



Blue Flames and Golden Fertilizer

Biodigester market development in Sub-Saharan Africa

Eilat-Eilat Renewable and Clean Energy Conference
29 November 2016



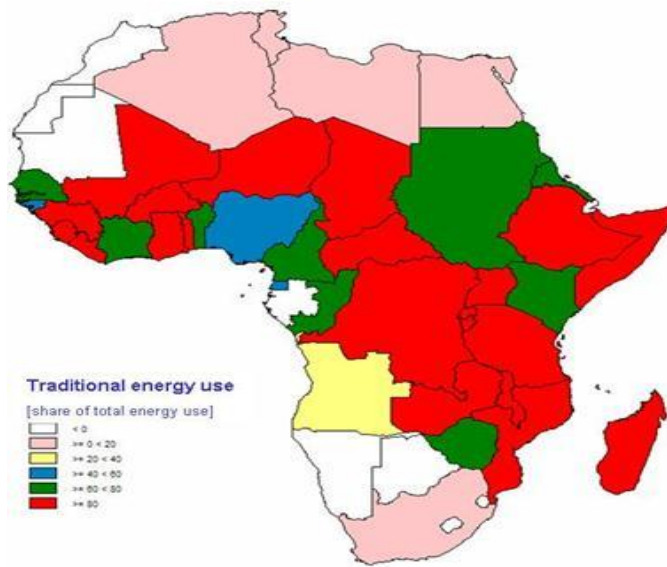
Government of the Netherlands

Unsustainable use of energy

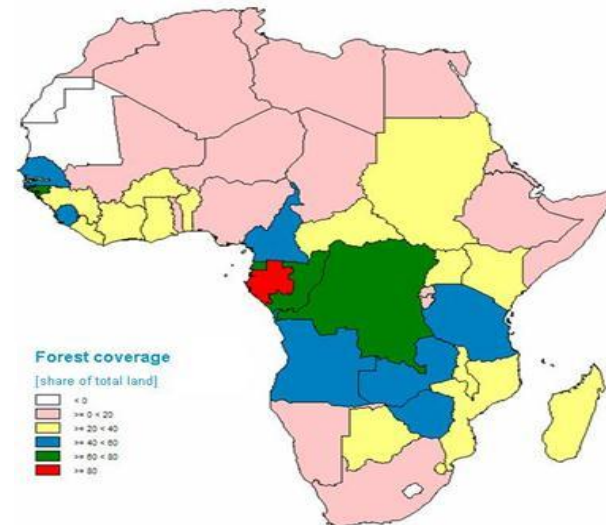


- The World Health Organisation (WHO) estimates that **annually 4.3 million people** die from the exposure to **household air pollution** because of cooking on open fires or traditional stoves
- **Traditional domestic energy sources** for cooking are mainly based on **biomass** (wood, charcoal, plant materials, agricultural/crop waste)
- Main **biomass sources** –forests- are **rapidly dwindling**
- **Households** are forced to **step down the energy ladder** to provide in their domestic **energy needs**
- As a result, **energy efficiency is decreasing** whereas acute respiratory infections, workload of women and children, malnourishment and environmental degradation **are increasing**

Traditional energy use



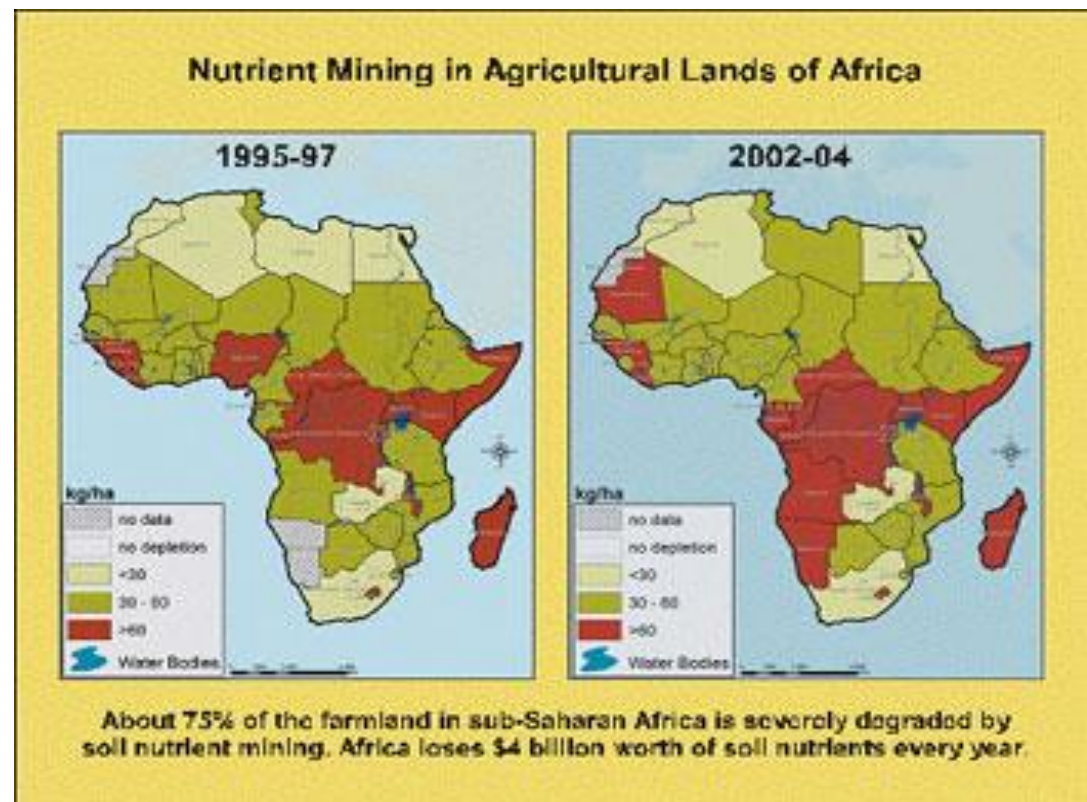
Forest coverage





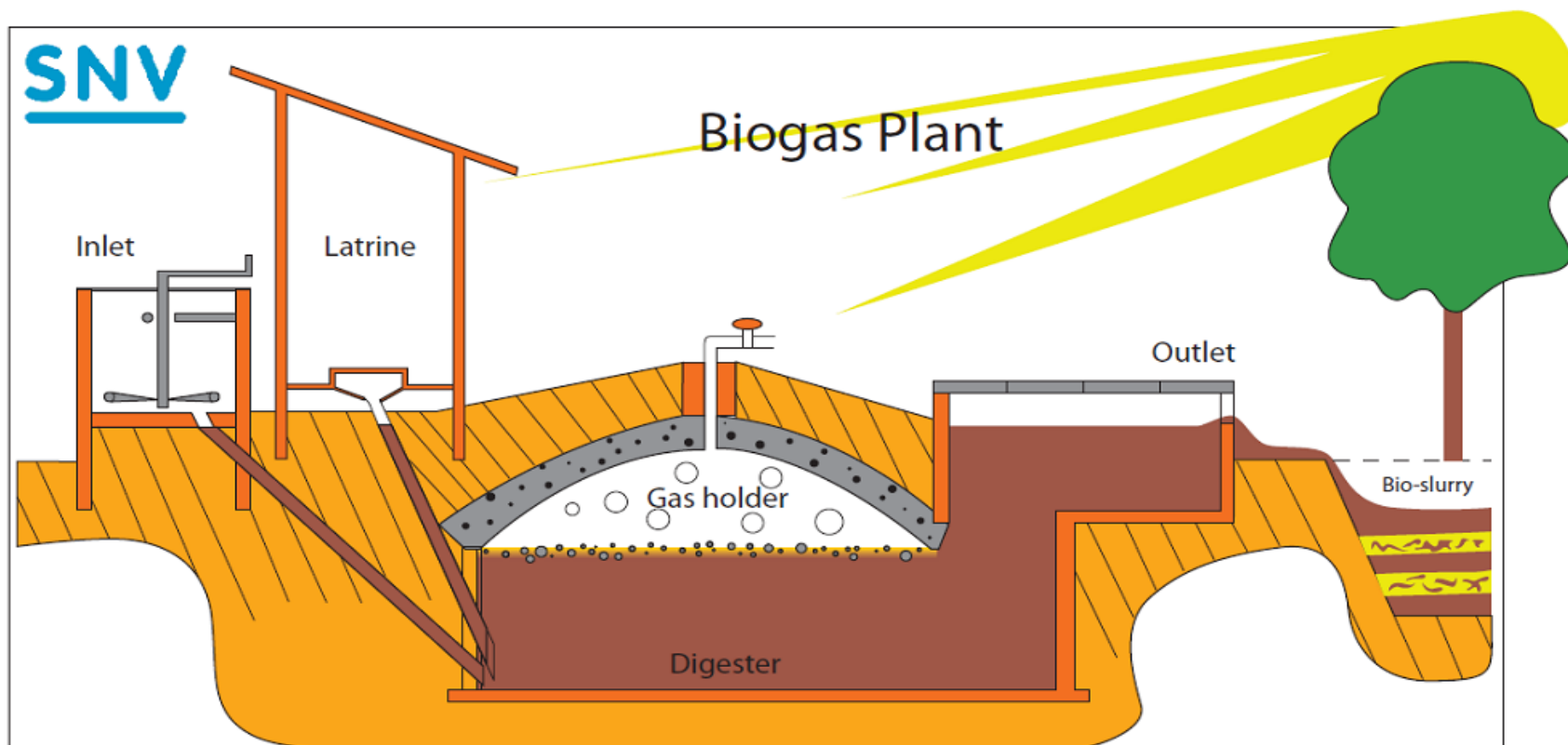
The African soil fertility challenge

- **Steady environmental degradation; nutrient depletion** through water and wind **erosion** is natural soil development through weathering.
- The Food and Agriculture Organisation (FAO) estimates that some **33% of world soil** is already **moderately to highly degraded** due to erosion, nutrient depletion, acidification, urbanization, and chemical pollution
- For a large share of farming households, **chemical fertilizer** is either **insufficiently available or unaffordable**
- As a result, **soil productivity is declining**, threatening the livelihood of ~ **80% of the African population**.



One solution: Bio-digesters

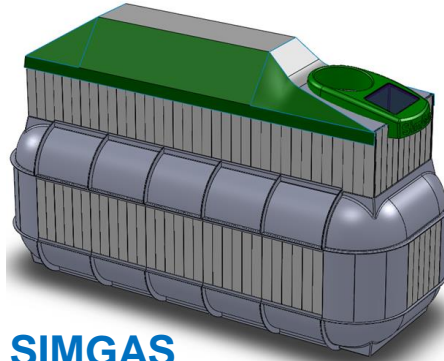
- Conventional fixed dome design (4-13m³)
- Local materials & resources
- Feeding: livestock manure & (> 40 kg daily)
- Investment cost East Africa: >USD 650
- Lifespan: > 20 years
- Gas use: cooking chilling heating
- Bio-slurry: organic fertiliser



Innovators/Investors



BLUE FLAME



SIMGAS



REHAU

Unlimited Polymer Solutions



HOME BIOGAS®



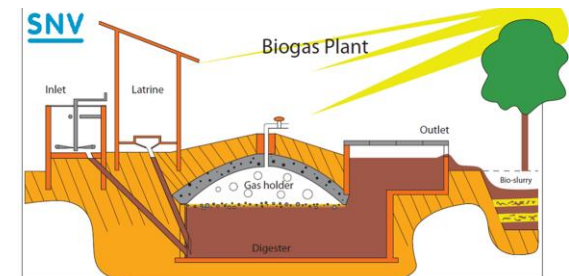
Q-Energy tube digester



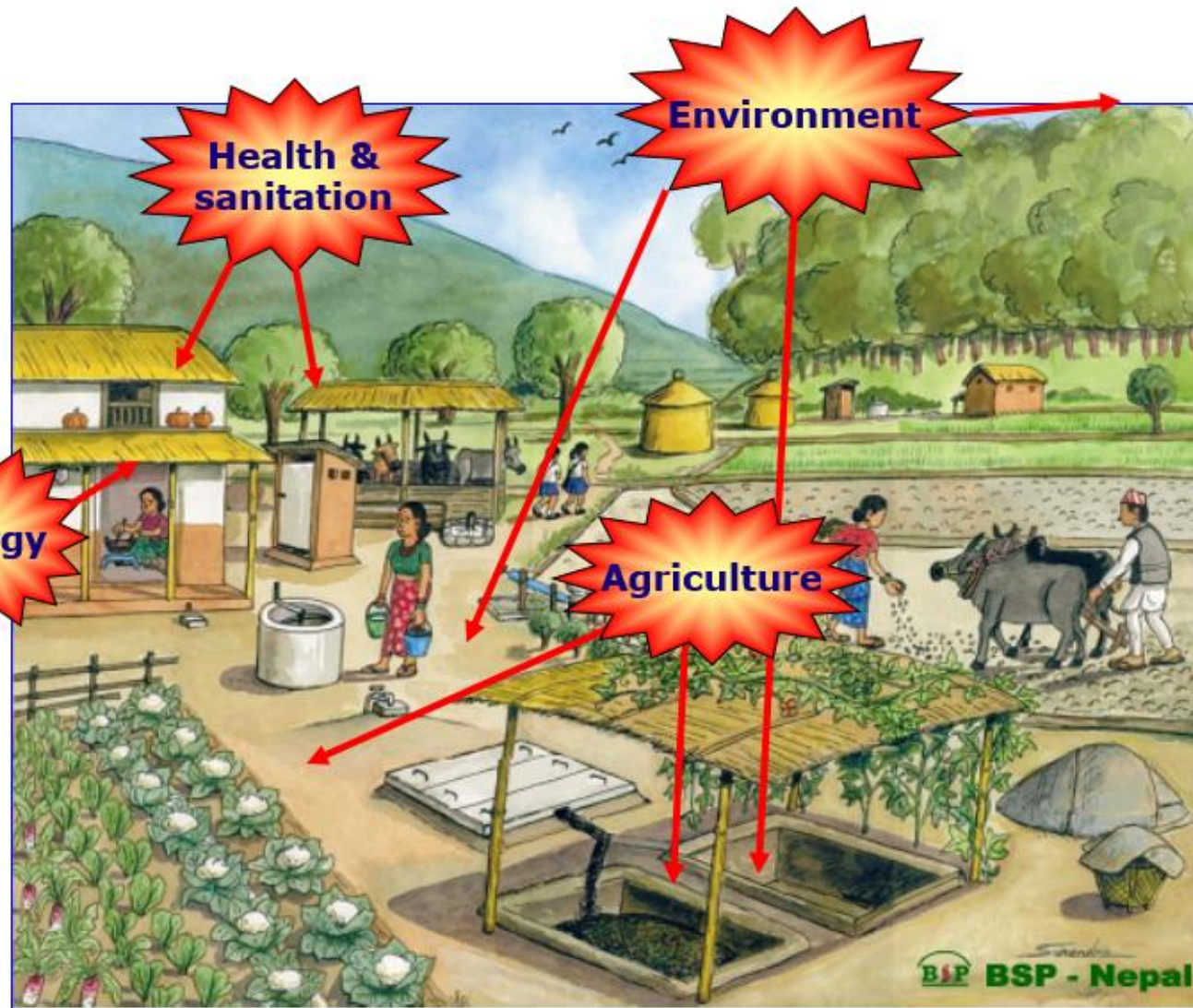
Flexi Biogas Solutions

Sustainable Affordable Renewable Green Energy for Every Household

Solid State Digester



Multiple Benefits of Bio-digesters



Established in 2009

Hivos
people unlimited

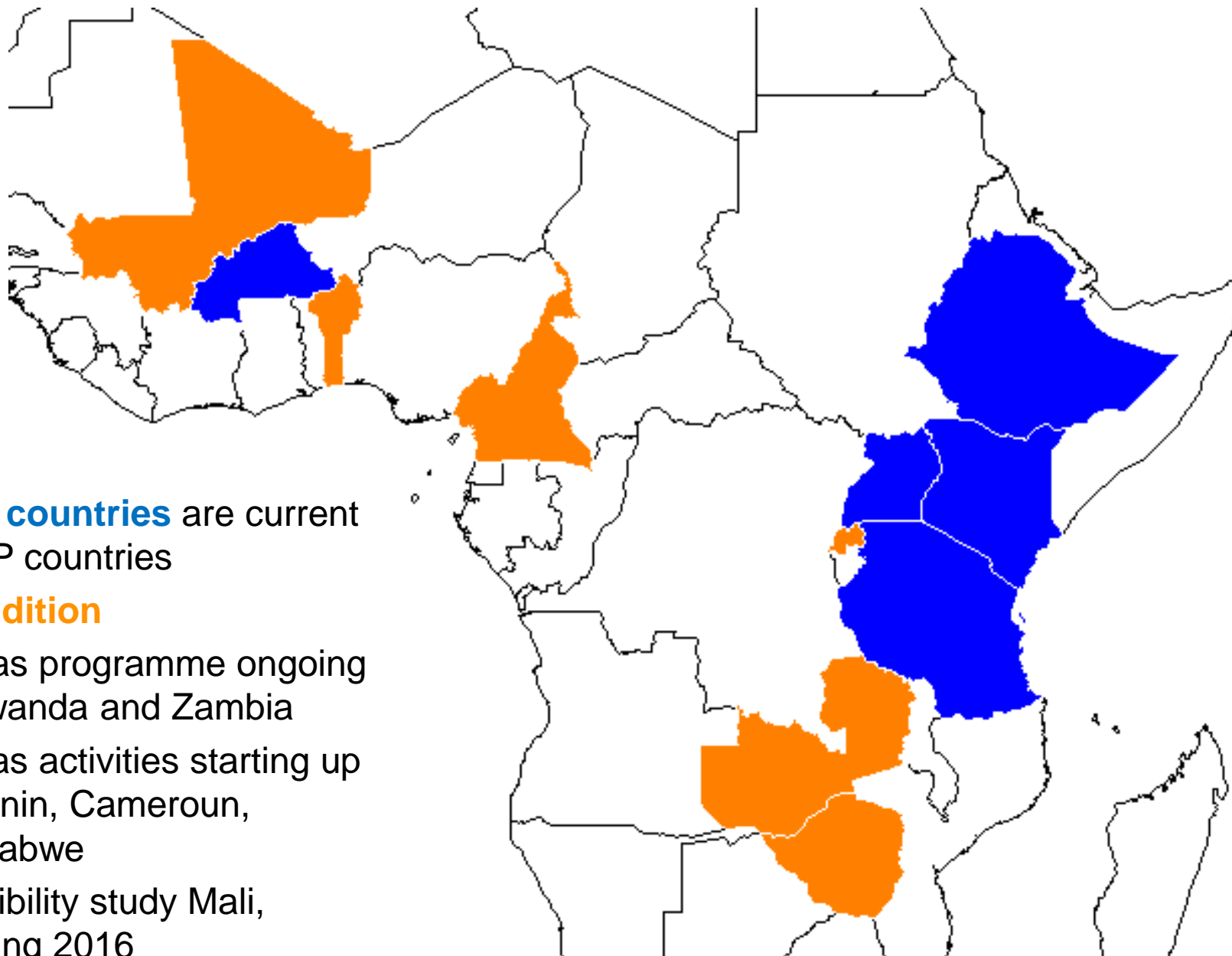


ABPP SNV
Biogas, cleaner energy,
better lives



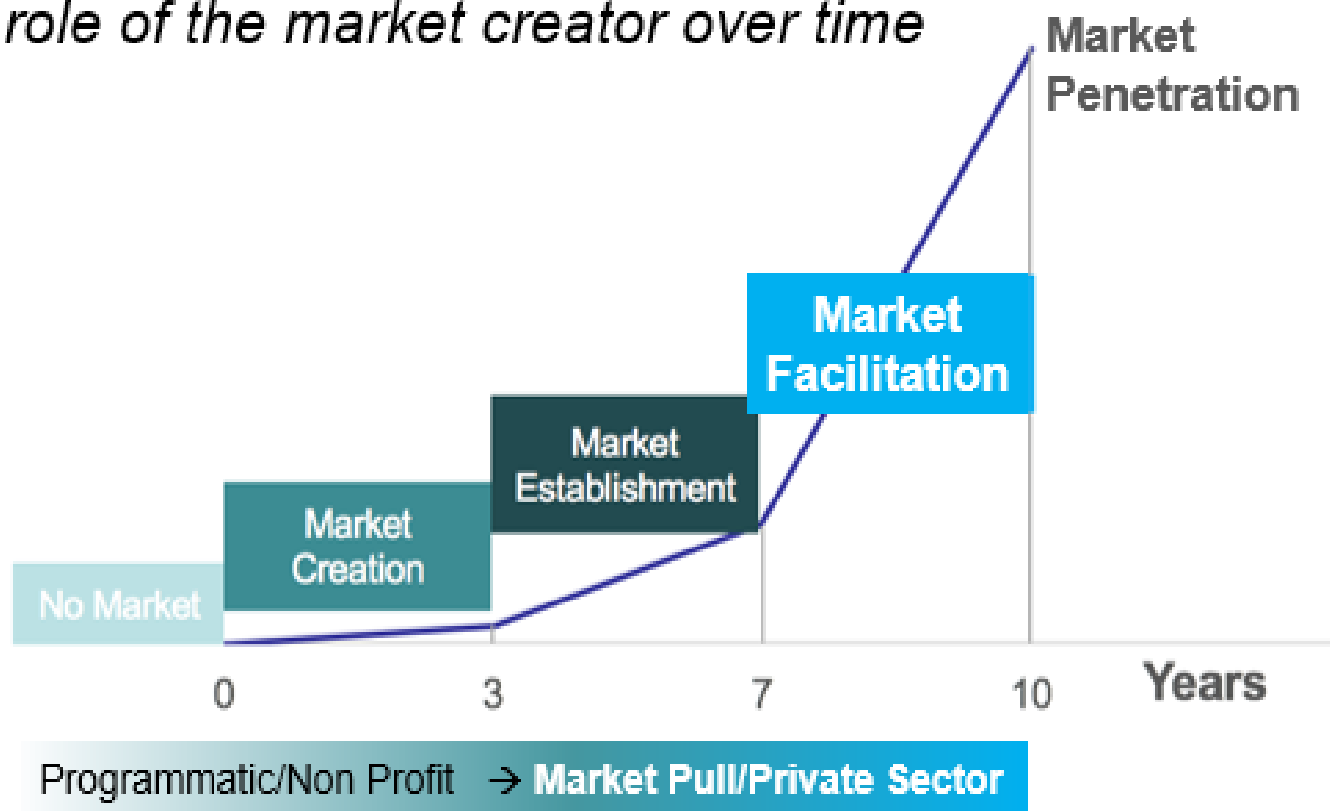
ABPP

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better lives



- **Blue countries** are current ABPP countries
- **In addition**
- Biogas programme ongoing in Rwanda and Zambia
- Biogas activities starting up in Benin, Cameroun, Zimbabwe
- Feasibility study Mali, scoping 2016

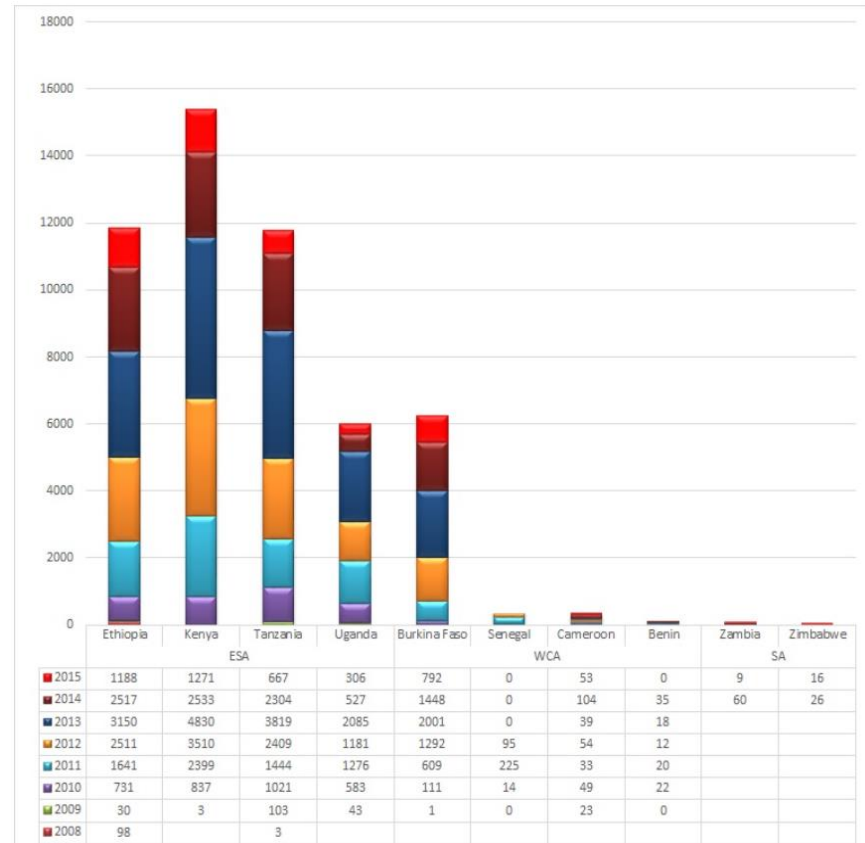
The role of the market creator over time



1. ***Strengthen & increase demand:*** Sensitization, awareness raising, durable affordable products, maximized benefits for users
2. ***Strengthen & increase supply:*** ensure availability of high quality biodigesters (and appliances) through viable companies, value chain linkages, effective quality assurance and customer care
3. ***Improve quality and functionality*** of biodigester products and services
4. ***Create a supportive institutional environment:*** Supportive policies, regulations and commitment, strengthen farmers/value chain organizations and suppliers' associations

Some numbers...

- 70.000 bio-digester installations by mid 2016
- Estimated potential Sub Saharan Africa: 20mln rural households with min. of 3 zero grazing cows, access to water and ability to pay



- Demand densification for sustainable rural market development
- Functionality: quality of products and services
 - Functionality rate: Africa 80 to 95%
Asia >95%
- End user credit facility (pay back period of 2 years) to finance up-front investment
- Capital investment for suppliers, installers

Clean Cooking – Renewable Energy

Hivos
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Bioslurry fed coffee bushes, garden vegetables, fodder grass, banana crop



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