

Pre Feasibility Study

SPC Concept and Pilot Project

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Prague - Project - Portfolio - Planning - Platform
for Renewable Energy Sources
Self-Powered Community Business Knowledge Transfer



Pilot Project Proposal

The “Pilot Project Proposal” is a document with four chapters and it represents a follow-up to the “Case Example,” the “Case Story”, and other documents which are available at www.5pforres.eu. The Proposal describes the way how to generate financial sources for a sustainable improvement in quality of life and capital investment into climate change-related projects at a local level.

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Summary

SPC Concept (Chapter 1)

uses Public Private Partnership (PPP) and drivers of socio-economic development as key synergy tools for financial independence. SPC Concept uses decentralized electrification based on locally available renewable resources (including biomass from bamboo and coconut tree plantations) and funds to be invested in climate change projects, such as rainwater management, etc.

Synergy effects further help the SPC Concept-based projects an attractive solution and opportunity for government-run development initiatives as well as profitable participation of private sector.

SPC Utility (Chapter 2)

is an organizational unit for managing portfolio of socio-economic development projects in a province. The structure of the SPC Utility respects PPP rules through two key internal functions: revolving loan fund and special purpose company departments.

SPC Utility is jointly funded by local private sector and by local government unit (LGU) with a mix of long-term and commercial loans for 30 years (a life span of one generation). An international team of experts serves as a professional base of managerial skills of the SPC Utility, and LGU represents the public interest.

SPC Utility's Board of Directors is composed of representatives of LGU, private investors and institutional lenders. The SPC Utility performs services in procurement, acquisition of micro, small and middle enterprises (MSME), evaluation of project portfolio, and internal and external audits.

The Pilot Project (Chapter 3)

is an opportunity to demonstrate benefits of the SPC Concept in specific region. 5PforRes is an initiator and integrator of the Pilot Project (PP) initiative. Preparation and implementation of the PP is a task for of the SPC Utility. Critical tasks and individual steps in PP preparation stages are specified bellow and in detail in Table 2.

Three critical drivers: electricity, water, and materials (e, w & m) are identified and used: decentralized electrification (e) based on locally available renewable energy sources (RES), rainwater management (w), representing investment into prevention of disasters caused by climate change impacts, and biomass management (m) based on local wealth of bamboo and coconut trees are the core of the proposed business model. Business rules should be applied through management thresholds and control instruments promoting consensus building among PP stakeholders (using tools such as LGU's Master Plan, Citizen's Charter, internal financial control, and internal audit). A brief survey of the costs and yields is presented (in Financial Model, FM).

Financial Model (Chapter 4)

was prepared for a wide spectrum of applications and presents a brief analysis of initial assumptions for preparation of the PP. Financial Model (FM) is to be used for in presentation of the SPC Concept, negotiations related to establishing SPC Utility, and for preparation of the PP. Input data collected for the 2013 version of the FM analyzed five sub-models and their combinations:

- Financing of the PP preparation stage,
- Mix of loans for star up (\$45m)
- Double (\$90m) and
- Triple (\$135m) stages, and
- MSME acquisitions.

FM quantifies the costs of the SPC Concept know-how and proposes financial settlement for all five sub-models. The FM helps to answer the following three questions:

1. What is the total profit of the SPC Utility's investment into decentralized electrification and bamboo and coconut tree plantations by the end of 2045? (almost 900%)
2. How large portion of \$ can be invested by the SPC Utility into prevention of disasters caused by climate change impacts in a province?
3. What is the overall potential of the three drivers (e, w& m) to generate jobs over the time period ending with 2045?

The core assumptions:

- a) The production capacity of all power plants is available for 27 years (power plants are maintained and retrofitted as needed),
- b) Bamboo and coconut plantations are properly managed and harvesting from 2027 for 18 years (plantations are maintained as needed),
- c) MSMEs represent a production and business chain of domestic and foreign business services.

Critical tasks:

1. To unlock human potential and build the capacity at central and local levels for PPP and to gain trust of donors and lenders in success of the project portfolio.
2. To strengthen regulations (e.g. by Master Planning, Citizen's Charter, etc.) and to motivate stakeholders in SPC Concept-based portfolio of projects and to adhere to them.
3. To integrate the SPC Utility external tasks (e.g. for public administration services and participatory budgeting interventions) through utilization of professional skills and citizens' participation.
4. Financially motivate the SPC Utility owners to apply and maintain transparent and competitive procurement and acquisition processes in all cycles of the project portfolio.
5. To hire, educate, and coach SPC Utility staff and to use internal financial control and internal audits tools to control results of all milestones of the project portfolio.

Recommended Steps:

1. An agreement between 5PforRes and an Investor¹ concerning preparation and implementation of the Pilot Project.
2. Investor's prospectus is presented to and advocated before PP donors and stakeholders.
3. Pre-feasibility study is used for negotiation concerning establishment of the SPC Utility.
4. Approval of a Feasibility Study and securing financing for the SPC Utility.
5. The SPC Utility starts implementing the PP.

¹ Investor (s) is (are) individual (s) or private or public sector entities interested in participation in preparation and implementation of the PP (e.g. a rich family or a donor).

1. SPC Concept

The SPC Concept proposed for the Philippines is an opportunity to demonstrate feasibility and sustainability of proposed synergy effects in other countries and regions of the world (e.g. Asia, Africa, and Latin America). For more details see the Case Example for the Philippines on www.5pforres.eu.

1.1 Findings

The SPC Concept has five years of development behind it. We have contacted both individuals and organizations from the public, private and NGO sectors and confirmed how critical for understanding of the SPC Concept the Pilot Project (PP) is.

The PP is to:

- Demonstrate the SPC Concept on a sample of a province with one million inhabitants (verification of financial autonomy and independency growth at a province level).
- Design synergy environment for the SPC drivers (e, w, and m) for local needs (utilization of local renewable sources in a context of the Public Private Partnership).
- Encourage well-to-do local families to take responsibility and assume a leading role in a province where they live by participating in SPC Utility projects
- Give access to education, training and development of new skills (national and local universities to build engineering capacities for better life at local levels).

The PP will create investment standards for:

- SPC strategy and tactical decisions (e.g. Business Model, Business Rules, Provincial Master Plan and Citizen's Charter)
- SPC project portfolio procurement (e.g. Terms of Reference and Contract templates, Monitoring and reporting templates, and rules for financial control and auditing procedures)

The PP will enhance social stability by:

- Middle class growth caused by integration of SPC drives into socio-economic aspect of life (e.g. jobs growth in public services and in engineering and civil works professions).
- Growth of international cooperation reaching to local levels (e.g. by creation of a national SPC Center in Manila and a leading SPC Center in Prague).

1.2 Policy

The SPC Concept has a positive influence on the key problems of today's world: population growth and climate change. Regardless of opinions on whether or not there is a causal relationship between these problems, the SPC Concept starts from the fact that the current population growth has had a negative impact on quality of life.

The aim is to add a value into the following areas:

- Public utilities (PU) and population growth (deficit in infrastructure services)
- Expansion of best practices in the Public-Private Partnership (PPP)
- Promoting development of Participatory Budgeting (PB)

Public utility (PU)

Public utility (PU) is a business enterprise, a public-service corporation, privately or publicly owned, performing an essential public service, regulated by central or local government. PU is a subject to forms of public control and regulation of infrastructure construction and maintenance ranging from local community-based groups to statewide government monopolies. SPC Utility (see Chapter 3) represents new business opportunities in infrastructure development and operation focusing on three divers (electricity, water management, materials) while applying the SPC Concept.

Public Private Partnership (PPP)

Public Private Partnership (PPP) is a proven way of mobilizing resources, sharing responsibility and ensuring a functioning infrastructure.

The PPP is an opportunity to harmonize financial management and internal financial control within a common budget for projects financing (e.g. for tendering and contracting) and for projects financial closing (e.g. in a project portfolio framework).

The goal is to get higher autonomy in creating, controlling and using province's financial resources.

The Philippines is a country with strong impacts from the Climate Change and with new opportunities for building infrastructure to mitigate and prevent threats of typhoons and floods.

The Pilot Project demonstrates that the PPP is a realistic base for financing of SPC Concept-based projects. One of the core questions is how to get and sustain financing for mitigation and prevention of disasters?

The SPC Concept offers a solution by applying the PPP principles:

- Public sector harnesses expertise and efficiency from private sector and seeks to make capital investment not including any borrowing
- Both sectors can share risks and be stronger players in the region
- PPP is an "off-balanced sheet" method of financing to deliver new or refurbished assets

Participatory budgeting²

Participatory budgeting is a different way to manage public money, and to engage people in government. It is a democratic Participatory budgeting (PB) process in which community members directly decide how to spend part of a public budget.

A Participatory Budget Council (PBC) is elected amongst the assembly. Community research is done to determine the problems that can be overcome with projects from the PB program, and the PBC writes proposals with a technical working group from a LGU.

PB principles:

- Financial and/or budgetary dimension of the PB must be discussed,
- The city/region level has to be involved (elected bodies with power over administration),
- PB has to be a repeated process (one meeting, forum or one referendum are not enough),
- Accountability concerning PB outputs is required.

The goal of the PB is to include those who are not traditionally engaged in policy decisions, to create opportunities for greater efficiency in allocation of public funds, and to increase community cohesion.

PB is very popular in Latin America (16.000 cities use it), nearly half of the population in Brazil. In the Philippines, there are two notable examples of PB implementation: Naga City and Sorsogon Province.

1.3 Financing

SPC Concept utilizes financing and capital from both institutional and private investors. The SPC Utility philosophy and operations are based on collaboration with a wide range of partners sharing the objectives of socio-economic development.

The goal is to build on strategic relationship, add value, and achieve sustainable impacts on financial inclusion and development of MSME by implementation of the SPC Concept drivers.

Development financing institutions (DFIs)

DFIs are government-controlled institutions that invest in sustainable private sector projects with a twofold objective of spurring development in developing countries while themselves remaining financially viable. International Financial Corporation (IFC), a member of the World Bank Group is the largest multilateral DFI (with a consolidated portfolio of \$45b in 2009).

IFC and European DFIs have complementary approaches. Many regional development banks, e.g. the Africa Development Bank (AFDB), the Asia Development Bank (ADB), the Islamic Development Bank (IDB), and the European Investment Bank (EIB), all are participating in PPP projects, primary through loans.

² Specific details of relationships between Participatory Budgeting (PB) and Citizen's Charter techniques will be addressed in the first PP.

Development financing for MSMEs

Lack of access to financing is particularly critical for small and medium enterprises (SMEs) and micro-businesses. Large banks serve healthy small and medium enterprises and microfinance institutions increasingly serve micro-businesses.

At present, we see two independent initiatives in a banking sector (e.g. boom in microfinance after the Millennium Development Goals). Now we can see (e.g. in Africa) success of micro, small, and medium enterprises in regional development projects. But lack of long-term financing options remains the key issue both for SMEs and/or MSMEs.

Investment Strategy

Both access to financing and access to electricity, implemented step-by-step are addressed in SPC Concept-based projects. New technologies, particularly renewable source for decentralized electrification, open opportunities for local communities through higher self-participation on parallel access to electricity and finance and in benefits that synergy effects have on socio-economic development.

Synergy effect allow for development of MSMEs, built on the basis of locally available renewable sources, labor force, and on subsequently growing income of local households and entrepreneurs as their products and services start reaching local and international markets.

DFI and the SPC Concept

DFIs are exploring a number of approaches in ongoing attempts to increase their contribution to improving access to finance.

The SPC Concept proposes a standardization for infrastructure investment (for example by applying business rules to management and control of impacts of key drivers on economy and socio-economic environment of a specific territory). A brief explanation of how the SPC Concept contributes to DFIs effort is described below:

DFIs approaches to increase access to finance:

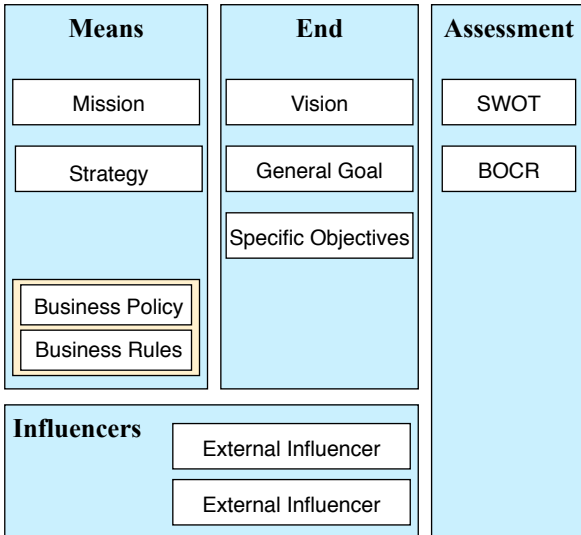
1. Making public and private sector finance more complementary
2. Engaging in the public policy debate
3. Increasing visibility for private sector
4. Updating regulatory practices
5. Growing the capital base

SPC Concept contribution to:

1. PPP for access to renewable local sources (access to finance, electricity, jobs, etc.)
2. Cooperation between SPC Utility and LGUs via Participatory Budgeting (PB)
3. Pilot projects and visible participation of the private sector
4. Infrastructure development through Master Plan (a law for sustainable financial expenditure)
5. Territorial development through Citizen's Charter (participation of the public)

1.4 Business Motivation Model

Business Model of the SPC Concept is based on three-business views:



1. SPC Concept processes (what is the subject of a business),
2. Organizations (how is the business organized), and
3. Motivation (by whom is the business accepted and why it is sustainable).

External influencer – an example

The BMM “External Influencers” are those outside of SPC Utility organizational boundaries (e.g. a competitor, customer, partner, supplier or regulator, environment and a technology) that can impact its use of Means or a chievement of Ends (see 1.3).

As an example a relevant business territorial influencer of decentralized electrification:

China, the world’s largest potential smart meter market, has just set forth some ambitious goals for pushing smart pricing and "decentralized energy" awareness.

Now, the question is how these goals will be put into effect by regional governments responsible for implementing them.

A research firm, Researching China, reported that bids to replace old-fashioned analog meters with digitally enabled, communications-capable meters across China added up to 76 million units in 2012, with single-phase meters that serve homes and SME businesses accounting for 92 % of that total.

The United States had about 46 million smart meters installed as of mid-2013, reaching about 40% of households. But while the pace of North America’s smart meter deployments have peaked,

China’s are on an upswing -- and the country, with some 1.34 billion people and 402 million households according to its 2010 census, has a lot more customers to serve.

China’s definition of “smart meters” is quite different than the U.S. definition, however.

China is targeting a much lower price per meter for its deployments -- about \$50 apiece or less for mass-market residential units, compared to the \$150-and-up ranges seen in North America and the \$100-and-up common for European smart meter projects.

1.5 Evaluation

A brief SPC Concept evaluation based on BOCR characteristics focused on the needs of developing countries.

Benefits and Opportunities:

- Socio-economic cooperation between private and public sectors
- Identifying absorption capacity of the SPC Concept for a public administration
- Benchmarking of proposed PPP mechanism in a context of global market competition
- Tripartite agreement between public administration, private sector and donors
- SPC Concept penetration into the particular legal framework of electric power generation and distribution
- Selection of SPC Drivers (e, w, m) identification of their impacts on socio-economic development
- Dissemination of the SPC Concept dissemination and establishment of SPC Centers
- Outcomes of the Millennium Development Goals (MDGs), a project in Africa (started 2000, to be completed in 2020).

Cost items of the SPC Concept introduction:

- Results of SPC Concept research and development
- Market research and marketing; analysis of competition and partners' inputs
- Selection and ex-ante evaluations of regions for Pilot Projects' implementation
- Development of SPC Business Model; benchmarks for rules of investments strategy and tactics
- SPC Project Portfolio methodology and training of IT support for:
- Project Portfolio Preparation (management and internal control/ external services)
- Project Portfolio Implementation (tendering, contracting, monitoring, and benchmarks for project financial closing methodology)
- Interim and ex post evaluations and auditing of accepted rules and templates for rent, leasing, and franchise techniques. Benchmarks for BOO, BOT projects, and other investment tools (comparison of different SPC Concept allocation; evaluation of results)

Risks related to preparation and implementation of the SPC Concept:

- Risks of a higher power: mega disaster, disasters; aberrance of humanitarian assistance.
- Social risks: insufficient stability and poor links between central and local governments and inadequate participation of local private sector in a long-term efforts addressing poverty
- Economic risks: Insufficient interest of well-to-do families with roots in given areas to participate SPC Concept-based solutions
- Capital risk: Low efficiency of investment and poor utilization of assets of the SPC Utility
- Financial risks: Loss of cash flow and threat of bankruptcy of the SPC Utility
- Risks of a long term financing: Undervaluation of one generation principle in participation of stakeholders in SPC Concept-based projects.
- Policy risks: Potential threat of social instability and no economic grow due to local insurgency conflicts, corruption, and lack of transparency in contracting for public works projects; low financial literacy.

1.6 Infrastructure

Investment into infrastructure development, also called infrastructure-driven development, can boost economic growth. Particularly, in disaster-affected areas, the reconstruction of essential public infrastructure is an important ingredient for recovery, sustained economic growth and poverty reduction. The deficit in infrastructure services has a direct relation to a dramatic population growth in developing countries.

Infrastructure and development

A great attention of national and international institutions is given to infrastructure development in developing countries. The Centre for Climate Change Economics and Policy (CCCEP), and The Grantham Research Institute on Climate Change and the Environment estimated current annual investment in developing countries \$0.8-0.9 trillion in 2008, in East Asia 35-50% (split by sector: water 15-30%, electricity 45-60%, telecommunication 10-15%; transport 15-25%; split by project phase: preparation 5-10%, implementation 90-95%). The majority of investments was financed directly by domestic budgets with lesser shares provided by the private sector and foreign countries through development finance. Prediction for 2020 was (in 2008) \$1.8-2.3 trillion. That represents more than 10-fold increase over the decade.

Access to finance

It is estimated that over three billion people in developing countries lack active access to loan and deposit services. Access to money is particularly a challenge in countries that are either rated “non-investment grade” or not rated at all. Low or non-existence credit ratings make it difficult for private financial institutions to invest (e.g. only 9 countries in Asia and 5 countries in Africa are rated as investment grade). Another example of very limited access to finance comes from Sub-Saharan Africa where only 5-25% of households have a formal relationship with a financial institution.

Why the SPC Concept

The existing architecture of financial services does not satisfy demand in developing countries and does not suit the current needs of infrastructure and population growth. A major gap in the system is the lack of adequate facilities for preparation and implementation of pilot projects in order to identify and develop a prioritized and viable pipeline of project portfolio especially in low-income countries.

The SPC Concept is focused on investment in infrastructure that allows for socio-economic development that is initiated and implemented according to LGU's development plans for 30 years.

SPC Concept includes investment into tree areas of local socio-economic drivers by the formula,

SPC Concept => (QL & CC) => (e) & (w & m) => SPC Utility
--

where the Quality of Life (QL) and Climate Change (CC) impacts are the most critical general goals. SPC Concept is driven by:

- Decentralized electrification (e); based on renewable (local) energy sources
- Rain water management (w); based on rain water retention and its utilization, and floods and earth slides prevention
- Biomass management (m); based on bamboo and coconut forests planting and maintenance and on local agriculture and municipal waste management.

Success of local infrastructure projects has impact on results of LGU's elections. Citizen's Charter (a strategy document) and Master Plan (an investment document) must address mandatory tasks concerning the entire time frame of 30 years.

Governors of provinces, Mayors and barangays Chairmen who adopt SPC Concept rules will share their responsibility and coordinate the SPC Concept with other infrastructure investments (e.g. highways, streets, roads and bridges, mass transit, airports, waterworks and water resources, wastewater treatment plants, municipal waste processing, telecommunications and treatment of hazardous waste facilities, etc.) and with socio-economic objectives.

The Philippine PPP center

The Philippines' PPP (Public-Private Partnership) Center initiatives generally cover the government's priority plans involving roads, airports, rails, energy, hospitals and classrooms. Centre has been recognized as a channel to carry out much needed infrastructure development projects in the country, and the first discussion about the SPC Concept started in 2014 in Manila.

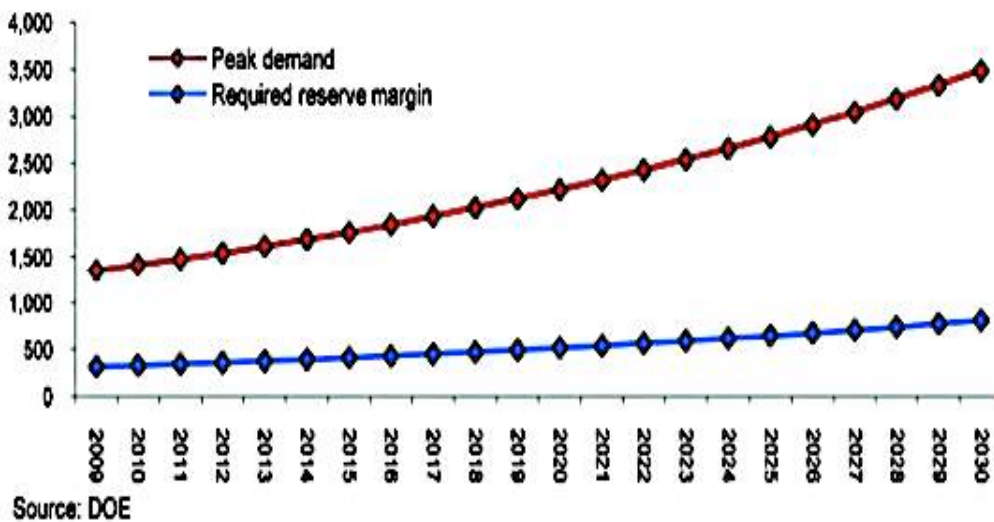
1.7 Technologies and technical solutions

Science and research are bringing new ideas and established procedures are changing. Production and distribution of electricity by renewable energy sources (RES) are available around the world. Technical acceptability and affordability has opened door for RES also in developing countries. The proposed mix (in Chapter 3.4) reflects contemporary technologies and the vision for the future 30 years.

The following three key considerations are included:

1. Demand for energy (engine of change, e.g. Graph 02),
2. Future of RES (hope for all, e.g. Graph 03),
3. Climate change (threats to all, e.g. Graph 04),
4. Social unrest and conflicts (impacts on all, no graph is needed).

Graph 02: Required reserve margin and peak demand estimates, Mindanao, in MW



Science and research are bringing new impulses and established procedures are changing. Renewable energy sources (RES) are a typical example. RES mix in Chapter 3.4 reflects contemporary technologies and is open to future development (e.g. production price of PV panels felt down from \$76.67/watt in 1977 to \$0.36/watt in 2014 and new technologies for the next 30 years are based on integrated scientific disciplines like biology, bio-chemical, etc.)

The question is what a community or a province (by the Table 1) needs?

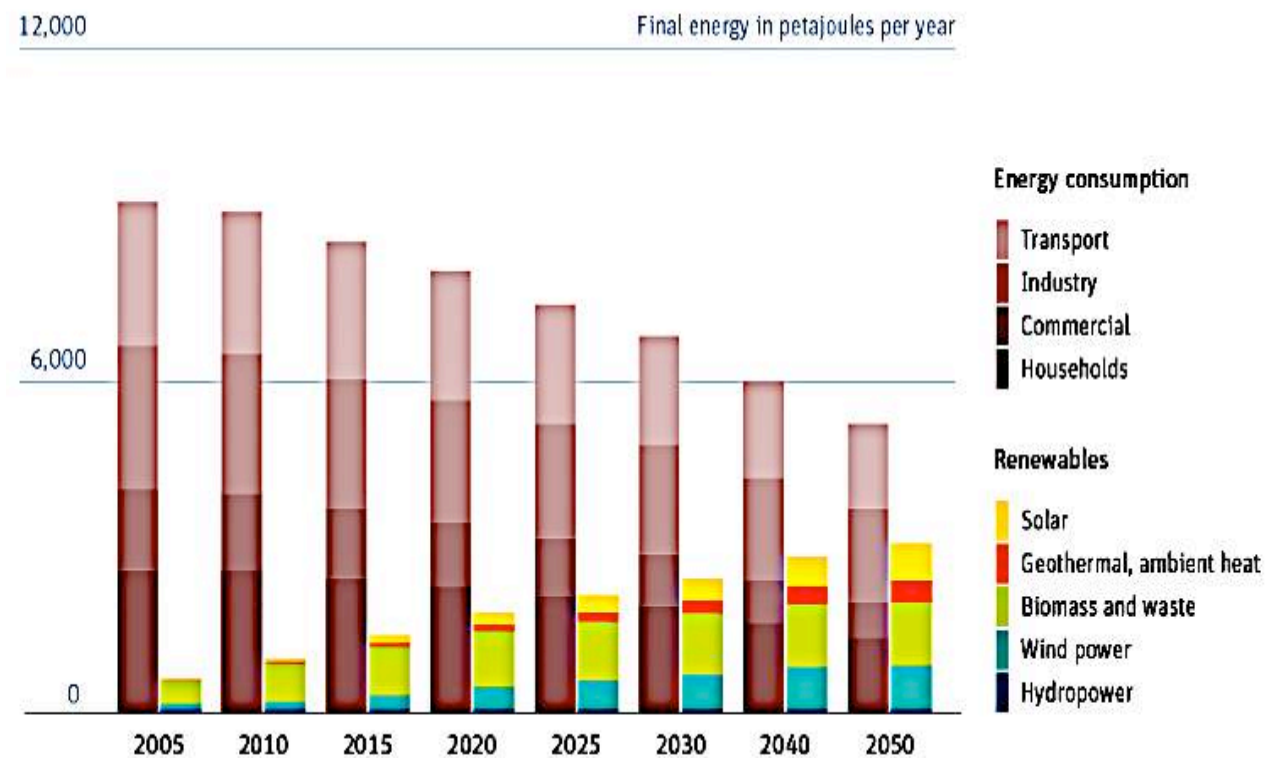
The answer is that most of them need simple and proven technologies supplemented by new products that are available on the market (e.g. packet of PV panels and batteries). It must be responsibility of a province to build its local infrastructure and to keep it in operation using sustainable technologies (see Chapter 1.6).

But even the longest living solar cells that most effectively convert sunlight to energy will not become common if they are prohibitively expensive.

Therefore, Professor Yabing Qi, the head of the Energy Materials and Surface Sciences Unit at the Okinawa Institute of Science and Technology Graduate University, has a different idea: make solar cells using a type of semiconductor called perovskite materials, which are, in Qi's words, "dirt cheap."

The extremely thin perovskite cell that Qi and his lab designed measures merely 135 nanometers and reaches an efficiency of 9.9%. Because these films are semitransparent, Qi hopes to use them on windows, as a sort of lightweight set of blinds. "It will be a window and at the same time it will be a solar cell," he says. "Some of the light could go through and the rest will be absorbed. Then, a certain percentage of the absorbed light will be converted to electricity."

Graph 03: Energy consumption and RES in Germany (Energiewende Germany, 2014)

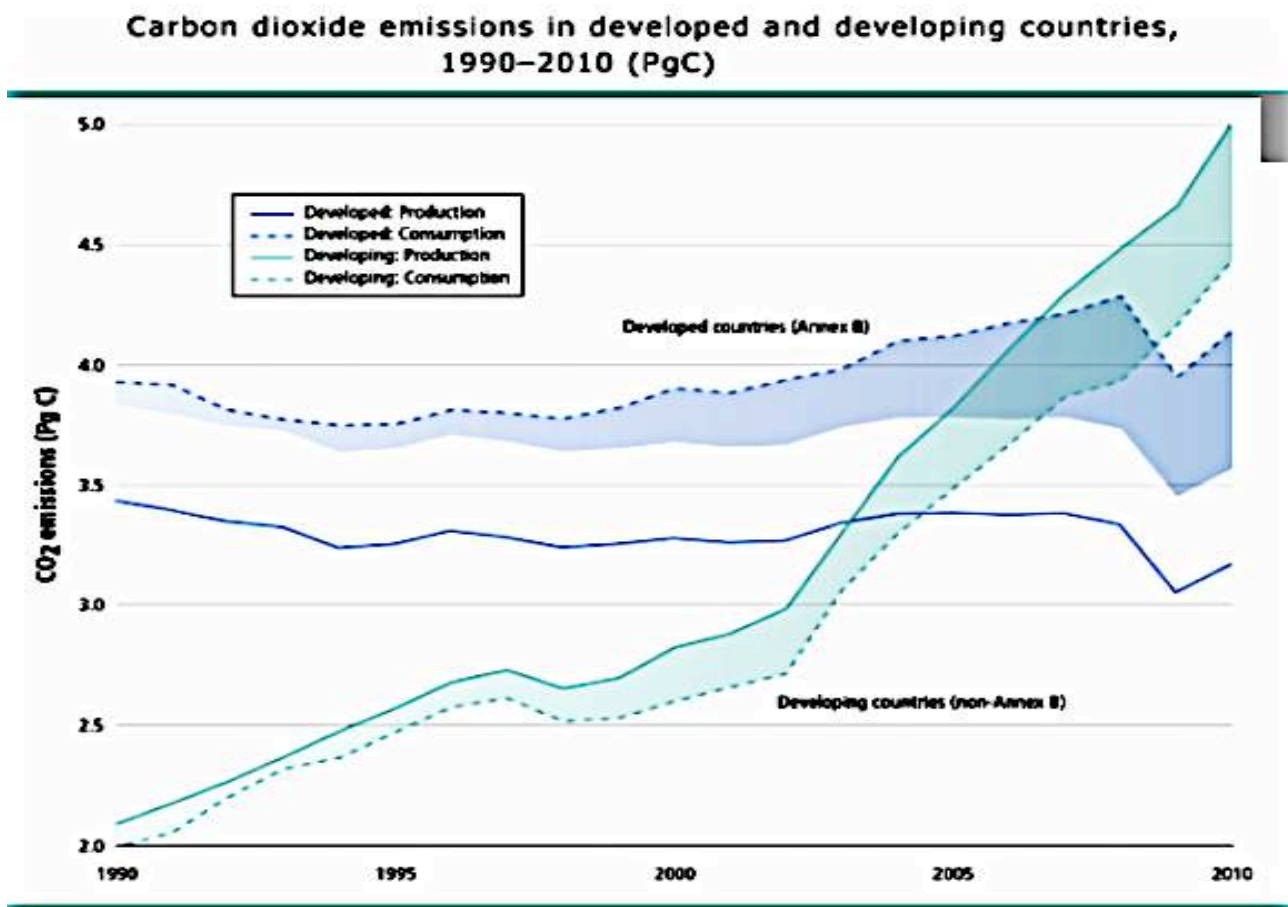


Europe is a pioneer of energy revolution. In Germany, this energy revolution, taking place under the "Energiewende" (Energy Change) nationwide program, already brought 380,000 new jobs and significantly reduced the country's dependency on imported fossil fuels.

The Philippines were one of the first nations to commit themselves to renewable energy and it has since long abandoned the idea of nuclear power. The Philippines are in a position to fill the needs with the renewables (now 30% of RSE are integrated into domestic energy mix).

The Philippines huge difference between the peak demand and required reserve margin in MWe is growing not only on the biggest islands (Mindanao, Visayas, and Lozon) but on thousands smallest island as well and the gap there is much more dramatic (see Graph 03, by arangkada, www.investphilippines.info).

Graph 04: Carbon dioxide emission in developed and developing countries (1990 – 2010)



Source: Figure 2 in G. P. Peters, G. Marland, C. Le Quéré, T. Boden, J. G. Canadell, and M. R. Raupach, "Rapid Growth in CO2 Emissions after the 2008-2009 Global Financial Crisis," Nature Climate Change 2, no. 1 (2012): 2-4, doi:10.1038/nclimate1332. Note: Carbon dioxide emissions are for fossil fuels.

1.8 Assumption for the PP

Input data for the PP are based on the 5PforRES visits in the Bicol Region, the Sorsogon Province, and the Santa Magdalena Municipality and on publicly available information sources. They are summarized for sample (model) province presented in Table 1.

Table 1: Key characteristics of sample of a province

Sample of a Province	Number of Cities	Number of Municipalities	Number of Barangays	Number of Inhabitants	Area (km ²)	Forest Area (km ²)	Density person per km ²	Number of Households	Number of Mayors	Number of Chairmen
Sample of a Province	1		500	1,000,000	2,500	1,250	400	200,000	21	500
City	1	-	-	150,000	300	-	500	30,000	1	-
Municipality	-	20	-	42,500	110	-	386	8,500	20	-
Barangay	-	-	500	2000	5	-	-	400	-	500

Sample of a province

A province is represented by one city, 20 municipalities, and 500 barangays; in total 1.0 million inhabitants. Province has 200,000 households (5 persons per household on average) and 50,000 other units (micro, mini and small workshops, schools, medical centers).

In total 250,000 potential SPC Clients (electricity producers). Province has a land capacity of 2,500 km². Forest area (at 50% of the total) has 1,250 km² of coconut and bamboo forests (with a potential of 50% plantations with a regular harvesting and 50% forests and climate change barriers without any regular harvesting).

Analysis

The PP presents a sample of province LGUs budgets (province, cities, municipalities and barangays) earned either from local sources (taxes, duties and other fees) or receive a share from the National Government Income (Internal Revenue Allotment-IRA, grants, debt services etc.).

All SPC Clients have access to electricity 24/7, and are potential producers of electricity for power cooperatives. For more details see the “Case Example” on www.5pforres.eu.

2. SPC Utility

SPC Utility is an organizational unit (e.g. joint-stock company) founded by representatives of public and private sectors and financially controlled by lenders. It represents implementation of SPC Concept-based project in a territory administered by LGUs (see Table 1).

2.1 SPC Utilities and PPP

SPC Utility is a practical demonstration of PPP (Public Private Partnership) for a portfolio of projects. The public sector is represented by LGUs (Local Government Units), and private sector represents a “Manager” of the SPC Utility (reflecting its share of capital contribution).

Both sectors are in financial relation to banking creditors. This tri-party arrangement is a guarantee of cooperation and financial performance by the SPC Utility.

SPC Utility is to complement functions of traditional utility company (production, transfers and distribution of electricity to clients, etc.) and provides some of the functions to clients who choose to become self-sufficient in electric power generation. It offers them Net Metering option to sell excessive electricity produced into grid.

SPC Utility cooperates with local Power Cooperatives and where it is possible, decentralized electric power producers feed electricity into central power grid.

SPC Utility is not a threat to existing utility companies; it is a business solution reflecting new technologies (business processes), advanced administration (business organization) and social consensus (business motivation) in various regions in the world.

PPP is a tool of socio-economic development that seeks to achieve objectives of infrastructure segments development. Owners of SPC Utility (LGUs and a “Manager”) must gain trust of donors and must be controlled and audited by creditors from public and private sectors.

PPP is a strong stimulator for dissemination of Participatory Budgeting (PB); PB opens a new opportunity for both Master Planning and Citizen’s Charter acceptance and understanding by the SPC Concept stakeholders.

Credibility

SPC Utility is a new public–private organizational unit operating in existing public administration system (e.g. LGUs of the Philippines), and its role is to take care of building of local infrastructure, its maintenance and development within the framework of the SPC Concept. LGUs is a body composed from local governments (according Table 1, LGUs is composed of governments of a province, city, and 20 municipalities with strong influence of 500 barangays).

The LGU will grants a license to SPC Utility to operate the project portfolio within LGU jurisdiction. Similarly LGU will request the Department (Ministry) of Finance to authorize the SPC Utility to issue securities (bonds) to facilitate approved strategy of leveraging of loans from creditors.

Mission of the SPC Utility reflects public policy objectives in a given province. LGUs, SPC Utility and donors cooperate on contractual basis. SPC Utility operates within the guidelines and objectives set forth by LGU’s Master Plan and Citizen’s Charter.

SPC Utility must build a reputation of a strong and flexible investor into local infrastructure projects based on the SPC Concept. Results of its work should be the strongest argument for policy makers and the strongest expression of “vox populi”. The three parties, LGU, SPC Utility and creditors, are responsible for credible of 3E (efficiency, effectiveness and economy) results of the SPC Concept implemented in a province.

The SPC Utility is built on “top down” approach. It means individual power producers (e.g. households) and power island units (e.g. farms or micro entrepreneurs) should be founded by the SPC Utility. Other option is a “bottom up” approach when the SPC Utility is based on integration of existing individual power producers and/or existing power islands. A mix of both approaches is very probable.

Of critical importance is application of Terms of References (TORs) in contracts with suppliers of individual project of the SPC project portfolio.

Each TOR must guarantee conclusive rules and navigate suppliers throughout the project’s life cycle. Each TOR is a segment of the project portfolio reflecting provincial Master Plan and result of each project (inclusive their financial closing) must adhere to policy consensus as declared by the Citizen Charter.

Questions

How is SPC Utility financed? How to approach risk allocation between the public sector (LGUs) and the private sector ("Manager")? How are LGUs and "Manager" selected?

Who are the donors, and why is a syndicate of banks needed?

What is a relationship between SPC Utility and "traditional" utility company (i.e. vertically integrated monopoly for building power plants, transmission and distribution lines), and what are new trends in the rebirth of "utilities" in developing countries?

How does SPC Utility fit into the existing legal environment and how are its services linked to Power Cooperation services? Who are the key players?

Is it public sector (LGUs), private sector (represented, for example, by well-to-do local families) or donors (represented, for example, by a syndicate of international financial institutions, local banks and local private investors)?

How is staff of the SPC Utility selected? How many people will be required at the beginning and during the SPC Utility operation?

How will be SPC stakeholders educated?

What is the role of universities? How can other public, private and NGO institutions and organizations be of help?

All to these and other questions must come from preparation of a Prospectus and/or a Feasibility Study.

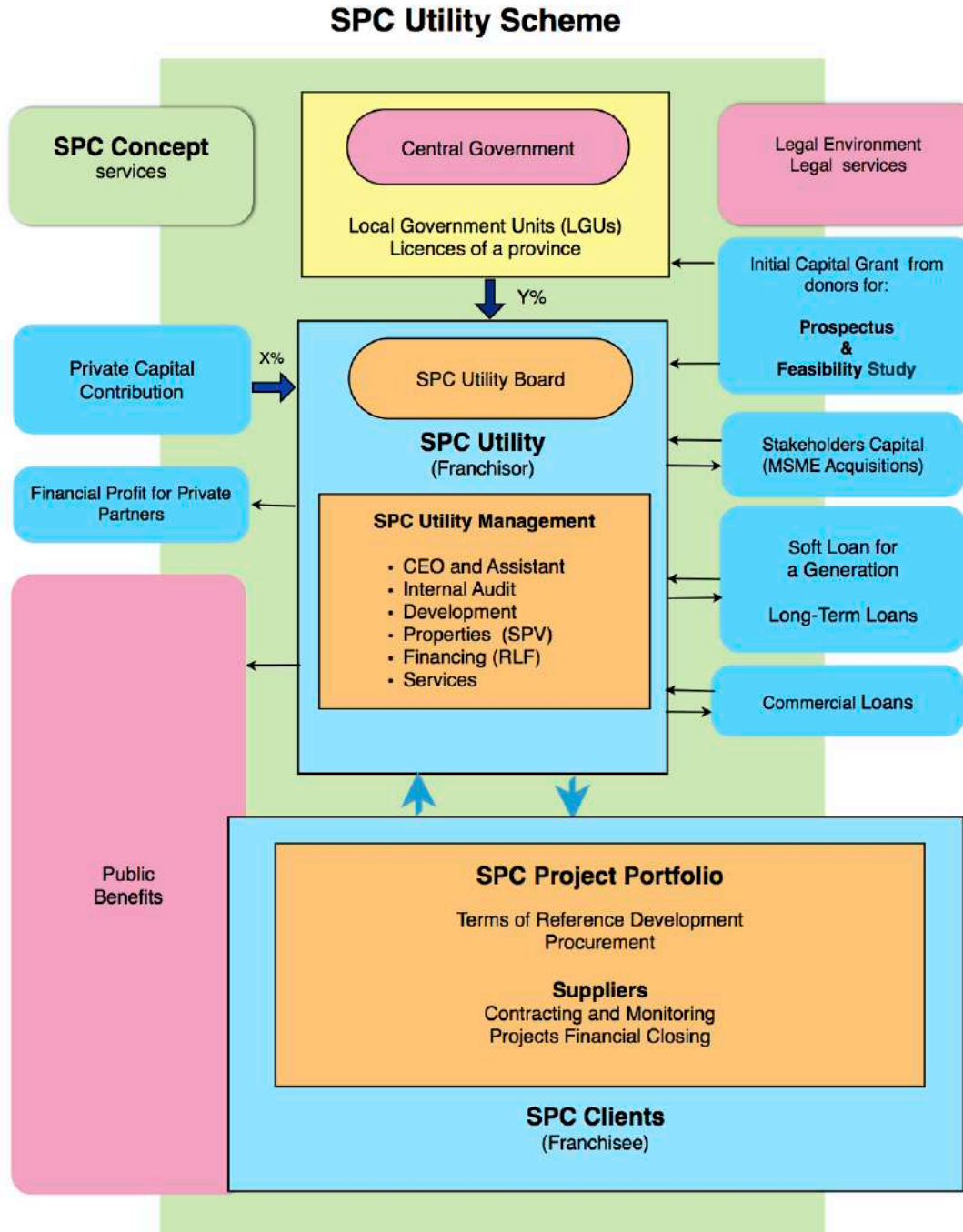
2.2 Organizational model

Survey and research of national and local policy environment and legislative readiness must be done before the SPC Utility is established. The objective is to have business model applied for the time frame of at least 30 years. This covers:

1. A feasibility of the SPC Concept processes
2. Policy consensus concerning operation of the SPC Utility in central and local public administration system
3. Public consensus on added value delivered by the SPC Utility for stakeholders within a province

The following diagram serves introduction the SPC Concept in a province where X% represents a capital share of the private sector ("Manager") and Y% a non-financial share of the public sector (financial commitment of LGUs). The SPC Utility has an opportunity to be a "flagship" of the PB growth in the public sector.

Graph 05: Organization proposal of the SPC Utility - scheme of 5PforRES, 2013



All items mentioned in the diagram are explained in chapters of this study and the most specific components of the SPC Utility management (departments of the future administration structure) are described below (SPV and RLF).

Legal Framework

A brief description of the legal framework is in the “Case Example” on www.5pforres.eu. For the SPC Utility function, the most important is the Philippine RE Act of 2008 that approved net-metering as the first non-fiscal incentive mechanism, taking effect in July 2013.

Under the net-metering rules, qualified residential and commercial consumers are allowed to install an on-site RE facility – such as solar panels installed on roofs – not exceeding 100 kilowatts (kW) in capacity to generate electricity. Any electricity generated that is not consumed by the RE user will automatically be exported to a distribution network of a Power Cooperatives (operating in all provinces of the Philippines).

2.3 Components of management

SPC Utility assists, manages and controls SPC Unit’s network (life cycle of design, construction, operation, maintenance, ownership transfer, acquisition, etc. of power plants, bamboo and coconut plantation, and other projects where legal responsibility and money should be under SPC Utility management control. The SPC Utility role covers:

- Consulting services to internal and external clients in private and public sectors (financing, procurement, contracting, construction, operation, maintenance, and transfers),
- Administrative services for owners of SPC Units (project preparation and implementation, e.g. master planning, communication with local representatives, monitoring, evaluation, financial closings, business results and benchmarking),
- Communication and cooperation with financial institution, national and international institutions, universities (research and market analyses, dissemination of best practices, etc.),
- Cooperation within the framework of the National Energy System on investment in on/off grid systems together with regional (for transmission) and local (for distribution) electric power services networks
- Management and financial control of SPC Units within the scope of a “Special Purpose Vehicle” (SPV) and within the scope of “Revolving Loan Fund” (RLF).

Special Purpose Company/Vehicle (SPV)

SPV is a logical candidate to performing tasks of the SPC Utility. Generally, SPV represents a standard legal tool that is performed under different labels (i.e. Special Purpose Company; Special Purpose Entity; Segregated Portfolio Company). For the PP we used the SPV label characterized by:

- *Function:* SPC Operation is created for the purpose of fulfilling a very specific and limited tasks (power plants portfolio project consisting of SPC Units based on a mix of RES technologies and supplementary projects created by synergy effects during the SPC Concept implementation),
- *Securitization:* Protection of parent organization (SPC Utility) from financial risks related to operation of any SPC Unit in the SPC Utility portfolio,
- *Risk sharing:* Allows additional investors to take part in a project,
 - *Assets transfer:* SPC Units can transfer assets into SPC Operations or use financing from RLF thereby achieving their specific goals without putting the entire organization at risk,

- *Regulatory reasons:* SPC Utilities using SPC Operations are set up in a way that allows them to better react to regulatory changes and modify ownership of specific assets,
- *Corruption:* SPC Utilities adopt standards of banking management, internal financial control and internal audit within the environment of “Public Private Partnership”. A broad and mixed portfolio of owners of SPC Units and their real time operations are natural (and effective) system with the ability to resist dangers of fraud and corruption (both in developed and developing countries).

Revolving Loan Fund (RLF)

RLF is a standard financial tool. RLF offers attractive balance between a) the opportunity to increase capacity of the investment source and b) acceptance of a broader spectrum of clients including those with lower incomes (more please see www.5pforres.eu for papers and links to other studies).

RLF, properly managed and controlled, accumulates financial sources for other investments, mostly with synergy effects for achieving and maintaining balance between objectives of economic development, objectives of social policies and expenditures on the climate change impacts. RLF must be designed in a close cooperation with donors and lenders:

- Donor/s (international banks or financial institutions that are ready to finance RLF),
- Local banks, which are ready to assist back-office services of the RLF.

2.4 Business activities

Two options are available:

1. SPC Utility establishes every individual power producer (e.g. households), power island unit (e.g. farms or micro enterprises) and other business activities performed within a license granted by a LGU.
2. SPC Utility operates as an integrator of existing individual power producers and power island units.

The most probable situation will be a combination both options where the SPC Utility is a key founder of individual power producers and power island units and simultaneously the integrator.

Through the SPC Utility operation LGU receives benefits specified in the Master Plan and in Citizen’s Charter.

The SPC Utility’s operational objectives are effectiveness, efficiency and economy (3E) measured by indicators approved independently by LGU and Creditors. Its CEO is responsible for transparent accounting, auditing and financial reporting of the SPC Utility performances.

Creditor’s scope of work is to protect soft loan repayment over the period of 30 years and identify and manage risks related to the SPC Utility operation. Creditor should have an option to count on central (not a local) government guarantees in case of catastrophic damages (e.g. due to local armed conflicts, impacts of weather or climate disasters) and benefit from arbitrage settlement (we propose arbitrage at the UN level).

SPC Concept-based projects not only generate new jobs but they also put forward new requirements for education and development of skill in a broad spectrum of professions.

That includes managers, planners, financial analysts, accountant, auditors, technicians and workers in different professions. The need for education and workforce training is one reason why we are in working contacts with local universities.

The SPC Concept is implemented on PPP principle and works with one generation (30 years) time frame. Two types of licenses ought to be granted:

1. A license issued by a LGU to the SPC Utility to implement SPC Concept-based project within the LGU's jurisdiction, and
2. A license issued by Ministry of Finance (upon request from a LGU) allowing the SPC Utility to issue securities (bonds) used for approved strategy of leveraging of loans of creditor's syndicate.

2.5 BOT and MSME acquisition

Build - Operate – Transfer (BOT) projects are an opportunity for the SPC Utility to demonstrate financial feasibility of BOT techniques for investment into micro and small enterprises (e.g. for added value to bamboo and coconut harvesting products).

The general objective is to assist entrepreneurs and farmers by new financial tools and BOO and BOT techniques. This is a new way to implementing the PPP in infrastructure project on local level under responsibility of a LGU.

The SPC Concept presents a methodology how to speed up socio-economic development in a province through growth of a local industrial base (e.g. by bamboo products: new opportunity in construction, furniture, food industry, including coconuts: food, oil, milk, water from coconuts, and non-food raw materials, e.g. activated carbon and other product like soap and cosmetics, charcoal, activated carbon, fertilizers, drugs, cosmetics, etc.).

This is a pragmatic solution to the “three-generation tree” phenomena when a farmer, his children and grandchildren can use fruits of common work and motivate others to start commercial activities.

Coconut and bamboo forests can secure growth of the local economy. It is a great opportunity for new sustainable jobs creation and healthy environment as well as for faster and safer circulation of money in peri-urban and rural areas and offers local banks to participate.

Micro, Small and Middle Enterprises (MSMEs) are a great challenge and opportunity for local families and entrepreneur to found, operate and/or participate in a MSMEs network (in a cooperative). Biomass Management (see Chapter 3.6) presents an example of a MSMEs network (a Biogas Power Plant on a province's territory).

New MSMEs, assisted by the Board of Investment (BOI) and/or the Philippines Economic Zone Authority (PEZA) have a great opportunity to penetrate global markets.

Table 9, 10 presents a rough estimate of yields from Business to Business (B2B) operations when the SPC Utility provides low cost/high quality investment to MSMEs and which in the end to sell their products through the BOT techniques with a turnover share in a minimum of 1:2 (\$1 generating \$2). Three the most important preferences are presented through MSMEs acquisitions:

- A province generates its own financial sources,
- More people have a chance to be an entrepreneur,
- Local banking sector experiences growth in number of clients.

Chapter 2.7 (SPC Utility and the Pilot Project) presents five views on the SPC Utility: Views on economy and social, technology and technique, organizational, financial and capital, and motivation issues. From the point of view concerning MSMEs relation to the SPC Utility it is critical to define competency of the SPC Utility in the micro (M) and SME sector. The core task of the SPC Utility is to assist start-up process building on personal responsibility of entrepreneurs and on financial and capital responsibilities of the local banking sector. Hired specialists should leverage the professional team and their acquisition business results should be opened to benefit provinces as well as private sector.

A new investment opportunity:

Driver (m) represents "materials" with a great potential to create jobs directly in a community. The PP proposal is focusing on biomass materials, specifically on harvest from bamboo and coconut plantations. Both bamboo and coconut have a great potential for starting new MSME (see 4.3 and an example presented by Table 9). Over the past years, we identified another opportunity. The new technology, "Metallurgical electro-forming," needs a copper ore mine and competitive price of electricity. It is an option for a PPP project for the SPC Utility (for more information please see www.5pforres.eu for Executive Summary of presentations, 2012).

2.6 Assumptions for the FM

Financial model (FM) described in Chapter 4 is the most important start-up phase of the Pilot Project Proposal (for a comprehensive survey of tasks see Table 2). Assumptions for FM are focused establishing of the SPC Utility.

Adequate external conditions for establishing SPC Utility are as follows:

- Policy consensus and legal framework exist
- Public, private and NGO sector participants accept the SPC Concept
- A new financial stream for infrastructure investment is integrated into provincial administration budgeting
- There is a commitment from a LGU to manage local development via master planning process and Citizen's Charter.

Adequate internal assumptions are:

- SPC Utility works with professional managers and auditors experienced in international tenders
- Disputes between partners of the SPC Utility are subject of the law of the country where the SPC Utility is registered
- Operation results of the SPC Utility are made public. At a request of one of partners an external audit assesses their value and impact.

Revenues survey (FM): Amount of money brought into a company by its business activities.

Revenue inputs:

- Initial financing and sponsoring
- Grant from donors (for Prospectus, Feasibility Study, and preparation of soft loan application)
- Capital share of the SPC Utility bought by the private sector (a “Manager’s” share)
- Soft loan for 30 years (\$30m)
- Commercial loans (\$10m used 3 times over the period of 30 years)
- SPC securities (bonds) (\$5m for SPC Utility capital share, \$15m used 3 times over the period of 30 years)

Operating revenues:

- Services to clients
- Equipment leasing (for power generation and system maintenance)
- BOT projects (operation and/or exit; focused on “ad hoc” income)
- BOO projects (operation; focused on regular income)
- Bond issued by the SPC Utility (an opportunity for local population to participate)

Expenditures (FM): cash spent on generating revenues and maintaining equipment.

- Charge for the SPC Concept know-how
- SPC Utility administration (CEO, managers, staff, premises, legal fees, taxes, IT etc.)
- Debt services; Revolving Loan Fund section (RLF)
- Legal services; Special Vehicle Services (SVS)
- Payments for:
 - Procurement (TOR preparation, and contacting, auditing)
 - Monitoring (Assessment, internal financial control and audit)
 - Project Portfolio Financial Closing (Ex-post Evaluations, Auditing, Reporting, and Marketing and dissemination of results)
 - Specific tasks (legal, financial consulting, auditing services, etc.)
- Other expenditures (taxes, insurance, penalties, fees for extra services, other licenses etc.)

2.7 SPC Utility and the PP

Using the PP, the SPC Utility offers to implement a project portfolio driven by:

- *(e) Decentralized electrification* based predominantly on renewable energy sources (RESs) integrated into specific situation and needs of residences (power islands), and the landscape (natural islands). Other technologies for energy accumulation and reserves (e.g. batteries, diesel generators) are included.
- *(w) Rain water management* based on hydrogeological project into protection of landscape and residences and for other socio-economic objectives.
- *(m) Biomass management* based on bamboo and coconut forest planting, maintenance and harvesting. Utilization of harvesting waste and municipal waste management are included in the PP.

Five brief assessments are used to present different views on the SPC Utility as presented through the PP:

1. Socio-economic:

the PP offers a way to stimulate growth of GDP at LGU level through the growth of opportunities in access to electricity, increasing revenues bamboo and coconut plantations, and investments in water management. The PP offers local inhabitants synergy effects of 3E (effectiveness, efficiency, economy) in the given project portfolio defined by the formula (e) & (w + m).

2. Technology:

PP evaluates the absorption capacity of the province to use expensive and/or advanced technologies or yield to temptation of cheap and low quality technologies (from perspective of added value per capita). PP suggests procedures for organization of procurement, selection of suppliers and service.

3. Organizational:

the aim is to build the SPC Utility for an effective, efficient and economical performance of tasks of development and security of a territory (a province) driven by project portfolio of the (e) & (w + m) type. Since a sound financial performance is expected of the SPC Utility by lenders for a long period of time (30 years) is desirable to have the SPC Concept strongly anchored into local administration and local policies. Preparation and implementation of the PP will take place under international supervision (e.g. a Development Finance Institution, DFI), and under public scrutiny both at national and provincial levels. The PP represents a unique opportunity to motivate public, private and NGOs to strengthen the PPP operating principles.

4. Financial and capital:

PP demonstrates suitability of tests financial tools for projects of the (e) & (w + m) type and offers three opportunities of financial operations:

- *Loans* (SPC Concept proposes use of generational loans - a long-term soft loan for 30 years from international financial institutions (IFIs), commercial long-term loan from national central bank for 7 years, and commercial loans from local banks for 3 years).
- *Acquisition - BOT technique* for investment in micro, small or middle enterprises (MSME). Professional team of the SPC Utility is authorized to design, build and test operational capability of a MSME and to offer these services to others.
- *Allocation* of financial sources that are generated by project portfolio of the (e) & (w) type and used for financing of projects of type (w). These projects are proposed and approved by a professional team of the SPC Utility together with relevant departments of LGUs on the basis of the Master Plan and Citizen's Charter.

The SPC Utility is authorized for perform public procurement services and it is equipped to use its own financial sources for financing or co-financing of all three above-mentioned financial operations (for more information see Chapter 5).

5. Motivation:

PP motivates households and entrepreneurs in a province to accept, adopt, and participate in various aspects of new opportunities offered by synergy effects of decentralized electrician project based on locally available renewable sources on energy which improve quality of life.

3. Pilot Project

3.1 Policy environment

The PP proposal is compatible with an official policy of the Philippines.

1. The recent geo-political conflicts in the world serve as a reminder that the Philippines – which imports 90% of its fuel requirements – are highly susceptible to fluctuations of global prices and the looming threats to energy crisis.
2. Department of Energy (DOE) has been promoting the right mix of renewable energy (RE) with traditional sources, such as coal and diesel (the Philippines are harnessing 30% of RE in the energy mix)
3. Economy risks: DOE's strategy is a guarantee of a secured energy sources (even if oil prices go up or if there is a shortage in supply on the international market).
4. Risks of force majeure: RE is indigenous which means it is locally available and so the Philippines can depend on it for energy security even if there are political issues such as war e.g. in other countries.
5. Risks of a higher price of RE: detractors are quick to point out that the infrastructure needed to harness RE is expensive (but we must be ready to prove and explain that RE entails not only one-time cost but also operational costs).

Added value by the PP:

1. Addressing several key infrastructural problems: lack of electricity (e), unpreparedness to respond to rainwater (w), and underestimation of a great value of biomass (m).
2. Systematically using benefits of synergy effects stimulated and protected by project portfolio management tools.
3. Strengthens visibility and benefits coming from Public Private Partnership (PPP) as it is instrumental to improving quality of life in a community and reducing impacts from the climate change
4. Opens a parallel financial stream for financing infrastructural projects
5. It ready to absorb current technologies and be open to technologies respecting high quality and competitive price (through procurement processes controlled by the SPC utility)
6. Opens new opportunity for education and skills (opportunities for local and national university and for international cooperation in a growth of labor qualifications)

3.2 PP preparation and implementation

Activities that are supposed to be done are split by a matrix of inputs and output and preparation and implementation steps (see Table 2).

PP Preparation - inputs:

- *Studies:* a broad spectrum of studies supports the SPC Concept development in international context.
- *LGU Master Plan:* (local public administration services) used their own financial sources and their own human capacity to prepare Master Plan and Citizen Charter in their jurisdiction.
- *PP Business rules:* the SPC Utility uses its own financial sources and human capital for preparation Business Rules for the SPC Concept and applies them in preparation and implementation of the PP.

PP Preparation - outputs:

- *Prospectus:* a key document written for a donor interested in financing preparation stage of the Pilot Project (PP).
- *Loan applications:* documents for banks with annexes (e.g. Feasibility study).
- *Concessions:* Rights assigned to the SPC Utility from the central and local governments for preparation and implementation of the SPC Concept-based PP in a given province.

PP Implementation - inputs:

- *Pilot Project Portfolio proposal:* The project portfolio is strategically selected to advance the SPC Concepts organizational goals. It is a group of projects that are carried out by the SPC Utility. Subsets of projects reflecting the driver's groups (e, w, m) are selected and prioritized in a way that allows for company's effectiveness, efficiency and economy being maximized.

SPC Utility manages the overall risks of the portfolio while ensuring that cash flow and other requirements are satisfied.

Project portfolio selection and the associated activity of managing selected projects throughout their life cycles are important for sustainable development of investment in both in the province and the country.

- *Tendering and contracting:* Tendering is designed to meet the supply chain management needs of the SPC Concept-based projects. It is a competitive environment, standardized to accommodate public procurement requirements.

The most important segment of professional skills is preparation of Terms of Reference (TOR), solicitation of expression of interest by potential suppliers and selection of best suppliers.

Contracting represents a standard process of arriving to a written agreement between two or more parties that is enforceable by the law.

- *Project Portfolio Management (PPM)*: This is not a simple task; high professional skills are needed. At least, for the first project groups of the soft loan (at the start-up phase of the SPC Utility) an external professional team should be hired.

PPM is an effective business practice that can enable the province to generate significantly more value from the SPC Concept-based projects. The best practices of organizations are finding that PPM enables them to make better decision and arrive to more cost-effective solutions.

- *Project's financial closing*: The financial closing of the project portfolio occurs when financing agreements of all projects were signed and they met all the conditions contained herein.

The financial closure of the each individual project of the project portfolio occurs when the project is completed and investor's accounts are settled and closed (including liabilities to operating safeguards).

PP Implementation - Outputs:

- *Ex-ante evaluation of the project portfolio*: An evaluation of the feasibility and sustainability of the PP is focused on a document mostly used for presentation and consensus building among SPC Concept-based project's stakeholders.
- *List of contracts and business plans*: Results of successful open tenders and a list of signed contracts between the SPC Utility and project's suppliers is summarized in a database of all relevant data for project portfolio management, financial control and auditing for life cycle of each project and the project portfolio.
- *Project monitoring and reporting (M&R)*: The purpose of the M&R is to provide for a systematic gathering of accurate, timely, objective and reliable information on real status of the SPC Concept dissemination and preparation and implementation of a PP in a specific location.
- *Ex-post evaluation and the Citizen's Charter*: Results of standard evaluation techniques publicly presented to voters of LGUs representatives.

Table 2: Inputs and outputs of the SPC Utility for preparation and implementation of the PP

	Inputs	Outputs
<i>PP Know How</i>	SPC Concept	Pilot Project proposal
<i>PP Preparation</i>	Studies results	Prospectus
	LGUs Master plans	Loan applications
	PP Business rules	Concessions
<i>PP Implementation</i>	Pilot Project Portfolio proposal	Ex-ante evaluation of the project portfolio
	Tendering and contracting	List of contracts and Business plans
	Project Portfolio Management	Project monitoring and reporting
	Project's financial closing	Ex-post evaluation and the Citizen's Charter

3.3 Tools for the Public-Private Partnership

Public-Private Partnership (PPP) is based on key analysis of the methods used for preparation and implementation of templates for a study (e.g. Master Plan), a declaration (e.g. Citizen's charter) and a directive (e.g. Business Rules).

Master Plan (MP):

An overall guidance of a long-range plans that balance and harmonize all elements of the SPC Concept for a territory under responsibility of a LGU. MP is used to coordinate preparation of more detailed plans for development of a province's infrastructure.

Preparation of a MP is financed by LGU's financial sources. The SPC Utility comments on MP prepared by a LGU. The final version of an MP represents a consensus between LGU and the SPC Utility.

Citizen's Charter:

This is a declaration of consensus of central and local public administration, the SPC Concept-based project stakeholders, and the SPC Utility owners. It is a subject of public hearing. The goal is to form a social environment for discovering and maintenances of synergy effects in the project portfolio of the PP.

Citizen's Charter helps local inhabitants to get in touch with officials, informs them as what to expect from the services and how to seek a remedy if something goes wrong. The Citizen's Charter does not by itself create new legal rights, but it helps in enforcing existing rights.

Business Rules (BR):

An individual actionable directive that does not require additional interpretation to undertake strategic or tactical decisions and that integrates rules under business jurisdiction of SPC Concept-based project. "Actionable" means that a "person" who understands the directive is equipped to observe a relevant situation in the SPC Concept-based project and can decide directly whether or not the business action was complying with that directive.

BRs are derived from Business Policy (in contrast to BR, Business Policy is not actionable in that sense). BR describes the operations, definitions and constraints of the SPC Utility.

BR can apply to the Pilot Project's stakeholders, processes, and to corporate behavior of project portfolio suppliers.

BRs are key inputs for computing systems of the SPC Utility. They are put in place to help the SPC Utility achieve its goals.

Financing:

Pilot Project (PP) offers four tests of risks of financial controls and transparent management of borrowed money:

- The PPP contract between a LGUs and the "Manager" from the private sector is the **first test** of the feasibility and a financial liability of the pilot project. LGU has its own annual budgets (e.g. Internal Revenue Allotment-IRA) and contract with the "Manager" is a standard legal tool how to ensure quality of the investment.
- The **second test** is the process of applying for a loan; preparation and submission of the application and expert evaluation and opinions concerning the required documents; that includes feasibility studies, guarantees, and collateral agreements
- The **third test** is through internal audit of the SPC Utility and its linkage to the lender (financial risks) and LGUs (performance risks).
- The **fourth test** is a permanent role of external professional and public audit (audit of portfolio integrity, financial audits, and forensic audit). The key question is how much does all these tests cost? For the PP proposal we will operate with 10% - 15% share of the total budget for a common item "Management and control services". (For more see Financial Model section).

3.4 Decentralized electrification (e)

Driver (e) modeling - Decentralized Electrification (e) presents a list of RES technologies defined as a set of 100 kW units. The reason is to present a broad portfolio of RES units and to allow a flexible combination of mixed solutions for individual application.

Proposed combination of 100 kW units:

List of below proposed combinations of 100 kW units has only information value and in this stage of the FM is not used as input for calculation. The studies (see www.5pforres.eu) describe the reason why out of a grid and on a grid solutions are separated and each type of power plant (units) is described (more detail are in 5PforRES presentation (Summary 2013).

Out of Grid:

That solution brings added value to rural and peri-urban areas. That includes the ability to use electricity for jobs, food, health care, education and safety (a greater ability to resist to climate change impacts). Proposed combinations are:

- *Solar PV, Battery,*
- *Solar PV, Wind, Diesel Generator,*
- *Solar PV, Hydropower, Battery,*
- *Biomass, Solar, Diesel Generator.*

On a grid:

This solution brings added value to supply central grids by individual producers on big island (for example Luzon, Mindanao). The role of the SPC Utility is to motivate, organize, finance, advise and train all individual producers of electricity as how to leverage the growth of the national wealth by the way of electric power generation and use. Proposed combinations are:

- *Geothermal,*
- *Biomass,*
- *Others (will be specified for more detailed FM).*

Table: 3 Capital cost of standard power plant units 100 kWe (Survey for the Financial Model)

Type of power plant (units)	Capacity factor	Unit capital cost	Initial investment (2016)			
			No. of power plant	Capital cost \$/kW	O&M cost \$/year	Common capacity kW/year
Solar PV	25%	1 700	30	5 100 000	50 000	750
Hydropower	45%	2 200	15	3 300 000	15 000	675
Biomass	80%	4 000	20	8 000 000	300 000	1 600
Wind	30%	1 600	10	1 600 000	28 500	300
Geothermal	90%	4 500	15	6 750 000	150 000	1 350
Diesel generator	(50%)*	650	25	1 625 000	45 000	1 250
Battery	(50%)*	650	10	650 000	40 000	500

Comments: * 50% means that both units will be used only for energy accumulation. Source of capital costs comparison: Lazard's leveled cost of energy analyses, 2013.

3.5 Rainwater management (w)

Rainwater management in a province is closely connected to and based on good urban design principles. It requires a focus on the harmonization of a man and nature and the skill sets of several environmental and planning professionals (e.g., engineers, hydrologists, urban planners, landscape architects, public works officials, politicians, attorneys, environmentalists, and citizens).

The rainwater management might be effective and successful if a long-term rainwater management program processes are anchored in Master Plan and Citizen's Charter.

Driver (w) is represented by a specific task - Rainwater Management – i.e. fundamental needs of a province to address climate change impacts on the landscape and to integrate these solutions into units that prove positive socio-economic impacts on local life.

The SPC Utility does not solve these problems in details and by it-self but it provides financial resources to communities for investment in primarily hydrogeological projects. The SPC Utility uses money obtained from the sale of electricity and from commercial activities linked to investments in bamboo and coconut plantation.

The SPC Utility in financing (or co-financing) cooperates with Participatory Budgeting (PB) initiatives and is a member of the Board of LGUs (approves a share of public funding on each project that is co-financed from the SPC Utility budget).

The SPC Utility proposes to the Board of LGUs synergy solutions for hydrogeological and hydro energy projects and for projects of a complex landscape solutions anchored in the Master Plan of the province (primarily for projects of bamboo and coconut planting).

For financial model, we set forth the following opportunities:

- b) Investment in rainwater management using financial source generated by the SPC Utility.
- c) Erosion control and plans, water conservation and water auditing, hydrogeological research engineering solutions (studies focused on prevention and investment into a prevention of disaster)
- d) Organic management (e.g. not only municipal solid waste management), engineering solutions for sustainable waste reuse and energy harvesting; ability to earn money at least for payments for the operational costs for cleaning of a territory (for urban, peri-urban or rural areas).
- e) Organic management (e.g. municipal solid waste management), engineering solutions for sustainable waste reuse and energy harvesting (ability to earn money for themselves needs)
- f) Quick response to financing needs after disaster (we offer to apply for refunding of such expenditures by UN budget for humanitarian assistance)
- g) Fast financing (co-financing) remedies to damages after a disaster and refunding of “specific” items of total UN budget planned for development aid
- h) Participation in growing and popular Participatory Budgeting (PB, see 1.2) and respecting the applicable Master Plans.
- i) Participation in large international projects aimed at alleviating impacts of climate change

Climate Change measures (more details see in the Case Example):

- *Retention tanks*
- *Floods management*
- *Banks of rivers and lakes*
- *Sea banks*

A new investment opportunity:

A municipal spa example; a combination of assumption of technique life and cultural roots used for building of a meeting place for families, business owners and other residents of districts (municipalities) of a province for a hygiene service (for washing, showering, toilets) and for a social (place for meetings of the population from a surrounding area). A common denominator is the availability of drinking water, hot and service water. We propose to add to the Pilot Project "Municipal spa" for support the cohesion of local population. Protection of people, mainly women and children and organizing of a mode for the different events (e.g. training, workshops) and the organization of social events and entertainment should be the responsibility of the LGUs. It is an example of a PPP project with the financial support of the sustainability of the cost of public budgets. It is an example of a theme for a Citizen Charter and Participatory Budgeting (a typical specific segment of the SPC Concept-type projects).

3.6 Biomass management (m)

Driver (m) modeling – Biomass management (m): for simplification only bamboo and coconut palms are considered in the Financial Model (FM). A base unit considered is 500 hectares for bamboo and 300 hectares (H) for coconuts (see table 4).

Table 4: Biomass management inputs FM:

Characteristics / Forests	Maturity (years)	Harvesting (years)	Forest area (Hectares)	Initial Investment
Bamboo	7	23	500	\$2.5.m
Coconut	7	23	300	\$7.5m

Comments: Source for Bamboo: APRRRDC, Manila, 2013; Coconut Palms: Liquid Investment, Brazil, 2014. Forest's maturity and harvesting years are estimated in the same value for both bamboo and coconuts.

Investment of \$10m (a commercial long-term loan):

For investment into forest (bamboo and coconut palms only) the cost structure is split into three segments. The total investment of \$10m is broken down to from \$2.5m (share of bamboo), \$7.5m (share of coconuts). Share of land costs is included as a financial reserve for both bamboo and coconut investment (details must be consulted with the farmers and relevant experts).

Characteristic of bamboo and coconuts:

Bamboo and coconut belongs to category of ‘forests for three (human) generations’. They can live and bear fruit for up to 90 years. Such forest can improve microclimate system and help in dealing with negative effects of the Climate Change. Both forests reduce risks from disasters due to storms or cyclones and sea-level rise (coastal flooding). Trees help to regulate regional climate, protect soil and regulate water in the landscape. They protect riverbanks and produces source of energy (from direct burning to sophisticated pyrolysis systems). Biomass is a biological material derived from living, or recently living organisms. The SPC Concept offers opportunities for synergy in development programs of many LGUs. A strong potential for investment include:

- *Municipal management and garbage (small town, municipalities of rural areas)*
- *Agriculture waste (from production of rice, sugar corn, etc.)*

Characteristic of bamboo:

Bamboos are some of the fastest-growing plants in the world, due to a unique mass of roots (rhizome) system. Bamboos have notable economic and cultural significance for local communities, mostly for medicine (treating infections), food (bamboo shoots), for textile and paper (bamboo fibers), seawater desalination, furniture making, and green houses, including interior accessories (eating utensils such as chop sticks, trays, and tea scoops) etc. Its effectiveness as a feedstock for the production of biofuels has a strong future potential.

*Characteristic of coconuts:*

The reality is that one in five Filipinos depend for their livelihood in some way on coconut production, with coconut farms accounting for 26% of the country's farmland. However 44 million palms (14% of nation's total) are past their productive peak. Disaster of the typhoon Haiyan (in November 2013) caused estimated \$110 million loss in crops and inflicted damage to agricultural sector twice as high. Estimated 33 million coconut palms (11% of nation's total) were destroyed. It is 'back to year zero' for coconut farmers in the Philippines, with a seven-year lead before the palms start to yield fruit (presented by the Philippine Coconut Authority).



Characteristic of bamboo and coconuts together:

Bamboo and coconut belongs to a category of ‘forests for three (human) generations’. They can live and bear fruit for up to 90 years. Such forest can improve microclimate system that is helpful in dealing with negative effects of the Climate Change. Both forests reduce risks from disasters due to storms or cyclones and sea-level rise (coastal flooding). Trees help to regulate regional climate and protect soil and regulate water in countryside. They protect riverbanks and both forests produces source of energy (from direct burning to sophisticated pyrolysis systems).

Biomass is a biological material derived from living, or recently living organisms. The SPC Concept offers opportunities for synergy in socio-economic development programs of many LGUs. A strong potential for investment include:

- *Municipal management and garbage (small town, municipalities of rural areas)*
- *Agriculture waste (from production of rice, sugar corn, etc.)*

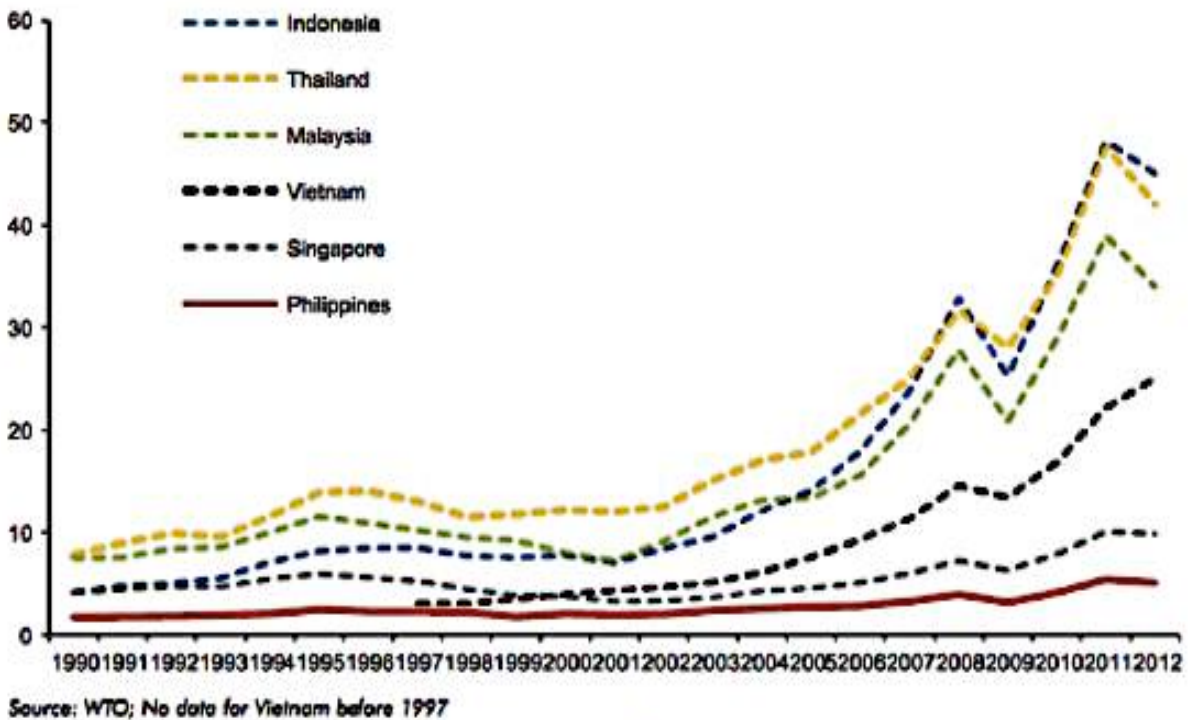
Graph 06: MSMEs network function (exemplified on a project of a Biogas plant; Conel, s.r.o. CZ)



We would like to point out the readiness of science and technologies for implementation of the SPC Concept. The required technologies are already on market.

We demonstrate the above on graphs. Graph 06 is a sample of MSMEs (individual or grouped in a production chain) aimed at the common goal: to maximize added value to local sources, to maximize financial profits and sustainability of the province’s private and public sectors. The Graph 07 demonstrates efforts of one generation to produce and export agriculture products (including products from coconut and bamboo plantations). It is a snap of agriculture product’s export growth over the last 22 years in 6 ASEAN countries (these information will be actualized in the Prospectus paper).

Graph 07: Agriculture product export, ASEAN-6, 1990-2012, US \$bullion



3.7 Opportunities for new jobs

The inability of the economy to generate employment on a scale that reduces unemployment rates to acceptable levels is emerging as a critical structural problem in both developing and developed regions of the world.

For development countries, at least two important conditions must be recognized. First, they must generate a substantial volume of jobs that are capable not only of absorbing new labor entrants every year, but of reducing over a reasonable period of time the large pool of currently unemployed workers. Second, they must spread job generation to the less developed parts of the country – i.e. the different regions and the rural areas.

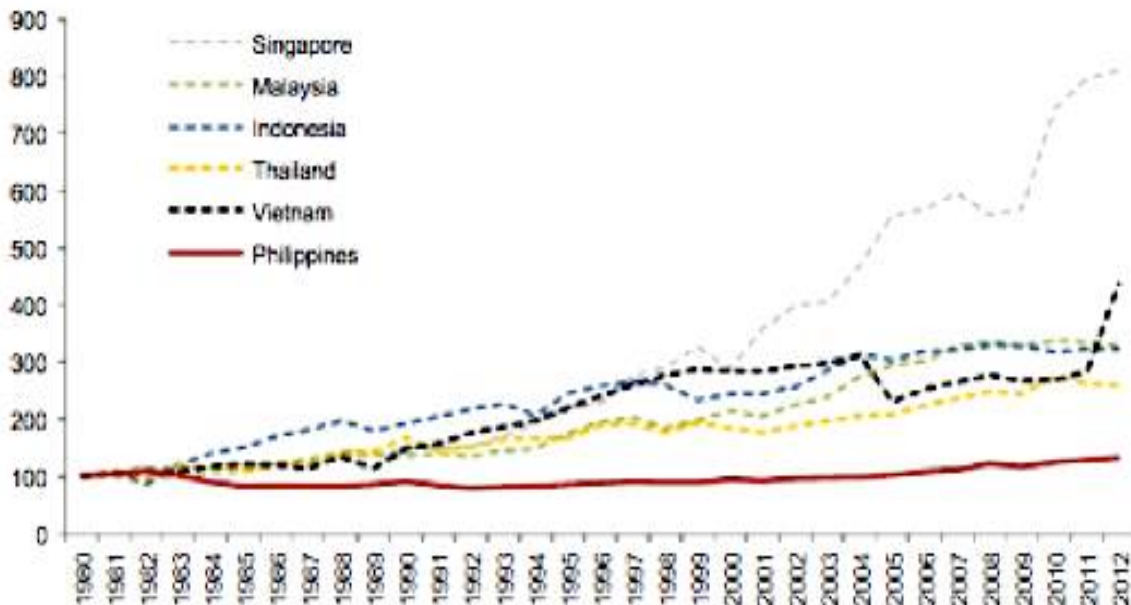
The SPC Concept incorporates both conditions and opens door for MSME that are ready to absorb workers better than large firms and so that they are important contributors to job creation. Power and energy infrastructure and biomass management (mostly on coconut and bamboo plantations) have a strong potential for jobs growth in the Philippines.

Special attention should be devoted to the tourism industry (in the Philippines, the tourism industry represents close to 10% of employment).

In an archipelagic country like the Philippines with its fragmented packets of development and weak geographical integration, there are not too many sources for generating jobs with equal extent of opportunities and, in the process, narrow employment access gaps and reduce welfare dependence. Nevertheless a benchmark of manufacturing labor productivity index (Graph 07, by arangkada, www.investphilippines.info) demonstrates two important conclusions:

1. The Philippines has to look for a solution how to improve its position within the ASEAN group of countries and,
2. Labor productivity of one generation (over 30 years) can grow significantly if the drivers of economic development are effective and efficient.

Graph 08: Manufacturing labor productivity index (1980=100)



Source: ILO, UNSD, ADB and author's calculations. Notes: This is based on Mfg GVA per person engaged at constant 2005 \$US. This measure shows the level of productivity changed relative to 1980 level.

In Chapter 4 (Financial Model) we defined the need for job creation by the SPC Concept-based activities. We propose - during preparation of the Prospectus and the Feasibility Study preparation (see. Table 2) - to develop a methodology of new jobs identification for local (provincial) job forecast based on local inputs.

3.8 PP costs and yields (by Financial Model)

- For preparation and implementation of the PP, there are critical costs and yields characterized by individual projects and *project* portfolio itself in a life cycle. Below, we present a brief survey of cost structure, and a survey of direct and indirect yields, and in Chapter 4 we presents some results.

Cost's structure:

- Acceptance of the SPC Concept acceptance and Pilot Project proposal (transfer and anchoring of the know-how)
- Establishment of the SPC Utility and its operations. IT assistance (for the Pilot Project)
- Studies, loans, guarantees, and audits (coming from contracts' commitments between the SPC Utility, LGUs and Donors)
- Development and maintenance of directives and rules (e.g. for Master Planning and Citizens' Charter)
- Design, prioritization and evaluation of individual projects of the Pilot Project portfolio for:
 - Decentralized Electrification; Driver (e)
 - Retention Water Management; Driver (w)
 - Biomass Management; Driver (m)
- Implementation of the Pilot Project (TOR processing, tendering, contracting, monitoring, individual project's financial closing)
- Financial closing and evaluation of the Pilot Project portfolio (marketing, research, results dissemination aimed to new market opportunity in a global scale)

Direct yields' structure:

- Presentation of results presentation and dissemination of the know-how (sales of concepts, leaflets, templates, and tuition fees from SPC clients),
- Equipment leasing (single and mixed energy units) for individual producers of electricity and for small entrepreneurs, agricultural farms, workshops, associations etc. which generates electricity for their own internal consumption,
- BOT projects with financial exits; energy projects and other projects of rainwater and biomass management; profitable or not profitable, for private and public sectors (e.g. business services for households, entrepreneurs, and for owners of bamboo and coconut forests) and for water retention projects (services to national hydro-projects planning, hydrological structures etc.).
- BOO projects owned by the SPC Utility on different islands of the Philippines and building energy accumulation system on islands; e.g. business based on synergy of electric power generation gasification or later on by pyrolysis, by a system of landscape cleanup (buying biomass residuals from municipalities, farms, cooperatives, etc.), and by cooperation with natural gas distribution and energy accumulation systems of the Philippines (e.g. participation in reprocessing of biogas into natural gas).
- Other opportunities which might arise (assisted by SPC Centers in Prague and Manila)

Indirect yields structure from services to:

- Power Cooperatives in a province (electricity consumption growth and new types of cooperation),
- Farmers and forest owners (waste clean- up and electricity production; consulting services),
- Development of new industries (BOT exits and sales and export of bamboo and coconut products),
- Cities, municipalities and barangays (consulting: e.g. municipal waste conversion into electricity),
- Cities, municipalities and barangays (consulting: flood and earth slide prevention),
- Landscape protection (cooperation on improvement of hydrogeological relief),
- Local population (e.g. financial literacy growth)
- Others

4 Financial Model

The Financial Model (FM) outlines the framework of feasibility and sustainability of the SPC Pilot Project. Inputs of the FM are selected and adapted so that results of FM calculations are transparent. FM was prepared in cooperation between 5PforRES and Naviga4 (a consulting company from the Czech Republic).

FM assesses financial and investment aspects of projects based on expected evolution of demand, sales prices and total costs. The model is based on the projects' cash analysis. The economic effect of the investment is the expected net cash income from projects and its value is determined by the difference between the expected cash receipts and expenditures.

A cash-flow model is used separately for power plants and for bamboo and coconut plantations. Subsequently, results of individual models are jointed into one unit to reflect the overall expenses and yields. The FM model is built on expected costs and revenues (inputs), which are publicly published. The FM reflects several variants, all-covering the same time period of 30 years.

4.1 FM assumptions

The goal is to introduce a simple and transparent FM for a wider spectrum of applications.

Strategy assumptions: the following assumptions for success of the SPC Utility were identified:

1. Project portfolio environment, project's life cycle, PPP and legal environment, public administration environment, politician's participation and impacts of elections.
2. A positive perception of the SPC project by local well-to-do SPC stakeholders.
3. Electricity demand and buying power of local population and small entrepreneurs' ability to expand on domestic and global markets.
4. Dissemination of PP results and marketing of the SPC Concept through SPC Centers and in target countries.
5. Education, development of skills and training.

Financial assumptions: financial assumptions incorporate two views:

- One view respects logical sequence of stages of implementation of SPC Concept,
- The second one presents financial tools in relation to absorption capacity of a specific province (a final beneficiary).

FM is built to allow for creation of combined results of each option (sub-models).

Preparation of the PP: this is the first look at financial feasibility of the PP base budget (of projects in a life cycle). The goal is to gather inputs for the FM, to perform pre-feasibility and to get financial assurance of implementation of the PP. Pre-preparation stage and following four stages are analyzed:

Start-up:

Presents the startup of proposals of financial leverage of the base budget adapted for loan portfolio. The goal is to prove validity of inputs for the FM and perform financial pre-feasibility of the PP implementation both for electricity production and biomass management projects (electricity production and biomass management are analyzed together and separately).

Double budget:

It follows the startup stage of proposals of financial leverage by a doubling the budget of the start-up stage. The goal is to compare difference between various commercial loans (variants of interest rates and maturities) and compare results with results of soft long-term loan analysis.

Triple budget:

Follows the "double" phase by a tripling the base of \$45m. The goal is to get a general view on investment in electrification and biomass management from the point of view of its impacts on economy and social issues of a province.

BOT variants and Securities:

It is an independent analysis (the first estimate) of a feasibility of BOT techniques proposed for motivation of local stakeholders and relevant banking sector to participate in implementation of the SPC Concept and Pilot Project in a specific socio-economic environment of a province.

4.2 Financial strategy

Financial characteristic of a sample province (see tab.1) indicates capacity of the residential and commercial environment for investment in local infrastructure. The PP preparation is on the level of the Pilot Project proposal (see tab. 2) and presents the first view on the financial feasibility of the PP.

Financial strategy:

This stage is staying out of the FM and is a subject of bilateral meeting with sponsors of the SPC Concepts and the PP financial strategy.

Table 5: SPC Concept policy and PP Financial strategy (\$m)

Funds/Years	2015	2020	2025	2030	2035	2040	2045	Total
Studies	1		(1)		(1)		(1)	(3)

Comments: \$1m presents an initial grant and (\$1m) the SPC Utility budget financing of strategy and control mechanisms used for upgrading and corrections of proposed trajectory of a socio-economic development in a given province.

Survey of studies of the SPC Concept policy and PP Financial strategy contents: preparation of a Prospectus, acceptance of LGUs Master plans, development of Business Rules and other documents finally incorporated into Feasibility studies prepared as an annex to loans applications (e.g. \$1m as an initial grant from donors, and 3 times \$1m from the SPC Utility budget, every 10 years)

Start-up Budget:

Two variants are distinguished: one for electricity production and the second one for electricity production and biomass management.

Table 6: PP – the start-up stage in total \$45m (electricity production and biomass management)

Funds/Years	2015	2020	2025	2030	2035	2040	2045	Total
Private contribution	5	-						45
Soft loan for a generation	30	-					30**	
Long-term loan	10	-	-	-	-	-	-	65

Comments: **Declares a spending of the revolving fund investment (\$30m) in a manner so that the same financial value sustains on the SPC Utility account until 2045.

The start-up items:

Private contribution: A private sector partner and LGUs founds the SPC Utility. We propose that capital investment of \$5m to be a responsibility of a private partner. Other assets (a value of studies and preparation works, licenses, inventories, intangible assets, cash and cash equivalents, all from LGUs and private sponsors) should - together with the \$5m – represent at least 30% of the total assets – liabilities structure of the SPC Utility.

Soft loan for a generation:

The SPC Utility applies for a soft long-term loan (SLL) of \$30m with interest rate 6% for the period of 30 years. The SLL from a syndicate of banks, predominantly IFIs (International Financial Institutions), and DFIs (Development Finance Institutions). There are other opportunities from region to region around the world: e.g. the Official Development Assistances (ODAs) mechanism offered by the Korea International Cooperation Agency (KOICA) with the following parameters: grants – up to \$0.5m; loans – up to \$30m, repayment period 30 years. Returns are guaranteed by payments of fees from decentralized electrification projects.

Long-term loan:

The SPC Utility applies for a commercial loan of \$10m with interest rate 6% for a loan period of 7 years. Returns are guaranteed by payments of fees from bamboo and coconut projects.

A double budget:

Links the start-up phase and set of commercial loans is added in a value of \$45m:

Table 7: PP - the FM for the 30 years (a double value) in total \$90m

Funds/Years	2015	2020	2025	2030	2035	2040	2045	Total
Private contribution	5	+5*	-					45
Soft loan for a generation	30	-					30**	
Long-term loan	10	-	-	-	-	-	-	65
Commercial loans	-	5	10	15	15	-	-	45

Following items:

Commercial loans: A dynamic scheme of a set of commercial loans is analyzed (each 5 years in a value \$2.5m, \$5m, \$10.0m, \$15.0m, and \$15m is proposed a new loan is open, in total \$45.0m).

A triple budget:

Links the start-up phase and set of commercial loans is added in a value of \$90m:

Table 8: PP Implementation – the FM for the 30 years (a triple value) in total \$135m

Funds/Years	2015	2020	2025	2030	2035	2040	2045	Total
Private contribution	5	+10***						45
Soft loan for a generation	30	-					30**	
Long-term loan	10	-	-	-	-	-	-	65
Commercial loans	-	10	20	30	30	-	-	90

Following items: Commercial loans are a doubled portion of the doubled budget. The goal of this step is to analyze absorption capacity of local banks (short term and not expensive loans).

MSME, Securities

The goal of the FM is to demonstrate financial feasibility of applying BOO technique for biomass power plant built at bamboo and coconut plantation (for added value to bamboo and coconut harvesting products), and BOT technique for investment in micro, small and middle enterprises (MSME).

The general objective is to assist entrepreneurs and farmers to boost economy and socio-economic development creation of new MSMEs (e.g. by bamboo products: new opportunity in construction, furniture, food industry and e.g. by coconut products: food, oil, milk, water from coconuts, and non-food raw materials, e.g. activated carbon and other product like soap and cosmetics, charcoal, activated carbon, fertilizers, drugs, cosmetics, etc.).

For sample of a province (Tab. 1) with 200,000 households the FM calculates with (data are from the SPC Concept - Case Example):

- High income category (HIC) represents 100 families,
- Middle income category (MIC) represents 19 000 families, and
- Low incomes category (LIC) represents 80 800 families.

FM estimates issuing three categories of Securities (S) per a family:

- For HIC: in a financial value about 1\$m with (10%), 30% of yields,
- For MIC: in a financial value about 100 000\$ with of (20%), 50%, (100%) of yields,
- For LIC: in a financial value about 100\$ with (30%), (100%), (150%) of yields.

There are two main reasons in support of this proposal:

1. To re-vitalize retail and commercial banking activities of local banks and
2. To utilize professional and engineering abilities of the SPC Utility staff in implementation of acquisition of MSME enterprises.

MSMEs build on the outcomes of projects initiated by key drivers (e, w, m) and tying up the chain of services and products that decentralized electrification in a community ultimately offers (above all harvesting from bamboo and coconut plantations), At the same time the added value represented by products and services sold on domestic and international markets further enhances yields of local enterprises.

Sale of MSME's security papers and BOT techniques are opportunities for getting members of local communities involved in preparation and implementation of the Pilot Projects. The tool are dividend payments to those who purchased the security papers. The precondition of success is always professionalism of the SPC Utility team.

The wealth thus created is from a work actually performed, not from speculation. Valuation of acquisitions will be set by market mechanism (including reasonable profit margin and calculation of added value). The proposed „double“ appreciation corresponds with these assumptions and the final optimization of sale price of acquisitions of this type will in the end be more advantageous for both sides and the SPC Utility becomes in a province important professional and financial institutions both for MSMES and local banks.

Table 9. Demonstrates a model for cases of 10% and 20% of yields. We tested different value of dividends (from 10% to 150%). "Double" in this table means that all costs spent on virtual or physical MSME project performed by the SPC Utility team is sold out in a price of 2 times higher.

Table 9 represents a simple approximate calculation for securities with 3-year return on investment and their dividend rates at 10% and 20% respectively.

Profitability of these services offered by the SPC Utility depends on the ability to do acquisitions well while dividends by themselves do not affect the final results that much (we tried the sensitivity even at 10% a 100% value respectively). We recommend that the SPC Utility Board of Directors use BOT Securities to motivate stakeholders toward participation in preparation and implementation of the SPC Concept-based projects in a given province.

Room for competition exists. Just in the Philippines alone, assuming 100,000,000 strong population over the next 30 years, there will be 100 provinces (as compared to about 80 today) which will have the capabilities to take advantage of outcomes generated by the Pilot Projects. For more concerning MSMEs see Chapter 4.8.

Table 9: FM and MSME acquisition (a double value)

Time	Years	Securities value	Re-investment	BOT costs	BOT transfer (1:2)	For Re-investment	Profit before tax	Repayment of securities 30%	Repayment of securities 50%	Dividends 10%	Dividends 20%	Gross profit before tax minus 10%	Gross profit before tax minus 20%
Positions		1	2	3	4	5	6	7	8	9	10	11	12
Process		1	5	1+2	Double	4 - x	4 - y	1+9	1+10	1x0.1	1x0.2	6-7	6-8
2015	-	-	-	-	-	-	-	-	-	-	-	-	-
2020	5	5,00	0,00	5,00	10,00	3,00	7,00	5,50	6,00	0,50	1,00	1,50	1,00
2025	10	10,00	3,00	13,00	26,00	10,00	16,00	11,00	12,00	1,00	2,00	5,00	4,00
2030	15	15,00	10,00	25,00	50,00	30,00	20,00	16,50	18,00	1,50	3,00	3,50	2,00
2035	20	15,00	30,00	45,00	90,00	40,00	50,00	16,50	18,00	1,50	3,00	33,50	32,00
2040	25	0,00	40,00	40,00	80,00	40,00	40,00	0,00	0,00	0,00	0,00	40,00	40,00
2045	30	0,00	40,00	40,00	80,00	0,00	80,00	0,00	0,00	0,00	0,00	80,00	80,00
Results:		45,00	123,00	168,00	336,00	123,00	213,00	49,50	54,00			163,50	159,00

Legend to Table 9:

Securities value: it is the same in time specification and value of money like in a case of the Commercial loan (see Table 7).

Re-investment: FM assumes a portion of money of the BOT transfer (position 4) is returned back to investment of MSMEs.

BOT costs: The SPC Utility minimizes cost and promotes quality of MSMEs participation on local markets.

BOT transfer: The SPC Utility sells products to clients with assistances of local bank(s). The minimum business margin is expressed by the rate of 1:2 (between costs of creation of MSMEs creation and "cash on account" of the SPC Utility).

For re-investment: A portion of money used for investment in MSMEs.

Profit before taxes: Money allocated to the SPC Utility budget and later on used for follow-up investment into MSMEs (before tax).

Repayment of (+ 10%; 20%): Money allocated to the SPC Utility budget and later used for payment of securities and dividends in a value of 10% respectively 20%.

Dividends (10%; 20%): A yield (10% or 20%) of securities tied to the value of securities issued by the SPC Utility (with a commitment to maturity max. 5 years)

Gross profit before tax (minus 10%; 20%): A portion of money allocated on the SPC Utility account as results of B2B activities in the PPP framework of investments in infrastructure on local level according of the SPC Concept rules.

Comment to the range of dividends from 10% to 150%: Financial success of the SPC Utility is much more dependent on the gain from the acquisition (on the difference between cost and selling price of a MSME) and less on the amount of the dividend. Dividend range between 10 to 150% is mentioned as an example of motivation of stakeholders in a province to work with the SPC Utility and participate in the SPC Concept-based project implementation.

Example of a MSME:

The global markets of bamboo and coconut-based products are not yet firmly assigned. Farmers, along with MSMEs (for example cooperatives in a province) have the opportunity to build production and distribution chains and claim some markets for themselves. If they will succeed to get a reasonably high percentage from the ultimate sale price then individual entrepreneurs and the province or the state become richer relatively quickly, within one generation.

For example, in the Czech Republic, one can buy 0.205 kg of Chinese bamboo spouts for \$3. That represents retail market value of one metric ton (dry weight) of the spouts at more than \$14,000. From one hectare one can harvest up to five metric tons of sprouts a year. With obtaining just 20% from the final retail sale price, sales revenues from 1 hectare represent up to \$14,000 a year. And 1.000H of bamboo plantations can generate revenues of about \$14m a year. (For more see Chapter 3.5).

4.3 Financial Model inputs

The FM is analyzed at four levels:

1. Start-up Phase (the FM is used as described in 4.1, The FM - Introduction),
2. Double value: the SPC Utility's budget is increased: by BOT re-financing loans and Securities investment,
3. Triple value: the SPC Utility's budget is again increased: by BOT re-financing loans and Securities investment,
4. BOT variants and Securities: the same value of budget and new tools: BOO and BOT projects.

Table 10: FM inputs summary (in \$m)

A phase of PP implementation by tables: No. 6, 7, 8, 9	Total PP Budgets	Staff of SPC Utility	SPC Concept 3%	Electricity (Table 3)	Bamboo (Table 4)	Hectares Bamboo	Coconuts (Table 4)	Hectares Coconuts palms	Time of implementation
Start-up budget	45	5	1.35	30	2.5	500	7.5	300	2015
Double value	90	10	+1.35	40	10	2000	30	1200	Around 2020
Triple value	135	15	(+1.35)	50	10	2000	60	2400	After 2020
MSME Securities	45	5	(+1.35)	A mix of projects: micro SMEs for (e, w, m)					After 2020

Legend to Table 11 (to all items):

Start-up budget:

FM has been prepared, tested and tuned for the total budget in a value of \$45m and is split into: a) share of the SPC Utility staff (\$5m); b) soft-loan for electricity production (\$30m); c) commercial loans (\$10m) for planting of bamboo (\$2.5m) and coconut palms (\$7.5m).

Double value:

FM has been prepared, tested and tuned for the total budget in a value of \$90m and is split into: a) share of the SPC Utility staff (\$10m); b) loans for electricity production (\$40m); c) loans for planting of bamboo (\$10m) and coconut palms (\$30m).

Other financial tools (BOT re-financing loans and securities investment) are analyzed. The goal of this phase of FM is to highlight the applicability of these tools that leverage a credit load of the SPC Utility (soft long-term and commercial loans).

Triple value:

FM has been prepared, tested and tuned for the total budget in a value of \$135m and is split into: a) share of the SPC Utility staff (\$15m); b) loans for electricity production (\$50m); c) loans for planting of bamboo (\$10m) and coconut palms (\$60m).

Other financial tools (BOT re-financing loans and securities investment) are analyzed.

The goal of this phase of FM is to highlight the applicability of these tools which leveraging a credit load of the SPC Utility (soft long-term and commercial loans).

MSME, Securities:

FM has been prepared, tested and tuned up for the same budget (\$135m) but for different financial tools (for the full scale of the PPP techniques).

The total budget was split into: a) share spent on the SPC Utility (\$15m); b) loans for electricity production (\$50m); c) loans for planting of bamboo (\$10m) and coconut palms (\$60m).

Staff of the SPC Utility:

FM is based on the assumption that the total cost of establishment of the company, preparation guidelines, templates and rules, IT facilities, tenders (recruitment) of managers and training for all staff (including long-term training) for the PP will require about 11% of the total budget.

SPC Concept:

FM covers the cost of the know-how at 3% of the total budget in favor of the author and integrator of the SPC Concept with an option of investing that money into building and maintaining the SPC Centers (in Prague and Manila).

Electricity:

More details are in section 3.8, Decentralized electrification. Budget is increased from the base (\$30m) to (\$40m) in a double value phase and to (\$50m) in both follow-up phases.

Bamboo:

More details are in section 3.10, Biomass management. Budget is increased from its base (\$2.5m) to (\$10m) in all following stages.

It represents 500 hectares (H) for the base phase and 2000H for each of the all other phases.

Coconut palms:

More details are in section 3.10, Biomass management. Budget is increased from its base (\$7.5m) to (\$30m) in the double value phase and to (\$60m) in both follow-up phases.

It represents 300 hectares (H) for the base phase, 1200H for the double value phase, and 2400H for both follow-up phases.

Timeframe of implementation:

FM assumes to implement the base phase during the first 5 years (before 2020), the phase of the double value assumes implementation around 2020, and both last phases after 2020.

4.4 Costs

Costs of the SPC Concept know-how

FM covers the cost of the SPC Concept know-how at 3% of the total budget. FM spreads the costs of the SPC know-how over the entire period of 30 years and it budgets each phase separately: the start-up, double, triple and / or BOT phases (in total of \$ 45 m, \$ 90M \$135 m).

Payment is done in favor of the author and integrator SPC Concept and he or she is responsible for meeting relevant commitments among all members of the SPC Concept International Team. Members of this team should have an option to re-invest their securities into building or maintaining of SPC Centers.

Both benefits and commitments as mentioned above must be anchored in contracts between the 5PforRES and the SPC Utility.

Costs of preparation of the PP

Preparation of Pilot Project for a sample province (Tab. 1) represents costs of different studies, preparation of the Prospectus, acceptance of LGUs Master plans, development of Business Rules, and other documents to be incorporated into Feasibility Study prepared as an attachment to grant and loan applications (Tab. 2).

Three options are proposed for financing of the preparation stage:

1. Step-by-step by small grants with the initial value of the first day EUR 20,000. - (a limit of the single tender grant of the European Development Fund) with participation of different donors inclusive the Philippine private sector. The total to reach \$1m.
2. Initial grant for the Prospectus in a value of \$0.5m co-financed by the Philippines private sector and a follow-up grant from bank consortium for loan application submission. The total value of \$1m.
3. Establishment of a bank syndicate consortium and opening of the PP for large projects by financing Feasibility Study as the basis for approval of a loan application in the total value of \$1m (with the private sector "Manager's" participation).

It is proposed to open a dialog with IFIs, DFIs and local banks and to use the third option.

Costs of the start-up stage of the PP

Cost specification is focused only on the start-up stage of the PP (more in Table 6).

Capital Cost

- *Investment and reinvestment cost of the power plant:*

In total, \$30m is proposed for investment into decentralized electrification over the period of 30 years.

- *Reinvestment cost of power plant:*

It represents cost of repairs and technical improvements to already made capital investment into power plants. In total, \$40m will be invested for 30 years. Proper operation of power plants portfolio will be thus assured from January 2045 and further in the same quality like before 30 years.

- *Investment cost of bamboo plantation:*

In total, \$2.5m is proposed for investment over the 30 years.

- *Investment cost of coconut plantation:*

In total, \$7.5m is proposed for investment over the 30 years.

- *Investment cost of retention:*

Investment costs of water retention management are not included in the FM. The FM classifies revenue from investment in power plants and bamboo and coconut plantation is portion of money with a potential to be invested in projects of the retention water management.

Operational Costs:

- *Maintenance and operations cost of the power plants:*

The cost comprises of operating costs of power plants portfolio. Different power plants will have different operating costs. The FM calculates with an average costs that grows with the increasing number of installed power plants for the period of 30 years. After that period, the total cost reaches \$17m.

- *Maintenance and operations cost of bamboo plantation:*

Operating expenses for the maintenance of bamboo plantations are labor costs, equipment maintenance, etc. The costs grow proportionally with investments in bamboo plantation. The full amount of the costs will be reached after seven years.

- *Maintenance and operations cost of coconut plantation:*

Operating expenses for the maintenance of coconut plantations are labor costs, equipment maintenance, etc. The costs grow proportionally with investments in coconut plantation. The full amount of the costs will be reached after seven years.

Other Costs

- *Administration costs:*

Pilot project implementation represents costs of activities described above in (Tab. 2). A general assumption for this administration cost and for costs related with a better long-term financial control and education of the SPC Utility staff performed by donors (e.g. a syndicate of banks, the PP investors) and by universities (added value to a standard education) is estimated at between 10% and 15% of total budget (a working value for start-up 15%, double 12.4%, triple 10% phase).

- *Insurance and guarantees:*

Calculated at 1% of investment costs for the plant. Of the original \$0.3m per year in the first years, the insurance charge is doubled to \$0.6 per year.

- *Depreciation and Amortization:*

The FM calculates depreciation uniformly: for investments into power plants over 15 years and for investment into biomass (bamboo and coconut) plantations over 25 years.

- *Interest rate expenses:*

Estimated at 6% for soft long-term loan (SLL) and for a commercial loan (CL) with a repayment of 7 years, and 5.5% for commercial loans (CLs) with a repayment of 3 years.

- *Taxes:*

Income tax was set at the rate of 10%. Tax holidays are planned for the first four years. Generally taxes vary between 10 to 30% and tax holidays between 2 to 4 years from a country to a country, and from item to item. We suggest income tax 10% because the SPC Utility is performing an accommodating public investment (reinvestment of incomes for electricity and biomass sales) in favor of a healthy development of infrastructure of a province (see Chapters 3.4, 3.5, 3.6).

Costs of the double and triple budgets

Investment costs:

- Start-up base is supplemented by commercial loans in total value of \$45m for a "double" case and in total value of \$90m for a "triple" case. The difference between both cases is in a focus on increasing plots of coconut plantations.

Operational costs:

- Inputs for all three cases (start-up, "double" and "triple") are staying the same.

4.6 Sensitivity and simulations

FM is a tool that will be used in its full power during preparation of the Prospectus and in following studies, including the feasibility study prepared as an appendix to application for the PP financing (see Tab. 2).

A note on sensitivity of the MSME acquisition program by the SPC Utility is in Chapter 4.1 “MSME Securities”: For the purpose of this study, the sensitivity is simply demonstrated on electric power rates and bamboo and coconut management, and simulation of a PP financial strategy is outlined for discussions with potential donors.

Electric power rates:

Three values of electricity rates were selected according to the results of the SPC Concept studies: “Blueprint and Case Example,” and other studies at www.5pforres.eu. The price of 1 kWh reflects two different methodologies for the cost of electric power generation: One with and second without the Retail Customers Charge (RCC). For presentation of results of this study we have selected:

- a) A lower price of \$0.14 (PhP6.2) per kWh (a generation cost, based on inputs of Soreco, June 2012).
- b) An acceptance price of \$0.28 (PhP12, 4) per kWh (a total cost with the RCC, example of a rate valid in March 2012).
- c) One of the highest costs, \$0.33 (PhP14,6) per kWh (a total costs with the RCC, example of a rate valid in March 2014)

Prices growth as compared to the base index 1.0:

- a) \$0.14 = 1.0;
- b) \$0.28 = 2.0 times;
- ca) \$0.33 = 2.36 times;
- cb) \$0.33 = 1.18 times;

For a comparison: Publicly published rate for a diesel generator is close to \$0.53 per kWh

Much more detailed attention to rates and prediction was spent during input data collection summarized in Tables 9 – 13 of the Case Example (see www.5pforres.eu).

The most current expression can be found in the Department of Energy (DOE) and the Climate Change Commission prepared in cooperation with Deutsche Gesellschaft für Internationale Zusammenarbeit, GIZ GmbH). “As a simple example, the cost of electricity from a coal plant can run up to P5.50 per kilowatt hour, plus P6.50 for distribution and transmission, which amounts to P12.00. If you install solar panels on your rooftop, you will only spend P9.00 per kilowatt-hour for generation and no cost for distribution or transmission. This already saves you up to P3 per kilowatt hour” said DOE Secretary, Carlos Jericho Petilla.

Bamboo and coconut plantations:

This is a brief supplement to Chapter 3.6, Biomass Management. Bamboo and coconut forests bring jobs, regular income and can improve microclimate system. They reduce risks from disasters due to climate extremes (storms or cyclones) and sea-level rise (coastal flooding) and can protect soil and regulate water in the landscape (protect riverbanks, seacoast, regulate floods in watershed and they are useful as a floodplain forest).

For preparation of the PP, we selected only the basic inputs, the same for bamboo and coconuts. This simplification allows us to focus on the study's priority: to introduce synergy and financial strategy of the SPC Concept through the first pilot project. Start-up phase counts with a long term commercial loan \$10m which allows for planting of:

- 500H: a land for bamboo forest (plantation),
- 300H: a land for coconut forest (plantation).

How much it is for sample of the province (Table 1) with land area of 2,500 km² (250,000H)?

- 500H represents 0.2% of the total land area of the province,
- 300H represents 0.12% of the total land area of the province.

How much share represents 1000H units (10 km²) of the total land area of the province

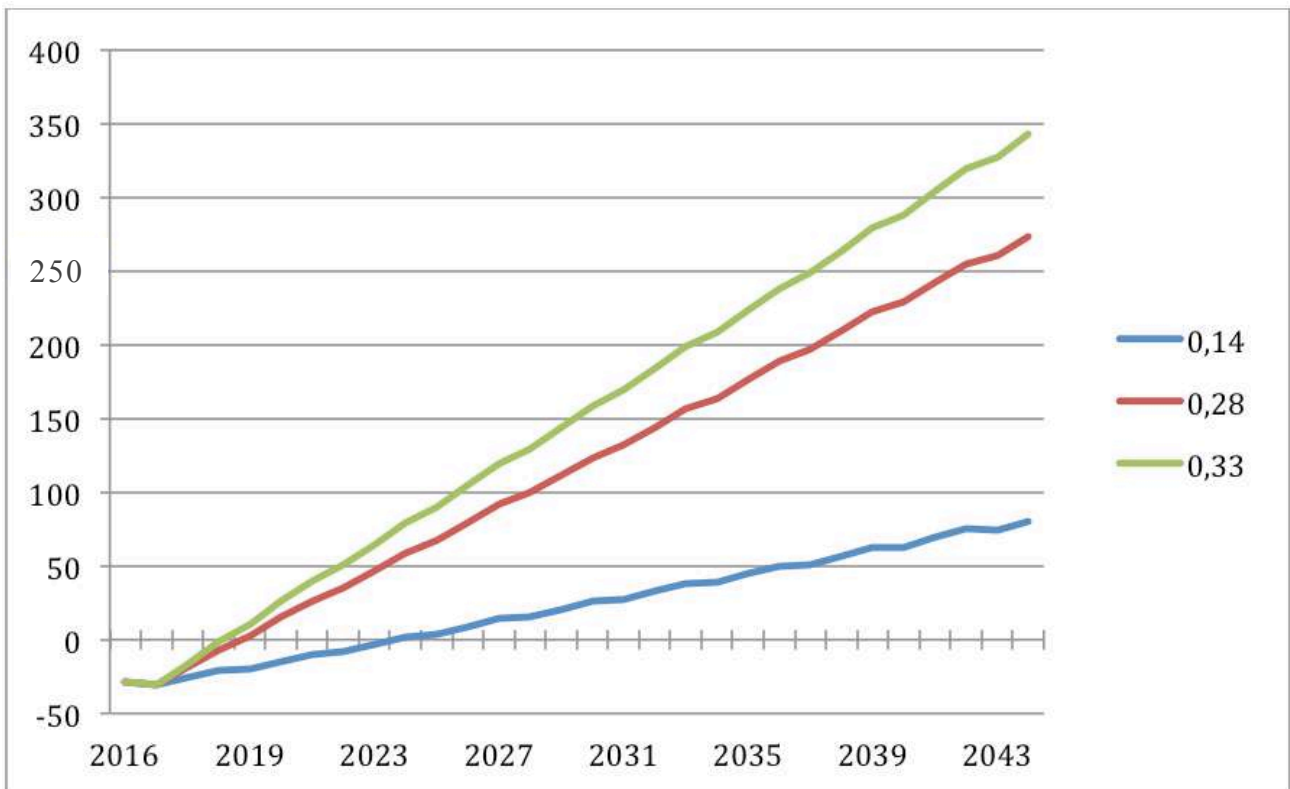
- 1000H represents 0.4% of the total land area

4.6 Revenues

The revenue's survey is split into segments of the Start-up stage, the Double and Triple budget, and the MSME added value.

Revenues from operation of the power plant reflect the installed power generating capacities (see Table 3). Revenues are calculated with the assumptions of electricity rates of three volumes: \$ 0.14; \$ 0.28; \$ 0.33(see Chapter 4.5).

Graph 08: Revenue generation in \$m for three rates from 2015 to 2045



Strategy for the calculations:

To cover a broader spectrum of financing and financial tools and to be on a conservative side of expected results, we use three levels of base budget for just one rate of \$0.14 per kWh.

Table 11: Survey of budget levels and two variants (for one rates*)

Budget levels:	Budget base:	Rates \$/kWh	Variant 1 (There type of loans)	Variant 2 (There type of loans and Securities)
A	\$45m	0.14	Start-up	Start-up
B	\$90m	0.14	Double	Start-up and Securities
C	\$135m	0.14	Triple	Double and Securities

Comments: * The reason why the rate of \$ 0.14 / kWh was selected is entirely pragmatic and led us to the effort to keep other calculations within realistic limits. On the other hand the FM demonstrates how simply the project portfolio results we can improve. In other words the SPC Concept is open and flexible for needs of decision makers on local and central levels.

Legend to Table 11:

Variant 1: Based on synergy of financial loans (soft loan for a generation, long-term loan, and commercial loans) used as an initial capital and financial leveraging of the RLF of the SPC utility.

Variant 2: Based on a synergy of financial loans and securities. Securities are used for investment from production chains to add value to the Philippine product on domestic and world markets.

Comparison of:

Variant mix of A1 and A2: Start-up phase has no alternatives (the "Start-up" as a necessary condition for success)

Variant mix of B1 and B2, and both C1 and C2: the most feasible is a combination of both (loans and securities)

Start-up Budget

Power Plants

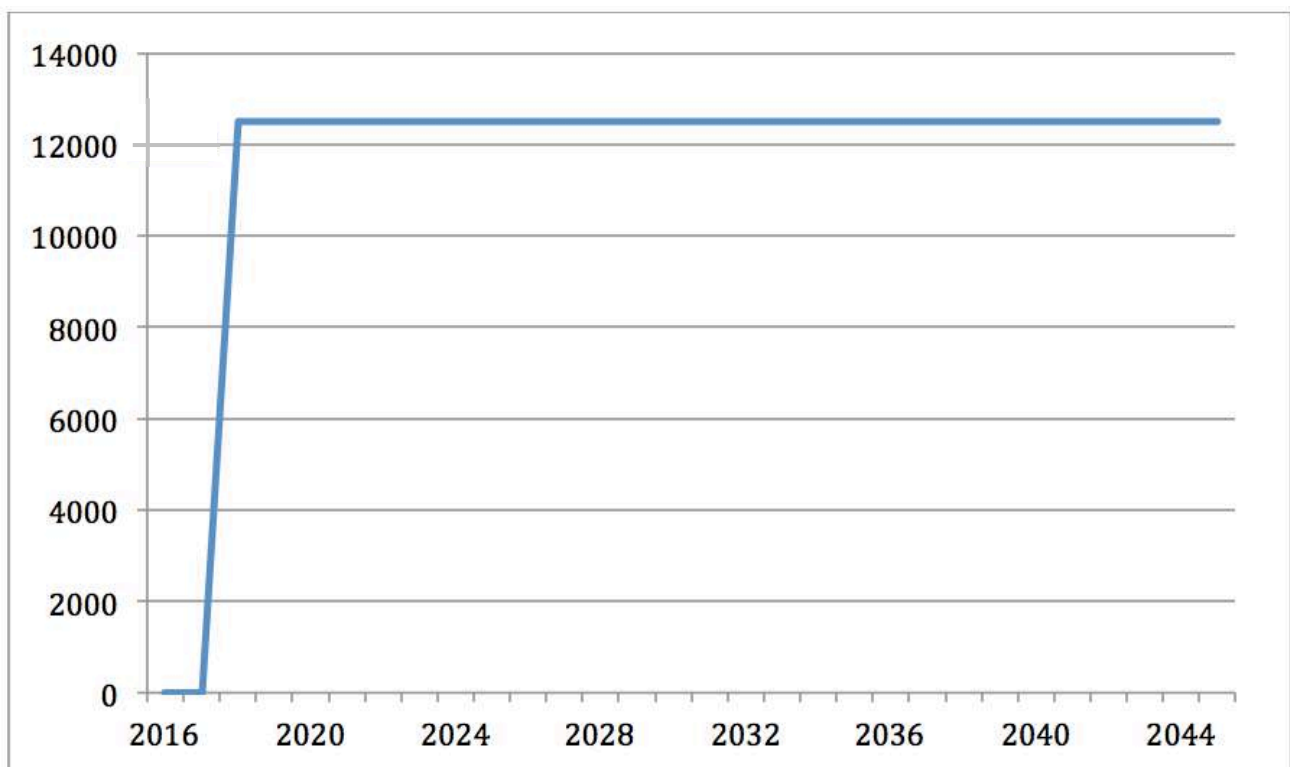
The example of construction and operation of a power plant (Table 3) has the initial investment of \$30m in 2016. The turning point occurs in 2025 and the first revenues are expected in 2018. Investment returns starts after 10 years.

By the year 2045, fully equipped power plants will produce electricity for 28 years (2-3 years construction and losses due to maintenance and retrofitting of individual power customers will be compensated from alternative sources, provided by the SPC Utility).

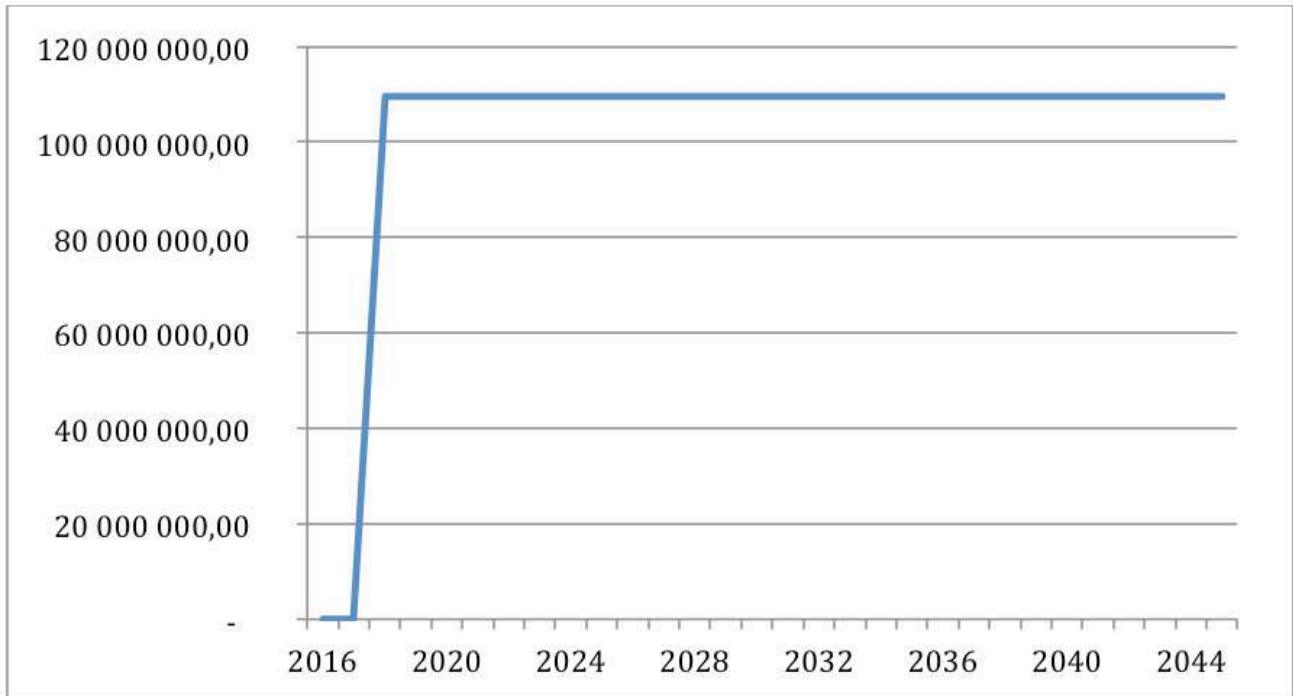
In 2045, it is expected that the power plants will produce and sell electricity worth \$7.5m and the total profit over the whole period of 30 years is expected to be at \$80m.

A survey of installed capacity in kW and production capacity in kWh is presented. Both capacities with needed services, with full maintenance and planned refurbishments of power plants for 30 years are presented on following graphs:

Graph 09: Installed capacity of 12 500 kW (12.5MW) per 1m inhabitants (12.5W per capita)



Graph 10: Installed capacity of 109 500 000kWh per 1m inhabitants (109.5 kWh per capita)



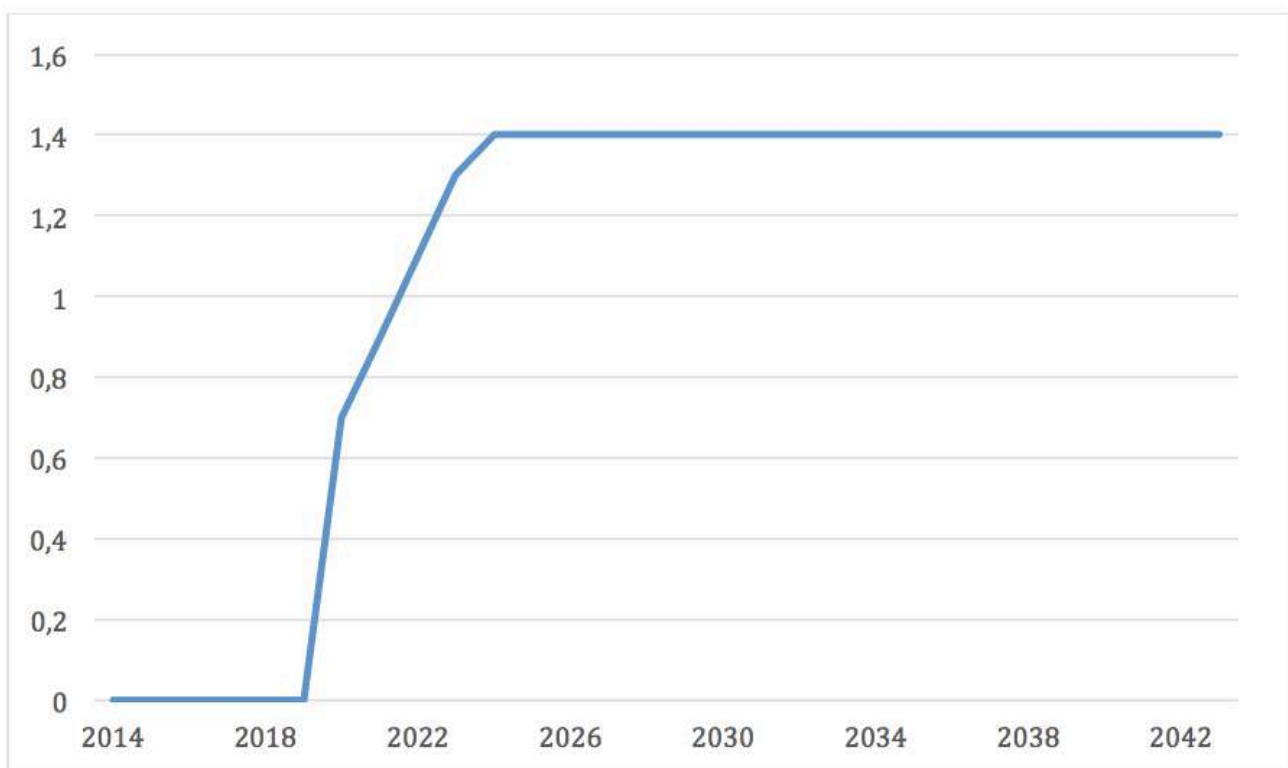
Bamboo plantation

Revenues of bamboo plantations of capacity of 500H are presented. The example of planting and harvesting of bamboo plantations has the initial investment of \$2.5m in 2016.

Bamboo needs 7 years of maturity and the turning point occurs in 2023. The first revenues are expected in 2021. Investment returns starts after 10 years.

Bamboo management in the province will produce goods for 23 years (cost on harvesting and of other services is included). In 2045, it is expected that the 500H plantations will produce and sell products worth \$1.4m and the total profit over the period of 30 years is expected at \$22m.

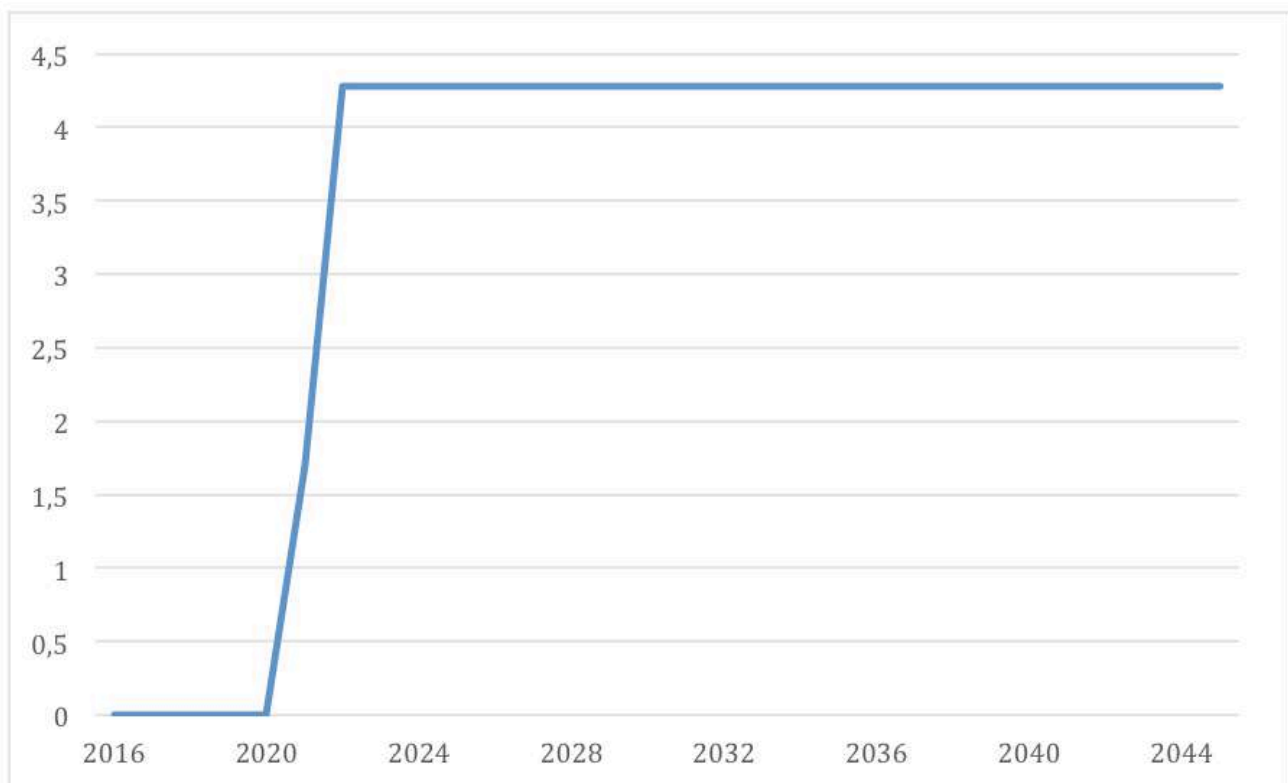
Graph 11: Yields in \$m for 500H of bamboo plantations



Coconut plantation

Revenues of coconut plantations on 300H are presented. The example of planting and harvesting of coconut plantations has the initial investment of \$7.5m in 2016. Coconuts need 7 years of maturity and the turning point occurs in 2025. The first revenues are expected in 2021. Investment returns start after 10 years. The coconut management will produce goods for 23 years (cost on harvesting and on other services is included). In 2045, it is expected that the 300H plantations will manage and sell products of worth \$4.3m and the total profit over the period of 30 years is expected at \$64m.

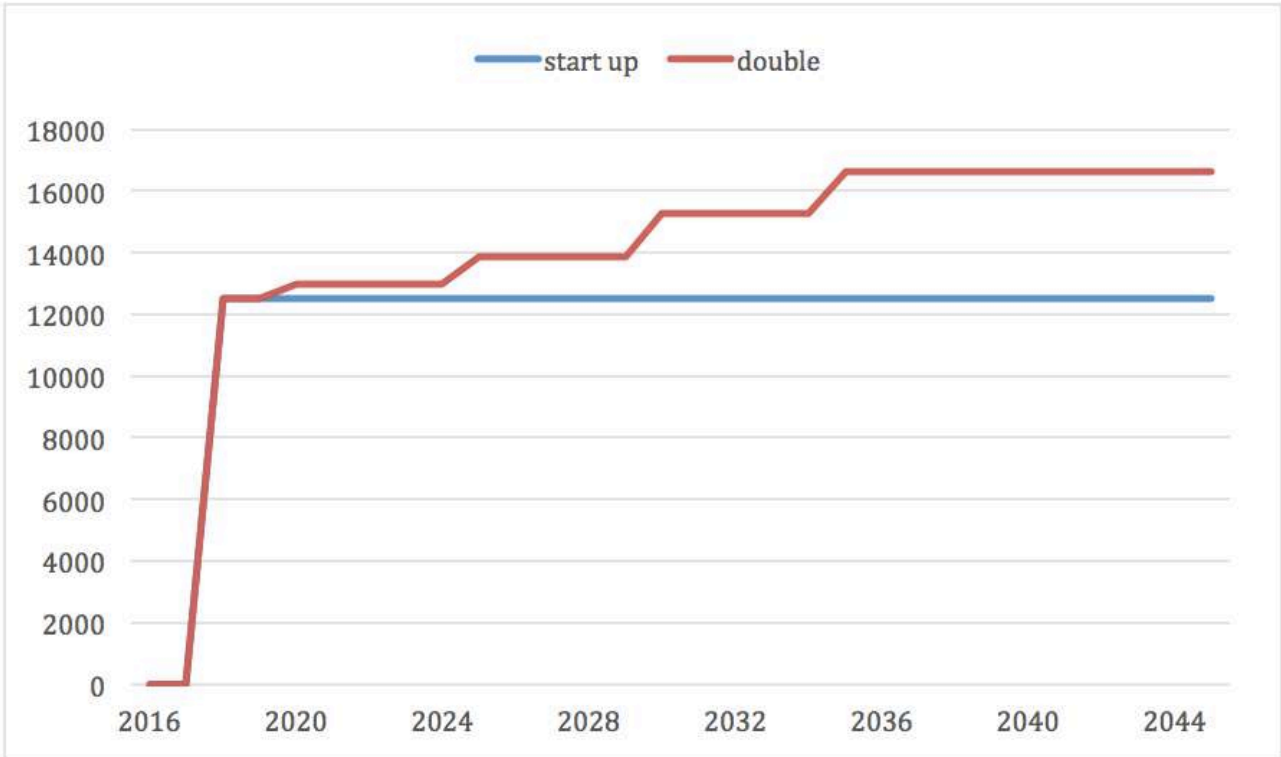
Graph 12: Yields in \$m for 300H of coconut plantations



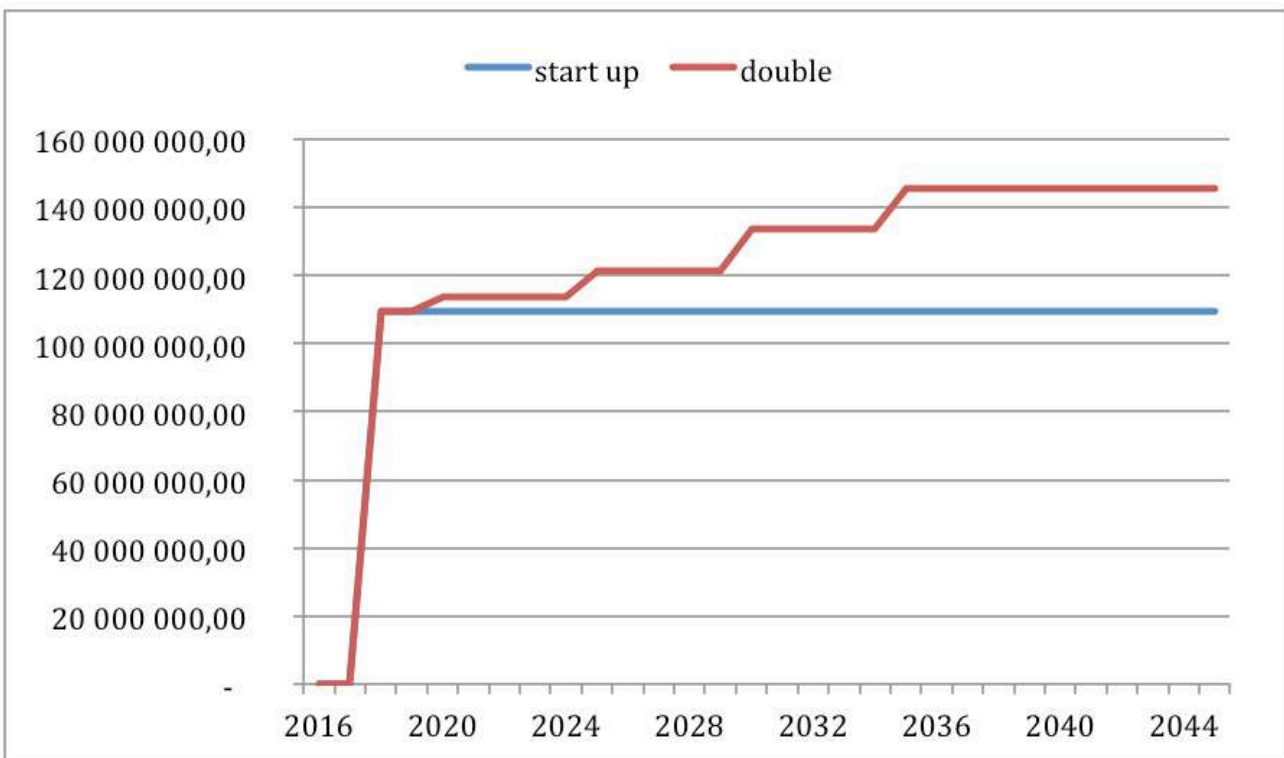
Double budget

The example of construction and operation of power plants (Table 3) has the initial investment of \$30m in 2016, and a further \$10m by commercial loans during the next 30 years (divided into years 2020, 2025, 2030, 2035). This is a combination of the start-up stage and commercial loans. In 2045, it is expected that the plant will produce and sell electricity worth \$10 m and the total profit over the entire period of 30 years is expected to be at \$103m. A survey of installed capacity in kW and production capacity in kWh is presented. Both capacities with needed services (with full maintenance and planned refurbishments of power plants for 30 years):

Graph 13: Installed capacity of 16 625 kW (16,625 MW) per 1m inhabitants (16,625 W per capita) in 2045



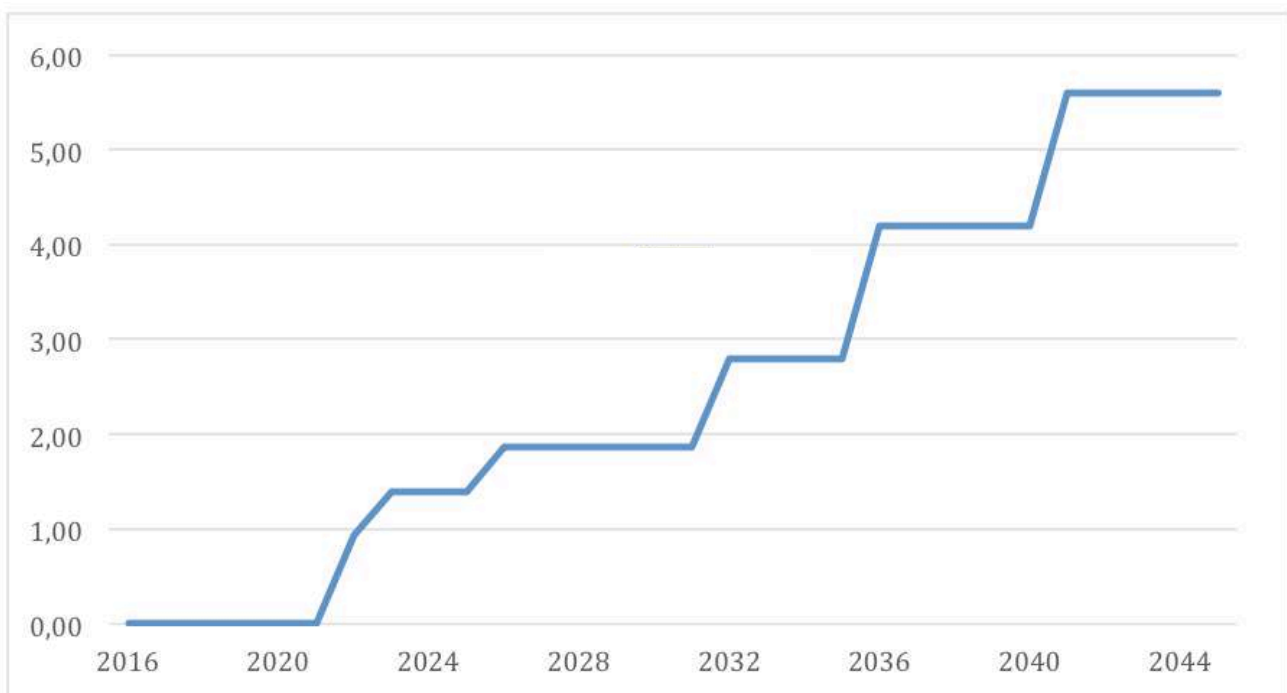
Graph 14: Installed capacity of 145 635 000 kWh per 1m inhabitants (145, 635 kWh per capita) in 2045



Bamboo plantation

Revenues from bamboo plantations on 2000 H are presented. The example of planting and harvesting of bamboo plantations has the initial investment of \$2.5m in 2016 and \$7.5 m during the next 30 years (2020, 2025, 2030, and 2035). Investment return comes in the year (2027). In 2045, it is expected that the 2000H plantations will produce and sell products worth of \$5.6m and the total profit over the entire period of 30 years is expected to be at \$47m.

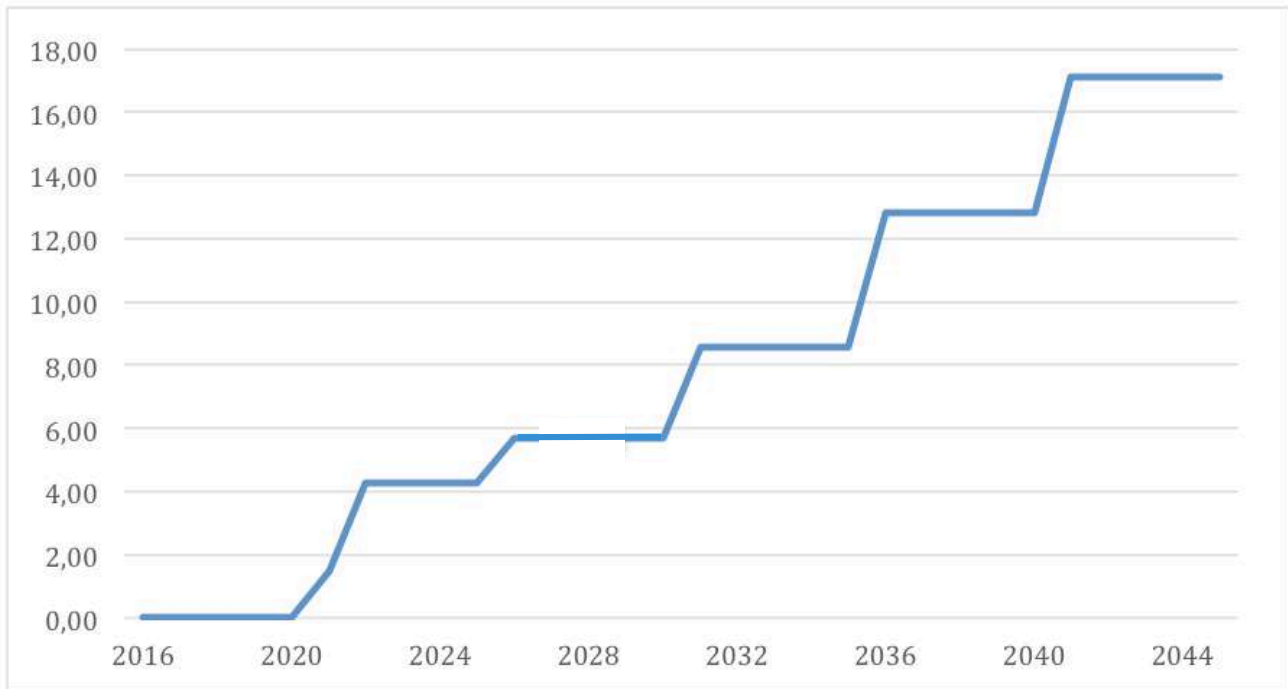
Graph 15: Yields in \$m for 2000H of bamboo plantations



Coconut plantation

Revenues of coconut plantations on 1200H are presented. The example of planting and harvesting of coconut plantations has the initial investment of \$7.5m in 2015 and \$7.5 m during the next 30 years (2020, 2025, 2030, and 2035). Investment return comes in 2027. In 2045, it is expected that the 1200H plantations will produce and sell products worth of \$17.1m and the total profit over the entire period of 30 years is expected to be at \$127m.

Graph 16: Yields in \$m for 1200H of coconut plantations

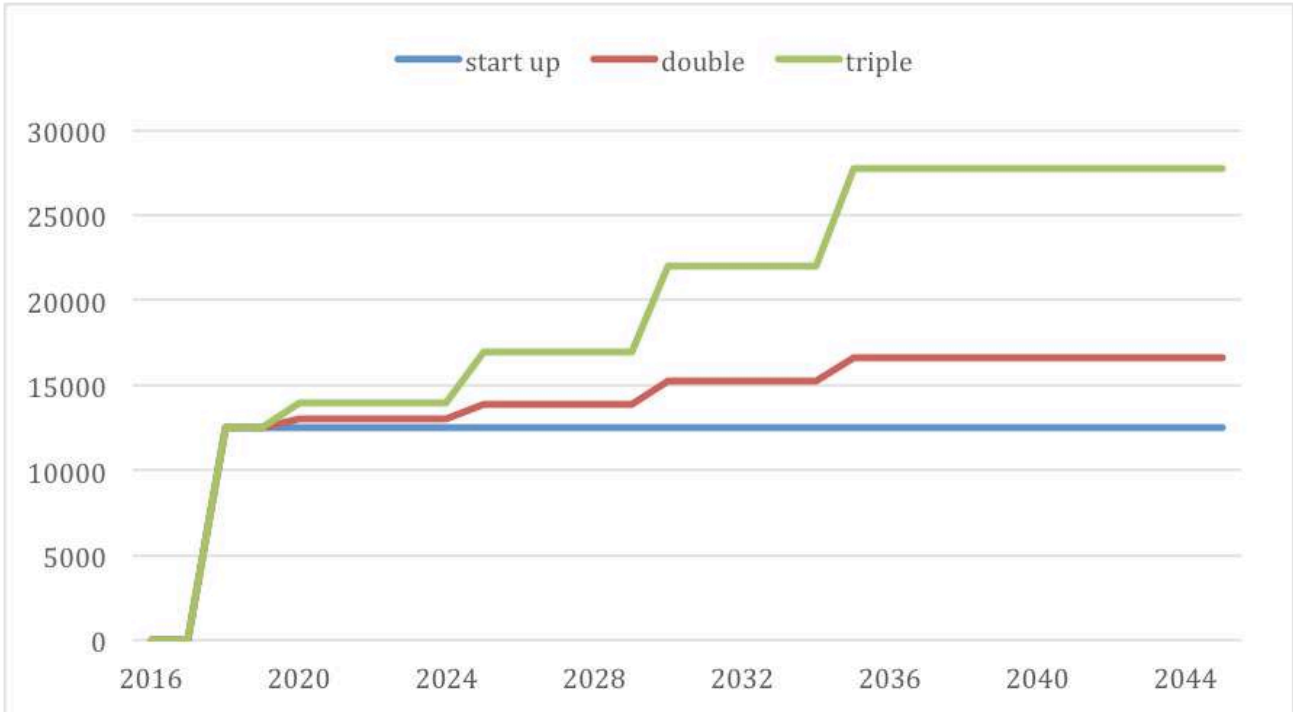


Triple budget:

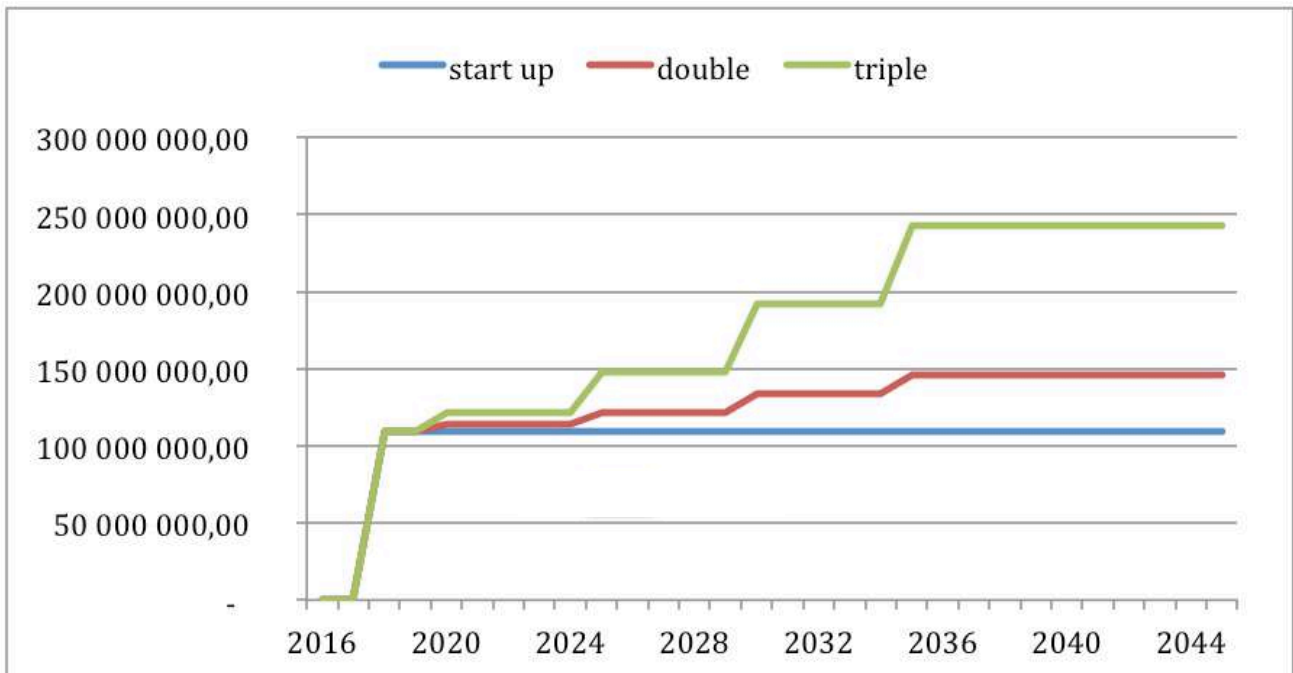
The example of the construction and operation of power plants (Table 3) has an initial investment of \$30m in 2016, and a further \$10m by commercial loans during the next 30 years (divided into years 2020, 2025, 2030, 2035). This is a combination of the start-up stage and commercial loans in a doubled value.

In 2045, it is expected that the plant will produce and sell electricity worth \$12,6m and the total profit over the entire period of 30 years is expected to be at \$126m. A survey of installed capacity in kW and production capacity in kWh is presented. Both capacities with needed services (with full maintenance and planned refurbishments of power plants for 30 years):

Graph 17: Installed capacity of 27 763 kW (27,763 MW) per 1m inhabitants (27,763 W per capita) in 2045



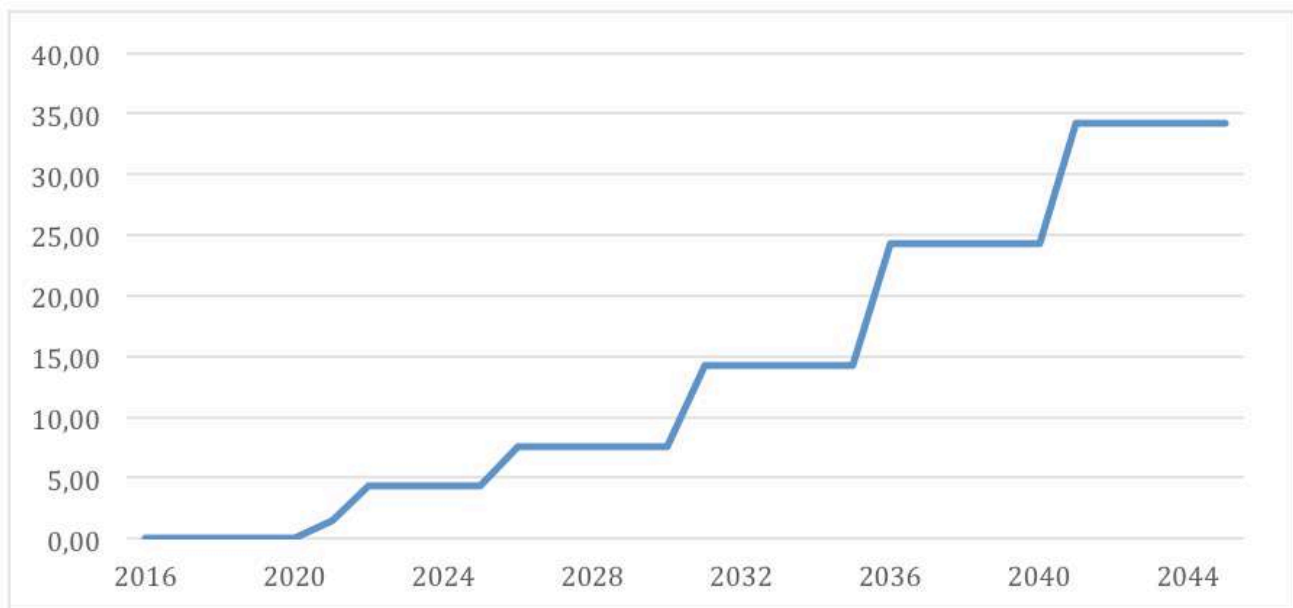
Graph 18: Installed capacity of 243 210 450 kWh per 1m inhabitants (243,21kWh per capita) in 2045



Coconut plantation

Revenues of coconut plantations on 2400H are presented. The example of planting and harvesting of coconut plantations has an initial investment of \$7.5m in 2016 and \$52.5m over the next 30 years (2020, 2025, 2030, and 2035). Investment return comes in 2026. In 2045, it is expected that the 2400H plantations will produce and sell products worth of \$34m and the total profit over the entire period of 30 years is expected to be at \$215m.

Graph 19: Yields in \$m for 2400H of coconut plantations



Revenue summary:

The FM has two options. The first is reinvesting of all revenue in the power plant and bamboo and coconut plantations and final bamboo and coconut product's chain development. In this case the SPC Utility will be focused only on drivers e & m. But the SPC Concept is a tool for improvement in quality of life and solution to climate change impacts, allowed by synergy effects among three drivers (e & w & m).

Table 12: Survey of revenues

Stages:	Added Value By:	Power Rates \$/kWh	Plantation in Hectares	BOT Securities In \$m	Variant 1 Loans In \$m	Variant 2 Loans and Securities
\$45m Start-up	Electricity	0.14	-	-	\$80m	
	Bamboo	-	500	-	\$22m	
	Coconuts	-	300	-	\$64m	
	TOTAL:	-	800	-	<u>\$166m</u>	-
\$90m Double	Electricity	0.14	-	-	\$103m	\$80m
	Bamboo	-	2000	-	\$47m	\$22m
	Coconuts	-	1200	-	\$127m	\$64m
	Securities	-	-	159	-	\$159m
	TOTAL:	-	3200	-	<u>\$277m</u>	<u>\$325m</u>
\$135m Triple	Electricity	0.14	-	-	\$126m	\$103m
	Bamboo	-	2000	-	\$47m	\$47m
	Coconuts	-	2400	-	\$215m	\$127m
	Securities	-	-	159	-	\$159m
	TOTAL:	-	4400	-	<u>\$388m</u>	<u>\$426m</u>

4.7 Opportunities for water-retention management

The SPC Utility will generate and reinvest portion of money between 2020 and 2045 into water retention management project:

- Reduction of floods (at rivers, lakes, and sea),
- Earth slides
- Water management (drinking, service water, irrigation, water treatment)
- Rivers and lakes (e.g. impacts of squatters)
- Protection of seaboard of islands
- Construction of barriers and planting of forest
- Maintenance of the above infrastructure.

For investment project in the water retention management The SPC Utility will use financial sources indicated in Table 13.

Table 13: Survey of financial opportunities for investment in water retention management

Stage:	Start-up	Double	Triple
\$45m	<u>\$166m</u>	-	-
\$90m	-	From <u>\$277m</u> to <u>\$325m</u>	-
\$23m	-	-	From <u>\$388m</u> to <u>\$426m</u>

Legend to Table 13:

- a) Financial sources earned by the SPC utility and invested into water retention management
- b) If the same financial sources will be co-financed by LGUs' public budgets and the participatory budgeting will used, the total amount can be doubled if the co-financing coefficient is 50%.

4.8 Opportunities for job creation

Methodology of calculation and results of the first approximation is presented by:

- a) The share of labour in the labour market, which creates the PP project
- b) The PP funding and labour opportunities

Assumption:

The sample of a province with 1m inhabitants (see Table 1) needs financial opportunities for 600 000 (60%). The PP has the ambition to create jobs for 25 000 - 50 000 inhabitants, i.e. for 5% - 10% of the entire potential demand. The broad range of 5% to 10% is acceptable as compensation for of a great simplification of the growth of population in the province (over the past 30 years (1985 – 2015) the population doubled).

Table 14: The share of jobs opportunities in the labor market in a province

Portfolio	Share	Characteristics	New Jobs
(e)	5%	Specialist, Electrician, Erector, Inspector, Handyman	1 750 - 2 500
(w)	20%	Specialist, Designer, Geologist, Builder, Worker, Digger	5 000 - 10 000
(m)	30%	Chief, Planter, Farmer, Workers, Driver, Store men,	7 500 - 15 000
MSME	35%	Mechanic, Planner, Workers, Supervisor,	8 750 - 17 500
Services	10%	SPC Utility, LGUs administrators, Accountants, Auditors	2 500 - 5 000
TOTAL:		All professions	25 000 – 50 000

Conclusion:

Between 2020 and 20145, opportunities for job growth range from 25,000 to 50,000 jobs. This estimate applies to the start-up stage. For double and triple stages with higher investment, two following effects have been taken into account:

1. Growth in demand for plantation workers;
2. Greater automation and growth in productivity in plantation operation and in MSMEs.

Both influencers interact in such a way that they in essence offset each other so we can focus only on impacts of population growth.

While the population on the Philippines doubled over the past 30 years and different projections for future population growth exist, we stay on a conservative side and accept the higher limits as shown in Table 14: A mix of 50,000 new jobs in a province (every year between 2020 and 2045). More detailed analysis and predictions should be part of the PP Prospectus and the Feasibility Study.

4.9 Comments on results and tables

Examples of institutions that address problems of global climate change:

- United Nations Framework Convention on Climate Change (UNFCCC)
- Green Climate Fund (GCF)
- Climate Policy Initiative (CPI)
- Sustainable Energy for All (SE4ALL)
- Climate Change Commission of the Philippines

An example: the Green Climate Fund (GCF). It is a fund within the framework of the UNFCCC founded as a mechanism to transfer money from the developed to the developing world, in order to assist the developing countries in adaptation and mitigation practices to counter climate change. The GCF is based in the new Songdo district of Incheon, South Korea. It is governed by a Board of 24 members and initially supported by an Interim Secretariat.

The GCF will support projects, programs, policies and other activities in developing country Parties using thematic funding windows. It is intended to be the centerpiece of efforts to raise Climate Finance of \$100 billion a year by 2020.

Remarks by the authors of the SPC Concept-based Pilot Project (PP) Proposal to be incorporated into the Prospectus and Feasibility Study for preparation of PP preparation:

1. Share of the PP investment in the \$100 billion target for financing of the Climate Change project by governments by 2020 represents only 0.03%.
2. SPC Concept-based PP uses no grants, no subsidies, only contribution of capital to the SPC Utility (via Revolving Loan Fund) which is to be invested and reinvested in project portfolio with the overall profit up to 900%.
3. The question “Who and how much will contribute to financing of Climate Change-related needs” can be tuned into answer “Generate new jobs and more money through financing of Climate Change-related projects at local levels”.

Why citizens in a province should participate in preparation and implementation of the Pilot Project? This is also a significant opportunity for investors, predominantly from the local area. Sample of a province (Tab. 1) with 200,000 households which represent high, middle and low incomes families in a share (1:190:808). This is a pool of investors and participants in SPC Concept-based Pilot Project:

A message for the high-income category (HIC):

When you invest in a gold mine shares or diamond mining operation you get an offer of up to 900% return. You buy your share for \$1 million and you might get \$9 million sometime in a future, if the operation will be sufficiently profitable while you have no influence over the turn of the events.

With investment into SPC Concept-based infrastructure projects you invest into place where you grew up or live. When you buy your \$1 million of securities in capital investment in the SPC Utility you get the opportunity to influence the outcomes, while you ultimate profit is also \$9 million. You have the basic parameters of your investment (time, money, outcomes) under your control and you and members of your family have also other opportunities that investment close-to-your-home offers.

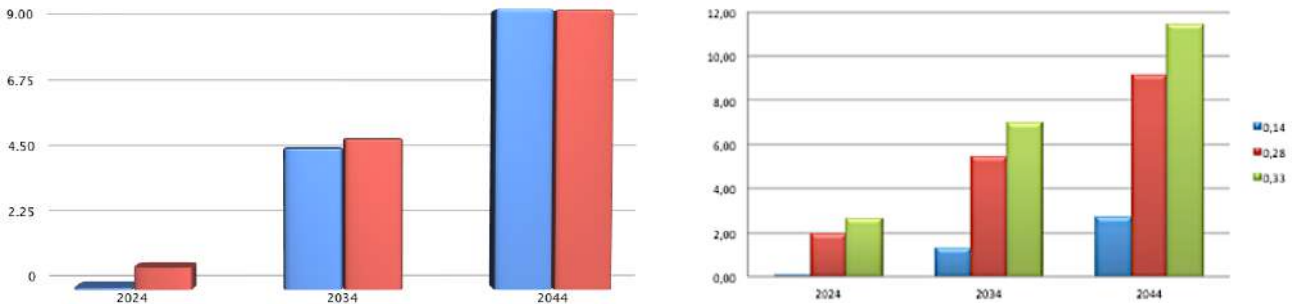
A message for the middle-income category (MIC):

The SPC Concept-based infrastructure projects create new jobs for the middle class in whole spectrum of professions and open up opportunities for financial participation in acquisitions of micro, small and medium enterprises in a place where you live.

A message for the low-income category (LIC):

The SPC Concept-based infrastructure projects create new jobs for workers in administration, services, and manufacturing and open opportunities for entrepreneurship (privately-owned workshops and services) and for participation in acquisitions of by buying security papers of micro, small, and medium business. All in a province where you live and work.

Graf 20: Yields from generation and sale of electric power (three rates are compared) and Yields from bamboo and coconut plantations.



Citizens in all three categories as well as other investors have a chance to add value to the SPC Utility while making an attractive investment which gives them – by 2045 - \$9 for every 1\$ invested in 2015.

This is an investment strategy for three generations (children, parents, and grandparents). It is also opportunity to help to have better education, healthcare, better-paying jobs, and even entertainment in a community. It is a way to local pride, public administration leadership opportunities and substantially improved quality of human live.