



# Tanzania Domestic Biogas Program Scaling access to energy in rural areas: a market-based approach

Presented by SNV Tanzania  
to South Africa

3<sup>rd</sup> National Biogas Conference-2<sup>nd</sup> Nov 2017



# Outline:

- Introduction of the Programme
- Type and sizes of Digesters
- Motivation for selection of working areas
- Key elements to move domestic biogas forward
- Expected results
- Challenges
- Conclusions



# Africa Biogas Partnership Programme II



**ABPP**  
Biogas, cleaner energy,  
better lives

**Overall objective:** To improve living conditions of households in five African countries, through the multiple benefits of the introduction of an additional 100,000 domestic biogas digesters for cooking and lighting.

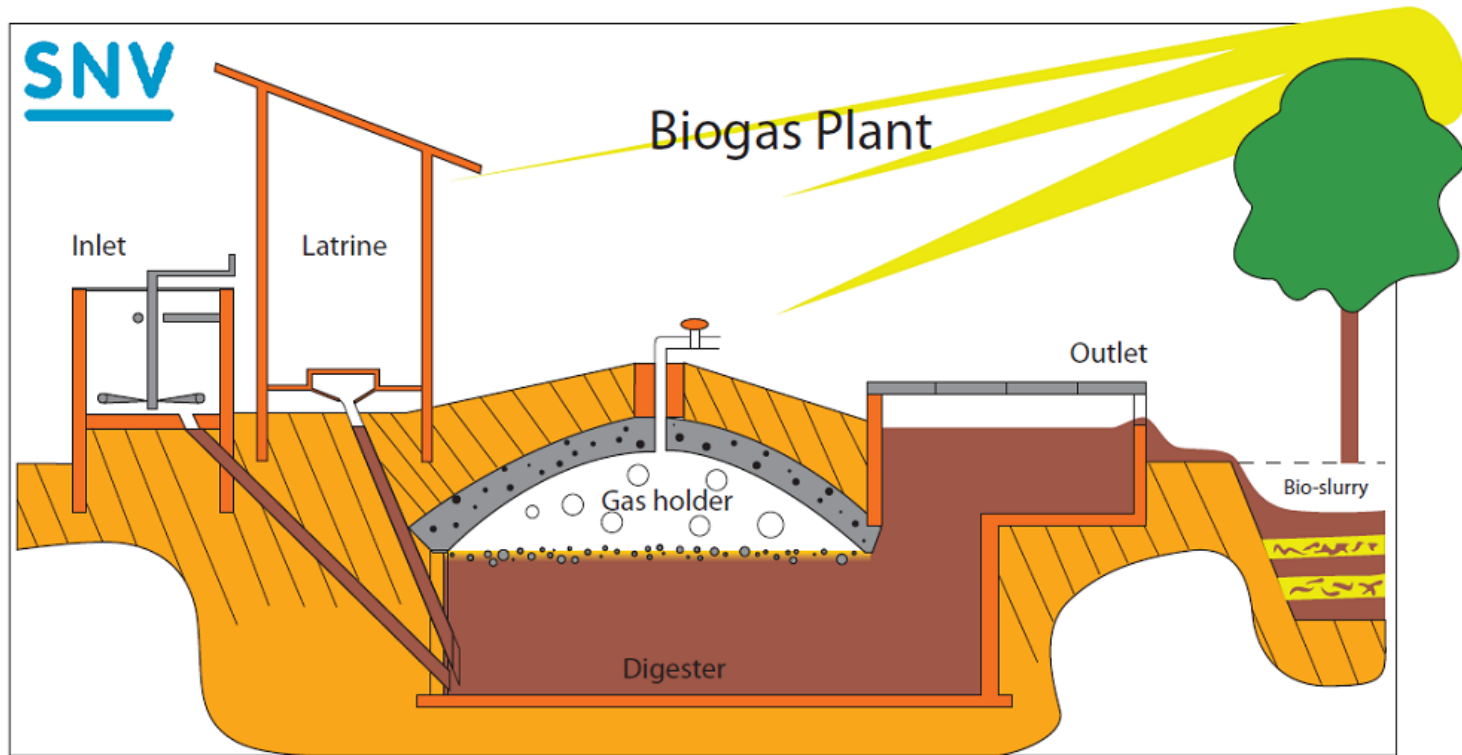
**Period:** 2014-2018 (continuation phase I: 2009-2013)

**Main funding: DGIS**    **Fund management: Hivos**    **TA: SNV**



# What is Domestic Biogas Technology?

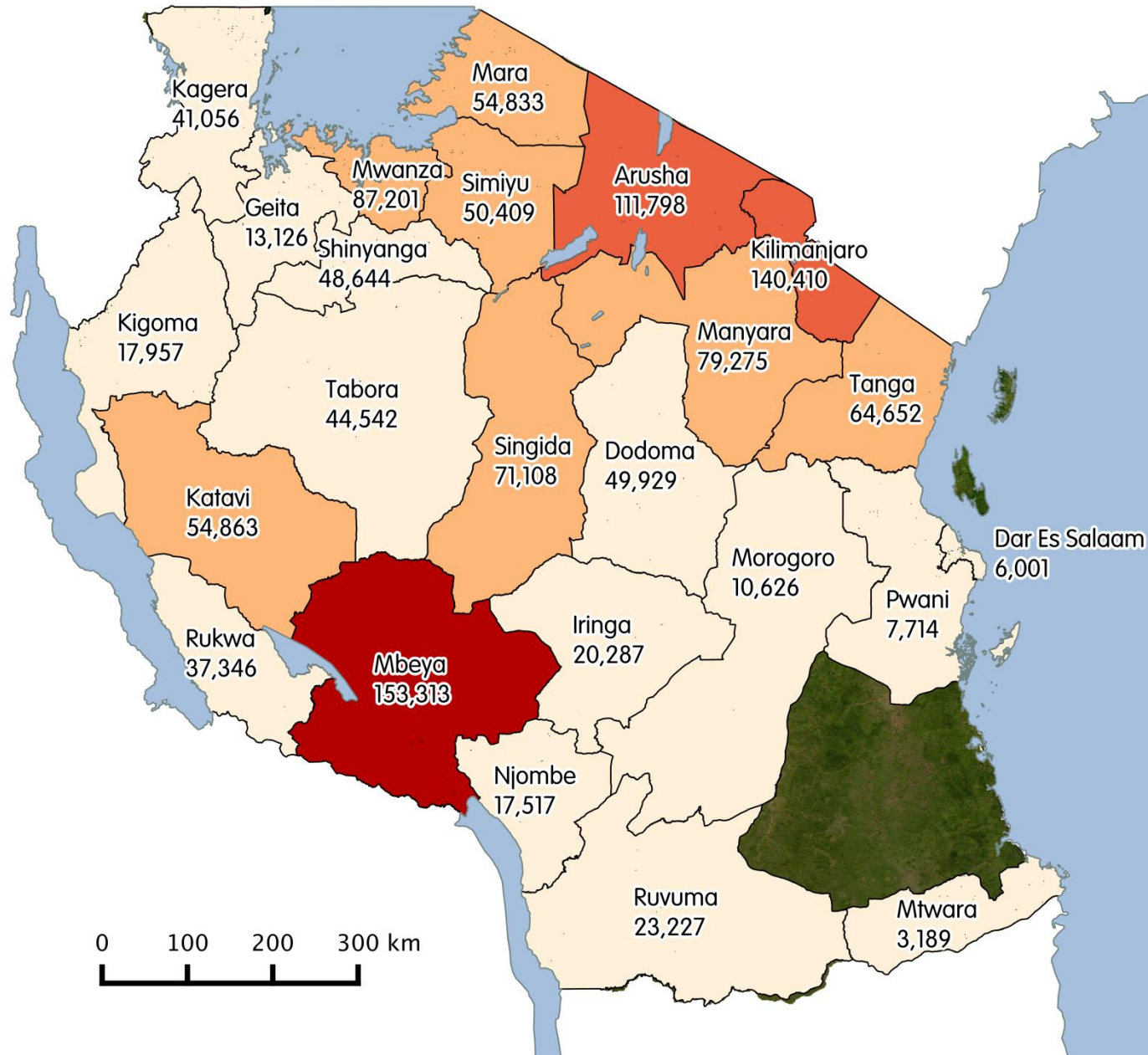
- **Design: fixed dome (6-13m<sup>3</sup>)**
- **Local materials & resources**
- **Feeding: livestock manure & human excreta (> 20 kg daily)**
- **Investment cost Tanzania: USD 400-900**
- **Life: > 30 years**
- **Gas use: cooking & lighting**
- **Bio-slurry: organic fertiliser**



# Cattle rearing households in Tanzania

Regional number of cattle rearing households with 1-10 cattle in Tanzania.

Source: NBS (2012)  
National Sample  
Census of Agriculture  
2007/2008



## Legend:

No. of hh 1-10 cattle

0 - 50,000

50,000 - 100,000

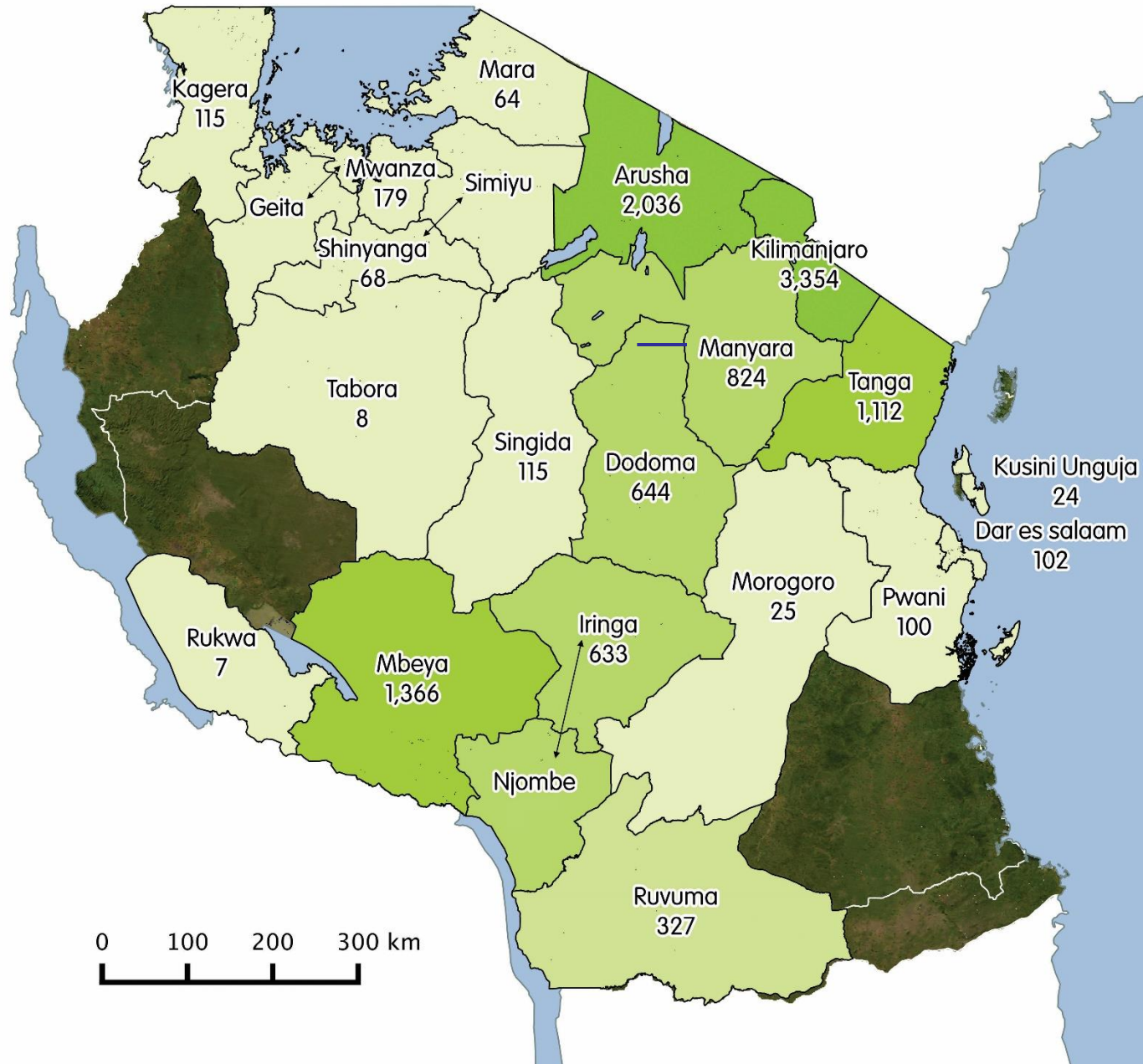
100,000 - 150,000

150,000 - 200,000

# Number of biodigesters installed per region

Number of installed bio-digesters per region in Tanzania at the end of 2014.

Source: TDBP, 2015.



## Legend:

No. of bio-digesters

0 - 250

250 - 500

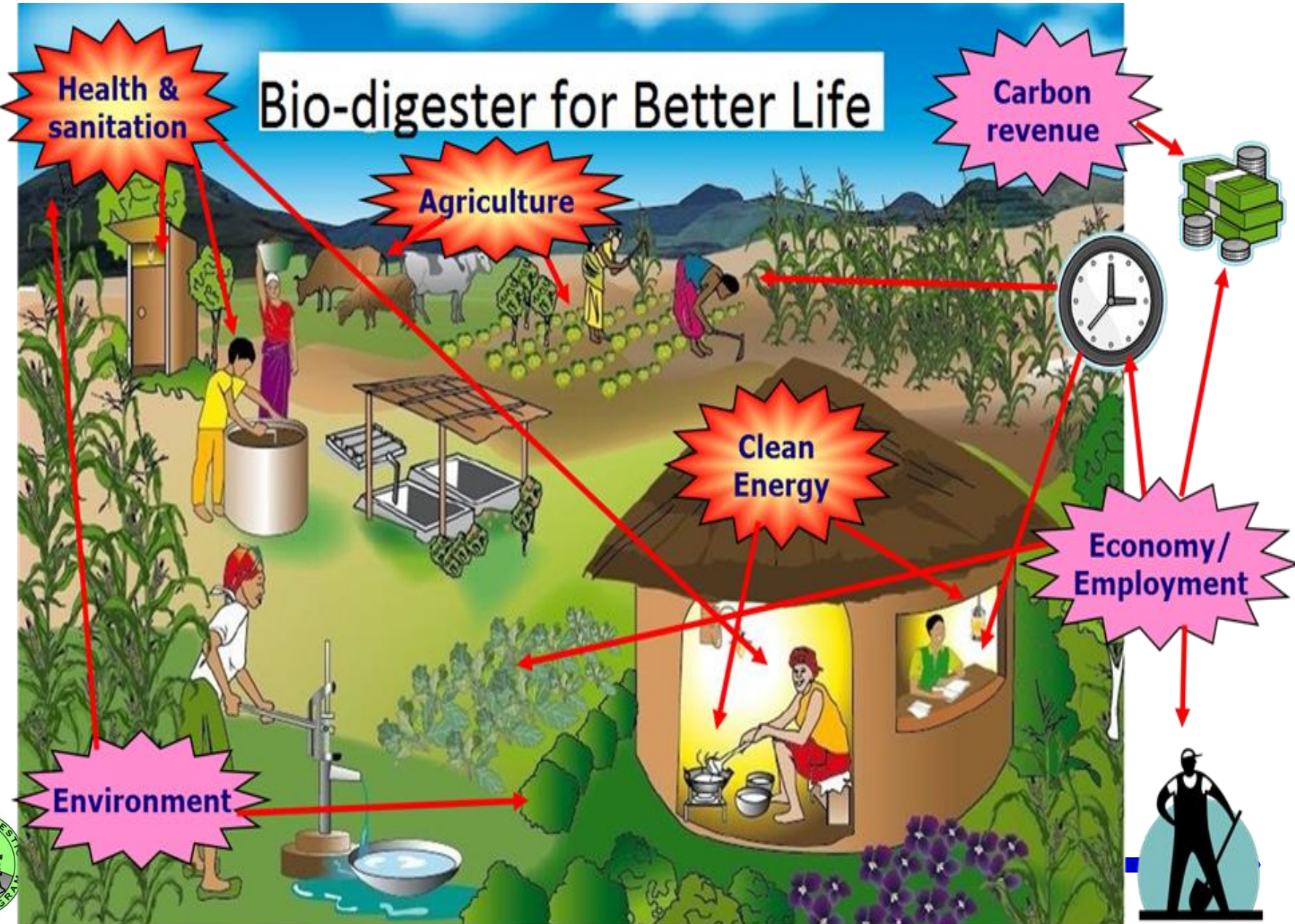
500 - 1,000

1,000 - 2,000

2,000 - 4,000

0 100 200 300 km

# Multiple Benefits of a Bio-digester



# SNV Tanzania Domestic Biogas Programme

## Key elements to move biogas forward:

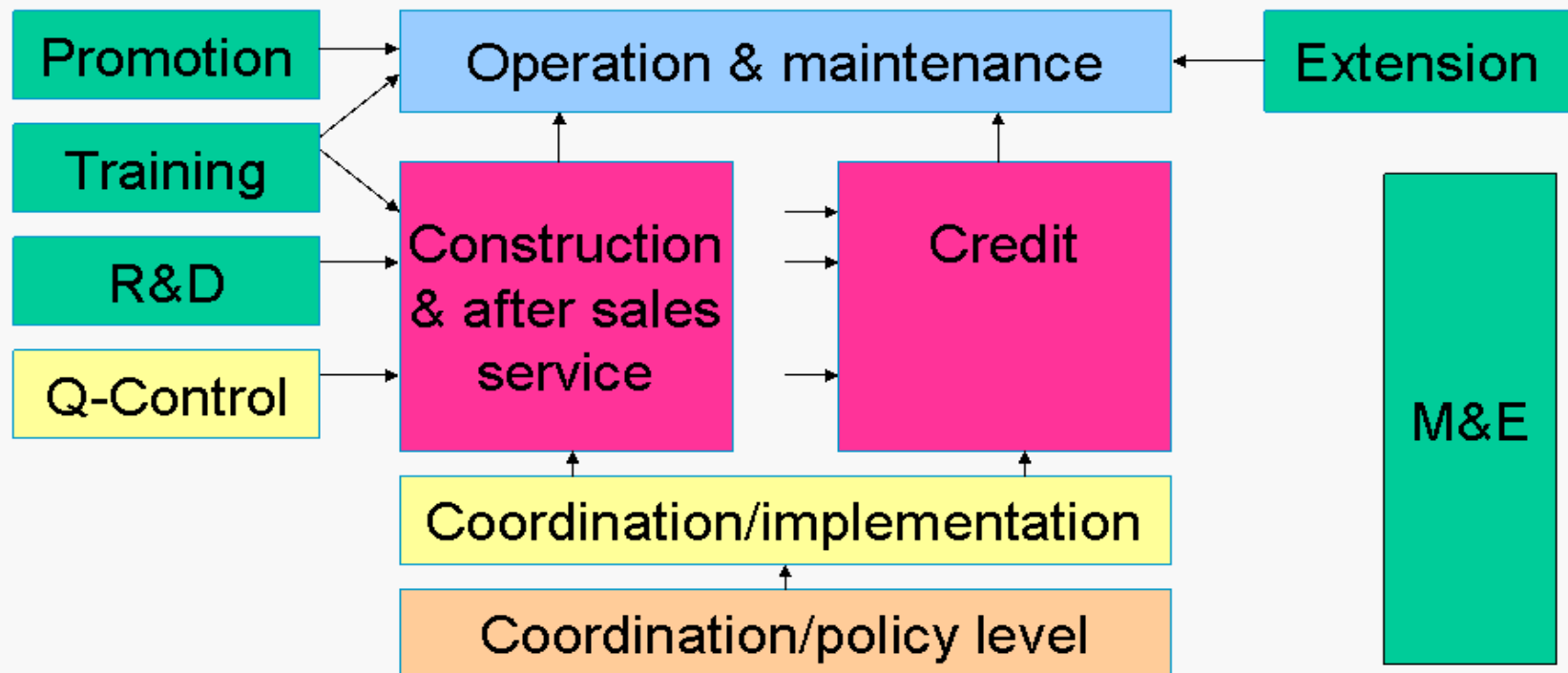


- Proper selection of beneficiaries
- Building capacities of local actors, aimed at the development of a commercially viable, market oriented biogas sector.
- Realistic production targets, aiming to develop the whole sector (project -> national programme -> sector).
- Multi-stakeholder approach involving private sector, civil society and government organisations.
- Continuous, long-term focus on customers' satisfaction, commercialisation, sustainability and maximizing benefits (including use of bioslurry, gender-focus).



# Programme functions

## Functions required for national programmes on domestic biogas



# TDBP: Implementation Structure



Norwegian Embassy



Ministry of Foreign Affairs of the Netherlands



**ABPP**  
Biogas, cleaner energy,  
better lives



**CAMARTEC**

**TDBP**

**National Biogas  
Steering Committee**

**Programme Support**

**Institutional  
partnerships**

**Ministries &  
Government  
agencies**

**Implementing Partners**

**MIGESADO**

**FIDE**

**ELCT**

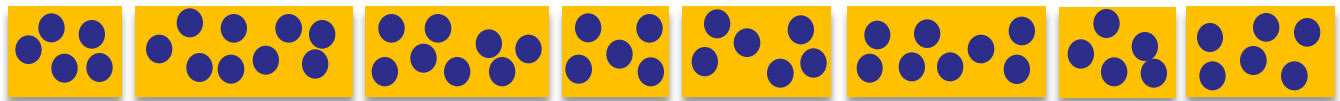
**KDA**

**NRCF**

**Caritas**

**OTHER**

**Private sector associations**



**Biogas**

**Enterprises: digester construction, appliance provision and after sales services**

**MFIs**



**Customers: invest to have access to energy**

**SNV**

**TA**



# Expected results TDBP

## Tanzania Biogas Programme

*expected results (provisional)*

Biogas plant construction **12,000** [plants]

### Energy

Energy production **110,222** [MWh]

Power installed **30,799** [kW]

### Environment

GHG emission reduction **60,101** [t CO<sub>2</sub>eq]

Deforestation reduction **7,954** [ha of forest]

Soil nutrification **64,909** [t(DM) bio-slurry]

### Fuel substitution

Biomass **98,952** [t biomass]

Fossil fuel **817** [t]

### Socio-economic

Persons reached **72,000** [persons]

Workload reduction (women & children) **2,003** [pers years]

Exposure to indoor air pollution reduced **60,000** [women & children]

Toilets attached **2,400** [toilets]

Productive slurry use **9,600** [households]

Employment generation (direct) **840** [person years]

### Training

User training **16,800** [person days]

Professional training **5,142** [person days]



# Private Sector Development

- More than 8,000 hh benefited from biogas
- >400 masons trained from start of the program (2009).
- From 2011, > 60 Biogas Construction Enterprises (BCEs) created throughout the country.
- BCEs are trained on technical skills and business skills, including after-sales services, marketing and financial management.
- BCE associations being strengthened to represent sector interests.
- BCEs account for 77.5% of digester construction in Tanzania (2016).
- Promote linkages between BCEs and SACCOs/MFIs to increase production.



# Biogas Business Boost Benefiting Farmers (4B-F)

Part of the EnDev RBF portfolio funded by DFID



**Overall goal:** To overcome market barriers constraining private sector delivery of biogas technologies and services providing modern energy and agricultural solutions to the poor.

**1. Micro Finance Institutions** -benefiting from result based Credit Sanctioning Incentives to mitigate financing challenges in the uptake of domestic biogas technology.

**2. Biogas Construction Enterprises** –benefiting from result based Quality Product Incentives to improve bio-digester functionality through after sales services. Incentives are disbursed after independent verification through a

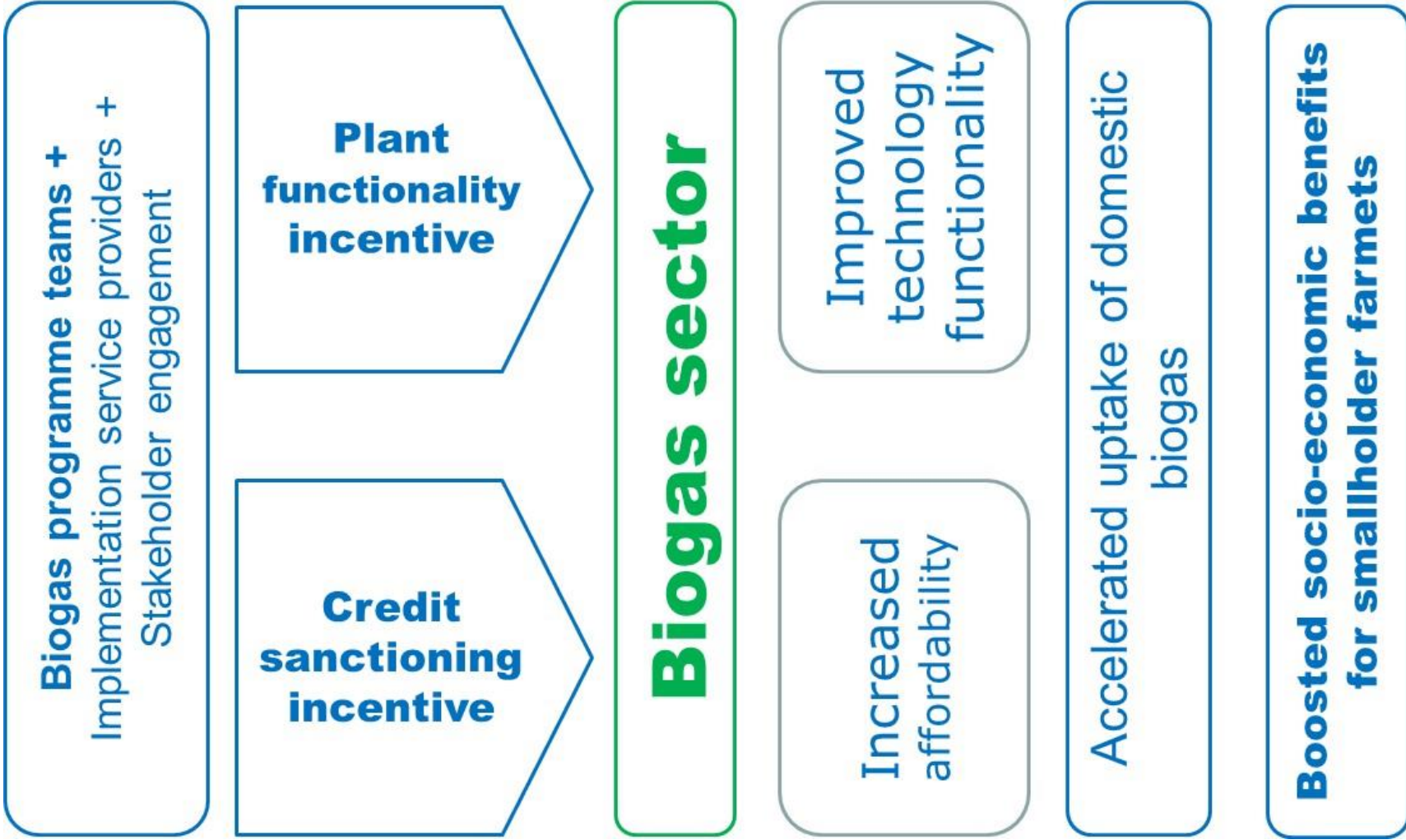
**3. Customer Service Centre** (CSC, operated by Technobrain).

- Customer registration, plant commissioning and after-sales service reports are uploaded on on-line database via mobile phone app.
- CSC verifies with customers and communicates with TDBP for repairs, lead follow-up, etc. (15% site verification).

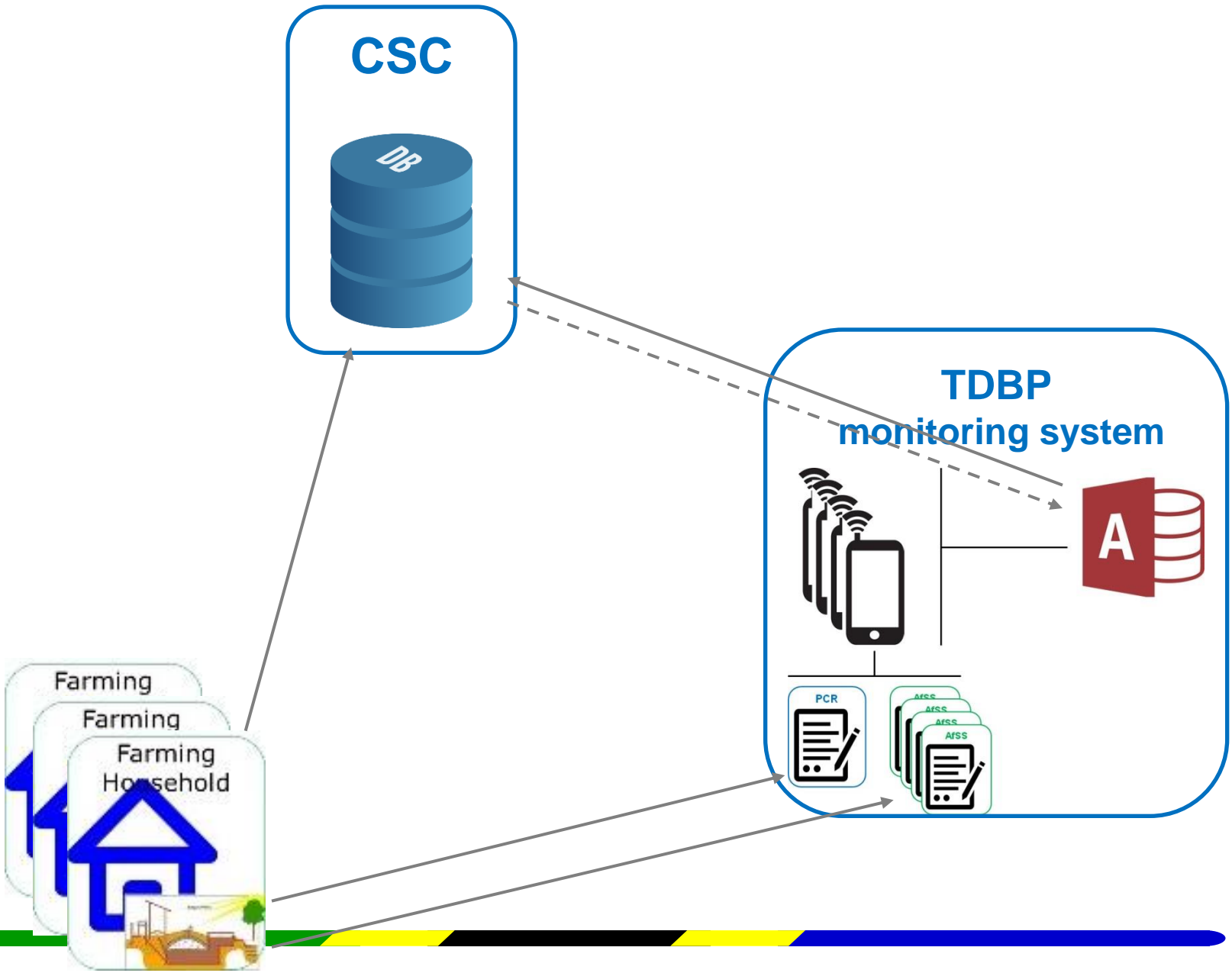
implemented by:



# 4B-F Theory of Change



# CSC verification



# TDBP challenges /barriers to Project implementation

## Affordability

- Investment subsidy
- Investment costs
- Credit availability

## Reputation

- Functionality
- Quality
- Integrity of products / services and actors in the sector

## PRODUCTION

## Programme mgt

- Drive / ownership
- Credibility
- Relevance
- Implementing modalities
- Capacity (mgt / fin)

## Business case / benefits

- Demand: market pull vs programme push
- Energy and agriculture
- Supply: attractiveness, growth, margins
- Value chain linkages
- Business case for farmer / BCE / MFI

# Conclusions:

## Hh Biodigesters:

- Creates jobs in many ways
- Increase productivity(cash/food crops)
- Protect our environment
- Protect our people-clean energy and safe food
- Create space for building sustainable communities
- In the end there is “balancing benefits”





# Asante sana!



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