SIAS RESEARCH

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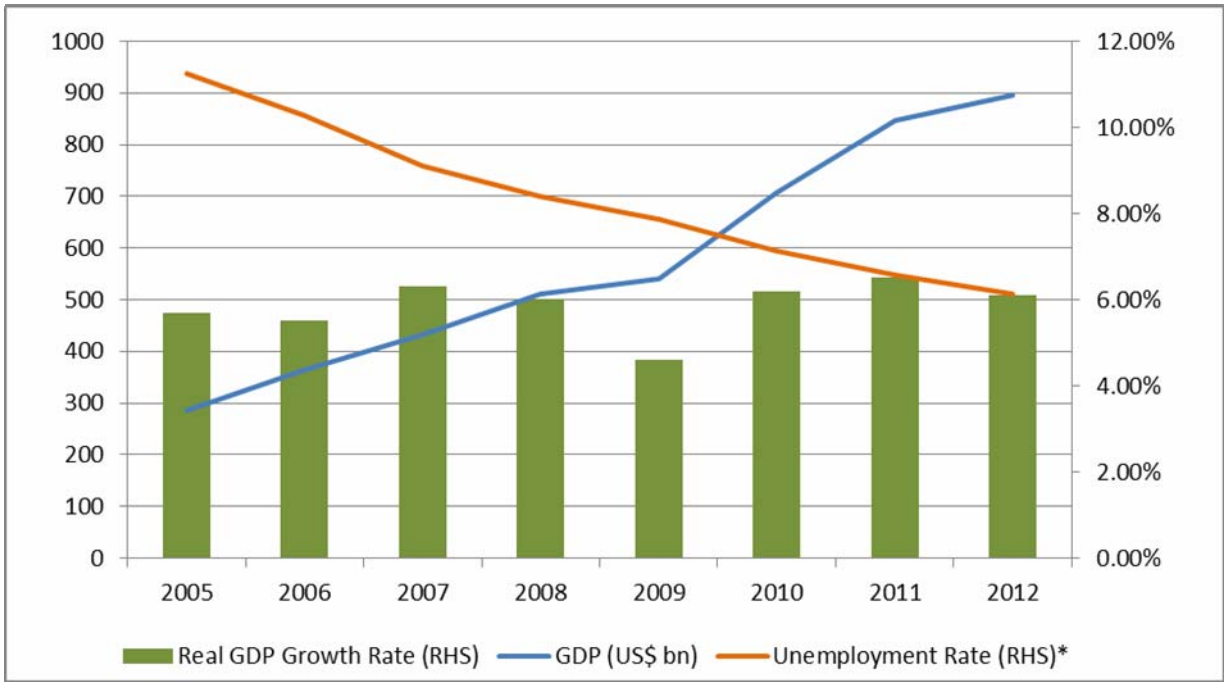
Not Enough Power in Indonesia

The Economy is Resilient: Indonesia's GDP expanded more than 6% YoY between 2007 and 2012, except 2009. In that year, the most populous ASEAN member managed to record a growth rate of about 4.6% despite the subprime mortgage crisis - ASEAN's average GDP growth then was only 1.5%. Income per capita rose by about 4.1% CAGR over the past 12 years while unemployment rate had gradually declined from 10.5% in 1Q 2006 to 5.9% in 1Q 2013. On the whole, Indonesia's economy is growing steadily. However, more electricity is required to power this growth and supply is insufficient.

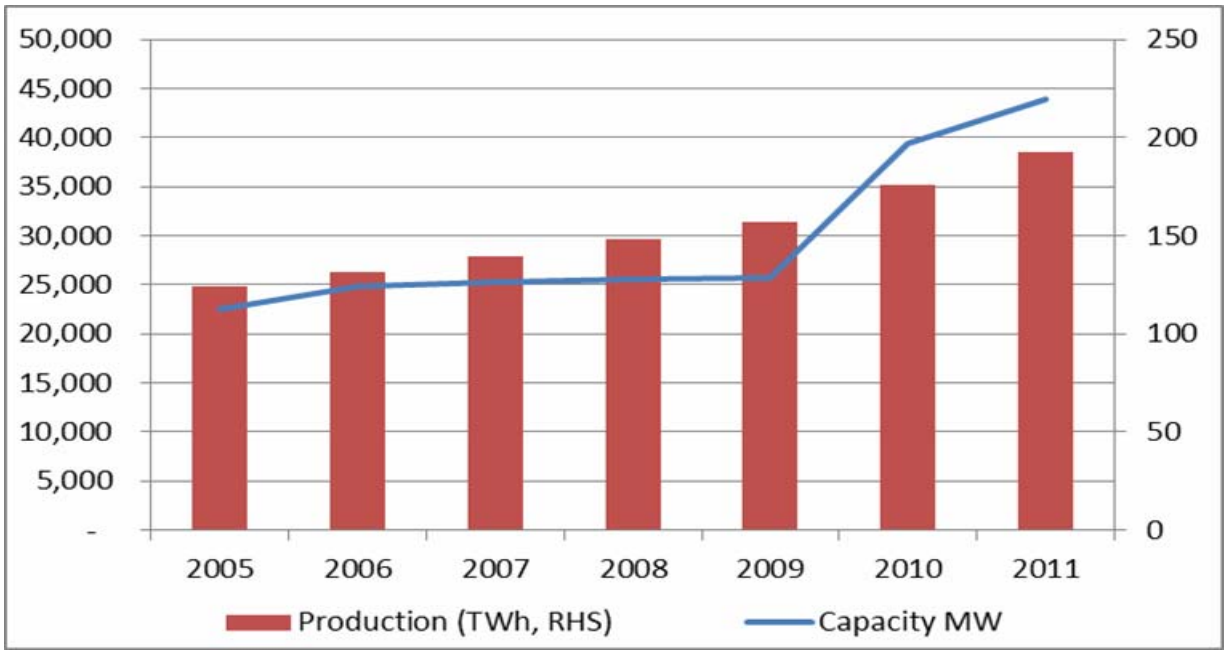
Figure 1: Indonesia GDP, Real GDP Growth Rate and Unemployment Rate



*: Data as of 3Q of the respective year

Lack of Power: As of end 2011, the archipelago has about 44GW of installed capacity and generated about 193 TWh or 193m MWh. This represented a capacity factor of merely 62% - probably because some of the facilities are outdated or poorly maintained. Demand for electricity probably surpassed supply by about 15-25%, leading to frequent blackouts in the country. The power outage is one of the main factors keeping investors wary about investing in Indonesia. Approximately 86% of current electricity generated comes from conventional thermal sources, 9% from hydroelectric and 5% from geothermal.

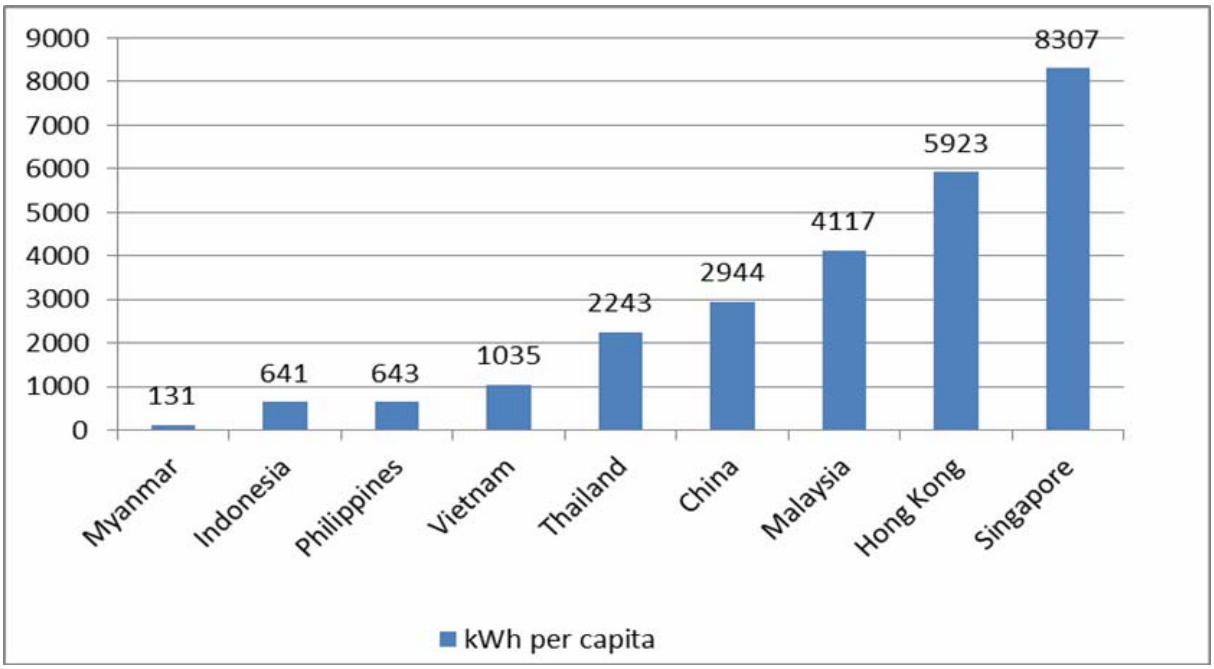
Figure 2: Indonesia Electricity Capacity and Generation



Source: Bloomberg

Rationale for the Lack of Supply and We Expect More Demand Ahead: The main reason for the low electrical capacity is due to the government's subsidy, which amounts to an estimated US$12bn in 2013 and is affecting the profitability of private operators. Other issues such as slow land acquisition speed, poor electricity distribution and transmission system, country risk and poor accessibility to funding further deter investors from entering the market. The strong economic growth, burgeoning middle-class and growing electrification rate (% of people with access to electricity) are pushing electricity demand by about 9+% annually for the next five years (about 4GW additional capacity is required annually costing about US$80bn). Current electrification rate is only 70% vs the authority's target of 90% by 2020. In terms of energy usage per capita, Indonesia lags Malaysia and Singapore by 6.4X and 13X respectively.

Figure 3: Electricity Usage per Capita



The Government has Some Infrastructure Plans, but it is Still Inadequate: Historical investment in electrical infrastructure has been way below GDP growth rate and there is an urgency to heighten supply. Between 2013 and 2016, the authority is looking to invest as much as US$250bn in public infrastructure, of which US$20bn has been allocated in 2013 alone. Plans are also in place to add 2,340MW power plants this year. Several big projects such as the Central Java 2000MW coal-fired power plant and the Asahan 180MW hydro-electric power plant are under construction to boost supply. However, these new capacity may not be sufficient to quench electricity needs, and if left unattended, we may see more frequent blackouts in future.

Roping in the Private Sector: The state utility company, PT Perusahaan Listrik Negara (PLN) is now turning to private investors to salvage the situation. A series of favorable regulations for renewable energy was implemented over the last few years to boost the sector's development.

- In 2009, a Ministerial Decree was issued, making PLN obligated to purchase electricity from renewable energy producers with facilities less than 10MW,
- Also in 2009, a new regulation which allows independent power producers to supply electricity to end users and

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- Higher electricity rates were implemented this year to boost PLN and independent energy providers' interest to invest in power plants.
- Reform law has also been passed in 2011 to speed up the land acquisition process and guarantee fairer compensation for landowners.

Other measures include tax breaks, reduced duties on machinery and others. As such, we see great potential in the Indonesia's energy market, particularly the renewable energy subsector. We have also noted the construction of several mega size projects like US$17bn worth of hydroelectric plants in Kalimantan by China Power Investment and two series of 10,000MW fast track programs (all the plants in the first program were behind schedule other than one) as part of the initiative to resolve the electricity issue.

An End to the Subsidy Era?: The Indonesia government recently announced it is looking to reduce its fuel and electricity subsidy, which cost US$32bn or 20% of its 2013 budget. Such a move will provide the authority with more funding to construct infrastructure and level electricity prices to market rates. The latter will provide an upside to power companies that are generating electricity in Indonesia. However, we expect the process to be gradual as any substantial move may result in severe public disorder.

Optimistic on Hydroelectric Arena: After looking at the various electrical alternatives in Indonesia, we are particularly optimistic about hydropower as the technology is proven, the energy source is renewable and clean and more importantly, the operating cost per kWh is low. There are also plenty of available sites – PLN had said in 2012 that they have identified 96 locations in Indonesia that are suitable for hydropower plants with a total capacity of 12,800MW. An estimated 60% will be developed by PLN while the rest will be offered to independent power producers.

The Numbers Seem to Make Sense: The capital cost for building a small hydropower plant can be around US$2m per MW and operating cost may be around 0.8 US cents/kWh. Assuming a selling price of 8 US cents/kWh, EBITDA margin can be close to 90%. Construction period may take about 18-24 months while financing can be as high as 80% of the project value.

We constructed a DCF model to evaluate the profitability of the project. Assuming 80% plant efficiency, 20% equity, selling price of 8 US cents/kWh, interest rate of 11%, discount rate of 14%, tax rate of 20%, 30 years of operation and terminal growth of 4%, we arrived at a NPV of US$6.3m per 10MW project. The equity value of a 10MW project may amount to US$10.3m and capable of generating cashflow of more than US$1.9m annually. Our tax rate of 20% takes into consideration benefits from tax breaks, import duties exemptions and tax deductibles from capex spending.

We also constructed a sensitivity table to investigate the impact of changes in our assumptions. Every 1% change in discount rate will lead to a US$1.16m change in our NPV while every additional 10% of equity (from 20%) will increase NPV by about US$0.66m. Our worst case scenario indicates a NPV of US$3.05m.

Figure 4: NPV Analysis (US$)

Year	0	1	2	3	4	5	6	7
Capex	(4,000,000)							
Efficiency				80%	80%	80%	80%	80%
Electricity Production (MWh)				58000	58000	58000	58000	58000
Revenue per MWh (US$)				80	84.0	88.2	92.6	97.2
Gross Revenue (US$)				4,640,000	4,872,000	5,115,600	5,371,380	5,639,949
Maintenance and Operating Exp				(464,000)	(487,200)	(511,560)	(537,138)	(563,995)
Interest exp				(1,760,000)	(1,760,000)	(1,760,000)	(1,760,000)	(1,760,000)
PBT				2,416,000	2,624,800	2,844,040	3,074,242	3,315,954
Tax				(483,200)	(524,960)	(568,808)	(614,848)	(663,191)
PAT				1,932,800	2,099,840	2,275,232	2,459,394	2,652,763
Discount Rate	1	0.877	0.769	0.675	0.592	0.519	0.456	0.400
Undiscounted Terminal Value								11,014,775
PV	(4,000,000)	0	0	1,304,585	1,243,274	1,181,684	1,120,467	1,060,143
Explicit Value	5,910,153							
Terminal Value	4,401,915				Tax	20%	Project Value	20,000,000
Project Capital	(4,000,000)				Discount Rate	14%	Equity	20%
NPV per project	6,312,068				Explicit Gwth	5%	Loan	80%
					Terminal Gwth	4%	Interest	11%

Source: SIAS Research

Figure 5: Sensitivity Analysis

	10%	12%	14%	16%	18%
40%	17,042,743	12,197,177	8,935,456	6,658,724	5,012,339
50%	16,079,651	11,413,440	8,279,609	6,097,276	4,522,846
60%	15,116,560	10,629,703	7,623,762	5,535,828	4,033,352
70%	14,153,468	9,845,966	6,967,915	4,974,380	3,543,858
80%	13,190,377	9,062,230	6,312,068	4,412,933	3,054,364

Source: SIAS Research

Issues with the Hydroelectric Market: There are also issues within the sector. The speed of land acquisition and paper work has traditionally been slow and delay in the construction of project will reduce the project's profitability. In the past, many plants have failed due to the selection of inappropriate river sites as hydro power plants, reflecting execution risk. Fluctuation of Rupiah, country risk and natural disasters are some other concerns.

Overseas companies in Indonesia's Electricity Sector: Companies that are involved in Indonesia's electricity market include YTL Power International Bhd, GentingBhd, TenagaNasionalBhd and ISDN Holdings. The former three are involved in coal-fired power plants while ISDN Holdings is involved in hydropower projects. The latter aims to achieve 100MW of hydropower plants by end 2014, which we reckon can give the company's cashflow a substantial boost by then. We look forward to future developments from ISDN over the next few months.

Figure 6: Peers Comparison

	Mkt Cap (S$ bn)	Description of Indonesia's Project
YTL Power	4.36	35% stake in PT Jawa Power, which owns a 1,220 MW coal-fired power plant
TenagaNasional	18.76	MOU to build a 1,200 MW power plant with PLN and PTBA
GentingBhd	15.33	660MW coal-fired power plant in West Java
ISDN Holdings	0.49	18 MW hydropower projects

Source: SIAS Research

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