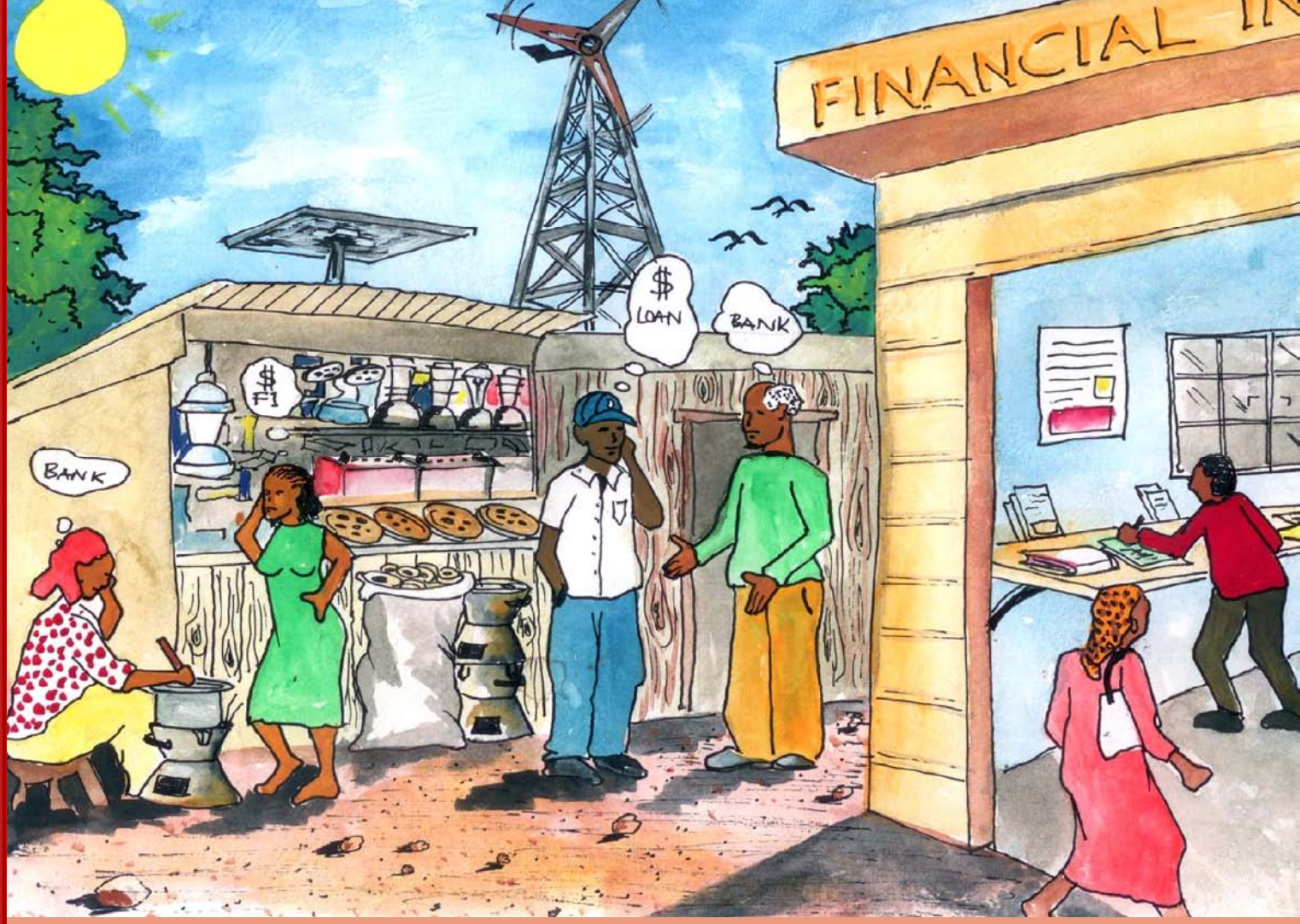

Training Manual For Senior And Middle Level Managers In Energy Financing

USAID
FROM THE AMERICAN PEOPLE

GVEP International

TRAINING MANUAL FOR SENIOR AND MIDDLE LEVEL MANAGERS IN ENERGY FINANCING

ACKNOWLEDGEMENTS

GVEP International developed this training manual in order to assist senior and middle level managers of Financial Institutions within East Africa in building their knowledge base.

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INTRODUCTION

GVEP International has designed a program with support from USAID in to encourage financial institutions in East Africa to engage in the financing of energy enterprise development. The main objective of this program is to introduce and work with financial institutions with the aim of increasing access to investment finance for the development of micro energy and small enterprises as well as to stimulate demand for energy product through consumer-financing initiatives.

It is envisioned that the programme will increase access to debt finance and use of credit guarantee schemes, and provide training to financial institutions in order to boost and speed up access to clean energy.

This training manual has been developed with a view to providing financial institutions with knowledge and skills on how they can tap into the huge financing opportunities that exist in the energy sector as well as informing them on the incentives that exist within their sector in energy financing. In addition, the manual provides several financing options which organisations can adopt or customize. It also highlights issues that financial institutions should consider when developing an energy financing product and informs them on how to market energy.

Overview of the Training Modules

This training manual contains **six modules**:

Module 1: Introduction to Energy

This module explores the definition of energy and some of its uses.

Module 2: Business Opportunities in Energy for Financial Institutions

This module highlights business opportunities that exist in the energy space that financial institutions could lend to as well as develop a portfolio for. It gives practical examples of energy businesses, therefore exposing financial institutions to energy enterprises they could finance. Additionally, the module provides insights to managers of financial institutions on the various incentives and benefits that exist for them in creating an energy loan portfolio.

Module 3: Financing Options in Energy

This module introduces managers of financial institutions to various financing options that they could adopt for use in lending to energy entrepreneurs. The module also examines the success factors of energy lending. Additionally, this module provides an example of an energy portfolio in a financial institution.

Module 4: Developing Financial Products for the Energy Sector

This module highlights financial product development process in an energy portfolio. This is a step-by-step process that clearly discusses the importance of each step and the role it plays in making the overall product development successful.

Module 5: Marketing an Energy portfolio

The module discusses concepts and methods of marketing financial products in the energy sector.

Module 6: Risk Management for an Energy Portfolio

This module explores the risk events that could occur in an energy portfolio and explores various ways of risk mitigation. In addition, it provides a step-by-step risk management framework.

ACRONYMS

CBO	Community Based Organization
DEEP-EA	Developing Energy Enterprise Project, East Africa
ESCO	Energy Service Company
FI	Financial Institution
GVEP-I	Global Village Energy Partnership International
ICS	Improved Cooking Stoves
KES	Kenya Shilling
KW	Kilo Watt
LPG	Liquefied Petroleum Gas
MDGs	Millennium Development Goals
MP	Member of Parliament
MW	Mega Watt
NEMA	National Environment Management Authority
NGO	Non-Government Organization
PAR	Portfolio at Risk
PV	Photo Voltaic
RE	Renewable Energy
SACCO	Savings and Credit Co-Operatives
USD	United States Dollar

Module 1

Introduction to Energy

OBJECTIVE

To introduce basic knowledge about the different energy technologies and their respective end uses.

Further, to illustrate business options and opportunities in the energy sector.

TOPICS IN THE MODULE

1. *Importance of the Energy Sector*
2. *Types of Common Clean Energy Technologies*
3. *Trends in Energy : Why People are Moving Towards Alternative Energy*

Introduction

Energy is a basic need and a component of all productive processes. Often access to energy is interpreted as access to electricity. However, it is not always so as mechanical power can be generated from water to drive agro-processing mills. Solar and wind powered systems can pump water for drinking or irrigation.

Everything we do involves energy and we use various forms of energy for day-to-day activities like heating, cooking, cooling, lighting and transport. It can make our life easier and more efficient. For example, a flourmill may be run on electricity, which may be produced from running river in a hydro power station. Thus, electrical energy eases the tedious and tiring work of pounding maize or hulling rice by hand, which uses metabolic/human energy. Electric light is brighter and better than candles for seeing at night. Some of the disadvantages of using wood as a source of cooking fuel include:

- Not readily available collecting wood from long distances
- Produces a lot of smoke and soot that is bad for our health.

Energy is central to sustainable development and poverty reduction efforts. It affects all aspects of development: social, economic, and environmental and improved energy sources can improve levels of welfare and increase standards of living.

There is growing evidence that investments in small- and medium-scale energy projects have a positive impact on improving the energy situation for the majority of population especially in those regions that are devoid of electricity. There is a range of different energy technologies for use and the following section will provide an overview of some of the technologies

1 Types of Energy Technologies

1.1 Difference between Non-renewable and Renewable Energy

Energy sources can be classified into two major classes: **non-renewable and renewable**.

Non-Renewable Energy commonly refers to 'conventional energy'. These are mainly fossil fuels such as coal and oil. These are produced over millions of years and cannot be replaced or replenished. These fuels are considered to be un-clean and harmful to the environment because they produce adverse smoke and gases when burnt. They are not sustainable fuels.

Renewable Energy (RE) is often known as a clean and modern form of energy. This is because it pollutes less than conventional fossil fuels. Renewable energy comes from natural resources and can be replenished. Table 1 shows a brief overview of types of RE and their derivative sources.

Table 1 - Types of renewable energy

Source	Description	Type of RE	Description
Sun	The source of all energy, transmitted as heat and light.	Solar energy	Energy from the sun.
		Hydro energy	Energy from flowing water.
		Biomass*	Energy from living or recently deceased natural and animal material.
Rotation of the earth	The earth's daily rotation leads to various processes (differential heating and changing inter-planetary forces) from which energy can be derived.	Wind energy	Energy from the movement of air molecules.
		Tidal energy	Energy from the tides and currents of the sea.
		Wave energy	Energy derived from the waves of the sea.
The interior of the earth	Heat from the earth's hot core is conducted towards the surface.	Geothermal energy	Energy from the earth's inner heat.

** It is debatable as to whether biomass is a renewable energy source. To illustrate this confusion, firewood taken from unsustainable management systems may not be renewable although there is still reliance on the sun to sustain the lifecycle of trees from which it is harvested.*

In Table 2 below, common renewable energy technologies and their applications are provided.

Table 2 - Renewable Energy Technologies and their Applications

RET	Potential service/ applications	Location
Solar PV and Solar Home Systems	▪ Lighting for houses and institutions ▪ Vaccine refrigeration for isolated clinics ▪ Lighting for enterprises to extend trading hours and in hatcheries ▪ Phone charging ▪ Street and market lighting to facilitate security and the operation of night markets	Rural and Urban
Solar PV Pumps	▪ Supply of clean drinking water for households and water for sanitation at household and community level ▪ Supplying water for cattle and other livestock ▪ Meeting water needs at rural health facilities	Mostly rural
Solar Thermal – (water heating, air heating and power generation)	▪ Water and air heating needs for public facilities, enterprises such as hotels and households. ▪ Steam generation for power generation	Mostly urban
Solar Cookers	▪ Supply energy for homes and enterprises to reduce cooking costs and time. This would also reduce costs of fuel-wood collection	Mostly rural
Solar Driers	▪ Crop drying by farmers for improved storage and enterprises for homes, micro enterprises and industry	Mostly rural
Wind Turbines	▪ Residential and industrial electricity applications	Urban and Rural
Wind Pumps	▪ Water pumping for irrigation ▪ Supply of clean drinking water for households	Mostly rural
Biogas	▪ Cooking in households and enterprises ▪ Motive power for small industry and small-scale electricity generation ▪ Reduces energy costs and preserves scarce wood-fuel sources by supplying energy for cooking ▪ Improved sanitation through improved waste management	Mostly rural
Efficient cooking stoves	▪ Used in houses, enterprises, institutions ▪ Reduces time spent collecting fuel Improved air quality for cooks and cleanliness in food preparation	Mostly rural, also urban
Ethanol and bio-diesel	▪ Transport fuels, mechanical power, heating and electricity generation, cooking ▪ Reduction in usage of fossil fuels	Urban and Rural
Small, micro and pico hydro	▪ Lighting and electricity applications	Mostly rural, can also benefit urban
Landfill methane	▪ Improved waste management particularly in urban centers ▪ Heating needs in public buildings and homes ▪ Electricity applications	Urban

It must be noted that the small systems are most favourable in rural areas. Large centralized systems, such as hydro-electric stations, large solar power plants, and wind farms provide a wider range of applications but also need specialist considerations during implementation. In the following sections, some of the common energy technologies pertinent to the sources are explained further.

1.2 Bio Energy Technologies

Bio energy technologies use a variety of material of plant or animal origin as the source for energy. The term includes fossil fuels but is generally used to include renewable energy sources such as agricultural crops and residues, wood and wood residues, animal and human faeces which lead to production of fuels directly or through conversion. Bio energy can be used for cooking, heating, and power generation.

There are numerous commercially available technologies for the conversion processes (e.g. biogas) and for utilization of the end-products (e.g. improved cooking stoves). Examples of bio energy applications are:

- ***Biogas*** for cooking, lighting and heating water
- ***Liquid bio-fuel*****:** mechanical power and transport fuels, lighting, cooking fuel
- ***Solid biomass*****:** cooking and lighting, motive power for small industry.

Some of the common bio energy technologies are explained in the following sections.

1.2.1 Improved Cooking Stoves (ICS)

Improved Cooking Stoves (ICS) are designed to be energy-efficient, which translates into the consumption of less fuel wood or charcoal, saving on time and resulting in less production of harmful smoke in comparison to the traditional stoves. The ICS is generally suited both to urban and rural populations. Specifically, consumers of ICS products are:

- Domestic charcoal users mostly in urban/peri-urban areas
- Domestic firewood users, mostly in rural areas
- Institutional users such as schools and hospitals
- Business users such as restaurants, hotels and street food vendors

The use of ICS leads to reduction of pressure on forest and energy resources. If the sector is well developed such as in Kenya, there is tremendous potential for skill development and job creation.

Types of ICS: The key feature of any ICS over a traditional stove is the use of an insulating material such as clay or mud to conserve heat, thereby making it more efficient. Two main parameters can be used to distinguish ICS types: the type of fuel used (e.g. charcoal or firewood) and whether the stove is portable or fixed.

- ***Fixed Firewood Stove:*** Fixed stoves with a mud or cement brick construction are common in areas of Uganda and Western Kenya. These are usually built in rural areas and can be made very cheaply using local materials. They work by directing hot gases from a fuel-wood fire.
- ***Portable Stoves (Charcoal/Firewood):*** These are stand-alone and portable stoves commonly used across East Africa. Their portability makes them suitable for both retail/distribution as a take-home product, and mass-manufacture away from the point of use.

Figure 1 - Portable 'KCJ' Stove

1.2.2 Gasifier

Gasifier stoves allow for cleaner cooking than traditional cooking stoves and use typical fuels such as dry firewood, sawdust, agricultural waste (e.g. coconut shells, husks, twigs), wood shavings, chunks or twigs among others. The gasifier uses the process of converting biomass fuel into combustible gases through intense heating resulting in a clean flame.

Figure 2 - Gasifier Stove, produced by a local Kenyan entrepreneur

Gasifier stoves can be used to cook food and heat water. The stoves can be used as a substitute for other conventional stoves such as charcoal cooking stoves or three stone fireplaces. The key markets include:

- Peri-urban households that use firewood and charcoal
- Rural households cooking with firewood
- Restaurants and other users

The gasifier stove can save fuel consumption, causes less air pollution as it releases less carbon monoxide, is affordable and readily available biomass materials can be utilized.

1.2.3 Briquettes

Briquette making is the process of pressing and compacting biomass waste materials to produce fuel. The main source of raw materials to make briquettes are sawdust, coffee husk, charcoal dust, ground nut husk, wheat bran, coconut husk among others. Briquettes are used as fuel in household, institutions and industries for:

- ✓ Cooking and water heating
- ✓ Heating productive processes such as tobacco curing, fruits and tea drying, poultry rearing etc
- ✓ Firing ceramics and clayware such as improved cooking stoves, pottery and bricks
- ✓ Powering boilers to generate steam
- ✓ Power machineries

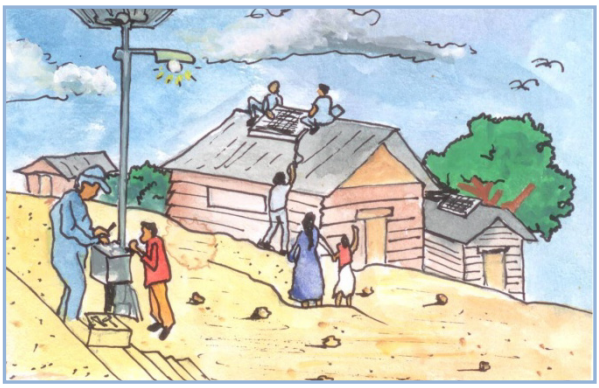
1.2.4 Biogas

Biogas refers to a gas produced by the biological breakdown of organic matter in the absence of oxygen. Biogas is produced by anaerobic digestion or fermentation of biodegradable materials such as biomass, manure, sewage, municipal waste, green waste and energy crops. Biogas can provide a clean, easily controlled source of renewable energy from organic waste materials, replacing firewood or fossil fuels. It is primarily used for cooking purposes but sometimes lighting and heating water as well. It can also be generated in modern waste management facilities where it can be used to run any type of heat engine, to generate either mechanical or electrical power.

1.2.5 Solar Technologies

Solar energy technologies are divided into two categories: solar thermal systems (e.g., for heating water) and solar electric or photovoltaic (PV) systems. Solar electricity systems capture the sun's energy using photovoltaic (PV) cells. A solar cell made from one or two layers of semi conducting material, usually silicon, creates an electric field across the layers when light shines on it. The amount of energy that can be produced is directly dependent on the intensity of the sunshine. Assemblies of cells are used to make solar panels, solar modules, or photovoltaic arrays.

1.2.6 Solar Photovoltaic (PV) Systems



Solar PV systems can be connected to the grid or can be isolated systems for the use of households and institutions. The applications include lighting, radio, TV, telecommunications, water pumping, drying, and charging other devices, among others. Mobile phones, car batteries and lamps/lanterns are some of the devices charged using this kind of energy.

They can be deployed by individual households, commercial or mini grid systems. Some of the strengths and weaknesses of using PV systems are in table 3.

Table 3 - Strengths and Weaknesses of PV Energy Systems

Strengths	Weaknesses
Highly reliable with a long lifespan	High capital / initial investment costs
Reliant on sun. No fuel required	Highly dependent on intensity of sunshine
Low maintenance requirements	If sunshine intensity is low, it will need back-up
Modular nature of PV allows for installation of different system ranges depending on application and willingness to pay	• Can be easily stolen • Quality may be an issue

1.2.7 Solar Thermal Systems

Solar thermal systems use the sunlight for its thermal or heat energy for heating, drying and evaporation. Some of its uses are outlined below:

- ***Solar cookers*:** There are two common types of solar cookers: oven or stove. Solar cookers are useful in areas that have scarce fuel-wood resources and can also be an effective clean and cost efficient alternative stove. The oven applies heating to the fully enclosed area which contains a cooking pot, and the stove applies the same principle of a conventional cooking stove.
- ***Solar thermal power plants***: Solar thermal engines use complex concentrating solar collectors to produce high temperatures which produce steam that is further utilized to generate electricity.
- ***Solar water heating:*** In this system, water is heated usually in a special collector and stored in a tank for usage. These systems are used in households and institutions such as schools and hospitals, and also in hotels and restaurants.

- ***Solar drying***: Solar drying systems are simple and often more efficient than simple open-air drying.
- ***Solar distillation***: Solar distillation is a solar enhanced distillation process to produce portable water from a saline source. It can be used in areas where, for instance, drinking water is in short supply but brackish water, i.e. water containing dissolved salts, is available. The costs may increase significantly with output.

1.3 Wind Technologies

Wind availability provides a good opportunity to generate clean and affordable energy. The working principle of the wind turbine is to convert the force of the wind (kinetic energy) action on rotor blades (rotational energy) into force or mechanical energy. When the rotational energy is used within a generator, it produces electricity. It is also used directly for powering equipment such as water pumps.

Wind technology is mainly used to meet energy needs through electricity generation and water pumping purposes to serve mostly isolated locations from wind turbines installed at both on-shore (on dry land) and off-shore (in the sea) sites. It can also be applied to deliver power to small businesses for lighting, battery-charging and operating electrical devices such as for refrigeration or food processing. The strengths and weaknesses of this technology are presented in Table 4.

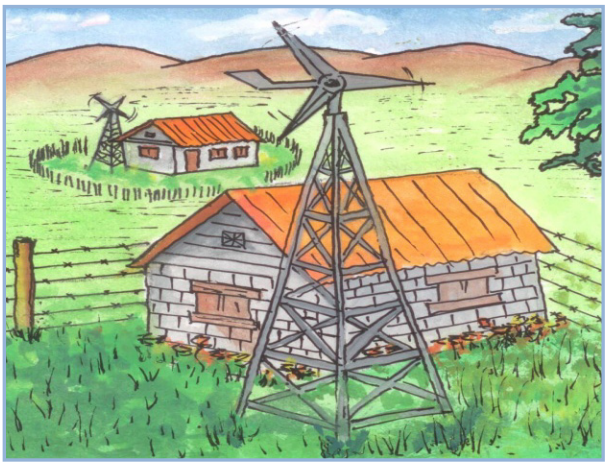
Table 4 - Strengths and Weaknesses of Wind Energy Technology

Strengths	Weaknesses
Alternative to grid electricity	High capital / initial investment
Simple and robust with lifetime of 10-15 years (if quality is good)	Site-specific
Easy to maintain	May need storage or back-up system as power produced is variable
No fuel required	Not a mature industry in many countries in the South as potential markets still low
Environmental impact low	Support expertise / equipment may not be easily available if market is not very active

Wind energy systems are mainly classified in three categories: mechanical systems, stand-alone electricity generation systems, and electricity generation systems for grid connection.

- ***Mechanical wind systems:*** This system uses the kinetic energy of the wind to lift the water. Wind pumps are the most common mechanical systems often used for water supply and irrigation.

- ***Stand-alone systems:*** Stand-alone electrical systems involve the use of a wind generator to maintain an adequate level of charge in an electrical storage battery. The battery in turn provides electricity for lighting, or powering TV, radios and refrigerators. Often, a controller is used so that the batteries are not damaged by overcharging or excessive discharge. The load connected to the battery can either be DC or AC (via an inverter).



Smaller, decentralized systems commonly are rated between 25 - 100W with 10m/s wind speed and a rotor diameter of 50cm to 1m. Larger stand-alone systems incorporate larger generators and battery banks, and are less common in developing countries. They could also be backed up by solar or diesel generators to enable continuous charge to the battery bank.

- ***Grid-connected systems:*** These systems are mainly large scale and installed either on land (on-shore) or in the sea (off-shore). In developed countries, these systems supply power to a private owner already connected to the electricity grid but the owner supplies back some of the power to the grid. This is the least common in developing countries but large wind-powered systems are starting to be installed and are favored as it is a clean source of energy.

1.4 Hydro-power Technologies

Hydro-power is the extraction of energy usually from falling water (potential energy), but this may include power extracted from the flow of water such as in rivers and streams (kinetic energy). Hydro-power systems are classified mainly in terms of their range of output, which can be from tens of Watts to hundreds of Mega Watts (MW).

The most common categories are:

- ***Large and Small hydro-power:*** These are systems that have outputs of hundreds of MWs. Small hydro-power technologies (SHP) generate up to 10 MW.
- ***Mini and Micro-hydro:*** Mini hydros range between 100kW to 1 MW in generational capacity and micro hydros usually generate between 5kW up to 100kW. Micro hydros can also be community-owned and managed which often may demand a different approach as opposed to SHP or large systems.
- ***Pico hydro*** is a term used for hydro-electric power installations that typically produce electricity in the range 0 – 5 Kilowatt (kW)

Micro and pico hydro installations can provide power to homes and communities in areas that are not served by the national grid. They offer an opportunity to produce clean and affordable energy from a decentralized, sustainable energy source.

Electricity is generated from moving water and is distributed to households and other users in the community. The systems can either be grid-connected, stand-alone or hybrid depending on the site, grid connectivity and reliability of the water supply. The systems normally use run-of-the-river systems which do not require storage reservoirs/dams to harness the energy from moving water. Whereas these may be seasonal in nature, they are more reliable in operation than wind or solar resources.

1.5 Liquefied Petroleum Gas

Liquefied Petroleum Gas (LPG) is obtained from refining crude oil or extracted from natural gas. One of the key characteristics of LPG is that it liquefies under moderate pressure making it easy to transport and store in concentrated liquid form. LPG is used as fuel for domestic (cooking), lighting, industrial, horticultural, agricultural, heating and drying processes. LPG is also used as an automotive fuel or as a propellant for aerosols, in addition to other specialist applications.

The clean burning properties and portability of LPG makes it an excellent substitute for traditional biomass fuels such as wood, coal, and other organic matter like cow dung cakes or charcoal briquettes.

1.6 Fireless cookers

Fireless cookers are made in such a manner that they do not lose heat to the outside environment. The food is allowed to boil in a conventional cooker and then transferred to the fireless cooker, where it is covered. The food cooks slightly slower than if it was directly on the stove. A well made fireless cooker can keep food warm for up to 8 hours after it has been heated.

1.7 Trends in Energy Use and Benefits

The modern lifestyle depends tremendously on the wide use of fossil fuels. With the high and increasing cost, and the decrease in levels of these fuels, as well as the high emissions of greenhouse gases they emit, there have been notable initiatives to increase the utilization of renewable energy and develop the technologies further.

Developing natural renewable resources also assists communities and countries to depend less on external imports. For individual countries, they can fulfill the targets and objectives on the environment that have been passed at international conventions and mandates that they have committed to.

The most important is the Kyoto Protocol and various linking mechanisms such as the Clean Development Mechanism that allows developed countries to buy carbon credits (effectively punishing them for emitting greenhouse gases) from developing countries.

There are several benefits related to increased use of clean forms of energy, in particular renewable energy. The key benefits are:

1) ***Environmental Benefits:*** The decreasing level of fossil fuels is not the only reason why the use renewable energy should be increased. Carbon emissions lead to air pollution that is a problem in many countries around the world due to use of fossil fuels. The impact of global warming has increased attention to cleaner energy production methods. The more carbon dioxide we pump into the atmosphere, the greater the effect becomes. Increased use of renewable energy resources can slow down and dilute the effects of global warming.

2) ***Sustainability***: Renewable energy can be replenished and is unlikely to run out, for instance solar energy. Other sources of energy are finite and will some day be depleted e.g. oil deposits, coal etc.

3) ***Growth in economy:*** Renewable energy investments help to grow local economies. They save the country foreign exchange that could have been spent importing fossil fuels. including biomass ICS and biogas units that are produced locally. Additionally, the RE sector creates jobs e.g. assembly of biomass kilns, biogas units, solar technicians etc.

4) ***Energy Security:*** Many of the countries that depend on foreign oil supplies or energy imports are at risk of an energy crisis due to the ever-changing political and economic climate. Increased utilization of renewable energy resources that are locally available increases energy security which could ensure stable economic conditions. For example, reliance on thermal fuel for electricity generation leads to volatile electricity tariffs due to changing world prices on oil. Utilization of wind for electricity generation will ensure constant tariffs as well as mitigation against hydroelectric generation which normally suffers during the drought season.

5) ***Better facilities for drinking water and irrigation:*** Renewable energy technologies can help generate the energy needed for pumping and sterilizing water. It can provide reliable and safe water supplies which is essential for adequate sanitation. Further, women and children can reduce the time spent gathering water. Irrigation facilities can be improved with water-pumping technologies.

6) ***Lower Energy cost:*** While the initial investment cost of renewable energy technologies may be high due to the initial cost of equipment (solar panels, wind turbines, and geothermal energy equipment), the only running cost to the consumer relates to any required maintenance and operation.

Discuss the renewable energy solutions available in your country or region

Module 2

Business Opportunities in Energy for Financial Institutions

OBJECTIVE

To highlight the various opportunities in the energy sector available to financial institutions.

TOPICS IN THE MODULE

1. *Introduction*
2. *Financial Institutions in the Value Chain*
3. *Opportunities to Finance Energy Enterprises*
4. *Opportunities for End Use Consumer Financing*
5. *Incentives for Financial Institutions in Energy*

Introduction

The energy sector presents a range of opportunities for financial institutions to use their existing customer base as leverage to finance energy loan products. There is an emerging trend where financiers and other reputable institutions partner to serve a particular target market especially for non-core products. Exploiting the opportunities in the energy sector requires one to clearly identify and select a specific business opportunity. Financial institutions have opportunities to:

- Finance their client base with new energy products available in the market
- Finance the growing number of energy entrepreneurs
- Increase their portfolio of products

The surging cost of electricity and fuels such as charcoal and kerosene is forcing consumers to adopt more efficient, alternative energy solutions. The growth in markets has in turn led to an increase in energy product development and innovation towards efficient systems and technologies, especially for rural areas. Just to illustrate, a few years ago, the range of solar LED lanterns did not exist as they do today. Private enterprises are accordingly scaling up efforts to exploit business opportunities in the energy sector, providing space for developing various energy loan products for financial institutions.

2 Financial Institutions in the Value Chain

Understanding the value chain helps in knowing where to create a market niche, thereby developing a business opportunity. A chain can simply be stated as:

The value chain of energy refers to the different processes and systems an energy product has to pass before it gets to the final consumer. The energy value chain starts with two types of sources: *fuels* such as coal, petroleum, and biomass-based variants such as wood; or *non fuels* from renewable sources such as solar, hydro, and wind. Renewable sources are often used to produce electricity or are converted into mechanical power that can run machines. Each energy product then proceeds through transport and distribution channels.

For example, in the case of electricity, the value chain starts from the source onwards to the power generating station, transmission, distribution and finally, consumption. For most others, the product may go through various supply chains till it reaches the consumer.

2.1 Opportunities for Financial Institutions in the Value Chain

Table 5 - Opportunities for Financial Institutions in a Typical Energy Value Chain

Energy Value Chain	Solar	Hydro	Cook-stoves	Briquettes
Producer	✓	✓	✓	✓
Importer	✓	✓		
Assembler	✓		✓	
Supplier – Wholesale or Distributor	✓	✓	✓	✓
Installer	✓	✓	✓	
Retailer	✓		✓	✓
Technician	✓	✓		
Energy Service Company	✓	✓		
End User/ Consumer	✓	✓	✓	✓

Each of the value chain components is a business opportunity. Energy entrepreneurs may decide to be in one or more, and some may decide to reach the customer by being involved in all the steps of the value chain. In the cook stove business, for instance, a women's group may decide to produce liners, assemble the product, supply it and sell directly to customers. Alternatively, an entrepreneur can focus on just one element such as liner production or acting as a distributor. If it is a solar business, an entrepreneur can choose to import, retail or install the systems if he/she has the requisite capital upfront. If not, others may choose to connect to various sources of the supply chain and only be an installer.

In sectors such as hydro, the value chain is more complex as initial investments required are high. When energy products are well-designed and developed, such as solar lanterns and briquettes, the biggest challenge that suppliers face is reaching the end customer. Since these products are new, they need to be marketed well. Financial institutions particularly micro finance institutions (MFI), savings and credit co-operatives (SACCOs) and other informal financial institutions can play a huge role in financing loans for end consumers. Therefore, financial institutions can play a big role in financing both the supply element as well as enabling demand. This will be expounded on further in the next two sections.

2.2 Opportunities to Finance Energy Enterprises

One of the main challenges that energy entrepreneurs face is accessing finance to start or grow their businesses. Energy technologies are maturing and market for related products and services is expanding rapidly. Few financial institutions are active in Africa but there is a growing number of social investors in the energy financing landscape. Some energy projects are financed by these social investors or are donor-led. Commercial financing institutions such as banks sometimes enter into financing large-scale energy projects but are inactive in the financing of small-scale ones. The common perception in the financial sector is that energy projects involve high risk and transaction costs with low returns.

Examples of reasons why the enterprise sector has not been very successful in accessing financing:

- **Lack of capital to start or scale up their enterprises.** In rural areas, lack of collateral is a major issue in accessing loans. In addition, they may often possess weak knowledge on banking and loan requirements
- **Lack of clear business plans and models**, and often business is treated as normal income for the family while profits are routinely diverted away from the enterprise.
- Most micro businesses, especially in rural areas, rely on the entrepreneur alone, who is often both the owner and manager. Often, investors look at the whole business package and may not find them worthy of investment.
- **Many enterprises are scattered in rural areas**, and can be far from formal financial institutions.

Despite these challenges, there is an emerging trend that indicates that the private sector in particular is starting to embrace energy businesses, not only in urban but also in rural areas. Thus, the players in the value chain such as manufacturers, suppliers, distributors, retailers, and service companies are increasing. Developing a portfolio to finance energy enterprises would bring the following opportunities to financial institutions:

- If a government has set a good feed in tariff policy whereby individual developers can sell excess power generated to the national electricity utility at a guaranteed price fixed legally by the government, the energy project becomes an attractive option, as financial returns are positive and assured. This is particularly true for larger projects such as hydro-power ventures. Large projects can also distribute electricity to local institutions, households and industries. If the financial analysis is good, then financing such projects can be attractive to financial institutions. In Asia, this is becoming common as commercial banks have opened up to investments in the hydro-power sector.

- Larger energy enterprises also sometimes produce energy products or electricity to power local industries. In East Africa, there are a few briquette companies that have started to do this. The opportunity to finance both the entrepreneurs and their dealers is yet to be maximised.

- Financial institutions can also finance Energy Service Companies, commonly known as ESCOs that develop, install, and manage energy projects to provide electricity over a period of time. ESCOs can also provide energy products and services to customers in return for a fee commonly known as the 'fee for service' model. In doing so, they could serve as financial intermediaries in procurement of bank loans by consumers. This is because most consumers may not have the upfront capital required (see next section). ESCOs can also downsize the high initial costs of the systems by offering staggered payment and 'fee for service' models. In this way, financial institutions such as banks can reduce inherent risks, allowing consumers to access loans. The risks are also minimised as ESCOs often keep up with technical back up, maintenance and support.

- Small and medium scale suppliers and dealers are constantly seeking financing to diversify or expand their energy businesses. Most of them have the potential to grow if there is access to competitive financing. Examples can be found in solar dealers and biogas companies as described in the next points.

- Opportunities exist in lighting energy technologies. In most rural areas, the provision of affordable, reliable and safe lighting remains a challenge. According to the East Africa Community Energy Access Strategy Study, less than 10 percent of rural communities have access to grid electricity. A typical household in the rural areas spends around USD 43 while the same in the urban areas spends approximately USD 96 for lighting in a year. Based on these findings, there are opportunities for financial institutions to provide financing solutions to both end users and entrepreneurs for better lighting solutions in off-grid areas.

Figure 3 - Customer buying solar PV from a dealer

Some of the common solutions include:

- ✓ Household solar PV system
- ✓ Solar LED lantern
- ✓ Micro and pico-hydros
- ✓ Wind systems
- ✓

Financial institutions can partner with reputable companies that stock solar PV systems and LED lanterns and market these products to their clients. Additionally, the financial institutions can develop loan products to support the big enterprises that import and assemble household solar PV panels and LED lanterns. Such businesses include Kenital, Chloride Exide, D-light, and Barefoot Power (Smart Solar), among many others in East Africa.

- Micro energy entrepreneurs are starting to emerge in many rural areas. Most are unable to graduate into stocking more products, or improve their businesses by using mechanised machinery, let alone electrical ones. For example, there are many micro entrepreneurs who make *briquettes* manually and sell the same but lack the capital to buy upfront a machine that can enable them to double or triple production and by extension sales. The facilitation of a loan from a bank or an MFI can help these entrepreneurs to do so. If financial institutions can integrate the machines as collateral and provide loans for acquiring them, entrepreneurs can easily graduate to increasing the scale of their businesses. Such opportunities still seem new to the financial sector.

- Most of the businesses around *Improved Cook Stoves* (ICS) are focussed on liner production, cladding (see figure), or the full assembly of the stoves (for both domestic and institutional use). The enterprises can be operated by individuals or groups and in Africa, these have been found to be profitable.

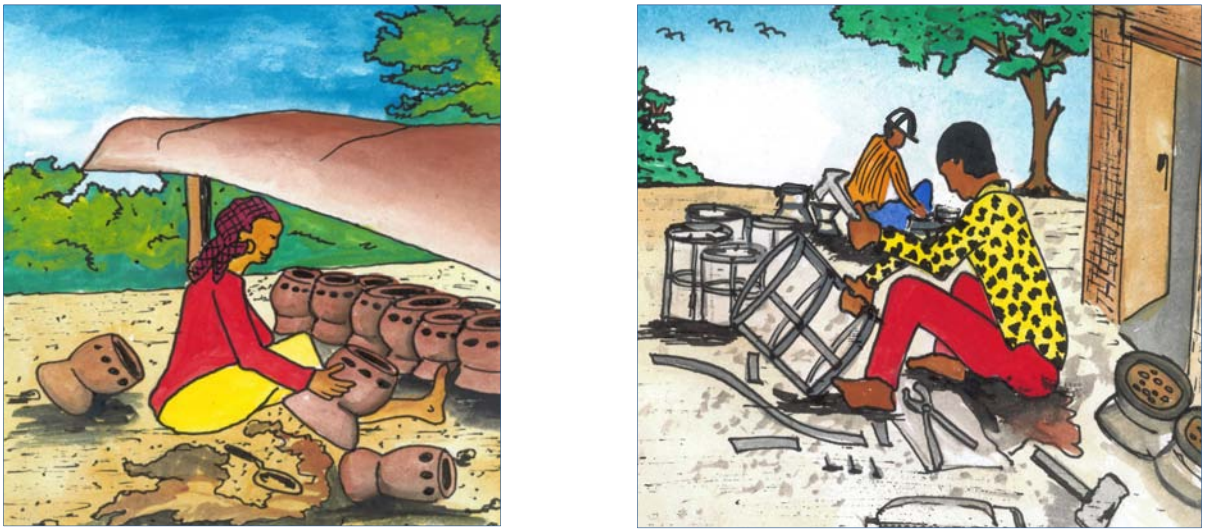


Figure 4 - ICS Liner & Cladding Production

- Financial institutions can either expand or retain their client base with a diversified energy portfolio. An additional portfolio that has potential because of a growing market in peri urban areas and towns is LPGs. Financial institutions can partner with mainstream LPG suppliers such as Total, Shell & BP among others.

Figure 5 - LPG stockist

The most common partnership arrangement would be one in which the financial institution provides loans to its customers who then go and collect their LPG units from one or more selected stockist. Additionally, there could be many smaller stockists all over the region dealing in LPG who can also be supported through working capital loans.

2.3 Opportunities to Finance Energy Loans for Consumers

Financial Institutions can create “Consumer Energy Portfolios” to enable customers/ users borrow money for purchase of energy products or services. This is commonly known as ‘end-user financing’. End-user financing is proving to be a good avenue that financial institutions can consider in energy financing and there seems to be a sufficient market.

In Bangladesh, Asia, Grameen Shakti Bank, one of the companies under Grameen Bank, started its solar PV programme, which has turned out to be the largest business line for the company. Grameen Shatki sells PV home systems to its client base in rural and far-flung areas.

The potential is huge in Africa. But despite the wide client base of many financial institutions, particularly MFIs, the opportunity has so far not been tapped. To understand this, here are a few reasons why the uptake remains limited:

- ✓ Limited access to financing
- ✓ Energy products are new to the African market
- ✓ Energy products can sometimes be expensive for instance home solar systems or biogas systems that cost over USD 200
- ✓ Energy products are not available everywhere and as easily as other products
- ✓ Consumers, particularly in rural areas, lack creditworthiness, assets or land titles.

However, there are a few solid reasons why financing a consumer energy portfolio is likely to bring rewards:

- The payback rates for most energy products are positive as they replace existing expensive fossil fuel usage or even charcoal. In fact, LPG is often supposed to be cheaper than charcoal in many parts of East Africa. However, customers often do not have the cash for buying it. One financial institution in Kenya has been very successful in financing an energy portfolio that included LPGs, resulting in a huge market outreach.
- As charcoal and firewood costs continue to rise, energy-efficient stoves assist in lowering the usage of these fuels for cooking. There are innovative designs and stoves that are being brought into the African market but some of them are a bit more expensive than traditional stoves. Improved cook-stoves (ICS) can be fairly affordable and depending on the product, can cost between USD 7-100. A financial institution can opt to partner with a manufacturer of the ICS and then market the ICS as a rider on the mainstream loan products offered by the institution. Starting a portfolio around such a technology, especially for women clients is positive not only for the financial performance of the financial institution but also for its social visibility.

- Another energy portfolio that could be attractive would be to finance the installation of biogas systems. Financial institutions can decide to work with co-operatives which can further channel the payments to the farmers. This has been tried out by a milk co-operative society in Kenya. Under the scheme, the co-operative facilitated the provision of loans to the milk farmers for the installation of bio-gas systems.
- Some of the energy sub-sectors such as solar or biogas may benefit from government or donor subsidies. This means that financial institutions can bank on and link with these programmes allowing more consumers to benefit from energy products and services.

2.4 Incentives for Financial Institutions in Energy

Financial institutions stand to benefit in several important ways by partnering with and financing clean energy. Some of these benefits include:

1. **Attracting investors:** With a shift towards environmental conservation and the use of renewable and clean sources of energy, many investors want to be associated with organizations that make a positive contribution towards this end. With a huge shift in the global debate on climate change, there is an ever growing carbon market that is attracting a whole new set of investors, big and small.
2. **Attracting Donors:** Philanthropists and donor agencies normally support socio-economic and environmental enhancement programs. The adoption of clean energy provides many benefits for end-users as donor organizations and government agencies commit to energy. This is an attractive incentive for financial institutions to start taking an interest in creating energy portfolios.
3. **Diversifying credit portfolio:** As a risk management measure, a financial institution should consider financing energy projects as a way of spreading its risks, and not increasing the same. It is important for financial institutions to fund a wide variety of sectors in the economy to distribute risk as traditional sectors such as agriculture are quite vulnerable to climate change and the effects of the global economy.
4. **Preserving the environment:** The use of many forms of clean energy such as briquettes that are made from waste helps in conserving trees as a source of fuel, hence conserving the environment. Some technologies such as improved cooking stoves (ICS) produce less smoke and use less fuel in comparison to the traditional stoves, reducing carbon emissions into the atmosphere.
5. **Increased business competitiveness:** The number of institutions that are involved in directly funding clean energy is small. Hence there is little competition in the sector. Many financial organizations have not yet discovered the opportunities that exist in the energy sector.

From the areas highlighted above, list areas that you think your financial institution will be interested in financing

Module 3

Financing Options in Energy

OBJECTIVE

To discuss the financing options available for financial institutions in the energy sector.

TOPICS IN THE MODULE

1. *Introduction*
2. *Overview of Financing Landscape in the Energy Sector*
3. *Factors that Lead to Successful Energy Lending*

ACTIVITY

An activity is provided at the end of the module.

Introduction

Financial Institutions can play a key role in speeding up access to modern energy among the poor, which in turn can transform people's lives. Access to energy translates into the following key benefits: lighting for homes and businesses, modern cooking fuels and stoves, better air quality, pumped water, refrigeration, telecommunications, education, transportation and agricultural processing, among others.

The financial sector has been promoting energy in the same manner as any other investment. Financial institutions funding energy need to change this approach because energy lending takes into consideration a totally different set of factors: legal basis, durability of any subsidies, grants, tradable certificates or tax credits. Other factors that should be considered include risk, return, and sources of capital.

Financial Institutions in East Africa have potential for energy lending if they tap into available opportunities. Clients of financial institutions seek cleaner sources of energy and financing matched with earning patterns. Financial institutions could play a critical role in improving access to clean energy by creating appropriate financial products and partnering with energy service providers to meet the energy needs of their clients.

3 Overview of Financing Landscape in the Energy Sector

Financing remains one of the key challenges in the quest for access to modern energy. Financing is necessary to enable people to purchase energy both at end user and enterprise levels. As a result, financial institutions need to design affordable, appropriately designed loans for end users to address these challenges.

At a household level, energy is the largest expenditure item. However, the potential for energy lending is still not fully utilized because there is a knowledge and resource gap among financial institutions, consumers and energy providers. In order to provide access to energy, there is need to build strong linkages between financial institutions and energy enterprises.

The figure below provides a chain flow that financial institutions (investors) need to carefully consider when financing the energy sector up to the energy end-user. It also highlights various entry points for financial institutions in this chain. The table also amplifies the role of financial intermediaries in creating linkages in energy provision.

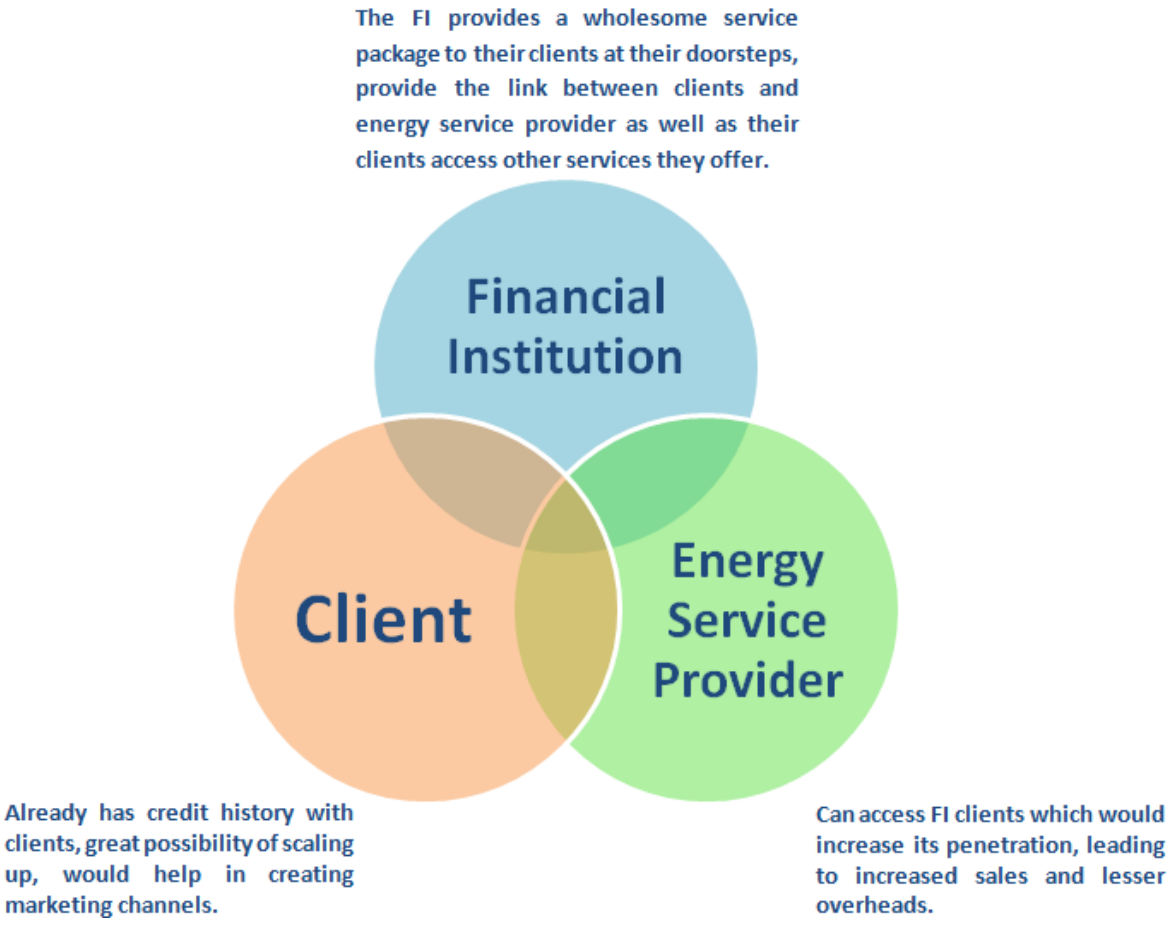
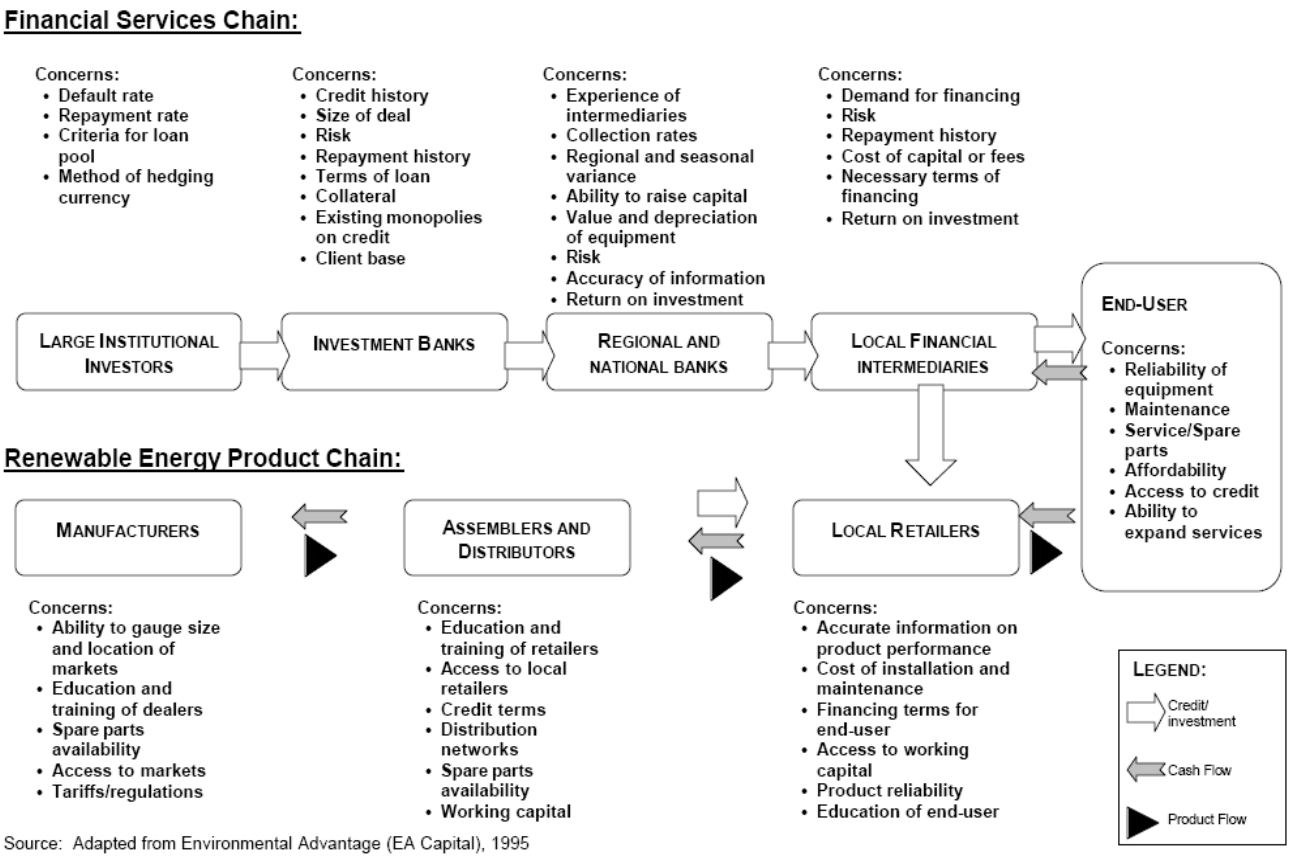


Figure 6 - Chain Flow

3.1 Bridging the Gap between Financial Institution, Client and Energy Company

When considering energy financing, financial institutions need to give consideration to value chain analysis since a wide range of players are involved in the energy spectra. The energy value chain includes larger institutional investors, financial intermediaries (village credit facilities, local banks, rural SACCOs/ cooperatives) local energy retailers and the end users.

The following diagram explains the two types of value chains in energy financing:



Source: Adapted from Environmental Advantage (EA Capital), 1995

In the financial service chain, there are a number of key players: large institutional investors, investment banks, regional and national banks, and local financial intermediaries. The renewable energy chain consists of energy manufacturers, energy assemblers and distributors and local retailers.

The link between the financial service chain and the renewable energy chain is the end-user. This therefore implies that the financial service chain ends with end-users whose needs have been addressed by the various financial intermediaries and activities on the renewable energy product chain target the end-user. This means that for financial institutions to develop a loan portfolio, they need to have the concerns of the end-user in mind.

The concerns of the end users from a financial perspective are chiefly access to credit while the concerns of the end-user from an energy perspective are reliability and maintenance of the energy equipment purchased.

Financial institutions therefore need to address various concerns at different levels. Institutional investors, investment banks, regional and national banks need to clearly address the various concerns that unfold within the financial service chain without losing focus on the end-user. Similarly, players in the renewable energy product chain need to address their concerns while focusing on the concerns of the end-user if energy lending is to be successful.

3.2 Financing Delivery Mechanisms

Financing delivery can be approached from four different angles, which are:

1) **Debt financing**
2) **Equity financing**
3) **Grants/Subsidies linked with financing**
4) **Hybrid**
5) **Other lending mechanisms**

3.2.1 Debt Financing

In this mechanism, the financial institution provides capital and earns an interest out of this arrangement. Debt financing options include corporate or project loans under recourse or limited recourse structures, leasing arrangements, and full or limited guarantees. Financiers using this model specify minimum cash flow generation projections, debt coverage, leverage and other financial ratios for projects to qualify for loans. In some cases, credit support can sometimes be structured into a transaction by obtaining additional collateral, cash flow, or parent company or third party guarantees for a loan. Options under this model include: loans converted to some amount of equity ownership with a view to increasing the lender's rate of return. Types of debt financing include: recourse debt, limited recourse debt and secured debt.

a) Recourse Debt

This is the type of financing that is structured as corporate or balance sheet financing. In this arrangement, the debtor is obligated to the primary sponsor of the project, and the loan must be reported on a company's balance sheet as a liability.

Financing using this model attracts lower cost cover since risk is transferred to the company, lowering the risk posed to the financial institution. Warranties, guarantees and insurance can provide various forms of recourse to add to the credit-worthiness of a transaction.

b) Limited Recourse Debt or Project Finance

Limited recourse financing is also referred to as project finance. In this model, the project is financed largely based on its own merits, and payments are made from the project's cash flows. Financiers have access to the project's cash flow and assets or additional collateral. Financiers using this method incorporate mitigation, and allocation of all risks that could have a negative impact on the cash flows from the project or venture. This model allocates risks among the parties in a transaction through contracts and financing agreements.

c) Secured Debt

In this mechanism, assets are pledged to the financier as loan collateral. The assets could be in the form of cash, physical equipment or property, or sometimes a bank letter of credit. In the event of a default on the promise to repay the project debt when due, the bank has the right to seize and sell these assets and utilize the proceeds to repay the loan. Guarantees and other types of credit support can provide other assurance or security for debt repayment under this model.

Examples of Debt Financing:

➢ Financing provided hand in hand with technical assistance:

In this business delivery mechanism, financial institutions partner with energy enterprises and then offer a comprehensive loan product. The loan product consists of two components namely:

- Finance component: the financial institution offers loans tailored and packaged to meet the client's energy needs.
- Technical assistance: energy enterprises provide energy equipment like solar PVs, solar lanterns, improved cook stoves and also provide technical expertise. In this arrangement the financial institution provides the loans to the end-users and also contracts technicians to install and service the energy equipment.

➢ Conventional Loans

In this case, the financial institution provides energy loans in the normal way it finances other business loans, that is without any concessions or improved terms. Energy is treated as if it were any other business or consumer loan.

➢ Leasing Financing

This mechanism can be used to finance the sale of energy equipment and services. It is mostly used to finance an Energy Service Company (ESCO), vendor projects as well as production processes or manufacturing. Lease financing can also be applied to energy efficient manufacturing ventures. Leasing gives the lessee use of the project in return for regular payments to the financial institution that provided the funds, which remains the legal owner until the loan is paid in full.

➢ **Vendor Financing**

In this delivery method, financial institutions provide a vendor with capital to enable them to finance the purchase of large quantities of products. This model works well with vendors involved in high-volume sale of small products to customers.

➢ **Micro-credit**

The micro-credit delivery mechanism is where financial institutions provide small households with access to capital and consumptive household credit. Usually, amounts accessed by households are small with flexible repayments schedules. Financial institutions using this model adopt peer group lending mechanisms where borrowers form groups to access credit. For this to work, financial institutions should make it convenient to apply for a loan as well as make repayments for the same.

Models Used in Debt Financing

The Consumer Credit Model

In this model, two financial players are involved: commercial financiers and local financiers who advance credit to end users to purchase goods from energy enterprises.

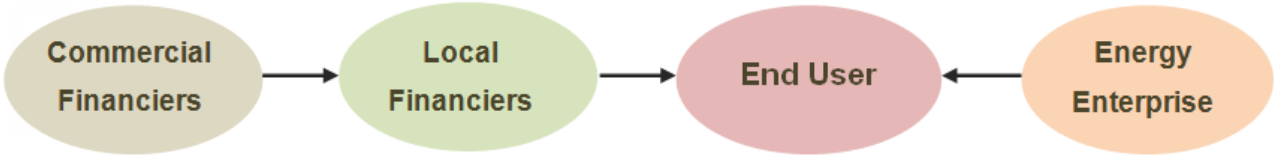


Figure 7 - The consumer credit model

In this model, commercial financiers are those institutions that lend money to local financial institutions which in turn lend to end-users. End-users eventually purchase energy from an energy enterprise.

Dealer Credit Model

In this model, financial institutions provide credit as commercial financiers to dealers. The dealer then sells energy products to the end-user who then pays in cash or credit as determined by the energy dealer. Granting of credit by the dealer to the end user does not involve the financial institution.

Figure 8 - Dealer credit model

In this model, commercial financiers provide wholesale loans to energy dealers who in turn provide credit to end-users.

The Energy Service Company (ESCO) model

An energy service company is defined as a business that develops, installs and arranges financing for energy projects and maintains costs of energy facilities over a defined period of time. In most cases, ESCOs act as project developers for a wide range of tasks as well as working to mitigate technical and performance risks associated with the project.

This model operates both at a macro level where governments could be key players and also at a micro level involving end-users, especially where the latter pay for the energy service that is provided to them by an ESCO as depicted in the model below.

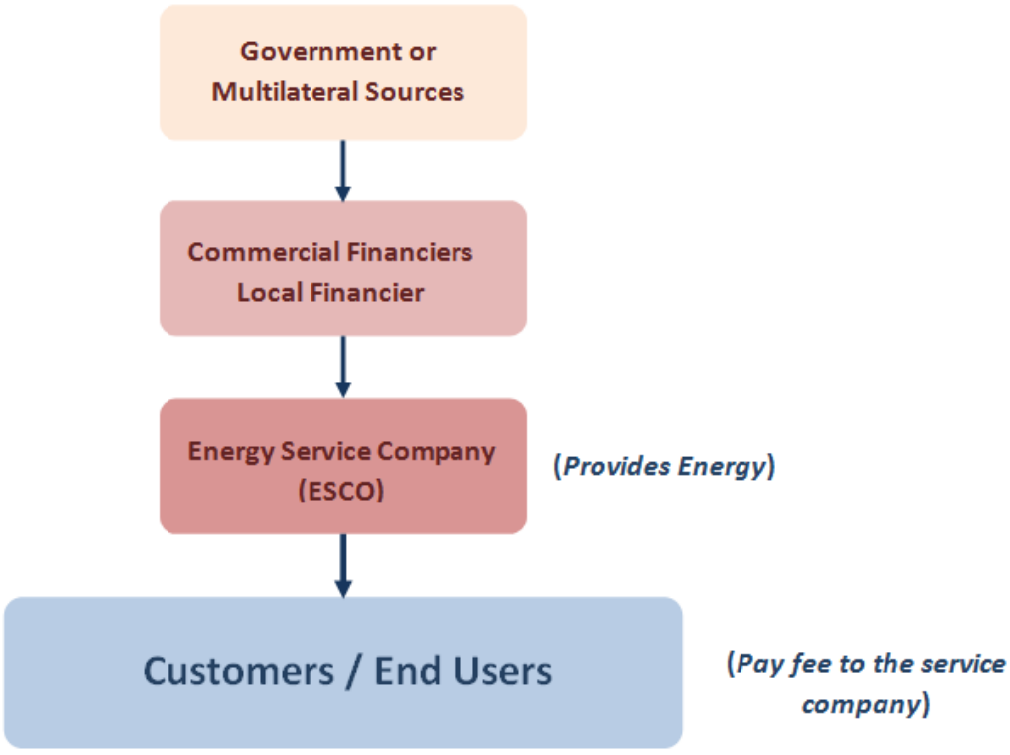


Figure 9 - The ESCO model

In this model, governments and multilateral organizations provide financing. A good example of a multilateral organization is the Global Environmental Fund (GEF). Examples of commercial financiers could be African Development Bank, Asian Development Bank (ADB), and European Bank for Reconstruction and Development among others. Local financiers include local financial organizations that range from banks to MFIs and SACCOs.

3.2.2 Equity Financing

The equity-financing model envisages ownership of a company or project by the financiers. Equity can come from the project sponsor, or in the form of a private placement or preferred or common stock. This model usually provides longer-term financing for a higher expected rate of return than debt. Ideally, a minimum of between 20 percent and 30 percent equity in a project is required to obtain debt financing, depending on the company's or customer's credit-worthiness.

Equity financing could include joint venture partnerships, equity investment funds, pension funds and venture capital. An example of this would be when a financial institution raises capital for an energy portfolio by selling shares in the stock market. Equity financing includes:

Joint ventures: this type of arrangement involves shared ownership and is ideally a strategic alliance between two or more companies. This type of alliances could include provision of capital, technology, financial risks coverage and skills-sharing, among others.

Equity investment funds: International financial institutions and multinational organizations have created equity investment funds specifically to benefit environmental and energy sectors. These include Triodos Bank, International Finance Corporation and Global Environmental Facility, which provide financial institutions with equity investment capital.

3.2.3 Grants/Subsidies Linked with Financing

In this financing model, the financial institution gets subsidized funds or grants and then passes on these funds together with technical assistance to the end-users. Some examples of this kind of arrangement include the rural electrification programs that are usually subsidized by government and other donors.

3.2.4 Hybrid

This is a mechanism in credit delivery that borrows from more than one of the mechanisms described above. It is where a combination of existing financial instruments is used. Examples of this could be long term financing combined with bond financing from an investment bank especially for a high cost energy project or long term debt combined with equity.

3.2.5 Other Lending Mechanisms

Restricted Accounts

Restricted accounts are those that are restricted to specific purposes and administered by an agency or financial institution, usually under an agreement. A financial institution can set up restricted accounts targeting clients interested in purchasing an energy product.

Line of Credit

This is a dedicated line of credit at a financial institution, or government agency that is made available on a commitment basis, but is returned if not used by customers. Depending on the nature of the financial institution, it can dedicate a line of credit to specific clients and energy entrepreneurs for purchase of energy equipment and products.

Revolving Loan Fund

The revolving fund is structured to become a self-sustaining source of funding after the fund's initial capitalization. A revolving fund is a loan fund that is replenished by borrowers as they repay their debt. They are designed to be self-sustaining, where from time to time, new loans continue to be made to borrowers. The initial seed capital for revolving funds can be sourced from grants, government subsidies or retained earnings. In order to benefit from such opportunities, financial institutions can write proposals for setting up a revolving fund for energy lending.

Investment Fund

This fund can be close-ended, open-ended, capitalized with equity, or leveraged with equity and debt. Its main purpose is to obtain an acceptable return for its investors/owners, although multiple developmental objectives may often be achieved. Financial institutions can tap investment funds to start energy portfolios.

Guarantee Fund

This is a commitment by a third party to cover the obligations of other parties in the event of partial or complete non-repayment. Energy stakeholders are working with financial institutions through loan guarantees as part of efforts by stakeholders to increase access to energy.

3.3 Factors that Lead to Successful Energy Lending

Financial institutions in Africa have several opportunities for scaling up energy lending and creating energy portfolios. Below are some factors that financial institutions may consider when starting and expanding energy lending:

a) The role of partnership(s) in energy lending is very critical. Partners should be properly vetted and selected by the financial institution. Partners range from energy service providers in various technologies to technicians.

b) Financial institutions should build capacity in order to sell the product and create awareness regarding the same. This means that loan officers, front line staff and field staff should be trained before setting up an energy loan portfolio. Training also helps staff to buy into the product. Most financial institutions are not aware of energy technologies available in the market and training is an avenue that would create awareness.

c) They should use lending models that are geared towards market development. This would mean that the models for implementation are driven by market forces and not from an institutional perspective. Such models should capture the energy needs of customers/ end-users as well as energy entrepreneurs.

d) Use of existing infrastructure and distribution networks to expand access to energy.

e) Financial institutions should have a built-in strategy to mitigate risks that are associated with an energy portfolio.

f) Financial institutions should leverage on new funding strategies from various sources for funding the loan portfolio.

g) Loans offered by financial institutions should match loan payments to existing energy expenditure and income flows.

3.3.1 Requirements for Financial Institutions in Building an Energy Portfolio

Financial institutions must consider the following while creating an energy portfolio:

i. Technical training of loan officers in order to build their skill and knowledge levels.

ii. Modifying operations to cater for an energy portfolio

iii. Introducing specific energy monitoring and evaluation processes.

iv. Identifying dedicated capital to fund an energy portfolio

v. The structure of partnership agreements between financial institutions and energy enterprises should clearly identify the roles and responsibilities of each stakeholder, communication, coordination channels, warranties and after-sales service provision.

Example of Energy Financing at Grameen Bank:

Making micro-credit work in rural areas

Grameen Shakti is a non-profit affiliate of Grameen Bank that was established in 1996 to promote and supply renewable energy systems to rural households in Bangladesh. The Grameen Bank is one of the world's best examples of how to deliver credit to the people living in poverty in rural areas and the Grameen family of financing now includes telecommunication and energy. Grameen Shakti is a private company funded by the Grameen Fund (a venture capital fund), donor agencies, and multilateral funding sources.

Grameen Shakti has established five operating divisions in different regions of the country, along with rural offices to sell pre-designed photovoltaic packages on both a cash and credit basis. Their plan is to first target sales for people who can afford the systems under the initial financing plans, and then broaden the reach of the program to other areas and other types of consumers. The goal of the initial effort was to sell 5,400 solar systems in the first three years of operation, and gradually expand the operation to include local manufacturing of the components.

Customers who wish to buy solar home systems from Grameen Shakti are eligible for two years credit at 8% interest and a 25% down payment. The typical sizes of the loans are USD 300-500. Grameen Shakti can usually work within the social network of the surrounding community to ensure repayment. To date, there have been no problems with defaults on the loan repayment. However, in order to encourage customers to pay cash upfront for the systems, they offer a discount of 1-3% on the total price of the system for a cash purchase.

In addition to solar, the Grameen Shakti makes financing available for small wind turbines (1.5-10 kW) used to set up micro-enterprise zones and sell power.

***Source**: Website : http://www.grameenfoundation.com/shakti.com*

Activity:

In groups discuss the models that your institution is likely to adopt and highlight changes to make.

Module 4

Developing Financial Products for Energy

OBJECTIVE

This module will:

- Introduce the participants to financial product development cycle.
- Discuss factors to consider in energy product development cycle.
- Discuss costing and pricing of energy financial products.

TOPICS IN THE MODULE

1. *Introduction*
2. *Financial product development cycle*
3. *Factors affecting development of energy financial products*
4. *Costing and pricing an energy financial product*

ACTIVITY

An activity is provided at the end of the module

Introduction

Product development is an essential activity for any market-responsive financial institution. Product development and design have a significant impact on the success of a financial institution. This is because product development ensures that clients' needs are met. A financial institution starting an energy portfolio needs to do so using a market-led product development process. This means that financial institutions will develop energy products systematically as a way of reducing risks and also ensuring that the clients get the best possible products.

As financial institutions introduce energy products, they need to have the product development cycle in mind as well as the steps in product development. For success in the development of energy products, they need to obtain leadership commitment, allocate staff and systems to develop and manage the new product, and train relevant staff.

4 Product Development

4.1 Definition of Product Development

Product development is a process that involves creation of products with new or different characteristics that offer additional benefits to the customer. It may involve modification of an existing product or its presentation, or formulation of an entirely new product that satisfies a defined customer base or market niche.

Product development is a broad field of endeavour dealing with the design, creation, and marketing of new products. Strategically, product development is seen as the overall process of strategy, organization, concept generation, product and marketing plan creation and evaluation, and commercialization of a new product.

4.2 Purpose of Product Development

Product development helps financial institutions to achieve the following:

- ✓ **Transform market opportunities into successful energy products.**
- ✓ **Provide an opportunity to create and differentiate energy products.**
- ✓ **Reach new markets.**
- ✓ **Increase revenue of a financial institution. An energy portfolio can be viewed as the source of additional income for the institution.**

4.3 Phases of Product Development

Product development revolves around understanding the customers' needs and the best way to satisfy them. The traditional *product development cycle*, embraces the conception, generation of ideas, analysis, development, testing, marketing, and commercialization of new products or services. Questions are asked and answers found, through systematic and objective research.

Figure 10 displays this process and it is broken down into phases. At each phase a decision is made on whether to proceed or not.

Figure 10 - The Product Development Cycle

Market research drives product development, which can also be thought of as a cycle or loop. This is because even after a product has been successfully commercialized, the financial institution should regularly assess customer satisfaction with the product to determine if possible improvements are needed. It is important that product development is not only about new products - product re-design can also be an effective route.

The methods used to develop new products for financial institutions broadly follow four key phases as discussed below.

4.3.1 Conduct Research to Identify the Needs and Opportunities

The "first" stage in the process (it is a cycle so there really is no first stage) is idea development. Ideas can come from anywhere, including frontline staff, loan officers, changes in the business environment and opportunities, and challenges in delivering current energy products. The best formal source of ideas is market research.

Financial institutions should conduct research to identify needs and opportunities in the targeted market as well as to gauge whether there is sufficient demand for the new product. This includes a review of the competition and products offered by all financial service providers in the energy sector.

The research can be either qualitative or quantitative. Qualitative research involves understanding the perceptions, feelings and other parameters that are not easily measurable. It provides answers to open-ended questions in a descriptive way, giving reasons behind a particular idea. Quantitative research is used to measure the magnitude or levels of occurrence of a predetermined perception or ideas. It answers closed questions. It is important for financial institutions to conduct both qualitative and quantitative research to gather the perceptions of the market and understand demand for the new product.

A market research exercise with well-formulated objectives such as the one illustrated in Figure 11 below guides the institution in identifying the unmet needs and opportunities.

Example Part I:

My ABC Financial Institution's operations are based in Luwero and its environs in Uganda. The Financial Institution's management has made a strategic decision to assess the clients' energy needs in the region with an aim of developing a suitable energy financial product. The institution also wants to determine the number and nature of other energy financial products in the market.

Research objectives:

- **Determine the energy needs in the region.**
- **Determine the current energy sources used in the region to meet the identified needs**
- **Determine the shortcomings associated with the energy sources identified.**
- **Determine possible solutions to the challenges identified.**
- **Develop a financial product to finance the energy solution identified.**

Figure 11 - Example of a Market Research Design

Ideas are initially screened to determine if the financial institution should take them to the next level, and some rudimentary profitability calculations may take place at this time based on estimated market size. Idea screening asks the following questions:

- *Who is the target market?*
- *What are the size and growth forecasts of the target market?*
- *Is the financial institution introducing this because of competitive pressures?*
- *What trends are the ideas based upon?*

4.3.2 Product Design

This stage is also referred to as concept design. Upon critical analysis of the research findings, the financial institution needs to come up with an energy product concept that can meet the unfulfilled needs.

During this stage, concept development fleshes out the ideas that pass the “screen test.” The following questions need to be asked:

- *Who is the "buying" decision maker? e.g. the producer of charcoal briquettes or end user of solar panels.*
- *What features must the product include?*
- *What are the benefits to the target market?*
- *How will clients react?*
- *What will it cost to deliver?*
- *How will the product be delivered most cost-effectively?*

The concept could then be tested in focus groups of clients or potential clients. Focus groups might answer questions such as:

- *Do they need this energy product? If so, when?*
- *How could they use it?*
- *How quickly do they need it?*
- *Is it structured appropriately?*

This phase includes developing the energy product concept with tentative costing which is further developed into a prototype (a refined concept with all the product specifications which includes product pricing).

Setting prices takes into account the objectives the institution desires to achieve for instance:

- *Increase revenues*
- *Increase profits*
- *Increase market-share*

Example Part II

The research study identified the following key findings:

- **The key energy needs are the area are Lighting, Cooking, and Business (productive uses)**
- **Only 15% of households in the region have access to the grid**
- **80% of the households use traditional biomass as a source of cooking fuel.**
- **All the competing financial institutions operating in the area do not have an energy portfolio.**

From the findings My ABC Financial Institution management decided to go ahead and develop two energy specific products:

- **A loan product to finance the purchase of solar light emitting diodes (LED lamps)**
- **A loan product to finance the purchase of improved cooking stoves.**

Figure 12 - Product Concept Development

The refined energy product prototype is pilot-tested so that the financial institution can make the necessary improvements before the eventual scaling-up.

4.3.3 Product Pilot Testing

During this phase of product development, the organization pilots the prototype in a few pre-selected markets so as to monitor the performance of the product. It keeps a close eye on the implications of the product on the finance portfolio and organizational development.

Further tests are conducted among the target market to gauge how they perceive and adopt the product. Based on feedback from the pilot test, the financial institution should continue making improvements to the product.

The example in Figure 13 below illustrates the pilot testing stage.

Example Part III

My ABC Financial Institutions's management has developed two loan products namely a light emitting diode (LED) loan and Improved Cook Stove (ICS) loan. Before scaling the two products up, the management decided to introduce products only to one township so as to gauge the acceptance of the new products in that region.

The gradual introduction of the loan products enabled the management to take corrective measures on costing and other parameters.

Figure 13 - Example of Pilot Testing

Financial analysis is performed to determine the viability of the new or re-designed product. This analysis uses information such as interest and fees (estimated based on competition) and an understanding of what the client will pay.

Upon determining the viability of the new or redesigned product, sales volumes are estimated, alongside profitability and how many loans must be disbursed (at what size) to break even. The cost analysis should take into account the costs of new staff (hiring and training), MIS, marketing/promotion, and anything else which will affect fixed and variable costs. In short, at this stage, financial institutions estimate if this new product idea makes financial sense.

4.3.4 Revise and Scale-up Implementation

This is also referred as rollout or commercialization stage. The last step involves analyzing the results of the pilot test phase. If the results are positive, the product is rolled-out in all the branches or if the results are negative then the FI may cease implementation of the new product, and explore other ways of serving the market or go back to the first stage of product development.

Figure 14 provides an example of a decision to roll out the new product.

Example Part IV

The management of My ABC Financial Institution, upon successful pilot testing and monitoring phase, has made the decision to go ahead and roll out the LED solar product and phase out the ICS loan product. The decision to phase out the ICS loan was reached by the management after it realized that most of the clients that had acquired the ICS complained of their poor quality. The management of my ABC bank decided to further explore this product only after partnering with a quality ICS vendor.

Figure 14 - Product Commercialization

4.4 Factors Affecting Product Development

This section discusses the factors that a financial institution should take into account to be successful in product development. They include:

i. The Team

A financial institution needs to put together a team that is charged with the responsibility of undertaking the product development process for energy products. Members of the team should have skills from different areas. They be may include staff from departments such as marketing, accounting, management information systems, operations and an energy expert conversant with the relevant technology. The main advantage of including different skill-sets in the team is that it is able to offer expert advice pertaining to the product under development.

ii. The product champion

In addition to selecting a team to oversee the product development, the financial institution should identify a leader for the process. This person should be senior enough to command respect, stamp authority and take responsibility for the process and outcome.

iii. Buy-in

Financial Institutions conducting product development should endeavor to gain support from all the levels of staff in the institution. Buy-in from the top management will ensure that the product development process gets all the necessary resources. Buy-in from middle and operational level staff will ensure that the product is rolled out and piloted successfully. Top management should be involved because they give strategic direction. New product development is also likely to require specialized expertise especially from an energy expert.

iv. Delivery Channels

A financial institution will need to evaluate how well it can use existing delivery channels during the product development process and evaluate whether it has sufficient capacity to market and distribute the new energy product. Delivery channels include the physical infrastructure such as a branch network with extensive coverage in the target market area that provides easy access to customers. In cases where the institution has limited coverage, it can partner with affiliate organizations that can market and deliver energy products.

v. Market Segmentation

This involves a clear definition of the target market that the new product is supposed to serve. Institutions should clearly identify the different needs that cannot be served with the existing portfolio.

This goes a long way in saving the financial institution's resources and also avoiding unnecessary product proliferation. In the case of a Financial Institution starting an energy portfolio, the institution needs to have a clear picture of what segment the energy product is targeting, and the various variables defining that target market.

The financial institution can target the end users or producers and providers of energy products. Each market has its own unique characteristics and would benefit from a specifically targeted product. For example, end users would require a consumer loan based on either check-off system or group guarantee. Producers would require more of a fixed asset loan with some grace period and a longer repayment period. Retailers of energy-related products would take any type of MSE loan.

vi. Market Research

The focus of market research is to understand the customer's energy needs and identify unmet or poorly met energy financial needs and design a product prototype. In order to conduct market research with the aim of introducing an energy product, a financial institution needs to do the following:

- ✓ **Define the research objective or issue:** a good example of a research objective would be to find the size of the market for an energy product or which specific energy products the financial institution should introduce.
- ✓ **Extract and analyze secondary market data:** secondary data refers to data collected by someone else for purposes other than what is being investigated.
- ✓ **Analyze institution-based information:** financial information/client results from consultative groups, feedback from frontline staff, competition analysis, etc.
- ✓ **Plan and undertake primary market research:** primary market research is information collected using various methods from the source.

MicroSave[1] points out that market research reaps the following **benefits** for financial institutions:

1. Better understanding of the market
2. Identification of client perceptions
3. Better understanding of internal capacity
4. Tool for managing change/buy-in
5. Enhanced image or reputation
6. Building internal skills while increasing staff motivation and satisfaction
7. An institutional culture more open to learning and experimentation

[1] MicroSave is a microfinance technical service provider

vii. Management Information Systems

Financial institutions need to consider management information systems in the new energy product development process. Information systems include accounting and portfolio monitoring systems used in tracking, managing and disbursing the new energy loan product. This implies that when introducing an energy product, financial institutions will have a book-keeping system that is able to track demand as well as analyze profitability. Importantly, the back office systems need to be versatile in order to accommodate the new energy product, keeping in mind that it may have unique characteristics compared to existing products.

4.5 Product Costing

4.5.1 Clarification of Terms

Product costing is the process of tracking and studying all the various expenses that are accrued in delivering a product to a customer. It is widely regarded as an extremely important component in evaluating and planning an overall business strategy.

There are various terminologies used in product costing that would require explanation and clarification to enhance the understanding of costing concepts. These include the following:

- **Direct costs** are those costs incurred specifically as a result of providing a specific energy service or product. Direct costs can be fixed or variable. These are the most easy to allocate to products.
- **Indirect costs** are those costs that do not relate directly to a specific service or product but are necessary to run the organization as a whole. Examples include overheads such as rental charge on premises, utilities, legal, audit and consultant fees.
- **Fixed costs** are those costs incurred that do not vary with the number of transactions or products. Examples include rental of premises, depreciation on existing fixed assets and staff salaries.
- **Variable costs** are those that are incurred with each transaction for each product. Examples include travelling, telephone and stationery costs used to make each transaction.
- **Cost allocation** is a process of attributing cost to particular cost centres. For example, the wage of the driver of the purchasing department can be allocated to the purchasing department cost centre.
- **A cost driver** is the unit of an activity that causes the change of an activity cost. A **cost driver** is any activity that causes a cost to be incurred. An example of a cost driver in production of charcoal briquettes could be man-hours.

4.5.2 Importance of Costing

In the right environment, the benefits of product costing can be considerable. Identifying sources of profitability (and losses) allows a financial institution to focus on promoting their winning products, and re-designing those that are less profitable.

Understanding of processes facilitates improvements in efficiency. A detailed understanding of cost structures allows more informed pricing decisions to be made.

In summary, some of the benefits of costing are:

- ✓ Facilitates the pricing of current / future products
- ✓ Determines the costing of products
- ✓ Determines the profitability/contribution of each product.
- ✓ Assists managers make informed decisions about selection of products
- ✓ Promotes a high quality MIS
- ✓ Facilitate development of cost/profit centres
- ✓ Instil cost-consciousness amongst product/service department managers - thus enhancing productivity.
- ✓ Basis for business planning and investment decision (e.g. which product to market etc.)
- ✓ Can be used as a basis for variance analysis (budget v. actual comparisons)
- ✓ Reveals hidden-costs (especially at a departmental level)

4.5.3 Cost Allocation

When allocating costs to products and services, a decision has to be made on what costs to allocate; total or marginal cost. In *total cost allocation,* direct and indirect costs allocated across the products and net profit/loss of each product is ascertained. In *marginal cost allocation, o*ne product is treated as the main/core business activity and all other products as secondary activities. Therefore, only incremental costs are allocated to those other products.

It should be noted that the selection of an allocation basis is subjective in nature and it is important to consider and discuss many options in order to identify the most appropriate basis for each allocation unit.

The following are steps that could be followed when costing energy based financial products:

a) **Plan for the costing exercise**
b) **Identify energy products for costing**
c) **Ascertain core processes and activities.** An activities register or dictionary is created that summarizes activities taking up staff time. These activities are categorized into core processes such as loan application, processing, disbursement and so on.
d) **Conduct staff time estimates for each activity**, through timesheets, interviews and observation of processes and activities.
e) **Calculate costs per activity:** costs are allocated to activities using staff time.
f) **Assign cost drivers and determine unit activity costs:** a cost driver is a logical criterion that is used to allocate an activity cost to individual products, for example number of loan applications.
g) **Drive activity costs to products:** the unit cost per activity is multiplied by the cost driver volume per product, for example the cost of processing a loan application for a particular product is number of loan applications multiplied by the unit cost of making a loan application.
h) **Allocate sustaining activity costs to product:** these costs are directly allocated to products using allocation-based costing.

4.6 Product Pricing

4.6.1 The Necessity of Pricing

Pricing of products is essential whenever an organization develops a new product, introduces an existing product in a new geographical location or wishes to change the positioning of its existing product in the same market. It is essential that financial institutions price their products systematically and correctly and that the price of energy products cover the full cost of delivering them.

4.6.2 Significance of Pricing

Pricing is a very important function in the life of an organization. It is a critical factor in the survival and good health of every organization that relies on sales of its products; If prices are too high, business is lost; if prices are too low the enterprise may be lost.

In price-sensitive markets, an organization's price structure may affect its competitive position and its share of the market. Pricing has an important bearing on the institution's revenue and profit. Therefore, financial institutions should take into account these fundamentals when pricing energy based financial products.

4.6.3 Pricing Strategies

It is essential that financial institutions price their energy-based financial products systematically and correctly and that the prices of products cover the full cost of delivering them. Some pricing objectives that can be adopted by an institution for energy products could include:

- ✓ ***To ensure survival.***
- ✓ ***To achieve a target rate of return.***
- ✓ ***To maintain or improve market share, and***
- ✓ ***To meet or prevent competition.***
- ✓ ***To reflect the clients' perceived additional value of a premium product.***

There are many strategies organizations may use in pricing their products. In addition to above pricing objectives, financial institutions can adopt one or a combination of the following pricing strategies.

1) **Competitive pricing strategy**: Financial institutions may fix the price of an energy product at the competitive level under certain market conditions. This strategy is mostly used when the market is highly competitive and the product is not significantly differentiated from competing products.

2) **'Skimming the cream' pricing strategy**: Financial institutions using this method charge higher prices during the initial stages of the introduction of a new energy based financial product. This is done to enable the organization to recover its initial investment quickly.

3) **Penetration pricing strategy**: Organizations use this method when entering a new market that is price-sensitive. Because of its objective of acquiring market share, an organization may temporarily price its product below the competition level in order to develop popularity of its brand. Unlike the skimming of the cream strategy, it facilitates higher volumes of sales even during the initial stages of a product's life cycle.

4) **Keep out pricing strategy**: This is a pre-emptive pricing strategy which an organization may use to discourage other organizations in the market from offering substitutes to a product it has developed. It is a very risky strategy, particularly when the product is being offered to the public at a price which is less than its actual cost.

5) **Mark-up pricing strategy**: The most elementary method of pricing is mark-up pricing. The method involves adding a standard mark-up to the cost of a product. It is easy to learn, easy to use and is very popular but has some weaknesses. Organizations introducing a new product often load a high mark-up hoping to recover their costs as rapidly as possible. But a high mark-up strategy can be fatal if a competitor is pricing low.

6) **Target-return pricing strategy**: Under this strategy, an organization determines the price, which will yield its target rate of return on investment. So the starting point is the desired rate of return, and the price is calculated by working backwards. The biggest weakness of this strategy is its inability to take into account price elasticity and competitors' prices.

7) **Demand-oriented pricing**: Under this strategy, the organisation recognises that it offers a premium service, which it believes its clients will pay an additional fee to access. The organisation uses market research to evaluate client perceptions of the service. It then attaches a value to its clients' perceptions.

Develop a product prototype from one of the energy technologies discussed.

Module 5

Marketing an Energy Portfolio

OBJECTIVE

To discuss concepts and methods of marketing financial products in energy.

TOPICS IN THE MODULE

1. *Introduction*
2. *Marketing Strategies*
3. *Steps in Marketing an Energy Portfolio*

ACTIVITY

An activity is provided at the end of the module

Introduction

Marketing seeks to understand the needs of the clients of financial institutions. An energy portfolio marketing strategy involves development and differentiation of financial products for the energy sector. This is the process of continually and systematically identifying market needs and developing suitable products to meet those needs. Marketing is important in reaching new markets or in the expansion of existing ones. It provides a clear, systematic approach to promoting financial products.

Marketing an energy portfolio seeks to do the following for a financial institution:

- ✓ **Increase the energy portfolio size.** In this case, the financial institution markets its energy products to an identified target group or segment.
- ✓ **Defines the promotional activities** that will be conducted by the financial institution to raise client awareness of the product.
- ✓ **Marketing allows a financial institution to monitor and analyze customer behaviour** in order to anticipate potential problems and provide solutions. Financial institutions can do this by using market research.
- ✓ **Marketing helps a financial institution to develop a positioning strategy** to assist it in defining how clients perceive an energy product and how the energy product is delivered.
- ✓ **Marketing involves conducting demand analysis**, which can help a financial institution identify potential target markets for an energy product.

5 Marketing Strategies

Marketing is categorized as follows:

a) **New Markets:** these are those markets that a financial institution has not captured. People in this category have not used any of the financial service provider's products before. A financial institution may market an energy product to new markets and may also cross-sell its other products once these new clients take energy loans.

b) **Developing or Growth Markets:** these are markets that exist but the financial institution has not marketed energy financing products to them. People in this category have used the financial institution's services in other categories. It is important to target existing clients in order to grow the energy portfolio.

c) **Developed or Mature Markets**: these are markets that are already served by financial institutions. People in this category have used the financial institution's service and are more aware of the its landscape. Financial institutions can introduce an energy product to an already served market.

Marketing of energy financial products has to be carefully planned and executed to avoid mistakes that can be costly and hard to recover from. Financial institutions must be aware of the current market trends and keep informing their clients about any changes they make in the energy portfolio.

A successful energy portfolio marketing strategy should:

- **Define the target market that the financial institution wants to serve**. For example, an institution with many customers in dairy farming is well suited to promoting loans for biogas units.
- **Identify the unique characteristics, needs, desires, preferences, values and priorities of that market.**
- **Develop a financial product that meets market needs better than the competition.**
- **Price the product competitively** and communicate the price and other features (benefits) in a way that the customers can easily understand.

A financial institution can use either pull or push strategies and at times a combination of the two in marketing an energy portfolio.

5.1 A pull-based Strategy

A pull strategy concentrates marketing activities on a wide range of potential end-users with a view to creating awareness and ultimately creating a strong demand for energy financial products. It pulls customers to demand the product with the use of some of the following activities.

- **Advertising**
- **Public relations**
- **Sales promotions**
- **Direct marketing**

5.2 A push-based Strategy

A push-based strategy markets the energy financial product directly to the end-user. It mainly uses staff to push the product through the following channels:

- **Personal selling**
- **Direct marketing**

To elaborate, a financial institution can use the following activities in marketing and communicating an energy portfolio as discussed:

Personal Selling

Personal selling involves face-to-face salesmanship. It is the most direct, personal, and commonly used technique by financial institutions marketing specific energy products. Personal selling is particularly appropriate for energy products that may require explanation or demonstration. For example, when marketing a financial product supporting bio-gas, one can use personal selling technique for the following benefits:

- It facilitates the building of relationships between customers and the financier
- It generates future sales through the provision of advice to potential customers or to influential members of the community
- It gathers feedback and other marketing information that help increase understanding of ever-changing customer needs, wants and preferences.

Advertising

Advertising is designed to generate demand through non face-to-face communication channels. An institution pays for media space or time in order to sell its product and services at a distance, with the aim of being able to reach more potential customers in a quicker way.

Advertising an energy portfolio is particularly effective when the benefits to be communicated about the energy product are relatively easy to communicate.

For example, an institution can develop a financial product to finance solar LED lanterns in an off-grid area. Then it puts up advertisements in its banking hall, local markets, and local community radio stations in the targeted market.

Advertising is very effective when:

- There is need to develop awareness in a mass market
- Products are purchased frequently.

Sales Promotions

Sales Promotions are used whenever there are special offers such as waived fees or lower interest rates. Sales promotions are short-term activities designed to boost sales for a limited time, or to entice new customers to experiment with the institution's products and services.

Typically these promotions are:

- Time-bound: for example ***"Take a solar loan before 31st December and the financial institution will waive the legal charges."***
- Activity-based: for example," ***Bring in 5 new customers and there will be an offer of 2% premium interest on your biogas loan for that year."***
- Segment focused: for example, special offer for dairy farmers - ***reduced charges on the biogas loan.***

Public Relations

Public relations are a deliberate, planned and sustained effort to establish and maintain mutual understanding between an organization and its clients. Activities in public relations ensure that the publicity a financial institution gets for its energy portfolio is good publicity.

For example a financial institution can organize for a tree-planting day as a way of campaigning for the planting of woodlots. Additionally, it can organize for a clean-up day and dispose the biomass waste for briquette production or biogas.

Public relations activities have a strong effect on the public's knowledge and perception of the financial institution and its products.

Direct Marketing

Direct marketing can be used to market energy financial products. It provides a direct link between the financial institution and its customers: current and potential. It is a very flexible, low-cost and creative strategy that is less visible to competitors. For example a financial institution can use direct marketing to market solar PV loans through:

- ✓ Distribution of leaflets on the solar PV loan to existing clients in the banking hall.
- ✓ Direct mail to existing and prospective customers detailing features/benefits of the loan product
- ✓ Targeted press advertising about the solar PV loan.

It is important to note that no matter what strategy or combination of marketing activities is selected, they should:

- ✓ Give the customer good reasons why they should buy from the financial institution and not from the competition.
- ✓ Not raise client expectations to levels that the financial institution cannot meet. It is best to under-promise and over-deliver on client expectations.

5.3 Steps to Marketing an Energy Portfolio

The marketing process for an energy portfolio involves the development of valuable products and communication that add value to the market. These activities can be broken into the following individual steps:

5.3.1 Step 1: Know Your Market

Establishing the energy portfolio is very important because once the market is known, with its needs and its characteristics, then the institution can develop and sell the energy financing products that offer value to the market. This first step is the foundation upon which all else is built and serves as the reference point for the financial institution to continuously endeavor to satisfy customer needs and improve on the value it offers.

For example, loans to finance the installation of biogas units would be suitable for areas with a high concentration of commercial dairy farmers and loans to support the production of briquette units would sell in wheat/rice growing areas.

5.3.2 Step 2: Select an Approach

Once the financial institution has established the market/market segment, identified energy financing needs, and the extent to which the energy financing product meets the needs, it should define the overall product strategy and select an appropriate approach. There are some questions that have to be answered in the process of selecting an energy portfolio marketing approach:

i. What is the financial institution's energy portfolio growth strategy?

In defining the growth strategy, one should aspire to provide better services to more clients to make more profit and/or have greater outreach. The financial institution should define the ways in which it wants to grow. For example, does it want to sell more of the financial energy product to the same kind of customers it serves or does it want to change the product offering in some way? Or does it desire to change the market to which it intends to sell the energy product?

ii. What is its marketing strategy for the energy portfolio?

Once the growth strategy has been defined, an appropriate marketing strategy can be selected. There are three main approaches that a financial institution can choose from in marketing an energy portfolio:

a) **Mass marketing strategy:** A financial institution targets to sell the energy-financing product to all the clients in the market without any form of differentiation.

b) **Segment marketing strategy:** It differentiates and profiles the energy financing market according to various parameters such as income, occupation, age, education etc. The financial institution then develops its marketing strategy targeting the selected market segments.

A financial institution intending to sell biogas loans can segment its existing and potential clients on the basis of their occupation so that it is able to identify a market segment that consists only of dairy farmers. It can now develop a marketing strategy tailored specifically for this segment.

5.3.3 Step 3: Develop and Differentiate Your Product

Having defined the type of energy product it wants to develop, and the target market/s to be served, the financial institution should focus on product development and differentiation. In this step, it should design and/or refine the energy product's features so as to ensure that they meet the needs of the target market. Additionally, the financial institution should endeavor to distinguish the product in the market and set it apart from available alternatives.

A financial institution intending to sell bio-gas loans can differentiate its loan product by offering a grace period, reduced interest rates, linkages with qualified technicians etc. It can also communicate the benefits that the clients will get from installing bio-gas systems. This will help in setting the bio-gas loan apart from other alternatives in the market.

5.3.4 Step 4: Price Your Product

Setting the price for a financial energy product is unique from other financial products in that the financial institution usually plays the role of linking the buyer with an energy enterprise. This means that the loan has to cater for the cost of the equipment and other fees such as installation, and maintenance where applicable. The financial institution should also be aware that some energy projects such as hydro take long to implement before they can generate funds. Therefore in setting the price, it should consider the time value of money.

Therefore, a financial institution should set the price of the energy financial product after considering all the unique factors of a particular energy product.

A financial institution pricing a financial product to finance a small hydro should take the following unique factors into consideration:

- **Cost of equipment, fittings and raw materials**
- **Cost of the required technical assistance**
- **The time it will take to set-up the whole project implying that it might be necessary to have a grace period.**
- **Cost of funds and the margin that the organization intends to get.**

The financial institution should then price the loan natives in the market.

5.3.5 Step 5: Prepare Your Message

It is important to then communicate the value to the target market. Potential customers need to know that the product exists, its terms and how to access it. The communication should convince the customers of its benefits so that they can make the decision to buy. It is important for the financial institution to communicate the benefits rather than the features of the energy financial product. Clients do not buy features but the benefits they will get from using the product. The message should be clear, concise, distinctive, compelling and in a language that the target market understands easily. When a message is crafted in such a manner, then it is bound to generate interest from the target market.

A financial institution that has developed a loan to finance the installation of a bio-gas system should have a marketing message that highlights the following benefits:

- **A loan to finance clean and reliable cooking, lighting and heating solutions.**
- **Linkage to expert technicians for installation**
- **Grace period of 3 months**
- **Few requirements to apply and qualify**

5.3.6 Step 6: Deliver the Message

It is necessary for financial institutions to communicate the message developed on the energy-financing product to the target market. When the message is well delivered, the the financial institution will be initiating a relationship with potential clients while developing the trust that is necessary for a sale to happen. A good message that is well delivered builds on one's reputation and brand. It is important to choose channels that are suitable and are able to reach the intended target market. The communication channels include radio, internet, newspapers, posters, brochures and others.

A financial institution that has a solar LED loan and has identified the off-grid areas as its target market can use the following channels to deliver the marketing message to the end users.

- **Vernacular/community radio stations transmitting in the target market**
- **Brochures distributed by staff in trading centres**
- **Posters located at the administrative centres**
- **Billboards**

Activity:

Which strategies would your financial institution use for the indicated loan products and why?

Products	Advertisement	Personal selling	Direct marketing	Promotions	Public relations
Solar PV loan					
Solar lanterns loan					
Briquette loan					

Give reasons for your choices:

Module 6

Risk Management for an Energy Portfolio

OBJECTIVE

To identify, analyze energy related risks and design mitigation measures.

TOPICS IN THE MODULE

1. *Introduction*
2. *Risks Definitions*
3. *Steps in Risk Mitigation*
4. *Risks inherent in energy projects*
5. *Risks inherent in energy loan portfolios*

Introduction

Risk management is important to financial institutions as they are able to proactively anticipate losses from undesirable outcomes or the failure of a desirable outcome to happen. This enables them to plan and take necessary measures of risk mitigation, rather than reacting to losses when they have already occurred.

Establishing a comprehensive risk management control structure in a financial institution is a necessary pre-requisite to effectively managing risks related to an energy portfolio and offers the following benefits:

- ✓ **It provides an early warning system for potential problems** before they become larger and take a big toll on the organization's time and resources.
- ✓ **Enables the financial institution to use capital more efficiently** by allocating resources to those areas that present acceptable risk levels and returns.
- ✓ **Enables it to be more successful in developing an energy portfolio** by taking into account all the areas in which it may be exposed and managing the inherent risks.

It is therefore expected that financial institutions that are pursuing energy financing will put in place a risk management framework as a way of mitigating against energy-related risks.

RISK DEFINITIONS:

Below are some of the terminologies used in risk management literature. These terms have been defined to ease understanding whenever applied.

Risk: The possibility of an undesirable outcome or the absence of a desired outcome disrupting your institution or project

Risk Event: The undesirable outcome

Risk Driver: The causal factor that results in the risk.

Risk Indicator: The relevant measure, which when measured, quantifies the level of the risk.

Risk Owner: The person responsible for managing a particular risk in a financial institution.

Exposure: A condition or set of circumstances in which a risk event could result in loss.

Frequency: The probability or likelihood of the risk event occurring or number of times a risk event is likely to result in a loss.

Severity or Impact: The degree of damage that may result from an exposure.

Risk Management: The activity of proactively identifying and controlling undesired project outcomes.

Risk Management Framework: A guide for financial institution managers that helps them design an integrated and comprehensive risk management system. This enables them to focus on the most important risks in an effective and efficient manner.

6 Risk Management

6.1 Steps of Risk Management

Risk is undesirable and must be managed at all times. Financial institutions should use a systematic approach to manage risks. Proactive risk identification, assessment and mitigation are core functions of building an energy portfolio that focuses on medium and large projects.

Managing risk is a continual process of systematically assessing, measuring, monitoring and managing risks in the organization. Effective risk management ensures that the “big picture” is not lost to the urgent demands of day-to-day management.

Classic risk management requires an organization to take **four key** steps:

1. **Identify the risks facing the institution** and assess their
2. **Measure the risks appropriately** and evaluate the acceptable limits for that risk.
3. **Monitor the risks on a routine basis**, ensuring that the right people receive accurate and relevant information; and
4. **Manage the risks** through close oversight and evaluation of performance.

Effective risk management encompasses a "feedback loop" from the branch to senior managers, and sometimes to the board of directors, to make sure that policies and strategies are appropriate and that the risk levels are within the risk parameters set by the institution. In essence, there are 5 steps that make up the risk management feedback loop as shown below:

1. To identify, assess and prioritize risks
2. To develop strategies to measure the risks
3. To develop tactics to mitigate the risks
4. To assign responsibility and implement
5. To evaluate the effectiveness of the results

Figure 15 below displays the flow of these steps.

Figure 15 - Risk Management Process

6.1.1 Identify, Assess, and Prioritise R33isks

The financial institution identifies the various risks it is exposed to by developing an energy portfolio (by investing in a long-term, medium to large energy projects or lending to users of energy products), lists causal risk drivers and categorizes the risks according to departments and areas that they may affect.

6.1.2 Develop Strategies to Manage Risks

The financial institution needs to develop means and ways of measuring, tracking and monitoring energy portfolio risks. In many cases, such institutions identify the main indicators and drivers for each risk. Severity and frequency are the main parameters used to measure impact of a risk event. What has been measured is easy to manage or take the corrective action against. The strategy to take in managing any risk associated with an energy source should be built along managerial considerations listed in Table 6 below.

Table 6 - Renewable Energy Project Risks and Considerations (*Source: Adapted from UNEP*)

RET	Key Risk Issues	Risk Management Considerations
Large PV	• Component breakdowns (e.g. short-circuits). • Weather damage. • Theft/vandalism.	Performance guarantee available (e.g. up to 25 years). Standard components, with easy substitution. Maintenance can be neglected (especially in developing countries).
Solarthermal	• Prototypical/technology risks as project size increases and combines with other RETs e.g. solar towers.	Good operating history and loss record (since 1984). Maintenance can be neglected (especially in developing countries).
Small hydropower	• Flooding. • Seasonal/annual resource variability. • Prolonged breakdowns due to offsite monitoring (long response time) and lack of spare parts.	Long-term proven technology with low operational risks and maintenance expenses.
Wind power	• Long lead times and up-front costs (e.g. planning permission and construction costs). • Critical component failures (e.g. gear train/ box, bearings, blades etc). • Wind resource variability. • Offshore cable laying.	Make and model of turbines. Manufacturing warranties from component suppliers. Good wind resource data. Loss control e.g. fire fighting can be difficult offshore due to height/location. Development of best practice procedures.
Biomass power	• Fuel supply availability/variability. • Resource price variability. • Environmental liabilities associated with fuel handling and storage.	Long-term contracts can solve the resource problems. Fuel handling costs. Emission controls.
Biogas power	• Resource risk (e.g. reduction of gas quantity and quality due to changes in organic feedstock). • Planning opposition associated with odour problems.	Strict safety procedures are needed as are loss controls such as fire fighting equipment and services. High rate of wear and tear.

6.1.3 Develop Tactics to Mitigate Risk

There are four tactics to manage risks. For the various risks, an institution chooses the tactic to adopt based on the levels of exposure that are acceptable.

- **Accept**: Accept a risk if the possibility of risk event occurring is rare and does not affect the institution adversely if it occurs.
- **Transfer:** Transfer a risk if the possibility of a risk event occurring is rare but would adversely affect the institution if it occurs.
- **Control:** If the possibility of a risk event occurring is high but its incidence would not adversely affect the institution, then the best tactic is to control the risk event.
- **Avoid:** Avoid the risk if the possibility of a risk event occurring is high and it adversely affects the financial institution.

In most cases, these tactics are incorporated in policies and procedure both operational and product.

6.1.4 Implementing and Assigning Responsibilities

In this step, the institution chooses important cost effective controls and assigns various levels of responsibility in managing risk. For instance, the person responsible in monitoring day-to-day performance of a particular risk is the risk owner and the supervisor is the high level monitor.7

The purpose for developing a risk management system is to ensure that risks are measured and controlled. For this to take place, there must be persons charged with the responsibility of implementing the laid down actions. The risk owner should ensure that the necessary mitigation actions have been implemented.

6.1.5 Evaluation results and feedback

At the end of the loop, an evaluation is done to provide feedback on the effectiveness of the risk management strategies undertaken. This implies that the Financial Institution should continually measure and evaluate the impact of the anticipated risks in order to make improvements in the future.

Performance evaluation of the risk management strategy and its implementation should help to ensure that the intervention adopted leads to required results.

6.2 Risks Inherent to an Energy Portfolio

Like any other project finance, energy projects have unique risks that can expose a financial institution to loss. Some of the inherent energy project risks are:

1. **Completion risk**
2. **Technological risk**
3. **Supply risk**
4. **Economic risk**
5. **Foreign exchange risk**
6. **Political risk**
7. **Environmental risk**
8. **Force majeure risk**

6.2.1 Completion Risk

Table 7 below summarises the features of completion risk.

Table 7 - Completion Risk

Risk description	The risk that an energy project started might not be completed despite the lender having made the funding available
Risk driver	• Project costs higher than originally expected • Projects are long-term and take long to be operational
Risk indicator	Incomplete project
Risk owner	In charge of credit in the financial institution
Impact	• Loss of earnings • High portfolio at risk (PAR)

Example of Completion Risk

A financial institution can easily be exposed to completion risk if it funds a small hydro project on a short-term basis while the project completion takes longer than anticipated.

Mitigation

The financial institution should consider transferring this risk to a third party which can assume the risk. This can be in the form of insurance or a guarantee[2].

[2] A guarantee typically refers to financial guarantees of debt that cover timely payment.

6.2.2 Technology Risk

Table 8 below summarises the features of this risk.

Table 8 – Technology Risk

Risk description	This is the risk that the energy equipment financed is of poor quality and or does not last as long as expected. The equipment may also not perform as expected or have a shorter shelf life/lifespan.
Risk Driver	• Poor technical assistance • Poor product
Risk indicator	Product failure
Risk owner	In charge of credit in financial institution
Impact	• Loss of earnings • High PAR • Loss of image (reputation risk)

Example of a Technological Risk

Some renewable energy components such as solar panels are sensitive and their installation quite technical in nature. There is a risk that a financial institution considering financing the purchase of solar panels may partner with rogue suppliers and expose the institution to losses from customers' non-repayment due to poor quality products.

Mitigation

The financial institution should consider partnering with credible energy equipment suppliers whose products are certified by the relevant authorities. They should also work with certified service providers, for instance, qualified solar technicians.

6.2.3 Supply risk

Table 9 below summarises the features of this risk.

Table 9 - Supply Risk

Risk description	This is the risk that the raw materials or parts needed for repairs or to implement a project are not readily available when needed.
Risk driver	Failure to conduct due diligence on the reliability of the suppliers.
Risk indicator	Incomplete project
Risk owner	In charge of credit
Impact	• Loss of earnings • High portfolio at risk

Example of Supply Risk

An institution may expose itself to supply risk if it finances a wind-mill or hydro-power project where components are sourced from abroad and are not readily available.

Mitigation

The financial institution should first conduct a thorough due diligence so as to ensure the availability of all the required parts and resources. It should engage expert advice from qualified energy professionals.

6.2.4 Economic Risk

Table 10 below summarises the features of this risk.

Table 10 - Economic Risks

Risk description	This is the risk that once the project has been completed or installed, demand for the energy intervention drops to levels inadequate to sustain the project, which may not pay off the costs related to setting up the energy solution
Risk driver	Failure of the financial institution to conduct a good feasibility study on the demand of the solution.
Risk indicator	Failure or low-uptake of the energy solution.
Risk owner	In charge of credit
Impact	• Loss of earnings • High portfolio at risk (PAR)

Example of an Economic Risk

For instance if an institution finances a windmill or small hydro project and then the government extends the grid to such an area, then individuals may opt to connect to the national grid, making the local solution un-sustainable.

Mitigation

The financial institution should ensure that it conducts thorough due diligence. Also, it can consider transferring the risk to a third party in the form of full or partial guarantees.

6.2.5 Foreign Exchange Risk

The table 11 summarises the features of this risk.

Table 11 - Foreign Exchange Risk

Risk description	This is the risk that the institution is exposed to when it borrows money in a different currency from the local currency. It is exposed to currency fluctuations.
Risk driver	Loss of value by the local currency
Risk indicator	Higher than expected loan repayment amounts
Risk owner	Management of financial institution
Impact	• Loss of earnings • Erosion of capital • Liquidity problems

Mitigation:

The institution may consider hedging the loan so as to shield itself from the losses.

The management needs to properly analyze loan terms and conditions before borrowing funds.

6.2.6 Political Risk

Table 12 summarises the features of this risk.

Table 12 - Political Risk

Risk description	This is the risk that the political environment may adversely affect the financial institution's energy portfolio.
Risk driver	Adverse influence of leadership
Risk indicator	Interference in the project
Risk owner	In charge of credit, management
Impact	• Loss of earnings • High portfolio at risk • Reputation risk

Example of Political Risk

An influential person/group in an area may decide to interfere with the management of a financed energy **development** project. This in turn will expose the institution to losses.

Mitigation

The financial institution should transfer this risk to third party in the form of a political risk insurance cover or a partial guarantee. Additionally, it should be very careful when financing projects whose implementation periods cut across two electoral periods and should consider funding long-term projects in tranches.

6.2.7 Environmental Risk

Table 13 summarises the features of this risk.

Table 13 - Environmental Risk

Risk description	This is the risk associated with the physical environment that can impact negatively on an energy project implementation.
Risk driver	Failure to request for an environment assessment certificate/report.
Risk indicator	Stoppage of project implementation by government agencies
Risk owner	In charge of credit/ management
Impact	• Loss of earnings • High portfolio at risk • Delay in implementation of the project

Example of an Environmental Risk

This could come from a lobby group or a government agency such as National Environment Management Authority (NEMA) in Kenya which may stop the implementation of a project on the basis that it negatively impacts the environment.

Mitigation

The institution can control this risk by ensuring that before financing medium to large energy project, the borrower has all the necessary documentation on environmental assessment from the relevant government agencies.

6.2.8 Force Majeure Risk (Acts of God)

This is the risk that an unforeseen catastrophic damage will occur and destroy or disrupt the venture/project.

Mitigation

This risk can be controlled by diversifying the loan portfolio so as to spread risk into many sectors and regions.

6.3 Risks Inherent to Energy Loan Portfolio

Loan portfolios for energy related products have similar financial risks like other loan products.

6.3.1 Credit Risk

Credit risk is the risk to earnings or capital due to borrowers' late or non-payment of loan obligations. Credit risk encompasses both the loss of income resulting from the financial institution's inability to collect anticipated interest earnings as well as the loss of principal resulting from loan defaults.

Credit risk includes both transaction risk and portfolio risk. Transaction risk refers to the risk within individual loans. Financial institutions mitigate transaction risk through borrower screening techniques, underwriting criteria, and quality procedures for loan disbursement, monitoring, and collection. Portfolio risk refers to the risk inherent in the composition of the overall loan portfolio. Policies on diversification (avoiding concentration in a particular sector or area), maximum loan size, types of loans, and loan structures lessen portfolio risk.

For energy financing, this risk could arise from a poorly developed product, poor product policies and procedures, inappropriate delivery and follow-up systems and weak collateralization process.

Effective approaches to managing credit risk in financial institutions include:

- ✓ Well-designed borrower screening, careful loan structuring, close monitoring, clear collection procedures, and active oversight by senior management.
- ✓ Good portfolio reporting that accurately reflects the status and monthly trends in delinquency, including a portfolio-at-risk aging schedule and separate reports by loan product.
- ✓ A routine process for comparing concentrations of credit risk with the adequacy of loan loss reserves and detecting patterns (e.g., by loan product, by branch, etc.).

6.3.2 Liquidity Risk

This is the risk of loss arising from the possibility that the financial institution may not have sufficient funds to meet its obligations. Liquidity risk is the possibility of negative effects on the interests of owners, customers and other stakeholders of the financial institution, resulting from the inability to meet current cash obligations in a timely and cost-efficient manner.

Liquidity risk may be high especially where the financial institution is lending to energy consumers (like solar loans) and no formal collateral is pledged but group guarantee. Where there is no in-built motivation or sanction for repayment, the group guarantee mechanism crumbles, increasing the chance of loss. Effective liquidity risk management requires a good understanding of the impact of changing market conditions and the ability to quickly liquidate assets to meet increased demand for loans or withdrawals from savings.

6.3.3 Fraud Risk

Also referred to as integrity risk, fraud risk is the risk of loss of earnings or capital as a result of intentional deception by an employee or client. Therefore, fraud could be internal or external. Internal fraud may include tellers “borrowing” funds from their cash drawers and misrepresenting their cash counts at the end of the day, sometimes in collusion with branch managers.

The most common type of fraud in a financial institution is the direct theft of funds by loan officers or other branch staff. In addition, staff may collude with the clients to steal or defraud the bank or financial institution by falsifying documents like documenting collateral that does not exist and the client failing to pay.

These fraud risks could be minimized by installing a robust information system coupled with good internal control systems that provide regular internal audit.

6.3.4 Interest Rate Risk

Interest rate risk arises from the possibility of a change in the value of assets and liabilities in response to changes in market interest rates. Also known as asset and liability management risk, interest rate risk is a critical treasury function, in which financial institutions match the maturity schedules and risk profiles of their funding sources (liabilities) to the terms of the loans they are funding (assets).

In financial institutions, the greatest interest rate risk occurs when the cost of funds goes up faster than the institution can or is willing to adjust its lending rates. The cost of funds can sometimes exceed the interest earned on loans and investments, resulting in a loss to the financial institution.

6.3.5 Fiduciary Risk

Fiduciary risk is a type of risk that accounts for the possibility of a trustee or agent who is not optimally performing to the beneficiary's best interests. This risk is loss arising from factors such as failure to maintain safe custody or negligence in the management of assets on behalf of others.

For example, a situation where a fund manager (agent) is making more trades than necessary for a client's portfolio is a source of fiduciary risk, because the fund manager is slowly eroding the client's gains by incurring higher transaction costs than are needed. This would be a situation where the agent is clearly not optimally creating value for his or her client.

6.4 Financial Risks Management Instrument for Energy Portfolio

6.4.1 Existing insurance products for energy projects

Traditional insurance products are gradually becoming more widely available to the renewable energy sector. However, 'institutional inertia' is preventing any significant progress with regard to product development. Smaller projects, like those normally associated with biogas, small hydro and biomass, have limited insurance cover options.

Most small projects have a high opportunity cost and rarely exceed the internal hurdle rates required by managers of insurance companies. They simply avoid them.

6.4.2 Emerging risk management instruments for energy projects

There are financial risk management instruments that are evolving or can be adapted to meet the needs of the renewable energy (RE) sector. These include:

- **Alternative risk transfer (ART) products**. ART products are organized as 'contracts, structures and solutions' and often include combinations of both risk finance mechanisms (captives/finite products) and risk transfer (Integrated Risk Management). For example, risk finance structures using finite insurance can be applied to smooth revenues for RE projects.
- **Specialist underwriting vehicles**. This involves risk management processes in terms of risk retention versus risk transfer. The retention decision is both a risk management and capital structure decision. An 'unfunded retention' is the retained risk of a project for which any losses are not financed until they have occurred, while a 'funded retention' means that specific funds are allocated to carry particular losses. Risk finance can offer some revenue-protection solutions for RE projects that may be acceptable to financiers and thus help facilitate more transactions.
- **Weather derivatives** are used to protect RE project revenue streams against the financial uncertainty associated with wind, precipitation and temperature variability. Temperature is the most commonly traded weather product but other risks are gaining prominence. Wind power indices (WPIs) are available to wind farm developers in areas where there is sufficient data to create an index that is highly correlated to the wind flow into the turbine.
- **Credit derivatives**. These instruments allow brokers to repackage small and illiquid credits into tradable securities that can be distributed to a variety of investors. They are useful for hedging certain types of credit risk and aggregated credit structures could potentially be useful to the RE sector.
- **Political risk insurance**. This coverage protects investors against the inability of the borrower to convert interest and principal payments from local currency to hard currency.

6.4.3 Developing Risk management Framework for Energy Portfolio

Risk management framework

Creating a risk management framework and culture within the institution are the first steps to successfully embedding risk management as a function within the financial institution. While taking risk is a natural part of lending and finance, financial institutions have to attempt to plan for risk and avoid unnecessary surprises, i.e. unforeseen events that can threaten their viability. Risk management is a systematic approach to identifying, measuring, monitoring and managing business risks in an institution.

Since financial institutions operate in ever-changing risk environments, it is becoming increasingly relevant and important to create an infrastructure and system that incorporates risk management into the financial institution's culture, ensuring that all staff can more professionally focus on identifying and anticipating potential risks. The framework needs to identify inter-related functions that ought to be created as far as possible by the financial institution. These are credit committee, asset and liability committee, internal control and risk management committee.

The following is a summary of aspects of risk management and what a proper risk management system consists of:

- Risk-taking as an inherent element of banking;
- A vast diversity of risks and types of banking institutions means that each institution tailors its own risk management program;
- Risk identification as a continuous process at transaction, portfolio, and institutional level;
- Risk measurement techniques to determine impact on profitability and capital, ranging from simple to sophisticated measurement models;
- Risk monitoring to facilitate timely review of risk positions and exceptions;
- Risk control to establish and communicate risk limits through policies, standards and procedures;
- Sound risk management systems that include:
    - Active board and senior management supervision,
    - Adequate policies, procedures and limits,
    - Adequate risk management systems,
    - Comprehensive internal control,
    - Alignment with internationally accepted risk management principles and best practice.
- Institutionalizing the risk management function

Benefits of a good risk management framework

A good risk management framework:

a) Integrates into a financial institution's operations a set of systematic processes for identifying, measuring, and monitoring many different types of risk to help management keep an eye on the big picture.

b) Uses a continuous feedback loop between measurement and monitoring, internal controls and reporting, and involves active oversight by senior managers and directors, allowing more rapid response to changes in internal and external risk environments.

c) Considers scenarios where risks interact and can exacerbate one another in adverse situations.

d) Elevates responsibility for risk management and preparedness to senior management and the board.

e) Encourages cost-effective decision-making and more efficient use of resources.

f) Creates an internal culture of "self-supervision" that can identify and manage risks long before they are visible to outside stakeholders or regulators.

Challenges of setting up a good risk management framework

This setup depends on the size and complexity of the institution. Ideally, the overall risk management function should be independent of those who take or accept risk on behalf of the institution. Sufficient checks and balances need to be established to ensure that risk management is not compromised.

The overall risk management function provides supervision of the management of risks inherent in the institution's activities. Institutionalizing risk management is challenging especially for microfinance institutions given that they often have to work in resource-limited environments with challenging staff recruitment and retention circumstances.

Develop a risk management strategy for a renewable energy product that you will introduce in your institution.

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THIS MANUAL IS A MODULAR TRAINING GUIDE THAT TARGETS SENIOR AND MIDDLE LEVEL MANAGERS OF FINANCIAL INSTITUTIONS.

IT IS DESIGNED TO PROVIDE AN OVERVIEW OF FINANCING OPPORTUNITIES IN THE ENERGY SECTOR INCLUDING POTENTIAL FINANCING MECHANISMS THAT CAN BE ADOPTED OR CUSTOMIZED TO DESIGN AN ENERGY FINANCING PRODUCT OR PORTFOLIO.

IT ALSO POINTS OUT THE RISKS THAT ARE INHERENT IN AN ENERGY LOAN PORTFOLIO AND PROVIDES SUGGESTIONS ON HOW THESE RISKS CAN BE MITIGATED.

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