

REGEND – Regional Initiative for Promoting Small-Scale Renewable Energy Applications in Rural Areas of The Arab Region – Business Models

Regional Workshop on “Business models for the integration of renewable energy technologies into rural development” – 25 October 2021



Shared Prosperity Dignified Life



Sweden
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Definitions

- **Renewable Energy:** The energy generated from renewable, theoretically inexhaustible and non-fossil-based, energy sources which are replenished in a human lifetime. Renewable energy sources include solar, wind, marine (ocean), hydropower, geothermal and bioenergy.
- **Small-Scale RE Technology:** The technology which converts RE sources into electrical or thermal energy with an output power capacity up to around 100 kW.



Integrated Business Model Approach

Aspects to consider

Affordability

Capital Financing

Water-Energy-Food
(WEF) nexus

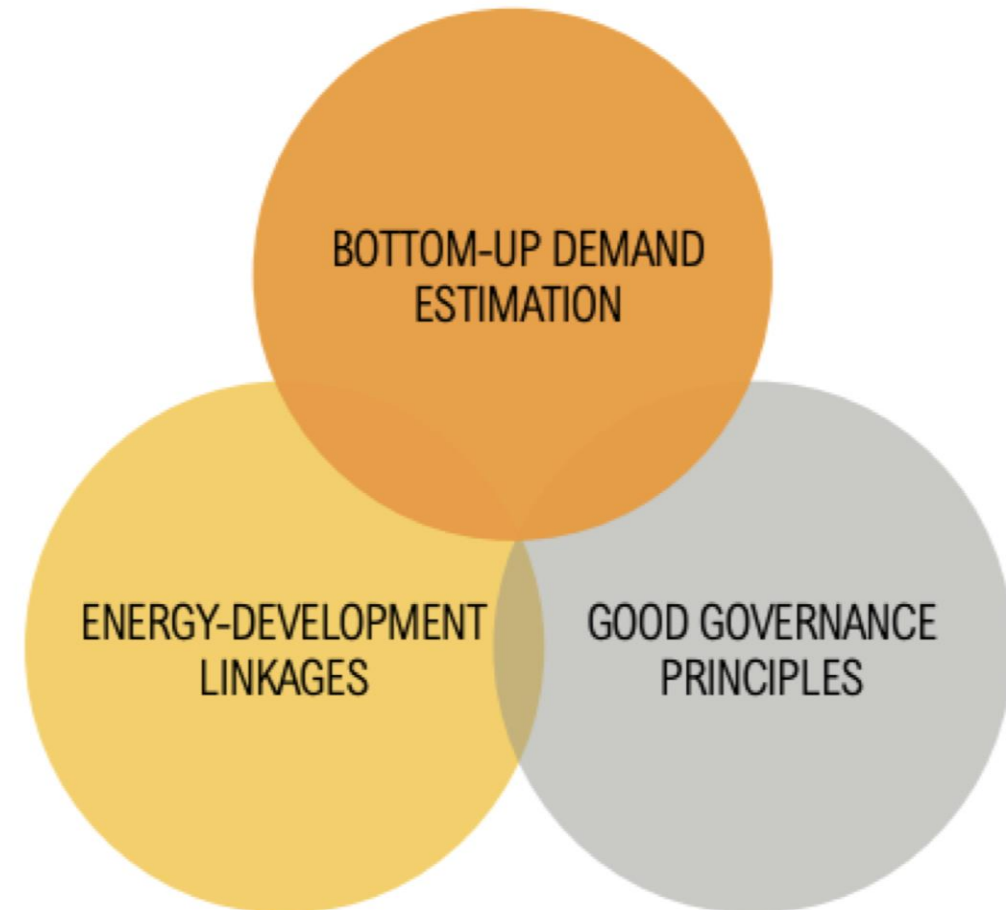
Women Empowerment

Rural development

Community Participation
and Buy-In

Environmental Protection

Community Engagement
and Capacity Building



Business Model Development Steps

1

Establish national and regional baselines and select suitable site locations.
Baseline analysis to quantify the demographic data, energy requirements and price/cost, and availability rates of RE sources at the project site, etc.

2

Identify and select feasible RETs for the identified opportunities.

3

Create a delivery model framework, e.g. using the Energy Market System Assessment (EMSA).

4

Use the energy market map to identify barriers and the respective mitigations and interventions.

EMSA Delivery Model Framework

Model components to define

Enabling Environment

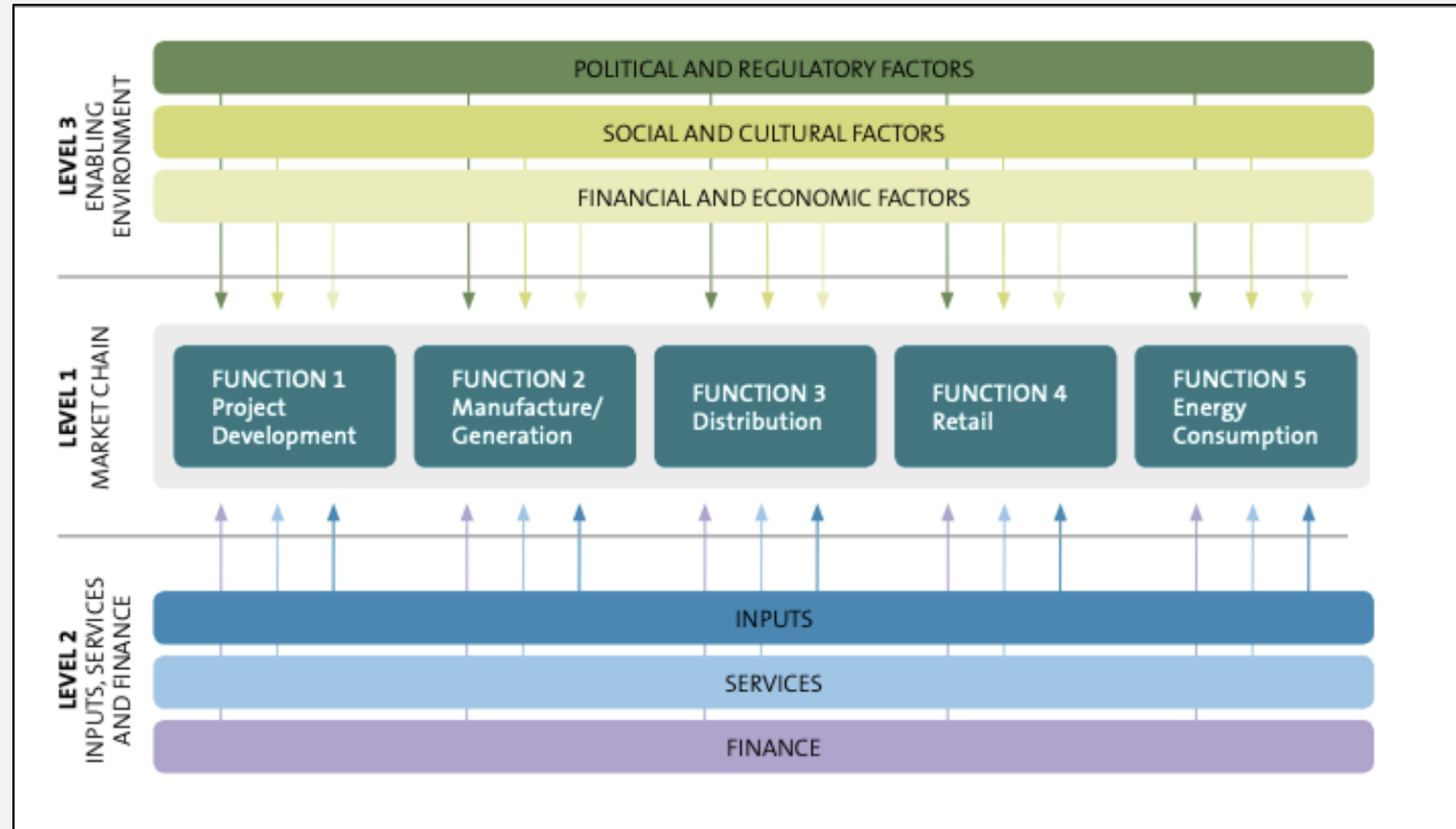
Ownership

Capital Financing

Delivery Model Option

End-user Financing

Stakeholders



Source: EUEI PDF, 2015

Financing Options for Rural End-Users

Service Model

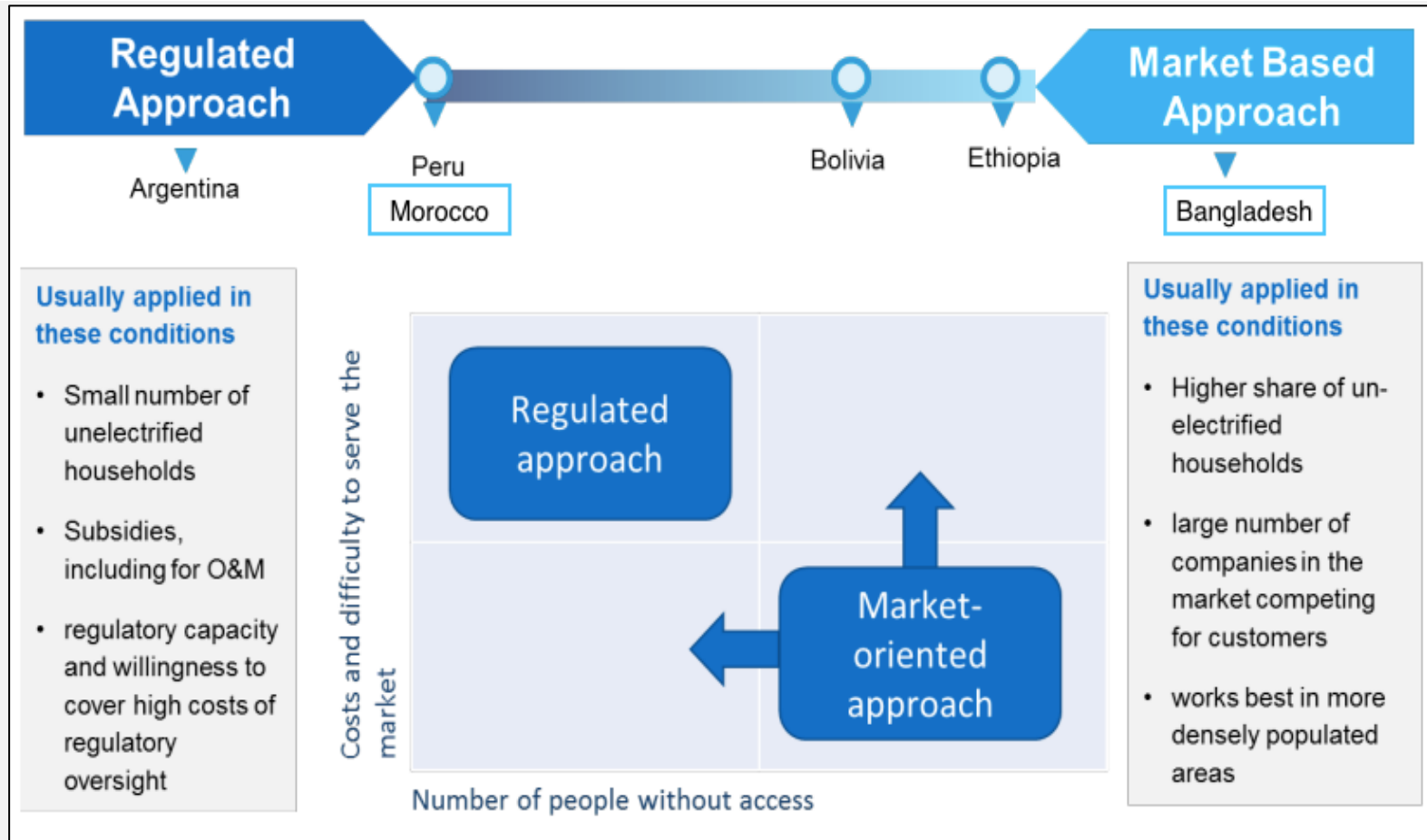
- Rural customers are being provided a service or access to a product that they pay for with a service fee.
- The RET system itself is not sold to the community members and the company ensures the correct operation and maintenance of the system.
- Service providers can range from concessionaires, ESCOs, NGOs to user cooperatives.
- **Fee-for-Service** – is where the end-user decides upfront based on a package how much electricity they need and pays a flat rate at regular intervals.

Ownership Model

- Customer purchases the RET equipment and products can be bought directly for cash in retail sale models.
- Payment mechanisms may require payments to be broken down into regular instalments over defined periods of time to be accessible and affordable for the communities.
- **Pay-As-You-Go (PAYG) Model** – the end-users pay for electricity consumed based on a flexible PAYG billing structure.
- **Micro-Finance Schemes** – Rural end-users are offered micro-loans by MFIs, directly or through the RET business, to pay at least part, if not all, of the capital cost of the equipment.

Scale up of RET Deployment

Regulated or Market-driven approach



Source: World Bank, 2017

Case Study: UNDP Solar mini-grids in Yemen

- To support vulnerable populations, UNDP and Enhanced Rural Resilience in Yemen (ERRY) partnered to provide affordable energy to three villages near the frontline of the conflict in Hajjah and Lahj.
- The aim of the project was to provide affordable energy to vulnerable populations while also empowering women and youth economically to help support their families.
- Local women were trained to **establish, manage, maintain,** and **promote** the solar mini-grid businesses. In the Abbs district, the **solar mini-grid is owned and run entirely by women** which helped them challenge gender norms and create new roles within their communities.
- The solar mini-grid reduced bills by 50% and have created a monthly income of \$70 US for the grid owners as well as providing improved security in the community.



Source: Al Jazeera, 2020; Ashden, n.d.c.

REGEND Main Pillars

DRIVER

INCLUSIVE , SUSTAINABLE, ENVIRONMENTAL AND ECONOMIC REVIVAL & DEVELOPMENT OF THE ARAB RURAL COMMUNITIES

PILLARS

RE Technologies

- Effective/innovative RE-Small scale decentralized and modular, energy systems.
- Water-Energy-Food nexus
- Access to productive resources, appropriate and reliable services.

Human Capacity

- Model based on knowhow
- Trainings, Knowledge skills/Advisory Services.
- Bringing change among rural community from resource poor living standards to reliable, affordable and modern sources of energy.

Women's Empowerment & Social inclusion

- Economic power in rural women's hands
- Female mentor
- Participative and bottom-up approach

Entrepreneurial development

- Economic transformation, Environmental and socio-economic development priorities
- Entrepreneurial jobs in productive sectors
- Spawn energy-based enterprises around RE based service providers

Policy and institutional Framework

- Pro-poor investments and private sector involvement
- Synergies among national/regional stakeholders.
- Innovative incentive mechanisms.

Cross Cutting

Human Rights, Gender equality, resilience to Climate Change

FOUNDATION

Untapped RE Resource, high Unemployment, chronic poverty, water scarcity, food insecurity, energy poverty and vulnerability to climate change of the rural communities of the Arab countries

REGEND Impacts

Cost for honey wax printing per kg

LBP 10,000



LBP 4,000

Cost for honey humidity removal per kg

LBP 12,000



LBP 4,000

Cost for grinding of bees' candy per kg

LBP 12,000



LBP 4,000

Cost for preparation and mixing of bees' candy per 100 kg

LBP 100,000



LBP 20,000

Monthly diesel bill savings for a farmer

TND 1,800



Number of working women farmers/beneficiaries

40



25

Total labour time to prepare dough

3 hours



30 mins

Total labour time to shake milk

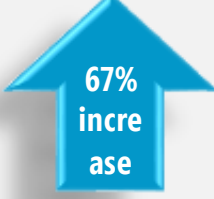
9 hours



45 mins

Number of active women members

25



15

Average income per day

JD 500



JD 50

REGEND's business model was able to reduce costs and energy expenditures and increase women participation, income, and productivity.

Conclusions & Recommendations

- Deploying small-scale RETs in rural communities within the Arab region should be done in an integrated approach including elements such as: affordability, WEF nexus, rural development, women empowerment, community participation and buy-in, environmental protection, financing mechanisms and capacity building.
- Developing a business models starts with establishing baselines regarding demographics, energy requirement, available RE sources, etc.. It will then move to identifying and selecting feasible RETs for the identified opportunities and finally to creating a delivery model framework, taking into consideration potential barriers and how to mitigate them.
- Financing small scale RET deployment can be offered through a service or an ownership model to suit the end-users specific circumstances.
- Economies of scale of RETs can improve affordability and accessibility for rural communities. The scale up of RET deployment can be via a regulated approach or a market-driven approach. Each option suits different conditions such as a small number of end-users for the former and a larger number for the latter.



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Thank you