

# Small-scale bioenergy initiatives in ASEAN +3: *impact, barriers and opportunities*

How2Guide for Bioenergy, Bangkok 22<sup>nd</sup> -23<sup>rd</sup> July 2014



**Mattia Vianello, Energy Consultant**



Food & agriculture



Climate change



Energy



Knowledge & communications



Disaster risk reduction



Markets



## REGIONS WHERE WE WORK



UK office

Latin America

Western Africa

Eastern Africa

Southern Africa

Asia

South Asia

# 2008 FAO-PAC

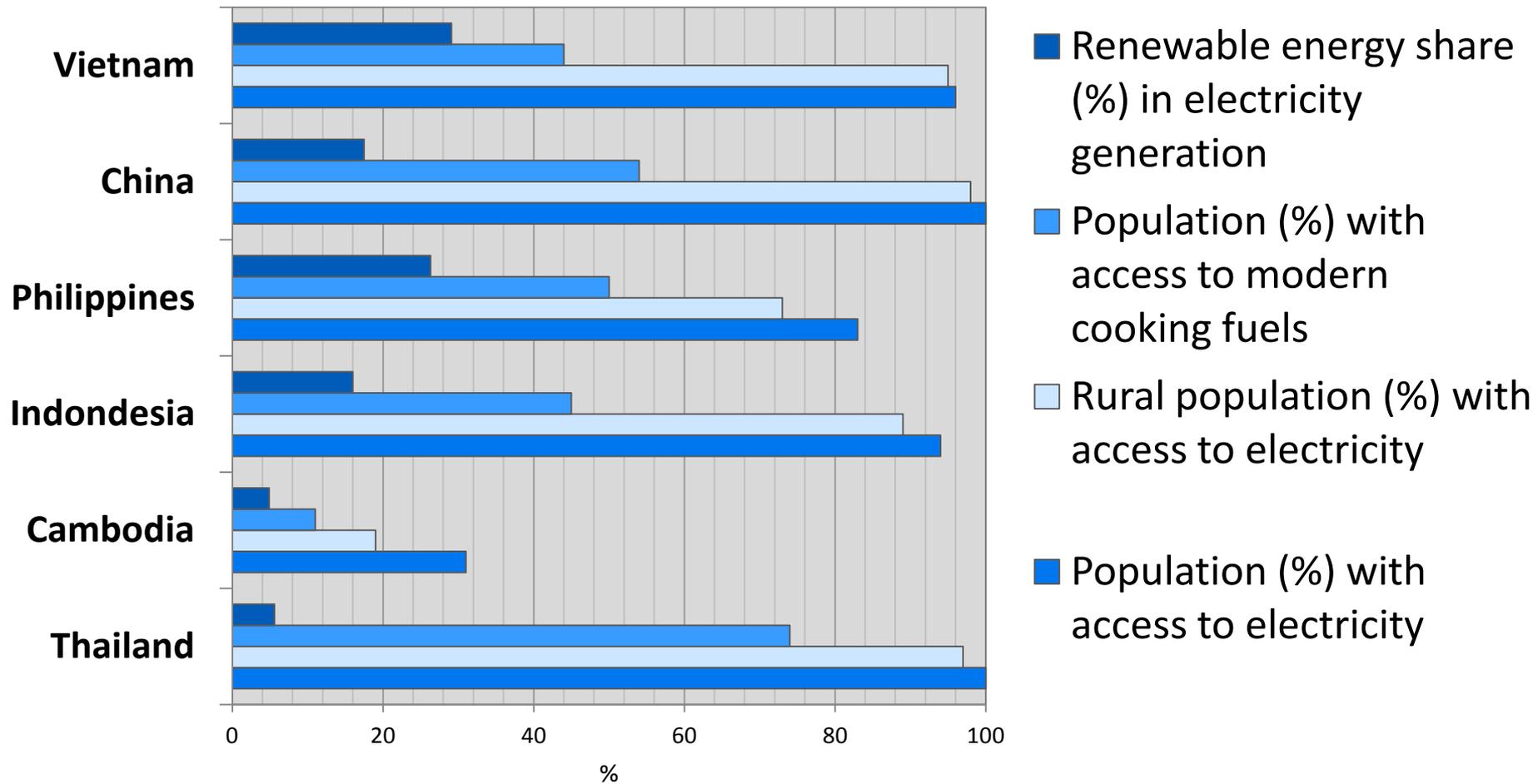
## 15 Small Scale Bioenergy Initiatives Study



# Small Scale Bioenergy Initiatives in ASEAN+3

- Revisited cases + new ones
- Analytical Framework
- **Impact, barriers and opportunities  
for scaling up / replicating**





Access to energy in six ASEAN +3 countries. Data taken from *Global Tracking Framework Report* (World Bank, 2013)

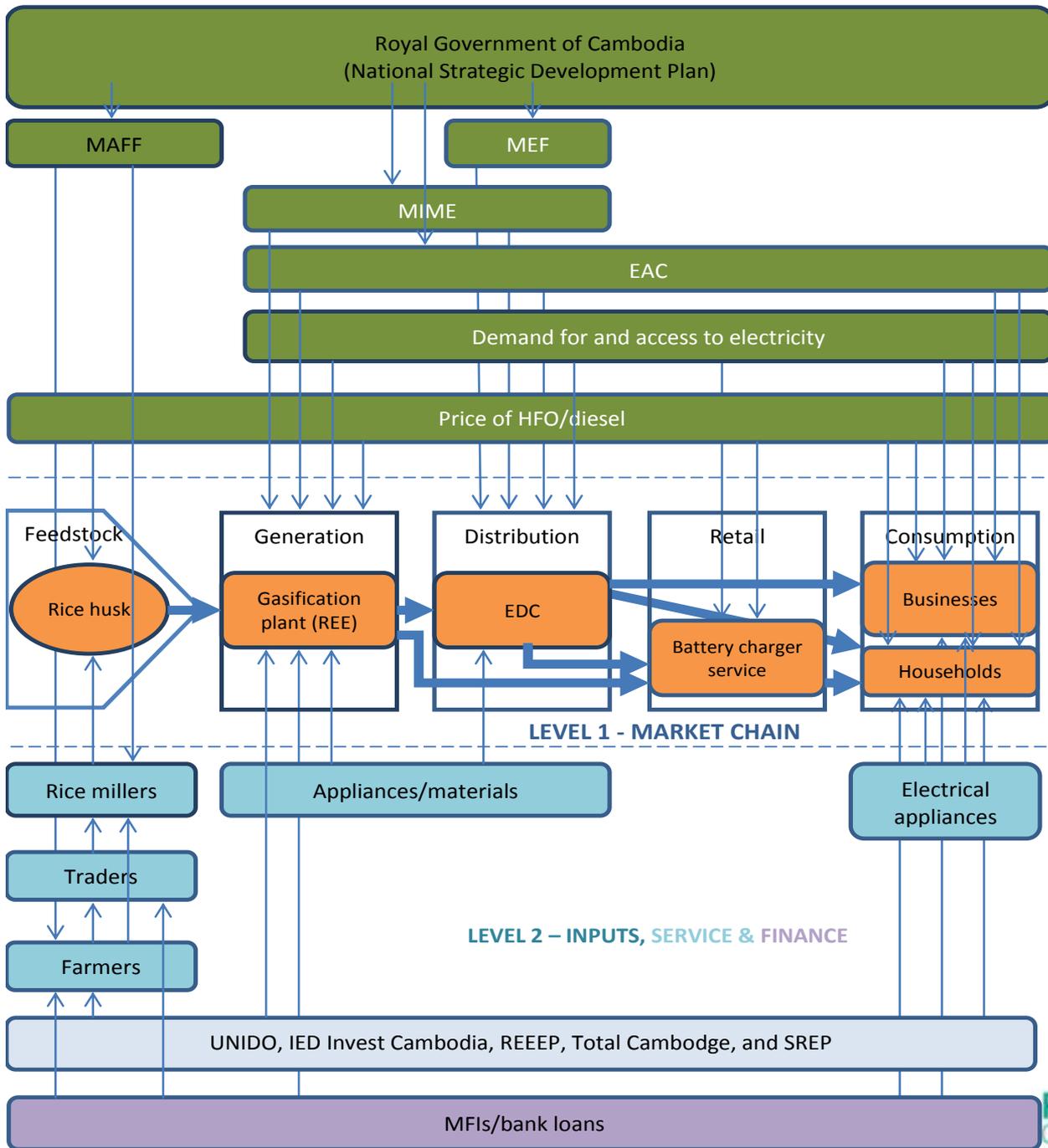




# The Analytical Framework

- Stage 1: Market mapping
- Stage 2: Identification of sustainable livelihood outcomes
- Identification of bioenergy market system barriers, drivers and potential opportunities/interventions





		Rice husk gasifier – Cambodia	Jatropha – Cambodia	BIOMA – China	BIRU – Indonesia	Lombok – Indonesia	Mangrove briquetting – Philippines	Rice mill – Philippines	Biogas chicken farm – Thailand	Jatropha – Thailand	VACVINA – Viet Nam
Improved energy access to	HHs	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary
	Productive uses	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary
Improved Incomes by	Supplying feedstock	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary
	Supplying energy	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary
	Improved agriculture	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary
	Energy saving	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary
	New job opportunities	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary
	Installing/selling devices	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary
	Improved productivity	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary

Key:



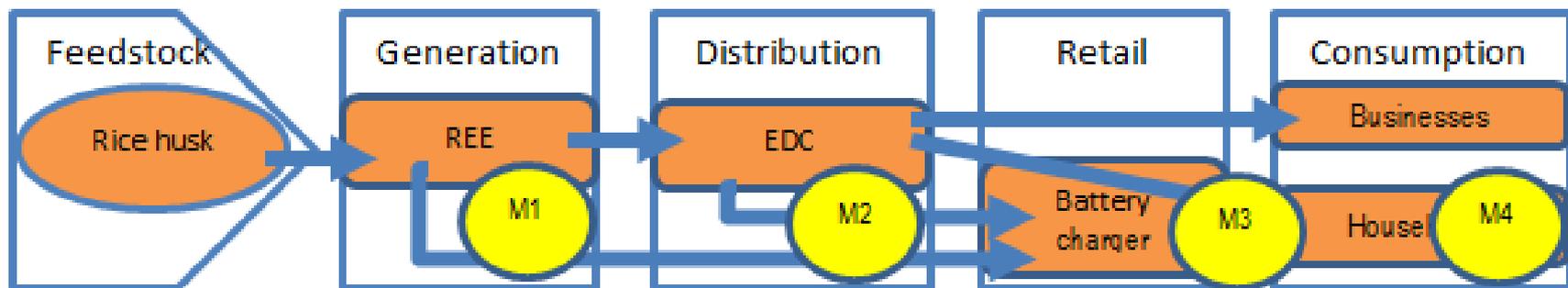
Primary



Secondary



# Market Chain



# Market Chain

- A range of **business models**, from fully commercial to quasi-commercial and non-commercial management structures.
- **Cost** at different levels of the supply chain
- Development of **appropriate** technologies
- **Capacity** of the market actors to produce distribute and retail their products
- Existence of **suitable demand** for bio-energy



# Supporting Services

## Level 2: Inputs, services, finances and outputs

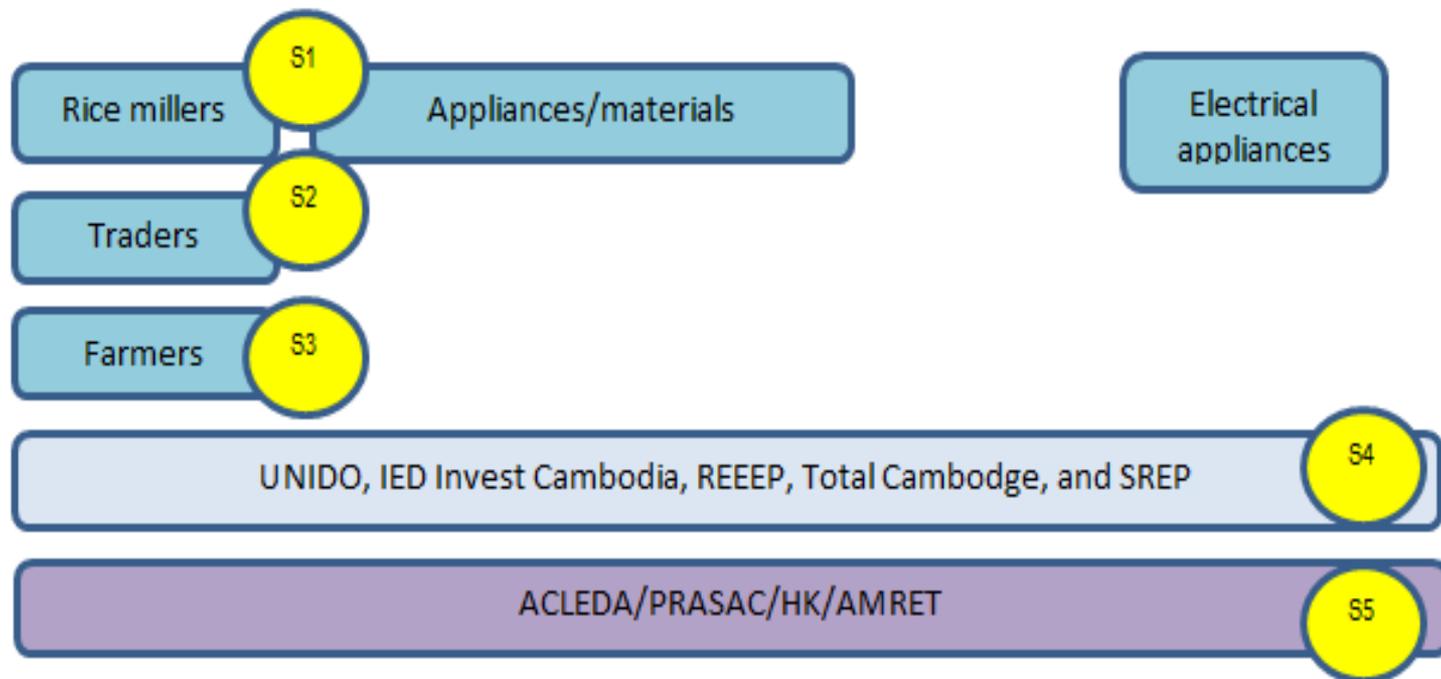


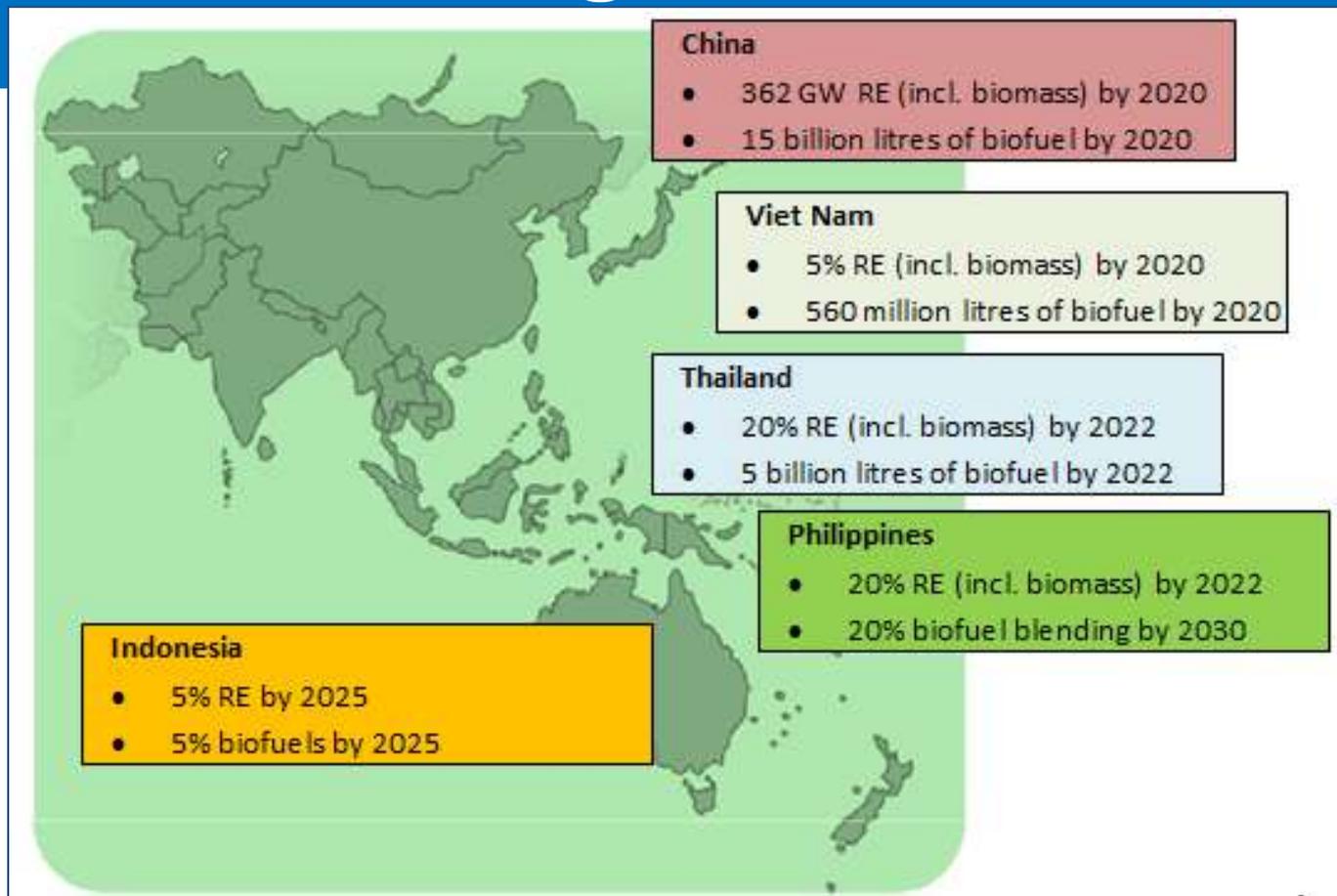
Figure 2 Barriers, driver and interventions: inputs, services, finances and outputs

# Supporting Services

- Access to **technical assistance**
- Access to appropriate **financial services**
- Access to **after-sale services** (including access to adequate spare parts)
- **R&D** to develop locally appropriate technologies
- Access to a sustainable and suitable supply of bioenergy resource **inputs**



# Enabling Environment



Government-supported bioenergy targets of ASEAN +3 countries  
(Adapted from: Bioenergy and Food Security in ASEAN, FAO 2013 and  
Philippine Biofuels Situation and Outlook, USDA 2013)

# Enabling Environment

## Level 3: Enabling environment

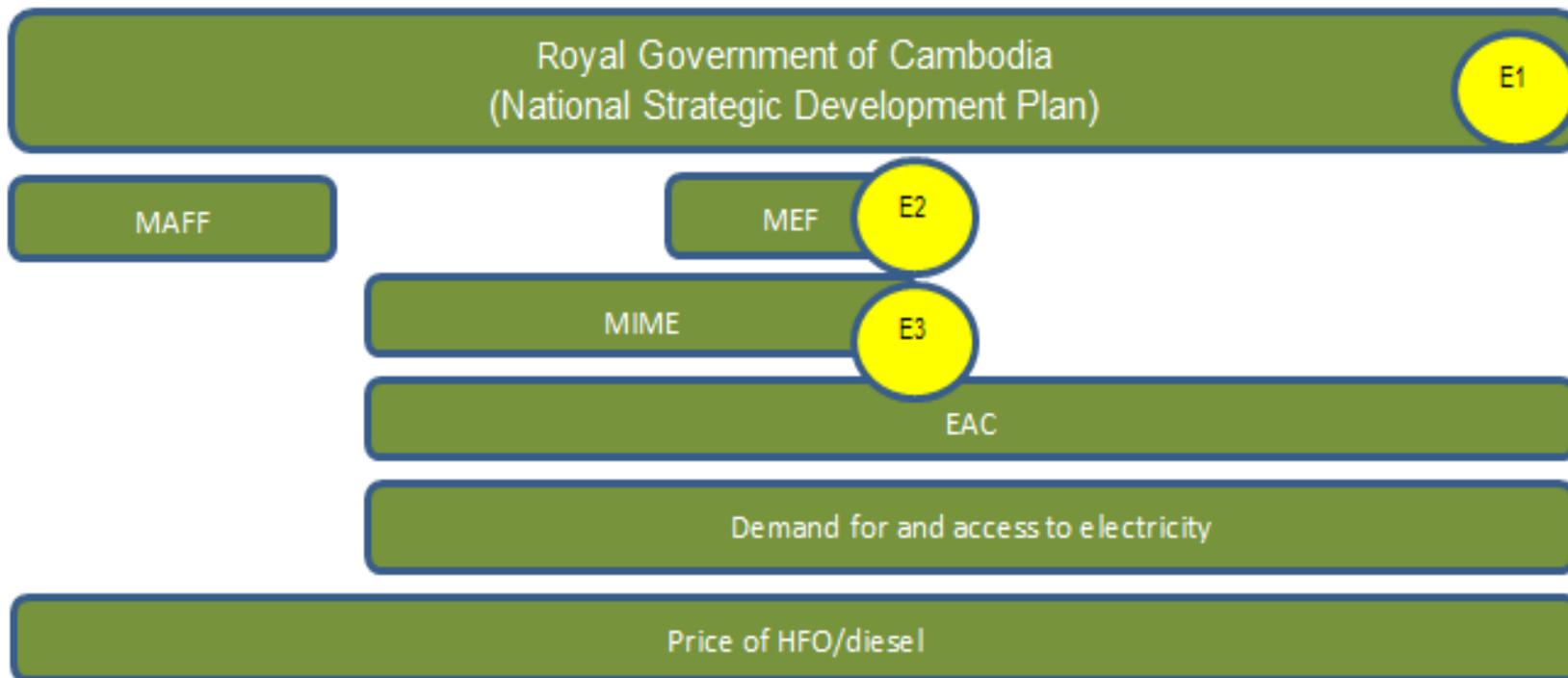


Figure 3 Barriers, drivers and interventions: inputs, services, finance and output

# Enabling environment

- **Infrastructure** for distribution of feedstock, appliances and spare parts
- **Cultural barrier**
- **Regulations** and standards (right equilibrium)
- **Rural development** strategies
- **Agriculture and energy sector synergies**
- **Bottom-up & top-down**



# Sustainable Livelihoods

GBEP indicators + BEFS operator tool

**Economic, social and environmental** impact and sustainability



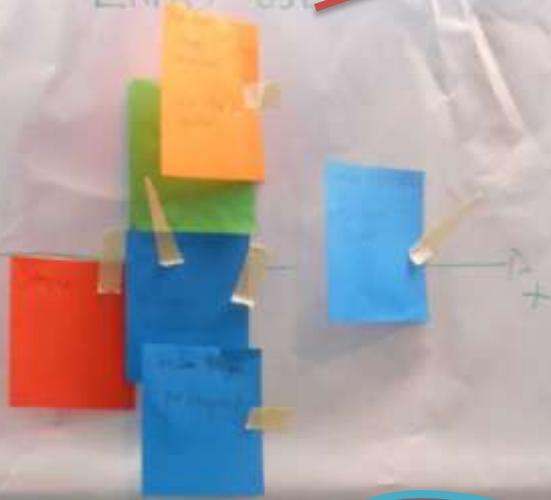
The image is a screenshot of the BEFS (Bioenergy Food Security Assessment Tool) interface. At the top, the BEFS logo is displayed. Below it, the title reads "OPERATOR LEVEL FOOD SECURITY ASSESSMENT TOOL – VERSION TWO". The page contains introductory text explaining the tool's purpose and instructions for use. A link is provided to access a two-page overview of the tool. The main section is a form titled "Operator overview" with the following fields:

- Name (Company/Operator/ Organisation):
- Type of operation (hectares):
- Bioenergy feedstocks:
- Operator's Coordinates:
- Country:
- Input coordinates below or click on the map to locate the operation:
- Latitude:
- Longitude:

To the right of the form is a map of the world with a red dot indicating the location of the operation.

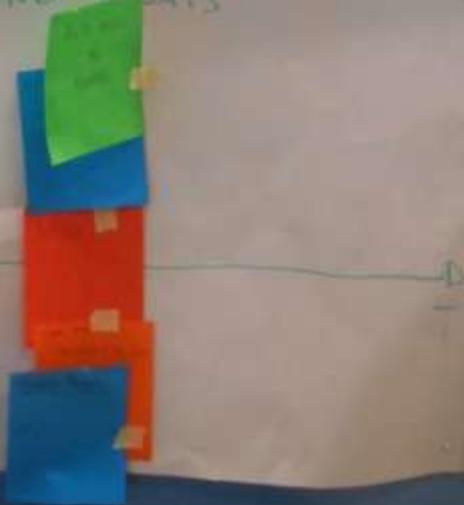


LAND USE



**Land Use:** not yet, but in the future if scaling up without proper regulations?

LAND RIGHTS



**Land tenure rights:** inadequate legal framework around land occupancy and ownership. Risk of scaling up!

## CHANGES IN INCOME

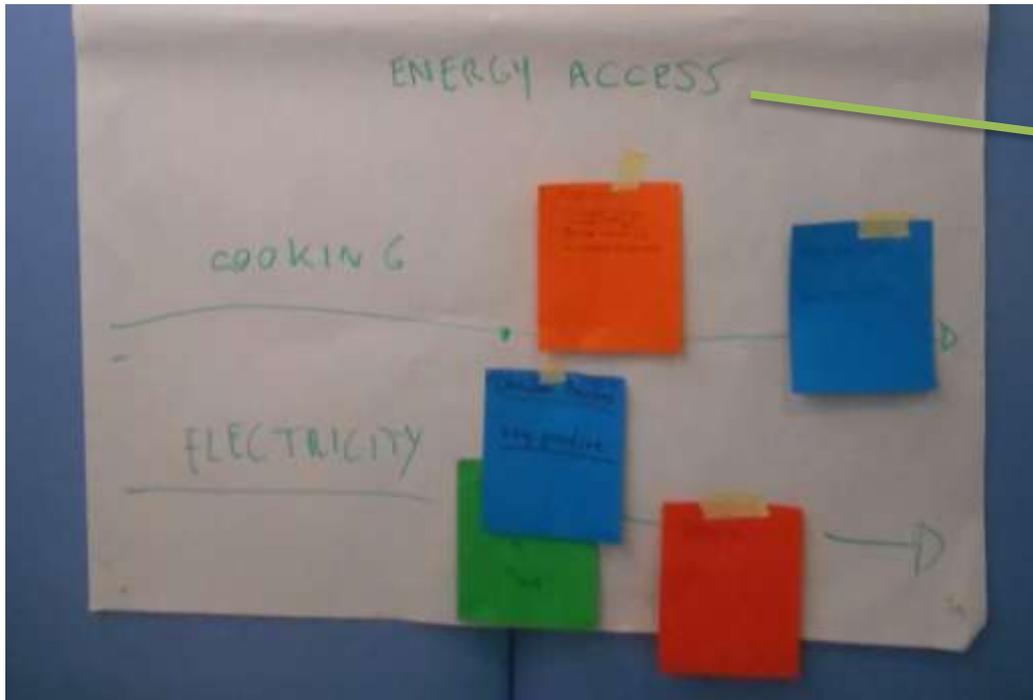


**Changes in income:** improved incomes and fuel cost savings + new income sources.

## JOB'S & LABOUR



**Jobs and labour:** Direct and indirect employment, + labour conditions



**Energy access:** + convenience, reliability, affordability and quality energy for end users (HHs and businesses)

# Food Security

	Cambodia - rice hull	Cambodia - Jatropha	Indonesia- biogas	Indonesia Lombok	Phil - mangrove	Phil - rice husk	Thai - biogas	China- biogas	Viet - biogas	Thai - Jatropha
<b>Availability</b>										
<b>Access</b>										

Key:



Positive impact



No impact

How to identify the tipping point when small-scale initiatives replicate and scale-up to become unsustainable?



# Impact of small-scale bioenergy initiatives

- Natural resource efficiency
- Benefits along the market chains
- Value of waste products
- New businesses
- Energy services have their own impact on socioeconomic development
- Increased affordability of food products



# Lessons for scaling up

- Systemic approach
- Collaboration
- Long-term planning and business model development
- Contextual differences for sustainability
- Financial support + Economic viability
- Awareness-raising + demand-creating
- Synergies energy/agriculture
- Knowledge exchange
- Link to global initiatives



# Recommendations for further work

- Country-level needs assessments
- Country-level bioenergy market system assessments
- Detailed economic analysis of initiatives
- National policy and regulation assessments
- Development of appropriate finance schemes
- National awareness-raising programmes
- Technical assistance and R&D support
- Regional policy-makers knowledge exchange





# Thank you!

Mattia.vianello@practicalaction.org.uk

<http://practicalaction.org/consulting-uk>

