East Asia Energy Sector Assessment

Quick Assessment of the Impact of the Credit Crisis on Power Sector Investments

EAP- EASTE

March 2009

Topics for Discussion

- Objectives & Rationale
- Regional Context
- Country Assessments

Objective

The Objective

To assess the short to medium term impact of the emerging economic and financial crisis in the power sector

The Approach

Three EAP countries targeted, Vietnam, Indonesia, Philippines

Energy utilities, project sponsors, financial institutions and relevant government agencies identified and sent an advance list of questions

Followup detailed face-to-face interviews conducted

The Team

The work was funded by ESMAP and was undertaken by the following Team members in close coordination with Energy Sector staff in the Country Offices as follows:

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Sector Context & Rationale

The recent downturn in global credit markets has created uncertainty regarding the availability and cost of medium to long term funding for meeting energy sector investment targets

- …**some projects have witnessed a withdrawal of potential financiers while others have seen an increase in funding costs to unsustainable levels**
- …**more stringent project approval thresholds** are being imposed by potential lenders in a credit constrained environment
- … **project (mainly private) developers are seeing a withdrawal of commercial lenders** from potential energy project loan syndications due to capital constraints
- …**there are no viable alternate financing mechanisms** beyond local commercial bank finance, and bilateral and multilateral finance in some markets
- **… Governments are receiving calls for additional capital infusion or credit support** to cover funding requirements
- **…sovereign and private lending windows of multilaterals are among few global players left in certain primary lending markets**

The inability of client countries to meet their energy sector investment targets will have an adverse impact on economic growth, employment, and access to essential infrastructure services by the poor while also delaying the achievement of MDGs

- **… the Bank [ESMAP] has therefore made an assessment of the financing challenges facing energy sector utilities, sponsors, financiers, and client Governments in EAP as a first step in designing key interventions to address the funding shortfall**

Regional Context: Topics for Discussion

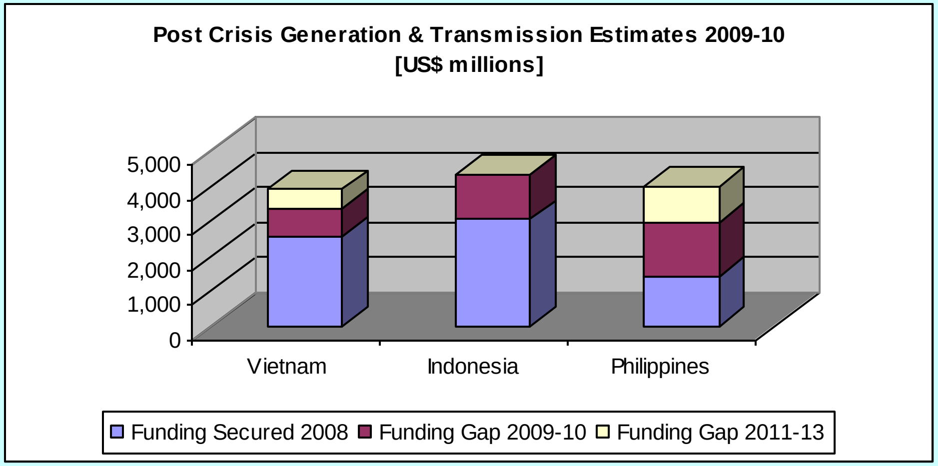
- Public Power Projects – Emerging Funding Gap
- WB Demand Assessment 2009-10
- Lending Terms
- Sector Ownership
- Country Economic Context
- Sector Context & Vulnerabilities
- Key Challenges to Funding Public Power Projects
- Key Constraints to Funding Private Power Projects

Regional Context: Public Power Projects - Emerging Funding Gap

	Pre-Crisis Funding estimate 2009-13 US$ millions	**WB estimate based on post-crisis demand 2009-10** US$ millions	**Funding Secured through end 2008** US$ millions	**Funding Gap 2009-10** US$ millions
EVN, Vietnam	7,847	3,897	2,553	787
PLN, Indonesia	8,071	4,333	3,047	1,286
PSALMTransco Philippines [NPC Debt Overhang, Transco costs, stranded costs]	**PSALM NPC Debt Repayment Obligation 2009-13** US$ millions	**PSALM NPC Debt Repayment Obligation 2009-10** US$ millions	**Privatization Proceeds through end 2008** US$ millions	**Funding Gap net of privatization proceeds of US$ 2,190 mln 2009-10** US$ millions
	5,280	3,750	935	1,560
Total	**21,198**	**11,980**	**6,535**	**3,633**

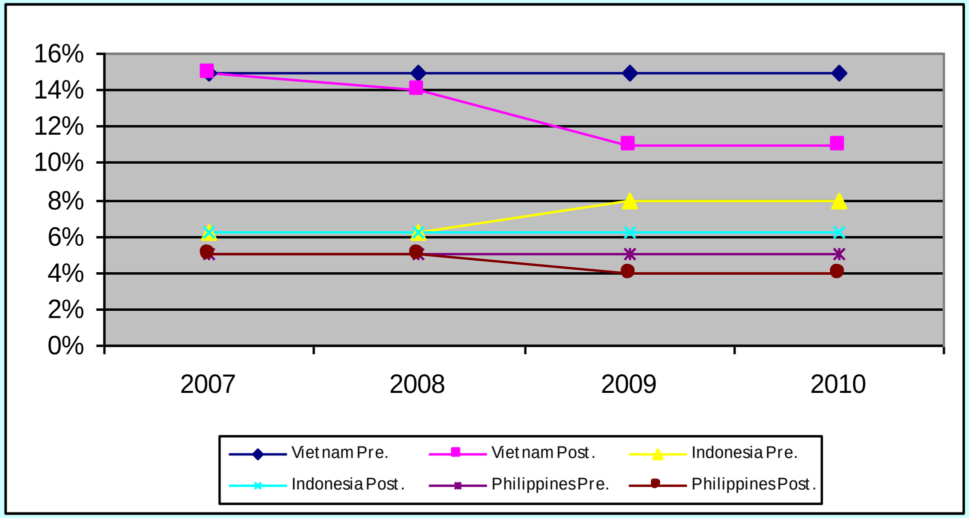
Additional funding needs of US$ 557 mln in 2011-13

Additional funding needs of US$ 1,010 mln net of privatization proceeds in 2011



Regional Context: WB Estimate of Demand in 2009-10

Electricity Demand Growth Forecast



WB Electricity Demand Forecast Assumptions

- **Vietnam –** Demand is 9 % for 2008 and kept at between 9-11% for 2009-10 as compared to 15 % from 2000 – 07
- **Indonesia –** Demand forecasted at 6.2 % during the next 24 months as compared to earlier forecast of 7-9 %
- **Philippines –** Demand forecasted at 4% for 2009-10 vs. earlier assessment of 5%

Generation Growth Forecast GWh

	2008	2009	2010
Vietnam	74,567	82,769	91,873
Indonesia	151,302	160,682	170,345
Philippines	61,996	64,476	67,055

Planned Installed Capacity MW

	2008	2009	2010
Vietnam	15,615	17,332	19,239
Indonesia	28,242	29,993	31,853
Philippines*	16,574	17,237	17,927

Assuming same capacity factor and T&D losses as before

* Not used in forecast as focus is on refinancing NPC debt held by PSALM

Regional Context: Lending Terms

VIETNAM [Benchmark - 11% national savings rate Dec. 2008]

	Terms	Q1, 2008	Q4, 2008	Trends
1.	Interest rate VND	20%	12-14%	While overall interest rates have declined, spreads over benchmark have increased
2.	Spread over benchmark* VND	100-150 bps	250 – 300 bps	Increase of 150 bps post crisis over benchmark
3.	Maturity [local banks to state-owned entities]	5-10 yrs non-prime; 10 -12 years prime	5-10 yrs non-prime; 10 -12 years prime	Fully amortizing loans for high credit quality borrowers
4.	Capital structure – Debt equity ratio	80:20	75:25	Developers are finding it challenging to raise 25 percent equity in current market conditions
5.	Credit support	No govt. guarantees (local banks)	No govt. guarantees (local banks)	Local banks willing to assume EVN, PVN, PC risk

INDONESIA [JIBOR = 11% as of Dec. 2008]

	Terms	Pre-Crisis	Post Crisis	Trends
IPPs				
1.	IDR Interest rate [local banks]	JIBOR* + 100-200 bps	JIBOR + 400-500 bps	300 bps increase post crisis over benchmark
2.	Maturity [local banks]	7-10 yrs	7-10 yrs	Unchanged
3.	Capital structure requirement– Debt equity ratio	80:20	70:30	Developers are finding it challenging to raise 30 percent equity in current market conditions
4.	Credit support req. [foreign banks]	No govt. guarantees	Sovereign guarantees required	Foreign banks unwilling to assume PLN offtake risk
PLN				
5.	IDR Interest rate - PLN	JIBOR + 100 bps	JIBOR + 150 bps	50 bps increase post crisis over benchmark
6.	Maturity [local banks to PLN]	7-10 yrs	7-10 yrs	Unchanged
7.	US$ Interest rate - PLN	LIBOR + 70-80 bps	LIBOR + 150 bps	80 bps increase post crisis over benchmark
8.	Maturity [foreign banks to PLN]	12 years	12 years	Unchanged

Regional Context: Lending Terms [Contd.]

PHILIPPINES			
	Terms	**Interest rate & Maturity**	**Comments**
1.	IFC Interest rate [to PNOC]	PHIBOR + 285 bps - 9.12% variable -all in	Adjusted every 5 years off PHIBOR*
2.	IFC Maturity	Upto 15 years	
3.	Php Interest rate [local banks]	PHIBOR + 150 – 250 bps	Fully amortizing loans for high credit quality borrowers
4.	Maturity [local banks]	10-12 years	To high credit quality developers
5.	Interest rate [foreign banks]	LIBOR + 390 bps uncovered, LIBOR + 330 bps covered	To high credit quality developers - although each bank in syndicate has reduced participation levels
6.	Maturity [foreign banks]	10-12 years	10 years uncovered, 12 years covered

PHIBOR is the an average of interest rate quotes by 20 local and foreign banks in the Philippines and 7-yr PHIBOR was 6.2 % in Jan 2009

Regional Context: Sector Ownership

Ownership structure of the sector has left it vulnerable to market shocks

Vietnam

Dominant [80%] public ownership of the sector – however the contraction of local credit markets post March 2008, combined with the financial crisis has impacted the equitization process and the ability of energy SOEs to meet their investment needs

Indonesia

Single buyer model with ownership of generation assets diversified between public and private players – however tariff reforms curtailed in late 2003 adversely impacting the bankability of electricity projects

Philippines

Power sector entirely dependent on private investment with family-owned gencos, dist. cos. but current owners potentially subject to single borrower limits of parent conglomerate limiting investment in generation assets

Regional Context: Country Economic Context

VIETNAM	INDONESIA	PHILIPPINES
GDP Forecast		
• GDP expected to decline from 6.2 % in 2008 to 4.8 % in 2009 [IMF est.]	• GDP expected to decline from 6.1 % in 2008 to 3.5 % in 2009 [IMF est.]	• GDP expected to decline from 4.4 % in 2008 to 2.2 % in 2009 [IMF est.]
Recent Economic Developments		
• Overheated economy in early '08 leading to **monetary tightening** in March 2008, through fiscal stabilization program– followed by **monetary easing** during crisis • Monetary tightening led to **GDP growth of 6.5% thru Sept. '08 lowest since 2000** • **Fiscal deficit to increase** from 5.6 % of GDP to 6.2 % of GDP (VND 94 trn) • **Inflation high at 22.97%** for 2008 due to excess credit, high commodity prices • State Bank of Vietnam increased **policy interest rates** from 8.75% in Feb. 2008 to 14 % in June 2008 – **reduced back to 10 % in Dec. 2008 in view of the financial crisis** • **Stock market dropped** from 43% of GDP in 2007 back to 15 % of GDP (pre '07 level) by end 2008 due to cap on lending for securities purchases but investors still active • **FDI likely to decline in view of the credit crisis** – rose 38 % thru end Oct. '08 but has slowed down recently	• **GDP grew 6.1 % yr. on yr**. thru Sept. 2008 - private invest. main driver of growth at 26% of GDP • **Fiscal deficit is 1% of GDP** (est. 2008) & projected at same level for 2009, down from 2.1% in 2007 • **Inflation high at 11.7% in Nov. 2008** • **Currency depreciated 29 %** between Jan- Dec. 2008 leading to add'l reserves required to service ext. debt • **Country remains vulnerable to capital flight during crisis** – financially open economy, foreign holdings of Govt. bonds down 4% from 20-16% • **Govt. reducing likelihood of capital outflows** by offering guarantees to banking system, increasing deposit insurance, & passing regulation to permit rapid intervention in troubled financial institutions • **Indonesian stock exchange has fallen 56 %** since beg. 2008 due to low expectation from domestic economy during crisis	• **GDP growth decelerated to 4.6%** in the first three quarters of '08 down from 7.2% in 2007 – decline in exports of electronics, remittances, services, agriculture • **Fiscal deficit was 0.9% of GDP as of Nov. '08** against target of 1% for 2008 - fiscal deficit goal under pressure from falling revenues, – pvt. proceeds (1.4% of GDP) in '07 declined due to volatile market conditions • **Inflation at 8% y-o-y in Dec. 08** down from high of 12% in Aug. 08 following decline in fuel & commodity prices • **Global slowdown projected to continue to impact the economy** – OFW remittances down 10% in Nov.

Regional Context: Country Economic Context

VIETNAM	INDONESIA	PHILIPPINES
Impact on Government expenditures		
• **Govt. expenditure to be reduced by VND 48 trn** • 1,145 public projects worth VND 30 trn or 12.7% of planned inv. adjusted, downscaled or stopped initially awaiting Govt. stimulus package	• Govt. planning to **maintain infra. investment but reducing ministerial budgets by 5-15%**	• **Govt. spending at 15% of GDP with capex at 2.4% of GDP in '08** vs. 1.7% of GDP in '07
Government Debt & Borrowing Strategy		
• **Total external public debt of approx. US$ 19 bn is sustainable** - 25% of GDP (est. 2008) mostly on concessional terms (low debt service to exports ratio) • **FX reserves at US$ 20.7 bn** as of July 2008 • **Current account deficit to widen from 10 to 12% of GDP in 2008** - economic performance linked strongly to exports and FDI • Changes to Govt. financing plans post crisis unavailable at this time	• **Ext. debt is 35% of GDP o/w 16% due within 12 months** and could cause fiscal pressure to mount – but at US$ 22.8bn is manageable • **FX reserves at US$ 60bn fell to US$50 bn** by Oct. 2008 • **BOP surplus of 1.8% of GDP** thru Sept. 2008 • **Govt to raise US$ 10.6 bn in 2009 to fund financing strategy** – could be impacted by contagion, financial crisis – could see withdrawal of foreign investors, risk of capital flight • **Govt. inability to raise the required amount will have an adverse impact on its ability to fund energy sector projects**	• **Govt. debt stock reduced slightly** from 55.8% at end '07 to 55.6% at end Sept. 08-but Govt. debt reduction slow in the face of higher int. rates, weaker peso • **Gross int'l reserves** at US$ 37.1 bn in 2008 – increase of US$ 3.3 bn from '07 **can cover 5.6 mths of imports., is 2.8x s/t external debt** • **Sovereign spreads elevated** at UST+600 bps in Jan. 2009 vs. UST+200 in Jan. '08- **Govt. issued US$ 1.5 bn in 10 yr global bonds at 8.75%** • Govt. maintains sizeable deposits with BSP & Land Bank (4% of GDP) as cushion to meet short-term liquidity requirements • **Govt. significant cash holdings, liquidity, & foreign bond placement has eased financial pressures for 2009**

Regional Context: Sector Context & Vulnerabilities

VIETNAM	INDONESIA	PHILIPPINES
Sector context		
• Dominant [80%] public ownership of the sector	• Single buyer model with ownership of generation assets diversified between public and private players	• Main issue is large NPC debt overhang assumed by PSALM
Public sector vulnerabilities		
• Contraction of local credit markets post March 2008, combined with financial crisis has impacted the ability of energy SOEs to meet investment needs - EVN fixed asset formation has dropped in 2008 compared to less than half of 2007 levels • FX risk - Sector has large FX debt – EVN debt is 68 % in FX mainly from bilaterals/ multilaterals • Interest rate exposure – local banks loans on floating rate interest - 36 % of EVN local bank loans are floating rate debt which remains unhedged	• Tariff reforms curtailed in late 2003 adversely impacting the bankability of electricity projects • SOE debt capacity insufficient to meet investment needs - PLN funding needs of US$ 4 bn in 2009-10 vs borrowing capacity of US$ 1.2 bn • PLN solely dependent upon PSO subsidies to remain solvent - represents one third of revenues – banks revisiting PLN credit risk during credit crisis • Local banks approaching sector lending limits – 10 % of loan portfolio	• PSALM expected to cover NPC debt repayment of US$ 4.4 bn thru 2011 through privatization proceeds but forecasted revenues from new privatization reduced due to financial crisis • PSALM ready to refinance 2009 gap by issuing bonds • PSALM preparing Phase 2 liability management program to address vulnerabilities • FX risk – 84% of PSALM debt in foreign currency • New investment entirely dependent on private investors – owned largely by family-owned gencos, distribution cos. – existing owners potentially subject to single borrower limits of parent conglomerate

Regional Context: Key Challenges to Funding Public Power Projects

Traditional funding sources include Govt. budgetary transfers, commercial banks, bond market, internal cash generation – but are drying up

VIETNAM	INDONESIA	PHILIPPINES
Government budgetary transfers have declined due to competing expenditure priorities		
• NA – Govt. budgetary support in the form of onlending bilateral/multilateral loans to the sector	• Only IDR 2.4 trn of IDR 7.4 trn approved by national Govt. – actual needs to be determined against reprioritized list of projects	• NA – private power development
Foreign bank loans have declined in the face of the credit crisis, and have become more expensive		
• Reduced foreign bank ability to fund large SOEs – as a result SOEs have drawn upon cash reserves to fund capital expenditure – EVN has seen internal cash balances drop in 2008 despite liquidation of short-term investments due to internal cash offsetting decline in bank lending for capital expenditure – EVN tangible asset formation has dropped due to construction delays resulting from funding shortages • Changes to EVN cost of capital post crisis unavailable at this time	• Foreign bank participations limited - participation levels capped at US$ 50 million apiece, down from US$ 100 – 200 million • Cost of capital has increased - Spreads higher in the face of widening sovereign spreads post crisis - PLN rates increased by approx. 70 bps from LIBOR+80 bps to LIBOR + 150 bps • More stringent credit support requirements – Banks requiring explicit sovereign guarantees for PLN risk • Credit capacity has declined in the face of local currency devaluation – PLN capacity at US$ 1.4 bn for 2009-10 against official borrowing needs of US$ 5 bn following 29% devaluation in '08	• Foreign banks being approached to refinance PSALM debt but loan terms reflect liquidity constraints, higher cost of capital and potentially shorter maturities • PSALM planning bond issue during Q1 2009 to refinance NPC debt to be priced off Philippine 10-yr sovereign bond issued Jan. 2009 at 8.75% higher by 200 bps • Recent bank participation in power sector mainly in the form of purchasing loan sell-downs or refinancing existing debt – First Gen refinancing of US$ 500 mln equivalent at LIBOR+390 uncovered (150bps higher than pre crisis & less than US$690 mln to be refinanced)

Regional Context: Key Challenges to Funding Public Power Projects

VIETNAM	INDONESIA	PHILIPPINES
Local banks are liquid but are constrained by single borrower limits		
• Banking sector well capitalized – raised sufficient liquidity during economic boom of 2007	• Banking sector liquid in local currency terms with high capital adequacy ratio (9.8%) and low NPLs (3.9%) in Sept. '08	• Banking sector is resilient & banks are liquid (55% liquidity ratio), but are exposed to domestic & external shocks – large holdings of sovereign paper, slowing economy, NPLs
• Loan size - Can lend between US$ 50 – US$ 200 million equivalent per SOE project, but limited by single borrower limit of 15% of own equity, but have exceeded it in the past	• Loan size - Can lend between US$ 50 – US$ 200 million equivalent per SOE project, are limited by sector lending limits of 10% of loan portfolio but can exceed it against MOF guarantees	• Loan size - Lending mainly to private power, upto US$ 200 million equivalent but are constrained by single borrower limit of 20 % of borrower's unimpaired capital
• Cost of capital - Interest rates have declined post economic slowdown (March 2008) from 20% to bet. 14-16 % due to fall in the benchmark national savings rate (from 14 to 11%) – spreads over benchmark are 300-500bps	• Cost of capital for SOEs has increased – PLN cost of borrowing higher by 50 bps from JIBOR (11%) + 100 to JIBOR + 150 bps	• Cost of capital - for PSALM yet to be determined but remained largely unchanged post crisis for the sector at PHIBOR (6.2%) + 150 - 250 bps for 5-12 year maturities
• Maturities remain at 10 years for large SOEs e.g. EVN unchanged from pre-crisis levels	• Maturities remain at 7-10 years for large SOEs e.g. PLN unchanged from pre-crisis levels	• Maturities remain at 10-12 years for creditworthy borrowers

Regional Context: Key Challenges to Funding Public Power Projects

VIETNAM	INDONESIA	PHILIPPINES
Local bond markets have offered a viable alternative to raising finance but are largely illiquid, and offer relatively short maturities – access to global bond markets is limited to few creditworthy SOEs		
• EVN has issued bonds worth VND 6.5 trn over time, and a VND 500 bn, 5 yr corporate bond (US$ 28.5 mln equivalent) in Jan 2009 – another VND 3,500 bn to follow in tranches thru 2010 • Mkt. size - Bond market has grown by 31 percent in the last year in US$ terms to a size of US$ 12.9 bn outstanding by end 2008 • Issuers - Main issuers have been the GoV and public entities that represented 96 percent of the market in 2008 – few corporate issuers • Cost of capital – avg. 12 month dep. rate of (7.5 %) + spread (200 bps and higher depending on issuer) • Maturities are 5-15 years for Govt. securities, shorter for corporate bonds	• PLN planning 5 & 7 yr. bonds (IDR 1.5 trn or US$ 123.2 mln equiv.) issued at bet. 15.7 – 17.2% • Mkt. size - Bond market has declined by 21 percent in US$ terms in the last year to a size of US$ 68 bn outstanding by end 2008 • Issuers - Govt. issues represented 91 percent of the market in 2008 • Nearly 450 basis point increase in yields on medium-term domestic bonds post crisis [Oct. 2008] • 700 basis point increase in Indonesia's global bond spreads post crisis [Oct. 2008] • Cost of capital - for SOE bonds is JIBOR (11%) + 300-400 bps or more • Maturities are upto 7 years for corporates	• PSALM planning bond issue in Q1 2009 – but spreads are higher by at least 200bps post crisis • Mkt. size - Bond market has declined by 1.5 percent in US$ terms in the last year to a size of US$ 59 bn outstanding by end 2008 • Issuers - The Govt. represented 53 percent of the market in 2008 • Issue size: Recent corporate issues have been bet. Php 4 – 6 bn (US$ 100 mln equivalent) • Cost of capital – increased by 100-150 bps during crisis – priced at a spread over the sovereign's cost of capital [8.75% for 10 yr global bonds as of Jan. 2009] • Maturities – for corporates are 5 – 7 years • Cost of market entry – high at 150 bps

Regional Context: Key Challenges to Funding Public Power Projects

Traditional funding sources include Govt. budgetary transfers, commercial banks, bond market, internal cash generation – but are facing funding issues

Key issue	Market context
Commercial banks (mainly foreign banks) are lending less	
• Reduced foreign bank ability to fund large projects	• Most top tier foreign banks have capped participation levels at US$ 50 million apiece, down from US$ 100 – 200 million, will impact foreign currency borrowing program of state-owned power utilities that are seeking private finance beyond multilateral funding e.g. PLN (hard currency loans from Mitsui, Calyon, BNP Paribas, Fortis, ABN Amro, etc.)
• Funding needs exceed local bank funding capacity – and lending is impacted by single borrower limits	• Can lend between US$ 50 – US$ 200 million equivalent per SOE project • Main issues are single borrower limits and relatively short maturities of between 7-12 years
• …as a result, some SOEs have drawn upon their cash reserves to fund capital investment	• Large SOE in the Vietnam power sector had cash balance fall during the first 9 months of 2008 despite liquidation of its short-term investments as a result of internal cash being mobilized to offset contracting debt market
• … and have had to slow construction on projects	• Large SOEs have shown lower levels of tangible asset formation during the second half of 2008 e.g. EVN Vietnam

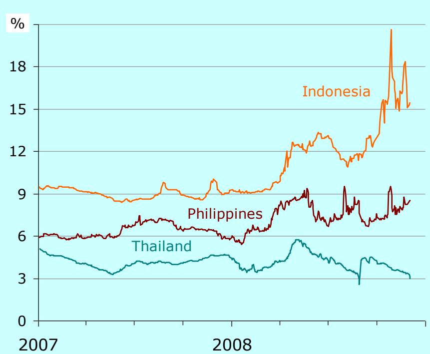
Regional Context: Key Challenges to Funding Public Power Projects

Key issue	Market context
Bond markets offer a viable alternative …external bond markets have been accessed by SOEs to raise capital	
… but access is limited to few creditworthy SOEs with strong financial history (or Govt. credit support)	• PLN has raised US$ 2bn in the Eurobond market in 2006-07 • PSALM is exploring a global bond issue to be priced off the Jan. 2009 sovereign issue (8.75% for 10 yr. maturity)
Local bond markets are under-developed, illiquid, and offer short maturities	
… but have been accessed for medium term financing by SOEs	• PLN is planning IDR 1.5 trn 5 & 7 yr. bonds at between 15.7 and 17.2 % interest in 2009 • EVN has issued bonds worth VND 6.5 trn over time, and a VND 500 bn, 5 yr corporate bond (US$ 28.5 mln equivalent) in Jan 2009

Regional Context: Key Challenges to Funding Public Power Projects

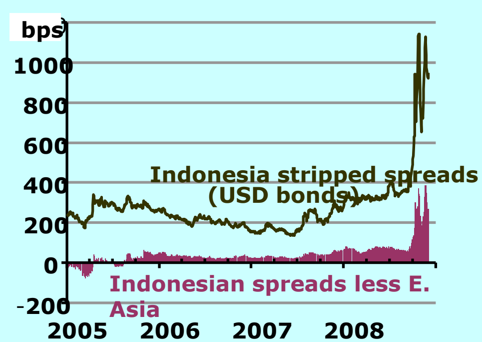
Key issue	Market context
Cost of capital has increased (except in Vietnam, where local benchmark fell following fiscal stabilization program)	
• … and spreads over global benchmarks have widened for SOE borrowing	• Spreads over LIBOR have risen by about 50 – 80 bps for foreign bank lending to PLN in Indonesia, and by approx. 200 bps on average in the Philippines
• …spreads are also higher for local loans post crisis	• By about 70 bps for PLN in Indonesia • Even a highly rated Singapore public generation entity saw spreads increase from 60-80 bps to 350 bps post crisis for local currency loan
• … and when combined with local currency devaluation post crisis, has led to an erosion of SOE borrowing capacity	• Indonesian Rupiah has declined 29 percent since January 2008, as a result PLN's borrowing capacity limited to US$ 1.2 bn for 2009-10 while funding needs are approx. US$ 5 bn

Domestic Currency Bond Yields



Source: CEIC

Spreads on US$ Sovereign Bonds



Source: JP Morgan and World Bank

Regional Context: Key Challenges to Funding Public Power Projects

Key issue	Market context
Foreign Currency & Interest rate exposure of SOEs has remained unhedged …	
• … most SOE borrowing in the form of onlending of bilateral/multilateral hard currency loans	• EVN has 64 percent of its debt while PSALM has 84 percent of its debt in hard currency with foreign currency exposure remaining largely unhedged • PLN has approx. 40 percent of its debt in hard currency mainly two-step loans and has incurred a foreign currency loss of IDR 4.7 trn (US$ 420 mln)
• … and when combined with floating rate local & foreign currency loans, could impair SOE ability to service debt	• 36 percent of EVN's local currency debt is in the form of variable interest loans and would impact debt service ability in the event interest rates were to rise during the crisis (benchmark reduced from 14 to 11 percent following economic cooling) • PLN has seen spreads widen from LIBOR + 70 bps, to LIBOR + 150 bps for private finance
Sector lending limits are being approached …	
• … but in Indonesia, state-owned banks are willing to exceed these limits in return for explicit Government guarantees	• In Indonesia state-owned commercial banks e.g. Bank Bukopin are approaching their exposure limit (10 % of loan portfolio) for lending to the power sector but others have reached levels of 21 % (BNI)

Regional Context: Key constraints to funding private power during credit crisis

- **Shortage of liquidity among foreign banks**
  - **More banks are required post crisis to meet original project financing needs [clubbed deals] as a result, projects are being delayed - even creditworthy borrowers e.g. gencos in Singapore have seen the no. of interested banks submitting expressions of interest for lending drop significantly post crisis (from 15 banks to 1 bank in one case)**
  - **In Vietnam, a large IPP project is seeking to fill a funding gap of US$ 500 million for which it is approaching approx. 13-15 banks – most banks are seeking guarantee cover and can only commit upto US$ 50 million apiece**
  - **In the Philippines, First Gen had to approach 13 banks for its US$ 500 mln refinancing**
- **Uncertainty reaching financial close**
  - **Fully underwritten deals have been replaced by fund raising on a best efforts basis leading to uncertainty in funding large projects**
- **Flight to quality - most top tier foreign banks have focused on lending to well-prepared projects offering significant risk cover**
  - **In Indonesia, Itochu is developing the 330 MW Sarulla IPP and has seen spreads increase for a 17 yr loan by 50-100 bps and with lenders seeking a JBIC PRG**

Regional Context: Key constraints to funding private power during credit crisis

- **Bilaterals stepping in to fill the funding gap – but are capping exposure limits and lowering maturities**
  - **In Vietnam, ADB, and IFC are funding substantial portions of a large IPP project but have capped exposure at US$ 200 million and have reduced maturities from 20 to 16 years**
  - **In Indonesia, developers are actively seeking equipment suppliers and EPC contractors from countries that have bilaterals active in the sector i.e. JBIC, China EXIM, Korea EXIM**
- **Limited lending capacity of local banks**
  - **Banks in Indonesia, Philippines are still liquid and can lend between US$ 50 – US$ 200 million equivalent per project, however liquidity and funding capacity for large projects is limited to local currency loans to a select few IPPs post crisis**
- **Foreign banks awaiting clarity on investment climate for lending**
  - **In Vietnam, some banks have been unwilling to quote interest rate margins citing regulatory uncertainty**
  - **Some banks are assessing own liquidity condition to gauge ability to lend long term to infrastructure**

Regional Context: Key constraints to funding private power during credit crisis

- **Higher cost of capital in both local and foreign currency terms with spreads over benchmark having increased**
  - **In Indonesia IPPs are accessing 10 year local currency variable spread loans averaging 17% (JIBOR+400-500 bps) vs. 12-13% pre crisis**
  - **Regulatory approval for pass through of higher interest rates being awaited**
- **Shorter maturities**
  - **Mainly in foreign bank loans where in some instances maturities have been reduced by at least 5 years e.g. Singapore, Vietnam**
  - **Large IPP in Vietnam has seen maturities drop by 4 years for its foreign currency loans – from 20 to 16 years, banks in Singapore are quoting maturities of 12 years vs. 17 years pre crisis**
  - **Lower maturities in Vietnam are resulting in higher debt service requirements – however regulatory relief in the form of pass-throughs being awaited**

Regional Context: Key constraints to funding private power during credit crisis

- **Single borrower limits**
  - **SBLs at 20% of a borrower's unimpaired capital are being approached in the Philippines due to IPP ownership by family-owned conglomerates – credit capacity shared among conglomerate entities**
- **Banks are requiring sovereign guarantees**
  - **Uncovered loans are no longer a possibility in some markets, e.g. Vietnam, Indonesia, while sovereigns are reviewing their ability to take on contingent liabilities on behalf of their SOEs (PLN offtake risk)**
  - **In Indonesia, lenders are seeking a PRG for the Itochu, Medco Sarulla IPP project to fund the commercial debt component**
- **Higher equity requirements of developers**
  - **Banks have raised equity requirements from 20 percent to 30 percent in Indonesia, leading to developers being unable to raise the required higher sponsor equity**
- **Currency risk**
  - **Funds dedicated for investment being channeled to service debt post local currency devaluation e.g. First Gen, Philippines channeling funds to service yen denominated loans following devaluation of Php vs. JPY**

COUNTRY ASSESSMENTS

VIETNAM: Topics for Discussion

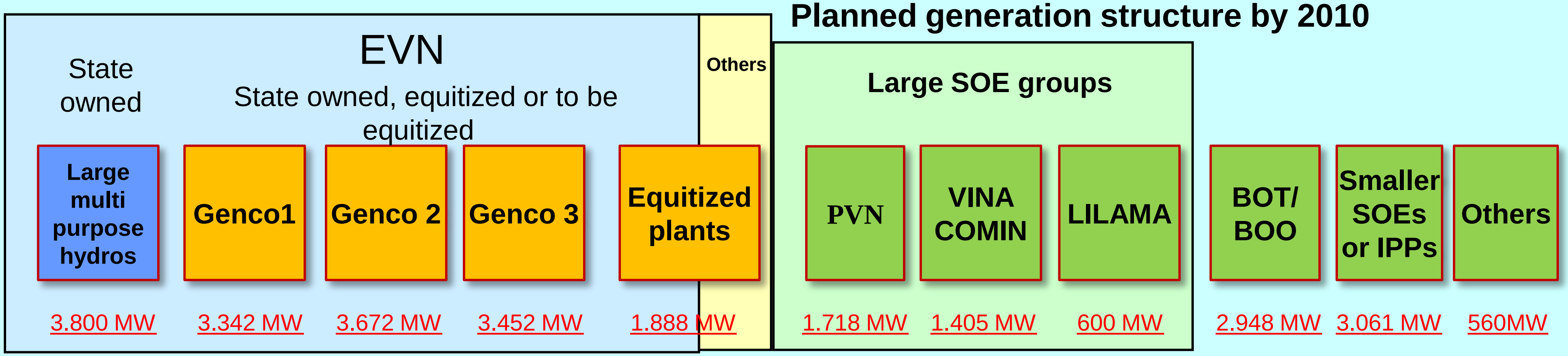
- Power Sector Structure & Ownership
- Sector funding needs & financing trends
- Development of renewables and efficiency improvements
- Effect of the economic downturn and financial crisis
- Investment projects and funding gap
- EVN Capex needs and funding gap
- Financial institution response
- Key lending terms - pre and post crisis

VIETNAM: Power sector structure and ownership

Power sector characterized by State Owned Enterprises, with their investments financed mostly through local banks, multilaterals and bilaterals, internal cash generation and bonds

- **Vietnam Electricity Group (EVN) is the main power utility, a holding company:**
  - **dominant generator, retaining majority ownership of 8 power plants converted into independent JSCs, and shares sold to staff and in stock market ("equitized generation")**
  - **responsible for transmission and distribution network investment (except for small local low voltage networks in rural areas resulting from rural electrification program)**
    - **owns a subsidiary National Transmission Company (NPT) with independent accounting**
- **EVN has subsidiaries in non core activities such as telecom and banks - planned to be restructured into successor companies**

Planned generation structure by 2010



VIETNAM: Power sector structure and ownership [Contd.]

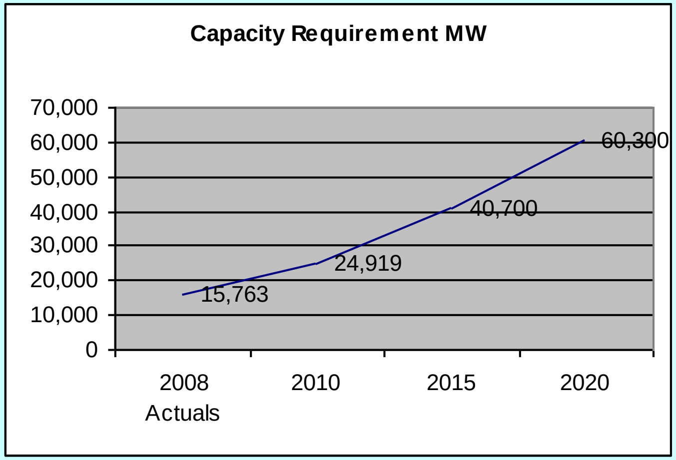
- **Rural electrification funded by Government (national, provincial and local), and through grants/concessional loans from bilaterals and multilaterals**

- **Under the Prime Minister's approved National Power Development Plan 6 and later adjustments in power sector investment plans, almost all generation projects under construction, and to start operation by 2010, are owned by SOEs**
  - **EVN or its successor generation companies and its 51% ownership of equitized plants expected to own 55% of installed generation capacity; with 15% owned by other large SOE Groups including PetroVietnam (oil and gas), Vinacomin (coal) and Lilama (construction); and existing generation of 12% to be BOTs/BOOs**

- **Private investment in coal fired BOTs of total 3,600 MW under procurement/negotiation (one tender in 2010; two projects under negotiation)**

VIETNAM: Power sector structure & funding needs

1.	**Installed Generation Capacity 2008 of which coal (20%), hydro (40%), gas (40%)**	**15,763 MW**
2.	**Transmission system**	**Two 500 kV backbone lines**
3.	**T & D losses 1995-2008**	**Dropped from 21.4% to 11 %**
4.	**Electricity sales in 2007**	**69.1 TWh**
5.	**Annual electricity consumption growth 1995-2006 corresponding to 7.1 % GDP growth over same period [with some periods of power shortages]**	**15 %**
6.	**New power users 1996-2006 (mainly rural rep. 40 % of population)**	**32.5 million**
7.	**Per capita annual consumption 1995-2008 increased from 50-94% but below average for EAP (1,400 kWh)**	**Increased from 156 kWh to 800 kWh**
8.	**Consumption by sector 2006**	**Industry 48%, Residential 43%, Commercial 9%**
9.	**Average tariff**	**US cents 5.4/kWh or VND 948.5/kWh cost reflective, with cross subsidization from industrial & commercial to residential**



- **Power Development Master Plan 6 projected high growth** starting at approx 20 percent in 2010 and reducing to 16 percent by 2015
- **Annual energy consumption in 2006-07 grew at less than projected levels** at 13 percent and is expected to be 10.2 percent in 2008
- Total power sector investment required for the PDMP demand growth will be **US$ 4 bn a year between 2011-15 o/w 75 percent is for generation**
- **60 percent of investment assigned to EVN** (or successor cos.)
- **40 percent of investment to be made by SOEs, and domestic & international private investors**

Capacity addition of about 3,750 MW required to restore reserve margins

VIETNAM: Development of Renewables & Efficiency Improvements

- **PDMP 6 envisages growth of all three major power generation sources – hydropower, gas and coal – as well as a significant contribution from renewable energy, predominantly small hydro of less than 30MW, and imports, mainly from China and Laos**

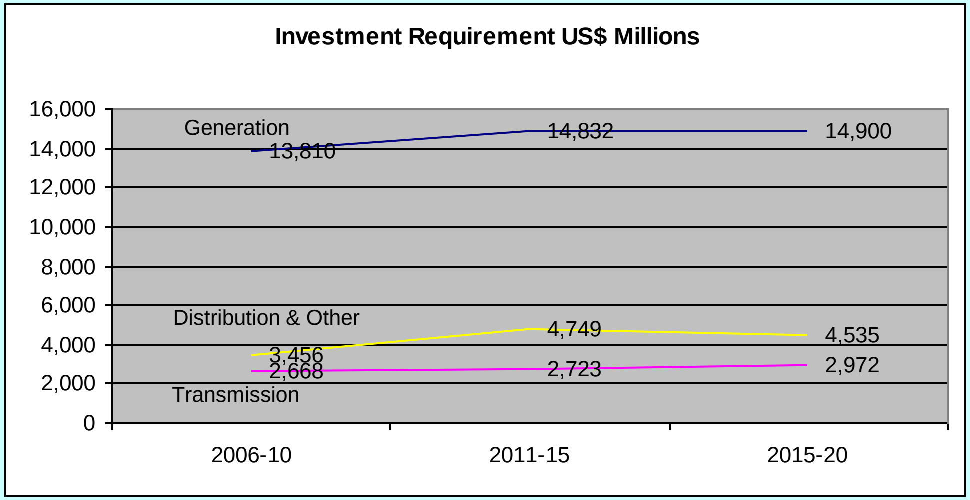
- **Energy strategy includes scale up of renewables, energy conservation and energy efficiency**
  - **In December 2007 the Prime Minister approved the National Energy Development Strategy of Vietnam through 2020 with vision upto 2050, encouraging the development of renewable generation, and setting policies on energy conservation and energy efficiency**

- **Over the past 2-3 years, developers, (mostly private) are becoming more interested in developing renewables - mainly small hydro projects**

- **GOV's main instrument to scale up renewables is a 'non-negotiable' standardized PPA (SPPA) to be signed between small renewables developers and PCs, with a price based on the power system's avoided cost tariff (ACT) and to be recovered by PCs through electricity retail tariffs - SPPA and ACT developed through Bank support**

- **Economic signals for Demand Side Management**
  - **In February 2009, the Prime Minister's Tariff Decision adopted time-of-use retail electricity tariffs for all industrial and commercial customers, and upon installation of required metering, also for residential consumers**

VIETNAM: Power sector financing trends



- **Power Development Master Plan 6 [PDMP 6] estimated power investment needs of about US$ 8 bn in 2009-10** (US$ 4bn a year), US$ 22.3 bn from 2011-15, & US$ 22.4 bn from 2015-20
- **SOE Generation projects have experienced delays leading to tight reserves and periods of shortages** with reasons being**:**
  - Insufficient budget to cover unforeseen increases in project costs - from US$ 1,000 per kW to US$ 1,200 per kW
  - Construction companies being over-extended in infrastructure projects and being unable to complete projects on schedule
- **ODA to continue to play a substantial role in funding power sector investment needs** – key players include JBIC, ADB, WB/IFC – JBIC also funding CDM projects e.g. 60 MW hydro plant in Lao Cai province
- **Govt. renewed interest to attract foreign investment through generation BOTs** – 3 planned BOTs of 1,200 MW each coal fired power plants to be funded between 2009-10

VIETNAM: Effects of the economic downturn and financial crisis

Vietnamese economy (and consequently the power sector) faced two financial shocks in 2008

- **During the first quarter of 2008 the over-heating of economy in FY 07 created inflationary pressures and liquidity constraints**
  - Domestic interest rates soared to above 20%
  - State-owned commercial banks (SOCBs) and joint-stock banks (JSBs) reduced funds available for lending, following Government's efforts to tighten monetary conditions
  - Capacity of smaller construction firms to finance large investments was reduced
- **During the last quarter of 2008 the global credit crunch added to the domestic economic slowdown**
  - Vietnamese economy was adversely affected – as exports, the "flagship" of economic growth were reduced sharply in the wake of the financial crisis (80% of exports go to USA, European Union and ASEAN region)
  - GDP growth was 6.5% through Sept. 2008, the lowest level since 2000
  - Fiscal deficit will increase from 5.6% to 6.2 % of GDP
  - FDI is likely to decline from 38% in Oct. '08 – has slowed down recently
  - The commercial bank market has introduced more stringent credit requirements for borrowers
  - Stock market dropped from 43% of GDP to 15% of GDP (2007 level) following restriction on borrowing for securities purchases – however investors are still active
- **State Bank of Vietnam subsequently reduced policy rates down from 14 to 10%, and released liquidity through repurchase of treasury securities**

GDP and electricity demand projections are being reassessed against the above revised economic parameters and preparation of PMDP 7 has commenced

EVN Capex needs & Funding gap [US$ millions]

EVN is facing issues with raising long-term finance for priority projects

		Capacity MW	Capex	Funding Sources			Funding Needs 2009-10	Funding Needs 2011-13	Total Funding Needs
				Debt	Equity	Govt.			
1.	Generation projects under construction	3,566	3,764	1,697	791	NA	719	557	1,276
2.	Generation projects planned for construction	Approx. 3,600	3,950	NA	NA	NA	614	3,336	3,950
3.	Transmission networks under construction		133	23	30	12	68	-0-	68
	TOTAL		**7,847**	**1,720**	**821**	**12**	**1,401**	**3,893**	**5,294**

Source: EVN – Exchange rate VND 17,000 = US$ 1

- **Eight priority generation projects** with funding needs of US$ 3.76 bn o/w immediate funding needs through 2010 are US$ 719 mn
- **Three of eight projects [capacity 1,246 MW] are 80 percent** complete while remaining five are at most 20 percent complete
- Funding needed to complete three substantially built projects is **US$ 175 mn**
- **EVN is already facing a funding gap due to higher project costs and liquidity constraints of local lending institutions**
- **EVN is signing long-term multi-project agreements** with large equipment suppliers who have the ability to offer construction finance

VIETNAM: Ongoing Investment projects & funding needs

EVN has financing gap of US$ 175 million for three substantially complete projects … and additional funding shortfall through 2010 is US$ 612 million

Generation plants under construction

- **Urgent financing needs** - EVN projects close to completion (80% progress or more) representing 1,248 MW face completion risk and need funding of **US$ 175 million**
- Remaining five projects in early stages (preparatory works or planning phase, 20% progress or less) – **EVN has indicated a funding gap of US$ 544 million through 2010**, with an additional US$ 557 million needed through 2013 to complete these projects

Transmission projects

- Three transmission projects undertaken by EVN transmission subsidiary **require US$ 68 million by 2010**

Distribution projects [PC 1]

- Small size and short duration of individual projects enables adjustment of existing investment programs to new demand scenario
- PC lenders/grant financiers have largely been local banks and multilaterals including WB, ADB, JBIC, SIDA
- **PC -1 needs VND 1.6 trn over 7 years [US$ 13.4 million a year] for 30 projects** that are part of the 110 kV expansion program – however only 70 percent of 2008 allocation was used, and remaining program is likely to be scaled back in the face of a cooling economy
- Annual funding needs met through electricity revenues [internal cash generation] and local and multilateral bank loans

PetroVietnam & Song Da Corporation - Capex needs [US$ millions]

PVN

PVN would prefer to source multilateral loans from the Bank due to the Bank's favorable lending terms that offer lower cost of capital, and maturities that are longer than those available in the private finance markets

- PVN has been using oil and gas revenues that have benefited from price increases, and bank loans to invest in generation
- PVN is raising funding from internal cash generation and loans for five thermal (coal, gas fired) planned generation projects representing 7,950 MW for completion through 2018
- Three of the five projects projects, Nhon Trach 2 (750MW), Thai Binh (1,200 MW) and Long Phu 1 (1,200 MW) are proposed to be the first to be undertaken for which **capex is US$ 3.8 bn**

Song Da Corporation

- Song Da Corp. have 4 hydro projects under construction for which their **total funding needs are US$ 1.1 bn of which funding through 2010 is US$ 402 million** and which has been secured through debt and equity investment (US$ 500 mln).
- The **remaining US$ 575 mn is yet to be sourced** for which they are exploring **various sources including multilateral finance, bank loans and the global bond market**
- Song Da are also planning an additional 4 hydro projects with capex of US$ 620 million for which they have secured US$ 196 million through equity, and are planning to raise US$ 458 million through debt

VIETNAM: Financial Institution Response [Local Banks]

Local banks are still willing to lend to projects

Vietnam's largest banks are:

- **Five state-owned commercial banks (SOCBs) of which four represent 55 % of the banking sector loan assets**
  - **SOCBs are well capitalized**, have liquidity and are willing to lend to EVN, and state-owned distribution companies – 42 percent of their infrastructure loans or US$ 1.36 bn are to electricity projects
  - **SOCBs have low exposure to toxic assets**, have benefitted from recent Govt. easing of liquidity, have low NPLs (1.87%), high risk appetite for creditworthy SOEs, and headroom to lend to infrastructure projects
  - **Capacity to lend to multiple large projects is limited -** the four largest SOCBs have the **ability to lend upto US$ 110 mn equivalent per bank per project uncovered** mainly to SOEs, and IPPs but **40 Joint Stock Commercial Banks represent 30 percent of banking sector assets**
- **Two policy banks that have US$ 9 bn outstanding to infrastructure projects and entities**

… but are limited by the regulatory lending limit of 15 % of each bank's equity per borrower [in addition to regulatory limits on loan to deposit ratios and others]

- **15 percent of equity of 4 largest SOCBs is US$ 453 mn while for the 4 largest JSCBs the limit is US$ 182 mn for a total of US$ 635 mn. EVN funding needs in itself are US$ 787 million through 2010** – ability of local banking sector to address sector financing needs would appear to be limited but SBLs have been exceeded in the past

VIETNAM: Financial Institution Response [Bond Market]

The local bond market can provide a medium term solution to meeting funding needs

- **Bond market has grown on average by 31 percent** in the last year to a size of US$ 12.9 bn outstanding by end 2008
- **Main issuers have been the GoV and public entities** that represent 83 percent of the market in 2008 – few corporate issuers
- **EVN issued bonds** worth VND 6.5 trn over time and a VND 500 mln 5 yr. corporate bond (US$ 28.5 mln equivalent) in Jan. 2009 – another VND 3,500 mln to be issued in tranches thru 2010
- **Cost of capital** has been the avg. 12 month deposit rate (7.5%) plus spread of 200 bps or more depending on the issuer

… but is under-developed, and illiquid, and suffers from limitations in supply and demand for new issues

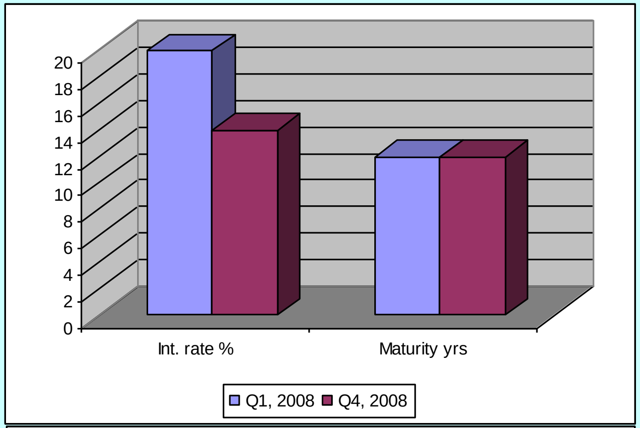
- **Issuance of bonds remains unsystematic**, - as a result. the market does not offer good references for an efficient pricing of bond issues
- **GoV issues are of small size** (US$ 33-45 million) **of varying maturities** (5 – 15 years) **and lack volume, range, and a GoV funding strategy** and are therefore unlikely to become a benchmark for pricing potential issues

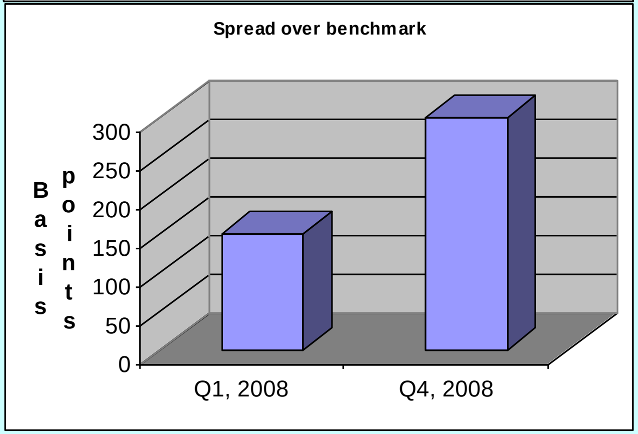
… but can offer a viable funding source for SOE bond issues and potentially infrastructure (SPV) borrowing in the medium term following further development characterized by increase in the size, and regularity of issues and liquidity in issued paper

VIETNAM: Lending Terms – Pre & Post Crisis

	Terms	Q1, 2008	Q4, 2008	Trends
1.	Interest rate VND	20%	12-14%	While overall interest rates have declined, spreads over benchmark have increased
2.	Spread over benchmark* VND	100-150 bps	250 – 300 bps	Increase of 150 bps post crisis over benchmark
3.	Maturity [local banks to state-owned entities]	5-10 yrs non-prime; 10 -12 years prime	5-10 yrs non-prime; 10 -12 years prime	Fully amortizing loans for high credit quality borrowers
4.	Capital structure – Debt equity ratio	80:20	75:25	Developers are finding it challenging to raise 25 percent equity in current market conditions
5.	Credit support	No govt. guarantees (local banks)	No govt. guarantees (local banks)	Local banks willing to assume EVN, PVN, PC risk

Benchmark - 11% national savings rate





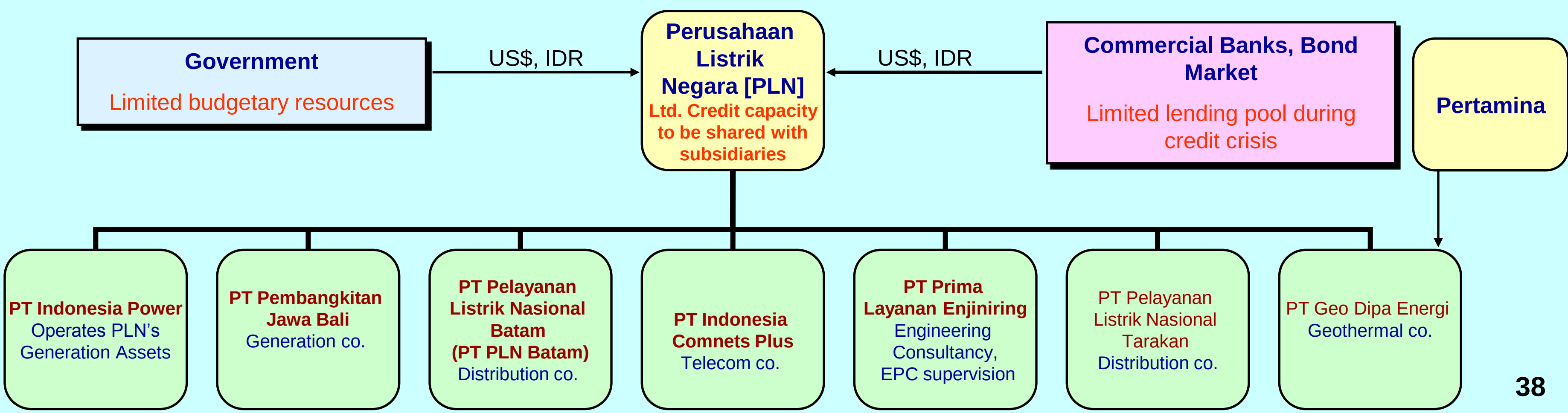
INDONESIA: Topics for Discussion

- Power Sector Structure and Ownership
- Power sector trends
- Development of renewables
- Effect of the economic downturn and financial crisis
- PLN Capex needs and funding gap
- IPP Capex needs and funding gap
- Financial institution response
- Key lending terms - pre and post crisis

INDONESIA: Power sector structure and ownership

Strong public ownership structure of the sector with funding investment needs being the responsibility of PLN

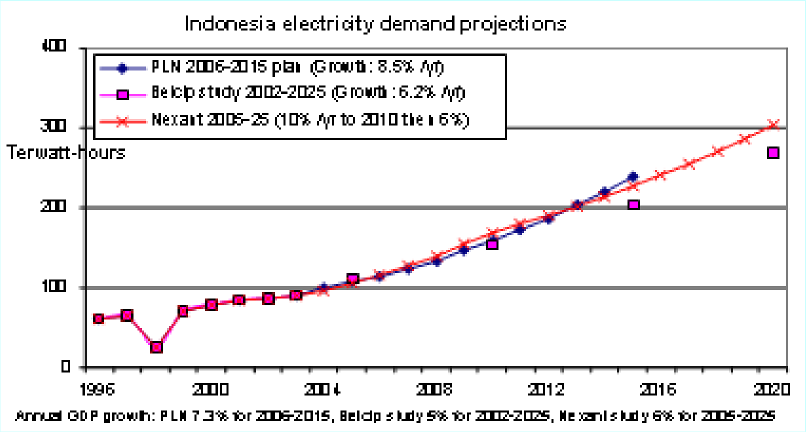
- **Single Buyer Model with generation assets shared between public and private sectors** - PLN and its subsidiaries represent 63 percent of installed capacity and PLN is the sole offtaker of power
- **PLN has six subsidiaries and one JV (for geothermal) for which it is responsible for meeting investment needs**
- Total **power sector investment requirement for Indonesia will be US$ 41.4 bn between 2006-15 (PLN estimates)** o/w US$ 26 bn for generation, US$ 7 bn for transmission, and US$ 8 bn for distribution
- **68 percent of investment (US$ 28 bn) to be undertaken by PLN** with the remaining 32 percent to be assumed by the private sector



INDONESIA: Power sector trends

1.	Installed Generation Capacity (PLN) 2007	29,705 MW
2.	Captive generation capacity	14,600 MW
3.	Total energy production (PLN) in 2007	120,529 GWh
4.	Electrification ratio 2006	58 %
5.	Annual electricity demand growth	8.5 %
6.	Average tariff	UScents 6.7/kWh - Below cost recovery rates frozen at 2004 levels – Govt. provides PSO subsidy to cover PLN losses

Figure 1: Electricity Demand to Nearly Triple by 2020



INDONESIA: Development of Renewables

The Government is considering a 30-40 percent renewables component for the second program to develop additional 10,000 MW of capacity from 2010 onwards

- **The Government's strategies for renewables are:**
  - **Short Term target for small users e.g. supplying rural consumers through mini hydro**
  - **Long Term target - at least 15% of the energy mix to be based on renewable energy**
- **The Government passed a Geothermal Law in 2003 which requires competitive tender for future geothermal fields**
- **The Ministry of Energy & Mineral Resources (MEMR) has issued a Blueprint for Geothermal Development in Indonesia which is a roadmap to increase geothermal capacity from 950 MW today to 6,000 MW by 2020**
  - **It is estimated that approx. 10,000 MW of geothermal capacity is economically viable**

INDONESIA: Effects of the economic downturn and financial crisis

The Indonesian economy and the power sector have been affected by the financial crisis

- **There's been a 56 percent decline in the stock market in 2008** – resulting in lower investor appetite for investment in infrastructure and other sectors
- **29 percent depreciation of the Indonesian rupiah against the US dollar since beg. 2008** – leading to raising the debt service obligations of PLN on its hard currency loans and lowering credit capacity
- **Decline in national forex reserves from US$ 60 bn to US$ 50 bn** – leading to a reduction in budgetary resources available for energy sector investments
- **Bank Indonesia lowered its policy rate by 25 bps to 9.25 % to stimulate credit markets** – however, lending to the power sector has been adversely affected by lack of borrower creditworthiness (mainly for IPPs), construction cost increases, hard currency borrowing needs, and withdrawal of foreign banks
- **2009 budget to target a deficit of 1% of GDP in 2009** by reducing routine line ministry spending by 5% - 15% - **provision for funding priority infrastructure projects** in the budget
- **Govt. will attempt to raise US$ 10.6 bn** in domestic and global capital markets in 2009 o/w US$ 5.1 bn equivalent in IDR bonds, and US$ 5.5 bn in US$ bonds
- **Govt. expects a challenge in raising capital market finance during credit crisis** - will suffer from global risk aversion and contagion effect of regional markets

Govt. inability to raise the required full amount when combined with the recent decline in foreign exchange reserves by US$ 10 bn, will have an adverse impact on its ability to fund energy sector projects

INDONESIA: PLN Capex Needs & Funding gap – 10,000 MW Program [US$ millions]

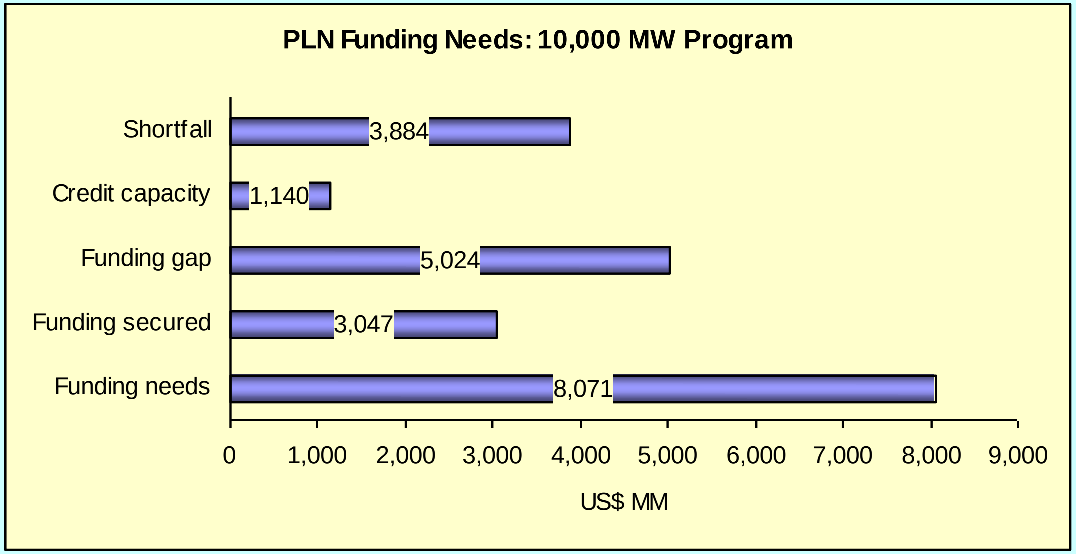
		Funding Needs US$ Mln	Funding Needs IDR Bn	IDR Funding Needs [US$ Mln equiv]	Total Funding Needs US$ Mln	Status
1.	**Generation [8,721 MW]**	1,496	12,975	1,165	2,661	Financial close
		1,665	2,306	207	1,872	Loans being negotiated
		328	1,136	102	430	Req, for EOIs issued
		913	913	82	995	To be identified
	Sub-Total	**4,402**	**17,330**	**1,556**	**5,958**	
2.	**Transmission**	136	383	34	170	Loans being negotiated
		798	3,465	311	1,109	To be identified
			1,898	170	170	Project list 2007/08
			7,400	664	664	Proposed 2009 nat'l budget
	Sub-Total	**934**	**13,146**	**1,179**	**2,113**	
	TOTAL	**5,336**	**30,476**	**2,735**	**8,071**	

Source: PLN – represents 85% of total funding for the 10,000 MW crash program. Another US$ 2 bn was raised in the global bond markets.

PLN Capex Needs & Funding gap for 10,000 MW Program [US$ millions]

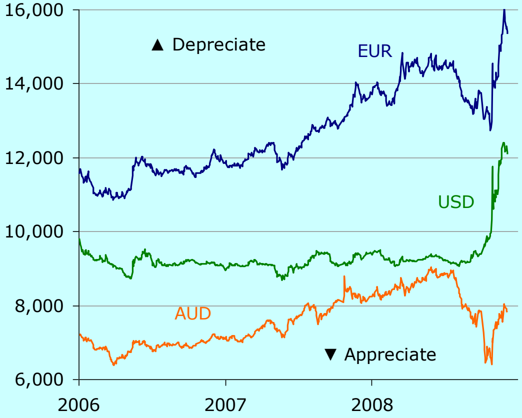
Taking into account:

- the US$ 2.7 bn that has reached financial close
- the Rp. 1.9 trn (US$ 171 mn) that PLN has received from the national budget for its 2007/08 projects
- the Rp. 2.4 trn (US$ 215 mn) of the Rp. 7.4 trn that has been approved by the Government for 2009
- **the magnitude of the funding gap for the 10,000 MW program is US$ 5 bn**
- **PLN debt capacity through 2012 is US$ 1.14 bn and is impacted by the 17% depreciation of the IDR vs. the US$**
- **Funding shortfall beyond the debt capacity is US$ 3.9 bn**



Source: PLN

IDR vs Major Currencies 2006 – end 2008



Source: CEIC

INDONESIA: IPP Capex Needs & Funding gap [US$ millions]

	Phase	No. of Projects	Capacity MW
	Operation		
1.	Sumatera	2	230
2.	Jamali Nusra	10	3,737
3.	Kalimantan	0	0
4.	Sulawesi & IT	4	227
	Sub-Total	**16**	**4,194**
	Construction		
5.	Sumatera	6	246
6.	Jamali Nusra	2	490
7.	Kalimantan	4	126
8.	Sulawesi & IT	3	**74**
	Sub-Total	**15**	**937**
	Preparation		
5.	Sumatera	15	1,121
6.	Jamali Nusra	9	1,909
7.	Kalimantan	3	64
8.	Sulawesi & IT	4	433
	Sub-Total	**31**	**3,527**
	TOTAL	**62**	**8,658**

Source: PLN

Funding Needs

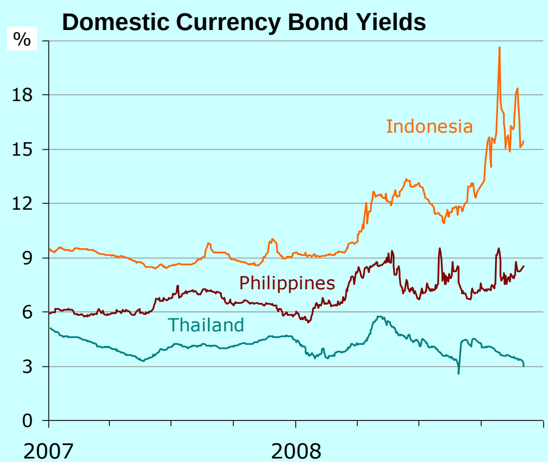
- **Of the 62 IPPs representing 8,658 MW of capacity, 31 projects in preparation are still trying to reach financial close**
- These projects have **funding needs of approx. US$ 3.6 bn**

Key Issues

- **Capital structure**: Banks are requiring a 70:30 debt-equity ratio up from 80:20 during the pre-crisis years - smaller developers for 50-100 MW size projects unable to raise higher equity amounts
- **Funding ability**: Developers unable to raise LCs to fund equipment purchase [only 10 percent of LC amounts deposited, balance unavailable]
- **Project cost escalations**: Developers unable to negotiate pass throughs of recent cost escalations
- **Higher cost of capital**: 300 bps increase in interest rates from 12-14 % pre-crisis to 17 % has eroded project IRRs
- **Exposure limits**: Local banks are approaching their 10 percent exposure limit for the power sector – but are willing to exceed it if offered Govt. guarantees
- **Foreign bank withdrawal**: Local banks being asked to step in but have limited funding capacity for hard currency loans

INDONESIA: Financial Institution Response

- **Local banks still willing to lend to projects -** Local banks have liquidity and are willing to lend to PLN, and to IPP developers without requiring sovereign guarantees – but can mainly lend in local currency
- **Bilaterals stepping in to replace foreign banks** – JBIC, China EXIM still lending long term to IPP power projects at competitive rates – however credit conditions are more stringent e.g. Sarula project with 17 year JBIC/ADB funding where cost of capital increased by 100 bps, equity component up from 25 to 30 percent of project costs
- **Government is exploring alternate funding mechanisms –** including an IDR 1 trn infrastructure fund but it is still to be launched and operational guidelines are unclear
- **Foreign banks requiring Govt. guarantees for IPPs**– which are not forthcoming but more recently the Govt. is willing to consider sovereign counterindemnities for IPPs on a case-by-case basis – not an issue for PLN which has an implicit sovereign backing (PLN US$ 2 bn worth of bond issues in 2007 & '08 were undertaken without sovereign guarantees, as are PLN bank loans)
- **Domestic & global bond market offers limited potential** – Typical terms have been JIBOR + 300-400 bps for upto 7 years for corporates – short term maturities and high cost of capital not conducive for infrastructure lending
    - Nearly **450 basis point increase in yields on medium-term domestic bonds post crisis [Oct. 2008]**
    - **700 basis point increase in Indonesia's global bond spreads post crisis [Oct. 2008]**



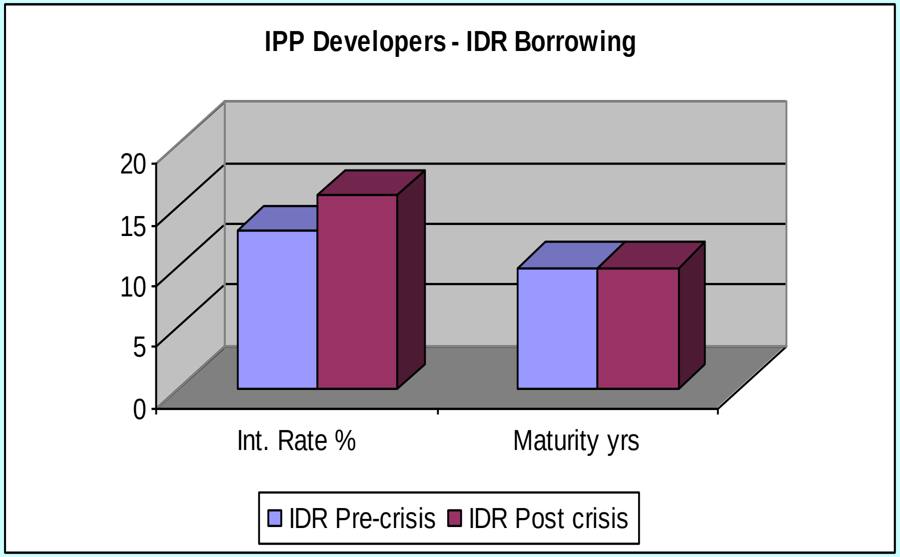
Source: CEIC

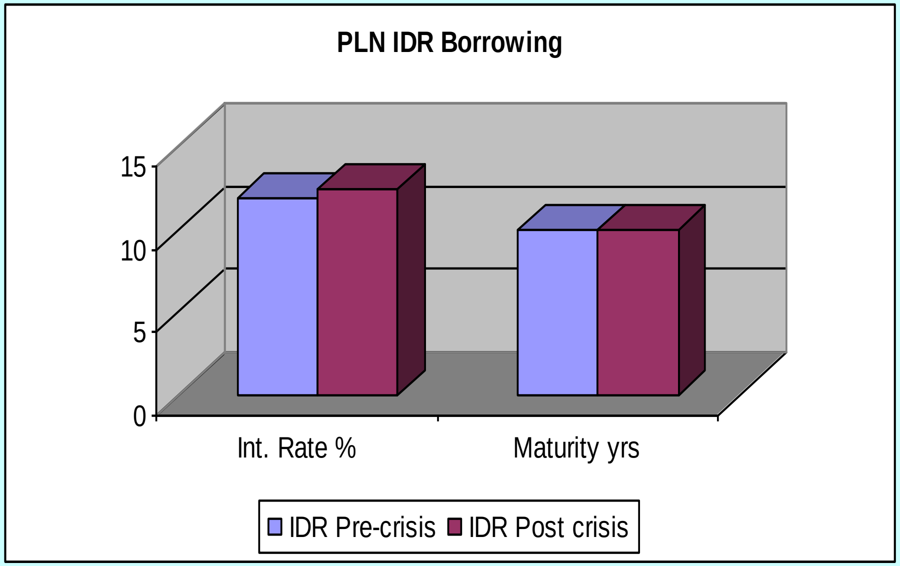
Source: JP Morgan and World Bank

INDONESIA: Lending Terms – Pre & Post Crisis

	Terms	Pre-Crisis	Post Crisis	Trends
IPPs				
1.	IDR Interest rate [local banks]	JIBOR* + 100-200 bps	JIBOR + 400-500 bps	300 bps increase post crisis over benchmark
2.	Maturity [local banks]	7-10 yrs	7-10 yrs	Unchanged
3.	Capital structure requirement– Debt equity ratio	80:20	70:30	Developers are finding it challenging to raise 30 percent equity in current market conditions
4.	Credit support req. [foreign banks]	No govt. guarantees	Sovereign guarantees required	Foreign banks unwilling to assume PLN offtake risk
PLN				
5.	IDR Interest rate - PLN	JIBOR + 100 bps	JIBOR + 150 bps	50 bps increase post crisis over benchmark
6.	Maturity [local banks to PLN]	7-10 yrs	7-10 yrs	Unchanged
7.	US$ Interest rate - PLN	LIBOR + 70-80 bps	LIBOR + 150 bps	80 bps increase post crisis over benchmark
8.	Maturity [foreign banks to PLN]	12 years	12 years	Unchanged

JIBOR is approx. 11% as of Dec. 2008.





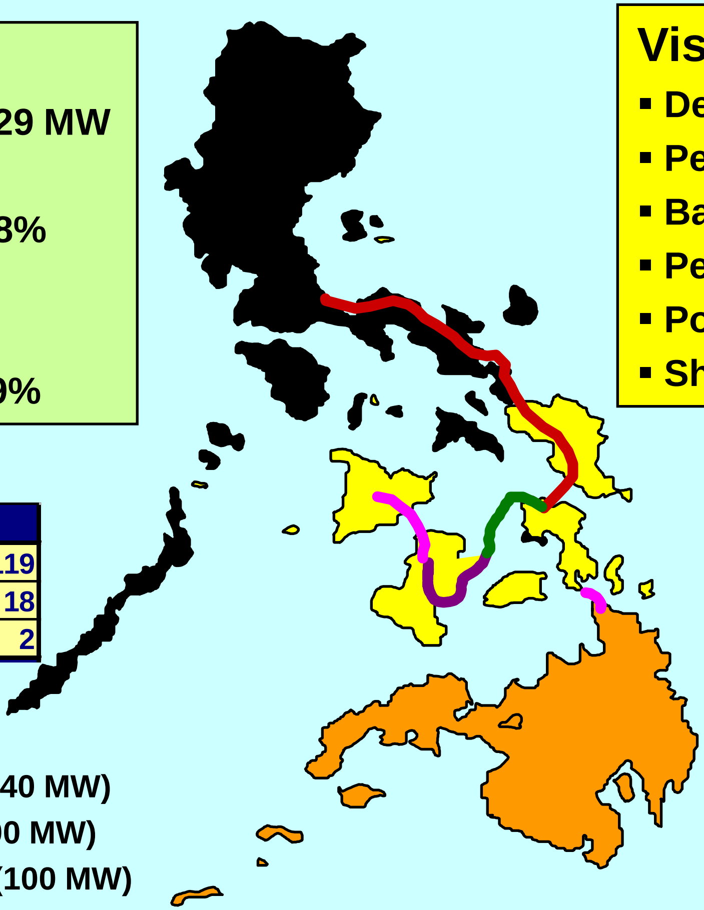
PHILIPPINES: Topics for Discussion

- Power System
- Power sector trends and investment needs
- Development of renewables
- Institutional structure and ownership
- PSALM refinancing needs and funding gap
- Alternate funding sources
- Key credit terms

PHILIPPINES: Power System

Luzon (2007)
- Dependable capacity: 10,029 MW
- Peak demand: 6,643 MW
- Barangay electrification: 98%
- Per capita GDP: P14,670
- Poverty rate: 30.2%
- Share of PH economy: 65.9%

Distribution Utilities	
Electric Cooperatives	119
Private Dist. Utilities	18
LGUs	2



Interconnections:
- Leyte-Luzon (440 MW)
- Leyte-Cebu (200 MW)
- Cebu-Negros (100 MW)
- Negros – Panay (100 MW)
- Leyte-Bohol (35 MW)

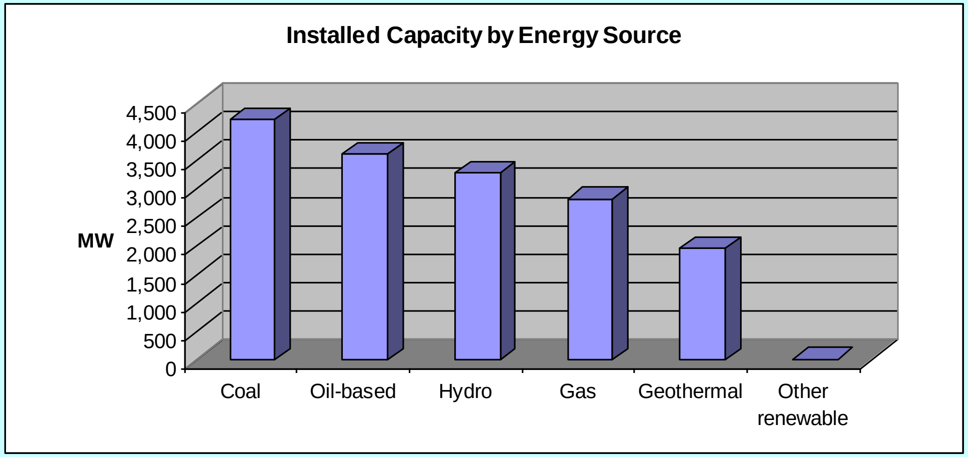
Visayas (2007)
- Dependable capacity: 1,475 MW
- Peak demand: 1,102 MW
- Barangay electrification: 98%
- Per capita GDP: P11,281
- Poverty rate: 41.8%
- Share of PH economy: 16.5%

Mindanao
- Dependable capacity: 1,682 MW
- Peak demand: 1,241 MW
- Barangay electrification: 93%
- Per capita GDP: P10,383
- Poverty rate: 49.9%
- Share of PH economy: 17.6%

PHILIPPINES: Power sector trends & investment needs

Industry profile 2007

1.	Installed Generation Capacity (coal 26.4%; oil 22.7 %, hydro 20.6%, gas 17.8%, geothermal 12.3 %, other renewables 0.16%)	15,937 MW (DOE data) o/w Luzon, 12,174 MW, Visayas 1,831 MW, Mindanao 1,933 MW
2.	Power Systems	Luzon (50% of demand), Visayas, Mindanao
3.	T & D losses	12.78 %
4.	Gross power generation	59.61 TWh, an increase of 4.98 % from 2006 (gas 31.5%, coal 28.2%, geothermal 17.2%, hydro 13.8 %, oil 9.3%, wind & solar 0.1%)
5.	Electricity sales	48 TWh (5 % growth year on year from 2006)
6.	Peak Demand	8,993 MW (2.62 % growth year on year from 2006)



PHILIPPINES: Development of Renewables

- The Renewable Energy Law, passed in October 2008, lays out the framework to scale- up development and utilization of renewable energy resources, and establishes the institutional framework and mechanisms to achieve these objectives

- DOE has identified as its long-term goal an increase of renewable energy generation by 100 percent by 2013, mainly hydro and geothermal, and contribution of biomass, solar and ocean (wave action) by approx. 131 MW

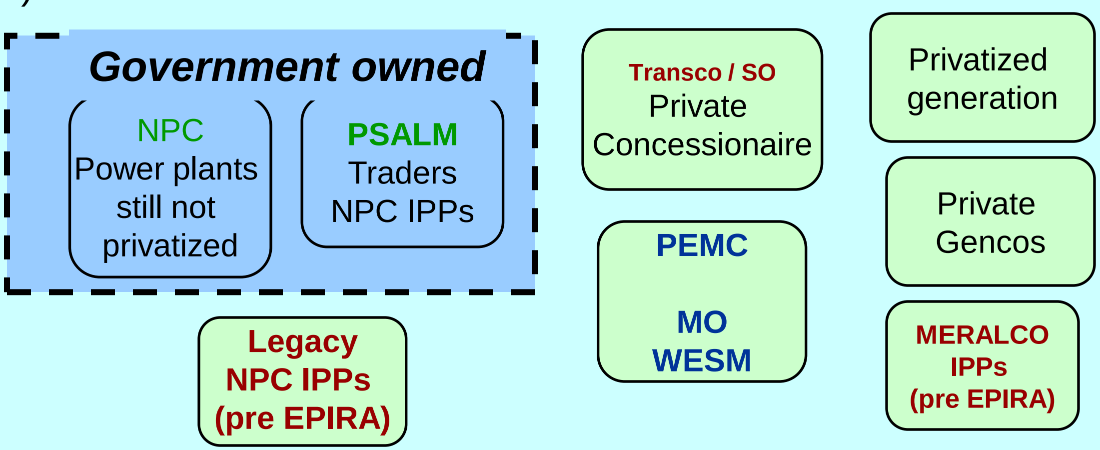
- Geothermal energy currently represents 17 percent of generated power – the Renewable Energy Law offers several incentives for geothermal energy expansion including an exemption from VAT, reduction in corporate taxes, an extension of the tax holiday period, and reduction in royalty payments to the Govt.

- Private entities such as First Gen are acquiring Govt. owned brownfield geothermal assets for future capacity expansion

PHILIPPINES: Institutional structure and ownership

Generation & Transmission Reform

- **National Power Corporation (NPC)** separated into generation and transmission (Transco) including System Operator
  - State-owned major generator until 2004
  - Wholesale power purchaser and seller of pre-existing (legacy) contracts with IPPs
- **Power Sector Asset and Liabilities Management Corporation (PSALM)** responsible for privatization of NPC generation, management of NPC liabilities, tender for appointment of IPP Administrators and, until then, trading of NPC IPP contracts through WESM
- **Wholesale competitive spot market (WESM)** started commercial operation in Luzon (2006)
- Privatization of NPC generation assets initiated in 2004. By end 2008, most large plants had been successfully privatized – some geothermal still to be privatized: 48 % of generation capacity transferred to winning private investors
- **2007 Transco concession successful tender** with Performance Based Transmission Wheeling Regulation - franchise granted end of 2008 to private concessionaire (operator and investor)



PHILIPPINES: Institutional structure and ownership

Efficient regulation but demand side of reform pending

- **Large private distribution utility - Manila Electric Company (MERALCO)** in Metro Manila, with pre-existing PPAs with gas fired IPPs (cross ownership)
- **Performance based regulation for distribution services tariffs issued by ERC for profit distribution utilities,** to replace existing rate-of-return (RORB) regulation
  - Regulations are sound and broadly consistent with international practices
  - 3 pilot filing, including MERALCO. Implementation still pending for MERALCO
- **Electric Cooperatives (EC)** (non profit), several technically and financially weak
  - Benchmark regulation proposed by ERC to simplify tariff filing and setting
  - Grouping the ECs and benchmarking the group, to streamline their regulation
  - Aggregation of ECs/DUs and purchase of subtransmission assets
  - Need to address Non-Bankable ECs, Default Supplier and Aggregator Scheme

Manila Electric Company (MERALCO)
Private distributor in Metro Manila

17 Investor Owned Distribution Utilities
(for profit)

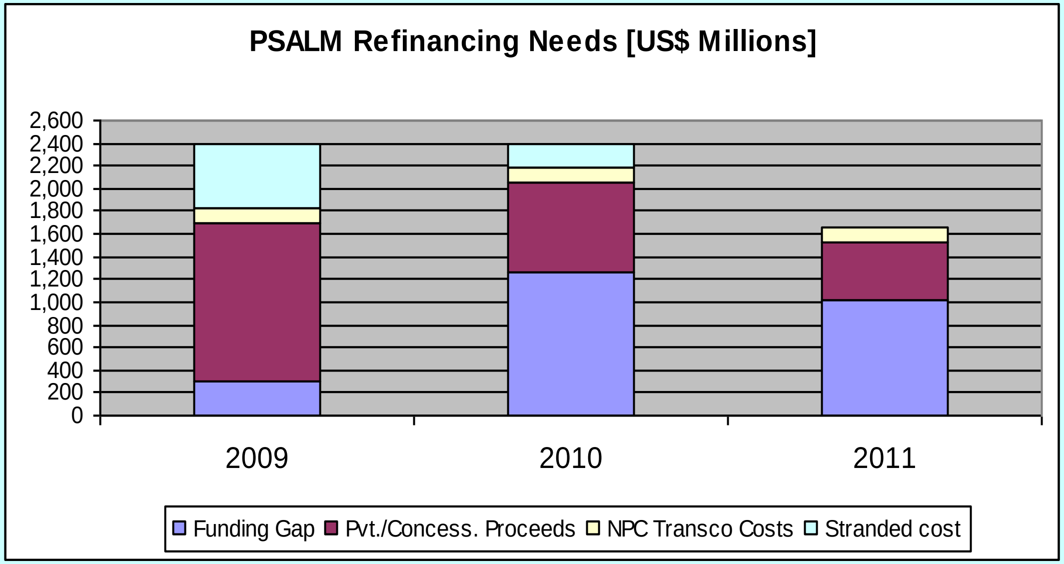
119 Electric Cooperatives
15% of sales

Aggregators

2 Municipal Systems

PHILIPPINES: PSALM Refinancing Needs & Funding gap [US$ millions]

- PSALM has **refinancing needs for repaying outstanding NPC debt of US$ 4.1 bn through 2011 along with US$ 400 mln of transmission costs, and US$ 800 mln in stranded costs totaling US$ 5.3 bn**
- **US$ 2.7 bn is being raised** through privatization of generation assets & concessioning of Transco leaving **US$ 2.6 bn outstanding**
- **Stranded debt universal charge -** established under EPIRA to transfer recovery of debt to tariffs **has yet to be filed for by PSALM/NPC**



- However **sale of generation assets has been affected by credit crisis –**
  - **Calaca privatization has failed** (US$ 748 million)
  - **Proceeds from the sale of Makban are still pending** (US$ 400 million)
  - **PSALM received a down payment of US$ 935 mln from the Transco concession** [of the total US$ 3.95 bn]- but for the remaining US$ 3 bn the concessionaire has chosen the 20-year deferred payment scheme offered in PSALM's tender documents (to be funded from transmission charge revenues)
- **PSALM is exploring the regional bond market** – pricing to be based off Jan. 2009 sovereign bond issue [Philippines issued in Jan. 2009 a US$ 1.5 bn, 10 yr. bond at 8.75%, Philippines has a BB – stable rating by S&P]

PHILIPPINES: Financial Institution Response

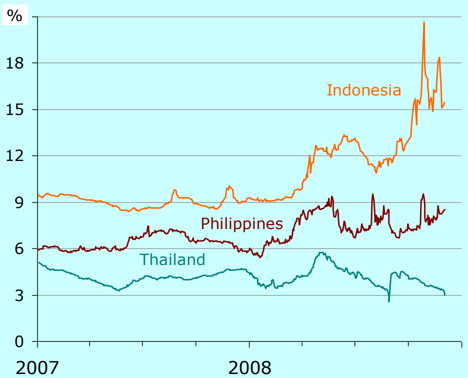
Key Issues and Market Trends Post Crisis

- **Local banks are willing to lend to projects** - Local banks are sufficiently liquid and are willing to lend to IPP developers for upto 10-12 years at 75 -200 bps over the benchmark– competitive with foreign banks on loan amounts, spreads, and interest rates
  - … **however Single Borrower Limits are being reached for existing owners of generation assets** – SBLs apply across conglomerate entities & other sector borrowings have a negative impact on credit capacity for power projects – regulatory SBL limit of 25 % of a firm’s unimpaired capital
  - … **lead arrangers prefer fund raising on a best efforts basis** - instead of fully underwritten deals
  - … **banks are unwilling to assume merchant risk** –although not directly related to the crisis, banks require long-term PPAs to secure long-term lending for projects – WESM to soon become operational
  - … **local banks need to move up the learning curve to fill the funding gap** – to price, and offer loans in a merchant market – currently participation levels have been limited to US$ 200 mn equivalent per project
  - … **foreign banks are holding back in the primary markets** – to conserve liquidity, there’s been a flight to quality, cost of capital has increased (to 150-250 bps over PHIBOR), capital structure has changed to require additional equity (30 % up from 25%), and sovereign backstop or political risk cover is essential
  - … **foreign banks prefer loan sell downs in the secondary markets** – in lieu of underwriting deals or syndications in the primary market
  - … **tightening of credit** with foreign banks unwilling to participate at levels above US$ 100 million

PHILIPPINES: Alternate funding sources

- **Corporate bonds have been issued for 5-7 yr. maturities**
  - …recent corporate issuers have included Manila Water (Php 4bn), Ayala Land (Php 6 bn), Globe (Php 5 bn), and Aboitiz power is in the pipeline
  - …**however maturities are short and require refinancing**, cost of market entry is high (upto 150 bps), and pricing is unattractive with spreads for corporates having increased by 50-100 bps post crisis with 5-7 yr. maturities
- **Bank credit can be released**
  - by reducing reserve requirements or increasing SBL allowances
  - banks offer longer maturities (10-12 years) at approx. 150-250 bps over PHIBOR
  - banks are exempt from the 20 % withholding tax for raising capital
  - **however local banks do not have the capacity to lend more than US$ 200 million equivalent per project due to exposure limits**

Domestic Currency Bond Yields



Source: CEIC

- **ECA/Bilateral funding is available**
  - EIB & NIB are active in the renewables space, KEXIM is funding capacity addition
- **Multilaterals are active in the privatization of NPC/PSALM generation & transmission assets**
  - IFC offering 15 year loans e.g. US$ 82 million loan to PNOC-EDC at PHIBOR + 385 bps readjusted every 5 years (all in cost is 9%)

PHILIPPINES: Credit Terms

	Terms	Interest rate & Maturity	Comments
1.	IFC Interest rate [to PNOC]	PHIBOR + 285 bps - 9.12% variable -all in	Adjusted every 5 years off PHIBOR*
2.	IFC Maturity	Upto 15 years	
3.	Php Interest rate [local banks]	PHIBOR + 150 – 250 bps	Fully amortizing loans for high credit quality borrowers
4.	Maturity [local banks]	10-12 years	To high credit quality developers
5.	Interest rate [foreign banks]	LIBOR + 390 bps uncovered, LIBOR + 330 bps covered	To high credit quality developers - although each bank in syndicate has reduced participation levels
6.	Maturity [foreign banks]	10-12 years	10 years uncovered, 12 years covered

PHIBOR is the an average of interest rate quotes by 20 local and foreign banks in the Philippines and 7-yr PHIBOR is currently 6.2 %

In Conclusion …

There remains a desire on the part of state-owned power sector entities to source multilateral finance

- … **demand needs to be reassessed** - investment needs remain high but need to be gauged in light of the cooling of the economy and resulting lower demand
- …**public power projects will largely continue to meet demand** (in Vietnam and in Indonesia) - although the borrowing capacity of state-owned generation, transmission & distribution utilities is limited
- **…foreign banks are withdrawing in the face of liquidity constraints** while local banks have limited capacity to fill the funding gap
- …**there are no viable alternate financing mechanisms** beyond local commercial bank finance, and bilateral and multilateral finance in these markets
  - bond markets are illiquid, and under-developed;
  - insurance cos. and pension funds are facing their own funding crises
  - local infrastructure funds are non-existent
  - foreign equity investor interest is targeting a handful of projects at high cost of equity
- **the size, pricing (e.g. LIBOR + 75 bps for WB fixed spread loans), and duration (upto 25 years) of multilateral loans cannot be matched by private finance institutions**
  - foreign banks are requiring sovereign guarantees for SOE lending, yet pricing of loans is higher than those offered by multilaterals
- **…private lending windows of multilaterals are among few global players left in certain primary lending markets** e.g. Philippines

As a Follow-up …

Strategic power sector planning to incorporate environmental costs and financing

- **In view of changes in demand growth and investment costs, countries are reviewing demand forecasts and power sector plans**
- **Emission and environmental costs need to be incorporated to represent sustainable power system planning**
- **Countries are recommended to also review their strategic planning to benefit from:**
  - **special financing for reducing energy intensity and low carbon technologies;**
  - **programs and projects to increase supply side and demand side efficiency;**
  - **scale-up of renewables; and**
  - **move to clean generation expansion**

THANK YOU