

EAP Clean Stove Initiative

Yabei Zhang

Energy Economist, EASIN

March 1, 2012

Agenda

2

- ▣ Context
- ▣ Objectives
- ▣ Strategy
- ▣ Over Program Structure
- ▣ Approach
- ▣ Example of Phase I Work Plan
- ▣ Initial/Preliminary Findings



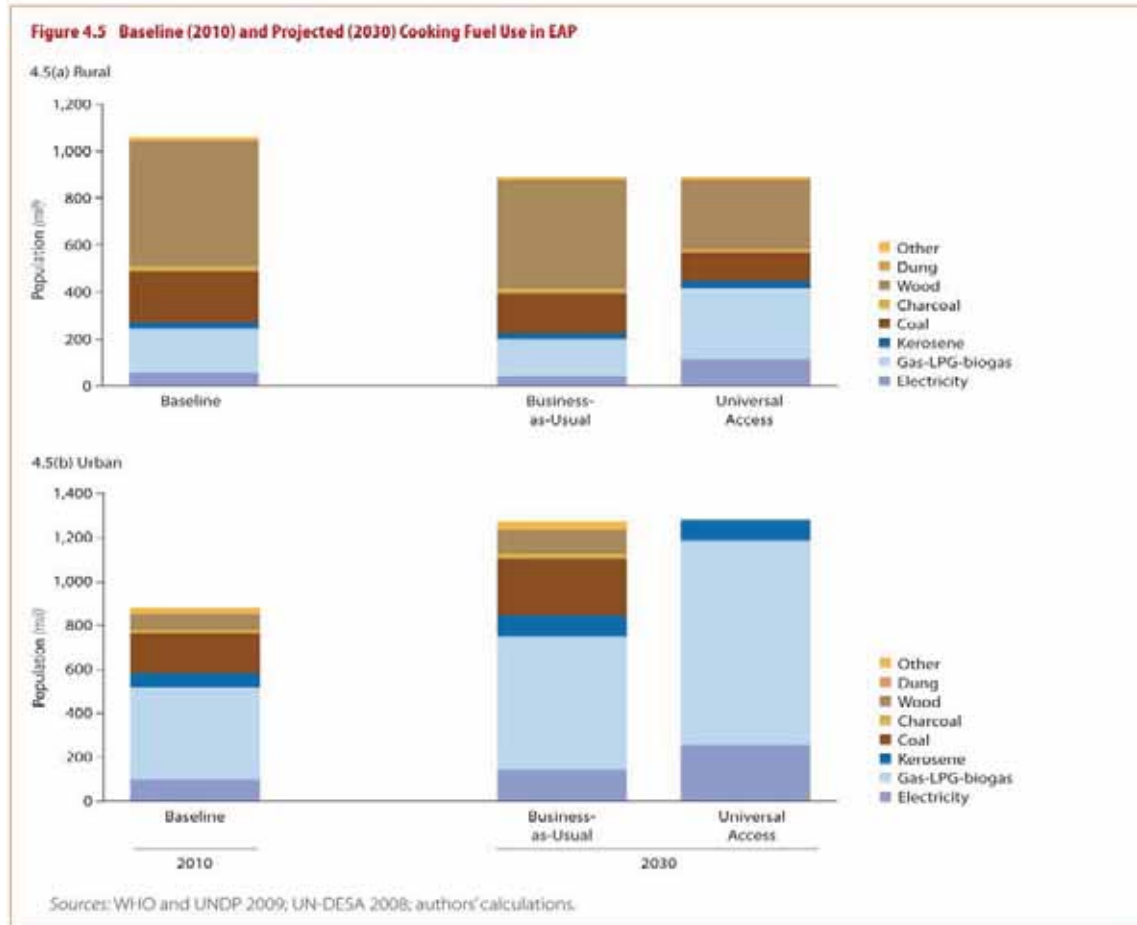
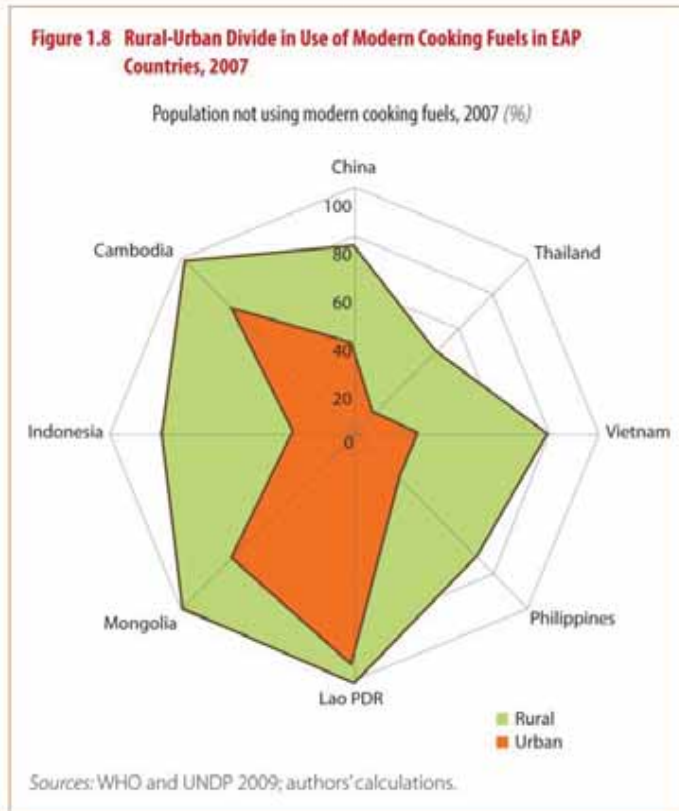
Australian Government

AusAID

Context



A Follow-up of “One Goal, Two Paths” Flagship Report Recommendations.



Objectives

4

- To help scale up access to clean and efficient stoves in EAP countries through capacity building, policy development and supporting selected government action plans.
- To promote regional collaboration, learning and knowledge sharing on access to household modern energy through the establishment of regional energy access forum.

Strategy

5

How to scale-up clean and efficient stoves?

Foster institutional support and enabling policy environment for promotion of clean and efficient stoves

- Establishing and/or strengthening institutional focal point and coordination across sectors
- Engage national and local stakeholders in public and private sectors
- Adopting standards, introducing quality control and testing facilities
- Develop and implement monitoring and evaluation systems

Develop a thriving market and strengthen supply of clean and efficient stoves

- Enhancing market analysis and information sharing between stakeholders and businesses
- Providing financial incentives to scale-up businesses for manufacturing and selling stoves
- Innovating delivery platforms and value chains for manufacturing, distribution, sale and post sale service

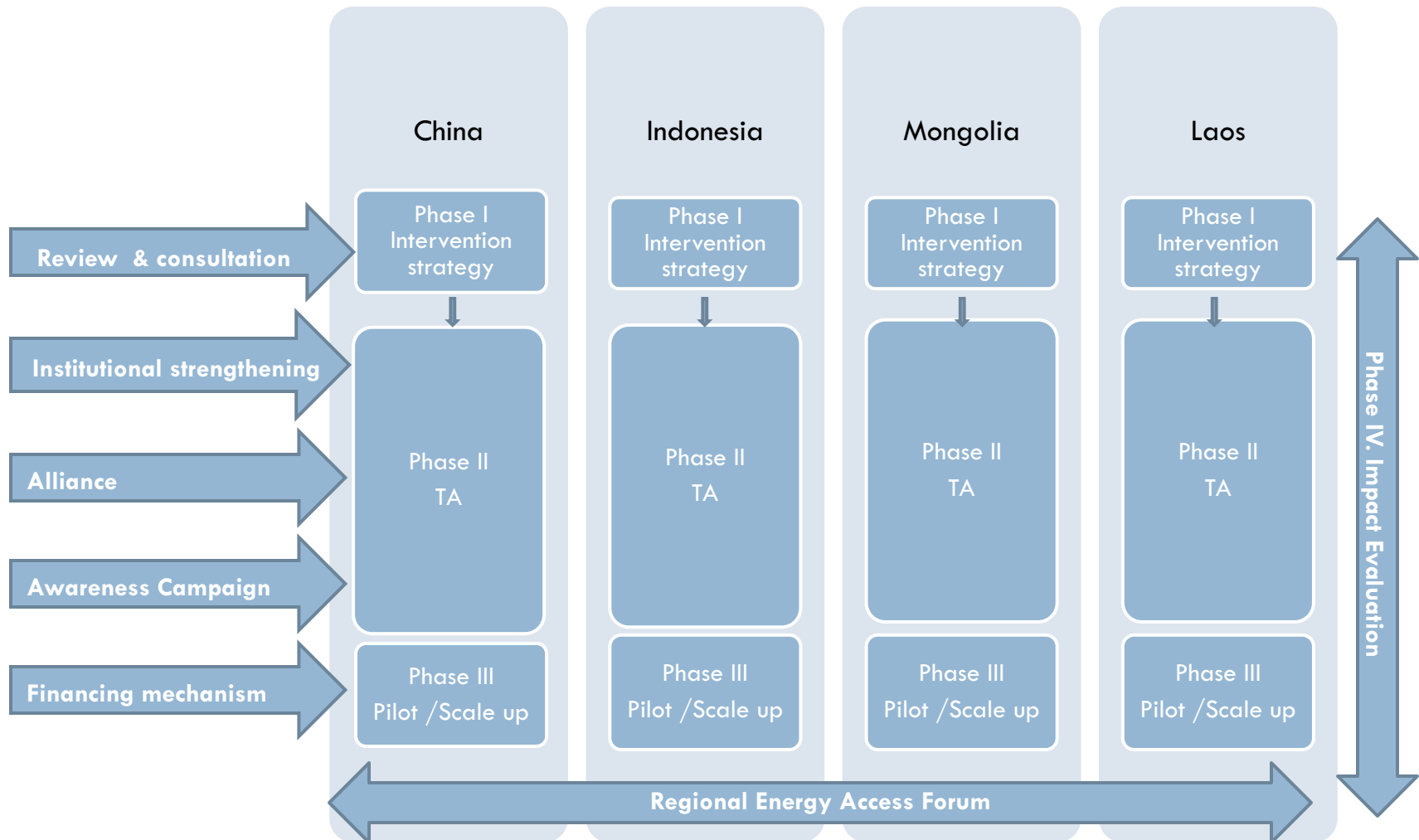
Enhance demand for clean and efficient stoves

- Promoting broad-based awareness
- Providing (micro) credit and other financial incentives to purchase clean stoves
- Engaging communities and civil society in better understanding and motivating consumers as well as providing feedback to suppliers

Transformation strategies for scaling up access to clean stoves

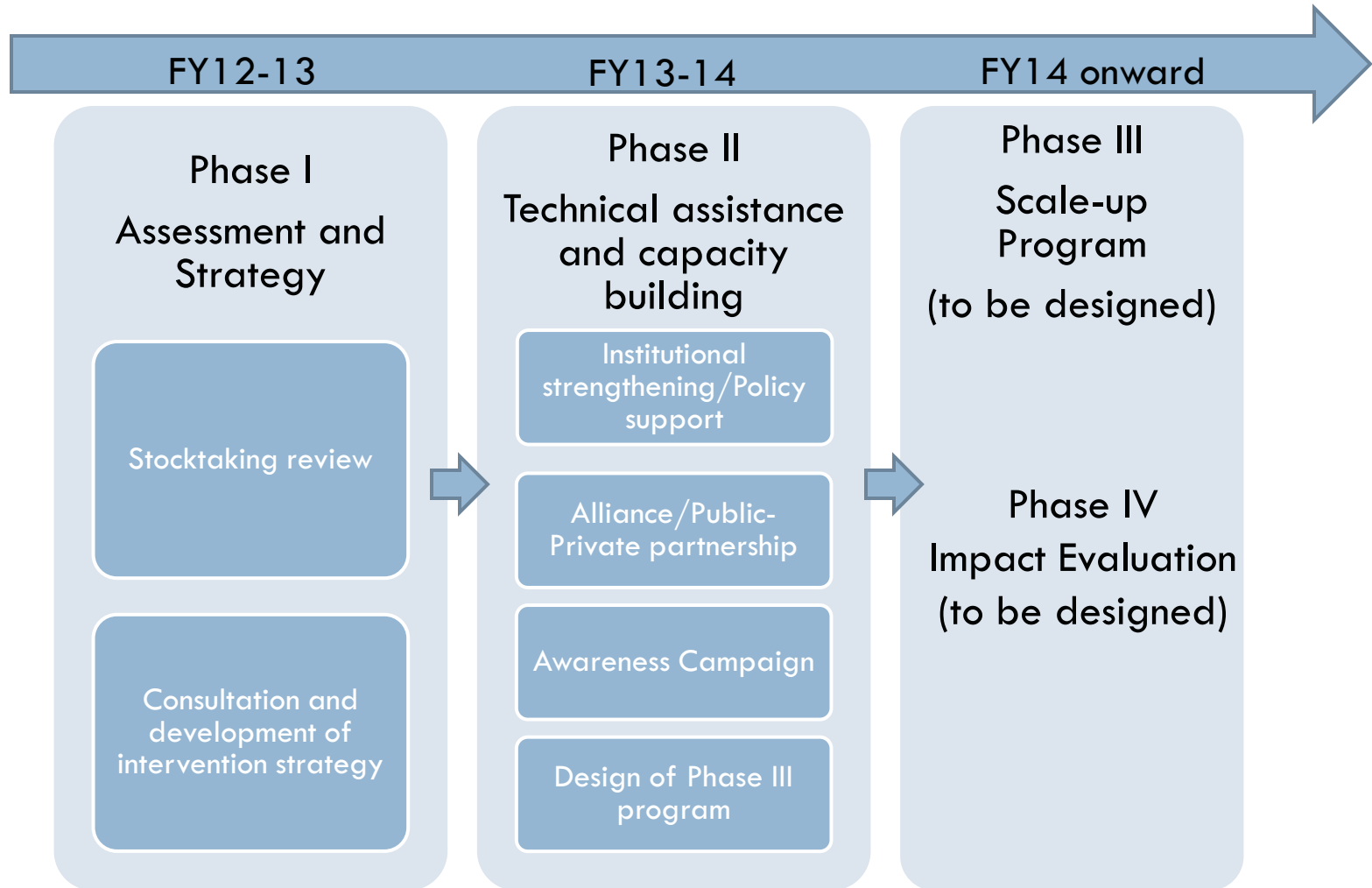
Overall Program Structure

6



Approach

7



Initial/Preliminary Findings

Household cooking fuel use in Indonesia

Of the 59 million households in Indonesia, about 54% use biomass as their main cooking fuel, and most (83%) of them live in rural areas.

The households that rely on biomass as their primary cooking fuel are **mainly located in the Java island**, accounting for 53% of all that use biomass.

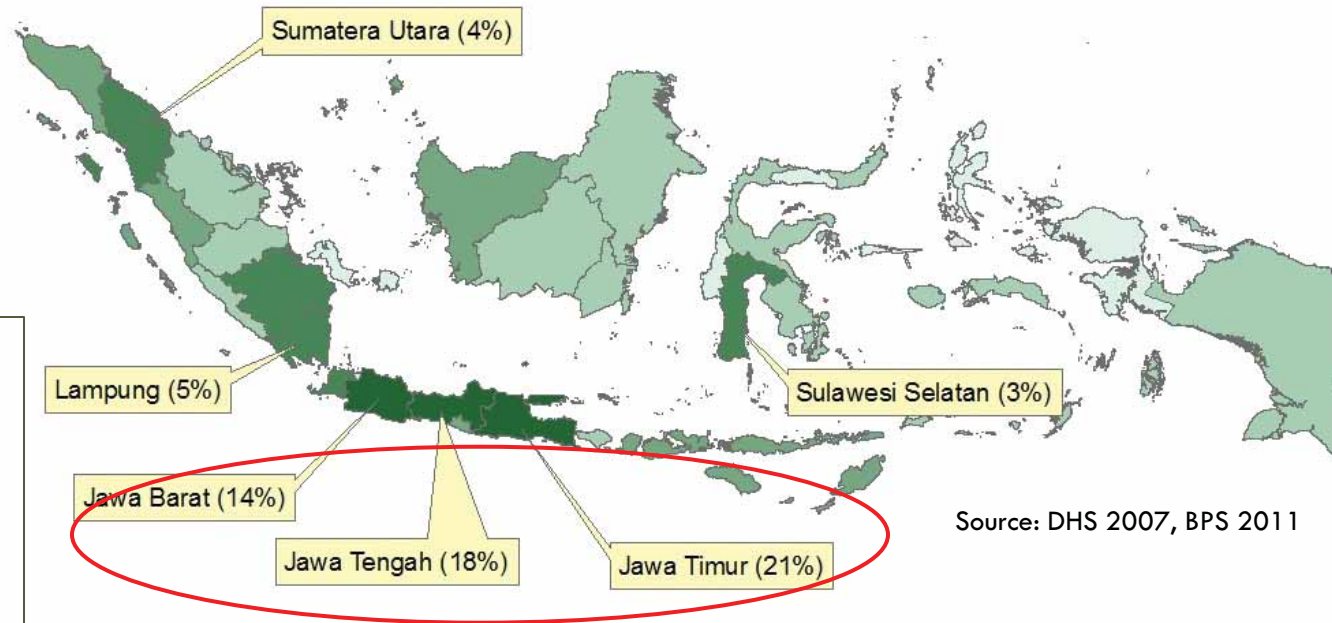


Fig: Province distribution of HHs using biomass as main cooking fuel--

Jawa Timur: 6.4 M (21%)

Jawa Tengah: 5.6 M (18%)

Jawa Barat: 4.3 M (14%)

Lampung: 1.4 M (5%)

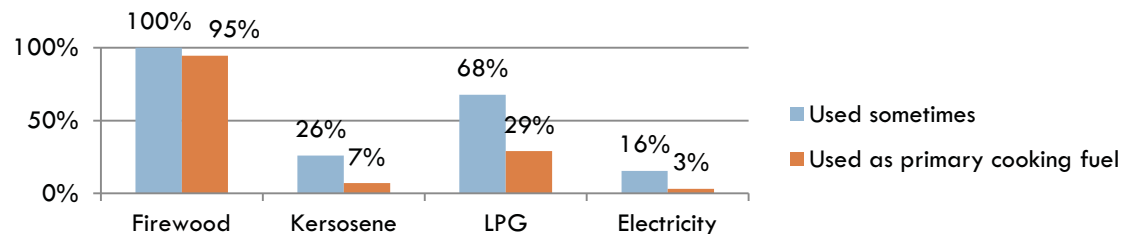
Sumatera Utara: 1.3 M (4%)

Sulawesi Selatan: 1.1 M (3%)

Source: DHS 2007, BPS 2011

Multiple cooking fuels are very common. LPG is increasingly used as cooking fuel, but biomass remains as the dominant cooking fuel.

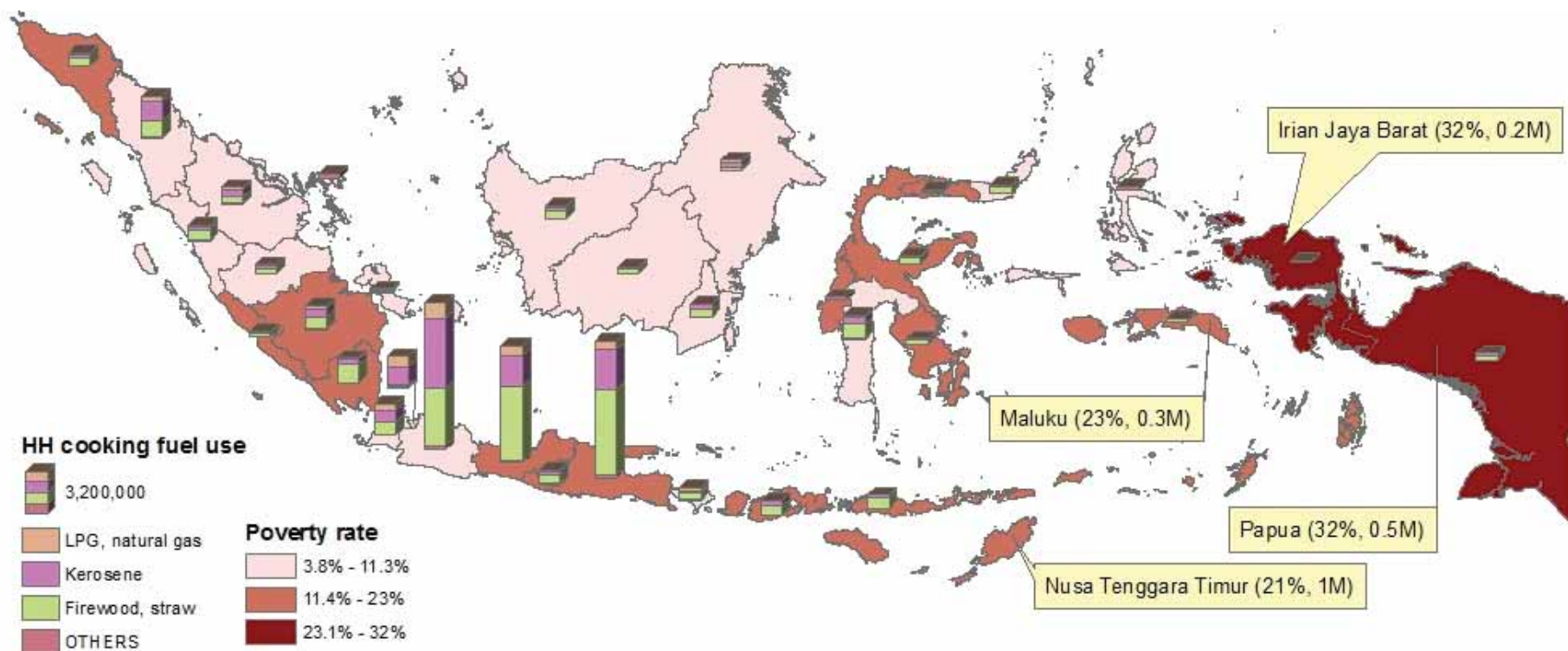
Primary and Secondary Cooking Fuel, Central Java



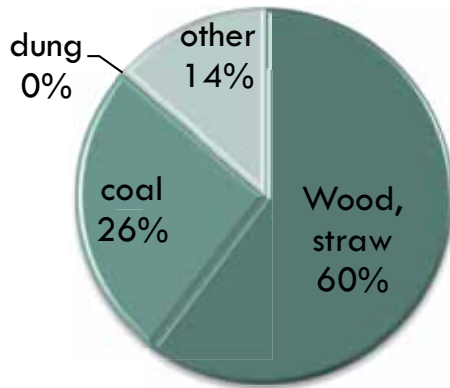
Source: GERES2009

Household cooking fuel use in Indonesia-Cont'd

Java Island has the highest population as well as the number of poor people and the number of households that use biomass as main cooking fuel.

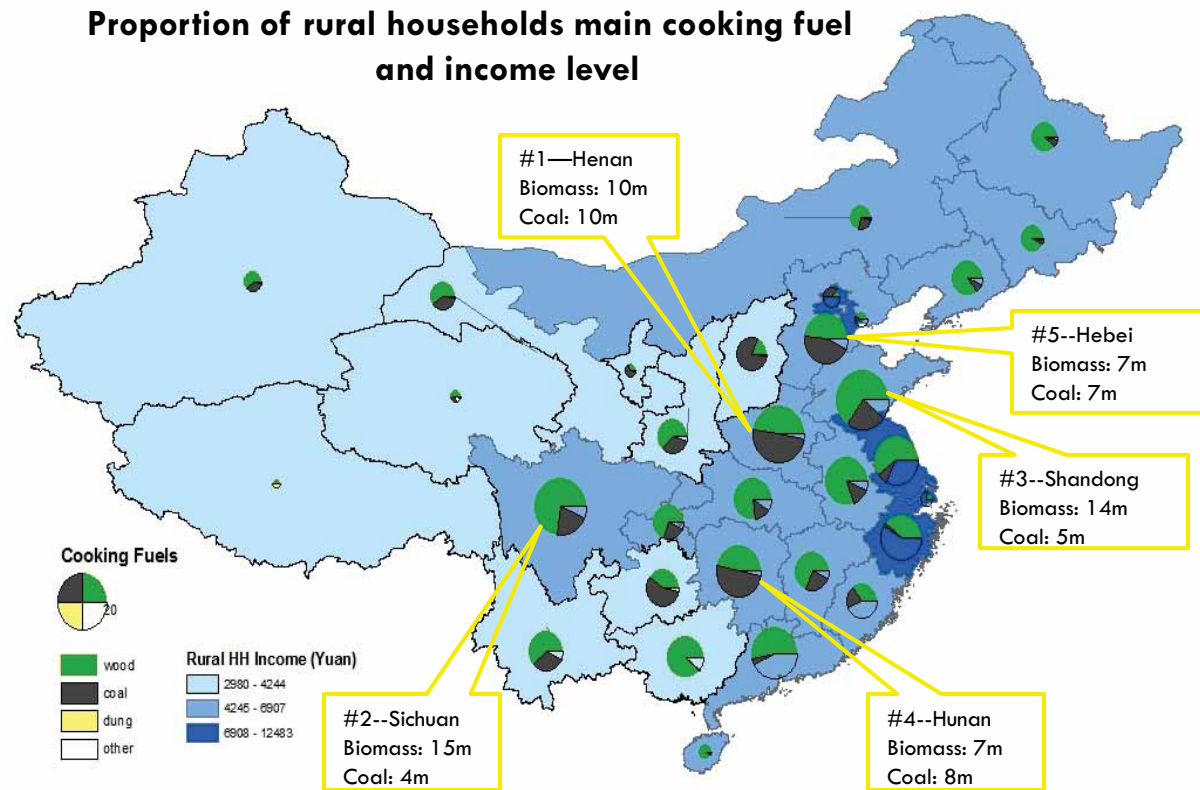


Cooking fuel usage in rural China



- Of the 263.8 million rural households in China, 60% (159 million) use wood and agricultural residues as their main cooking fuel, while 26% (69 million) rely on coal.

- Henan(20m), Sichuan(19m), Shandong(19m), Hunan(15m), and Hebei(14m) have the most households depending on solid fuel for cooking.



Source: the Second national agriculture survey (2006)

Business Model: Biomass Stove

13

- The biomass stove program under INOTEK's Recognition and Mentoring Program (RAMP)
 - Offers incubation facilitation for grassroots inventors/innovators who have ideas/technological solutions with high potentials for social impacts.
 - Supports include idea/technology incubation, business incubation as well as provision of micro equity financing for start-up capital of new technology-driven enterprises/products.

Technology Aspects

14

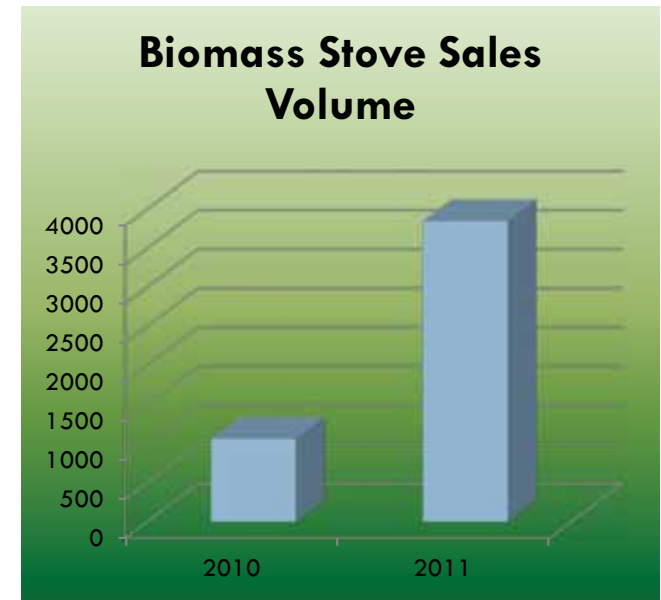


- The stove is designed by using pre-heating and semi gasification mechanism with efficiency up to 50% compared to traditional stoves.
- The stove has been improved and transformed into 3rd generation (called UB-03) during the incubation process and considering feedback from users.
- Stove design is familiarly known by users since its shape is very similar with kerosene stove which is widely used by communities.
- Stove lasts more than 2 years and combustion chamber lasts up to one year.

Business Aspects

15

- Patent was registered in 2009 and an SME (owned by the inventor) was established in April 2011.
- The production facility uses an existing kerosene stove workshop in Malang.
- Production capacity is around 1000 units per month with about 25-30 workers (most of them are women).
- Production cost of a stove (including materials, labor, etc.) is Rp. 75,000 (\$ 9) and the selling price for the stove is \$12. Price for combustion cylinder is Rp. 25,000 (\$2.7).
- Cooperation with Kopernik (online market place) to deliver the stoves directly to rural communities (e.g. through women groups).
- Around 6000 stoves have been sold by November 2011.
- Transportation cost is a major obstacle in expanding the market.



Business Model: Biogas Digester

16

- **BIRU (Biogas Rumah) Program by Hivos**
 - **Objective:** aims to build 8000 biogas units during the program (2009-2012) .
 - **Targeted area:** clusters of high-density livestock areas and aiming at dairy farmers with at least 2 or 3 stabled cows.
 - **Approach:** “Multi-Actor Initiative” which consists of BIRU and SNV, the governments, construction partners, cooperatives and financial institutions to provide credit.

Business Model: Biogas Digester (cont'd)

17

□ **Training and Technical Support**

- 39 Construction partners.
- Provide training and technical support to ensure quality.
- 475 masons and 102 supervisors have been trained so far.

□ **Subsidy Scheme**

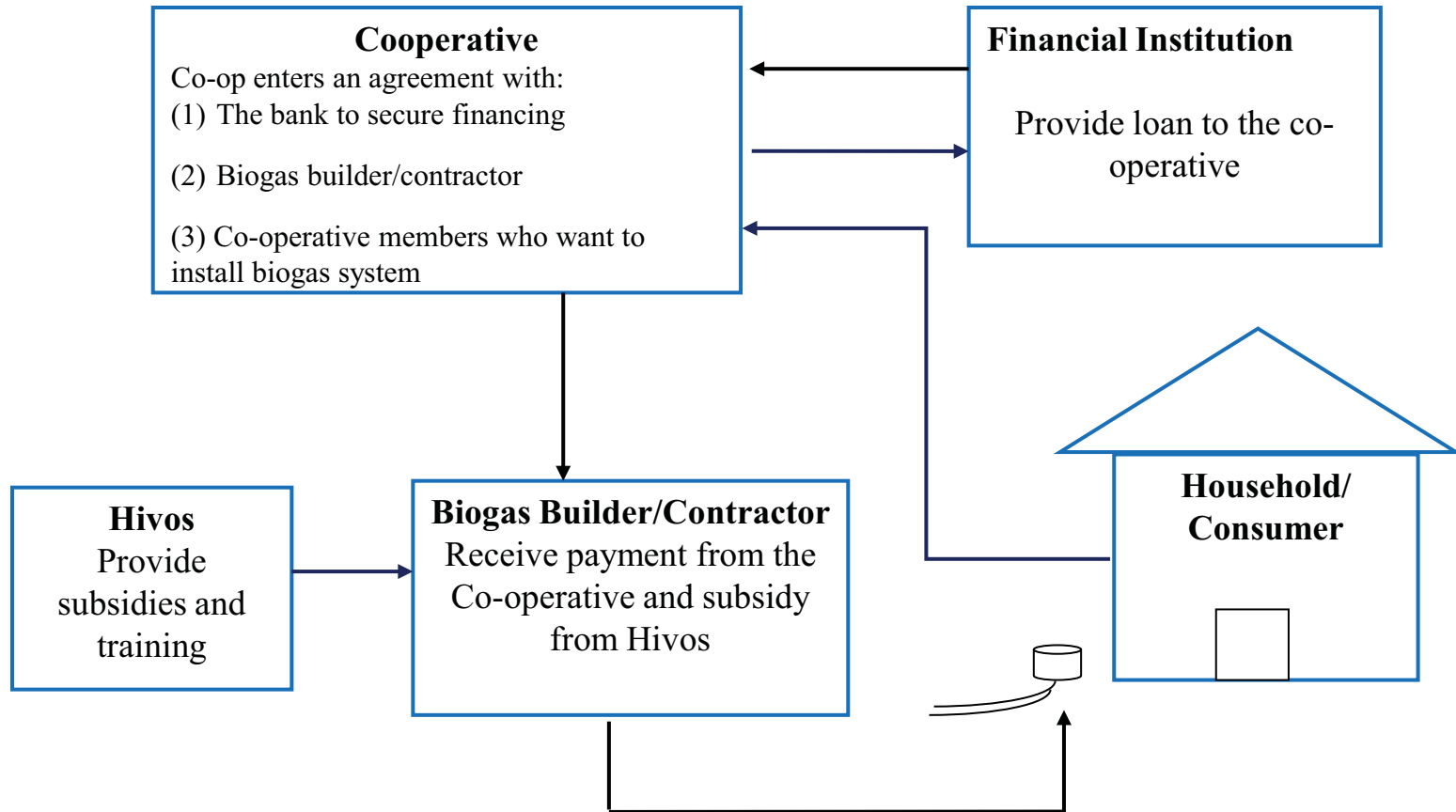
- Provide a subsidy of 2 million Rupiah (IDR) (or US\$225), about 1/3 of the total cost of a typical system.
- The subsidy was paid directly to the biogas builder by BIRU. A portion of payment is linked to annual inspection report to ensure product quality and after-sale service.

□ **Financing Arrangement**

- Involves dairy cooperative and commercial banks to provide credit to the farmer to pay for the biogas system.
- Dairy farmer, who is a co-op member, makes arrangement with the co-op to pay back his/her loan.

BIRU-Financing Arrangement

18



Builder/contractor installs biogas system and provides after-sale service for 3 years

Pictures from Field Visit (1)

19



Slurry Mixer Reservoir



Gas outlet Valve and Gas Pipe from the Bio-digester is Piped to the Kitchen

Pictures from Field Visit (2)

20



Slurry Overflow Pit: Slurry from the Overflow Pit is Mixed with Soil to make Organic Fertilizer



Cow Shed Shared by three Dairy Farmers

Pictures from Field Visit (3)

21



Gas Meter Level, Gas Pipe, Valve,
and Stove in the Kitchen



Gas is used as Supplemental Lighting in
the Kitchen