2nd POWER Southeast Asia

Conference & Exhibition

Sep. 15 - 17-2015 Sule Shangri-La, Myanmar

Day One. Tuesday Sep. 15, 2015

8:00 Registration and morning coffee

8:50 
Welcoming remarks from the Organizer and Chairman - **Allard M. Nooy**, Chief Executive Officer, InfraCo Asia

SEA Electric Power Outlook, Challenges and Opportunities

9:00 **Opening Keynote**: Myanmar's Electric Power; Outlook and Opportunities for Infrastructure Development -**Senior Official**, Ministry of Electric Power Myanmar

9:30 **Keynote Address**: Myanmar's Upcoming Plan: Priority Development Coping with the 2016 Power Crisis - **Senior Official**, Ministry of Electric Power Myanmar

10:00 
Energy Policy; The role of Renewable Energy to support the energy security in Indonesia - Dr. **Surya Darma**, Chairman of the Energy Committee, National Research Council of Indonesia

10:30 **Coffee Break & Refreshment** 

11:00 
Communication Technologies for Smart Grids and Smart Cities - **Ajoy Rajani**, Senior Executive VP, Reliance Infrastructure

11:30 
Application of Gas Insulated Switchgear for Enhancing power transmission reliability, availability and efficiency - **Prashant Mishra**, Territory Marketing Manager, ABB Ltd

12:00 
How GE Helps Move Forward to Power Up Myanmar - **Andrew Lee**, Chief Country Representative, General Electric

12:30 **Networking lunch** 

14:00 **Panel Discussion: Financing for the Power Sector in Myanmar**


Moderated By:
Mr. **Yap Kwong Weng** , Chief Operating Officer, Parami Energy Group of Companies


Mr. **Peter Bird**, Non-Executive, Director, InfraCo Asia


Ms. **Jean Loi**, Partner, VDB Loi
Kanthan Shankar, Country Manager of Myanmar, The World Bank


Mr. **Valery Tubbax**, SVP, Head of Power & Infrastructure Advisory Asia, Sumitomo Mitsui Banking Corporation (SMBC)

15:00 
Economic and Environmental benefits of South Asia Power trade - **Jyoti Parikh Ph D**, FNASc, Executive Director, Integrated Research and Action for Development (IRADe)

15:30 **Coffee Break & Refreshment** 

16:00 
Renewable Energy as Power component in Myanmar NEP Energy Mix - **U Aung Myint**, General Secretary, Renewable Energy Association Myanmar (REAM)

16:30 
Myanmar's Hydropower Strategy and Its Impact on Industry Players - **U Min Khaing**, Director, Hydropower Implementation under Ministry of Electric Power

17:00 
Power Projects – What could possibly go wrong? - **Neil Thomas**, Head of Claims, Asia, Willis (Singapore) Pte Ltd

17:30 
Outlook for Building Large Solar Plants in Myanmar- **Hari Achuthan**, Managing Director & CEO of Convalt Energy, ACO Investment Group

18:00 **End of Day one conference**

2nd POWER Southeast Asia

Conference & Exhibition

Sep. 15 - 17-2015 Sule Shangri-La, Myanmar

Day Two. Wednesday Sep. 16, 2015

8:00 Welcoming Remarks

8:50 
Welcoming remarks from Chairman - **Dliver Massmann**, General Director, Duanemorris

9:00 
Electricity Infrastructure Development: Integrated Appraoch - **Thuzar WinAlpha**, Business Development Director, Power Energy Engineering Co.,Ltd

9:30 
Myanmar Infrastructure and Energy Market - **Allard M. Nooy**, Chief Executive Officer, InfraCo Asia

10:00 
Mr.**Kenny Li**, Regional Commercial Director, Vpower Group Holdings Ltd.


Technical Advantages of MTU Systems in Power Generation - **Heinz Bruckmann**, Director of Sales & Sales Engineering, MTU Asia Pte Ltd

10:45 Coffee Break & Refreshment 

11:00 
The New Electricity Law and Electricity Sector Reform - **Audray Souche**, Partner & Deputy Head Energy, Mining and Infrastructure Practice Group, DFDL


The New Electricity Law and Electricity Sector Reform - **Nick Towle**, Senior Legal Adviser, DFDL

11:30 
RISK IN INSURANCE - **Matthew Hooker**, Head of Natural Resources, Asia Region, Willis, Asia

12:00 
Importance of High Quality Insulating Oils in Transformers- **TOH Chian Yaw**, Head of Technical Service & Market Development (TechDMS), Nynas Pte Lt

12:30 networking lunch 

14:00 
Long Range Radio Trial Results for AMI and Smart Grid - **Gary Lam**, Solution Architect, Sensus Systems UK Limited

14:30 
The data-driven utility: a strategic approach to utilities data & analytics - **David Socha**, Projects Utilities Practice Leader, Teradata

15:00 
Recent trends in the commercial terms of Myanmar Power Purchase Agreements - **Edwin Vanderbruggen**, Partner in VDB Loi

15:30 Coffee Break & Refreshment 

16:00 
The effective use of temporary power in Myanmar & SEA - **Harry Townshend**, Area General Manager, Aggreko

16:30 
The Advantage of First Solar CdTe Thin Film in Photovoltaic (PV) Technology - **P'ng Soo Hong**, Vice President and Managing Director, First Solar Malaysia Sdn. Bhd.

17:00 
How to get Power Projects done in Myanmar, Mr. **Oliver Massmann**, General Director, Duanemorris

15:30 Chairman's closing remarks

2nd Power South-East Asia Conference

Opening Remarks: South-East Asia Electric Power Outlook, Challenges and Opportunities

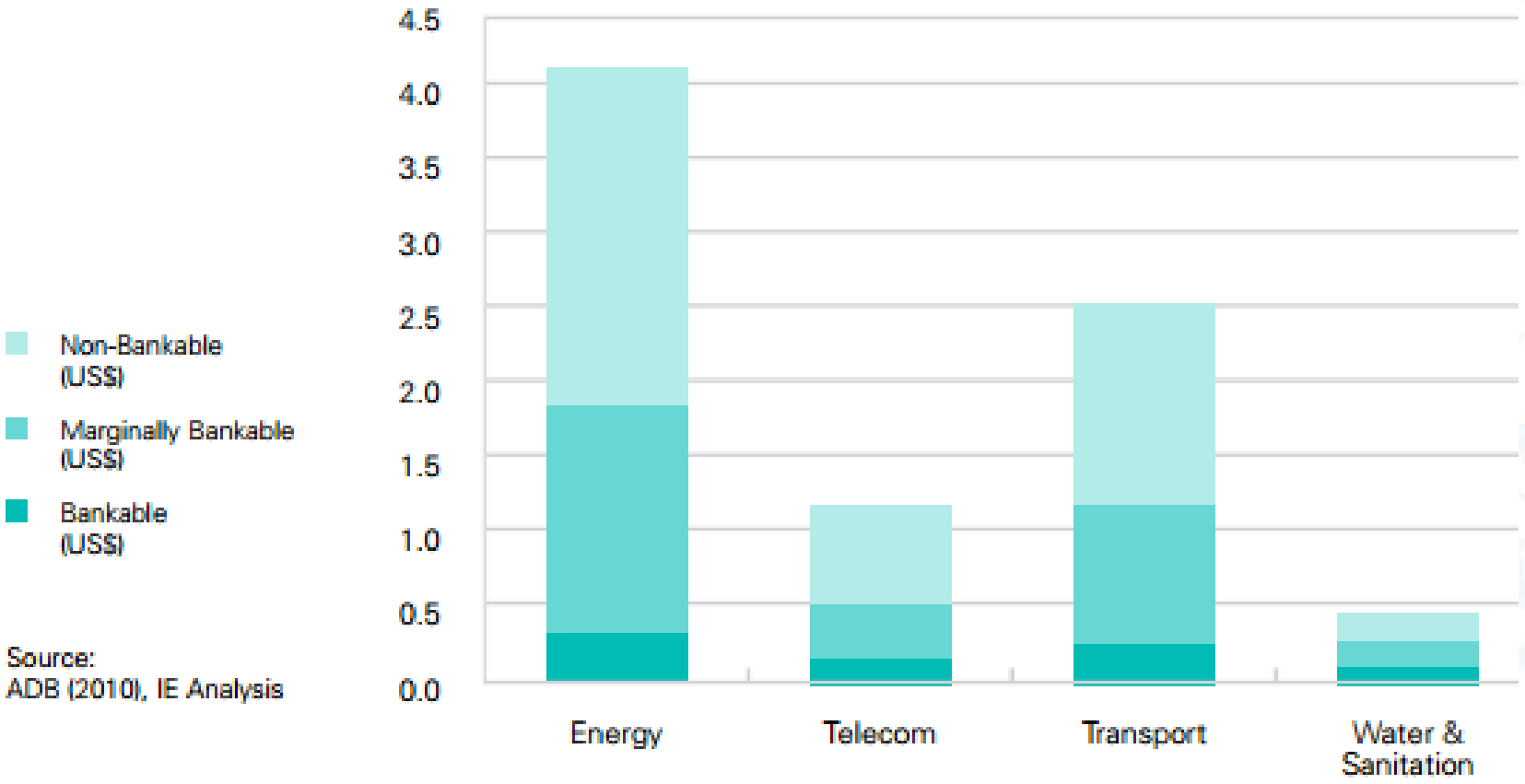
Allard Nooy

CEO, InfraCo Asia

Myanmar, 15 Sep 2015

InfraCo Asia

Power is the highest priority sector in Asia but there is a lack of bankable projects



- Only 5-10% of demand in Asia is currently bankable (US$ 40 to 80 Billion per year)
- 30-45% of demand in Asia is marginally bankable (US$ 240 to 360 Billion per year)

InfraCo Asia

More organizations are needed that focus on creating bankable projects

Stages of Infrastructure Project Development

InfraCo Asia plays a key role in attracting more private sector investment but very few peers exist

- Investment at this stage only $2 to $3 Million (2 to 10% of the total cost depending on project size)
- However, riskiest stage of investment
- Lack of sources of early stage financing in industry

- IFC Infra Ventures
- Global Infrastructure Facility
  - Recent World Bank initiative
  - Supported by Australian government, European institutions and Swiss firms

Most institutional investors focus on Stage 3 and Stage 4 projects as a way to diversify their portfolios

- Commercial Banks
- Multi-laterals
- Private Equity
- Pension Funds
- Sovereign Wealth Funds
- Infrastructure focused government sponsored funds such as AIF, AIIB

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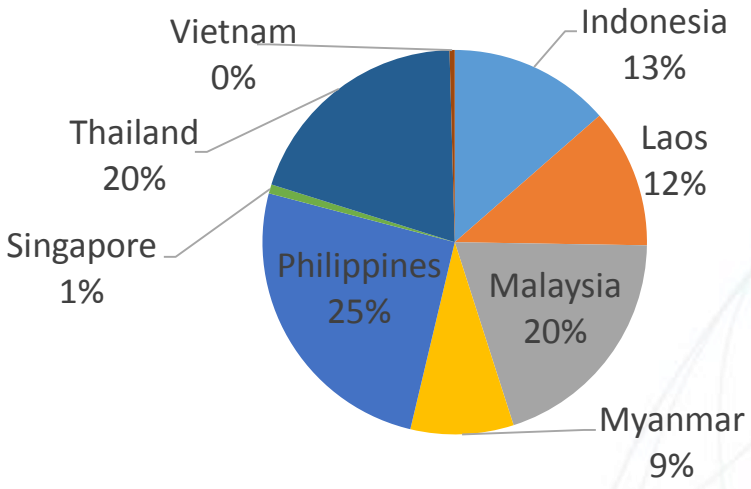
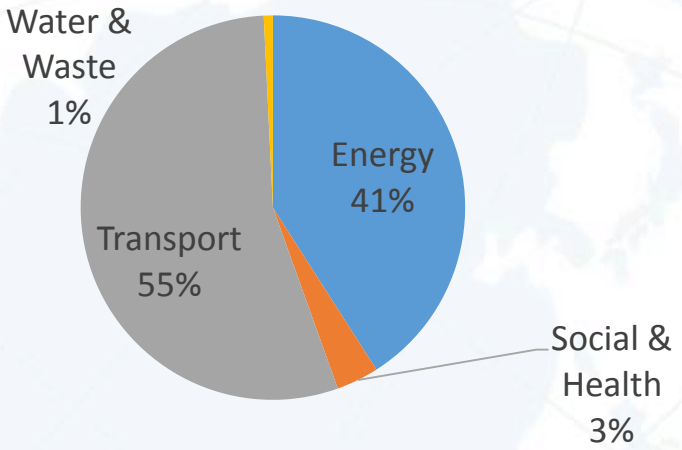
Recent PPP transactions show investments are not proportional to the requirement

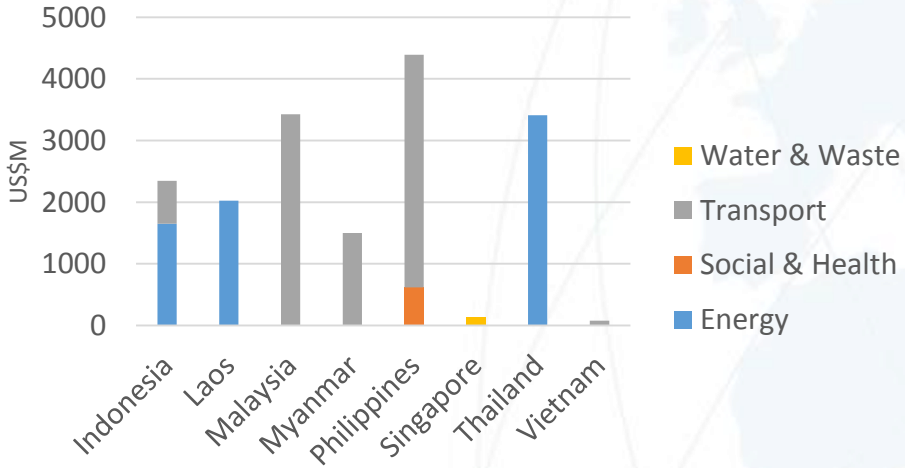
Distribution of PPP Projects by country (on value)



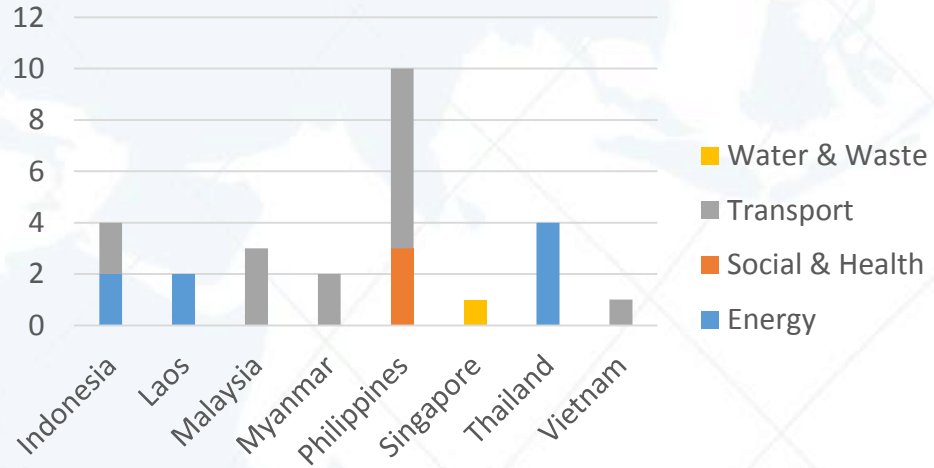
Distribution of PPP Projects by sector (on value)



Value of PPP projects by country/sector



Number of PPP projects by country/sector



Source: World Bank, InfraPPP

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Very few countries have power deals

Country	Project Name	Value	Sector	Status
Philippines	Manila ITS south terminal PPP Project	$87M	Transport	Project Awarded
	Cavite and Laguna Expressway PPP	$1228M		Project Signed
	Integrated Transport system for Cavite SW Terminal	$74M		Project Signed
	Mactan Cebu International airport	$515M		Financial Close
	Manila LRT Line 1 extension PPP	$1470M		Project Signed
	Manila's Automatic Fare Collection System (AFCS)	$40M		Project signed
	NAIA Expressway PPP project	$360M		Project Signed
	Philippines Orthopedic Center	$135M	Social & Health	Financial Close
	Calamba Regional Government PPP Center	$57M		Project in Operation
	PPP for School infrastructure Project	$425M		Project Awarded
Indonesia	Perbakaran-Tebing Tinggi Toll road PPP project	$303M	Transport	Financial Close
	First container terminal at Kalibaru port, north Jakarta	$393M		Project signed
	Sarulla Geothermal Project	$1541M	**Energy**	Financial Closure
	Rajamandala Hydro Power Plant	$110M		Financial Closure
Thailand	Gulf TS1 Co Ltd (Natural Gas)	$2200M	**Energy**	Financial Close
	Khanom 4 CCGT (Natural Gas)	$822M		Financial Close
	EA Solar Lampang Solar PV Power Plant	$199		Financial Close
	Bowin 1 Gas Fired Plant	$189M		Financial Close
Malaysia	Jabor-Kg Gemuruh highway concession	$1000M	Transport	Project Awarded
	Senai-Desaru Expressway (SDE) Johor	$423M		Project in Operation
	Penang underground tunnel link concession	$2000M		Project Signed
Myanmar	Mandalay International Airport	$100M	Transport	Project Signed
	Hanthawaddy International Airport	$1400M		Project Awarded
Laos	Xe-Pian Xe-Namnoy hydropower plant	$1043M	**Energy**	Financial Close
	Nam Ngiep 1 Hydropower Project	$980M		Financial Close
Vietnam	Phu Quoc Island Seaport BOT	$75M	Transport	Project Awarded
Singapore	Changi Newater II PPP	$132M	Water & Waste	Project Awarded

Source: World Bank, InfraPPP

There is room for more power projects in the PPP pipeline in South-East Asia

Country	Implemented projects	Pipeline	Airport	Social	Water & Waste	Power	Surface Transport
Myanmar	Power, Airport	Limited	✓				
Cambodia	Power, Airport	Limited					
Lao PDR	Hydropower	13 projects		✓		✓	✓
Vietnam	Power	Being developed				✓	✓
Indonesia	Power, Water	27 projects[1]			✓	✓	✓
Philippines	Airport, Highway, Schools	37 projects	✓	✓			✓
Malaysia	Highway	52 projects[2]		✓		✓	✓
Thailand	Highway	Being developed					✓
Singapore	Water, Social	Limited			✓		

1. *As per 2013 PPP Book*
2. *As per 10th Malaysia Plan*

Source: ERIA, December 2014

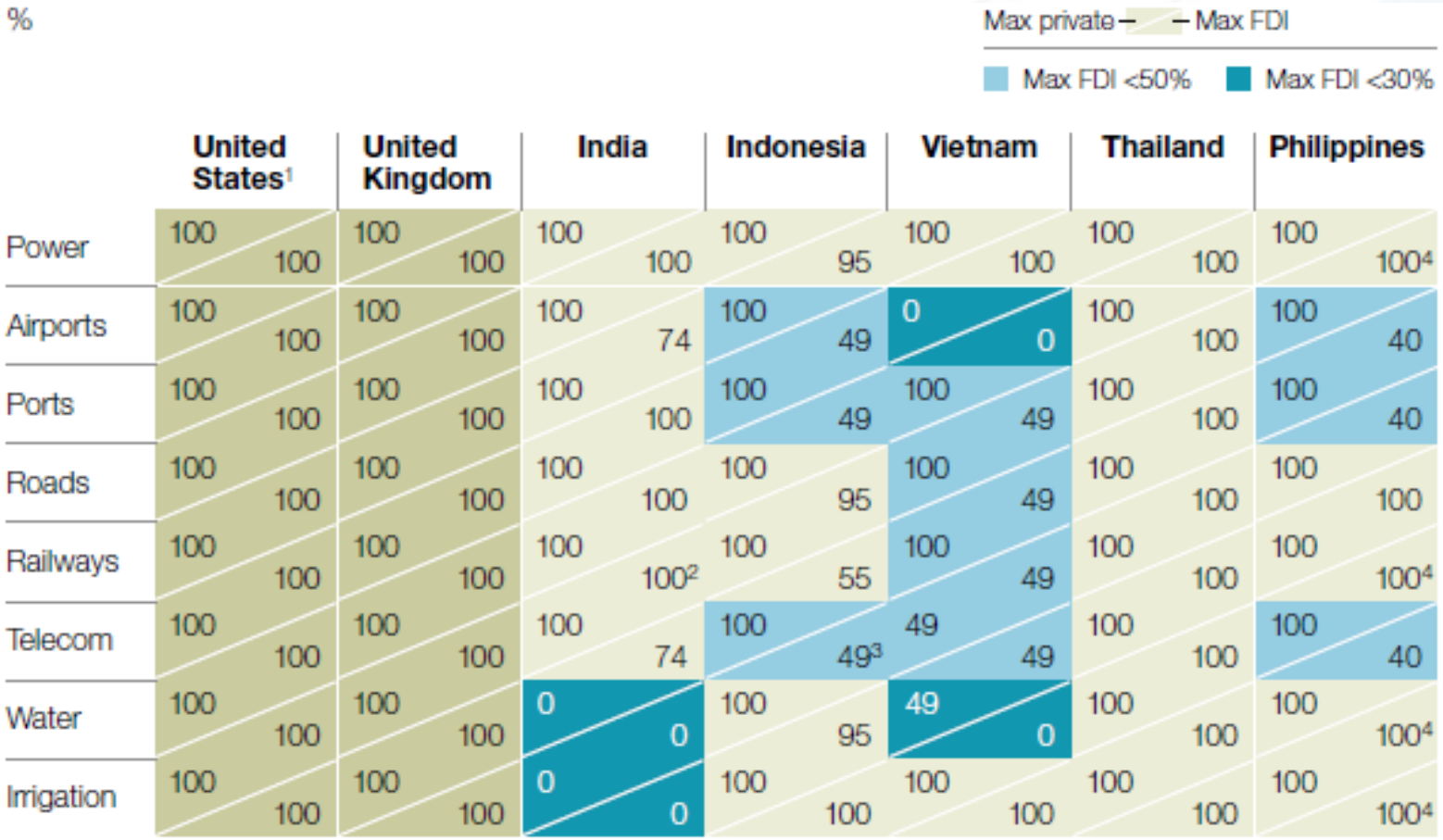
The PPP frameworks heavily influence private sector investment…

Country	Policy Framework	Legal Framework	PPP Govt Agency	Guidelines	Govt Financial Support	Land Acquisition
Myanmar	Few infra policies in dev plan	New Foreign Investment Law	No specific PPP agency	No published PPP guidelines	No developed regime	Limited govt support
Cambodia	Limited PPP specific policies	Use Law on Concession	CDC is focal point for concession law	Procurement manual	No developed regime	Limited Govt support
Lao PDR	Limited PPP specific policies	No specific laws (FDI laws used)	No specific PPP agency	MPI Investment guidebook	No developed regime beyond tax incentives	Limited govt support
Vietnam	Policies for PPP projects & FS fund	Based on 2010 PPP regulations	2012 PPP Team & Steering Comm	No published PPP guidelines	Govt guarantees on BOT power projects	Limited govt support
Indonesia	Economic Master Plan & PPP book	Several specific PPP laws/regns	Bappenas and other bodies	PPP Investor's guide & PPP Book	Guarantee (through IIGF) and VGF	Land Funds or related laws
Philippines	Philippines Development Plan	BOT framework; impl rules/reg	PPP Center	PPP Manual & Sector Guidelines	Project development & monitoring facility	Strategic Fund for ROW acquisition
Malaysia	Privatization policy, 2009 PPP guideline	No specific PPP laws	3PU (UKAS)	PPP Guideline (2009)	Facilitation Fund for private initiatives	Federal/State can acquire private land
Thailand	General infra policies to develop PPP regime	Act for Private Investment in state undertaking	PPP Committee	No published PPP Guidelines	No developed regime	Govt responsible for land acquisition
Singapore	Some policies set out in PPP handbook.	No specific PPP laws	MOF has overall responsibility	PPP Handbook published by MOF	Refinancing guarantee on Sports Hub PPP (2010)	Compulsory acquisition is possible

PPP specific framework | Limited PPP framework | No PPP framework

Source: ERIA, December 2014

…as well as restrictions on private and foreign investment



	United States[1]	United Kingdom	India	Indonesia	Vietnam	Thailand	Philippines
Power	100 / 100	100 / 100	100 / 100	100 / 95	100 / 100	100 / 100	100 / 100[4]
Airports	100 / 100	100 / 100	100 / 74	100 / 49	0 / 0	100 / 100	100 / 40
Ports	100 / 100	100 / 100	100 / 100	100 / 49	100 / 49	100 / 100	100 / 40
Roads	100 / 100	100 / 100	100 / 100	100 / 95	100 / 49	100 / 100	100 / 100
Railways	100 / 100	100 / 100	100 / 100[2]	100 / 55	100 / 49	100 / 100	100 / 100[4]
Telecom	100 / 100	100 / 100	100 / 74	100 / 49[3]	49 / 49	100 / 100	100 / 40
Water	100 / 100	100 / 100	0 / 0	100 / 95	49 / 0	100 / 100	100 / 100[4]
Irrigation	100 / 100	100 / 100	0 / 0	100 / 100	100 / 100	100 / 100	100 / 100[4]

[1]No limitations. However, critical infrastructure projects are subject to congressional review.
[2]100% for building railway infrastructure; rail operations are run solely by government.
[3]49% applies to fixed-line infrastructure; limit for mobile infrastructure is 65%.
[4]100% for greenfield projects; 40% for brownfield projects.

Source: McKinsey, March 2011

Thank you

For further information please visit:

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InfraCo Asia

2nd Power South-East Asia Conference

Myanmar Infrastructure and Energy Market

Allard Nooy
CEO, InfraCo Asia

Myanmar, 16 Sep 2015

InfraCo Asia

Contents

1) Introduction to InfraCo Asia

2) Current Scenario in Myanmar

3) Myanmar National Electricity Plan

4) Legal, Regulatory and Policy Framework

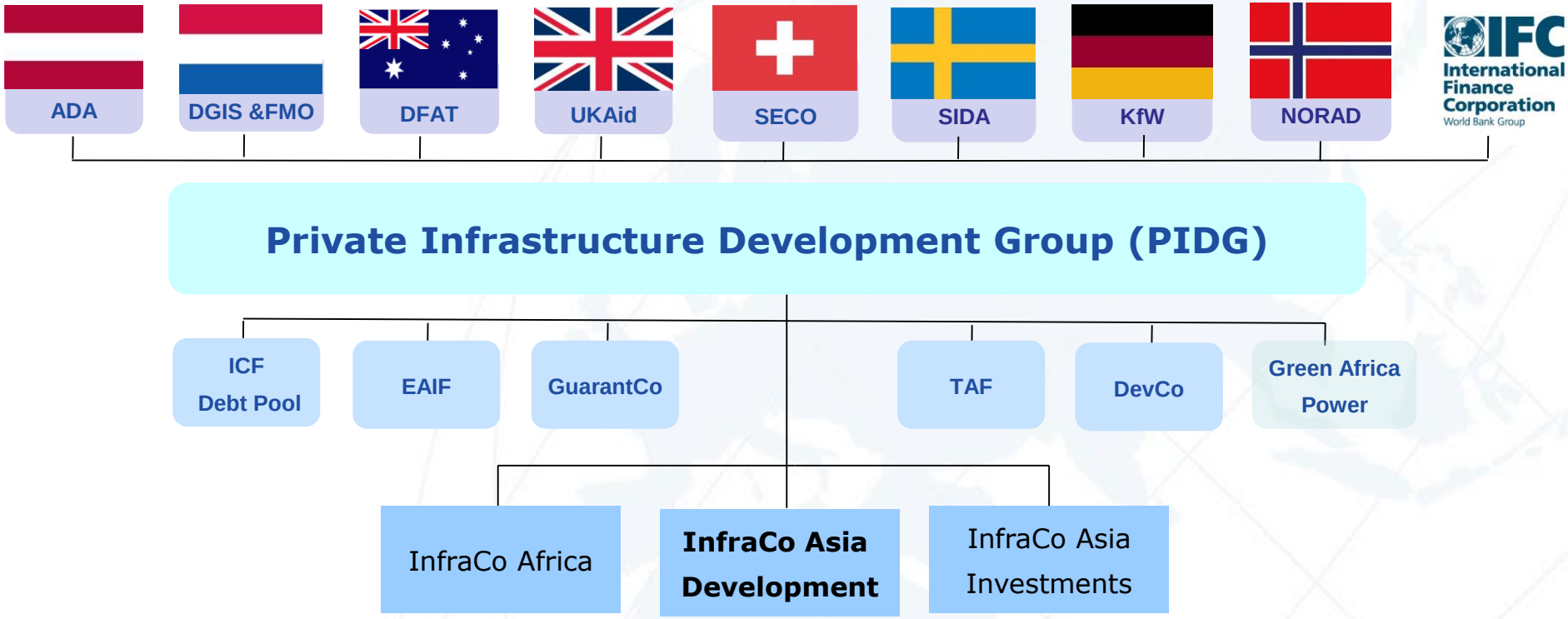
5) Plan for Transmission and Distribution System

Introduction to InfraCo Asia

- Commercially managed infrastructure development and investment company headquartered in Singapore
- Aims to stimulate greater private sector investment in infrastructure
- Funds early stage, high-risk infrastructure development activities by taking an equity stake in projects
- Seeks commercially viable infrastructure projects that contribute to economic growth and social development
- Focusses on risk management and mitigation and funding successful implementation of sustainable infrastructure projects
- Committed to tackling the major institutional market obstacles hindering private participation in infrastructure development in poorer countries
- Development activities are outsourced to teams of Project Developers, save for core corporate management
- Transitioning to a model of entering into development services agreements with multiple developer teams as well as co-invest in third party development projects.

InfraCo Asia is supported by PIDG

- InfraCo Asia is backed by the Private Infrastructure Development Group (PIDG) a multi-donor organisation that promotes private infrastructure investment in developing countries through a range of specialised financing and project development facilities and programmes



InfraCo Asia has 2 dedicated programs for Myanmar (funded by DfID UK)

	Developer Services Program	Co-Development Program

Description	• Work with contracted developer(s)
	• Provide equity funding for
	  • Developers operating cost
	  • Project development activities
	• Lead project development
		• Work with 3rd party developers
		• Provide equity funding for
		  • Project development activities
		  • No more than 50% stake
		• Supervisory/Advisory role to 3rd party developer

Status	Appointed Developer Team in June 2015 – Infra Capital Myanmar	Actively seeking investment proposals

Current Scenario in Myanmar

Myanmar has some of the lowest rates of electrification and consumption in the world

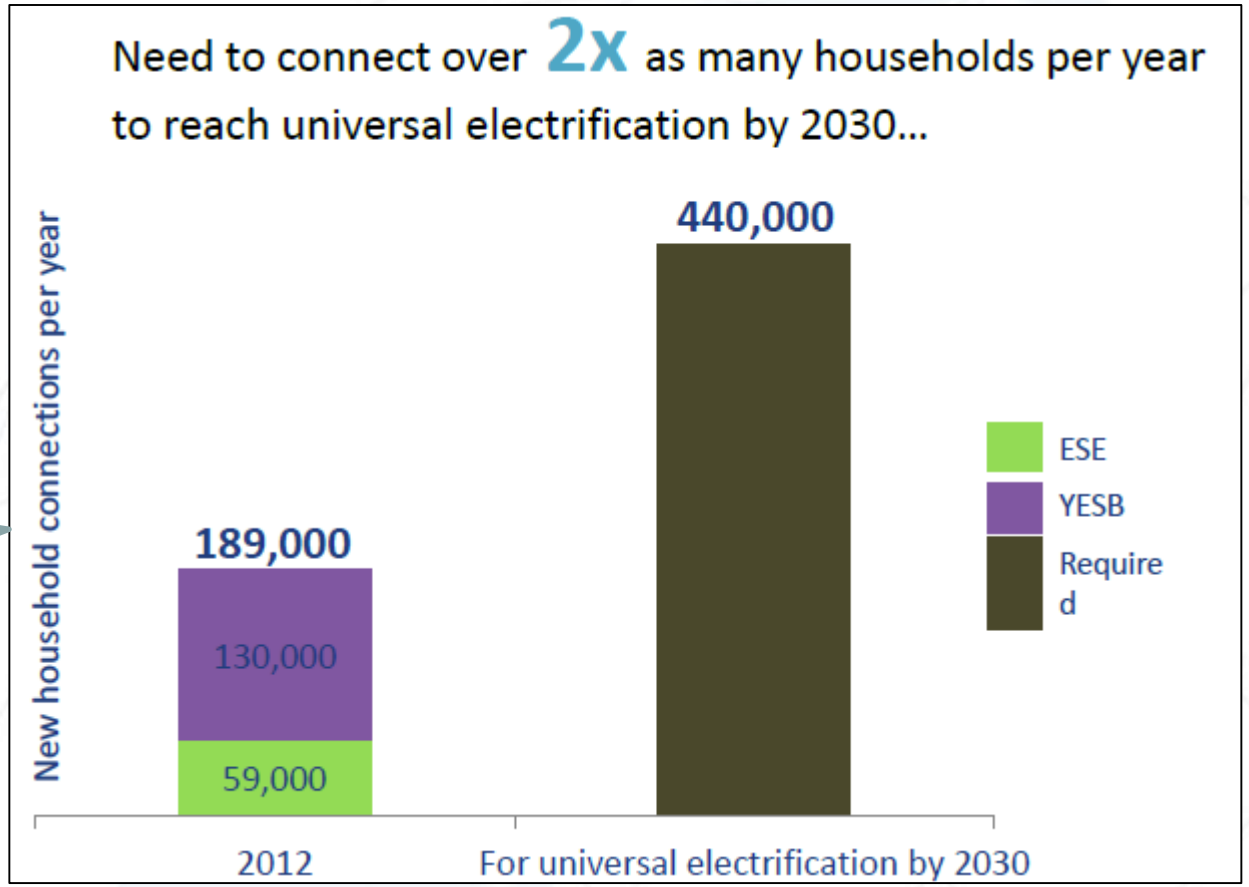
Current Scenario

- **Electrification** ratio increased from 16% in 2006 to 33% in 2014
- Average electrification ratio in rural areas is about 16%

Challenging proposition

Planned Scenario

- Government has set 100% electrification target by 2030



Source: MOEP (2011-2012), ESE, YESB data

Per capita **consumption** rate is ~160kWh/year which is 20x lower than world average

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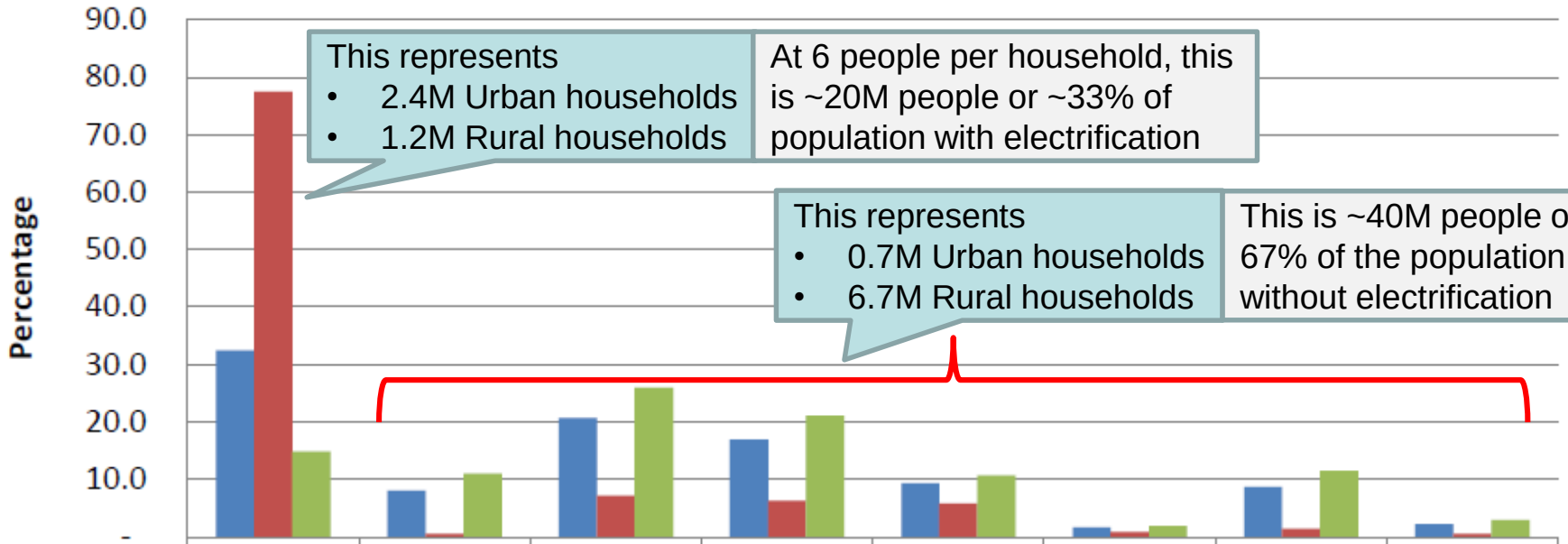
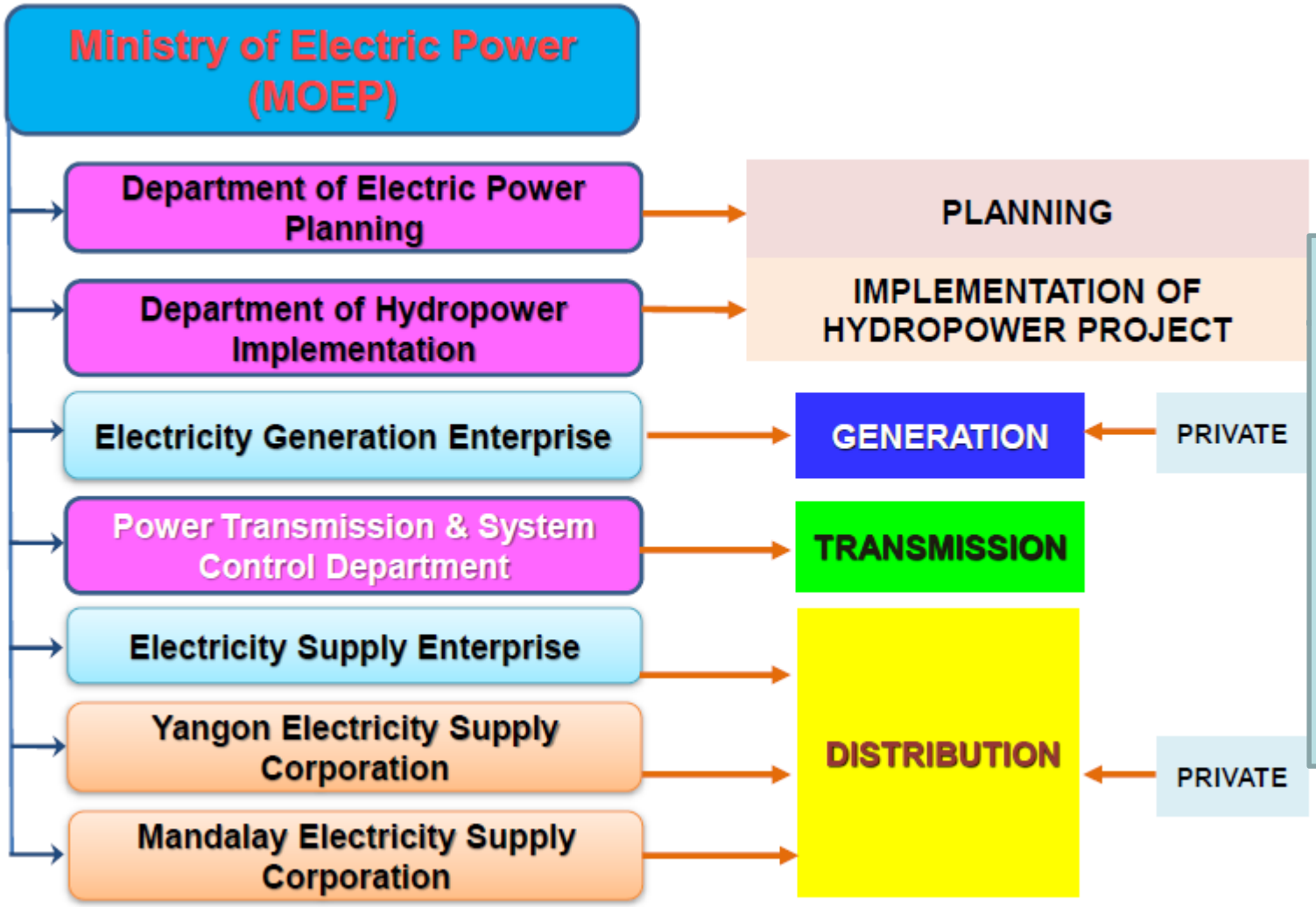
>7m households' main source of lighting is not electricity



	Electricity	Kerosene	Candle	Battery	Generator (private)	Water mill (private)	Solar system/ energy	Other
Union (%)	32.4	8.1	20.7	16.9	9.3	1.6	8.7	2.2
Urban (%)	77.5	0.5	7.2	6.3	5.8	0.8	1.4	0.5
Rural (%)	14.9	11.0	26.0	21.1	10.7	1.9	11.5	2.9

Source: Myanmar Population and Housing Census 2014

Government set up for power sector allows for private participation through unbundling



Three methods of financing **generation** projects

- Using the state budget
- Allowing domestic companies to build on BOT basis
- Allow foreign investments as part of JV with government or local companies

Source: Ministry of Electric Power

Currently hydro power through government ownership is majority of installed capacity

Total Generation Capacity by Plant Type (as of Dec, 2013)

(MW)

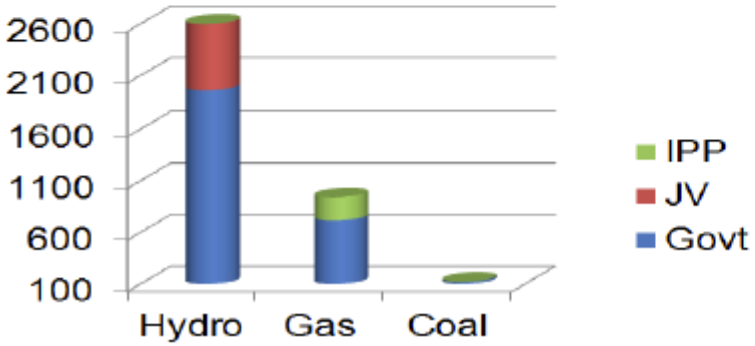
Sr	Owner/ Fuel	Hydro	Gas	Coal	Total
1	Govt	1959	715	120	**2794**
2	JV	840	0	0	**840**
3	IPP	120	225	0	**345**
Total		**2919**	**940**	**120**	**3979**

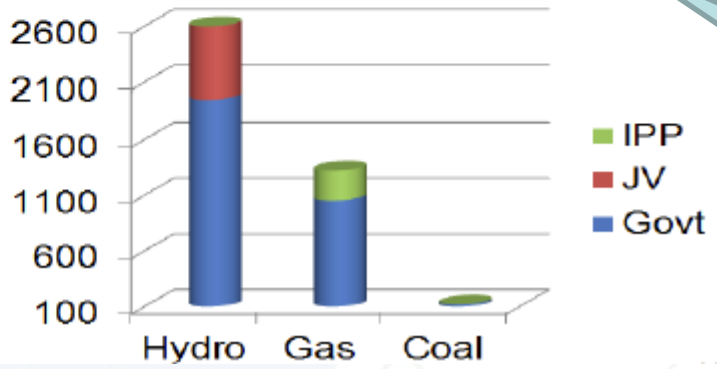
Total Generation Capacity by Plant Type (as of April, 2014)

(MW)

Sr	Owner/ Fuel	Hydro	Gas	Coal	Total
1	Govt	1959	1055	120	**3134**
2	JV	840	0	0	**840**
3	IPP	172	268	0	**440**
Total		**2971**	**1323**	**120**	**4414**

- Very few JVs have been implemented
- ~40 JVs are in various pre-implementation stages such as FS and MoU (e.g. 1280 MW Toyo Thai **coal** plant)





# of plants	25	13	1

Lowest capacity rate (per capita) in South-East Asia

Daily generation capacity of 43,500 kwH

Source: World Bank

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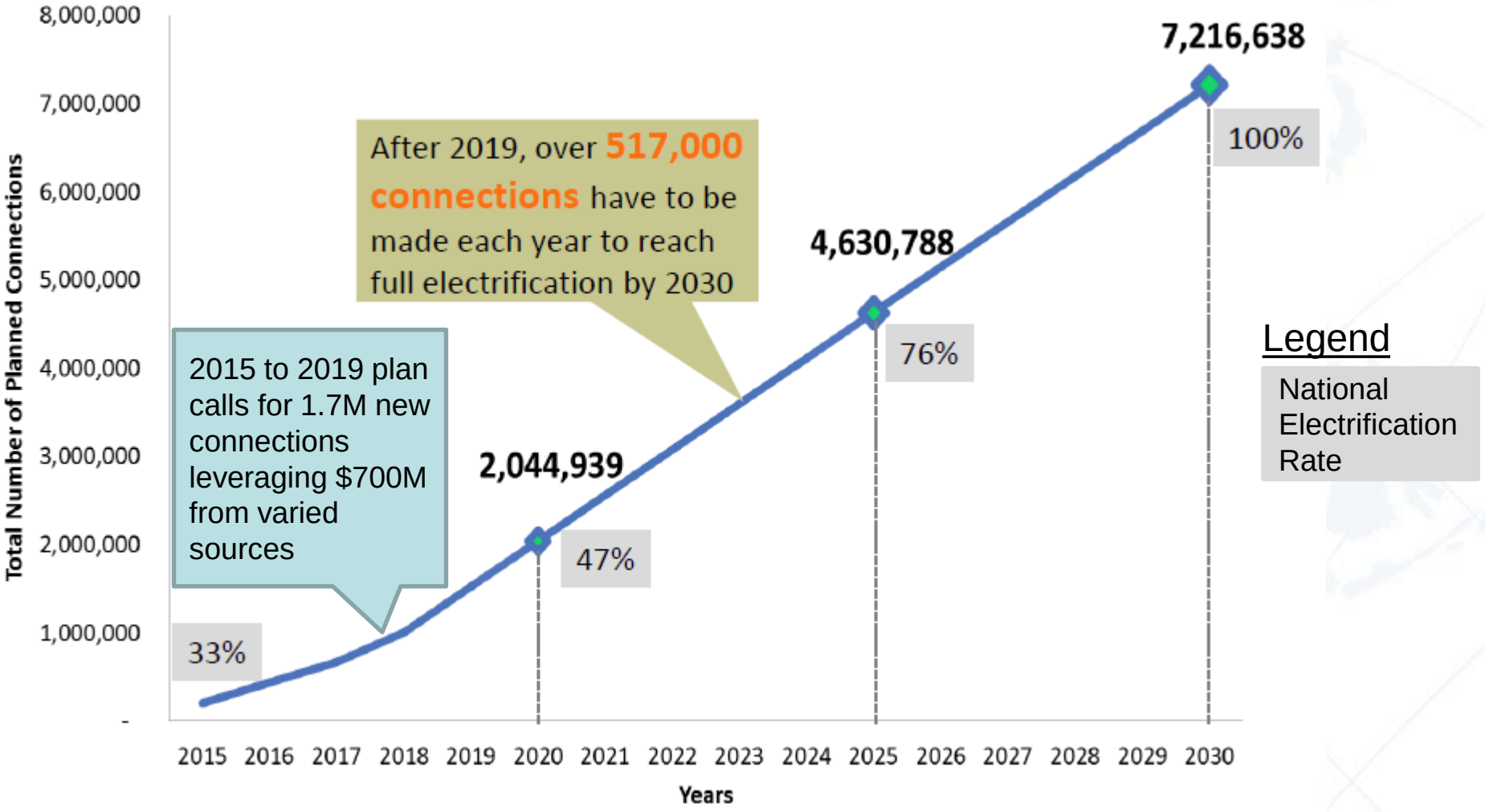
Myanmar National Electrification Plan (NEP)

Roadmap as per NEP for achieving 100% electrification by 2030



Source: World Bank

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The NEP calls for a two-pronged approach

- **Grid extension** will reach some states later in grid roll-out, and these connections will cost substantially more per household
- For those areas where grid will arrive late, an **off-grid "pre-electrification"** option can provide non-grid electricity service in the short- and medium-term
- Over the long-term, grid extension is the most cost-effective option for the overwhelming majority of households
- The total cost of National Electrification Program is estimated at **US $5.8 billion** (grid and off-grid) till 2030.

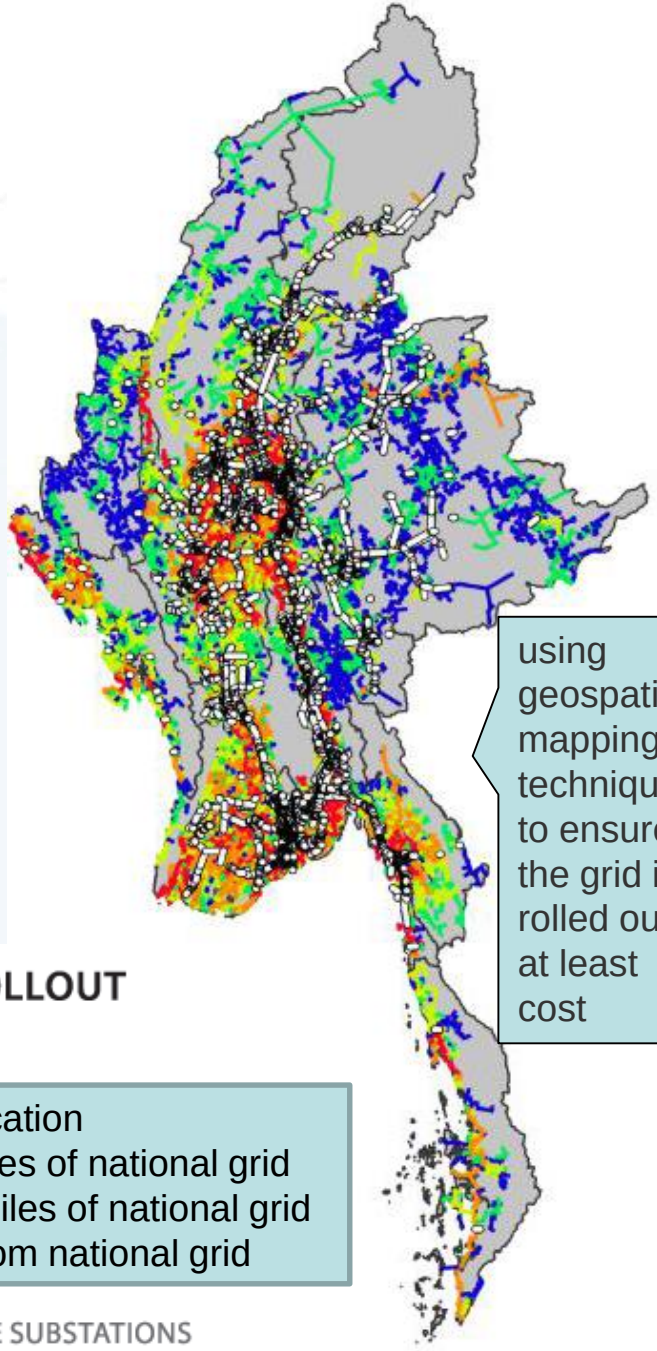
- Current funding allocations
  - **US$310M** through MoEP for transmission lines
  - **US$90M** through Ministry of Livestock, Fishery and Rural Development for rural electrification

- This will require a high degree of private sector investment
- Funding gap will depend on tariff increases decided by Parliament
- Until then, government needs to keep subsidizing as shown below:
  - **Tariffs** for households (56% of consumers) are **K35 per KwH**
  - **Tariffs** for industry are slightly higher
  - **Cost** of generation for Hydro is **K35 to K70** per KwH
  - **Cost** of generation for Gas is **K120 to K130** per KwH

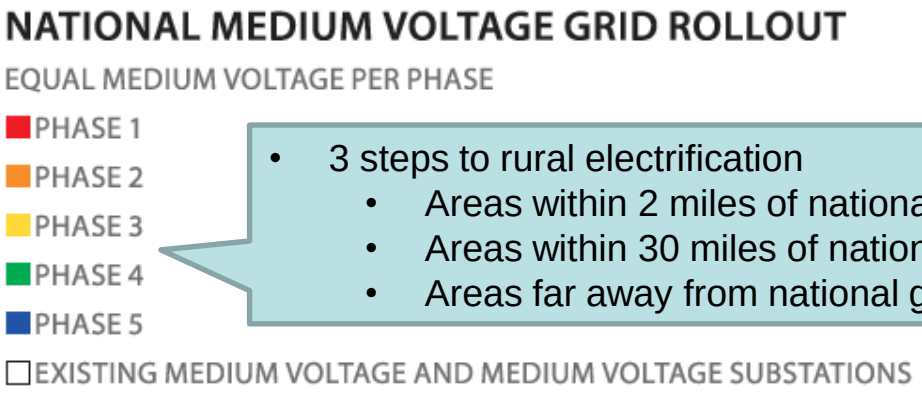
Source: World Bank, Ministry of Electric Power

Grid Extension Plan

- **Urban / dense areas** have least network/consumer; cheapest to connect first
- **Rural areas** need longer lines to reach; hence higher cost per consumer
  - require gradual grid extension
- **Remote communities**
  - grid too expensive
  - best use of off-grid technologies



using geospatial mapping techniques to ensure the grid is rolled out at least cost

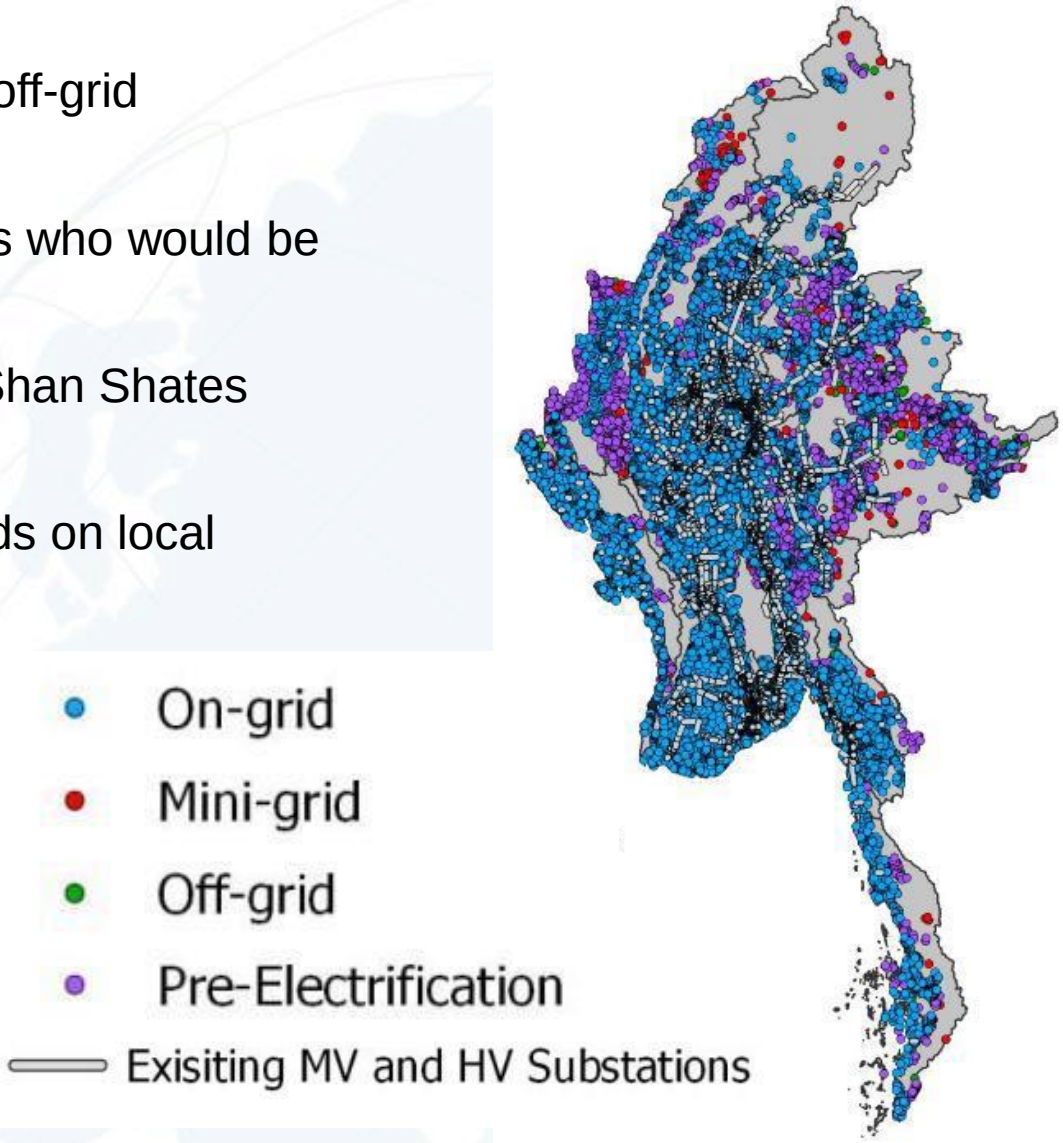


- 3 steps to rural electrification
  - Areas within 2 miles of national grid
  - Areas within 30 miles of national grid
  - Areas far away from national grid

Source: World Bank

Off-Grid Electrification Plan

- Pre-electrification' (short-term off-grid electrification)
  - Recommended for villages who would be last to connect to grid
  - Chin, Kachin, Kayahand Shan Shates good candidates
  - Technology choice depends on local circumstances and time



Source: World Bank

Appropriate Pre-electrification Technology Options depend on the size of the village

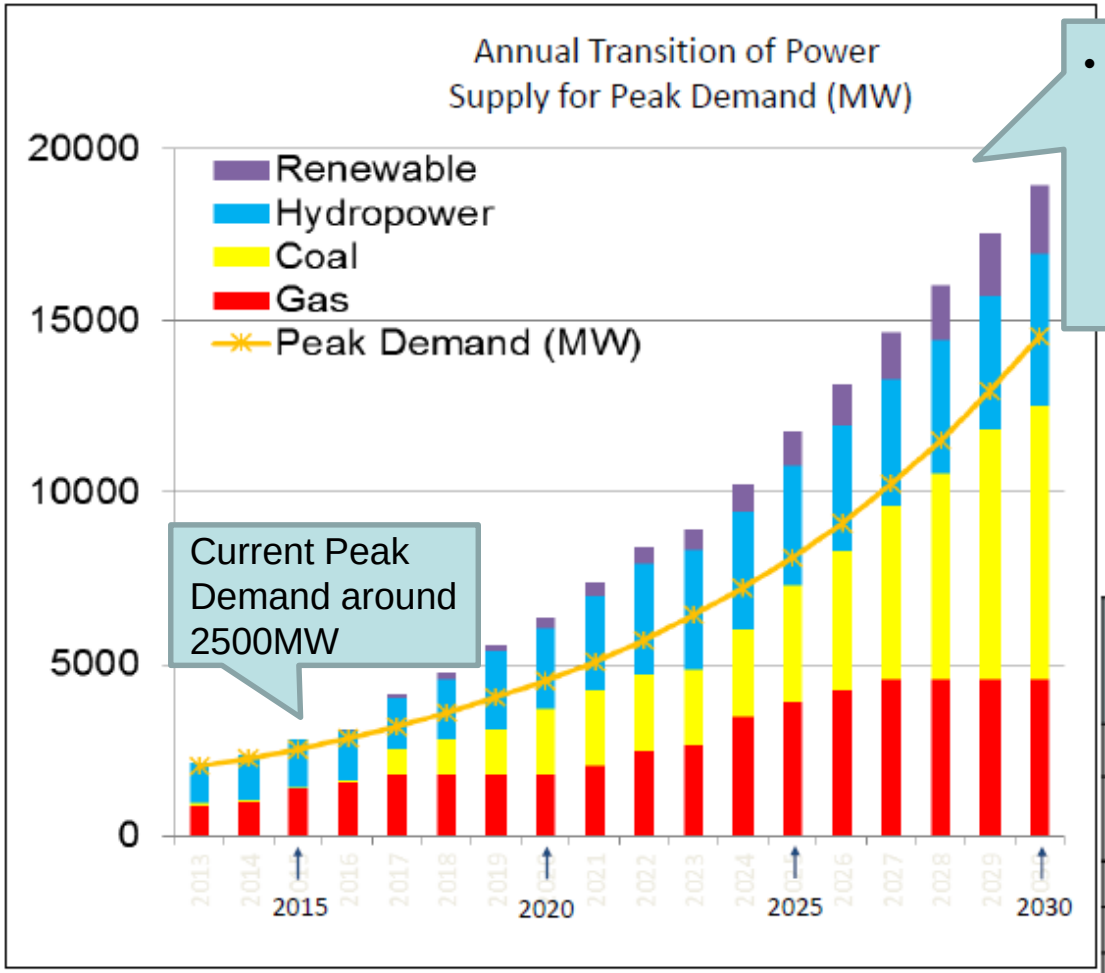
- **Solar home systems** - for smaller villages (<50 HHs)
  - may provide 75-175 kWh/yr for lighting/ICT/TV
  - US $400-500 / HH

  (These are international prices with good quality. Local prices may be lower, and quality can vary.)
- **Mini-grids-** for larger villages (>50 HHs) –solar, hybrid, diesel, or micro-hydro where available
  - 200-250 kWh/yr : lighting/ICT/TV & fan/small fridge
  - US$1,400/HH
  - Has potential to be integrated into grid and save on distribution investment later if built to grid standard

InfraCo Asia believes that these hybrid solutions powered through diesel, solar and biomass sources can be long-term viable solution

Source: World Bank

The fuel mix by 2030 has a more equitable distribution as per the Electricity Master Plan



- Challenges to achieving this:
  - Need more transmission lines
  - Capital investment
  - Technology
  - Public acceptance of large power projects such as hydro and coal

- Coal and Gas for base load power
- Hydro to remain largest contributor
- Renewable of 9% can be improved

Energy Resources	Installed Capacity	
	(MW)	%
(1) Hydro (large)	1,412	6%
(2) Hydro (Small & Medium)	7484	32%
(3) Gas	4758	20%
(4) Coal	7940	33%
(5) Renewable	2000	9%
	23,594	

Source: Ministry of Electric Power

Legal, Regulatory and Policy Framework

Energy Policy Framework

- To ensure **energy security** for the sustainable economic development in the country
- To provide **affordable and reliable energy** supply to all categories of consumers, especially to those living in the remote areas that are currently without electricity.
- To achieve the Government's overarching objective of **poverty reduction** and improvement in the **quality of life** of its people.
- To increase foreign exchange earnings through **energy exports** after meeting the national demand

- Energy exports is an ambitious target given the current domestic challenges.
- Nevertheless government exploring export options for India, Thailand and China
- Government also thinking of importing power and encouraging initiatives such as the one from Bangladesh who wish to import natural gas from Myanmar, build a power plant and export part of the power to Myanmar.

Source: Ministry of Electric Power

Electric Power Sector Policies

- To employ **gas turbine** power generation **in short term** plan and **hydro power** generation **in long term** plan for energy sufficiency.
- To generate and distribute more electricity for economic development.
- To conduct Environmental and Social Impact Assessments for power generation and transmission in order to **minimize these impacts**.
- To **reduce losses and conserve** electric energy for future energy sufficiency.
- To promote electricity production from **new and renewable** energy sources.

Yet, coal forms 1/3 of the installed capacity by 2030

As per standards set by ADB, WB and Japan

Transmission Loss ~5%
Distribution Loss ~15%

As per NEP, estimate is 9% but needs to have a policy level target

Source: Ministry of Electric Power

Legal Framework

- National Energy Policy
  - The Policy had been accomplished with the help of ADB. (7-energy related ministries are cooperating under the National Energy Management Committee, patronage by Vice President)
- Electricity Law
  - On 27 October 2014, Electricity Law was legislated by the Union Parliament.
  - By-laws are also ongoing.
- National Electricity Master Plan
  - National Electricity Master Plan (final draft II) was prepared by JICA and submitted to Ministry in Aug.2014; Drafting is close to completion.
- National Electrification Plan
  - To electrify the whole country in 2030-31 fiscal year, Myanmar National Electrification Plan was jointly prepared by Ministry of Electric Power, Ministry of Livestock, Fishery and Rural Development and World Bank in June 2014.

Source: Ministry of Electric Power

A suitable framework for PPPs also needs to be created

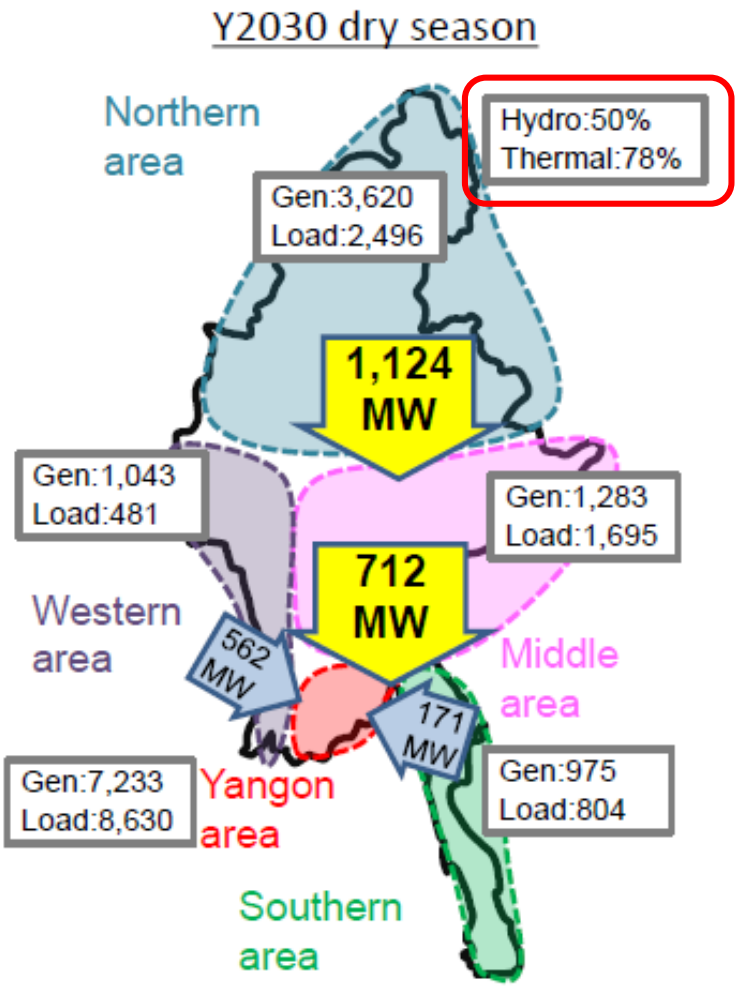
Country	Policy Framework	Legal Framework	PPP Govt Agency	Guidelines	Govt Financial Support	Land Acquisition
Myanmar	Few infra policies in dev plan	New Foreign Investment Law	No specific PPP agency	No published PPP guidelines	No developed regime	Limited govt support
Cambodia	Limited PPP specific policies	Use Law on Concession	CDC is focal point for concession law	Procurement manual	No developed regime	Limited Govt support
Lao PDR	Limited PPP specific policies	No specific laws (FDI laws used)	No specific PPP agency	MPI Investment guidebook	No developed regime beyond tax incentives	Limited govt support
Vietnam	Policies for PPP projects & FS fund	Based on 2010 PPP regulations	2012 PPP Team & Steering Comm	No published PPP guidelines	Govt guarantees on BOT power projects	Limited govt support
Indonesia	Economic Master Plan & PPP book	Several specific PPP laws/regns	Bappenas and other bodies	PPP Investor's guide & PPP Book	Guarantee (through IIGF) and VGF	Land Funds or related laws
Philippines	Philippines Development Plan	BOT framework; impl rules/reg	PPP Center	PPP Manual & Sector Guidelines	Project development & monitoring facility	Strategic Fund for ROW acquisition
Malaysia	Privatization policy, 2009 PPP guideline	No specific PPP laws	3PU (UKAS)	PPP Guideline (2009)	Facilitation Fund for private initiatives	Federal/State can acquire private land
Thailand	General infra policies to develop PPP regime	Act for Private Investment in state undertaking	PPP Committee	No published PPP Guidelines	No developed regime	Govt responsible for land acquisition
Singapore	Some policies set out in PPP handbook.	No specific PPP laws	MOF has overall responsibility	PPP Handbook published by MOF	Refinancing guarantee on Sports Hub PPP (2010)	Compulsory acquisition is possible

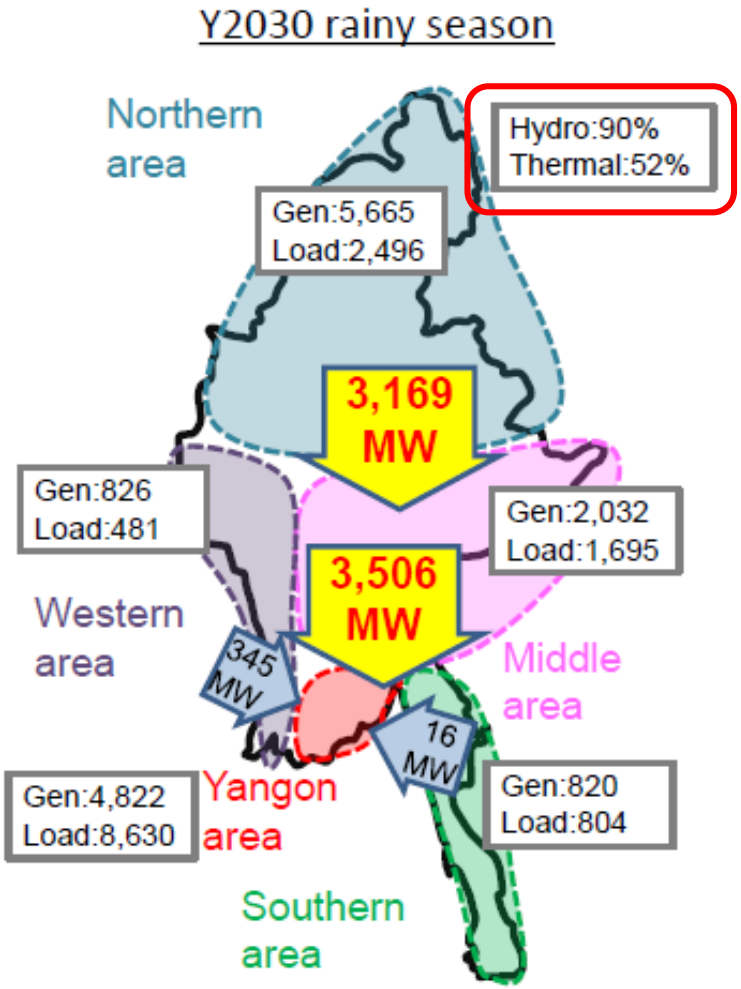
PPP specific framework | Limited PPP framework | No PPP framework

Source: ERIA, December 2014

Plan for Transmission and Distribution System

The transmission system plan is based on regional demand/supply and seasonality

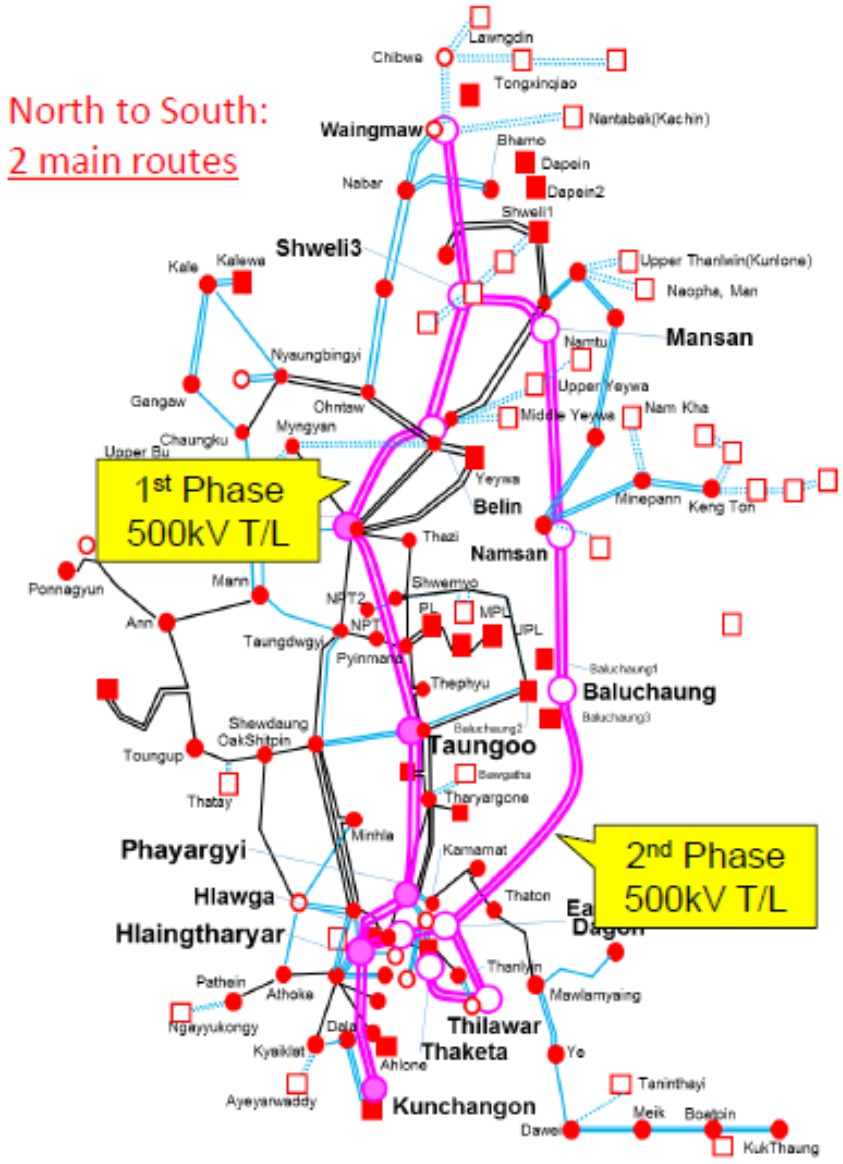




All values based on % use of installed capacity of Hydro and Thermal in dry & wet seasons

Source: Ministry of Electric Power

Outline of transmission system in 2030



Source: Ministry of Electric Power

Thank you

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