Handling E-Waste at Agbogbloshie
Ghana

E-Waste Management Issues & Challenges
29.11.2019 IIT Madras, Chennai
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1. What we do

Trading & Operations

International hazardous waste trading

- Hazardous industrial & medical waste disposal
- WEEE mediation, transportation and recycling
- Non-hazardous municipal waste exports
- Valuable hazardous waste brokerage service

In case local disposal capacities are inadequate or not existing at all: using our worldwide network of internationally certified recycling, disposal and treatment facilities for hazardous and non-hazardous waste; we offer tailor-made export solutions for you.
1. What we do

Trading & Operations

On-site operations and technical supervision

- Basel Convention notification service
- On-site packing and labeling of hazardous waste (IMDG & ADR)
- Worldwide logistics management, specialized in solutions for crisis areas
- Cooperation with certified EU hazardous waste disposal facilities

Hazardous waste streams require special handling, packing, licensing, labeling, transportation measures, and disposal systems. We offer a worldwide on-site A-Z service to fulfill and exceed all respective national and international regulations.
1. What we do

Consulting

Global waste management consultants

- Global waste management project development
- Waste management system consultancy for hazardous and non-hazardous waste
- Waste treatment & disposal facility concepts for hazardous and non-hazardous waste
- Hazardous waste interim storage concepts
- A-Z on-site project management

To protect the environment and public health, local waste management systems need to be strengthened and developed. Our highly specialized and experienced consultants support local authorities and investors for profitable and environmentally sound business models.
2. General Approach

Project Locations

Europe: Greece | Italy | Portugal | Spain | UK
Middle East: Afghanistan | Iraq | Iran | Jordan | Kuwait | Lebanon | Oman | Pakistan | Qatar | Saudi Arabia | UAE | etc.
Latin America: Argentina | Brazil | Guatemala | Mexico
Africa: Algeria | Ghana | Kenya | Namibia | Tunisia
Asia: Indonesia | Hong Kong | Malaysia

Project Office locations: Germany | Kuwait | Brazil
India: Solid Waste – Appropriate Technologies (SW-APT) Decision Support Tool version 2.0

As the result of rapid urban dynamics, urban waste management in India remains a challenge. For that, government in India seeks for a support to have a better access to the updated waste management solution.

Solid Waste – Appropriate Technologies (SW-APT) is decision making tool to support governments in choosing technology and service providers.

BFS is supporting the development of a version 2.0, enhancing technical know-how database, financial aspects and creating an user-friendly interface for easier access. This tool will help authorities, municipalities among other in tender processes, due dilligences, contractual services etc.

Project Period: 15.08.2019 - 15.08.2020
Customer: GIZ India
City: 40 cities across 4 regions

Project Description

• Technology assessment
• Decision support tool development
• Training programs for Local Bodies
Country Profile

The project is carried out as a joint project by the member companies BlackForest Solutions GmbH, tilia GmbH and uve GmbH for management consulting.

The technical coordination of the project lies with eclareon GmbH. In addition to GWP, RETech, Tilia and BlackForest Solutions, the other member companies of both associations, Andreas von Schoenberg Consult, BiPRO GmbH, Dr. Ing. Burghard-ibd and Intecus GmbH, were involved as authors of country profiles.

Project Period: 2017 - 2018
Customer: German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
City: Berlin

Download: https://www.retech-germany.net/fileadmin/retech/02_projekte/laenderprofile/Laenderprofile_17_18/Laenderprofil_Indien_2017-18.pdf
3. References

Start-Up Accelerator

In collaboration with POWERED Accelerator, BFS hosted an open source knowledge transfer day on Waste to Value.

The Open Source Economy Days (OSCE Days) is an open group of people that started in 2015 with a global event promoting Open Source as the key driver for a Circular Economy.

In the past years, OSCE days as a knowledge transfer platform has managed to gather people from politics, business, science, tech & start-up scene and NGOs to share, discuss and develop circularity solutions together.

Project Period: 10.2019
Customer: GIZ India
City: Mumbai

http://powered.org.in/accelerator/
Improving Recycling in Sri Lanka

BFS supports the GIZ SME Sector Development program. The program has 5 activity fields:

1. Framework conditions for SME Promotion
2. Technology Transfer and Market Access
3. Financial Inclusion
4. Innovation and Entrepreneurship
5. Wilpattu National Park and its influence zone.

BFS in particular supports on technology transfer by assisting public and private service providers in developing new business models for delivering technology solutions to SMEs in the region. BFS carries out a technical and financial feasibility study for the implementation of a holistic recycling system for selected post-consumer recyclables of the food industry in the Western Province of Sri Lanka. The selected post-consumer recyclables are defined as: PET, Tetra Pak and aluminium cans.

Project Period: 15.08.2019 - ongoing
Customer: GIZ Sri Lanka
City: Colombo
4. E-waste Handling in Ghana

Ghana’s Agbogbloshie e-waste dumpsite among world’s top-ten most toxic places

Presence of Pb of 18,125 ppm in soil, while US EPA standard is 400 ppm.

Sample done on 5 workers on site found Al, Co, Fe, and Pb levels above the ACGIH* limit value. One volunteer had Al exposure levels of 17mg/m3 compared to the threshold of 1.0mg/m3.

*American Conference Of Governmental Industrial Hygienists

Source: Blacksmith Institute and Green Cross Switzerland 2013, The Top Ten Toxic Threats: Cleanup, Progress, and Ongoing Challenges
4. E-waste Handling in Ghana

*Agbogbloshie*

*Source: BFS, 2018*
4. E-waste Handling in Ghana

Source: BFS, 2018
4. E-waste Handling in Ghana

Agbogbloshie

Source: Film Trailer “Welcome to Sodom”
4. E-waste Handling in Ghana

Facts and Figures

- WEEE imported into Ghana in 2009 added up to 215'000 tons and a per capita import of 9kg.
- About 30% comprised of new products and 70% second hand.
- Around 15% of the second hand imports was estimated to be unsellable.
- Another 20% of the imports can be serviced (repaired/refurbished).
- Due to high amounts of second hand imports, Ghana has a high availability of second hand WEEE that can be purchased at comparatively low prices.
- This makes these products available for a larger share of the population, compared to other countries.
- On the other hand, second hand products have a shorter lifespan compared to new products, which leads to a higher e-waste generation.

Source: UNEP and Green Advocacy Ghana2011, Ghana e-Waste Country Assessment
4. E-waste Handling in Ghana

Current Situation

In Ghana
4. E-waste Handling in Ghana

Legal Framework

E-waste Framework

- Reduction of hazardous substances in products
  - L.I. 2250 (S. 54)

- Combat of illegal e-waste trade
  - Act 917 (Part 1)

- Reform of e-waste handling + financing instruments
  - Act 917 (Part 2)
  - L.I. 2250
  - Technical Guidelines
  - MESTI-KfW Project
5. **Project Description**

   *Objectives*

1. Minimize negative environmental and human health impacts from improper management of electronic wastes.

2. Transition the most polluting e-waste recovery activities from the informal sector to the formal sector **without removing jobs from the lowest income group.**

3. **Test** a financial/pricing mechanism.

4. Support the National System with lessons learned
5. Project Description

Concept

(1) Satellite HOC

(1) Handover Centre

(4-8) Accredited Recyclers

(50) Registered Collectors

Supply Side

Demand Side
5. Project Description

• Sheltered storage size: 1,500 m²
• Total yard size: >4270 m²
• 4 main WEEE input streams:
  • Thermoplastics,
  • Cables,
  • 2 fractions to be identified during Inception Phase
• Lockable storage containers for valuable materials
• Hazardous materials storage
• Target: Storage of accepted WEEE amounts for at least 3 months
5. Project Description

Incentive System

- **FC Project Fund**: pays collection top-up and subsidizes sound recycling.
- **Handover-Center**: buys eligible hazardous e-waste.
- **Accredited Recycling Companies**: offer sound recycling and disposal for eligible e-waste.
- **Informal Collectors & Scrap Dealers**: delivers e-waste.

Flow Diagrams:
- Money Flow: Green arrows.
- Material Flow: Red arrows.

According to type of e-waste: call for tender or auction.
5. Project Description

Market Analysis
5. Project Description

Material Receipt – Example Cables

REQUIREMENTS CHECKLIST FOR CABLES

The following is a list of the criteria that has to be observed when accepting the waste fraction cables. These criteria have to be followed for point 1 on the checklist.

☐ Check fraction against requirements

Cables that are accepted

✓ Thin, medium and mixed cables
✓ Any cable length >50cm OR cables <50cm which are intact
✓ Cables that do not have one or more massive cores Ø > 2.5mm
✓ Deliveries with a total weight ≤ 500 kg per person

Cables that are not accepted

✗ Cables with one or more massive cores Ø > 2.5mm
✗ Cables that are shorter than 50cm and are not intact
✗ Cables that have signs of burning
✗ New cables
✗ Cables of unclear origin that might come from illegal activities (e.g. stolen from installations)
✗ Cables with no metal core
✗ Deliveries with a total weight > 500 kg

Exemplary photo of cables that are accepted

Exemplary photo of cables that are not accepted
# 5. Project Description

## Challenges and Next Steps

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<tr>
<th>Next Steps</th>
<th>Challenges</th>
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<td>1. Start purchasing e-waste at satellite HOC and test different pricing mechanisms</td>
<td>1. Engage the informal sector in a holistic approach</td>
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<td>2. Tender the HOC</td>
<td>2. Avoid income disruption from informal sector</td>
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<td>3. Construct and commission the HOC</td>
<td>3. Develop local treatment capacity</td>
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<td>4. Buy, store and transfer e-waste</td>
<td>4. Incorporate lessons learnt into the national waste framework</td>
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Thank you!

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