ODA – UNESCO Project
Promotion of Energy Science Education for Sustainable Development in Laos

Domestic Biogas digester (SNV)

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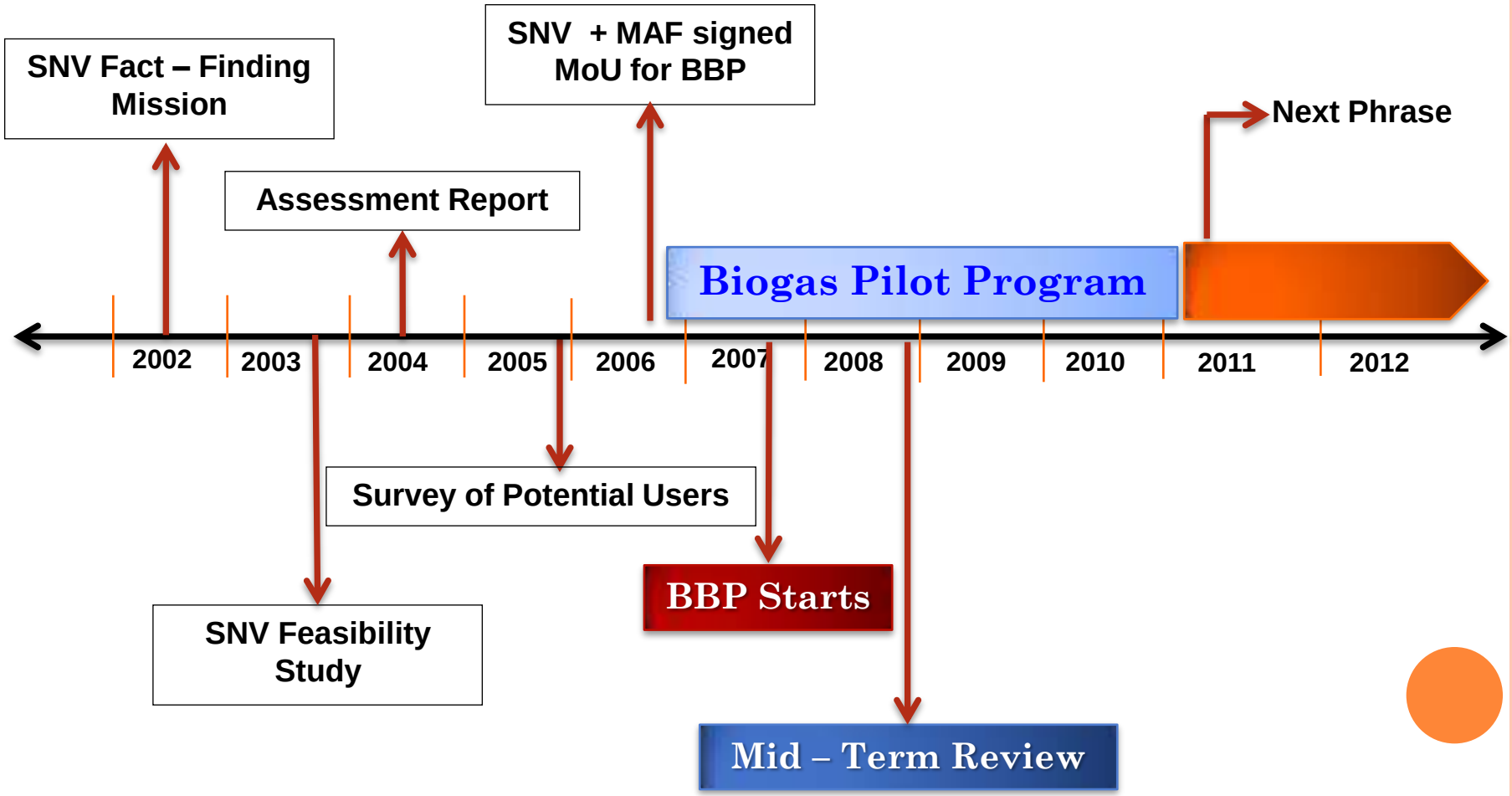
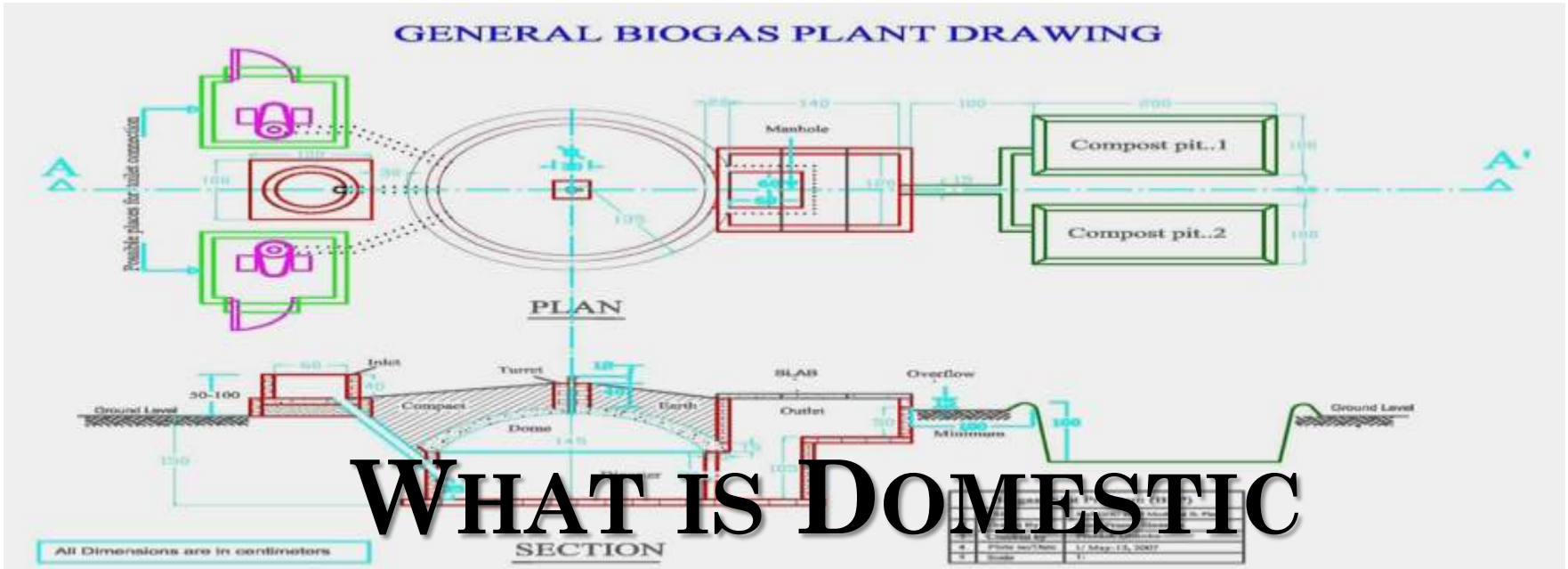
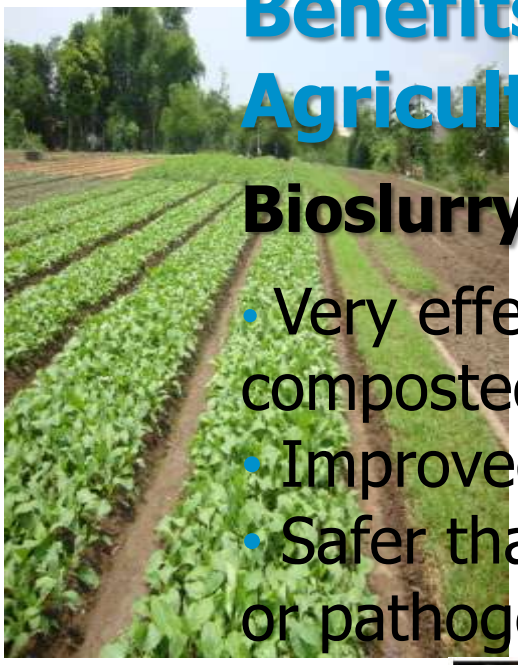
History of SNV Biogas in Lao PDR





What is Domestic Biogas?

Benefits of Domestic Biogas



Benefits of Biogas – for Agricultural Productivity

Bioslurry Organic Fertilizer

- Very effective fertiliser, easily composted
- Improved Soil Fertility
- Safer than raw manure (no weeds or pathogens)

Improved Livestock

- Encourages stabling of animals(easier vaccinations, improved health and breeding)

Benefits of Domestic Biogas

Energy Source

- **Cooking**: fast and convenient
- **Appliances:** lights, rice-cooker, water heater, generator
- **Clean + Renewable**: save money(average family savings of $89 per year *)

Health and Gender

- **Healthy:** no smoke inside the house (affects mainly women and children)

- **Saves Time:** not collecting fuel, cooking faster (avg savings of 1.5hrs per day *)

* Biogas User Survey 2007

Benefits of Domestic Biogas

The Environment

- **Cleaner Villages:** reduces smell, insects and disease
- **Water Quality:** reduces contamination from excess Nitrogen and faece matter
- **Local deforestation:** reduced
- **Greenhouse Gas Pollution:** reduced

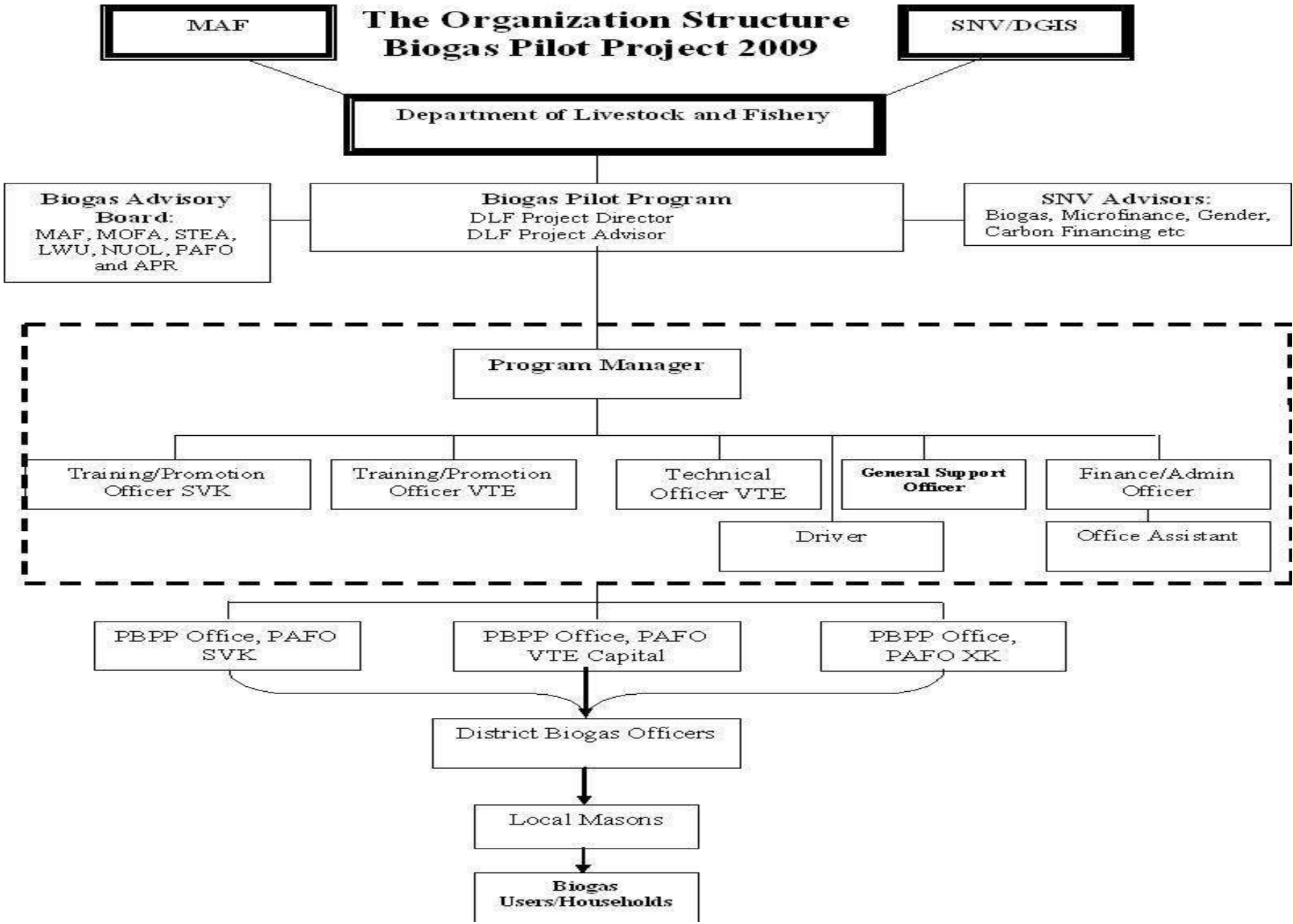
Rural Income and Employment

- **Local masons** trained
- **New jobs** in a sustainable new industry
- **Local PAFO/DAFO** co-ordinate program
- **Materials and labour** sourced locally

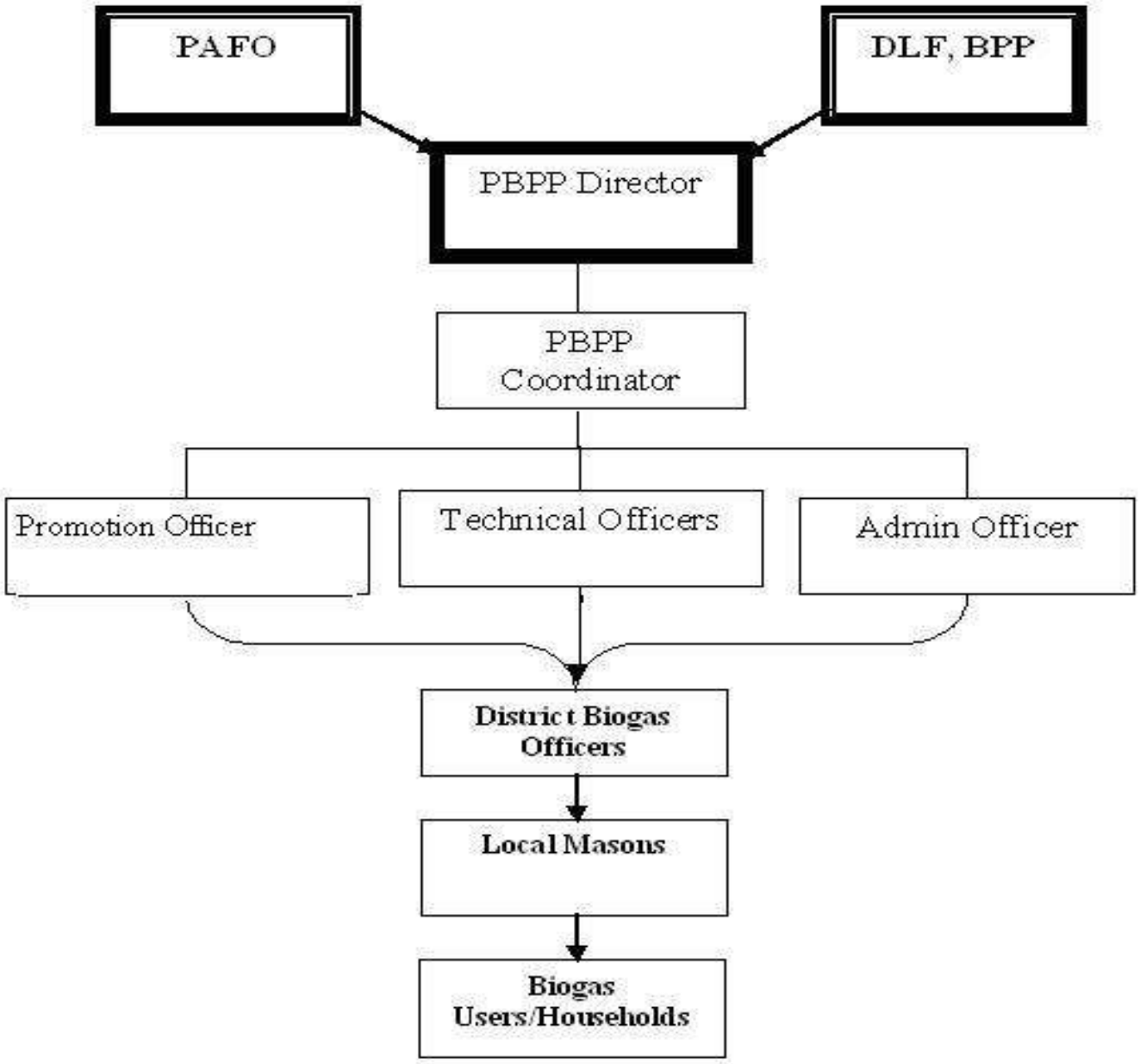
Design of the Lao Biogas Pilot Program

Program General Program objective: *Create a commercially viable biogas sector in Lao PDR*

Implementing Agency	**Ministry of Agriculture,Dept of Livestock and Fisheries**
Funding	**2007 to 2010 from the Dutch Government**
Coverage	**Vientiane Capital, Savannakhet, Xiengkhaoung,Vientiane Province and KhammuanProvince**
Management Structure	**•Central BPP Program Office in DLF •Provincial offices inside PAFO with 5 officers •District officers from DAFO**
Remuneration	**•Performance-based incentive structure**

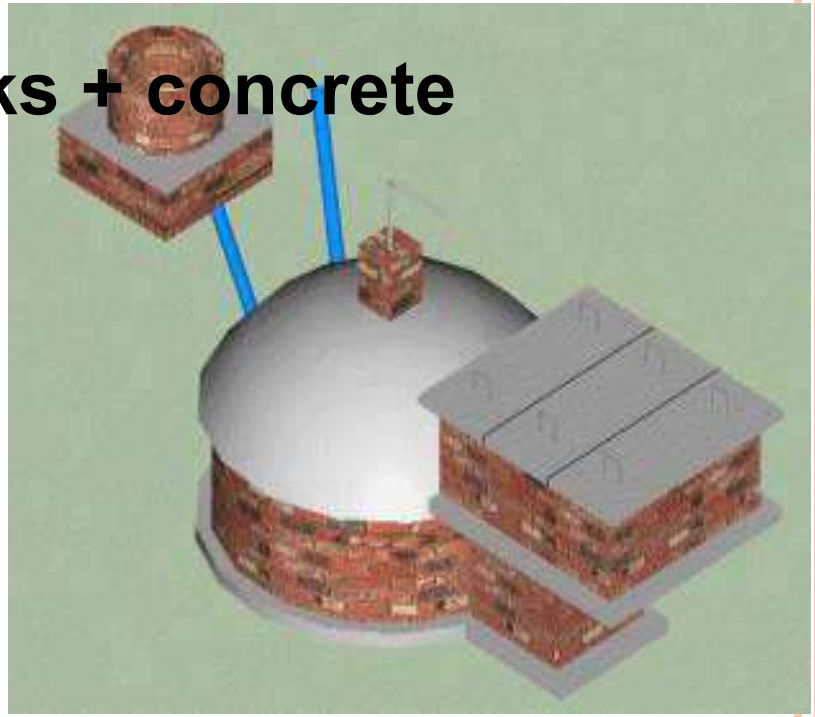

MAF
The Organization Structure
Biogas Pilot Project 2009
SNV/DGIS
Department of Livestock and Fishery
Biogas Advisory Board:
MAF, MOFA, STEA, LWU, NUOL, PAFO and APR
Biogas Pilot Program
DLF Project Director
DLF Project Advisor
SNV Advisors:
Biogas, Microfinance, Gender, Carbon Financing etc
Program Manager
Training/Promotion Officer SVK
Training/Promotion Officer VTE
Technical Officer VTE
General Support Officer
Finance/Admin Officer
Driver
Office Assistant
PBPP Office, PAFO SVK
PBPP Office, PAFO VTE Capital
PBPP Office, PAFO XK
District Biogas Officers
Local Masons
Biogas Users/Households

Provincial Biogas Pilot Program Office Structure 2009



BPP Biodigester System

- **Fixed dome, masonry works + concrete**
- **Sizes:** 4m^3, 6m^3, 8m^3 and 10m^3



- **Quality Management:** 5-step process before, during and after construction.
- Focus on training and monitoring

Biodigester Costs (in Lao Kip)

Size:	4m3	6m3	8m3	10m3
Total Biodigester Cost	**3,751,000**	**4,372,000**	**5,224,400**	**6,004,800**
Household Costs	1,891,000	2,512,500	3,364,400	4,144,800
BPP Subsidy (in kind + cash)	1,860,000	1,860,000	1,860,000	1,860,000
Subsidy Proportion	50%	43%	36%	31 %

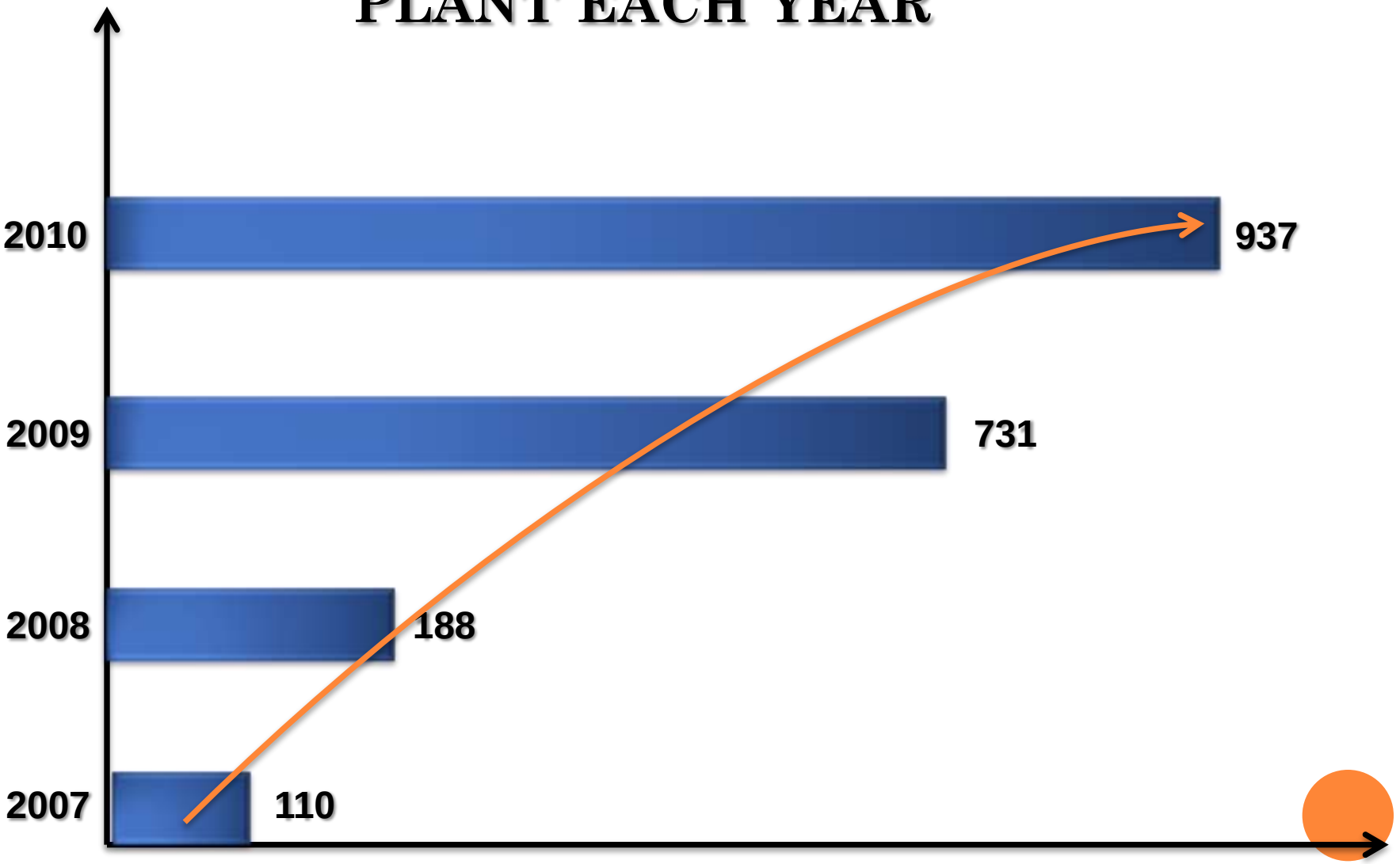
Skilled Labor (trained mason)	**5%**
Unskilled Labor (can be household)	**21%**
Materials	**74%**

Accessories	**22%**
Skilled + Unskilled Labor	**46%**
Skilled + Unskilled Labor	**11%**
Advanced credit subsidy	**21%**

ACHIEVEMENTS

Before BBP	Now
• A few demonstration biogas plants • Very few people had heard of or seen a biogas system	• **Over 2,000 families using biogas** • **Saving about $178,000 per year in energy and fertiliser costs** • **Saving about 1,399 tonnes of wood per year** • **Saving about 155 tonnes of charcoal per year** • **7,300 tonnes of an effective fertilizer were available instead of using the chemical fertilizer per year** • **Local supplier of Chinese Biogas appliances in Vientiane** • **Biogas Credit scheme offered by the Agricultural Development Bank** • **Biogas / bio-fertiliser company in XKG** • **Strong demand from many provinces (PAFO, DAFO, private)** • **1 Local NGO was joining**

An increase of the constructed plant each year



ACHIEVEMENTS (1)

- **Impacts of BPP on People**
  - Around **10,000 people enjoy the benefits of biogas**
  - Over **80 PAFO+DAFO officers trained and employed**
  - Over **150 masons trained (not all active)**
  - Over **$1 million total program costs invested by donor (not including SNV TA)**
  - About **$444,941invested by households in their own system**
  - About **$437,647in subsidies paid to households**
  - About **$400,000paid to PAFO + DAFO as incentive payments**

PROMOTION

Training on Construction and supervision

Research and Development

QUALITY CONTROL AND AFTER SALE SERVICE

Extension of Bioslurry

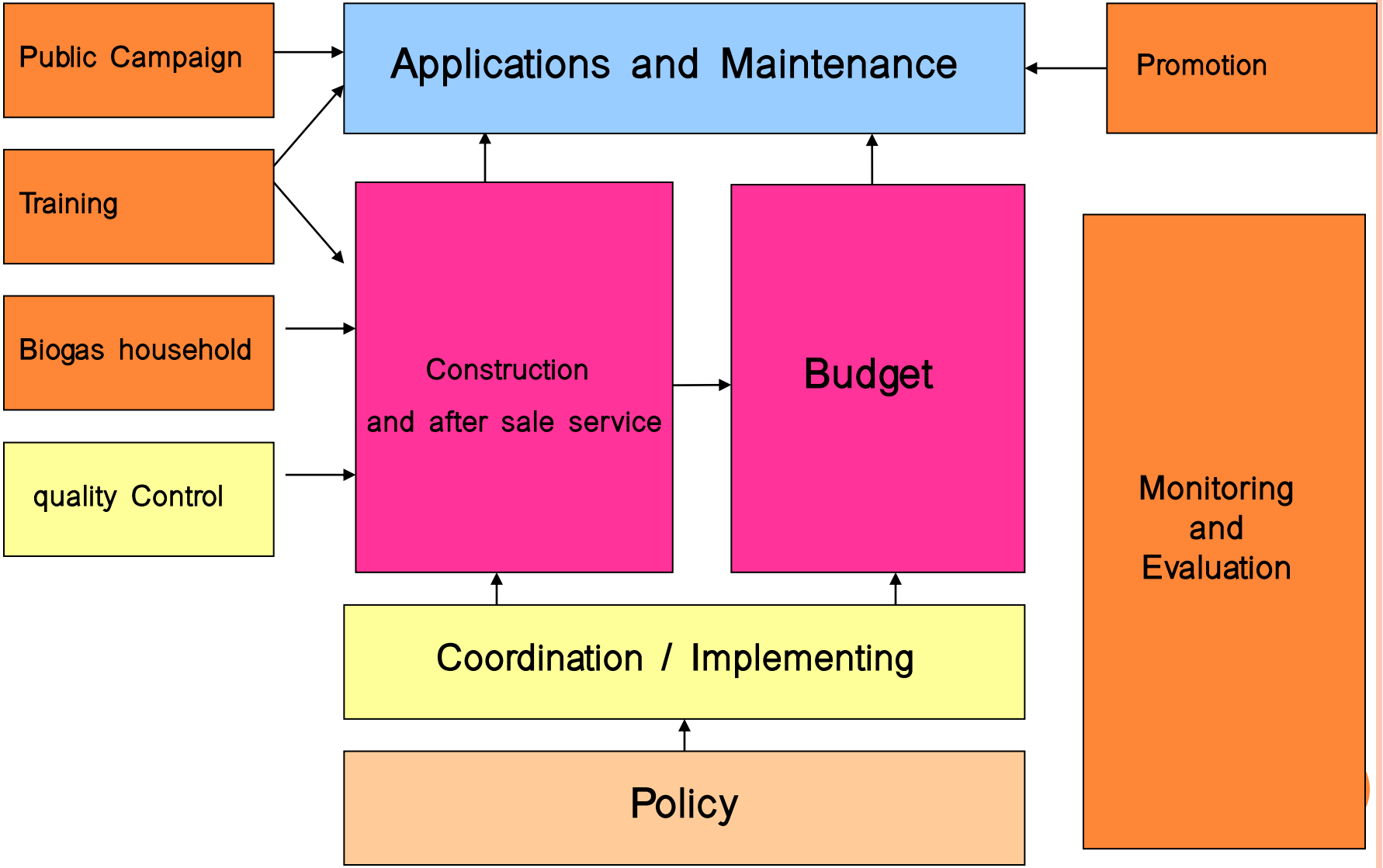
Problems and Challenging

- Other technical issues are mostly after the biogas plant is built.
- A common problem is that pipes get blocked
- Leakage is also a problem that is not unusual with fixed dome biogas plants.
- No have substrate for feeding into the biogas digester
- Biogas user do not maintain

Bioslurry

Bio-digester after four year later

THE MAIN AGENCIES FOR THE PROJECT SUSTAINABLE




Thank
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