

Integrated Management of Used Water in Neighborhoods of Leon/Nicaragua



LAS AMÉRICAS

November 11, 2015
BORDA Symposium

Acceso Universal a Servicios Básicos

Central Role of Wastewater Management on Sustainable Development in Nicaragua



BORDA 

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Central Role of Wastewater Management on Sustainable Development in Nicaragua

Based on BORDA's Decentralized – Integrated – Participatory Approach



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Transforming a slaughterhouse nightmare into an acceptable municipal service



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BORDA aims at contributing to create:

Livable cities

Livable villages



Transforming W&S mess into wellness



Focusing on the less fortunate 50%



Contributing to turn the Municipality of Leon Into a better place to live



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Background

- Municipal Slaughterhouse
- Meat dealers /butchers rent the facilities
- 30 cattle and 30 pigs slaughtered /day
- No line-slaughtering system
- “Hot” or unrefriegerated-meat
- Slaughtering at night
- Little supervision/hygiene control



Background

Slaughter house was already upgraded

- Line-Slaughtering for pigs → Not in use
- Electroshock stunning → Not in use
- Tiled walls at cow-slaughtering hall
- Wastewater treatment system → Never worked.



What is the nightmare at the Slaughterhouse?



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Poor Municipality runs a slaughterhouse



Slaughterhouse at a residential area



Animals are beaten to death



No division into dirty & clean areas



The poorest collect the last meat flakes on the bones



15 min. later the dogs will enter for cleaning



Daily 60.000 L wastewater flow into the municipal sewer



1.5 tons/d org. residues transported to the landfill site



Public sewer blocked / Street flooded by bloody wastewater



Neighborhood fights the slaughterhouse



Initiation of the Project

Municipality has a problem:

- Neighborhood is fighting the slaughterhouse.
- Ministry of Environment wants to close it.

BORDA looks for Pilot Grounds for DSS-Projects :

- Their problem is our opportunity



The Vision for the slaughterhouse

- A slaughterhouse generating decent meat
- Animal respected although slaughtered
- Cero - Waste business: No liquid, no solid wastes
 - Slaughterhouse linked to urban agriculture
 - “GreenBull” Products as valuable as meat
 - Org. fertilizer production



Explaining the project to the Local Government

BORDA to Mayor

“Sir, we have a decentralized, integrated wastewater treatment solution for your slaughterhouse”

“ And Sir, we follow strictly a participatory approach”



Explaining the project to the LG

Mayor to BORDA

“Mr., where can I see one of these decentralized, integrated wastewater treatment solutions ?”

Mayor thinks, but does not say it :

“Does participatory mean these fellows will hold community meetings and so on ?”



1st Agreement on Common Ground only

Treatment of residues required by Municipality

Treatment required by BORDA's Innovative DSS

Project Contract with BORDA :

40.000 EUR Municipality of Leon

120.000 EUR BORDA and Partners



2nd Agreement on New Common Ground

Municipality provides unused land

BORDA promises Residue-Conversion Enterprise

Project Contract with BORDA :

0.00 EUR Municipality of Leon

50.000 EUR BORDA and Partners



BORDA aims at:

Participatory Approach

It is considered the Target Group knows best what they need.

 **If it is not true → building on false assumptions**

Target Group contributes to the project

 **passing on the responsibility for potential failure**

Often it steals poor people's time



Participatory



BORDA aims at:

Participatory Approach

Community involvement may be interpreted as political act

Community to be involved as one of the stakeholders

Community involvement requires time

Community contribution not at infrastructure level



BORDA aims at:

Innovation

Innovative Decentralized Sanitation Solution (Packages)



Innovative: introduce something new or different



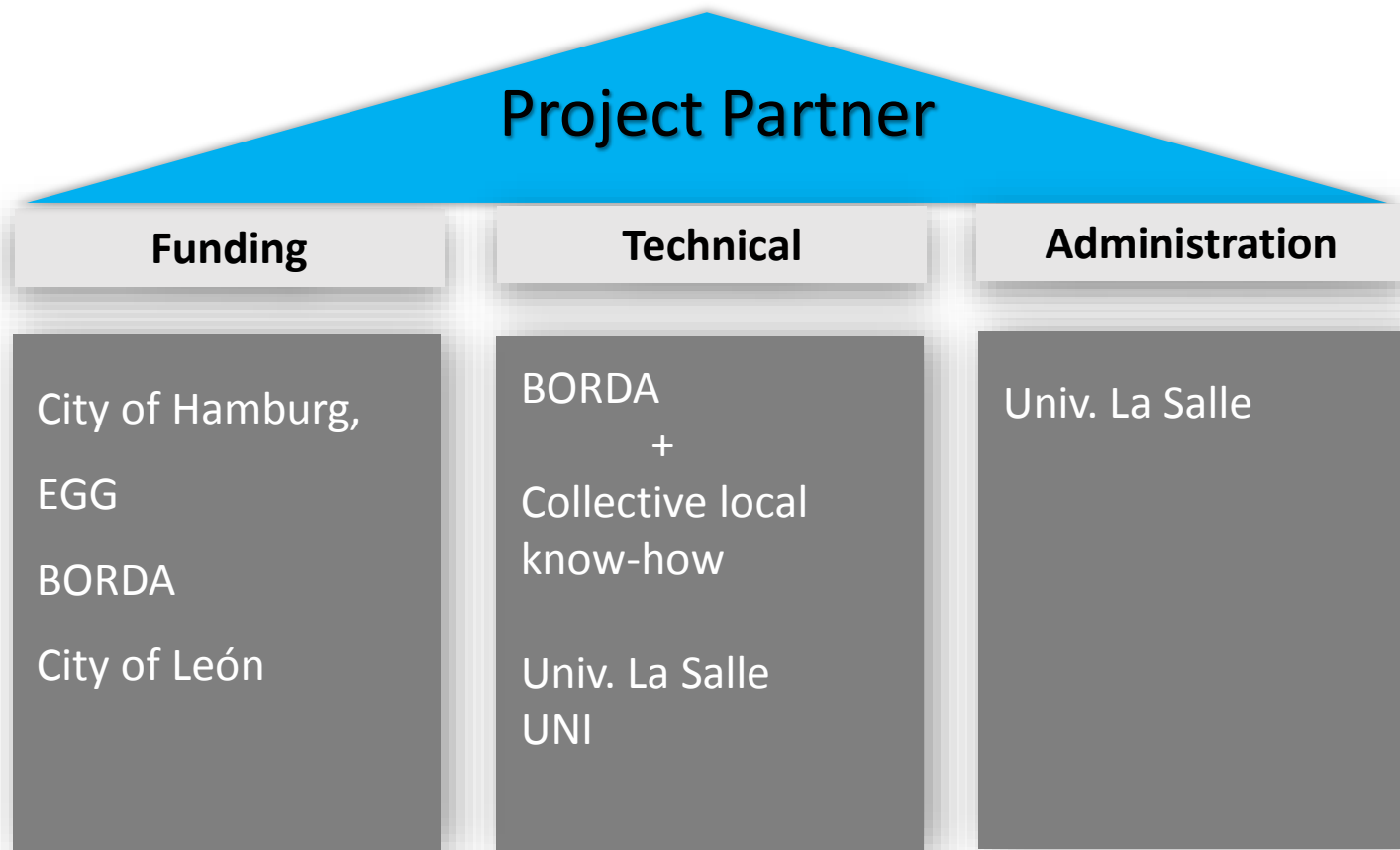
Piloting aspect linked to it



Risk of piloting has to be beard by DC



The NaKoPa - Project



The NaKoPa-Project

An integrated Project

A multilayered project on environmental management

4 Components



Pilot Intervention

Link with the academia

Extrapolation to the watershed

City exchange

Main Polluters of Chiquito River in León

Municipal Slaughterhouse

1. Component

One of the river polluters provided with sustainable environmental management.



Leon's Municipal Slaughterhouse



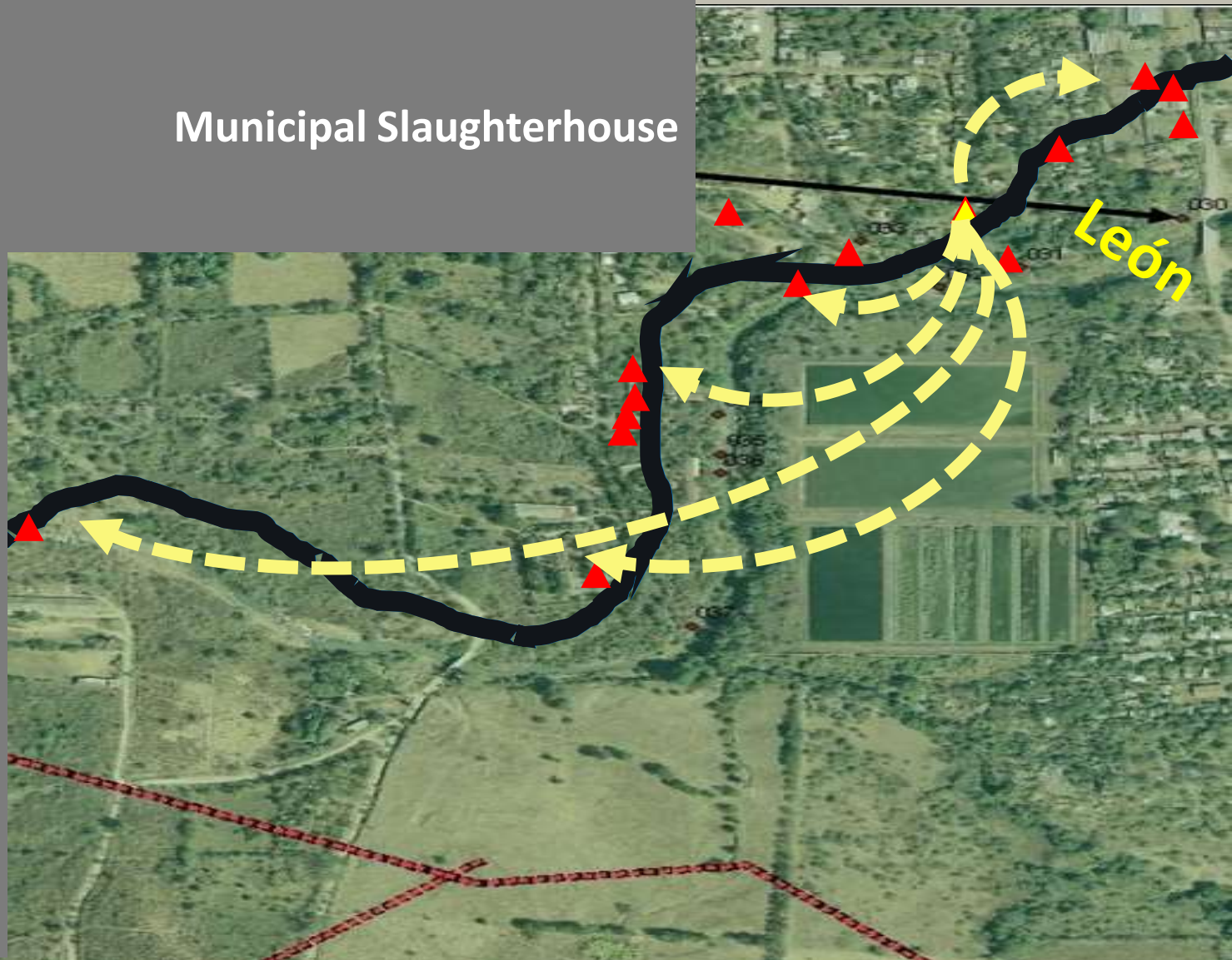
2. Component

Colleges, universities in Nicaragua receive a reference project for practical teaching

3. Component

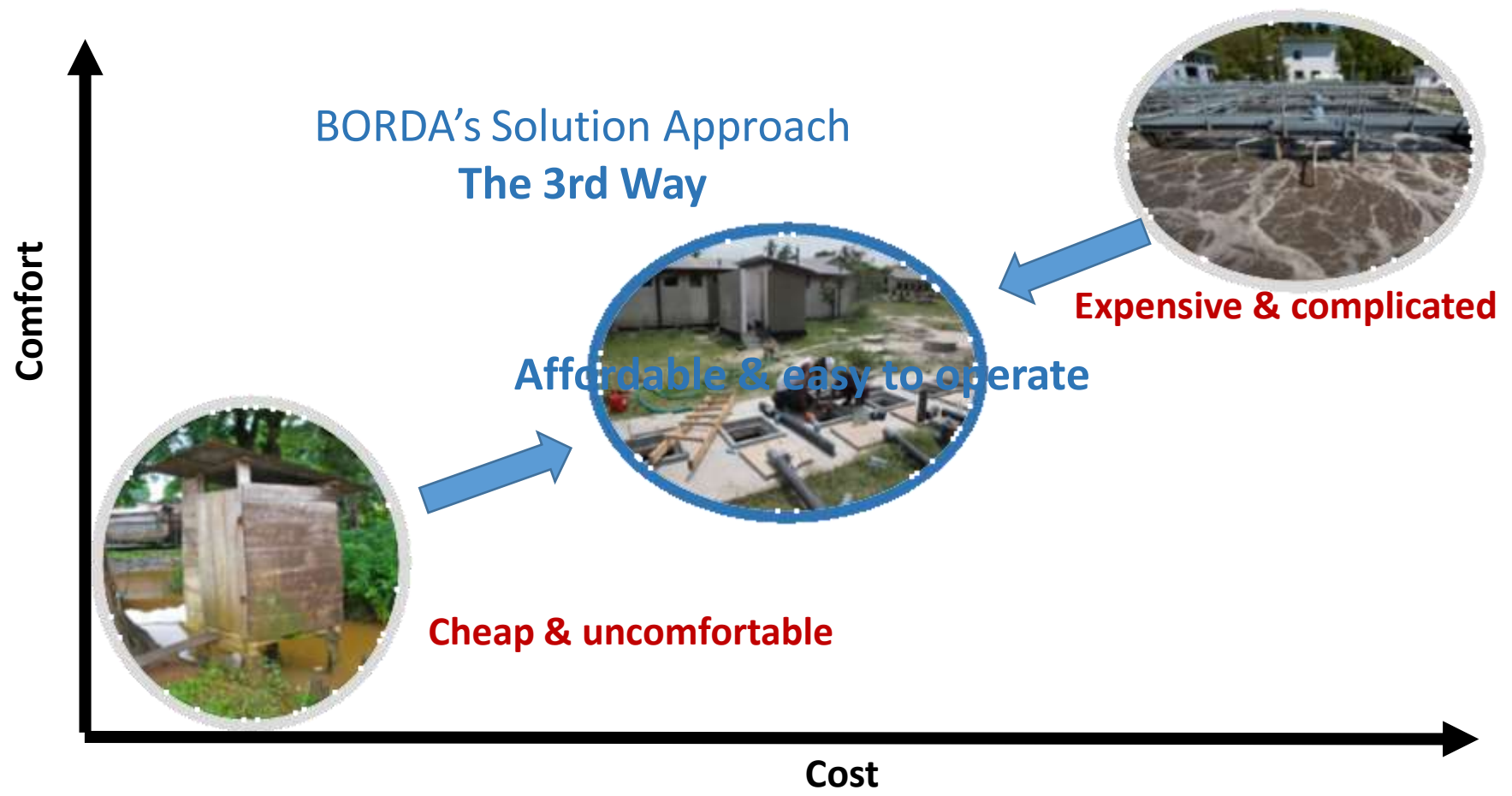
Municipal Slaughterhouse

Extrapolation of experiences to the other polluters of the wider catchment area - watershed.

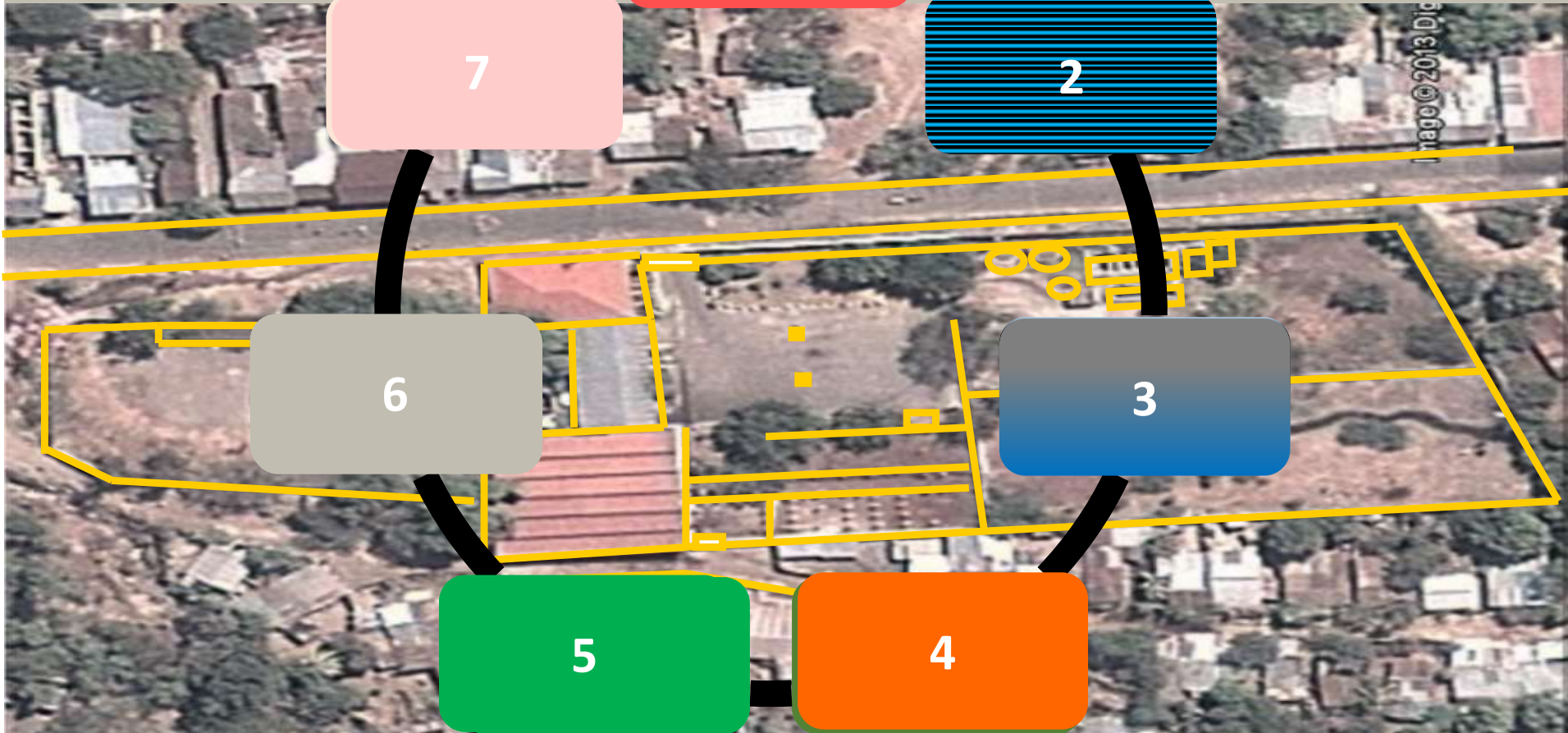


Approach towards a Solution

BORDA's approach of the „3rd Way “

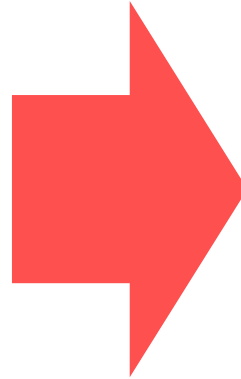


Targets at Municipal Slaughterhouse and Leon's Slaughterhouse





Slaughtering Process



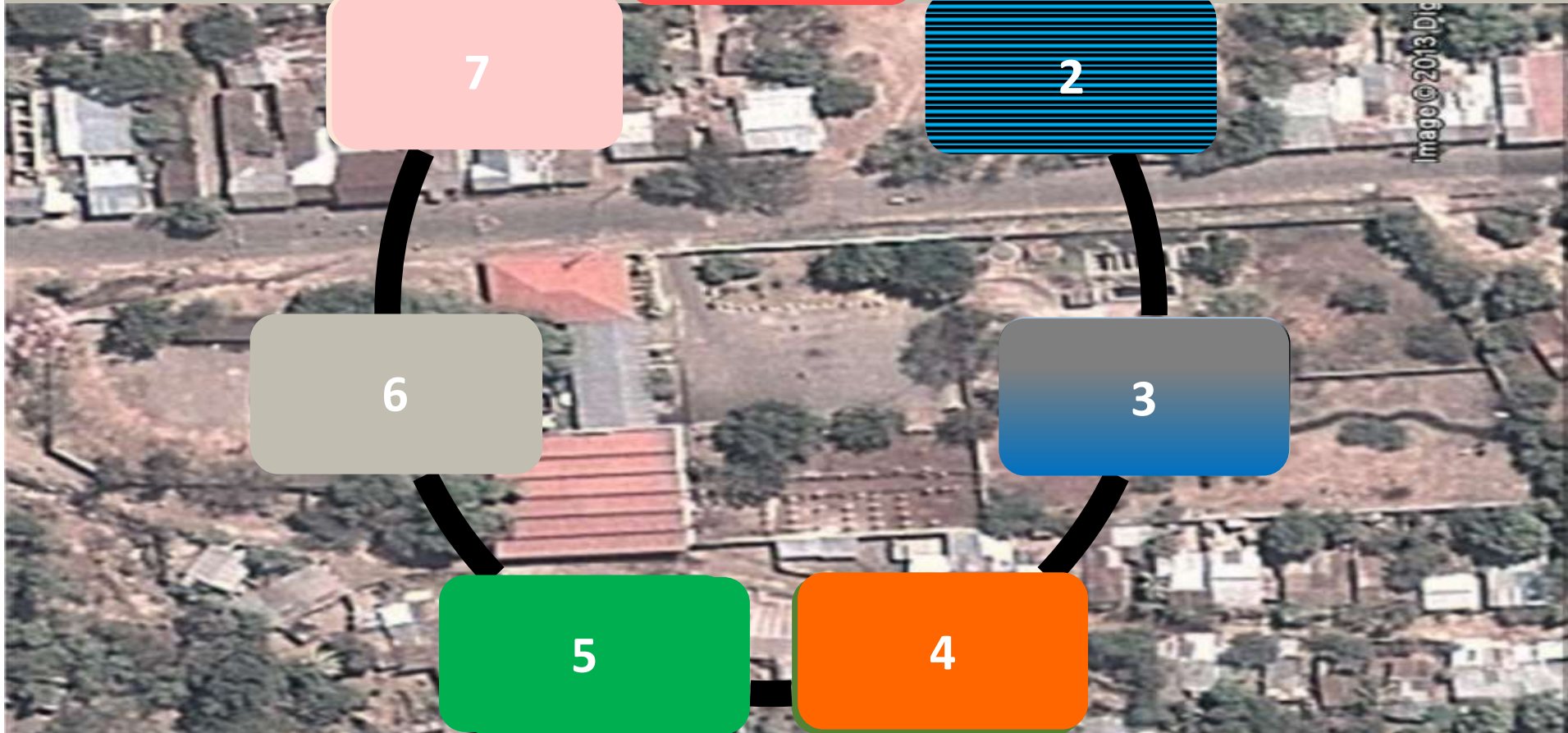
- **Cleaner**
- **Simpler**
- **Safer**
- **Improved animal welfare**



Targets at

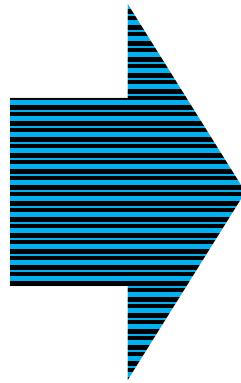
Slaughtering Process

Leon's Slaughterhouse





**Waste
Collection**



- Separation of substrates
- Easy to O&M
- Safer



Targets at

Slaughtering Process

Leon's Slaughterhouse

7

Waste Collection

6

3

5

4

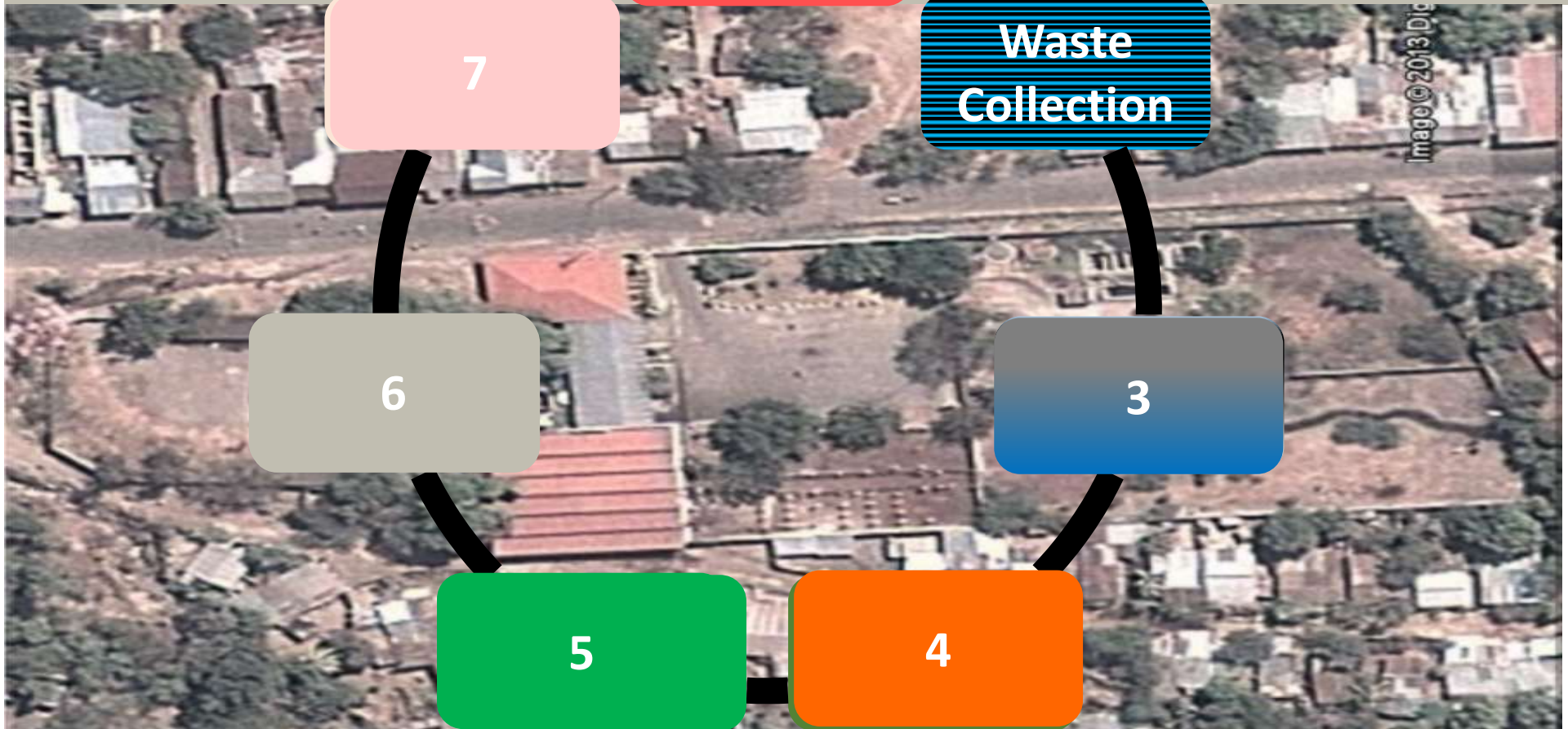


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Waste Treatment



- Separation of solids
- 2 Anaerobic treatment steps
- 1 Horizontal PGF
- Humification
- Drying bed
- Easy to O&M
- Neutralisation of greenhouse gas



Targets at

Slaughtering Process

Leon's Slaughterhouse

7

Waste Collection

6

Waste Treatment

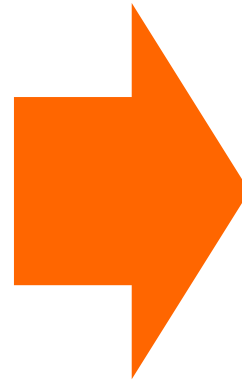
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4



Image © 2013 Digi

Biogas Utilization



- Gas collection
- Wood substitution
- Safer
- Hot water: pig scalding



Targets at

Slaughtering Process

Leon's Slaughterhouse

7

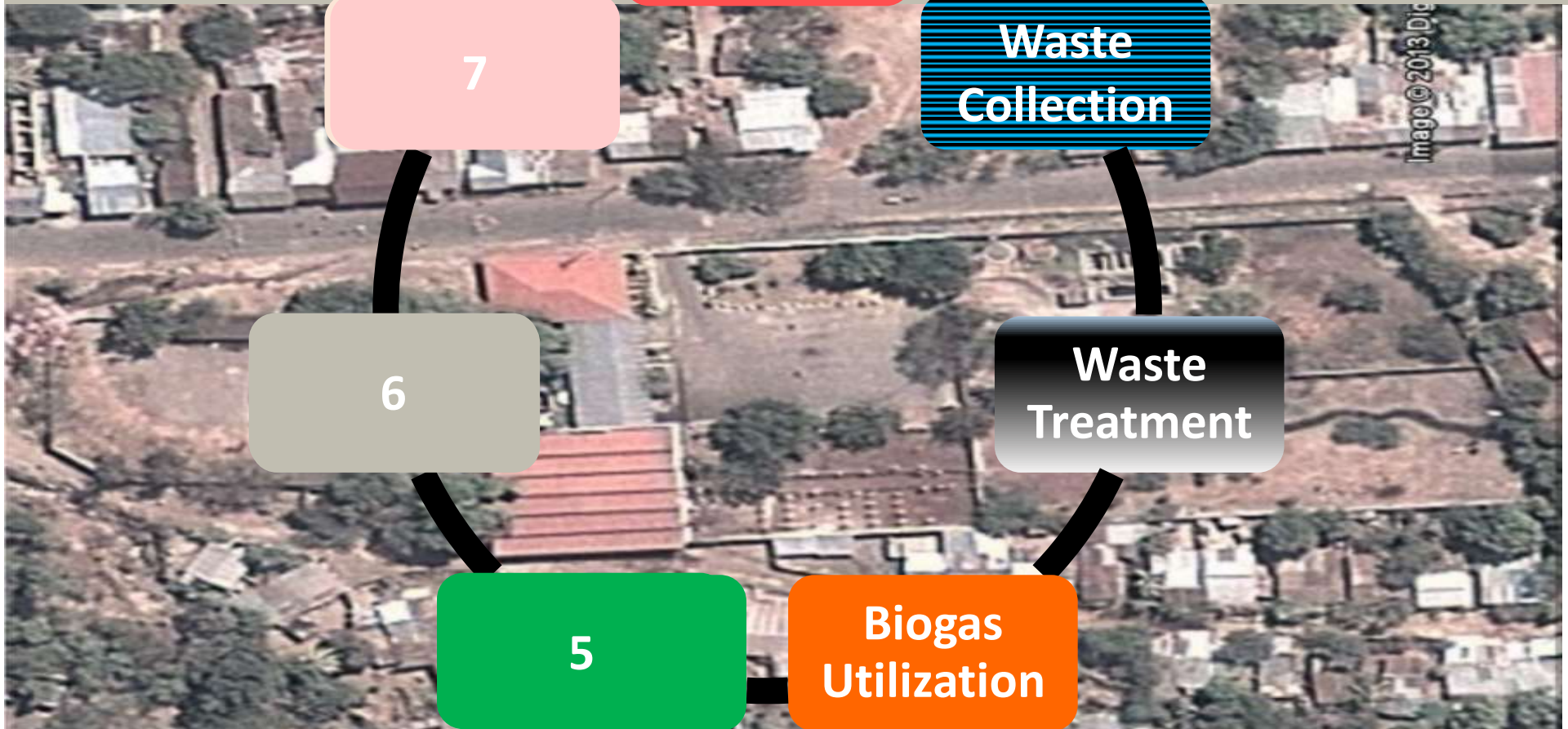
Waste Collection

6

Waste Treatment

5

Biogas Utilization



Reuse of Org. Residues



- **Food production**
- **Closing the nutrient cycle**
- **Know-how transfer from Cuba**



Targets at

Slaughtering Process

Leon's Slaughterhouse

7

Waste Collection

6

Waste Treatment

Org. Residues utilization

Biogas Utilization



Income

- **High consumption of water
60 m³**
- **Consumption of wood**



- **1/3 of the water consumption
20-25 m³**
- **Firewood substituted by biogas**
- **Production of vegetables**

- **Reduction of expenditures**
- **Increase of number of slaughtered animal**
- **New source of incomes (15.000 USD/year)**
- **Creation of job opportunities**

Targets at

Slaughtering Process

Leon's Slaughterhouse

7

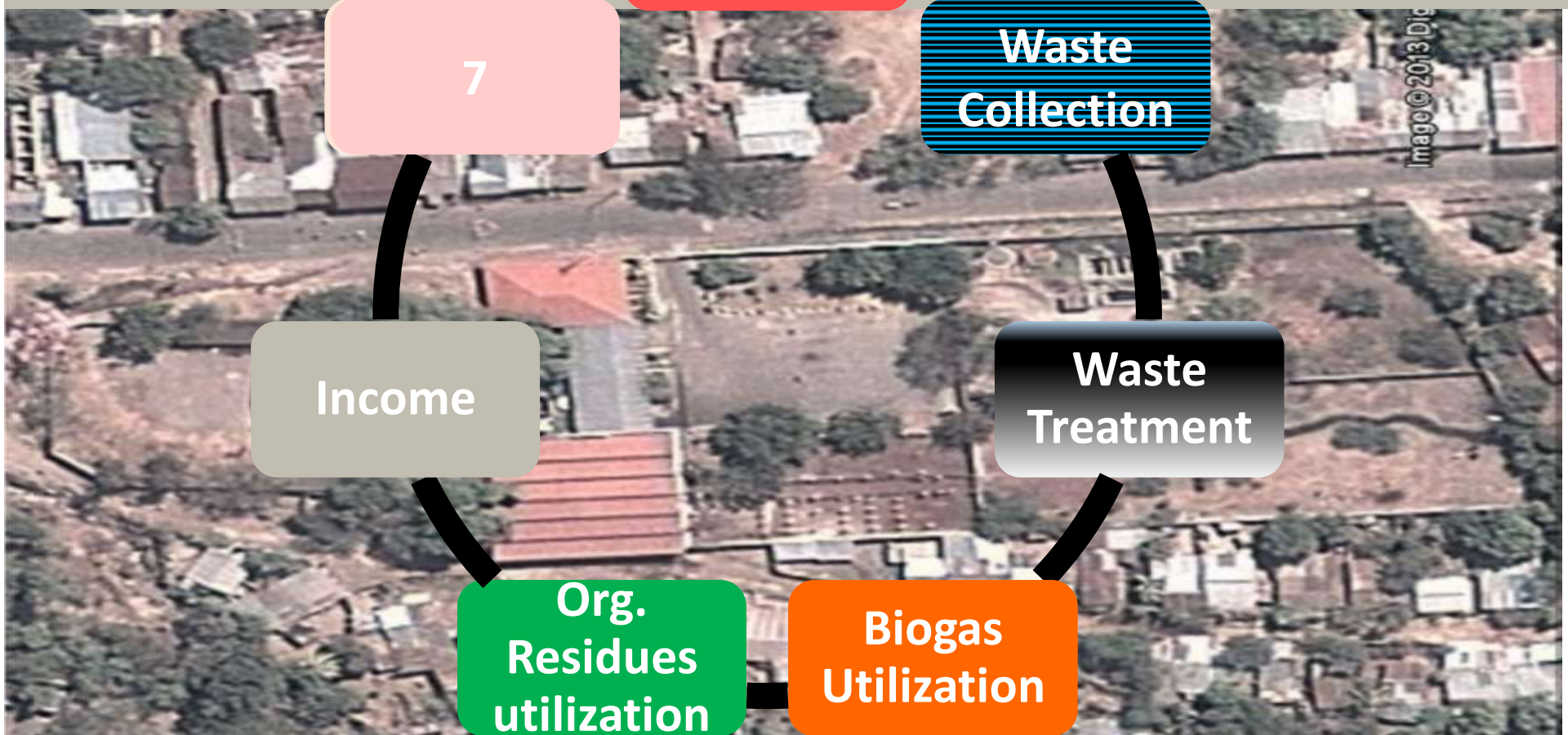
Waste Collection

Income

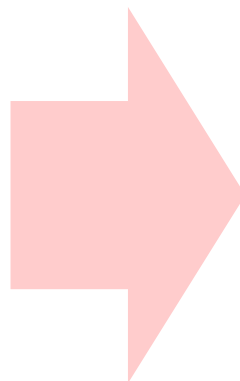
Waste Treatment

Org. Residues utilization

Biogas Utilization



Administration



- **Compliance with the regulation of the Slaughterhouse**
- **Improved control of illegal slaughtering**
- **Selling the concept of sustainable municipal service.**
- **Adaptation of the slaughtering fees**

Integrated Dezentralised Sanitation Solutions



- Drainage
- Health & Hygiene Education
- Business Plan
- Production Process

Real-scale pilot interventions of innovative projects

- Focusing on delivering the service

Implementation of programs, with projects of 2-3 years

- Components driven by specialists

Community involvement should not substitute Municipal responsibilities.

- We need to win the Municipalities for the innovation

Wider Planning and Implementation to be done parallel



Muchas gracias



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