



Nehlsen®

NEHLSSEN GHANA LIMITED

**APPROPRIATE & SUSTAINABLE WASTE MANAGEMENT
CONCEPTS & THEIR IMPLEMENTATION IN WEST AFRICA**



The Nehlsen Group

1



Identification of Problem – Current Situation

3



Sustainable Waste Management Solutions

5



Implementation Steps

6



The Nehlsen Group - International Locations

Nehlsen Trinec
Location: Trinec, Czech Republic

PUS Przedsiębiorstwo Usług Sanitarnych Sp. z o.o.
Location: Kwidzyn, Poland

Nehlsen Romania
Location: Bucharest

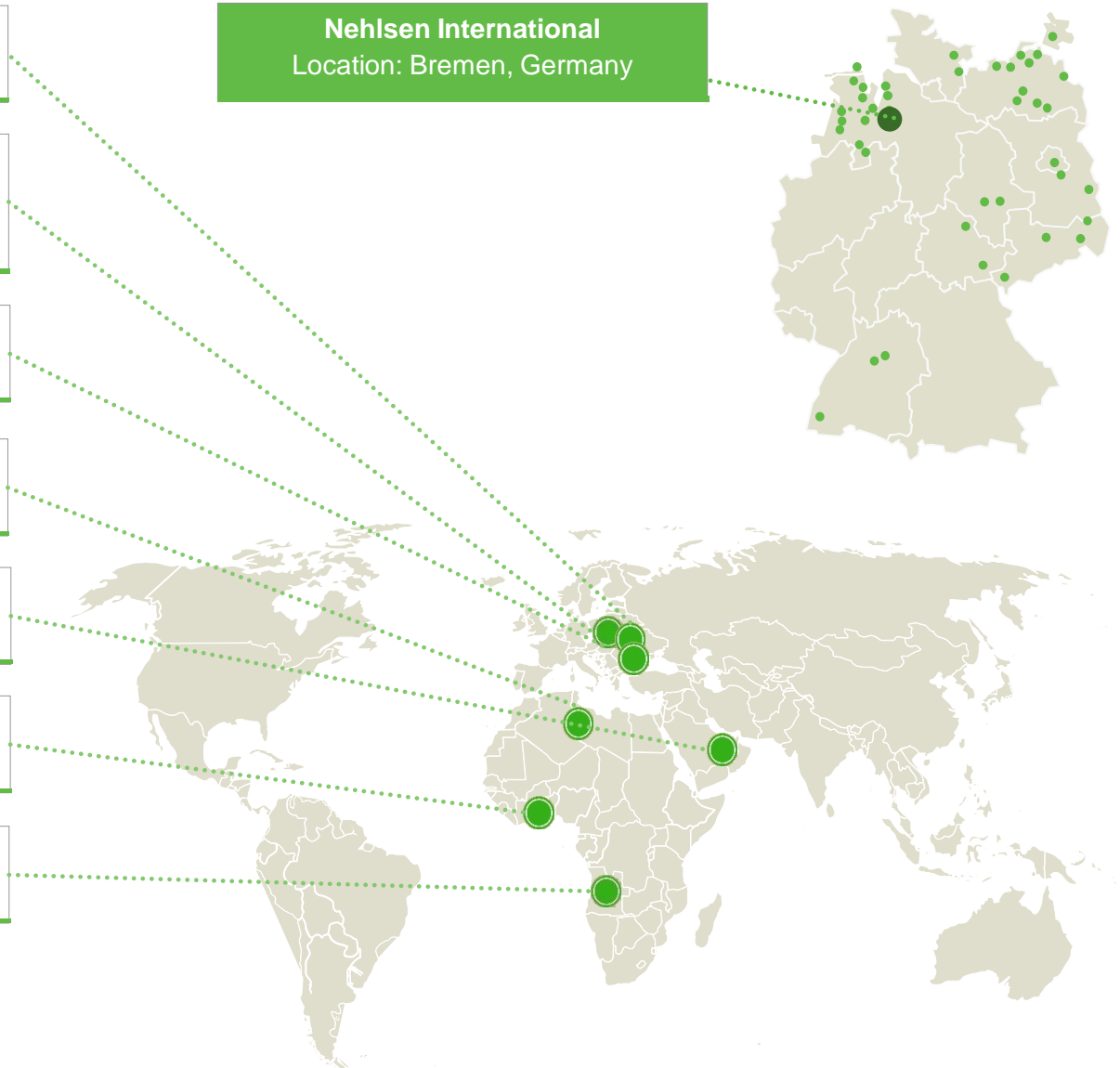
Nehlsen Tunisia
Location: Tunis

Nehlsen Middle-East LLC
Location: Abu Dhabi, UAE

Nehlsen Ghana Ltd
Location: Tema

Nehlsen Ambiente Angola Lda.
Location: Luanda

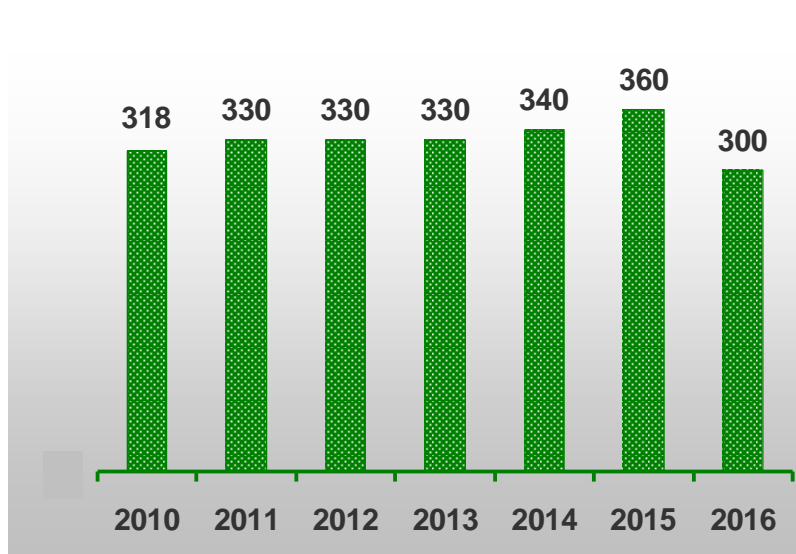
Nehlsen International
Location: Bremen, Germany



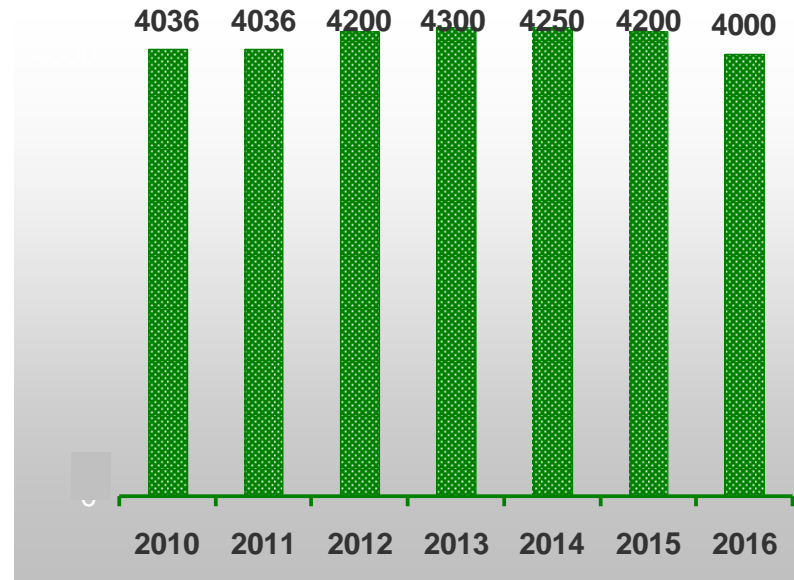
The Nehlsen Group – Facts and Figures

- Founded 1923, 100% family-owned
- Headquarters in Bremen, Germany
- National and international waste management solutions for municipalities, governmental bodies, industries etc.

Turnover in Mio. €



Employees



FACTS & FIGURES: NEHLSSEN GHANA LTD

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- Founded in October 2011 (with 90% foreign ownership)
- 816,000GHc Turn Over as at 2016
- 13 Employees
- Four (4) Suction trucks
- Currently 100% Ghanaian ownership



Services and Solutions Provided and Applied

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Municipal & Industrial Services



Technology



Material Flow Management



Sale of Equipment



Technologies & Technical Solutions Provided and Applied

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Waste
Collection



Street
Cleaning



Manual
Separation



Mechanical Sorting and
Treatment



Biological
Treatment - Rotting



Biological
Treatment - Digestion



RDF Production



Waste to Energy
(CHP)



Chemical-Physical
Treatment



Cryogenic
Separation



Landfill
Operation



Equipment Sale



2. Identification of Problem – Current Situation

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WASTE (TONS)	ACCRA	TEMA	GHANA
Daily	2,200	1,600	13,500
Annually	805,200	585,600	4,941,000
Recyclables	100,650	73,200	617,625
Paper – 6.0%			
Plastics – 3.5%			
Metals – 3.0%			
Others			
Glass – 2.5%			
Textiles – 1.7%			
Inert mat. – 17.1%			
Organic – 65.0%			
Population	4,300,000	860,000	26,500,000

Catchment Divisions

Domestic (house-to-house)	– 70.0%
Street sweeping	– 12.1%
Industrial collection	– 16.7%
Others	– 1.2%



Basic situation

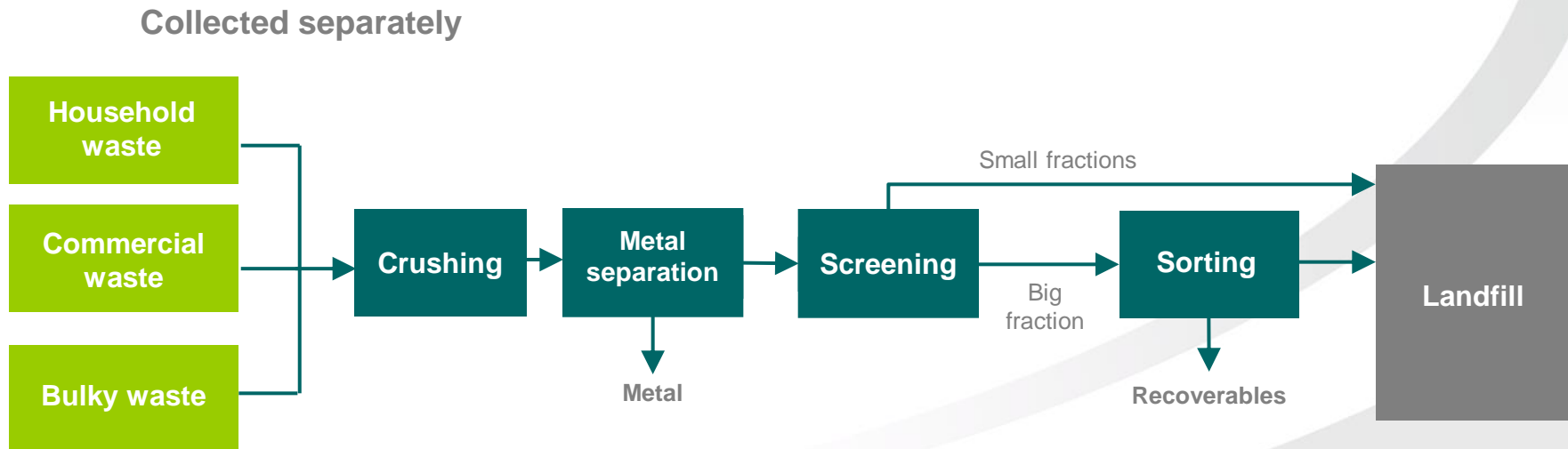


Landfill site often to be remediated!

Developing a waste treatment concept (II)

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Installing of mechanical treatment technologies

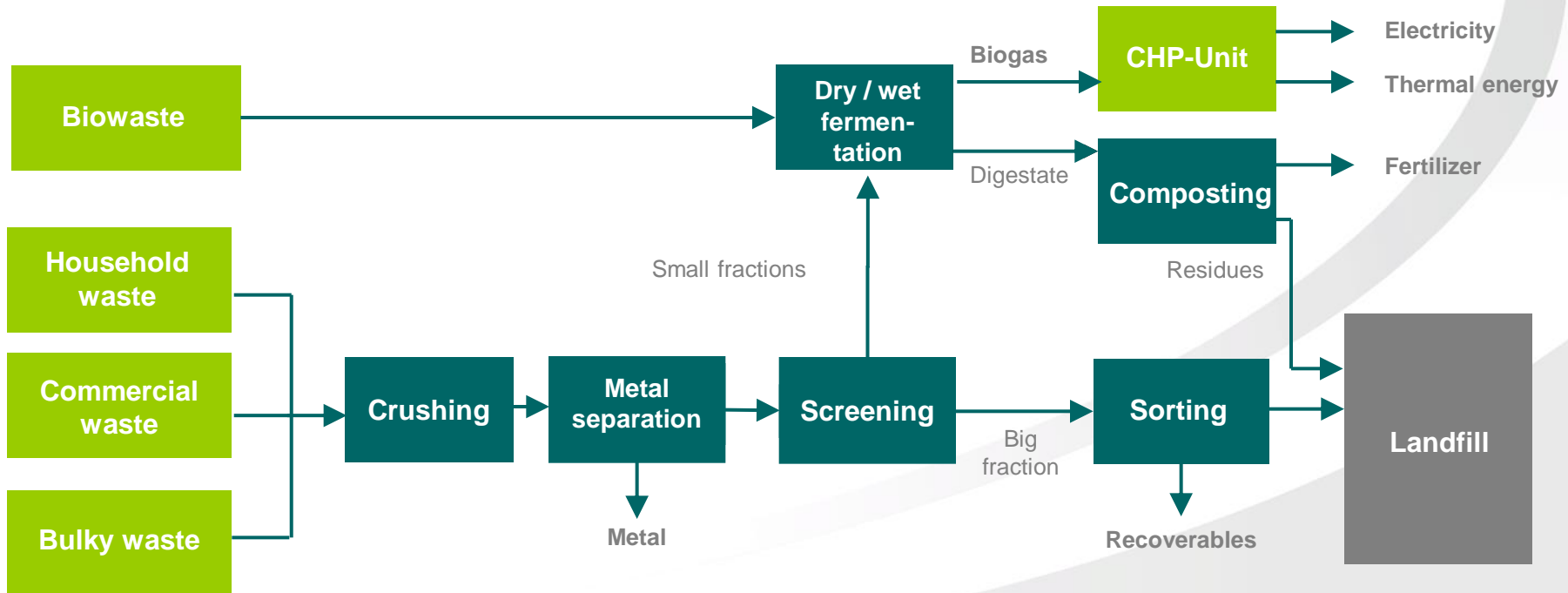


Recovering marketable commodity-like resources!

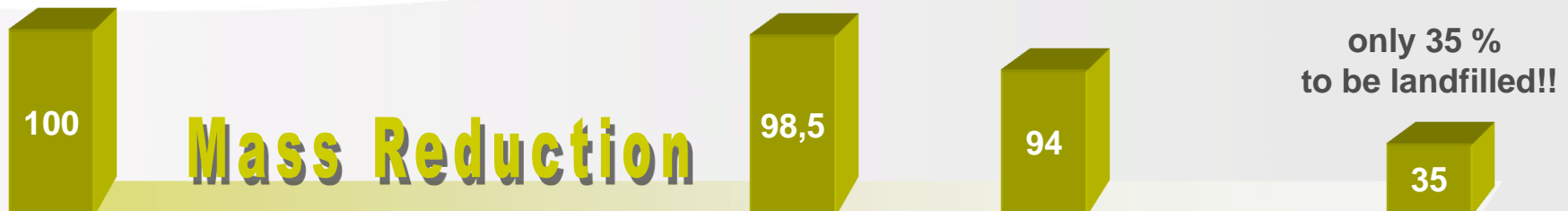
Developing a waste treatment concept (III)

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Integrating biological treatment technologies



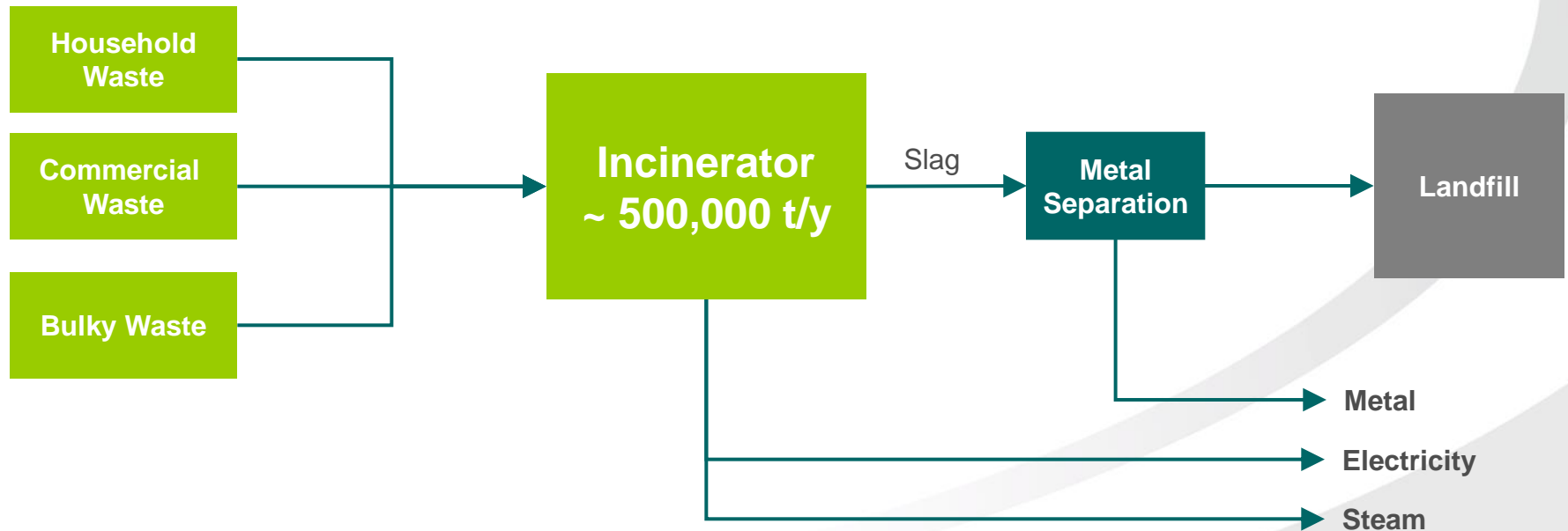
Installation of first waste to energy unit!



Development of a Waste Treatment Concept (IV)

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Installing Incinerator



Mass Reduction

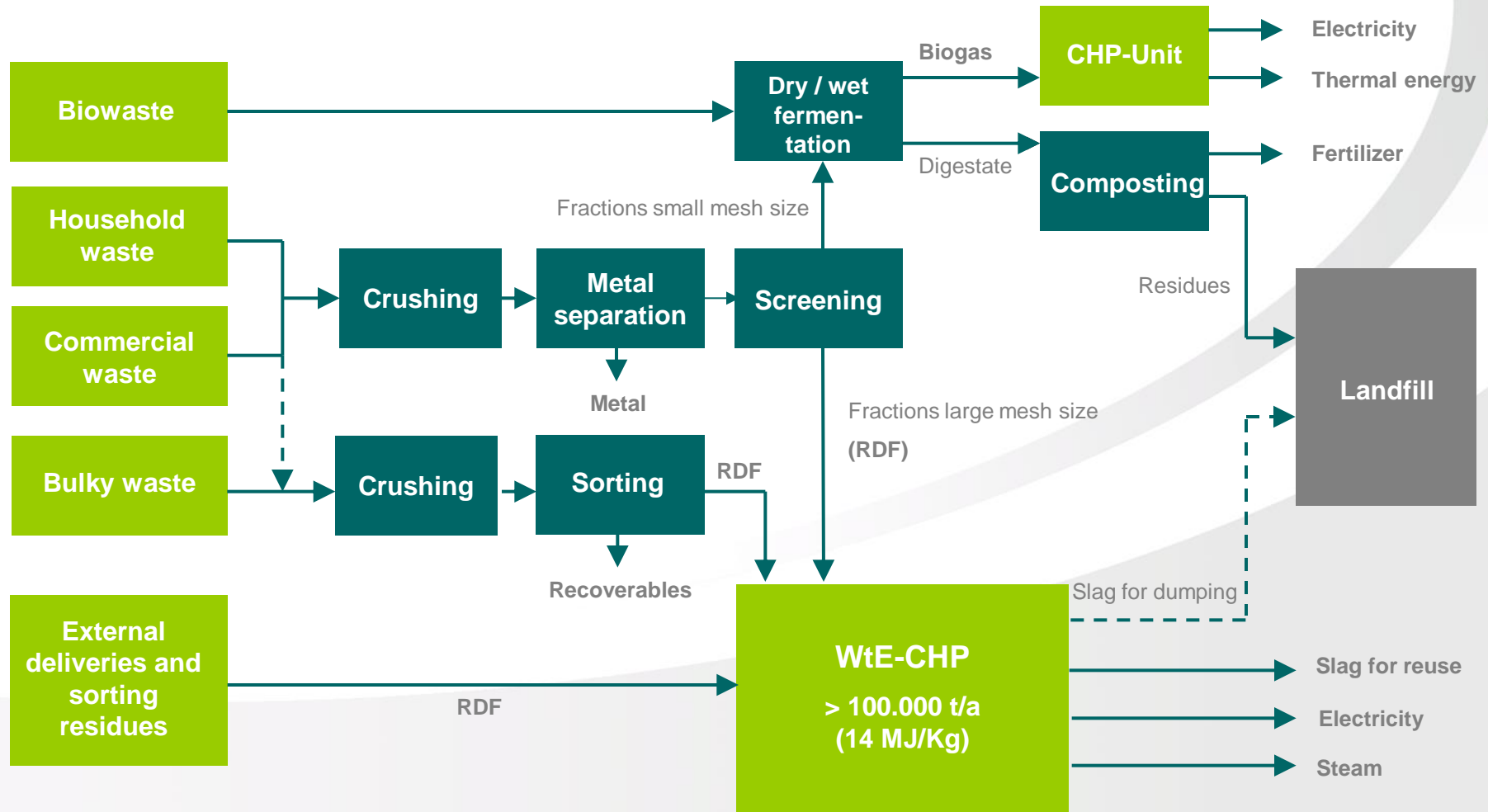
only 25 %
to be landfilled!!



Development of a Waste Treatment Concept (V)

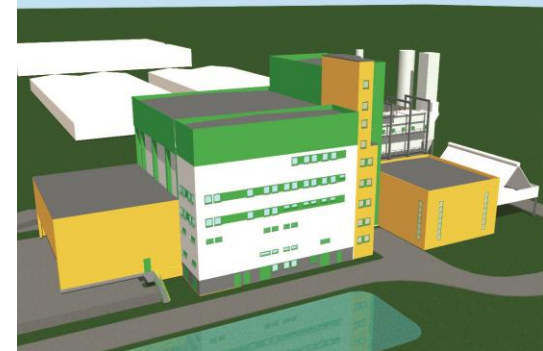
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Modular systems provides maximum flexibility



Modular WtE-systems / incinerators

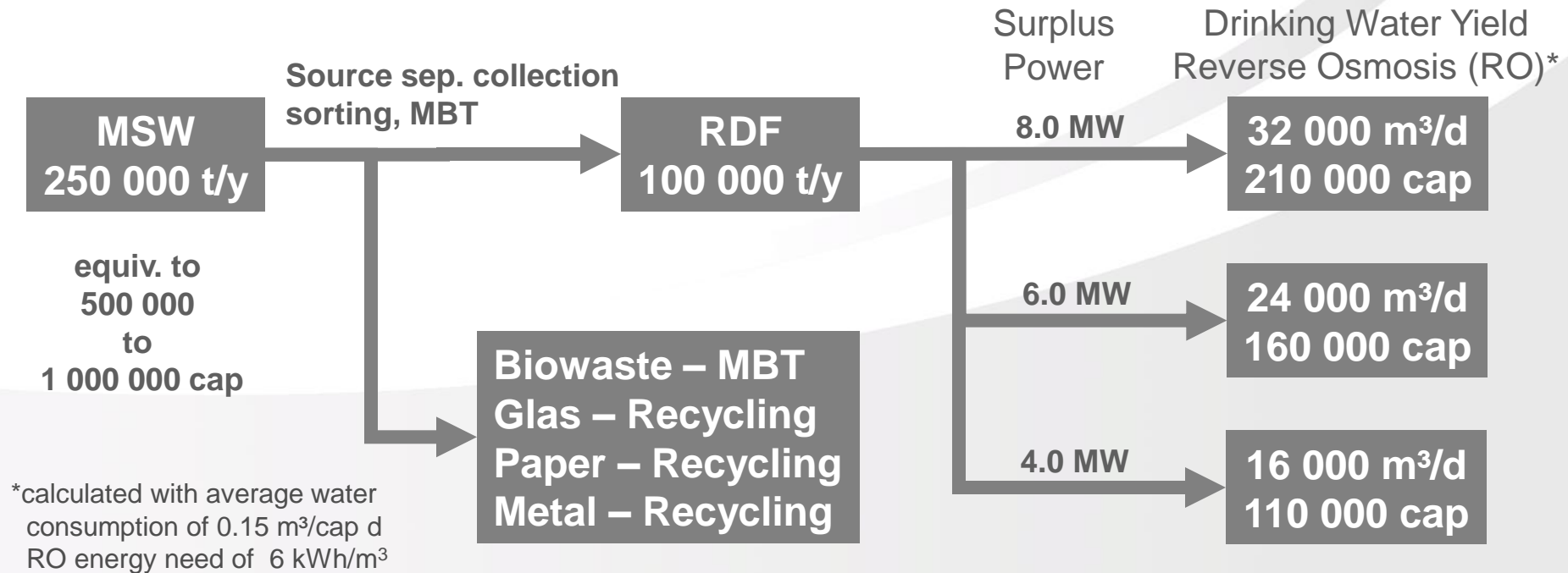
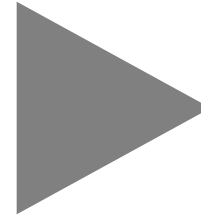
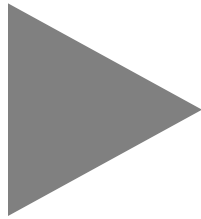
Module	No lines	Input [at heating value: 14 MJ/kg] To/y	Thermal Capacity MW	Output* electr. power steam
NBC 50	1	100,000	50	10 MW _{el} (100,000MWh/y) 400,000 to/y
NBC 70	1	150,000	70	15 MW _{el} 600,000
NBC 100	2	200,000	100	20 MW _{el} 800,000 to/y
NBC 140	2	300,000	140	30 MW _{el} 1,200,000 to/y
NBC 210	3	450,000	210	45 MW _{el} 1,800,000 to/y



*maximum output rate each,
if plant is operated as CHP, electric/thermal output is lower

Based on the 2 module size of a complete production line, several combinations are possible to adapt the plant to suit needs and find the best solution.

Waste to Energy ➤ Waste to Water using RDF



- Type and organisation of collection system will have a major impact on quality and quantity of materials recovered from waste
- Educating the public through the media and involving pupils in sanitation activities
- Co-operation between waste management companies and the state
- Using waste management strategies as a means of job creation
- Gradual enactment and implementation of legislations to support and promote waste management concepts from district to metropolitan assemblies
- Grants and assistance to waste management companies by the state. E.g. tax holidays, etc.

For further information on the planning, construction and/or operation of:

- Combined heat and power plants using refuse-derived fuel
 - Mechanical biological stabilisation/treatment plants
 - Composting/digestion of green, bio and food waste
 - Sorting plants for household packaging, commercial, construction and bulky waste
 - Cryogenic separation technology for contaminated packaging
 - Chemical-physical treatment of liquid hazardous waste
 - Collection, transport and supply of trucks, bins, containers including services
 - Landfill sanitation and landfill gas utilisation or for any other requirements, such as waste management concepts, surveys, studies etc.
- please visit our websites:

www.nehlsenghanalimited.com

www.nehlsen.com or contact:

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Nehlsen®



Vielen Dank für Ihre Aufmerksamkeit.
...Thank You For Your Attention