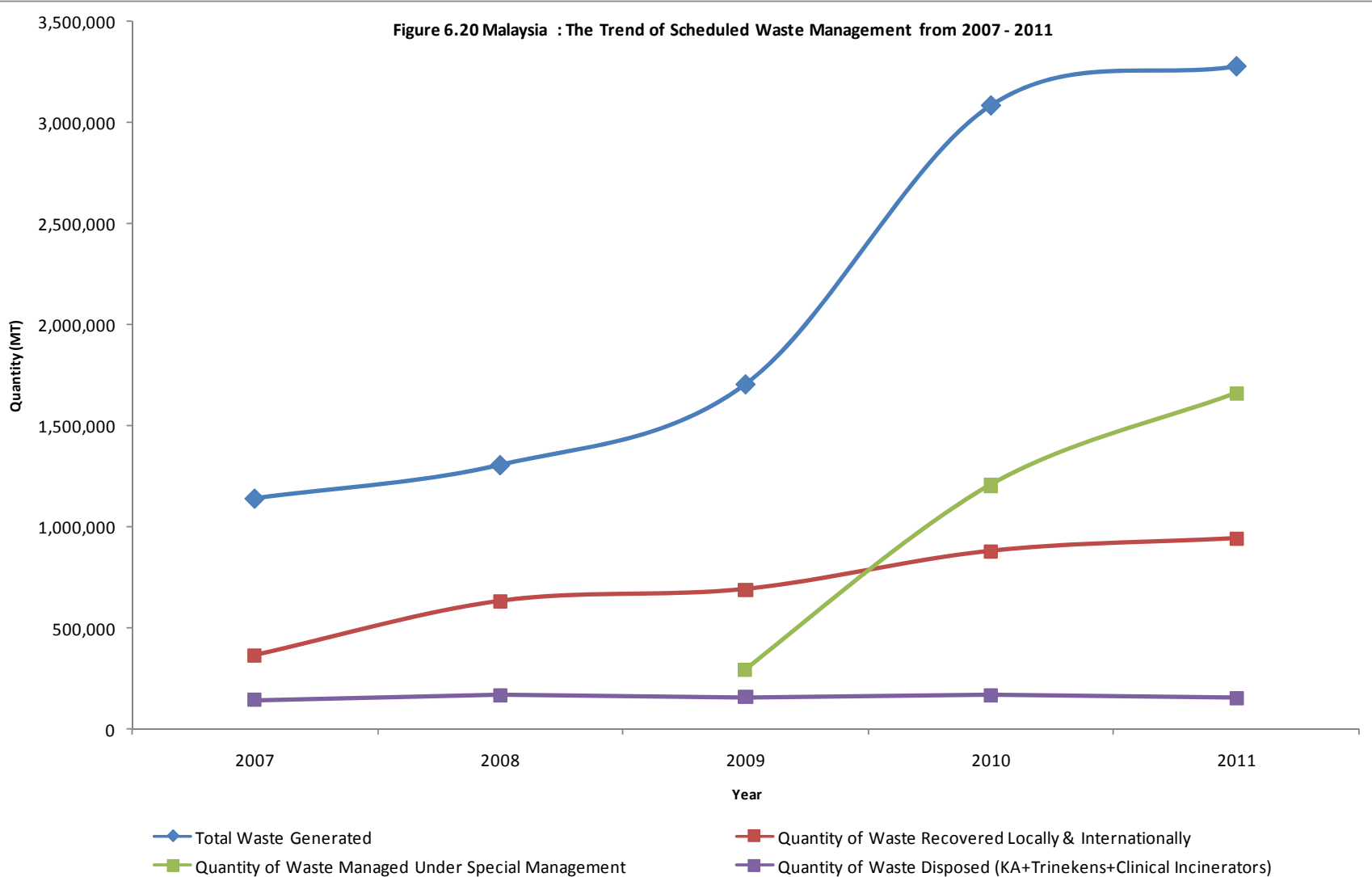


Table 5.1 Malaysia : Quantity of Scheduled Wastes Generated by Category, 2011

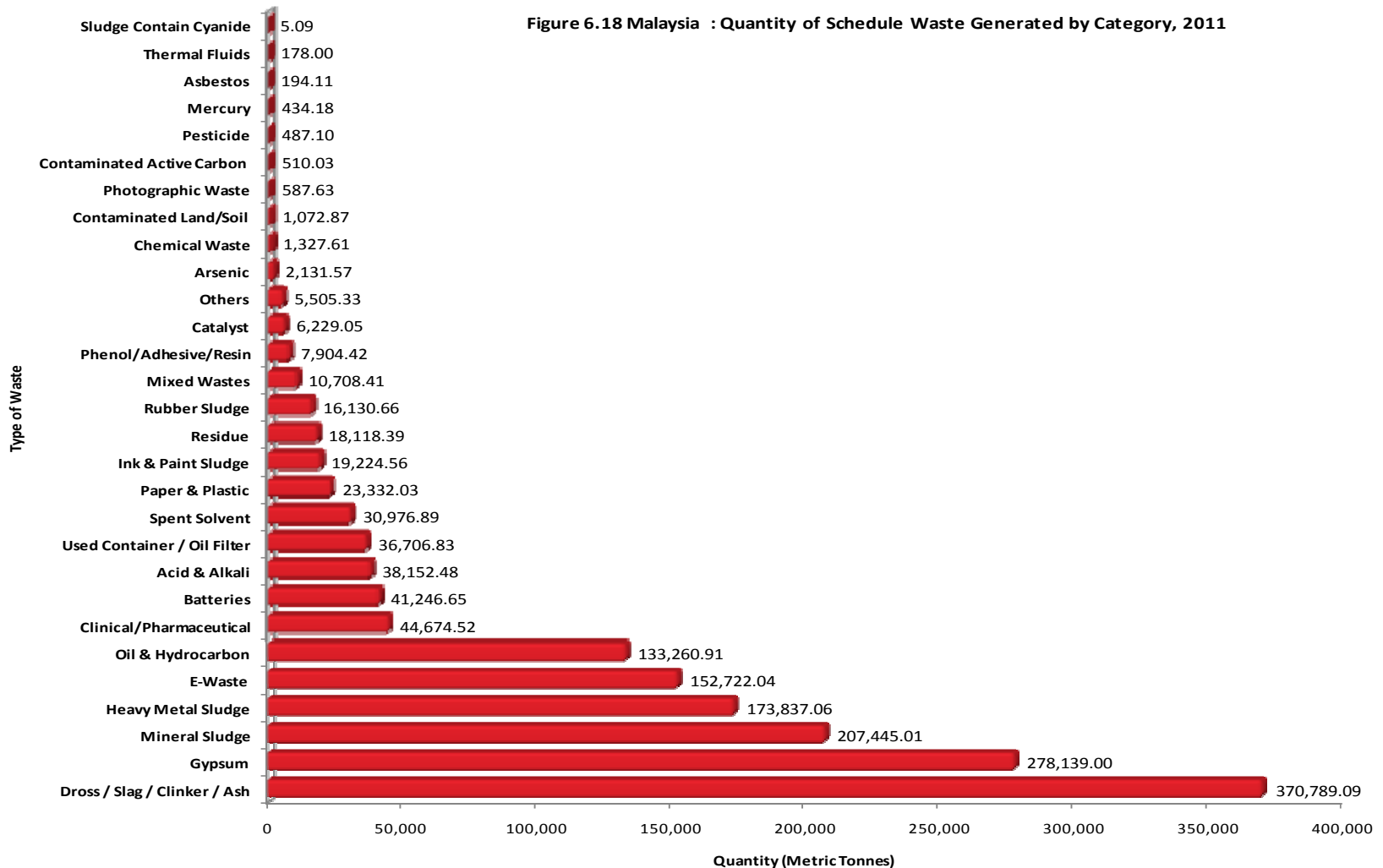
No	Waste Category	Waste Code	Quantity of Waste	
			MT/Year	Percentage (%)
1	Dross / Slag / Clinker / Ash	SW 104, 107, 406	370,789.09	22.86
2	Gypsum	SW 205	278,139.00	17.15
3	Mineral Sludge	SW 427	207,445.01	12.79
4	Heavy Metal Sludge	SW 204, 105, 108	173,837.06	10.72
5	E-Waste	SW 110	152,722.04	9.42
6	Oil & Hydrocarbon	SW 305, 306, 307, 308, 309, 310, 311, 312, 314, 315, 415	133,260.91	8.22
7	Clinical/Pharmaceutical	SW 404, 403, 405	44,674.52	2.75
8	Batteries	SW 102,103	41,246.65	2.54
9	Acid & Alkaline	SW 206, 401, 414	38,152.48	2.35
10	Used Container / Oil Filter	SW 409	36,706.83	2.26
11	Spent Solvent	SW 322, 323	30,976.89	1.91
12	Paper & Plastic	SW 410	23,332.03	1.44
13	Ink & Paint Sludge	SW 416, 417, 418	19,224.56	1.19
14	Residue	SW 501	18,118.39	1.12
15	Rubber Sludge	SW 321	16,130.66	0.99
16	Mixed Wastes	SW 422, 421	10,708.41	0.66
17	Phenol/Adhesive/Resin	SW 325, 319, 303	7,904.42	0.49
18	Catalyst	SW 202	6,229.05	0.38
19	Others	NA	5,505.33	0.34
20	Arsenic	SW 101	2,131.57	0.13
21	Chemical Waste	SW 430, 429	1,327.61	0.08
22	Contaminated Land/Soil	SW 408	1,072.87	0.07
23	Photographic Waste	SW 423	587.63	0.04
24	Contaminated Active Carbon	SW 411	510.03	0.03
25	Pesticide	SW 426	487.10	0.03
26	Mercury	SW 109	434.18	0.03
27	Asbestos	SW 201	194.11	0.01
28	Thermal Fluids	SW 327	178.00	0.01
29	Sludge Contain Cyanide	SW 412	5.09	0.00
	<b>Total</b>		<b>1,622,031.54</b>	<b>100.00</b>





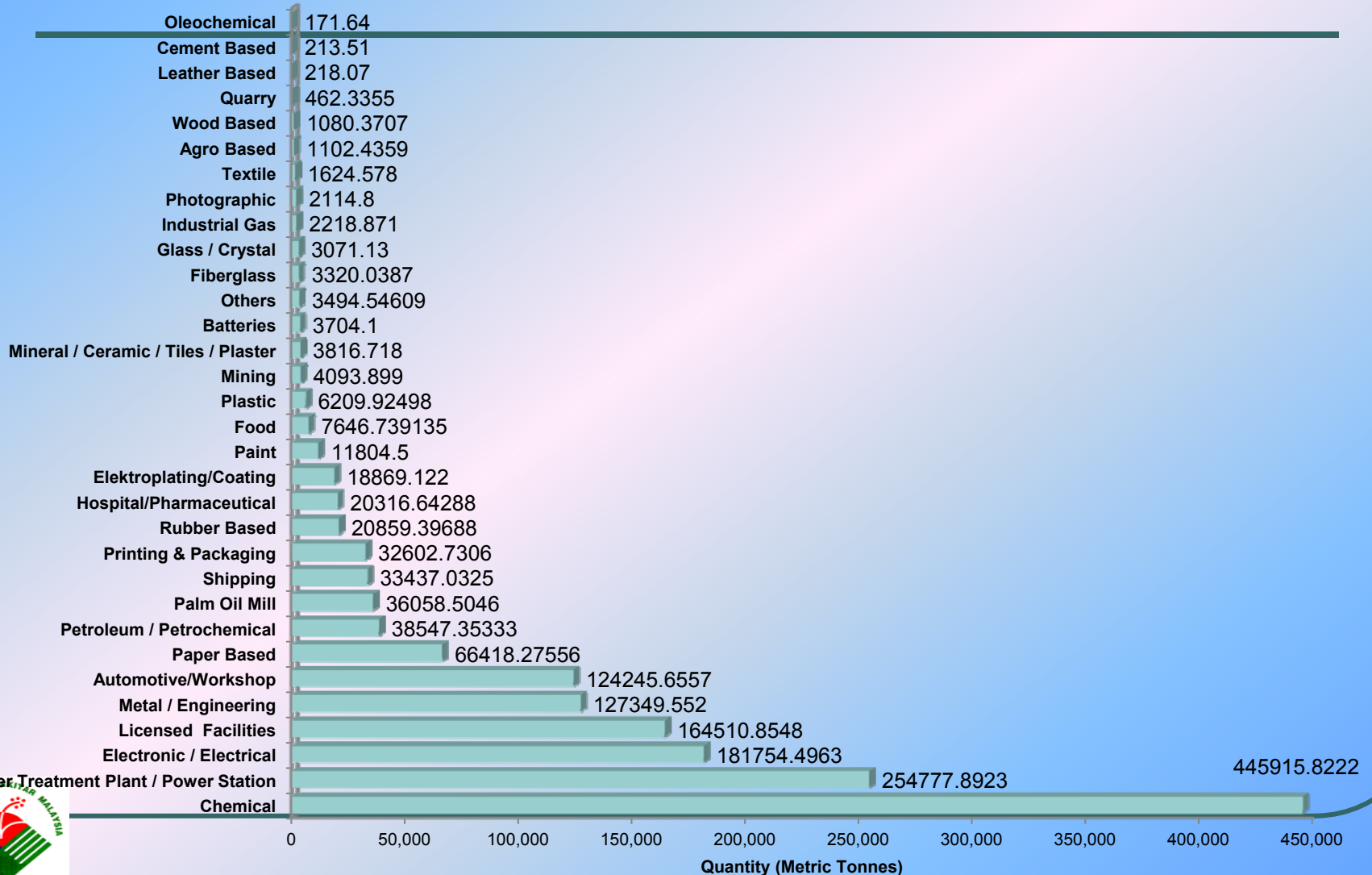
# Quantity of scheduled wastes by category, 2011

Figure 6.18 Malaysia : Quantity of Schedule Waste Generated by Category, 2011



# Quantity of scheduled wastes by Industry, 2011

Type of Industries



# HANDLING OF SCHEDULED WASTES, 2011

No.	Facility	Tones	Percentage (%)
1	Special Management	1,659,537.67	50.57
2	Local Off-site Recovery Facilities	937,769.83	28.58
3	On-site Treatment	340,460.16	10.38
4	On-site Storage	189,861.05	5.79
5	Kualiti Alam Sdn. Bhd	119,684.03	3.64
6	Off-site Clinical Waste Incinerators	17,795.47	0.54
7	Trinekens (Sarawak) Sdn. Bhd.	14,500.00	0.44
8	Foreign Facilities (Export)	1,961.00	0.06
	<b>Total</b>	<b>3,281,569.21</b>	<b>100.00</b>



# Generated Hazardous Waste Managed Under Special Management, 2011

No	Waste Category	Waste Code	Source	Tonnes	Percent (%)	Method of Disposal
1	Heavy Metal Sludge	SW 204	Drinking Water Treatment Plant	448,580.00	27.03	Sanitary Landfilled
			Industry	153,266.23	9.24	
2	Fly Ash	SW 104	Coal - Fired Power Plant	956,077.83	57.61	Reuse as raw material for product
			Industry	25,090.94	1.51	
3	Gypsum	SW 205	Industry	66,068.57	3.98	Sanitary Landfilled
4	Glue	SW 303	Industry	97.5	0.01	Reuse as raw material for product
5	Petroleum By - Product	SW 322	Industry	656.65	0.04	Recovered
6	Waste Containing Formaldehyde, Resin, Discarded Epoxy Powder	SW 320, 325, 418	Industry	6,412.19	0.39	Sanitary Landfilled
7	Discarded Pharmaceutical Product, Discarded Toner, Discarded Product	SW 405, 417, 429	Industry	124.5315	0.01	Sanitary Landfilled
8	Ash of Paper Sludge	SW 406	Industry	2,825.63	0.17	Sanitary Landfilled
9	Rubber coagulum waste	SW 321	Industry	334.00	0.02	Reuse as raw material for product
10	Spent Mixed Oil	SW 421	Industry	3.60	0.00	Reuse as releasing agent for mould cement
<b>Total</b>				<b>1,659,537.67</b>	<b>100</b>	

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# **Criteria for ESM facilities defined in the national law/regulation**



# Criteria / requirement on hazardous waste management facility in Malaysia (ESM standard for operation of waste management facility)

ESM Component	Overview of requirement/criteria	Relevant law/regulation
Compliance with legal requirements	Require an Environmental Impact Assessment (EIA) Require a licence for occupying and use of a prescribed premise	Environmental Quality Act 1974 Environmental Quality (Prescribed Activities)(Environmental Impact Assessment) Order 1987  Environmental Quality (Scheduled Wastes) Regulations 2005
Introduction of EMS	Establish policy or goals of environmental management is on voluntary basis	Malaysian Standards 14001 ISO14001
Identification of hazards or risks	identified and Measures to address is included as part of the Environmental Impact Assessment (EIA) prior to issuance of a licence	Environmental Quality Act 1974  Environmental Quality (Prescribed Activities)(Environmental Impact Assessment) Order 1987



# Criteria / requirement on hazardous waste management facility in Malaysia (ESM standard for operation of waste management facility)

ESM Component	Overview of requirement/criteria	Relevant law/regulation
Occupational safety and health	occupational, environmental, health and safety issues are identified and Measures to address is included as part of the Environmental Impact Assessment (EIA) prior to issuance of a licence	Environmental Quality (Prescribed Activities)(Environmental Impact Assessment) Order 1987
Monitoring, recording, reporting	Facility submits quarterly basis: - Hazardous wastes Inventory report (wastes received, stored,treated, recovered, destroyed, disposed of or otherwise handled) -Hazardous wastes consignment report - Air emission and water discharges monitoring report	-Environmental Quality Act 1974 -Environmental Quality (Prescribed Premises)(Scheduled Wastes Treatment and Disposal Facilities) Regulations 2005 -Environmental Quality (Scheduled Wastes) Regulations 2005
Awareness and competency of staffs	Waste generator / Persons licenced to operate waste management facility and employees must attend training programmes	Environmental Quality (Scheduled Wastes) Regulations 2005



# Criteria / requirement on hazardous waste management facility in Malaysia (ESM standard for operation of waste management facility)

ESM Component	Overview of requirement/criteria	Relevant law/regulation
Emergency Response	Emergency response plan must be submitted Report of Emergency Response Exercises conducted to be submitted	Environmental Quality Act 1974 Environmental Quality (Scheduled Wastes) Regulations 2005
Secure financial resource	A Banker's Guarantee of Permit Bank guarantee (Export – RM 25,000 and Import – RM 10,000) is required for issuance of Basel Import/Export and Transit	Environmental Quality Act 1974
Ensure ESM in downstream	Facility shall submit notification, inventory of toxic wastes generated, recovered, recycled, treated and disposed through on-line system (E-Consignment)	Environmental Quality Act 1974 Environmental Quality (Scheduled Wastes) Regulations 2005





# Technical Requirements for Hazardous Waste management Facility

- Hazardous wastes imported must be sent to an approved facility by the DOE
- Documents/Information to be submitted for approval to construct and operate hazardous waste management facility includes:
  - building plans and specifications
  - details of pollution control equipment to be installed
  - a site lay-out plan of proposed facility
  - details of process to be carried out
  - description of waste constituents and characteristics
  - and other information which the DG may require
- Hazardous wastes must be transported using licenced vehicle
- Emission report and environmental monitoring report must be submitted
- Trial burn test maybe required to be carried out by hazardous wastes management facility



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# Capacity and performance of ESM facilities



# INSPECTION OF FACILITIES/WASTE GENERATORS

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- ✓ Compliance with DOE's approval conditions
- ✓ Compliance with environmental regulations
- Enforcement visits on hazardous wastes premises licenced by DOE to manage the waste, compliance 95%.

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# **Information sharing on ESM facility and related waste streams**



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- List of approved waste management facilities and the waste categories that are processed in the facility are displayed at [http://eswis.doe.gov.my/contractor/contractor\\_list.php](http://eswis.doe.gov.my/contractor/contractor_list.php)



# E-Wastes Management System

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- ❑ E-waste inventory for Malaysia was conducted in 2008, with the cooperation of EX Corporation, Japan.
- ❑ Generation of e-waste in 2008 was about 688,000 metric tonnes ;and forecasted to be 1.11 million metric tonnes in 2020



# E-Wastes Management System

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- There is already a proper management of e-wastes generated from industries. Industries can send their ewastes to the recovery facilities licenced by the DOE.**
- Currently there are 138 e-waste recovery facilities in Malaysia. 16 out of them are the full recovery facilities and the others are the partial recovery facilities.**
- The main technology employed to recover e-wastes in terms of precious metals in Malaysia is still limited to wet chemical processes and electrolysis.**



# E-Wastes Management System

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- ✓ Currently all of the e-wastes recovery facilities in Malaysia are built and operated by private companies.
- ✓ Generally the e-waste recovery facilities are paying the industries or e-waste generators when they obtain the supply of e-wastes;
- ✓ A part from industries, another source of e-wastes is from domestic dwellings which is also one of DOE's impending tasks. The Department has conducted discussions with the National Solid Waste Management Department (NSWMD) on how to effectively collect household e-wastes.





# E-Wastes Management System

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- ✓ the public can now send their e-wastes, limited to used mobile phones, mobile phone's batteries and their accessories, computers and their accessories, as well as television sets to the e-waste collection centres, the addresses of which are posted in the DOE's website.
- ✓ The e-waste collection centres are managed by the solid waste concessionaires/local authorities



# PENANG E-WASTE PROJECT

**The Project for Model  
Development for E-waste  
Collection, Segregation and  
Transportation from  
Households for Recycling**



# PENANG E-WASTE PROJECT

- **A JICA Project for Technical Cooperation**

- **Major objective**

**To draw implications for new policies by Department of Environment (DOE) for enhancing e-waste collection from households through pilot projects in Penang Island**

- **Project duration**

**October 2011 – March 2013**

- **Pilot project : has started in June 2012**

- **Project members**

**DOE HQ, DOE Penang, MPPP**

**Experts dispatched by JICA**



# Surveys and current e-waste flow

- **Target products**

Television set, Refrigerator, Washing machine, Air conditioner,

Personal computer, Mobile phone

- **Questionnaire Survey**

Survey to e-waste generators

Household, Hotel, Office and others

- **E-waste flow survey**

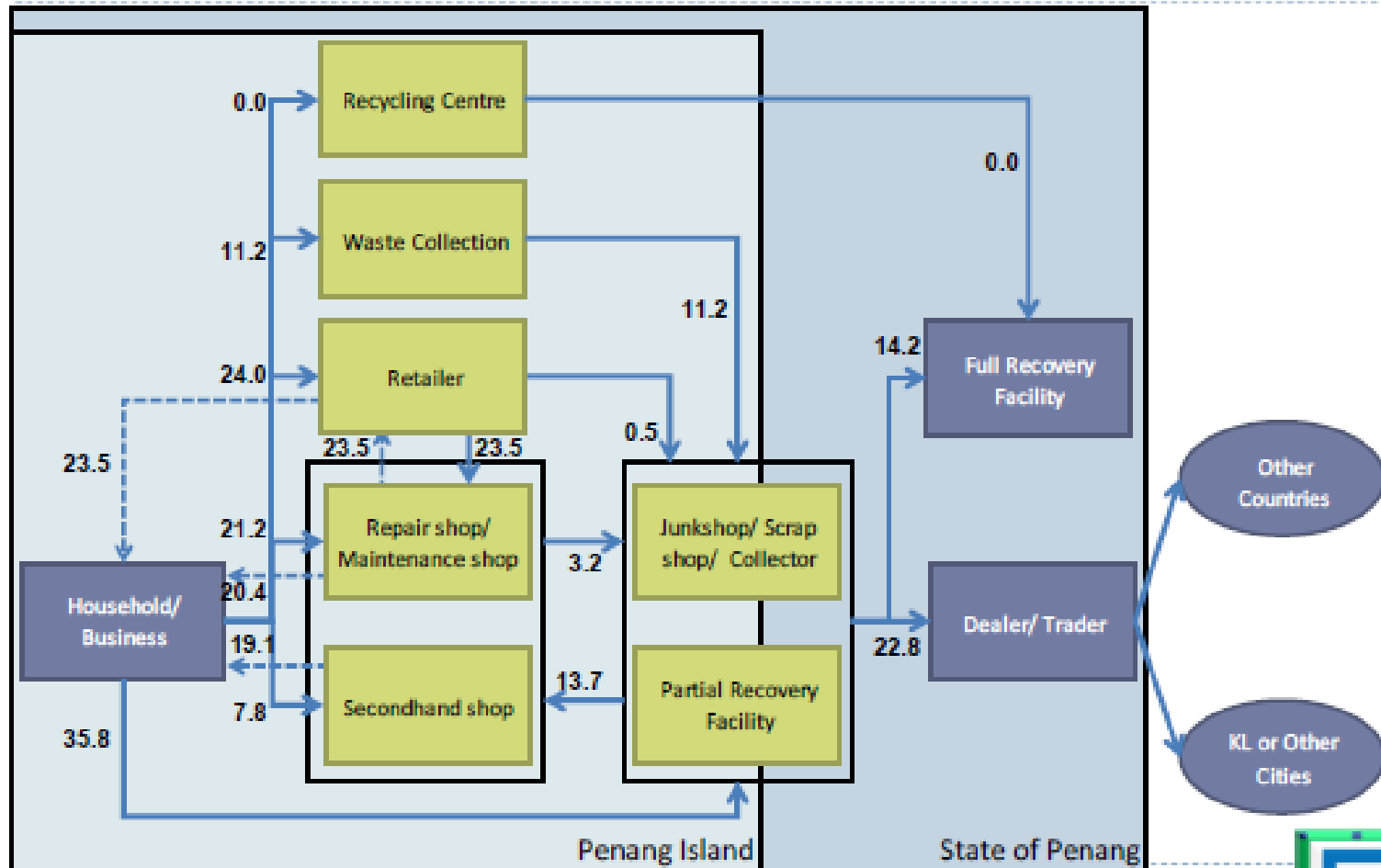
Survey to e-waste recyclers

Retailers, Secondhand shop, Repair shop, Junk shop, Partial ecovery facility, Full recovery facility, Dealer/Trader



# Surveys and Current E-Wastes Flow (Material Flow)

Current flow of discarded television set (%)

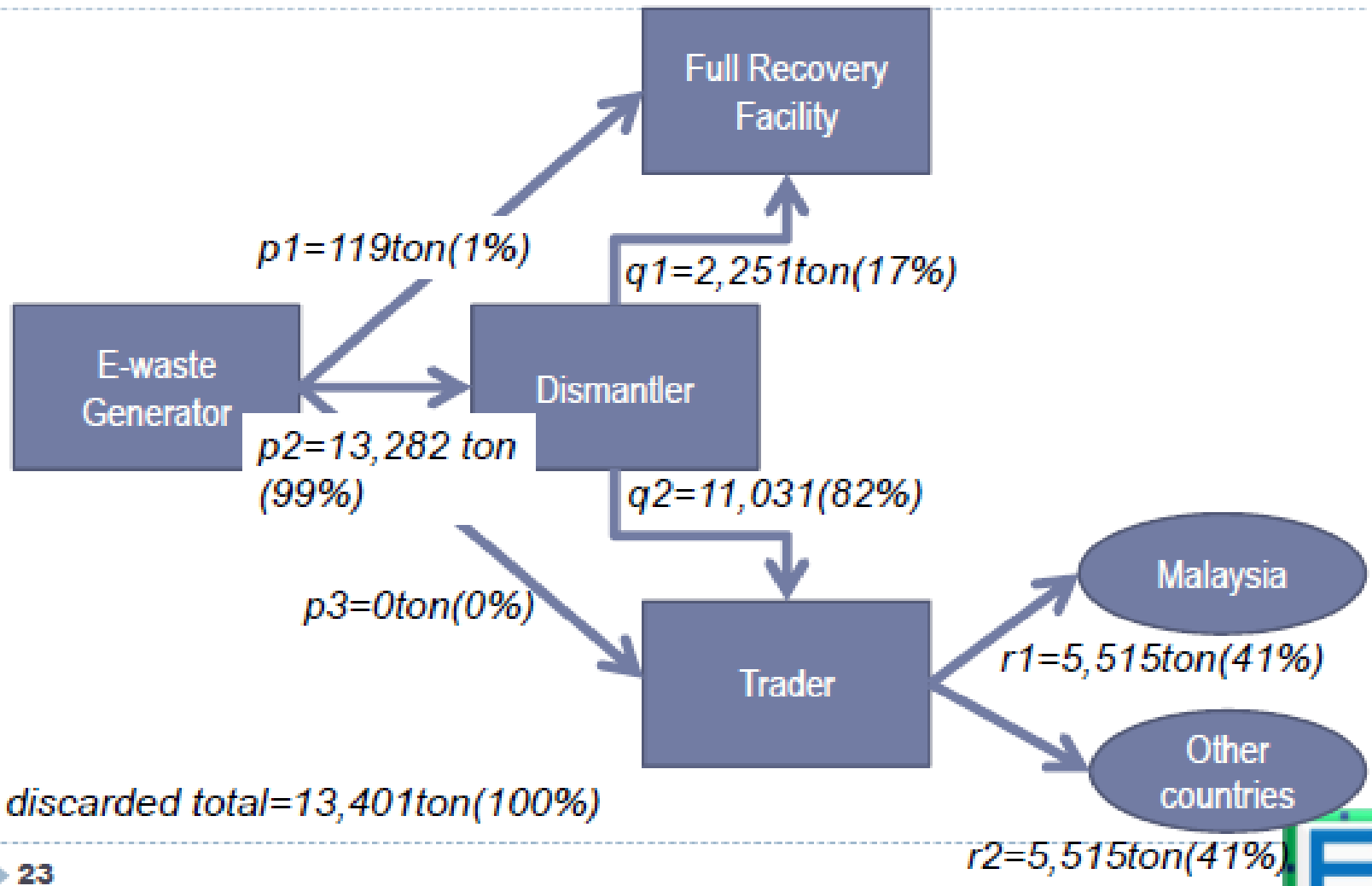


# Estimated Amount of E-waste discarded in Penang Island, 2011

	Number of unit currently discarded (in 2011) (unit)	Weight in 2011 (ton)
Television set	173,000	5,400
Refrigerator	39,000	2,100
Washing machine	20,000	800
Air-conditioner	63,000	2,800
Personal computer	274,000	2,000
Mobile phone	970,000	200
Total	-	13,300

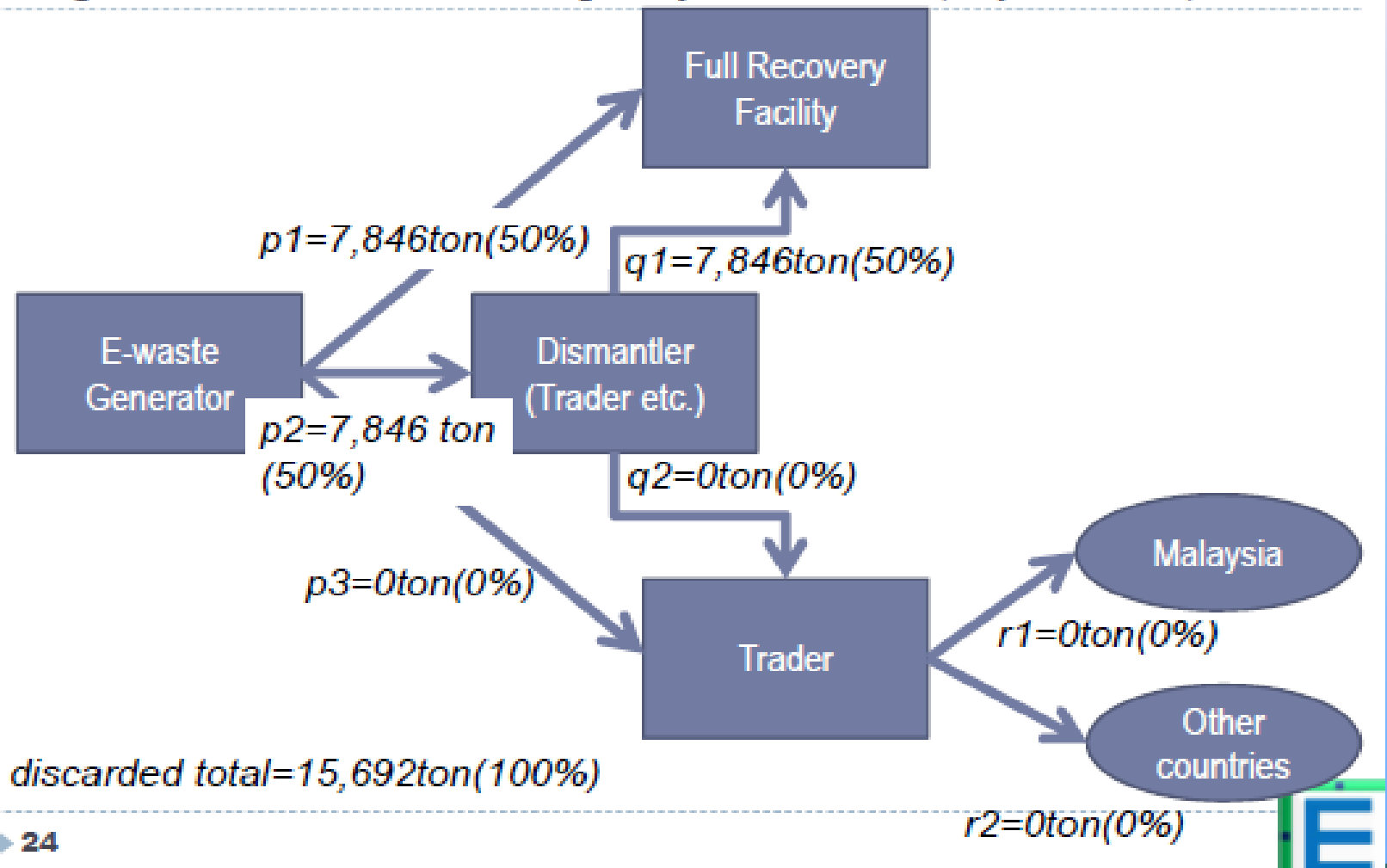
# ANAYLYSIS OF E-WASTE FLOW

## Current e-waste flow



# ANAYLYSIS OF E-WASTE FLOW

Targeted e-waste flow after a policy introduced (in year 2020)





# INPUT FOR PILOT PROJECT

## Points to consider for pilot project design

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- ▶ To increase collection points
  - ▶ Setting up new collection centers
  - ▶ Cooperation with the conventional recycling actors especially with the junkshops in towns
- ▶ To provide the service to take away e-waste from households when new products are delivered
  - ▶ Cooperation with EEE retailers
- ▶ To give enough incentive to households
  - ▶ Preparation of certain funds

# CHALLENGES IN DEVELOPING AND IMPLEMENTING E-WASTE MANAGEMENT

- Voluntary take back scheme of e-wastes has not been implemented widely by the producer/ importer of electronic and electrical equipment , may require Government to impose mandatory requirement of take back scheme;
- A thorough study needs to be done on how to establish a take back scheme of e-waste in Malaysia.
- Many consumers are in the opinion that e-wastes contain valuables materials hence they are supposed to be paid when they disposed of the e-wastes rather than to pay to the recyclers.



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**THANK YOU**  
**TERIMA KASIH**

