

Powering Indonesia's Rural Development Business Plan for Impact Investing in Mini Hydropower



Produced During GIFT's Global Leaders Programme
Hong Kong, West Java & Jakarta, Oct 2013

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1. EXECUTIVE SUMMARY

Executive Summary (1)

- Indonesia is the world's 4th most populous nation and is comprised of over 17,000 islands – providing electricity to its 250 million people is a significant challenge.
- In 2011 the government committed to increasing the share of renewable energy from 4.3% of primary energy supply in 2005 to 25% in 2025. As of 2010 renewable energy, including hydropower, still made up only 6.9% of the nation's energy mix.
- Independent Power Providers (IPP) in Indonesia are 100% privately owned, rely primarily on coal, and neglect to invest in serving rural communities because of a high perceived risk requiring high returns.
- The national grid is expanding and the state power company, PLN, is obliged by law to purchase all small-scale and medium-voltage power produced by IPPs providing a Power Purchase Agreement (PPA) is in place. PLN has an increasing interest in offering preferential tariff rates to IPPs producing renewable energy and actively engaging the community in the project.
- **This context presents an opportunity for a new business model which promotes renewable energy, empowers communities through ownership and factors in the true cost of valuable natural resources by paying for their eco-system services.**

Executive Summary (2)

- This business plan seeks to attract Impact Investment to establish a new company – ***NusaTerang*** – which will generate renewable energy that is environmentally sustainable and financially viable in partnership with local communities.
- NusaTerang will leverage IBEKA's experience, expertise and national network of rural communities developed over 20 years and 66 community led small-scale hydropower projects.
- NusaTerang will engage local communities during the project period, offering them a stake from day one, with the eventual goal of 100% ownership by the community.
- Through community ownership and by paying for eco-system services, NusaTerang will seek to capture premium tariff rates from PLN from sale of power to the grid.
- **Initial investment of US\$30 million will fund five projects totaling 15MW, have a rate of return around 5.5 – 6.5% (base case, no preferential tariff rate), and provide approximately US\$500,000 per year to local communities which may be deployed for social and infrastructure projects as desired by the community.**

GIFT Global Leaders Programme

In October 2013, 22 participants from ten countries and fifteen organisations worked closely with IBEKA to produce this business plan.

After a week of classroom sessions in Hong Kong, the group travelled to Jakarta and Mt. Halimun National Park in West Java to meet business leaders, including the President Director of PLN, community representatives from the Kasepuhan Kingdom and IBEKA's leadership team to gather the insights and data required to develop the unique business model that follows.





2. INTRODUCTION & BACKGROUND

Indonesia Overview

Country Information

Capital City: Jakarta
Land Area, km²: 1,811,569
Number of Islands: ~17,000
Population(2013): 251,160,124
Population Rank in the world: 4th

Social

Unemployment Rate (2012), %: 6.1
Poverty Rate (2012),%: 11.7
Rural Population (2010), % of population: 56
Poverty Rate in Rural (2012), %: 15.12%

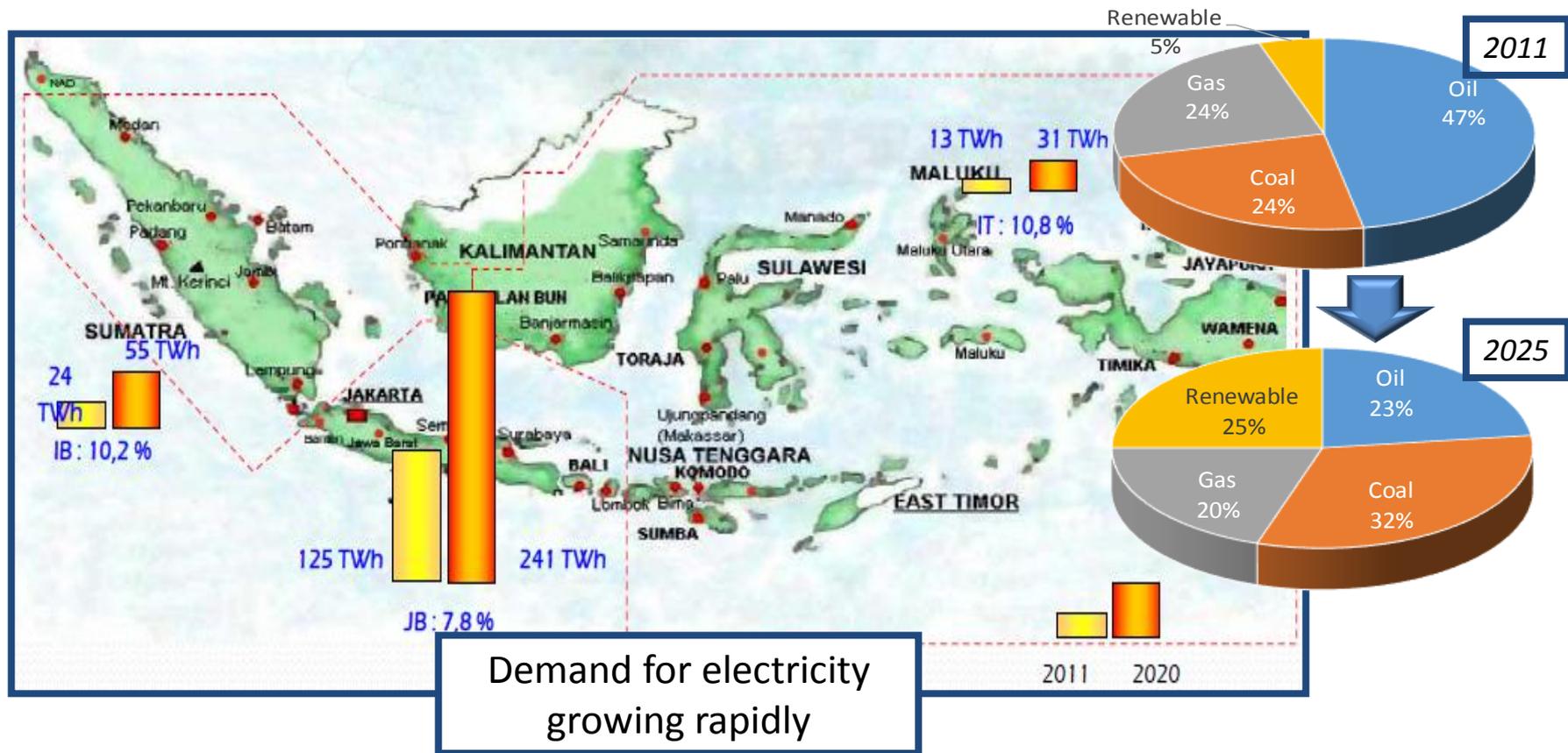
Economic

GDP (2012), billion US\$: 894.9
GDP Growth (2012), %: 6.2
GDP Per Capita Rank in the World: 157th
Industry (2012), % of GDP: 46.5
GDP Rank in the world: 16th
GDP Per Capita (2012), US\$: 5,000
Service (2012), % of GDP: 38.1
Agriculture (2012), % of GDP: 15.4

Home to the world's third largest middle class, massive economic potential

CIA, the World Factbook 2013, <http://www.cia.gov/library/publications/the-world-factbook/geos/id.htm>
BPS, Trends of Selected Socio-Economic Indicators of Indonesia, August 2013, http://www.bps.go.id/eng/download_file/booklet_leaflet/Boklet_Agustus_2013.pdf
Nielsen: Reaching Indonesia's Middle Class

Indonesia Energy Profile (1)



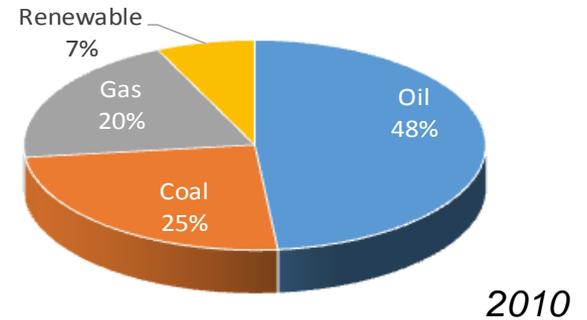
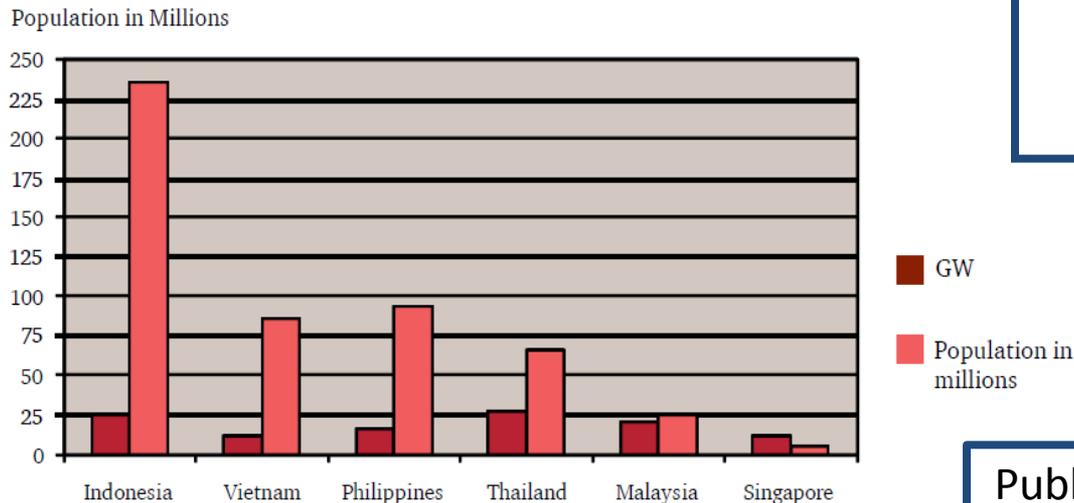
Indonesia presents significant potential for investments in renewable energy

PT PLN (2012), *Electricity Power Development in Indonesia*
 Ministry of Energy and Mineral Resources (2012), *Energy Efficiency and Renewable Energy in Indonesia*

Indonesia Energy Profile (2)

The average growth rate of energy consumption is 7% - 9% per year

Installed Capacity v. Population



New policy encourages renewable energy utilisation in rural areas

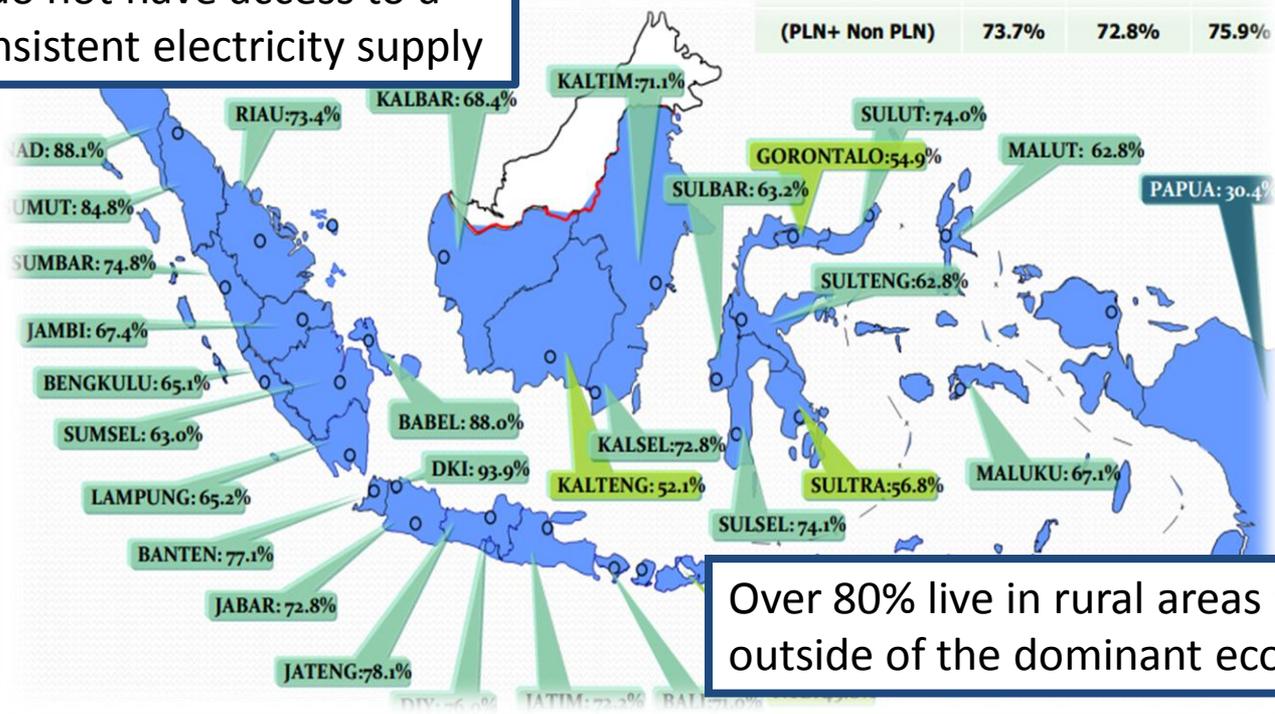
Public access to energy is still limited especially in rural / remote area

Rising demand and shift to renewable energy requires new business models

Ministry of Energy and Mineral Resources (2012), *Energy Efficiency and Renewable Energy in Indonesia*
 PwC (2011), *Electricity in Indonesia-Investments and Taxation Guide 2011*

Rural Electrification Challenges (1)

Over 70 million Indonesians do not have access to a consistent electricity supply



Electrification ratio (2012)

Category:

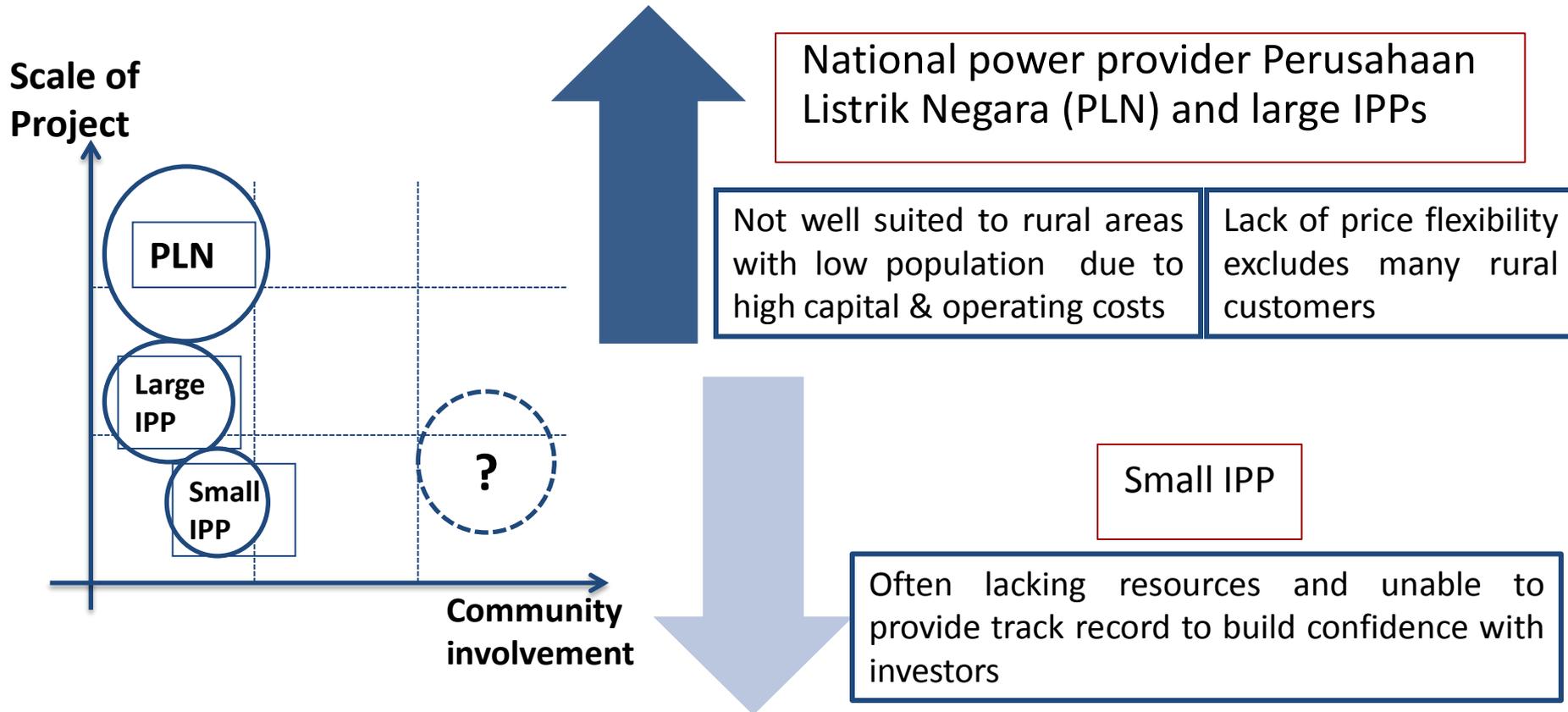
- >60%
- 41-50%
- 20-40%

Over 80% live in rural areas and over half live outside of the dominant economic centers

Rural electrification is a challenge mainly due to geography and infrastructure

PLN (2012), *Electricity Power Development in Indonesia*
 The World Bank (2005), *Electricity for All: Options for Increasing Access in Indonesia*

Rural Electrification Challenges (2)



Existing providers unable to overcome rural electrification challenges

PLN (2012), *Electricity Power Development in Indonesia*
The World Bank (2005), *Electricity for All: Options for Increasing Access in Indonesia*

IBEKA – The People Centered Economic & Business Institute

- Established in 1992, IBEKA is a pioneer and world leader in using small scale hydropower projects to promote sustainable community development and economic empowerment.
- Instrumental in shaping Indonesian policy around small-scale renewable energy, their approach has been refined over two decades and 66 community-led hydropower projects.
- The organisation received the [2012 Ashden Award](#) for Sustainable development and in 2011 Executive Director Tri Mumpuni was awarded the prestigious [Ramon Magsaysay award](#).



Strategic partner with proven track record in small scale hydropower development



3. OBJECTIVES

Objectives



To design a business model to address the gap in rural electrification and by doing so support Indonesia's socio-economic development



To support IBEKA's mission, reduce its reliance on donors and move to a commercially viable operating model which is attractive to investors



To create a renewable energy business that provides returns for investors and local communities and promotes natural resource conservation



A new business model, economically viable for rural communities

Approach

To create a commercially viable and self-sustaining business platform that will boost investor confidence and attract impact investments, ideally from within Indonesia. To reduce IBEKA's dependence on donors and grants which limits scalability.



To leverage IBEKA's strengths and allow the new business to provide consistent returns to investors and communities, thus contributing to rural economic and social development.



To engage and involve the community throughout the project lifecycle making them stewards of their resources base.

To develop a new business model which incorporates the principle of paying the true cost for valuable natural resources and their eco-system services.

Empowers communities and conserves ecosystems to achieve sustainable growth



4. BUSINESS MODEL

Overview (1)

- Given Indonesia's projected growth, the increasing demand for electricity and the government's commitment to increasing renewable energy production, particularly in rural areas, there is clearly a opportunity for investments in this sector.
- IBEKA has the national network and technical expertise to execute mini hydropower projects in partnership with local communities, but is constrained by its dependence on donors and grants.
- It is proposed to establish a **new holding company** to both meet this need and take advantage of the opportunity.
- The analysis shows that this company will require initial capital of US\$30 million to launch five rural mini hydropower projects totaling 15MW, two of which are ready for launch.
- US\$30 million will provide investors an 80 per cent stake in the holding company. Capital is expected to come from individual, institutional or impact investors who have an interest in including in their portfolio projects that address social and environmental issues whilst providing reasonable financial returns.
- Based on their pipeline of projects and community and government relationships, IBEKA will receive a 20 per cent stake in the holding company.

Overview (2)

- The holding company which will be established in Indonesia as a Private Company Limited (PT) under Law 40/2007, will provide 100 per cent of the CAPEX required to launch mini hydropower projects and also receive an 80 per cent equity stake in standalone Project Companies.
- Community cooperatives will receive a 20 per cent stake in these Project Companies in exchange for acting as stewards of the catchment area and providing labor for construction, operations and maintenance of the plants.
- A unique element of this business model is the fact that it will conserve valuable natural resources by paying for their eco-system services – this, along with community ownership makes it possible to capture a premium tariff rate for sale of power to the national grid.
- The holding company expects to provide investors with a minimum 5.5 – 6.5 per cent return p.a. and will transfer ownership of individual Project Companies to local communities over time.

New Holding Company – US\$30 million initial funding



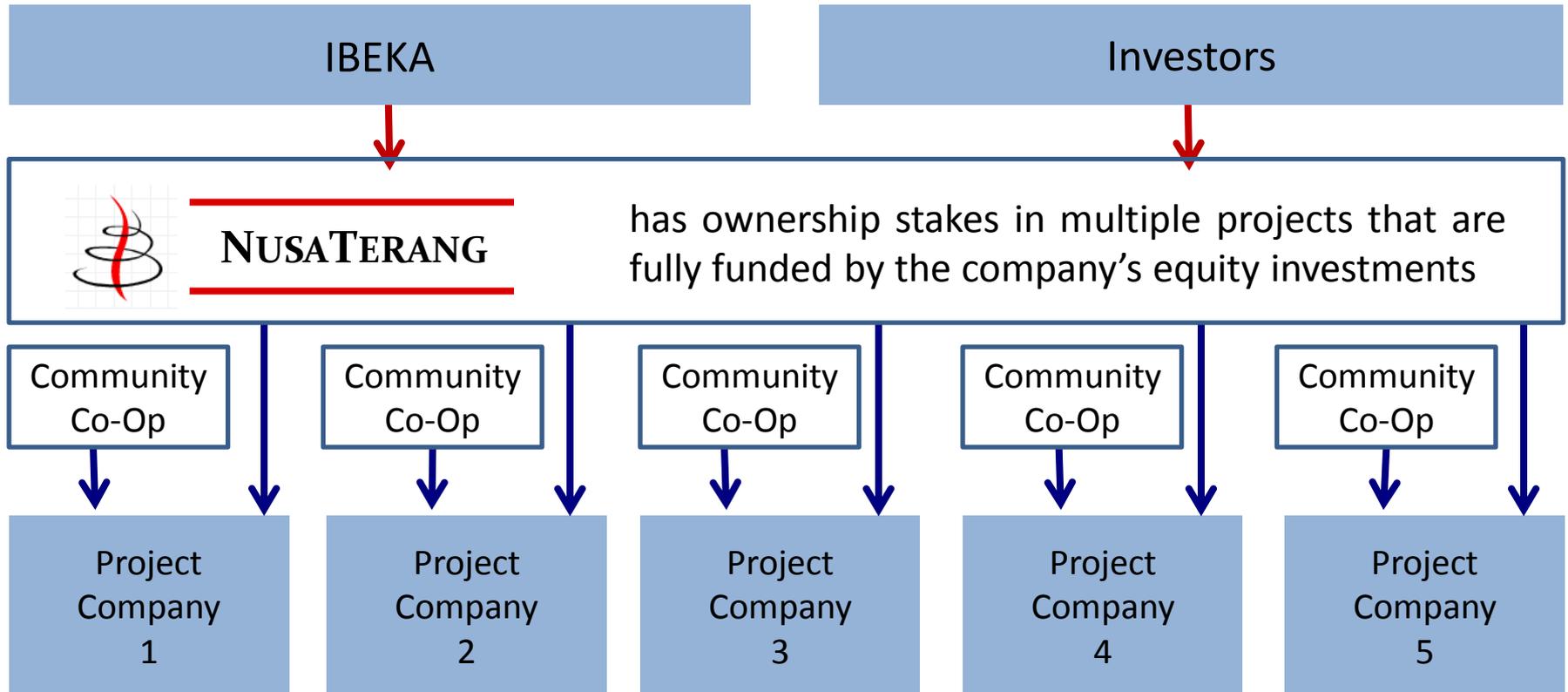
NUSATERANG

POWERING INDONESIA'S RURAL DEVELOPMENT

One translation of NusaTerang is *Lighting the Homeland*

A Financially Viable Social Business

NusaTerang will generate **financial, social *and* environmental returns** to benefit local communities, investors and Indonesia as a whole.



NusaTerang & IBEKA partnership ensures community is actively engaged

NusaTerang/IBEKA Project Model

NusaTerang will develop renewable energy projects in five phases, leveraging IBEKA's proven strength in community development through small scale hydropower.

NusaTerang/ IBEKA project model



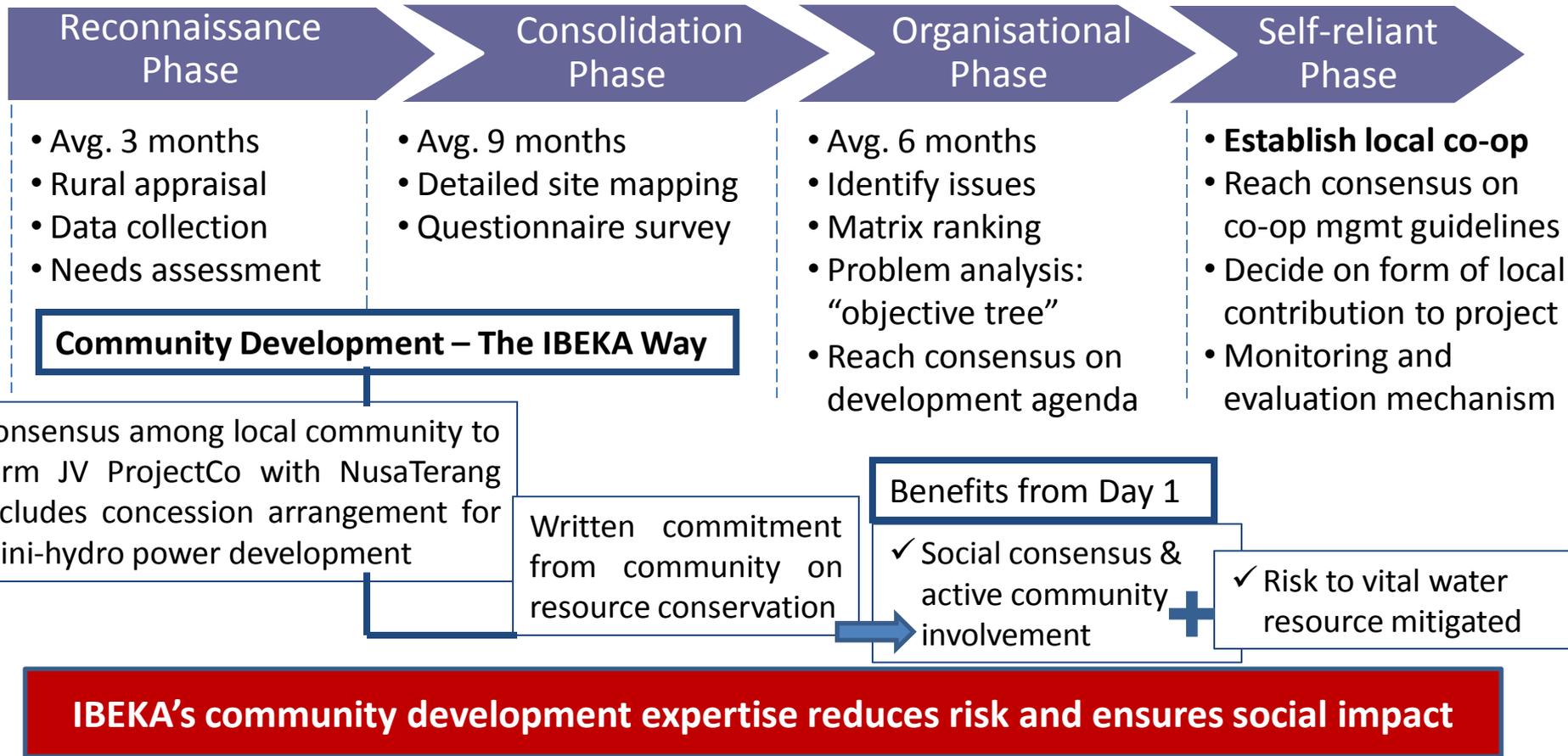
The traditional IPP project model



New model provides better social & financial return to local communities

Phase One: Community Development

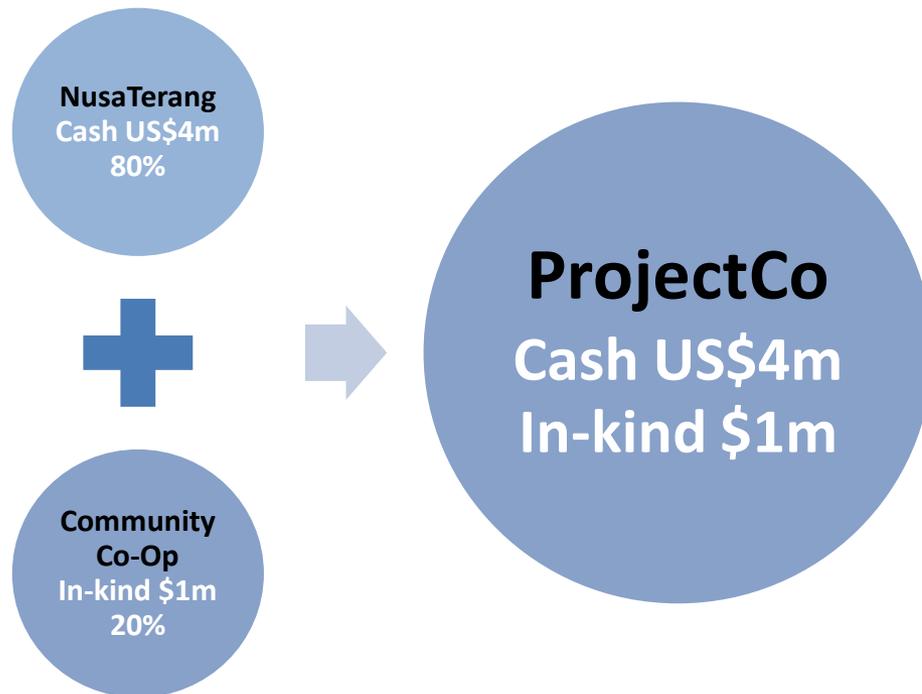
Through 66 projects over 20 years, IBEKA has developed a structured, proven approach for building consensus with local communities around developing renewable energy projects.



Phase Two: ProjectCo & Concession



Phase two facilitates equity stake for the community and the assurance of 100% community ownership over time. It also places a value on the eco-system services of water and forest resources. The community will be represented by a local cooperative, many of which have already been established in communities where IBEKA has existing projects.



Example: US\$5m Project

US\$1m “in-kind” from community includes:

- ✓ Concession on land and valuable water resources
- ✓ Labour during construction
- ✓ Operation and maintenance
- ✓ Preservation of catchment area i.e. through tree planting, efficient irrigation, etc.

Community stake through “sweat equity” & pricing of eco-system services

Phase Three: Construction



ProjectCo will use strategic partners to ensure social & environmental benefits and actively involve local communities during the construction of the project.

IBEKA

Key Partner and Project Manager

Professional service

Mechanical/Electrical Installation

- **Turbine** manufacturer
- **Controller** manufacturer
- **Generator and switch**

Community involvement

Civil construction

- **Skilled workers** required in mini-hydro construction
- **Local community involvement** in non-skilled work - e.g. transportation of construction materials, brick layers

Construction phase boosts local employment and sense of community ownership

Phase Four: Operation & Maintenance

ProjectCo will work with domestic and international strategic partners to conduct programs which enable knowledge transfer and community capability development.

Focus areas for developing capabilities within the local communities will include:

- Civil works maintenance;
- Preservation of catchment area;
- Management and accounting;
- Hydro power generator operation;
- Hydro power generator maintenance.

IBEKA



PT. PLN

ANDRITZ
Hydro



KEMENTERIAN KEHUTANAN



Masyarakat Energi Terbarukan Indonesia
The Indonesian Renewable Energy Society

Phase Five: Community Ownership

100% community ownership will be realised at the end of the agreed concession period.

In preparation for Phase five, the ProjectCo / IBEKA will work with the local community and NusaTerang to renew consensus on the local socio-economic development agenda in areas including:

- Education
- Healthcare
- Sanitation
- Infrastructure
- Local economic activity i.e. agriculture, food processing, eco-tourism, etc.



The *IBEKA Way* of community consensus building could be used, using tools as simple as pens and paper, to help the local community to re-align priority areas for social development.

Community ownership displays NusaTerang's commitment to social impact

NusaTerang Project Pipeline

NusaTerang and IBEKA will on inception have a pipeline of projects

	Ponggang (West Java)	Cipining 1 (West Java)	Perean (South Sumatera)	(South Sumatera)	Saluhau (West Sulawesi)
Capacity	2.8 MW	1.5 MW	6.3 MW	1.2 MW	3.0 MW
Investment value	US\$5.5 million	US\$2.6 million	Tbc	Tbc	Tbc
Fund availability	US\$1.4 million, soft loan, 5% p.a	None	None	None	None
Social devt %	100%	80%	10%	10%	10%
Feasibility study & tech documentation	100%	80%	50%	0%	0%
Financial modeling	100%	0%	0%	0%	0%
Development phase	Ready	Ready	Work in progress	Work in progress	Work in progress
	Ready for launch		Existing pipeline		

Strong pipeline means financial sustainability can be achieved rapidly

NusaTerang will Support IBEKA's Mission

Community development work

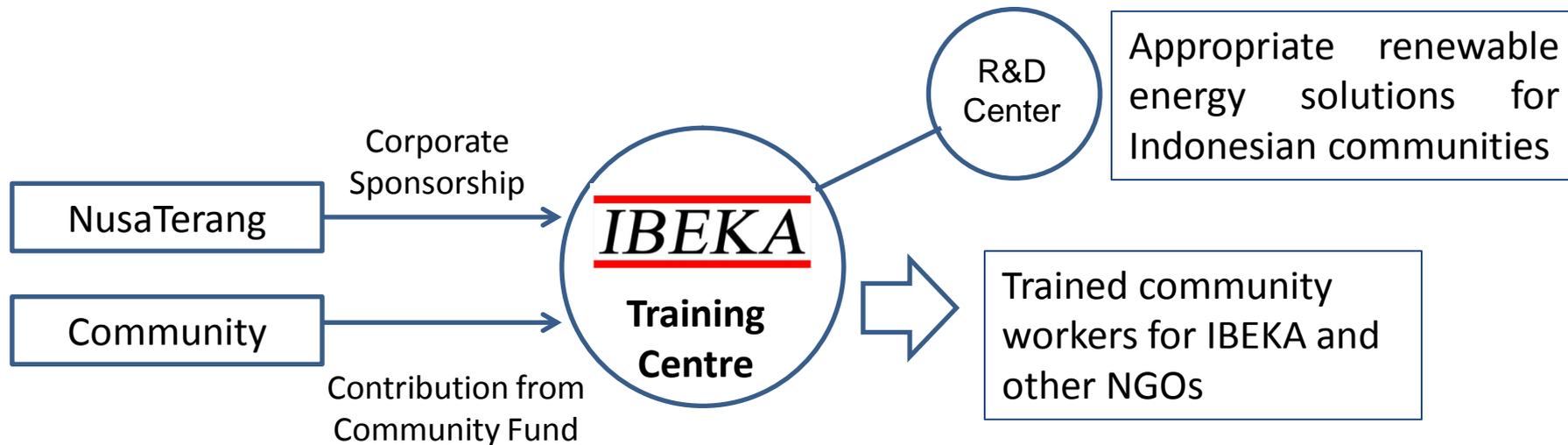
- Makes up approx. 70% of total project timeframe



Increased capacity within IBEKA

- More hydropower projects may be developed in parallel

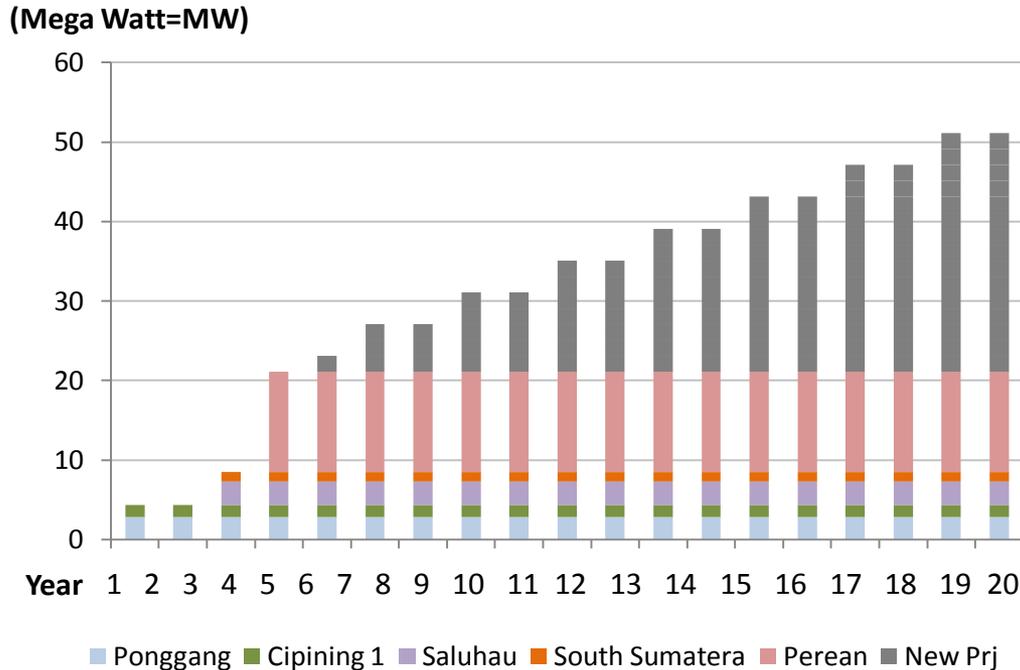
NusaTerang will support IBEKA to scale-up its community development capacity and transfer its skills and experience to its key partners through an IBEKA Training Centre.



Scaling-up community development efforts feeds into NusaTerang's project pipeline

Business Growth Plan

NusaTerang has strong projected growth, starting with hydropower but gradually incorporating other renewable energy sources into its portfolio.



Type	Indonesia's Available Potential	Investment Cost	Ops Cost	Time frame
Mini hydro	0.3GW	High	Low	Immediate
Wind	0.99GW	Med	Med	Mid term (3-5 years)
Geo thermal	26.8GW	High	High	Long term (5-10 years)
Solar	-	Med	Med	Long term
Biomass	49.5GW	Low	High	Long term

NusaTerang has an ambitious but realistic growth plan in the mid to long-term

Source: DIFFER Group, *The Indonesian electricity system – a brief of overview, 2012*



5. MARKETING

NusaTerang is Uniquely Positioned

	Current IPP	NusaTerang
Financing	One-off, stand-alone investments. Costly and time consuming to identify new project opportunities	Provides platform for accumulation of knowledge and expertise in developing future projects
Sustainability	True cost of eco-system services not paid, no assurance of conservation to maintain quality of river inflows	Lower risk, eco-system services paid for and communities actively involved in protecting catchment area.
Community	Higher risk of interruption and disputes over land use/revenues due to minimal community involvement	Lower risk as the projects are co-owned and developed with the local community providing various benefits
Stakeholders	Purely commercial, transactional relationships between public, private and civil sector stakeholders	IBEKA as founding shareholder brings strong relationships with communities and public sector players like PLN
Feed-in Tariff	Standard feed-in tariff	Potential for premium tariff from PLN in view of community involvement and resource conservation/management

NusaTerang's unique positioning will be attractive to all investors

NusaTerang Brand Identity



NUSATERANG

POWERING INDONESIA'S RURAL DEVELOPMENT



The holding company name NusaTerang combines the Bahasa Indonesia words “Nusantara” and “Terang” which mean “Archipelago” or “Homeland” and “Bright” or “Light” respectively.

Mission of the company:

To generate renewable energy that is environmentally sustainable and financially viable in partnership with local communities

Unique Value Proposition

NusaTerang's approach of **PRICING ECO-SYSTEM SERVICES** to include community as a shareholder and ensure catchment areas are protected over project lifespan is unique in Indonesia and should be communicated as a key differentiator.

Traditional Approach

Cost of natural resource not included in pricing and is relegated to an externality, thereby eroding it over time to the community's detriment

Economic viability of energy provision at the expense of valuable natural resources, tariffs not reflecting true costs



NusaTerang Approach

Conservation and replenishment of natural resources is rewarded and achieved via community stake and active engagement

Economic viability strengthened by premium feed-in-tariff to national grid to reward community engagement and conservation efforts

Groundbreaking approach to achieving financial sustainability, community empowerment and resource conservation

Nusa Terang's Project "Eco-System"

The river is the **bloodline** of the forest

Community preserves the forest

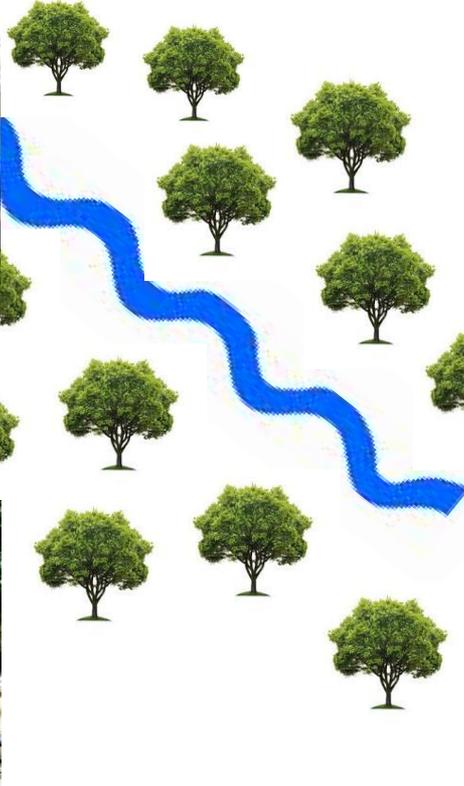


Community operates the power plant

Community involved in project construction



Community enjoys economic benefit



Community and environment integral to NusaTerang's approach

Marketing Strategy

Target Key Audience

Market Positioning

Investors



- Scalability
- Key partners
- Financial viability

- A pipeline of projects – two ready for launch, many in the pipeline
- Leverages IBEKA's track record of community development and small-scale hydro development
- Potential for preferential tariff from PLN
- Energy demand in rural communities growing, electricity is also key to social stability

Communities



- Ownership
- Development
- Conservation

- Offers communities equity stake from day one leading to full ownership over time
- Revenues deployed for local development and knowledge transfer through O&M of plants
- Communities incentivised to conserve valuable natural resources in and around catchment area
- Livelihoods improved, reduced risk of displacement

NusaTerang offers communities and investors compelling reasons to engage

Target Investors

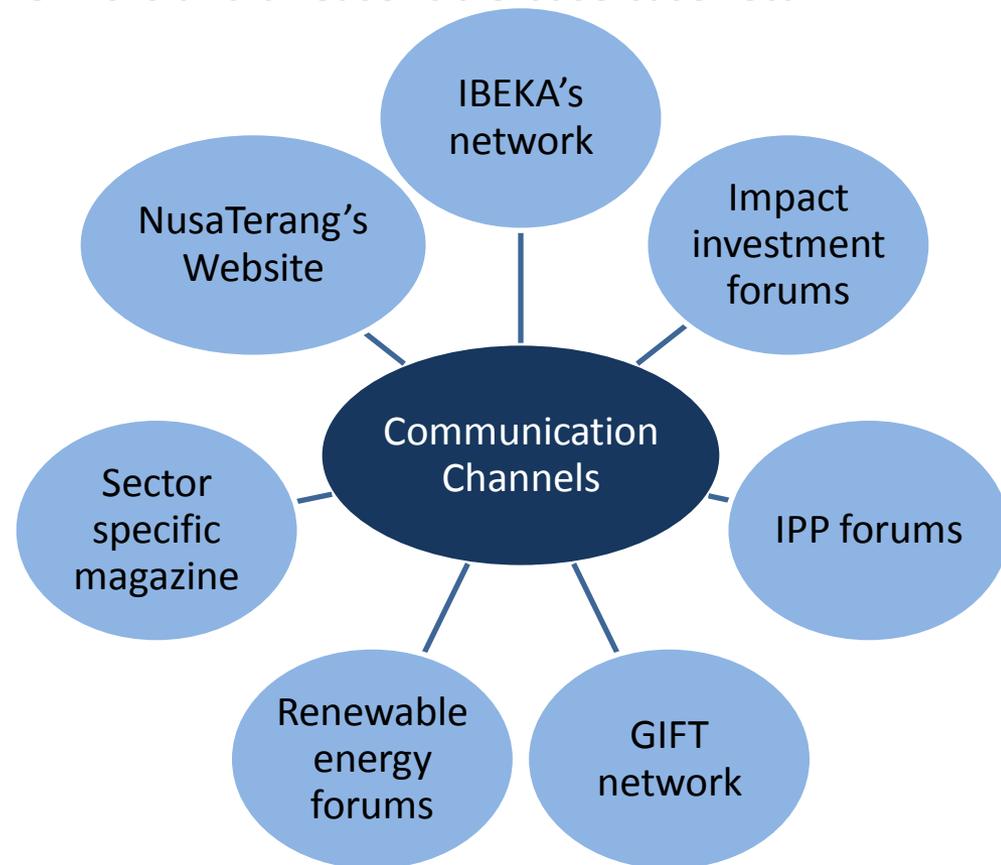
Type of Investor	Value That NusaTerang Offers	Why Identified?	Exit Strategy
<ul style="list-style-type: none"> • Impact Investment Funds • Angel Investors • Individuals 	<ul style="list-style-type: none"> • Base case IRR of 5.5 - 6.5% aligned with expected lower risk of projects • Measurable social and environmental impacts 	<ul style="list-style-type: none"> • Project and outcomes meet mandate of impact investment funds • Socially oriented angel and individual investors natural fit with NusaTerang's mission 	<ul style="list-style-type: none"> • IPO • Buy-back agreement • Private placement
<ul style="list-style-type: none"> • Commercial Banks 	<ul style="list-style-type: none"> • Machinery and potentially revenues (after first 1-2 projects) as collateral 	<ul style="list-style-type: none"> • Supports scalable funding platform that NusaTerang provides to accelerate pipeline development 	<ul style="list-style-type: none"> • Loan Repayment
<ul style="list-style-type: none"> • MNCs 	<ul style="list-style-type: none"> • CSR or venture philanthropy opportunity that provides social, environmental and financial returns 	<ul style="list-style-type: none"> • Many MNCs looking to move beyond conventional CSR (charity) • Potentially tap into MNCs' vast in-house expertise 	<ul style="list-style-type: none"> • Buy back agreement

NusaTerang's business model appeals to many categories of investors

Investor Communication Strategy

NusaTerang will attract investors by highlighting key elements of its groundbreaking business model, all of which lead to lower risks and a reasonable base case return.

- ✓ Healthy project pipeline
- ✓ Potential to secure premium feed-in tariff from PLN
- ✓ Among first business models in Indonesia to pay for the cost of ecosystem services
- ✓ Able to leverage track record and relationships of IBEKA
- ✓ Community ownership
- ✓ Environmental conservation
- ✓ Aligned to government's rural development and renewable energy plans



Community Communication Strategy

IBEKA's reputation, experience and proven track record makes them the ideal partner to lead communication efforts among local communities

Key benefits to be communicated:

- **Economic**

- Employment opportunities
- Consistent power supply can increase local economic activity

- **Social**

- Community fund can channel a portion of revenues towards local education, healthcare and infrastructure projects (roads, housing, sanitation, etc)

- **Environmental**

- Business model and "in-kind" contribution encourages stewardship of water and forest resources





6. ORG. STRUCTURE & GOVERNANCE

Key Challenges that Shape Governance

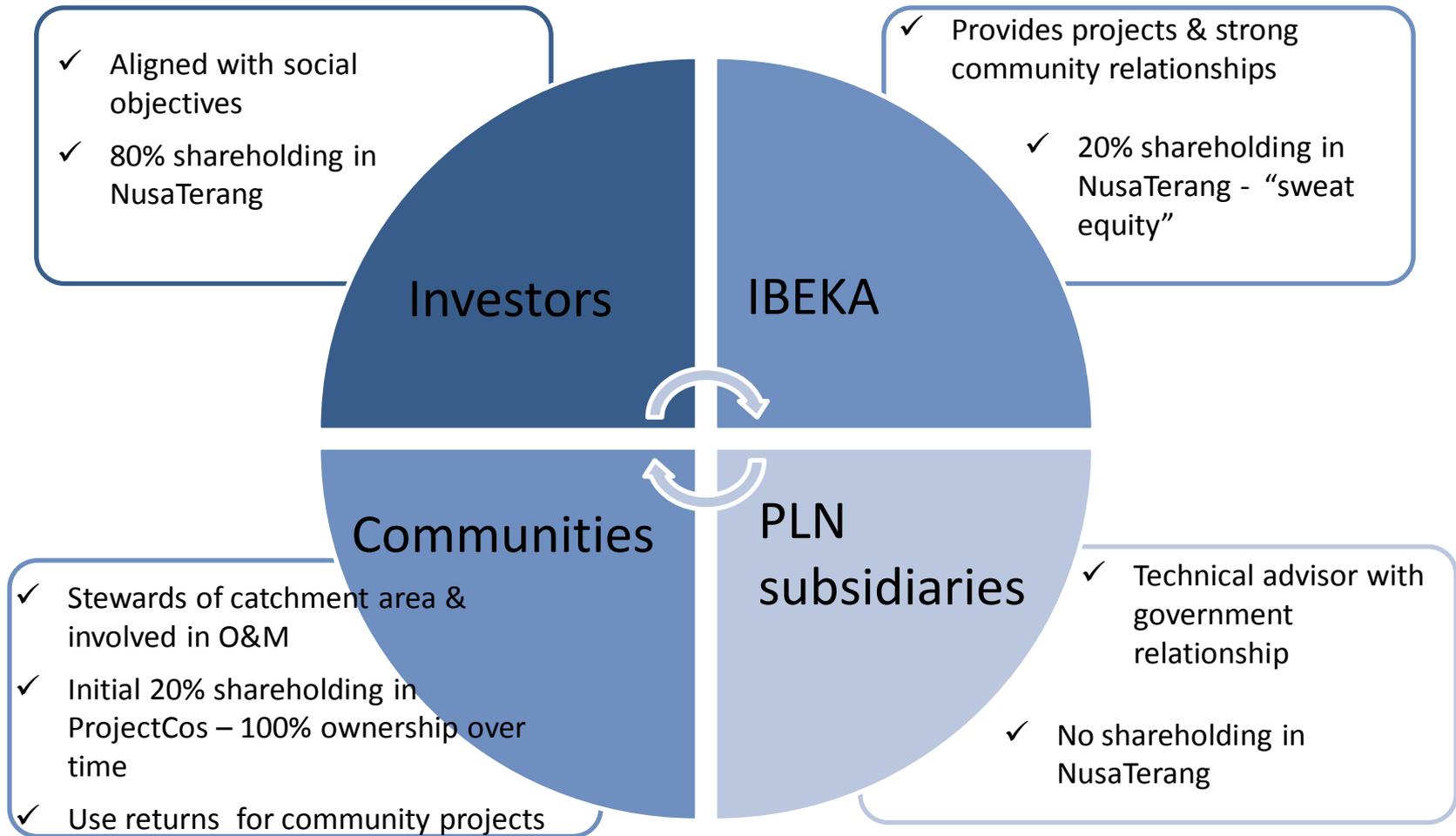
Balancing financial viability and stakeholder interests while ensuring social and environmental impact are key governance challenges for NusaTerang.

Governance challenges include:

- Following established governance standards to ensure NusaTerang is run professionally and achieves financial sustainability
- Ensuring key personnel lead and undertake the company's core activities and that there is appropriate oversight of the senior management team
- Including the community in all projects – transferring know-how, technology and subsequently 100% ownership of the subsidiary Project Companies
- Identifying potential projects that meet social impact requirements whilst providing return to investors
- Ensuring continuous operation of the business over time with community involvement
- Ensuring that the community enjoys the rewards of its participation in the project and uses the revenues in accordance with agreements
- Factoring in true costs of natural resources and environmental conservation in all projects

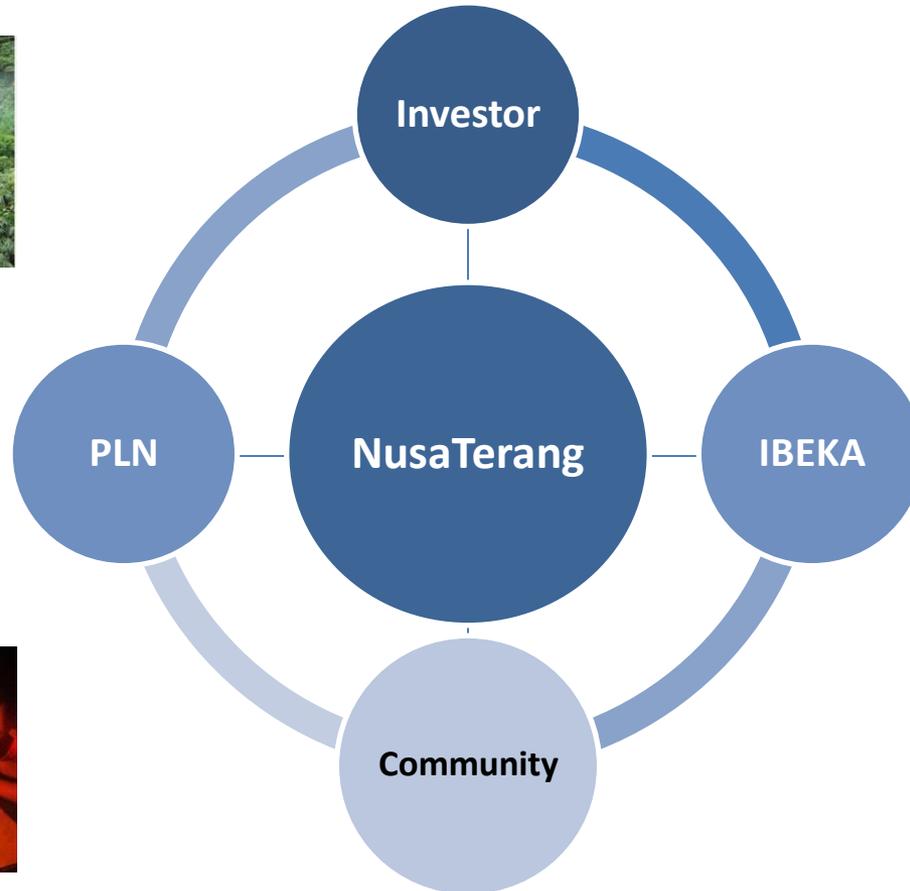
A system of checks and balances is required to boost stakeholder confidence and maintain integrity of the Unique Value Proposition

Key Stakeholders



Stakeholder Interests in NusaTerang

ROI • Transparency • Accountability • Strong relationship with community



- Expansion of national grid
- Increased capacity
- Serve rural communities

- Community development
- Environmental protection
- Government relations and negotiations

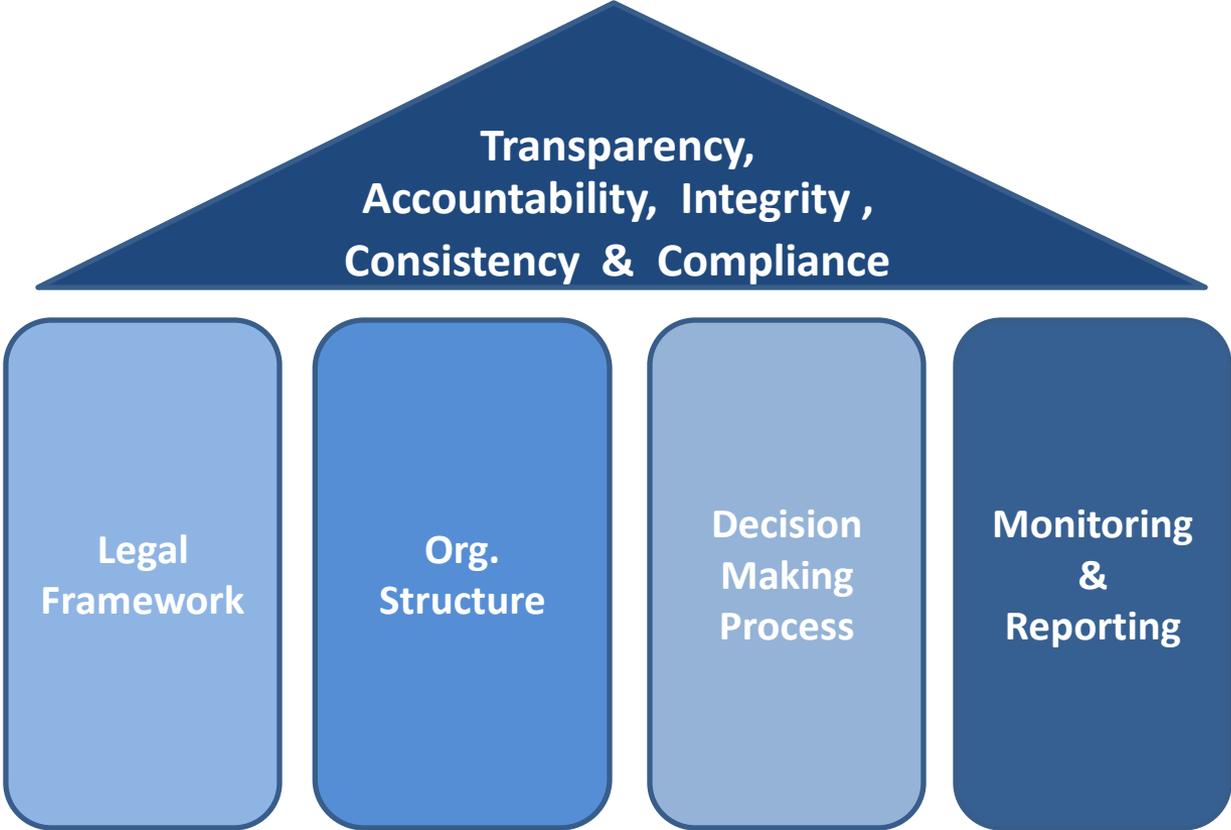


Empowerment • Development • Consistent electricity supply • Resource protection

Governance Framework

NusaTerang will rely on a robust governance framework to provide oversight, ensure compliance with local laws and regulations and meet the social, environmental and financial aspirations of the company's shareholders and stakeholders.

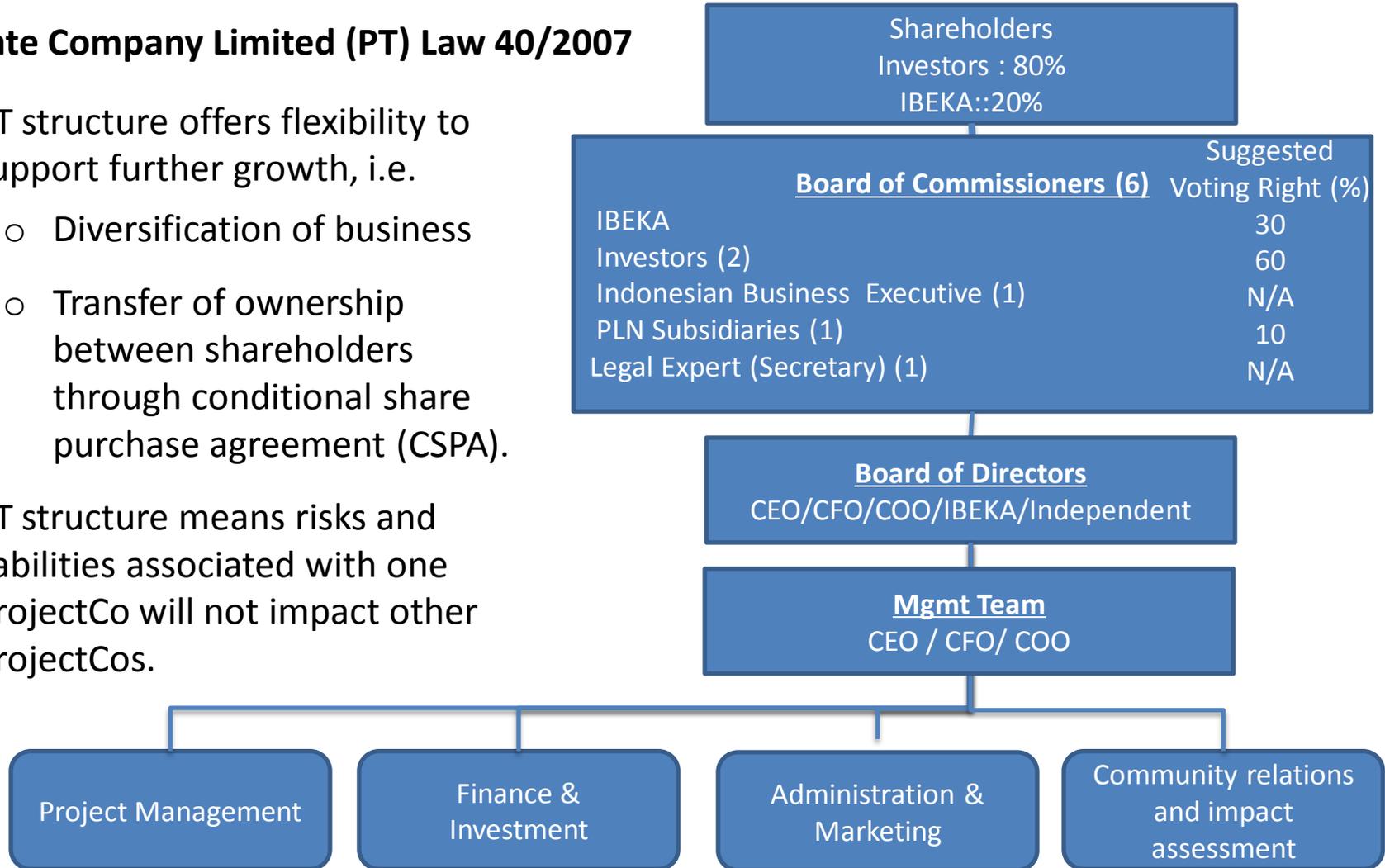
This diagram represents the core governance principles of NusaTerang and its associated pillars.



NusaTerang Legal Framework and Org Structure

Private Company Limited (PT) Law 40/2007

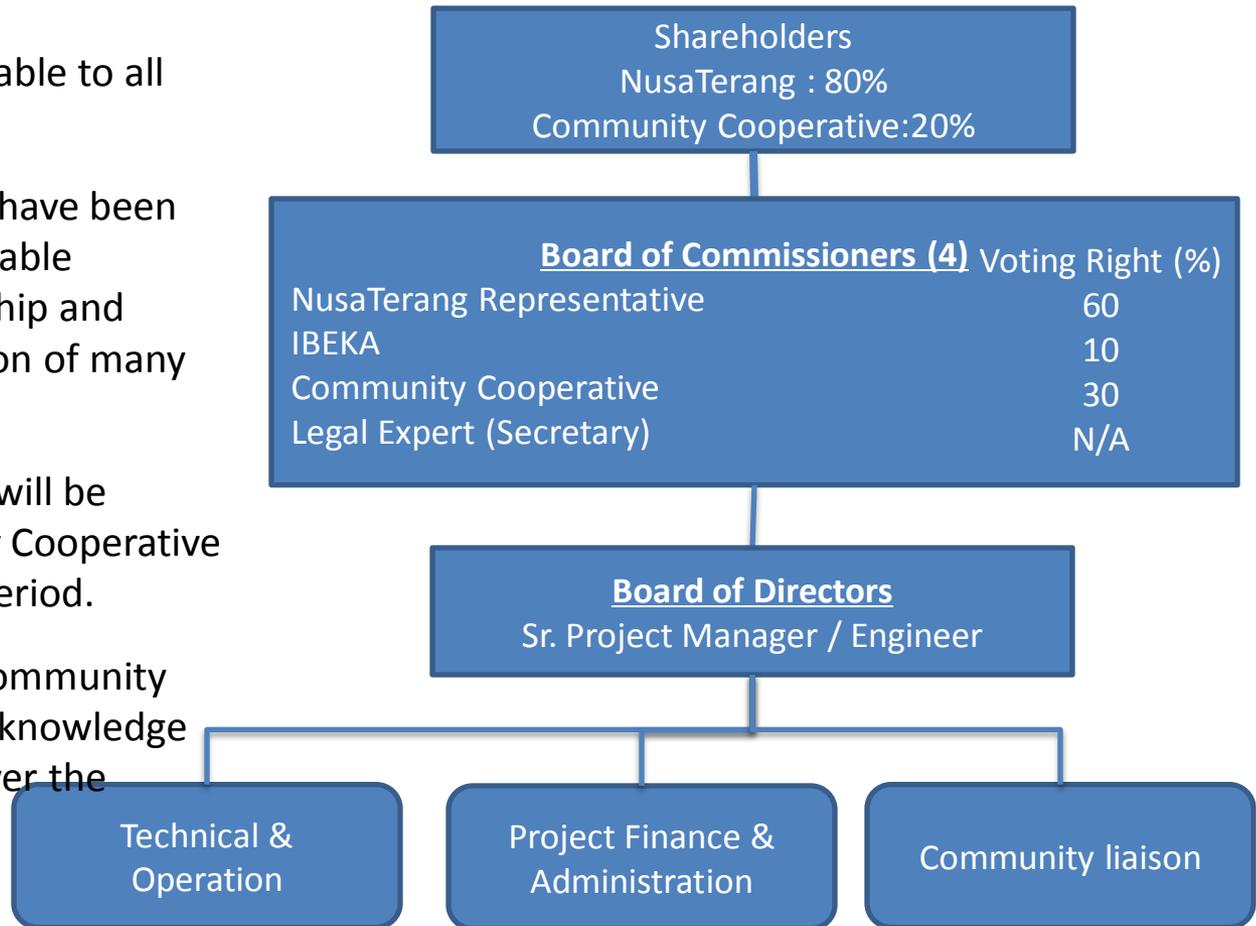
- PT structure offers flexibility to support further growth, i.e.
 - Diversification of business
 - Transfer of ownership between shareholders through conditional share purchase agreement (CSPA).
- PT structure means risks and liabilities associated with one ProjectCo will not impact other ProjectCos.



ProjectCo Legal Framework and Org Structure

Private Company Limited (PT) Law 40/2007

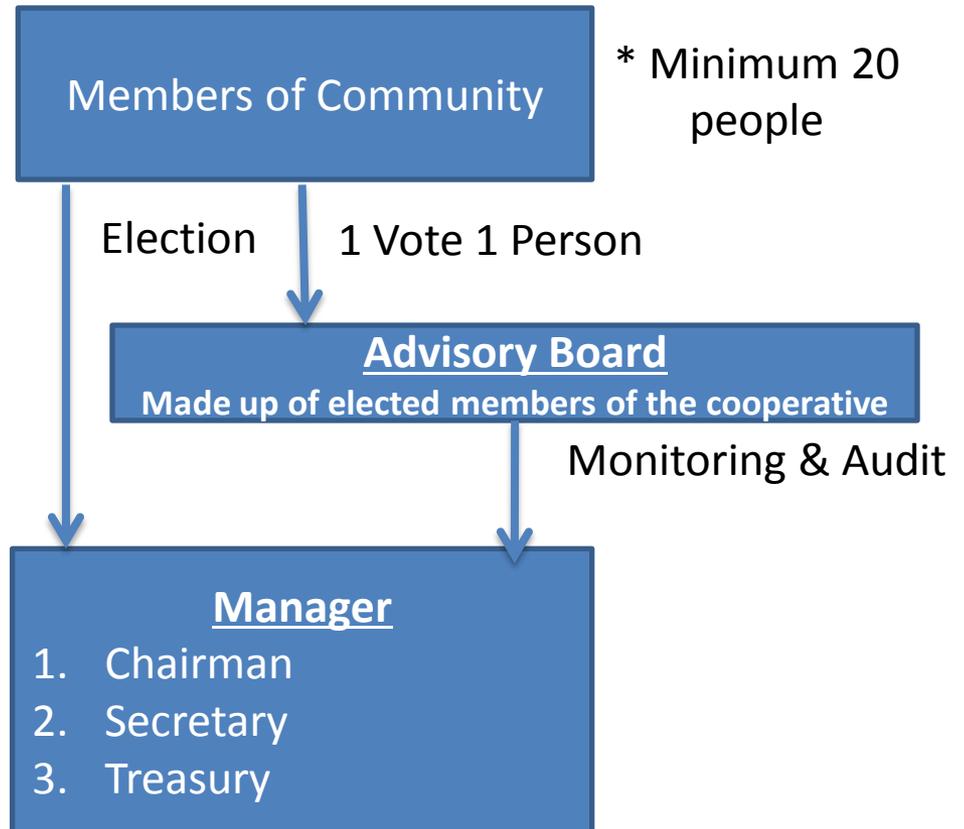
- Proposed structure applicable to all ProjectCos.
- Community Cooperatives have been identified as the most suitable structure for local ownership and established in the execution of many IBEKA projects
- Ownership of the project will be transferred to Community Cooperative after agreed concession period.
- The structure promotes community capacity building through knowledge and ownership transfer over the project lifespan.



Community Co-Op Legal Framework and Org Structure

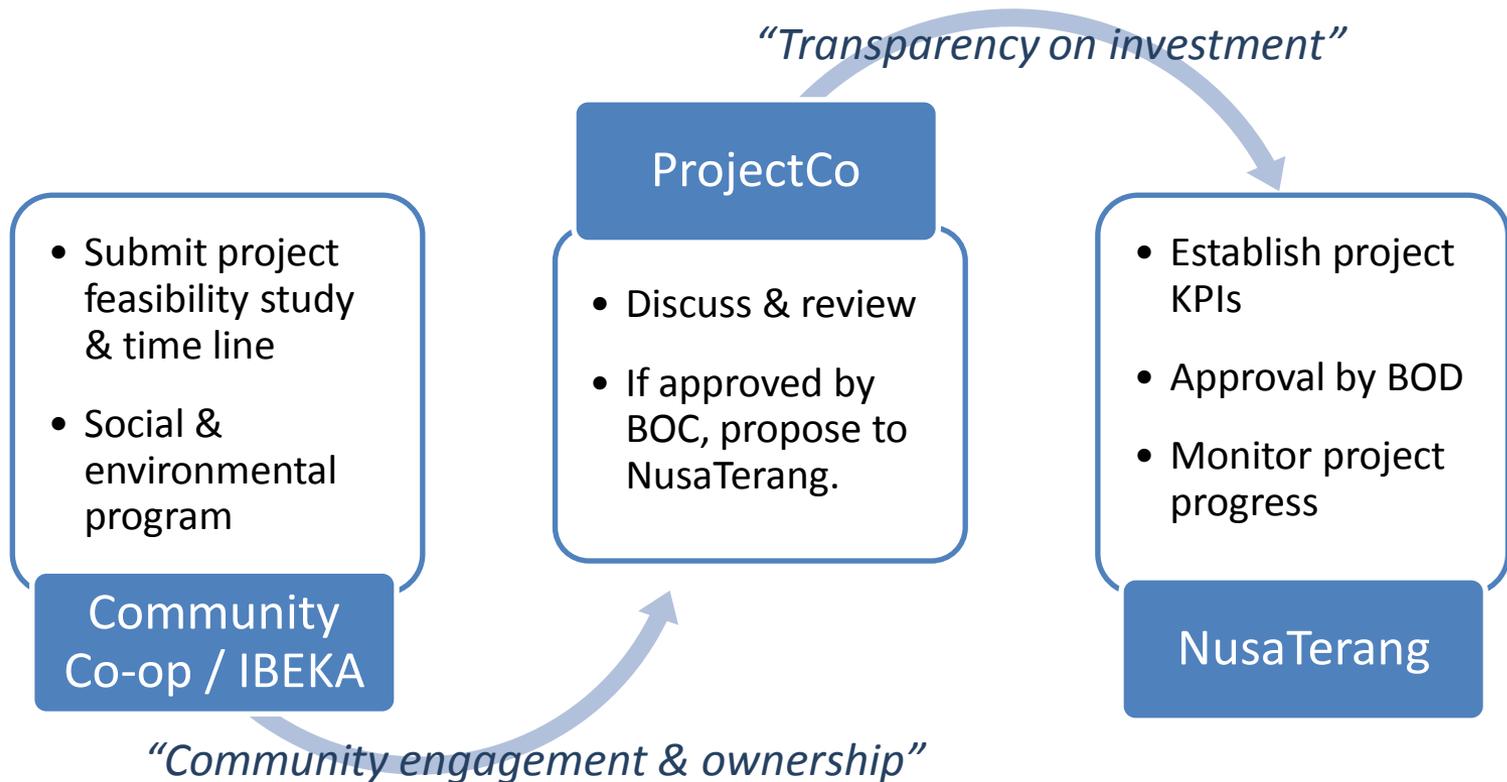
Cooperative Law 17/2012

- Community will form a legal entity that has an equity stake in ProjectCo, reducing the risk of disruptions or disputes through sense of ownership and shared financial benefits.
- The community co-op will receive dividends which may be deployed for local development projects.
- Co-op will assume ownership and management responsibilities of ProjectCo after agreed concession period ends.



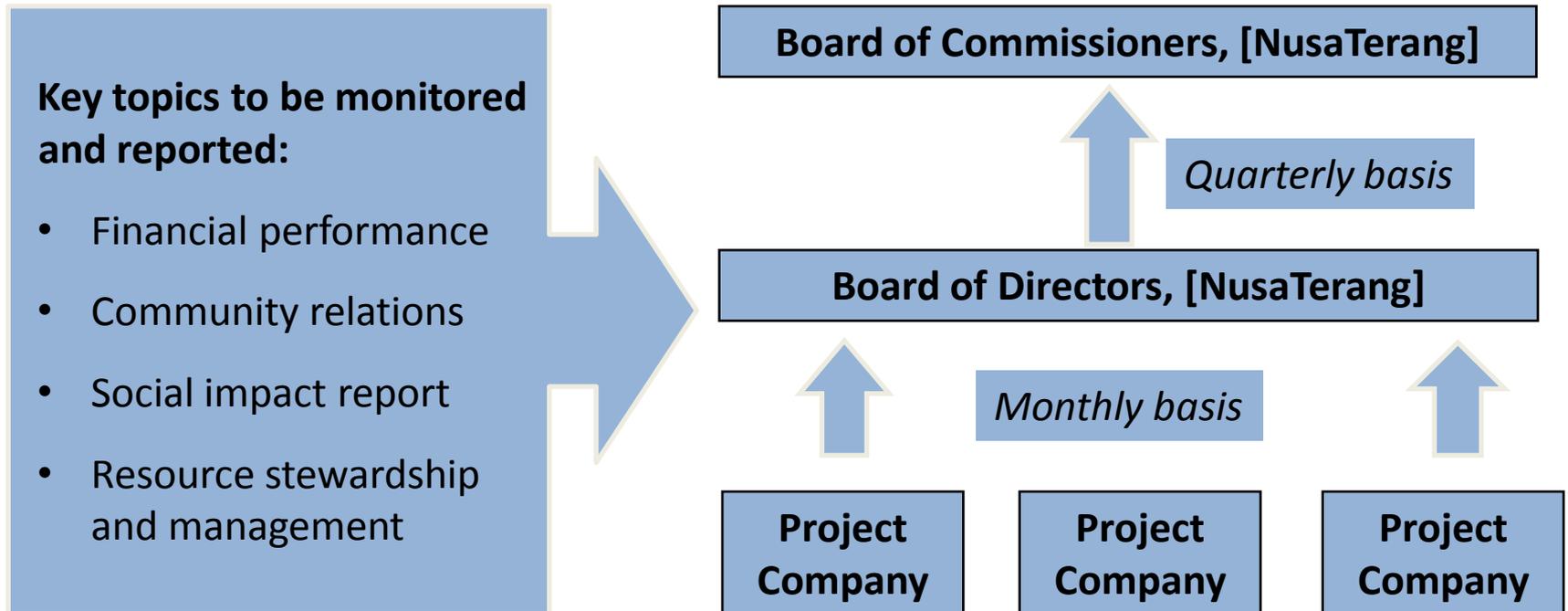
Decision Making Process - Example: Project Selection

NusaTerang's decision making process for key decisions, such as project selection, must meet investors expectations in terms of due diligence while also meeting stakeholders expectations with regard to social and environmental impact.



Monitoring and Reporting

Objective: to ensure that social, environmental and financial performance are measured, compared against company targets and regularly reported. Results will be discussed and, where necessary, targets adjusted based on internal and external factors i.e. better-than-expected performance or regulatory changes.





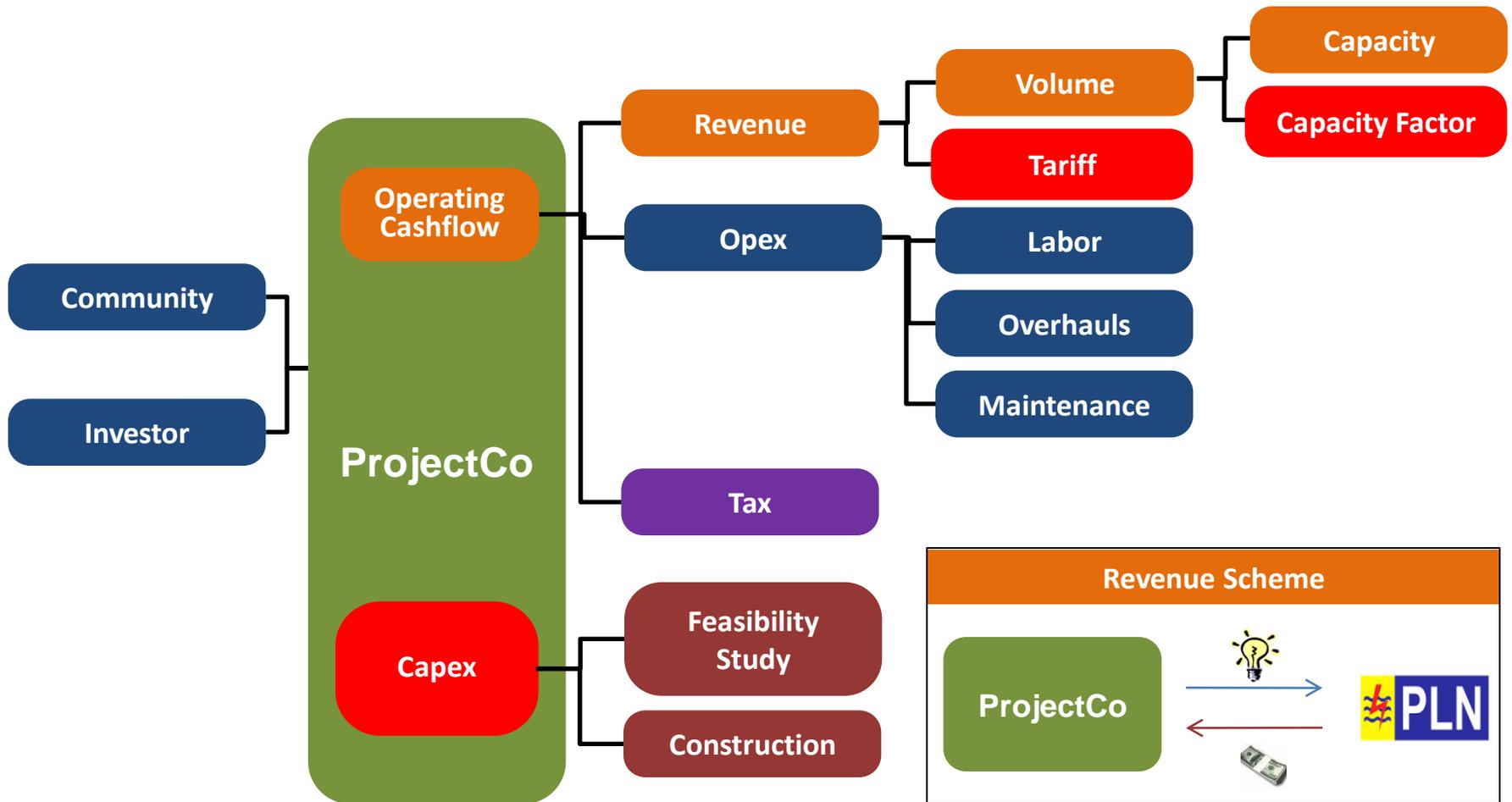
7. FINANCIAL PROJECTIONS

Overview of Financial Projections

- A 2MW project has been modeled to illustrate the economics of mini hydropower in rural Indonesia.
- A 2MW mini hydro owned 100% by the developer costs US\$4m and gives a project return of 9-10% p.a.
- NusaTerang will use a business model of joint ownership with the community. The community's ownership stake is funded 'in-kind'. This results in NusaTerang funding 100% of the cash CAPEX and receiving returns on its equity stake via dividend payment.
- The model shows that NusaTerang can expect a 6-7% p.a. return from a project and, after factoring in corporate overheads, and can expect to give investors a 5.5 – 6.5% p.a. return (base case, no preferential tariff rate).



Project Level Discounted Cashflow Valuation Drivers



Project returns are driven primarily by capital costs, capacity factor and tariffs

Financial Highlights

In this section, key financial highlights will be presented as follows:

- I. **ProjectCo** P&L Projection
- II. **ProjectCo** Cashflow Profile
- III. **ProjectCo** Return to Investor and Community
- IV. **ProjectCo** Scenario Test: Base Case vs High Case
- V. **NusaTerang** Cashflow Projection

Key Parameters and Methodology

Capital Expenditure

- CAPEX is estimated at US\$2M/MW split into:
 - **Feasibility Study:** 5% of the project cost
 - **Construction:**
 - Mechanical and Electricity construction: 40% of the project cost
 - Civil construction: 50% of the project cost
 - Community activities: 5% of the project cost

Revenue

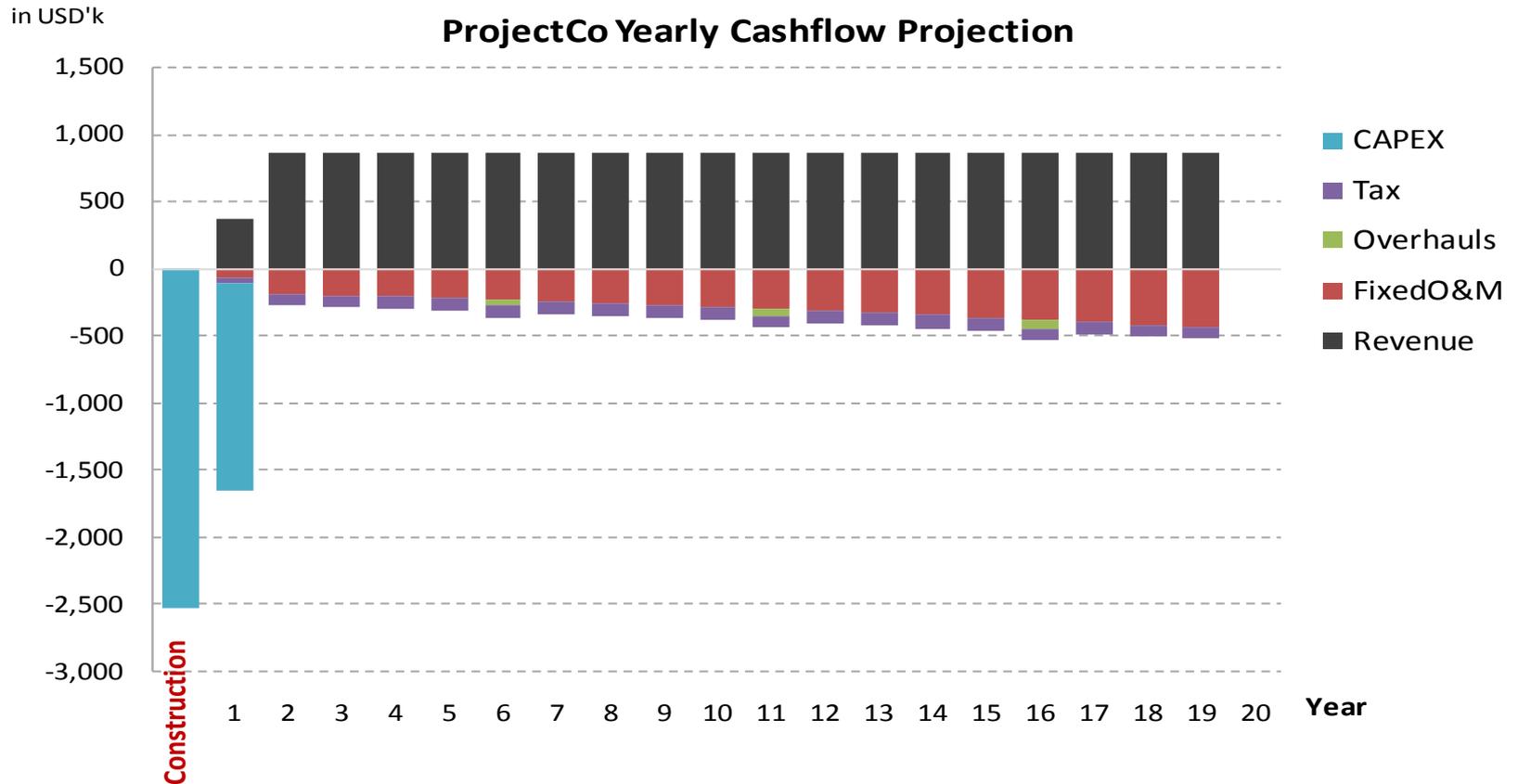
- **Base-case Tariff:** A flat tariff from PLN of Rp 656/kWh
- **Upside Tariff:** Tariff increased by 25%. PLN has indicated they would be willing to offer a premium Tariff for sale to the grid for renewable energy projects which actively involve local communities in both operations and resource conservation

ProjectCo P&L Projection (Illustrative 2MW Project)

Period Year	Construction							Operation		
	0	1	2	3	4	5	18	19	20	
Project P&L										
Revenue	\$000	0	363	864	861	861	861	864	861	0
Opex - O&M	\$000	0	-78	-195	-205	-215	-226	-425	-447	0
Opex - Overhaul	\$000	0	0	0	0	0	0	0	0	0
Depreciation	\$000	0	-134	-315	-290	-267	-245	-83	-76	0
Tax	\$000	0	-38	-88	-92	-95	-98	-89	-85	0
Profit AfterTax	\$000	0	113	265	275	285	293	266	254	0
CashFlow										
Revenue	\$000	0	363	864	861	861	861	864	861	2
OPEX	\$000	0	-78	-195	-205	-215	-226	-425	-447	-1
Tax	\$000	0	-38	-88	-92	-95	-98	-89	-85	0
CAPEX	\$000	-2,532	-1,542	0	0	0	0	0	0	0
Cash flow (for distribution)	\$000	-2,532	-1,295	580	565	552	538	349	330	1

After paying the initial CAPEX, the ProjectCo will be able to sustain its profitability at an approximate > US\$250,000 profit per year for a 2MW project.

ProjectCo Cashflow Profile (Illustrative 2MW Project)



The ProjectCo will start to accumulate net return from the 2nd year of operation onwards.

Mini hydro is capital intensive but has high cash earnings after construction

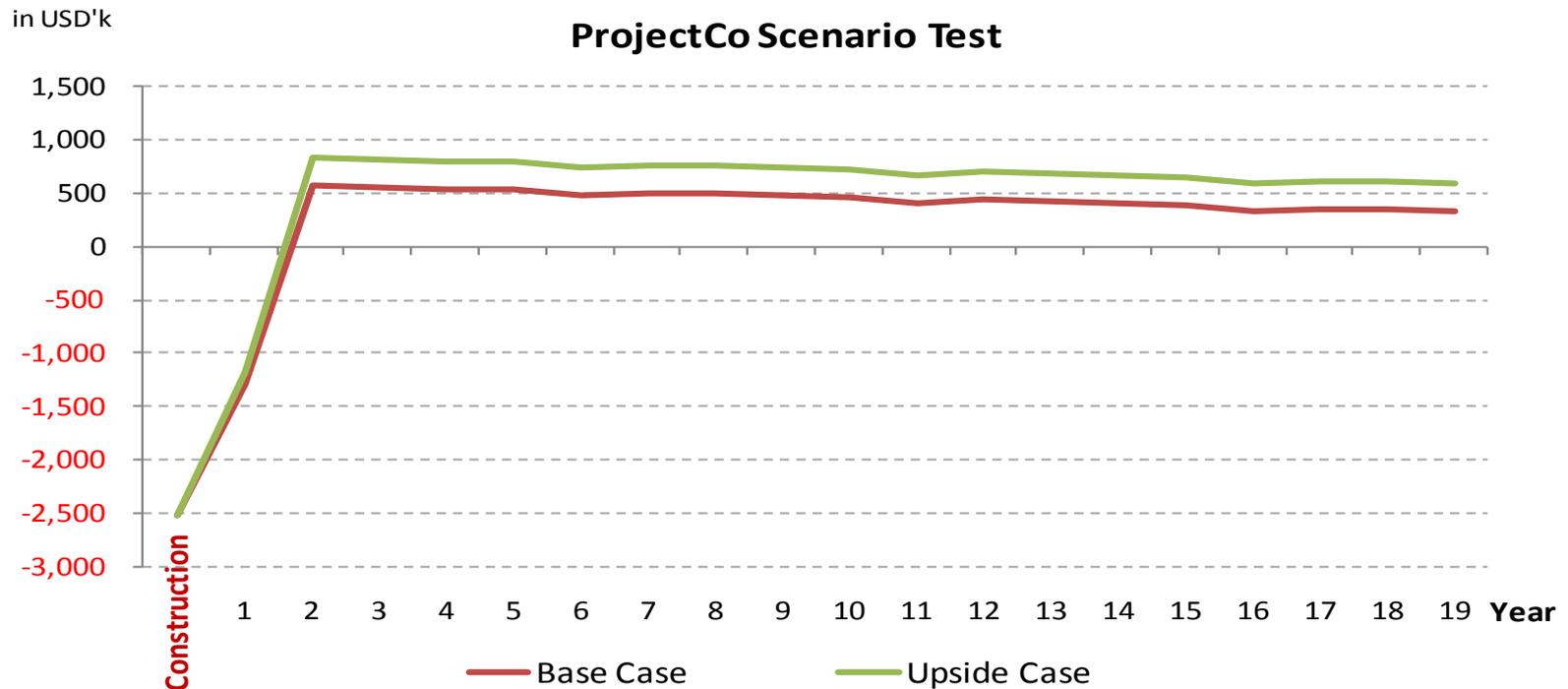
Returns to Investor and Community

Period		Construction					Operation			
Year		0	1	2	3	4	5	18	19	20
Investor Returns										
Dividends	\$000	0	198	464	452	441	430	280	264	0
Equity Investment	\$000	-2,532	-1,542	0	0	0	0	0	0	0
Return to Investors	\$000	-2,532	-1,344	464	452	441	430	280	264	0
Community Returns										
Dividends	\$000	0	49	116	113	110	108	70	66	70
Equity Investment	\$000	0	0	0	0	0	0	0	0	0
Return to Investors	\$000	0	49	116	113	110	108	70	66	70

- NusaTerang contributes capital and receives an 80% ownership stake in this example
- The local community contributes its capital 'in-kind' and receives a 20% stake, resulting in the community paying no upfront capital but receiving ~US\$100k per annum
- The community will have full ownership in year 20
- NusaTerang will recoup its initial investment in year 9

Investors pay 100% of the cash capital and receive 80% of the dividends

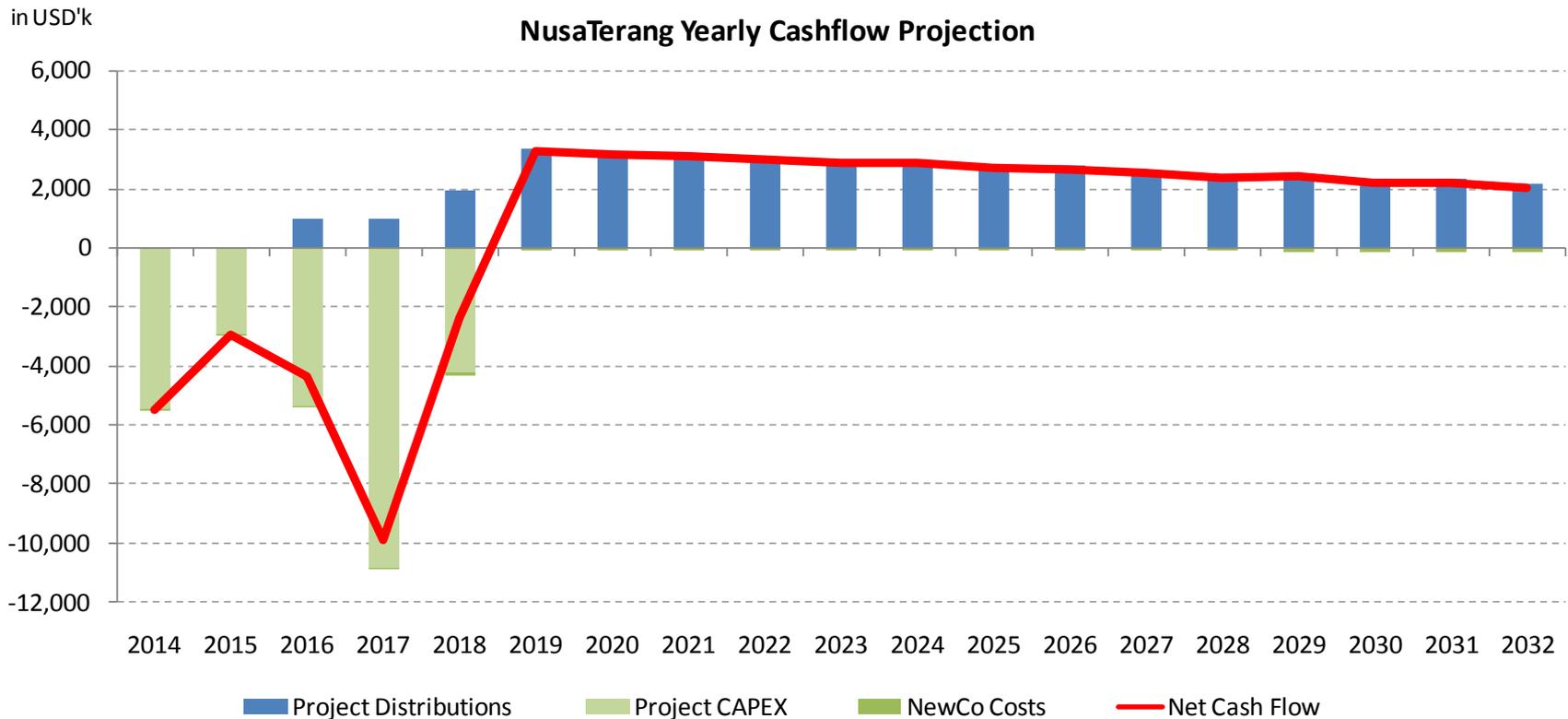
ProjectCo Scenario Test: Base-Case vs Upside-Case



Assuming that the feed-in tariff is upgraded by 25% to be Rp 820/kWh, the cashflow will improve by 60% in average during the 20 year operation

There is significant upside potential if a higher tariff can be negotiated with PLN

NusaTerang Cashflow Projections



NusaTerang’s projects pipeline comprises of 5 projects, i.e. Ponggang, Cipining, Perean, Saluhau, and South Sumatera with a total electricity output of 15MW

NusaTerang presents an attractive opportunity for “patient capital” investors



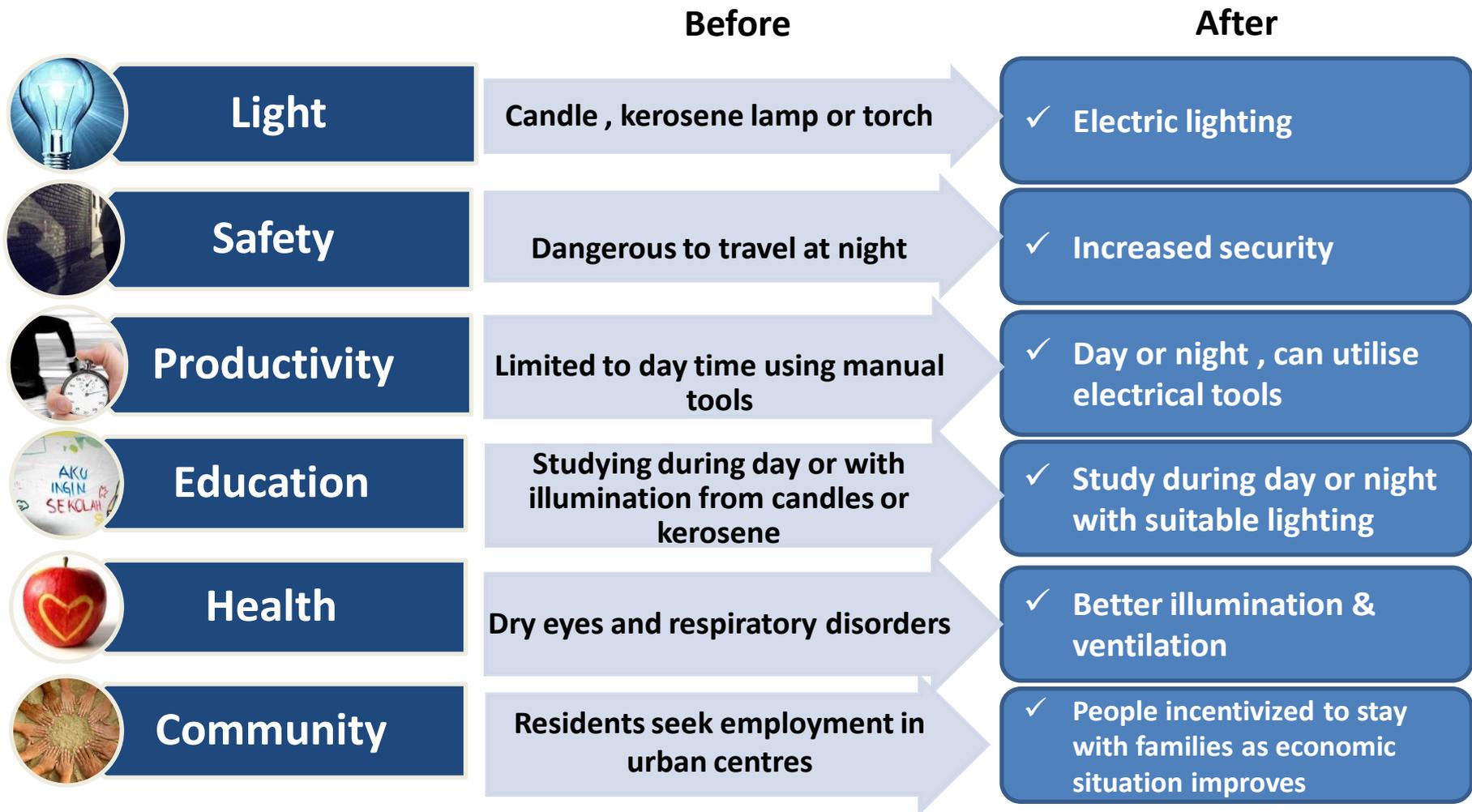
8. SOCIAL & ENVIRONMENTAL BENEFITS

Community Benefits of NusaTerang Business Model



Area	Example
Employment	During the feasibility study, construction and operation of the hydropower plants. Post-construction, regular electricity will create economic activity and employment
Increased income	Community ownership means a share of the dividends from selling power.
Vocational training	Over time, members of the community will be trained in the operations, maintenance and administration of the power plants.
Infrastructure	Revenues may be deployed for infrastructure projects such as new roads to improve accessibility.
Welfare programmes	Revenues may also be channeled towards new schools, clinics or communal food or livestock storage.
Consistent power supply	Even grid connected villages today have to deal with regular brown outs and black outs. This will be significantly improved.
Community cohesion	Sense of communal ownership and reduction in rural to urban migration for employment opportunities

Impacts of Access to Consistent Electricity Supply



Environmental Benefits of NusaTerang Business Model



Area	Example
Reduced CO2 emissions	Less coal or oil burnt for electricity generation by PLN or IPPS, and reduction in amount of kerosene and diesel burnt for lighting or heat by rural communities.
Conservation	Reducing deforestation by the community for fuel or to sell wood for additional income.
Local stewardship	Community “in-kind” contribution puts value on natural resources (forests and water ways) and includes commitment to protect local environment.
Water management	More value placed on water resources thus they are managed better with regard to the hydropower plant and irrigation for agriculture.
Flood control	Small-scale hydropower can contribute to flood control efforts during rainy season or unpredictable storms.
Filtering waste	Rakes preceding turbines collect waste which can be safely removed from waterways.

Measuring Impacts of NusaTerang Business Model



- Currently, several methodologies can be applied to assess Social and Environmental benefits from Impact Investments – for example:
 - **PRI** ([Principles for Responsible Investment](#))
 - **SROI** ([Social Return on Investment](#))
 - **IRIS** ([Impact Reporting and Investment Standard](#))
 - **GIIRS** ([Global Impact Investing Rating System](#))
 - **BACO** ([Best Alternative Charitable Option](#))
- NusaTerang will develop a specific set of measurement tools to measure the impacts of it's operations on the community and environment.
- These tools, whilst referencing international standards, will have to be tailored to meet local needs and at the same time, satisfy investors



Quantitative Measurement Example

Input	Output	Short-term Outcomes for community (Year 1)		Long-term Impacts (Year 2 – 20)	
		Direct			
Capital investment For Mini Hydro (USD 4.0M)	Electricity (15,750 MW/year)	Income from sale of power (Year1)	-	Income from sale of power (Year2-20)	Investors USD 6.7M Community USD 1.7M Total USD 8.4M
		Construction Job at hydro plant	USD 0.2M	O&M Job at hydro plant	USD 1.1M
		Indirect			
				New SME business e.g. eco-tourism / vehicle maintenance workshop	USD 0.5M
				Healthcare improvement e.g. building local hospital	USD 0.3M
				Education improvement	USD 0.7M
USD 4.0M			USD 0.2M		USD 11.0 M

Qualitative Measurement Example

	Low	Medium	High
Electricity	Households only receive limited power (<100 Watt) which is not stable (on and off)	The electricity received is stable but the amount of power is still limited (100 -200 Watt)	The electricity received is stable, households can access as much power as needed
Health Care	No permanent clinic. Nurse / health practitioner rarely visits the village	Permanent clinic but the nurse / health practitioner only visits once per month/week	Permanent clinic with doctor / health practitioner available at least twice per week
Education	No school, children must travel significant distance to school or opt out of education	Permanent school but only up to a certain level (Primary, Jr. High)	Permanent school up to at least Jr. High
Sanitation	Inadequate sanitation and limited access to clean water supply	Communal latrines and stable communal clean water supply	Household latrines and household clean water supply



9. IMPLEMENTATION TIMELINE

Implementation Plan

Set up (-1yr)

Phase one (1-3 yrs)

Phase two (3-5 yrs)

Key Activities

Tranche 1 equity raising

Incorporation of NusaTerang & hiring of management team (6-9 mths)

Establishment of governance framework for BOD, shareholders agreement, etc. (3-6 mths)

Transfer of immediate project pipeline to NusaTerang (★ on month 6)

Negotiation & finalisation of PPA with PLN (3-6 mths)

Commercial operations date for projects 1 & 2

Community cooperatives secure dividend (end of Year 2 onwards)

Resource conservation efforts in line with PPA terms (Year 2 onwards)

Commercial operations date for projects 3, 4, 5

Commercial ops for project 6 & onwards

Reconnaissance, community engagement, consensus-building for projects 3, 4, 5

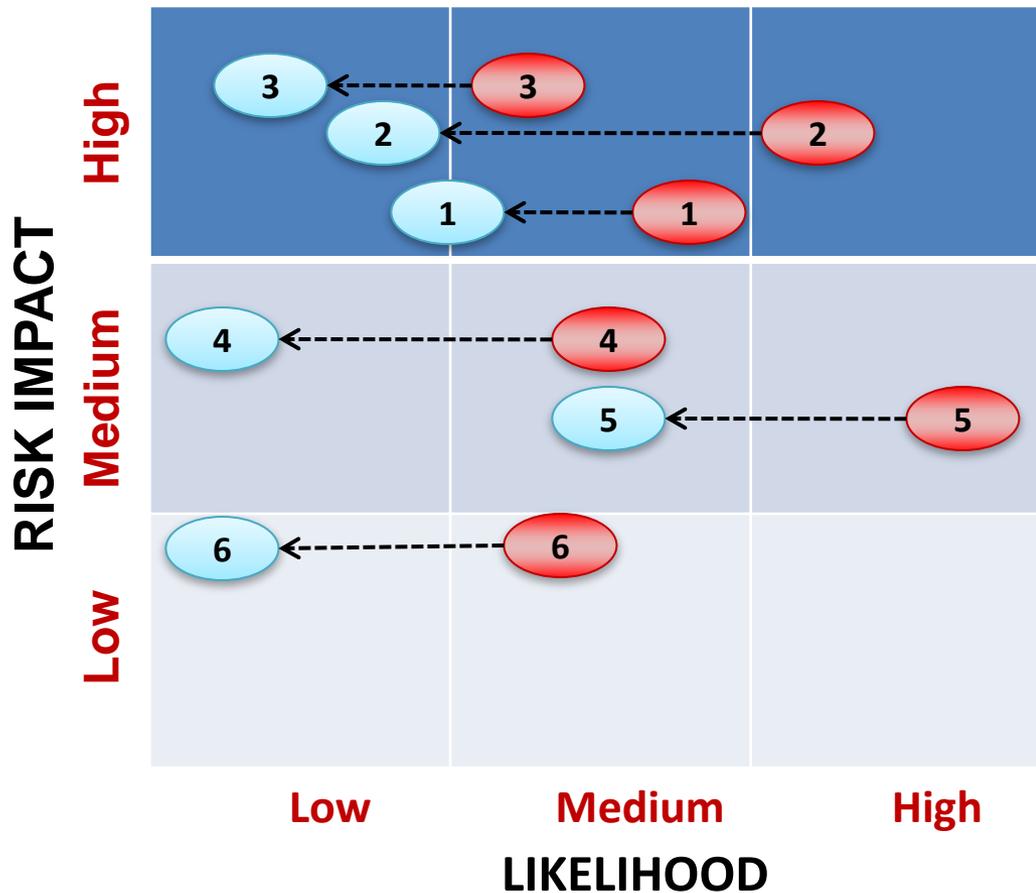
Setup of IBEKA training center (6 – 12 mths)

Knowledge transfer on O&M of power plants (Year 1 onwards)

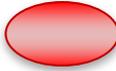


10. RISKS & MITIGATION

Business Model Risk Matrix



No	Key Risks
1	Inability to identify new projects
2	Reduced water inflow due to deforestation
3	Poor execution of the project
4	Lack of community support for the project
5	Lack of access to funding
6	Limited manpower for company expansion

 *NusaTerang Model*
 *Current IPP Model*

NusaTerang's socially and environmentally oriented business model reduces key risks

Risk Mitigation (1)

No	Risk	Potential Cause	Likelihood	Impact	Mitigation from NusaTerang Business Model
1	Inability to identify & explore new projects	<ul style="list-style-type: none"> Lack of information on or access to potential project locations 	L	H	<ul style="list-style-type: none"> IBEKA has a healthy project pipeline and a presence and experience across the country
2	Reduced water inflow due to deforestation	<ul style="list-style-type: none"> Local community/ external parties clear land for use Local community harvest trees for use as fuel or to sell 	L	H	<ul style="list-style-type: none"> Pricing eco-system services and offering community a stake in exchange for stewardship of catchment areas Electricity can be used for lighting and to heat water Selling power generates income for community
3	Poor execution of the project	<ul style="list-style-type: none"> Inadequate supervision of the construction No buy-in from the local community 	L	H	<ul style="list-style-type: none"> IBEKA has a track-record of executing small-scale hydro power working side-by-side with the local community Community co-owns the project and will enjoy full ownership over time

Risk Mitigation (2)

No	Risk	Potential Cause	Likelihood	Impact	Mitigation from NusaTerang Business Model
4	Lack of community support to the project	<ul style="list-style-type: none"> Community unable to reach consensus and form co-op Inadequate communication around benefits of the project 	L	M	<ul style="list-style-type: none"> Community Co-ops already present in some project locations IBEKA has proven methodology for building community consensus
5	Lack of access to funding	<ul style="list-style-type: none"> Seeking funding on a per-project basis Difficult to attract new investors 	M	H	<ul style="list-style-type: none"> Aims to secure funding for five projects in round one Unique business model and potential for premium tariff attractive to investors Early project cashflow stream will help to cover the new project Capex needs
6	Limited manpower for company expansion	<ul style="list-style-type: none"> Lack of specialists willing to work in rural communities 	L	L	<ul style="list-style-type: none"> IBEKA has strong relationships with engineering schools in Indonesia and international engineering partners



11. CONCLUSION

Conclusion

- Current energy production business models do not result in investments in rural mini hydro schemes due to the small-scale nature of the projects, high perceived project risk and the difficulty of identifying and developing new projects.
- The proposed NusaTerang business model overcomes these barriers by partnering with IBEKA and communities. This model lowers the project risk to the investor and creates an asset that will eventually be 100% community owned.
- The concept of pricing in eco-system services and offering the community a stake from day one in exchange for resource stewardship of catchment areas has massive potential to change the landscape of energy investments in Indonesia.
- NusaTerang expects that a premium tariff for sales to the grid can be negotiated with PLN based on co-ownership with the community and this offers a groundbreaking approach to the pricing and conservation of valuable natural resources.
- NusaTerang is offering investors the opportunity to invest \$30m Tranche 1 equity raising. This equity raising will fund its current pipeline of mini-hydro (5 projects; 15MW) and targets a 5-6% return to investors (base case) while enabling community ownership and environmental conservation.

Contact Information

If you or your organisation are interested in being a part of NusaTerang – as an investor or strategic partner – please contact:

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