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Clingendael Report

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Cover photo: City and traffic lights at sunset in Jakarta.
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Disclaimer and acknowledgements

This document is an output from a project commissioned through the Climate and Development Knowledge Network (CDKN). CDKN is a programme funded by the UK Department for International Development (DFID) and the Netherlands Directorate-General for International Cooperation (DGIS) for the benefit of developing countries. The views expressed and information contained in it are not necessarily those of or endorsed by DFID, DGIS or the entities managing the delivery of the Climate and Development Knowledge Network, which can accept no responsibility or liability for such views, completeness or accuracy of the information or for any reliance placed on them.

Responsibility for the content of the report lies with the authors only. They would like to thank Emma Jones, Vincent Tanutama, Dwi Rahardiani, and Ernst Kuneman for their support during the research, and Wouter Veenings, Ilmi Granoff and Leo Roberts for their useful and constructive comments on earlier drafts.

Indonesia and the Southeast Asian region

Executive summary

Indonesia is facing serious and imminent energy security challenges and if these are not addressed adequately and soon, it will hamper economic development in the coming decades. Whilst energy security deteriorates, current energy investments are following a 'business as usual' fossil fuel-based path. However, this unsustainable pathway is not inevitable and there is an opportunity for green growth solutions to be environmentally sustainable and improve energy security: increased efficiency can reduce pressure on supply expansion, renewable energy can offer economically attractive alternatives to fossil based power generation, and shifting from private to public transport and more efficient modalities can reduce exposure to international oil price fluctuations while improving mobility and air quality.

To understand why these win-win opportunities are thus far underutilised in Indonesia, one needs to be aware of a number of structural challenges Indonesia faces, especially related to political arrangements and development drivers. This gives rise to the questions addressed in this report: Given Indonesia's energy security constraints, what are the main challenges and opportunities for green growth? Is energy security a positive force for green growth, or could it become one?

Almost 20 years after the first democratisation and decentralisation programmes started, several structural challenges affect government capacity to operate effectively and efficiently. The Indonesian form of proportional democracy tends to lead to frequent loose coalitions and potential policy inconsistency. Although decentralisation brings stability, local government officials have challenges in turning large budgets from the central government into public services, transactional politics blur the lines between private and public interests, and land conflicts are frequent. Looking to the future, four themes will drive the development pathway in the coming decade(s) and whether and how Indonesia is able to steer through economic, political, and social challenges: Indonesia's economic growth model and public finances, the stability and the role of decentralisation of power and resources, urbanisation and the rising middle class, and Indonesia's international attitude and aspirations.

In general, there is not so much opposition to green growth but rather a lack of specific interest and unfamiliarity with the non-climate benefits of clean technologies. We observe three specific challenges to realising green growth in Indonesia: policy inconsistency, scarcity of investment capital, and considerable internal political pressure to exploit domestic fossil resources, regardless of whether this is economically or environmentally optimal or not.

There is hope: win-win actions for energy security and green growth will occur more often as, for example, clean technology costs drop, the energy security situation becomes more dire, and the government reform agenda succeeds in strengthening the enabling environment for climate compatible investments, fostering increased private sector and grass roots mobilisation, and when foreign direct investments are focussed more specifically on climate and energy security. There is still a long way to go, but with deliberate effort these may contribute to making, in the medium and long-term, a green growth development pathway for Indonesia a more and more convincing and obvious alternative.

Abbreviations

ADB	Asian Development Bank
APBI	Coal mining association Indonesia (Asosiasi Pertambangan Batubara Indonesia)
ASEAN	Association of Southeast Asian Nations
BNI	State Bank of Indonesia (Bank Negara Indonesia)
CDKN	Climate and Development Knowledge Network
CnC	Clean-and-Clear status for mining licenses
COP21	21st Conference of the Parties to the UNFCCC
CSR	Corporate Social Responsibility
DEN	National Energy Council (Dewan Energi Nasional)
DFID	Department for International Development (United Kingdom)
DPD	Regional Representative Council (Dewan Perwakilan Dareah)
DPR	People's Representative Council (Dewan Perwakilan Rakyat)
ESDM	Ministry of Energy and Mineral Resources (Kementerian Energi dan Sumber Daya Mineral)
FDI	Foreign Direct Investment
GCF	Green Climate Fund
GIZ	German Develoment Agency (Deutsches Gesellschaft fuer Internationale Zusammenarbeit)
ICED	Indonesian Clean Energy Development programme supported by USAID
IEA	International Energy Agency
IESR	Institute for Essential Services Reform
IIEE	Indonesian Institute for Energy Economics
IKPD	Local government performance index (Indeks Kinerja Pemerintah Daerah)
INDC	Intended Nationally Determined Contribution
KEN	National Energy Policy (Kebijakan Energi Nasional)
KfW	German Development Bank (Kreditanstalt für Wiederaufbau)
KLHK	Ministry of Environment and Forestry (Kementerian Lingkungan Hidup dan Kehutanan)
KPK	Corruption Erradication Commission (Komisi Pemberantasan Korupsi)
METI	Indonesia Renewable Energy Society (Masyarakat Energi Terbarukan Indonesia)
MPR	People's Consultative Assembly (Majelis Permusyawaratan Rakyat)
NGO	Non-governmental Organisation
OJK	Financial Services Authority Indonesia (Otoritas Jasa Keuangan)
PLN	State Electricity Company (PT. Perusahaan Listrik Negara)
RAAP-Id	Rapid Assessment and Action Plan to Improve Service Delivery in Indonesia

RAN-GRK	National action plan for reducing greenhouse gas emissions (Rencana Aksi Nasional Gas Rumah Kaca)
REDD+	Reducing emissions from deforestation and forest degradation
RPJMN	National Medium Term Development Plan (Rencana Pembangunan Jangka Menengah Nasional)
RUEN	National Energy Plan (Rencana Umum Energi Nasional)
RUPTL	Electricity 10-year Business Plan of PLN (Rencana Usaha Penyediaan Tenaga Listrik)
SBY	Susilo Bambang Yudhoyono GCB AC DUT (former president of Indonesia)
SOE	State-owned Enterprises
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development

1 Introduction

The Asia financial crisis of 1997-1998 was a watershed moment for Indonesia:[1] the Rupiah had come under attack from speculators and after the exchange rate was allowed to float, it lost so much value that the government had to resort to IMF support. Rising prices fuelled unrest and people took to the streets in protest in great numbers. This eventually led to the end of the authoritarian Suharto era, and set the scene for the introduction of democracy. During 1998, Indonesia lost over 13% of its GDP in a single year. Following the crisis, the government started implementing democratisation and decentralisation processes, and the economy managed to recover enough to achieve moderate GDP growth rates. The current government won the election with the promise to return economic growth back to pre-crisis rates of 7% per year, and to achieve progress against its economic and development goals. Indonesia has positive circumstances to make this growth possible, such as a favourable demographic structure, a strategic location, and abundant natural resources. Indonesia also, however, faces structural challenges that may prevent this growth from reaching its full potential. These challenges are discussed in later sections of this report.

Box 1: Indonesia as archipelago

Indonesia is an archipelagic island country situated in South-East Asia, comprising 17,000 islands of which 6,000 are inhabited. With 250 million inhabitants, Indonesia is the fourth most populous country in the world. Indonesia spans over 5000 km from east to west, has land borders with Papua New Guinea and Malaysia, and covers several strategic sea-lanes such as the Malacca strait, and borders the disputed South China Sea.

The largest islands are Sumatra, Java, Kalimantan, Sulawesi, and Papua; the administration resides on Java where 60% of the population lives and 75% of the economic activity takes place. Indonesia is rich in mineral resources and the combination of fertile (volcanic) soil and abundant rainfall means that Indonesia has an enormous agricultural potential and it is already a major world producer of many agricultural commodities.

1 Booth, A. 2016. *Economic Change in Modern Indonesia - Colonial and Post-colonial Comparisons*, Cambridge University Press, 2016.

One of the key enablers for this growth is the uninterrupted availability of energy at an affordable price (i.e. **energy security**)[2]. Demand for energy is growing fast: total primary energy demand is expected to more than triple by 2030, electricity demand quadruples, and demand for transport fuel will be more than three times larger. Energy security related issues are at the heart of the political debate in Indonesia: Firstly, fuel is still subsidised, but a phase-out is ongoing to free up state budget and (as a co-benefit) to reduce energy demand and emissions. The low price of oil has made for a smooth transition away from subsidies and helped to abate civil protests, but there are concerns that the population will turn to protest and demand reintroduction of subsidies when oil (market) prices increase. Secondly, in light of national economic growth, another pressing question is whether investment in electricity infrastructure can be mobilised fast enough to enable supply to keep up with the growth in demand; failure to do so could easily lead to an electricity crisis.[3] Thirdly, as a country with considerable fossil fuel resources, there are diverging views about how the government should deal with fossil exports. Oil, gas, and coal exports currently bring in significant foreign revenues, but some suggest that a fraction of the production should be secured for the domestic market. There is a growing realisation that the current development pathway is economically vulnerable and harmful for the environment and the climate, and that the government's decisions on these matters will have an impact on energy security, and directly and indirectly on energy related greenhouse gas emissions. This is relevant for Indonesia's pledge as part of the Paris Agreement on climate change: in its Nationally Determined Contribution (NDC), it states the ambition to reduce emissions by 29% in 2030, or up to 41% with international support.[4]

2 This IEA definition of energy security is rather narrow as it does not consider social and environmental acceptability, nor does it unpack the meaning of security: for whom, against what threats, and for what values. For a discussion on these topics, see Cherp, A. and J. Jewell. 2014. *The concept of energy security: Beyond the four As*, Energy Policy 75 (2014).

3 ADB. 2015a. *Indonesia constraints to growth*, ADB Papers on Indonesia No 10, Jakarta, 2015; p. 17.

4 Indonesia's first NDC was submitted on 6 Nov 2016 [link].

Box 2: Indonesia and climate change

Indonesia is highly vulnerable to the impacts of climate change. The current climate tends to be relatively even year-round, experiencing a wet season and a dry season, with no extremes of summer or winter. The agricultural sector is highly dependent on water availability (accounts for 80% of water demand) and food security in Indonesia is threatened by water scarcity.[5] A rise of surface temperatures and changing rainfall patterns can cause (long) periods of droughts and floods, which are likely to interfere with agricultural production and which increase the risk of diseases spreading. Sea surface temperature increase is likely to affect marine ecosystems (i.e. dying corals and declining fish stocks); sea level rise may cause coastal erosion, and threaten fresh water availability in areas with seawater intrusion via rivers and groundwater. Increased occurrence of extreme weather events such as storms and heatwaves will have severe impacts on livelihoods and public infrastructure.[6] The 2015 forest fires clearly showed the effects of prolonged droughts caused by the El-Nino Southern Oscillation in combination with questionable land-use practices. Indonesia (and the world) saw months of intense burning of forest and peat lands causing serious economic and environmental damage.

Indonesia also contributes significantly to climate change: greenhouse gases emissions are around 2.0 Gton CO2-eq. making Indonesia the world's 6th largest emitter. Without serious mitigation efforts, emissions are expected to grow to 2.9 Gton CO2-eq. in 2030. Currently 62% of emissions come from land-use change and peat/forest fires, and 26% from energy. Within the energy sector, emissions are dominated by electricity and heat (35%) and transport (25%). Energy is expected to overtake the land-based sector as the largest source of emissions, accounting for 50% of total emissions by 2030.[7] Indonesia is facing criticism from the international community for its contribution to climate change, especially with respect to palm oil plantations on tropical forest land instead of degraded land, for uncontrollable forest and peat fires that result from slash and burn practices, and for the massive increase in production and use of coal.

In recent years, **green growth** has become popular in international policy discourse as a way to reconcile growth with environmental sustainability, indicating a development pathway to a greener, more sustainable economy without having to give up economic growth. The argument behind green growth is that addressing climate change is not only compatible with growth, but it can positively promote growth in the short- and

5 Sari, A. 2016. *Climate-friendly economic growth: an opportunity for Indonesia – scoping report*, Jakarta, 2016.

6 Bappenas. 2012. *National Action Plan for Climate Change Adaptation (RAN-API)*; Jakarta, 2012, pp 8-26.

7 WRI. 2016. *CAIT Climate Data Explorer*, last accessed August 2016; Bappenas. 2015. *Developing Indonesian Climate Mitigation Policy 2020-2030*, Jakarta, November 2015.

long term compared to business as usual[8]. This report uses the green growth definition used by the OECD as "fostering economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies."[9] This emphasises the environmental constraints, and does not make assumptions about the social distributional aspects of economic growth.[10] Although green growth initiatives and analyses are emerging in Indonesia,[11] it does not currently have a national strategy or other coordinated approach for green growth.

Do green growth and energy security go hand-in-hand? Not always: not all clean energy technologies will improve energy security (especially more costly or vulnerable choices), just as not all actions to improve energy security are consistent with green growth (such as use of cheap domestic fossil fuels). Indonesia is fortunate to have options available that offer win-win outcomes for both green growth and energy security. To reduce dependency on oil, the transport sector can be transformed to increase its vehicle efficiency (time in traffic and fuel use per distance).Solutions such as trains and buses, and transit-oriented development in general, improve energy security and are consistent with green growth. Energy efficiency in industry and manufacturing has the potential to lower costs and increase competitiveness, while reducing the pressure on the energy system and keeping emissions low(er). Residential users can decrease their energy use through efficient buildings and appliances. Indonesia has extensive renewable energy resources; waste-to-energy and geothermal can offer affordable utility-scale alternatives to traditional coal and gas fired plants, and smaller scale renewable energy solutions can reduce and stabilise costs for consumers, and improve access to energy with minimal environmental impact.

To understand why these win-win opportunities are thus far underutilised, one needs to be aware of a number of structural challenges Indonesia faces, especially related to political arrangements and development drivers. This report explores the challenges of energy security in Indonesia and its relationship with the political economy of green growth.

8 Bowen and Hepburn. 2014. *Green growth - an assessment*, Oxford Review of Economic Policy, Volume 30, Number 3, 2014, pp. 407–422; Jacobs, M. 2012. *Green Growth -Economic Theory and Political Discourse*; Falkner (eds.), Handbook of Global Climate and Environmental Policy, Oxford: Wiley Blackwell 2013.

9 OECD. 2011. *Towards green growth*.

10 This contrasts with the framing of other institutions, for example the World Bank, who use the term 'inclusive green growth' to indicate that whether green growth is good for poverty reduction is not self-evident (Dercon, 2013).

11 GGGI and GIZ have specific programmes related to green growth. Sari (2016) offers a broad view and compelling argument for green growth options across the Indonesian economy with focus on benefits other than emission reduction.

Two questions guide the analysis: given Indonesia's energy security constraints, what are the main challenges and opportunities for green growth? Is energy security a positive force for green growth, or could it become one? The research is based on a desk study and 20 semi-structured interviews with key stakeholders. Preliminary findings were discussed at a workshop in Jakarta; feedback and issues raised at the workshop have been integrated into this report.

Structure of the report

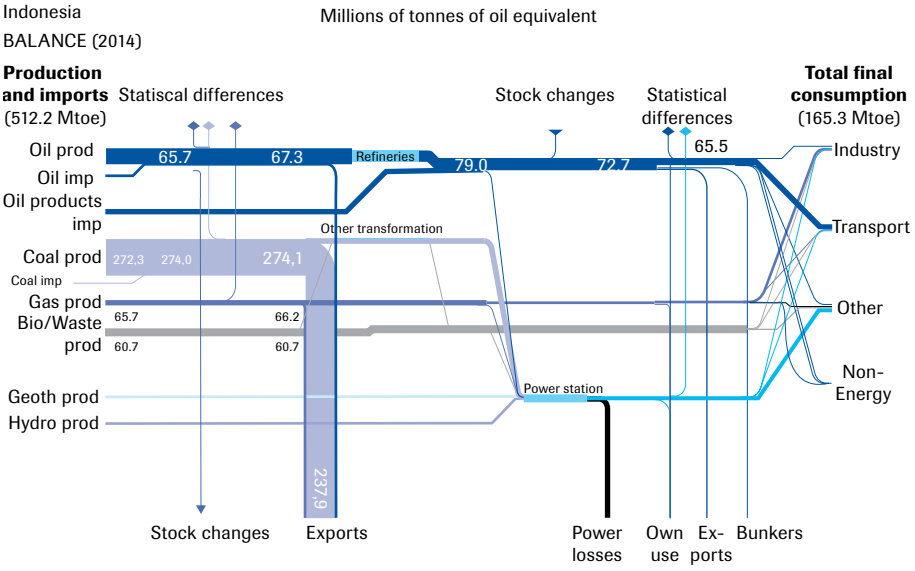
Section 2 presents an overview of the energy sector in Indonesia. It covers fossil fuel production and trade, energy supply and demand, and energy security vulnerabilities, and the phasing out of subsidies. Section 3 looks at how the Indonesian government is organised, what the structural political challenges are, and who is responsible for energy and climate policy. Section 4 then looks ahead at the four most important themes that will drive the development pathway in the coming decade(s): Indonesia's economic growth model and public finances, the stability and the role of decentralisation of power and resources, urbanisation and the rising middle class, and Indonesia's international attitude and aspirations. After sections 3 and 4 set the context, section 5 discusses challenges and opportunities. In addition to the structural political challenges faced by government, green growth solutions often require larger up-front investments and long-term consistent policies, and we observe that energy security is politically (much) more prominent than climate change, and that there is a sense of entitlement to energy security that points towards expansion of coal resources for own use. Despite these substantial challenges, section 5 points towards opportunities that can harness green growth investments to improve energy security. Section 6 draws conclusions.

2 Energy in Indonesia

Despite being a major producer and exporter of fossil fuels, diminishing reserves, lack of exploration,and ageing refineries make the country increasingly dependent on imported oil products. The potential for renewable energy is high, and although the majority of resources is located away from demand centres, technologies such as geothermal, hydropower, and solar can provide attractive opportunities. Currently only 5% of the energy mix is based on renewables and, despite the ambition of increasing this share to 23% in 2025, development of additional renewable energy capacity has been slow.

State-owned enterprises play a significant role in the energy sector. Pertamina is the state-owned oil and gas company and the country's second-largest oil producer after Chevron. Pertamina is engaged in LNG and refining activities, and owner of the largest fuel distribution network in Indonesia; it has also expanded into geothermal exploration and exploitation. As a vertically integrated state-owned utility, PT Perusahaan Listrik Negara (PLN) owns and operates 70% of the generating capacity and the entire transmission and distribution infrastructure.

Figure 1 Indonesia's energy balance in 2014; source: IEA, 2016



This section presents the energy situation in Indonesia, looking at production and trade of fossil fuels, domestic energy supply and demand, and energy security and energy subsidies. It shows the different and distinct challenges and vulnerabilities of transportation, power supply, and access to modern energy services. Moreover, it discusses the phase-out of consumer energy subsidies as a positive force for green growth and fiscal stability, but leaving customers less energy secure than before.

2.1 Fossil fuel production

Energy production (i.e. exploitation of coal, oil, and gas resources) and trade are largely in the hands of private companies, and the government benefits through revenue sharing and tax income. This in contrast with domestic supply, which is largely covered by the two major state-owned companies PLN and Pertamina and where private sector involvement has so far been limited.

Box 3: Production, trade, and energy security

In Indonesia, energy prices are not linked to government revenues from energy production. How production and export of fossil resources affect domestic energy security, depends on the perspective. In Indonesia, 'Rationalists',[12] who favour an open economy and view globalisation as an inevitable force that can pose opportunities, take a different view to 'nationalists', who see the role of the government as protector of the economy from external threats and pressures. Nationalists view the earmarking of domestic primary energy production for local use as a good way to secure energy supply from price fluctuations and foreign markets. Rationalists are less inclined to favour direct control over price and supply as solutions for domestic energy security. In their view, primary energy commodities are traded internationally and whether one sources it from domestic or global markets should not affect the price.

Indonesia has introduced a link between production and energy security, via the domestic market obligation (DMO) policy. The DMO makes it obligatory for producers to sell part of their energy on the domestic market, favouring domestic fossil power generation and oil refineries. Many rationalists would consider a DMO to be a protectionist measure, where the difference between local price and the export price could be considered subsidy to domestic customers (at the expense of export sales income).

12 The labels *rationalist* and *nationalist* are used to indicate opposing views in the debate in Indonesia; see Booth (2016).

Indonesia is the world's largest exporter of steam coal (used in power plants); its coal production has more than tripled since 2004, to 534 Mton in 2014. 80% of production is exported, with India (34%) and China (25%) the largest export destinations. The domestic use of coal is split equally between power plants and direct use in industry. Domestic power plants use around 77 Mton of coal per year but this is expected to grow to 200-240 Mton in 2030 (reducing export to less than half of production). The Indonesian coal mining industry is dominated by six large, domestically owned private and state-owned coal-mining companies, which together account for 75% of total production. The Indonesian coal lobby is strong and the coal industry directly employs 742,000 people. Coal is generally considered an important resource that should be used for the benefit of Indonesia. As such, it is discussed across a range of topics from domestic energy security, employment and environmental concerns to foreign relations with neighbouring countries relying on Indonesian exports. Discussions have led to a number of (proposed) changes in the conditions for coal mining and trade: a production cap and a domestic market obligation, a ban on export of low-caloric coal, stricter regulations on foreign ownership, and increase of royalties claimed by local governments. Following recent drops in coal prices and reduced demand from China, the coal industry has lobbied the central government for further protection of the sector.[13]

Crude oil production reached its peak between the late 1970s and the mid-1990s, and has been declining since. In 2014, Indonesia exported around 40% of the crude oil production and imported a similar amount. Since the refining capacity is insufficient to serve the domestic market, Indonesia has to import over half of its oil-based fuel. Natural gas production has increased since the 1970s and currently gas is more important as an export product than oil. Since the mid-1970s Indonesia has been one of the world's major exporters of LNG (liquid natural gas, prepared for shipping). Production has seen a decline over the past years, while domestic demand increases. In anticipation of becoming a net importer of gas in the coming decade, Indonesia has rerouted production from export to domestic use, and is changing its LNG terminals into regasification units to be recipient rather than exporter.[14]

13 IEA. 2015. *Energy Policies Beyond IEA Countries - Indonesia 2015*, International Energy Agency, Paris, pp. 71-83; ESDM. 2015b. *The role of Renewable Energy to contribute to INDC Indonesia*, Presentation at COP21 Indonesia Pavilion, Paris, 2015; PwC. 2016. *Supplying and financing coal fired power plants in the 35 GW programme*, analysis for the Indonesian Coal Mining Association ABPI, Jakarta 2016.

14 DEN. 2015. *Executive Reference Data National Energy Management*, National Energy Council (DEN), Jakarta, 2015, pp. 13-18,27; IEA (2015:39-54).

2.2 Domestic energy supply

The overriding challenge for robust and resilient energy infrastructure in Indonesia is the fact that the country is spread out over thousands of islands. The oil and gas infrastructure consists of a complex system of fragmented and unconnected point-to-point networks, three LNG plants and 10 refineries. Indonesia relies on government-owned oil and gas distributor Pertamina, which has 20-day operational stocks for emergencies. There are no compulsory industry stocks or public emergency stocks for oil and gas in place. Distribution of fuel presents a challenge, and islands are regularly confronted with physical scarcity of fuel. Coal transport to seaports and power plants is done by trucks on public roads, rail wagons, and river barges and conveyors. There are plans to move coal transport to rail in order to reduce pressure on other road transport.

In 2014, Indonesia had a total installed power generation capacity of 54 GW comprising coal, gas, and oil (89%) and renewable sources (11%), such as hydro and geothermal. Over the years, the fuel mix has changed in favour of (cheap) coal and phasing out (expensive) oil generation, while the shares of gas and renewables have been relatively stable.[15] The electricity infrastructure consists of hundreds of small and large power plants and several unconnected high-voltage transmission networks connected to thousands of distribution networks. Although PLN no longer holds the legal monopoly over transmission and distribution, the first right of refusal has to date discouraged the private sector from entering. It is responsible for system reliability and quality of power supply, for which it maintains spare emergency generating capacity. Coal power plants typically have 25 days' operational stock and other types keep a minimum of 7 days of fuel. There is no independent regulator for the electricity sector.[16]

In March 2015, the government launched a programme that tasks PLN to build an additional 35 GW of power generation capacity within 5 years (from 55 GW in 2014, with a backlog of 7 GW under development). This ambitious expansion plan expects around half of the capacity to be developed by the private sector, and relies heavily on coal as main source of low cost energy. Progress has been slow: as of May 2016 PLN only has 4 GW under construction and 8 GW is under procurement. The energy mix that the National Energy Policy prescribes to improve energy security (see 3.2) is considered highly ambitious. For the power sector this would mean that by 2025, 40% of all power generation and over 50% all new power generating capacity added before 2025 will need to be renewable.

15 DEN (2015:37); IEA (2015:100-101).

16 IEA (2015:24).

Indonesia has a large potential for renewable electricity generation, including 75GW for hydropower, 560 GWp for solar, 29 GW for geothermal, and 34 GW for bioenergy (wind and marine energy are less attractive). Investors and project developers face many barriers that hinder a fast uptake[17] and addressing these will require concerted government action.[18] Whether and where renewable energy is attractive compared to fossil alternatives depends on the technology and the circumstances. Since Indonesia is such a geographically diverse country, it can very well be that utility scale solar power is more attractive than coal-based generation in one place, while the reserve holds in others. As a rule of thumb though, renewable solutions are often easier to scale and therefore more attractive in areas with sparse demand. The factors that influence cost and feasibility in different areas in Indonesia is not well-known. This lack of accurate, up-to-date information on actual levelised costs for the key technologies, that is accepted by all stakeholders, is holding back policy development, as well as project development and finance – needed to move towards a high-renewables mix for on-grid electricity supply.[19]

As the world's largest producer of palm oil (45% of global supply), plantations currently cover 20% of the agricultural land. Of total palm oil production, 60% is exported, 16% is used in domestic food, and 12% goes to biodiesel production. Government policy has encouraged increased production using a combination of subsidies and mandatory blending of biodiesel in transport.[20] However, constraints on the available blending infrastructure and decreasing demand as a result of falling oil prices have created an oversupply of palm oil but low levels of use for domestic biodiesel in transport.

2.3 Domestic energy demand

2.3.1 Transport and oil

The transport sector accounts for around one-third of energy demand,[21] with vehicles almost exclusively using oil products as fuel: the largest share is used by motorcycles (44%) and cars (30%), followed by trucks (17%), busses (8%), and trains (1%).[22]

17 Cameron, L.C. and X. van Tilburg. 2016b. *Barriers to medium scale renewable electricity generation in Indonesia*.

18 Cameron, L.C. and X. van Tilburg. 2016c. *Promoting small and medium scale renewables in Indonesia*.

19 Ibid.

20 McFarland, W., S. Whitley and G. Kissinger. 2015. *Subsidies to key commodities driving forest loss - Implications for private climate finance*, ODI Working Paper, London, 2015, pp. 30-33.

21 The bulk of oil products is used for transport (70%), followed by direct use for industry and commerce (20%) and power generation (10%).

22 Growth rate for motorcycles is a staggering 15% per year; see (DEN, 2015:58-59).

The major challenge is to secure urban mobility and cheap and fast freight transport. Prolonged underinvestment in public transport infrastructure and rising car-ownership, together with rapid urbanisation are leading to serious congestion and unhealthy levels of local air pollution. The Greater Jakarta Area, with a population of 28 million, is one of the most congested (gridlocked) areas in the world. A 2014 study[23] indicated that about one-third of the fuel is wasted in stationary traffic, and average speeds continue to decrease.[24] Efficient mass transit infrastructure is hardly available: major cities do have bus rapid transit (BRT) systems, but bus lanes are hardly ever free for high-speed transport due to lack of enforcement. None of the Indonesian cities has a metro or light-rail now (Jakarta is expected to have its first 16km subway ready in 2018). While the government has a suite of policies at its disposal, there seems to be a bias towards switching fuel from oil to natural gas and biofuels. Policies to improve vehicle efficiency and shifting to more efficient modes of transport have received less attention. The focus on fuel switching seems to be driven primarily by concern for dependence on oil imports, while it does not address congestion and pollution (and is only marginally better for emission reduction).[25]

2.3.2 Electricity

Total demand for electricity is 199 TWh, mainly from residential (43%) and industrial (33%) consumers, followed by businesses (18%) and public use (6%). Demand has grown at an annualised rate of over 8% since 1990, with only a minor slowdown in the wake of the 1997 Asia financial crisis. Based on this trend, demand is expected to increase by over 8% per year until 2025, which will require a doubling of the generating capacity in less than a decade.[26] Energy savings potential is 15-20% per sector in 2025 and the government targets 17% final energy savings across all sectors leading to reductions in energy intensity of GDP by 1% per year.[27]

2.3.3 Access to modern energy services

Indonesia has achieved remarkable success in bringing electricity to its people. In the past 10 years, PLN has connected 20 million households. The government included electrification as a priority in its National Energy Policy[28] and aims to achieve almost full

23 ITPS. 2014. *Study of Long-Term Transport Action Plan for ASEAN*, Institute for Transport Policy Studies.

24 IEA (2015:143-150).

25 *Ibid.*

26 PLN. 2014. *General Business Plan (Rencana Usaha Penyediaan Tenaga Listrik, RUPTL) 2015-2024*, Jakarta, 2014.

27 ESDM (2015b).

28 Government of Indonesia. 2014. *National Energy Policy*, Regulation of the government of the Republic of Indonesia 79/2014, article 9.

electrification with guaranteed energy access for all by 2020. This ambition is reiterated in the medium term development plan, which "targets to increase the overall ratio […] to 97% in 2019".[29] While electrification rates are lowest in eastern Indonesia, the absolute number of households without electricity is greater by far in western Indonesia. Approximately 46% of the estimated 10.4 million households without electricity are in Java, whereas only 23% are in eastern Indonesia. Low-carbon solutions often make sense in sparsely populated areas in the outer islands, because of scalability and high costs of the alternative (i.e. diesel gen-set). The Asian Development Bank calls for a coordinated approach to determine which connections are best served by off-grid or mini-grid solutions, and which technologies are best suited. Most successful electrification programmes involve some form of subsidy to make power affordable, which seems inevitable given the low spending power of the poorest.[30]

Until 2006 Indonesian households relied heavily on firewood and subsidised kerosene as their main cooking fuel. Since then, the government has implemented successful programmes to substitute imported and unhealthy kerosene with cheaper and safer LPG (handing out over 50 million starter kits). In 2013, 46% of households (28 million) rely on LPG as their main cooking fuel. 40% (25 million) continue to depend primarily on firewood, while about 12% (7 million) rely on kerosene. The remaining 2% use other resources, including electricity, charcoal, other biomass, and biogas. Of those households that primarily use firewood, about half are concentrated on Java while the other half is distributed across the other islands. In 2012, the government and the World Bank started a programme to provide these households with clean and efficient cooking stoves to reduce negative health impacts and reduce pressure on forests.[31]

2.4 Energy security

Energy security vulnerabilities vary across subsectors and it affects actors differently. The main energy security concern for **transport** is the exposure to international oil price fluctuations. Now that subsidies are phased out, this risk is transferred from the central government to consumers. The challenges for urban areas are congestion and air pollution, while for industry the challenge is to keep freight transport cheap and fast in order to stay competitive. The main energy security concern for the **electricity sector** is the risk of blackouts as a result of inadequate generating capacity and insufficient or failing infrastructure. The main energy security concern for **access to modern energy**

29 DEN (2015:39).

30 ADB. 2016. *Achieving universal electricity access in Indonesia*, Asian Development Bank, Manilla, 2016.

31 WB. 2013. *Towards universal access to clean cooking in Indonesia*, Asia Alternative and Sustainable Energy Programme, World Bank, Washington, 2013, pp. 5-11.

services is affordability. The target customers are typically the poorest part of society and their spending power is very limited.[32]

Power disruptions are frequent across all islands and individual networks are vulnerable to shocks and stresses, while spare capacity is under pressure from capacity needed to meet growing demand. The International Energy Agency (IEA) reports that in 2013, the Java-Bali grid delivered 10% less than planned due to (rolling) blackouts[33]. In a recent assessment of Indonesia's energy sector, the Asian Development Bank paints a bleak picture of the state of the energy system. Investments across the energy sector have been grossly inadequate for over a decade due to unavailability of finance in combination with constraints in policy, planning, and implementation arrangements. Hundreds of billions of US dollars in Investments are needed by state-owned enterprises (in bad financial shape) and/or by private investors (reluctant due to regulatory, institutional, and policy risk). Unless the government is able to mobilise investments at scale, "energy supply becomes increasingly costly and unreliable, and access will be oriented towards economic growth centres".[34]

Indonesia expects that both energy demand and import dependence will grow fast in the coming decades. Total primary energy demand is expected to more than triple by 2030; electricity demand will be four times larger; and demand for transport fuel more than three times larger. Natural gas imports will exceed exports by around 2020. While it is currently just about self-sufficient, Indonesia will import around 80 Mtoe gas by 2030; the balance of trade for oil products is already negative (i.e. there is more import than export) and net import of oil products will reach 40 Mtoe by 2030.[35]

Energy prices and subsidies

Indonesia has a long history of subsidising domestic energy consumption by setting retail prices below market rates or even below cost recovery levels. The prices for fuel and electricity are set by the Ministry of Energy and Mineral Resources (ESDM) and require approval from government. Many Indonesians consider the availability of cheap energy a constitutional right (see 3.4) and it has brought positive developments such as economic growth, social mobility, and access to energy. However, in recent years, fuel and electricity subsidies have become an increasingly large burden on the national

32 Dercon. 2012. *Is Green Growth Good for the Poor*, Policy Research Paper 6231, World Bank, Washington DC, 2012.

33 IEA (2015:33,75,109).

34 ADB. 2015b. *Summary of Indonesia's Energy Sector Assessment*, ADB Papers on Indonesia No 9, Jakarta, 2015, pp. 12.

35 DEN. 2013. *Indonesia Energy Outlook*, National Energy Council (DEN), Jakarta, 2013.

budget, which has seriously affected funds available for infrastructure, education, and social welfare (and even the country's credit rating).[36]

At the time of writing, energy consumption subsidies are being phased-out, following through on the initiative started by the previous President Susilo Bambang Yudhoyono (commonly known as 'SBY') in 2013. Prior to reforms in January 2015, subsidies to gasoline, diesel, kerosene, and small LPG, comprised the single largest item on the state budget, totalling around 18% of total government expenditure in 2013 and 2014, with electricity subsidies adding another 9% in the same years. The share of energy subsidies relative to total government expenditure is declining: from 27% in 2013 and 2014 to 13% in 2015. This is partly the result of moving consumer prices for electricity and fuels closer to cost recovery levels, and partly because the oil price collapsed in 2015 – making import of oil products cheaper. In September 2015, the government announced that by better checks on whether all customers that currently buy subsidised power are actually eligible, subsidies for electricity can be brought down by a further 32%.[37, 38]

The phasing out of energy subsidies exposes customers to higher and likely more volatile prices for fuel and electricity, where this was previously 'buffered' by the state budget. For consumers, the loss in welfare is (partly) compensated by directing the subsidies towards social spending, but there is no longer a guarantee that prices will stay stable. For businesses, abolishing energy subsidies leads to higher energy bills and greater pressure to reduce energy demand in order to stay competitive. The new pricing system linked the retail prices to the market and was relatively painless to implement in a time of low international oil prices, which meant that customers did not experience much change in fuel prices. The real test however, will present itself when oil prices increase and customers are confronted with price hikes.[39]

36 IEA (2015: 30-34).

37 GSI (2016a:1-2) *Indonesia Energy Subsidy Briefing April 2016*, IISD Global Subsidies Initiative, Jakarta, 2016.

38 ADB (2015b:13-19).

39 GSI (2016a).

3 Political Arrangements

This section briefly introduces how the Indonesian government is organised, what structural political challenges the government faces, and who is responsible for energy and climate policy. We observe that the Indonesian form of proportional democracy tends to lead to frequent loose coalitions and potential policy inconsistency. Almost 20 years after the first democratisation and decentralisation programmes started, several structural challenges affect government capacity to operate effectively and efficiently. Decentralisation brings stability but local government officials have challenges in turning large budgets from the central government into public services, transactional politics blur the lines between private and public interests, and land conflicts are frequent. In the energy sector, Ministries largely depend on state-owned enterprises to implement policies.

3.1 Government and elections

Indonesia is a unitary constitutional democracy with a presidential system. The legislative branch, the *Majelis Permusyawaratan Rakyat* (MPR; People's Consultative Assembly) consists of the *Dewan Perwakilan Rakyat* (DPR; People's Representative Council; 560 members) which is responsible for legislation, budgeting and oversight; and the *Dewan Perwakilan Rakyat* (DPD; Regional Representatives Council; 132 members), which is limited in its mandate to dealing with bills related to regional matters. Indonesia has 34 provinces headed by governors, and 504 regencies and cities headed by *Bupati* and mayors respectively. The national election is designed to favour parties with a national scope, for example by requiring permanent party presence in each of the provinces and in three-quarters of all regencies and cities. Proportional representation (as opposed to majority rule) has led to many parties jointly making up the legislature. This means that political arrangements are often based on loose coalitions, which can negatively affect policy coherence.

The President, who is head of state and head of the national government, heads the executive branch. The president is chosen by the people in a direct election, together with a vice-President, and holds office for a maximum of two 5-year terms. The winner must receive a minimum of 50% of the vote nationwide, and at least 20% in over half the provinces. Candidates for the presidency need to be nominated by a party or coalition that received at least 25% of the popular vote or secure at least 20% of seats in Parliament during the preceding legislative election. In 2014, Joko "Jokowi" Widodo won the election. He does not come from the ruling political elite but appeals to common

people, therefore he had to team up with the PDI-P party of Megawati Sukarnoputri.[40] The current cabinet has 34 ministers and 3 vice-ministers. Jokowi has reshuffled his cabinet twice in less than two years in office, with the last one took place in July 2016.

3.2 Institutional Architecture

The Indonesian cabinet consists of four coordinating ministries[41] which aim to ensure policy coordination and synchronisation across a further 28 ministries. Presently, all four coordinating ministers belong to different parties. Under the coordinating ministry of maritime affairs, the Ministry of Energy and Mineral Resources (ESDM) is responsible for energy and has directorates general for Oil and gas, Electricity, Minerals and Coal, and Energy Conservation and New and Renewable Energy. ESDM follows long-term strategic guidance from the National Energy Council (DEN). The vice/president and the Minister of Energy chair the Council. It has seven Ministers as members from government and five experts from academia and civil society. It was established under the Energy Law 30/2007 and has five core tasks: formulating the National Energy Policy, establishes the General National Energy Plan (RUEN), supervise cross-cutting energy issues, oversee energy buffers, and manage responses to energy crises. On important topics, the President and Vice-President set the agenda and discuss with Parliament directly, for example with subsidy reform and 35 GW 'crash programme' but also domestic use of energy production and electrification.[42]

The 'institutional home' of climate change in the Indonesian national government has changed. With the installation of the new government in October 2014, the ministries of environment and forestry have been merged into one Ministry (*KLHK*). Presidential Regulation 2015/16 outlines that KLHK will have a dedicated directorate general (DG) for climate change and that the previously independent government bodies DNPI and the REDD+ Agency and their functions are to be integrated in the new climate change DG with a mandate to implement and (to some degree) coordinate climate related issues in Indonesia. In the past years the Ministry of National Development Planning (Bappenas), not linked to a coordinating ministry, has emerged as a driving force for mitigation actions in Indonesia. How KLHK and Bappenas divide the roles and responsibilities on climate change mitigation is currently being discussed.

40 Pisani, E. 2014. *Indonesia in pieces - The Downside of Decentralization*, Foreign Affairs, July/August 2014, p. 142.

41 Coordinating Ministry for Political, Legal, and Security Affairs; Coordinating Ministry for Economic Affairs; Coordinating Ministry for Maritime Affairs; and Coordinating Ministry for Human Development.

42 ADB (2015b:37).

3.3 Structural challenges

The former presidency of SBY and the current administration both promised to push for green growth and energy security with an increased share of renewables. There are five salient structural challenges to realising this, which are core to Indonesian politics and state architecture: limited fiscal space, decentralisation, transactional politics, institutional arrangements, and land (natural resources) conflicts.

3.3.1 Limited fiscal space

The 2016 budget shows that the government expects revenues to the state of 137 billion USD and fiscal expenditure is 158 billion USD of which about one third is transferred to subnational governments.[43] The public budget is remarkably small and central government tax revenue to GDP ratio is one of the lowest in the G20 and among emerging market economies (EMEs), averaging 10.9% of GDP,[44] compared to around 13-15% for its ASEAN neighbours and near 40% in Western Europe.[45] Around half the state revenues come from natural resources. For 2016, oil and gas revenues only make up 8% of the total income: production has slowed down and the reference price has halved from 97 to 50 USD/barrel oil.[46]

3.3.2 Decentralisation

Enforced in 2001, Indonesia's decentralisation efforts were born from Jakarta's fears of separatist movements splitting up the country. When the legislation passed in 1999 was finally enforced, it guaranteed the devolution of extensive governmental responsibilities to the sub-national level, empowering municipalities in a move that was seen as a way of restoring citizens' rights by bringing democracy to the grassroots while disrupting Jakarta's patronage networks. 15 years later the balance is not that positive.[47] *Kabupaten* (regencies) have constraints when it comes to human resources, yet are managing not only projects worth trillions of rupiah, but are also in charge of actual implementation

43 ISEAS. 2016a. *Indonesia's 2016 budget*; ISEAS Perspectives 03/2016, Institute of Southeast Asian Studies, Singapore

44 ADB. 2015c. *Summary of Indonesia's Public Sector Management – Sector Assessment*, ADB Papers on Indonesia No 11, Jakarta, 2015, p 3.

45 Economist. 2016a. *Roll out the welcome mat: To secure the growth it needs, Indonesia must resist its protectionist urges*, Economist Print Edition, 27th February 2016.

46 World Bank. 2016b. *Indonesia Economic Quarterly - March 2016*, World Bank Indonesia, Jakarta, 2016.

47 For further analysis on the impacts of decentralisation over governance, policy implementation and sustainability in Indonesia see: Holzhacker, R. *et al.* 2016. *Decentralization and Governance in Indonesia*; Hutchinson and Francis. 2015. *(De)centralization and the Missing Middle in Indonesia and Malaysia*, ISEAS Economics Working Paper; Pisani (2014).

of key national policies under a scheme that offers limited support to the regencies and enabling system arrangements.

The transactional costs of moving resources from the centre to the ever-growing number of municipalities are substantial[48] and inefficiency in the use of scarce resources has rocketed. In a natural resource rich country, the incentives to create a new regency to appropriate the rights over forests and mineral rich lands, have led to widespread agreements between local business patrons and politicians over land grabbing and natural resources exploitation. If there is no strong central leadership from Jakarta, such scenarios will continue to sprout across the archipelago, which would present challenges for sustainability and green growth.[49]

3.3.3 Transactional Politics

Defined as a trade between public office incumbents and voters' support, transactional politics promises the delivery of policies in exchange for votes. In practice, when such a practice extends beyond campaigning it blurs the reach of democratic arrangements as it favours communities that indeed have something to trade in exchange for money or political power. Transactional politics is a wide-open doorway for collusion between private interests and public office holders, and thus promotes patron-client networks and corruption. Some have argued that transactional politics has saved Indonesia from fragmenting into highly regional and polarized groups with the potential to compromise the prospects of a nascent democracy.[50] Notwithstanding such a claim, transactional politics has a toll in governance at both national and local levels.

Jokowi's platform, known as NAWA CITA (nine priorities), outlines his vision for his administration and includes key aspects to curb some of these governance challenges. Among these are developing clean, effective, trusted and democratic governance; greater accountability for the performance of public institutions; open information citizens and much needed public service reform; reform of law enforcement agencies; and a push for substantive land reforms. In addition, Jokowi has shown a strong determination in staffing his own office with political outsiders with robust credentials in the fight against corruption and in agrarian reform, a pivotal issue if the country is to clear its long-standing land conflicts and move forward towards more sustainable use of natural resources. Through the *Kantor Staf Presiden* (Office of the President), Jokowi

48 Since decentralisation 8 new provinces have been created (passing from 26 to 34), with 8 more to be created by 2020, regencies have swelled to 515 with 57 new prospects for 2020.

49 For a thorough analysis see Burguess, R. 2012. *The Political Economy of Deforestation in the Tropics*, Quarterly Journal of Economics.

50 See Roberts, C. *et al.* 2015. *Indonesia's Ascent: Power, Leadership and the Regional Order.*

is also spearheading the efforts to clean up land titles and to leverage due diligence in natural resource licensing.

Indonesia's multiparty democracy, a combination of presidential democracy and parliamentarianism, results in the party of the President never having a majority at the legislature, opening the doors for coalition making and transactional politics, with ministerial and non-ministerial posts distributed amongst coalition members. With the party's stance in key issues such as energy, biofuels, subsidies and agrarian reform being malleable, and driven by patron client networks and opportunism, it is difficult for a president not to compromise key points in his political, government and development agendas.

With the introduction in 2004 of direct local elections for *bupati* (regency heads), politicians had the incentive to introduce initiatives that were well received by potential local voters but that might be in contradiction with central government policies and implementation guidelines. With local voters becoming increasingly pragmatic and transactional, complex bargaining politics at local levels are on the rise. Private interests in collusion with political aspirations are often channelled through the use of a political party as a vehicle for a rich local businessperson. The practice of *sewa kendaraan*, as it is referred to in Indonesia, guarantees the backing of an official party at a hefty cost that needs to be reimbursed once the campaign is over. Some *bupati* start their tenure aligning their own private interests and business priorities, with the appointment of local officials, the participation of law enforcement in the spoils, and the voter's transactional demands.[51] The issuing of land titles for natural resource exploitation (logging, mining, biofuels, etc.) is often at the centre of this complex political negotiation, at times with limited attention to whether they are legal or not, in protected areas or in contradiction with national policies and guidelines.

3.3.4 Institutional arrangements

With the fall of Suharto in 1999, Indonesia started its transition to democracy. The *reformasi* era dismantled much of Suharto's New Order institutional architecture but the underlying nexus between financial, military and bureaucratic power was not challenged.[52] Informal patterns of influence across all government agencies still create the possibility for patrimonialism and corruption, which leaves public institutions with a narrow leeway to respond effectively to policy implementation.

51 See Aspinalli and Sukmajati. 2016. *Electoral Dynamics in Indonesia. Money Politics, Patronage and Clientelism at the Grassroots*.

52 See Aspinalli, E. and Klinken G. 2010. *The State and Illegality in Indonesia*; Ash Center for Democratic Governance and Innovation. 2011. *From Reformasi to Institutional Transformation*.

The Indonesian civil service has more than 5 million employees, and faces many challenges. This includes low salaries that are not suited to attract better qualified personnel; weak financial accountability; and patron client networks that exacerbate as one moves from the centre to the peripheries of the country, and among agencies handling substantial budgets or with key decision-making powers. Shortcomings in human resource development add to a hierarchical institutional culture, which enables action only when backed by superiors.

Institutional architecture and bureaucratic structures need to be improved as they are key for development. Reforms initiated in various ministries, together with public service reform initiatives, are paving the way for an overhaul of institutional arrangements and public service both at national and local levels. The complexity of the task requires a long-term view with results only to be seen over time.

3.3.5 Land conflicts

In the last ten years, there has been rapid expansion of the agricultural frontier, mostly due to the boom in biofuels (Indonesia is the biggest producer and exporter of crude palm oil), spearheaded by private investors and local governments. The expansion of the agricultural frontier has resulted in the grabbing of large amounts of land without respecting the rights and interests of local communities. Land grabbing has become the primary cause of the rapid increase in land conflicts throughout the archipelago.[53] The disenfranchisement of local communities and the invasion of land designated as "protected" has resulted in the displacement of populations, rupture of *masyarakat hukum adat* (traditional/customary law communities), and widespread violence by military, police and private businesses protecting joint ventures in mining, logging, and plantations (both legal and illegal).[54]

Many issues underlie the increase in conflict. This includes the distortions created by the collusion of private interests with local politics (the *bupati* issues land titles), the military and police (both are often either partners in joint ventures with private firms or firms are part of the *parman* network. The lack of clarity in the legal and regulatory system is another key issue. Land registration is costly and inefficient, the land rights of unregistered users (mostly *masyarakat hukum adat*) are insecure, women's rights to marital property are often unregistered, and power holders often use the ambiguities

53 See the work and reporting of the Indonesian *Konsortium Pembaruan Agraria* (Agrarian reform Consortium) [link]; Land Matrix figures showing the rapid expansion of land acquisition in Indonesia [link]; For a short analysis of land wars and their connection with resource-led growth in Indonesia see Time. 2012. *Land Wars: Indonesia's unrest shows risks of resource-led growth*, [link].

54 See National Commission on Human Rights: Kommas Ham. 2016. *National Inquiry on the Rights of Customary-Law Abiding Communities Over their Land in Forest Areas*. [link].

between formal and customary (*adat*) law to their advantage, leading to land grab and conflict.[55] In addition, the lack of an accurate land registry and the existence of multiple and often contradictory official land usage maps have resulted in overlapping land claims with several parties claiming to be the rightful owner, or parties claiming the right to exploit lands that in some maps are assigned special protection or conservation status. The resulting legal and regulatory maze is fertile ground for rent-seeking from local authorities, the BPN (National Land Board) and law enforcement authorities. The effects of this situation on key greenhouse gas reduction initiatives such as REDD+ is significant. Without clear land tenure laws and regulations, it is impossible to assess who are the rightful holders of rewards and responsibilities for maintenance or enhancement of the carbon sequestration of forests. In addition, the legal limbo in which adat-communities find themselves as regards recognition of their land rights over forest areas renders them ineligible for REDD+ benefits.[56]

Navigating through these challenges will determine the extent and depth of policy implementation in both energy security and green growth strategies.

3.4 Policy framework on energy and green growth

The policy framework for energy is based on the Energy Law 2007/30 (EL7), which lays out general principles for management of energy resources and the government's basic targets for the future development of the energy mix. This is further elaborated in the Oil and Gas law (2001), the Mineral and Coal Mining law (2009), the Electricity law (2009), and associated ministerial and presidential regulations and decrees. The Constitution, in Article 33 states that "sectors of production which are important for the country and affect the life of the people are under the powers of the State [...] the land, the waters and natural resources within are under the powers of the State and shall be used to the greatest benefit of the people". This article gives Indonesian citizens a sense of entitlement to affordable energy and is a powerful tool for anti-reform coalitions to prevent changes in energy system regulation such as independent regulators, privatisation, and liberalisation.

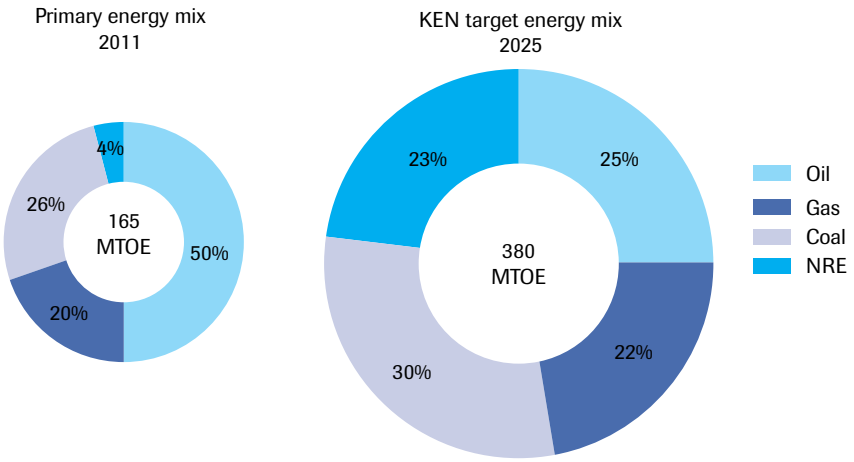
Against the background of high demand growth and concerns over energy security, the new National Energy Policy (KEN) was confirmed by Parliament as Presidential Regulation 2014/79 to guide medium and long term energy planning. It outlines the policy priorities for energy development as maximising renewable energy utilisation, optimising gas and new energy, minimising oil utilisation, and use of coal as a stabiliser

55 See USAID Land Tenure and Property Rights Portal [link].

56 For a thorough analysis of REDD+ and *adat* community rights see Larson, A. *et al.* (2013) *Land Tenure and REDD+: The good, the bad and the ugly*, Global Environmental Change 23 678-689 [link].

of national energy supply. According to projections, the use of gas is to more than double, use of coal is to more than triple, and renewables are to grow more than eleven-fold by 2025. The KEN also stipulates that exports of natural gas and coal are to be reduced gradually, and phased out eventually at a future date to be specified (in favour of domestic use of the production). It sets specific targets for the primary energy mix in 2025: Oil (25%), Gas (22%), Coal (30%), and 23% renewables.[57]

Figure 2 Current and target energy mix; NRE stands for 'new and renewable energy'; source: (ADB, 2015)



The medium term development plan (RPJMN 2015-2019), compiled by Bappenas, defines specific near-term objectives for the energy sector: "1) reliably and efficiently meet rising energy demand by expanding domestic, primary energy supply through increased oil and gas production, as much as possible, to address energy security concerns; 2) transition toward a sustainable energy sector development path through increased use of domestic gas, renewable energy and by scaling up energy efficiency measures; 3) achieve a more efficient and competitive energy sector; and 4) achieve nearly universal access to electric power".[58]

The Environmental Law (2009) requires energy, mining, and palm oil companies to conduct an environmental impact assessment, obtain environmental permits and report on environmental management and monitoring, and take responsibility for restoration of damage. Beyond this, there is currently no law directly covering green growth or

57 GoI (2014; 7-10).

58 World Bank (2016b: 38).

climate change. The most prominent policy document on climate change is the National Action Plan on GHG emission reduction, the RAN-GRK, adopted by Parliament under Presidential Decree 2011/61. The RAN-GRK was established after SBY's 2009 unilateral pledge to the international community to reduce emissions with 26-41% in 2020. It lists mitigation actions, covering forestry, agriculture, energy (including transport and industry), and waste management. Ministries and Agencies are obliged to implement programmes and activities mandated by the RAN-GRK.[59] In addition, a variety of policies and regulations actively support green growth but there is no national strategic approach. The RPJMN 2015-2019 is based on the current President's vision of '*Nawacita*' and includes green growth aspirations, but not explicitly labelled as such.

In September 2015, the government of Indonesia committed to a greenhouse gas reduction target for 2030 of 29%, or up to 41% with international support, in their Intended Nationally Determined Contribution (INDC)[60] that can be considered their national pledge in the lead up of the negotiations of what eventually became the Paris Agreement on Climate Change (2015). One-third of the emission reduction is supposed to come from a reduction in energy emissions: 222 Mton CO2-eq. and up to 393 Mton CO2-eq. with international support. Three key actions include: phasing out energy consumption subsidies, achieving 23% new and renewable energy by 2025, and strong emphasis on waste-to-energy. While the RAN-GRK focused mostly on reductions in forestry and land-based (energy only accounted for 5% of mitigation),[61] the NDC requires a 33% reduction in energy related emissions[62]. To achieve the 29-41% emission reduction, Indonesia will need to at least control land-based emissions, increase the share of renewable energy six-fold, and use significantly less coal than planned.

59 Bappenas (2015:13).

60 Indonesia ratified the Paris Agreement on October 31st 2016, and the Agreement entered into force in the next week.

61 IEA (2015:27).

62 Bappenas (2015); GoI. 2011. *The National Action Plan for Greenhouse Gas Emissions Reduction (RAN-GRK)*, Presidential Regulation of the Republic of Indonesia 61/2011; ESDM (2015b).

4 Development Drivers

This section explores four development drivers that are likely to shape Indonesia's growth path in the coming decades: the economic model and public finances, domestic stability, urbanisation and the rising middle class, and Indonesia's role in the world. These four drivers will influence whether and how Indonesia is able to steer through economic, political, and social challenges.

4.1 Economic model and public finances

The Indonesian government plays an active role in controlling the economy. With an extensive bureaucracy and over one hundred state-owned enterprises, it participates in economic activities, controls trade, and sets prices of basic goods such as rice, fuel, and electricity. The economic model that emerged after the Suharto-era is not a 'western style' market based system of economic organisation but rather oligarchic capitalism with tight relationships between ruling elite, political decision makers, and political parties.[63] The resources available to the Government of Indonesia are severely limited by the low tax income (of less than 11% of GDP).

Indonesia is the largest economy in South East Asia with a GDP of 862 billion USD in 2015, equivalent to 3374 USD per capita.[64] The main sectors contributing to GDP are services, mining and construction, and manufacturing, while the agricultural sector is the largest employer. However, growth rates since the Asian Financial Crisis have been "reasonable, but hardly spectacular"[65] compared to other emerging economies. Starting with pre-crisis growth rates of 7% between 1965 and 1997, the economy recovered slowly to 4.6% (2000-2004) and rose to 6% (2005-2011) on the back of the commodity boom, but has declined to around 5% since.[66]

For the medium to long term, Indonesia's challenge is to move from resource-based economy with high export of primary commodities, to less volatile and higher value-added labour-intensive manufacturing as the engine for growth. To achieve this, several structural challenges will need to be addressed. The most pressing of these are

63 Rosser, A. 2002. *The Politics of Economic Liberalisation in Indonesia - State Market and Power*, Routledge.

64 World Bank. 2016a. *Indonesia Economic Quarterly – June 2016*, World Bank Indonesia, Jakarta, 2016, Appendix Table 3.

65 Booth (2016:234).

66 ADB (2015a:4).

increasing investments in infrastructure development, increasing skills and moderating wages while ensuring employment, and increasing overall economic productivity.[67] The major share of the workforce remains in the agriculture sector, where overall productivity is low. The short-term challenge for the Indonesian economy is the improvement of infrastructure. Underinvestment in infrastructure has resulted in some of the region's highest logistics costs, and with power demand rapidly outpacing supply, Indonesia is likely facing a power crisis in the coming years.[68]

In 2014, Jokowi was elected on the promise of bringing continuous high GDP growth, and a 'mental revolution' to expel corruption and increase productivity. He put most of his political capital in the economy: phasing out of fossil subsidies to create fiscal space, stepping up infrastructure investments, and improving the overall business climate are top priorities.[69]

4.2 Domestic Stability

Indonesia is an incredibly diverse country with 250 million people from over 300 ethnic groups speaking 700 distinct languages. Under the national motto "unity in diversity", Indonesia has been governed as a unitary state (not a federation) from independence in 1949 until the fall of Suharto in 1998. Power and revenues were centralised with the national government in Jakarta, while provinces and districts display large variation in levels of development and in revenue-generating natural resource potential. At the end of Suharto's reign, over 80% of industry was concentrated on Java. In the first years of the democratisation process, discontent rose and rebellion was emerging in oil-rich Aceh and mineral-rich Papua. Faced with the existential threat of territorial disintegration, especially after Timor Leste declared independence in 1999, the Indonesian elite decided to transfer a major share of administrative, political, and financial power to local governments. To prevent the 27 provinces from trying to secede from the motherland, most of the power was transferred the next level down to 314 districts In 1999, reasoning that it was unlikely that any single district would ever grow strong enough to break away.[70]

An important feature of the decentralisation process was the sharing of mineral resource revenues. Oil and gas revenues mainly flow to the central government, while (coal) mining revenues mainly go to the producing district and province.

67 ADB (2015a:18).

68 ADB. 2015d. *Summary of Indonesia's Economic Analysis*, ADB Papers on Indonesia No 02, Jakarta, December 2015, p. 4.

69 Economist. 2016a. *Lone Fighter*, Economist Print Edition, February 27th 2016.

70 Pisani (2014; p143-145).

The asymmetrical revenue sharing model channels revenues back to resource rich districts and their neighbours and the redistribution of revenues from central government to provinces and districts was created to support 'balanced geographical growth'. In a paper on regional dynamics published in 2014, Hill concludes that decentralisation is still an ongoing project, but that it works "in the sense that Indonesia is by and large an increasingly prosperous, functional nation-state, with high levels of democratic participation and no serious threats to its territorial integrity".[71] Mietzner goes so far as to say that "the really astonishing feature [...] is how stable centre-periphery relations have become".[72]

Box 4: Revenue sharing

To understand the political economy of energy security and green growth, it is important to see who benefits and how. Private companies extract most of the oil, gas, and coal, and the revenues are shared with the government. Exploitation is subject to a production sharing contract, which stipulates how the revenues of the production are divided between the government and the contractor. The revenues from energy resources are then shared between the central, provincial, and district governments: most oil and gas revenues (70-85%) go to the central government while of the remaining revenue one-fifth goes to the province, two-fifths to the producing district and two-fifths is distributed among non-producing districts. For coal,[73] this balance is different: 20% goes to the central government, 16% to the province, and 32% going to the producing district (and 32% is distributed among non-producing districts). This asymmetrical distribution of revenues favours producing districts and provinces by design, in order to minimise secessionist tendencies.

Despite the increased power of local governments, the outcomes of public services delivery have not greatly improved. There has been a proliferation of new districts (=*pemekaran*, Indonesian for blossoming) from 314 in 1999 to 542 in 2014, and the volume of intergovernmental transfers has increased sevenfold in the same period. Local decision makers are keen to use land acquisition and permits as a source of income, routinely causing delays and cost overruns for energy projects. Local governments tend to underinvest in infrastructure, making themselves dependent on the central state. In 2012, local governments spent 42% their budget on salary and wages, 20% on goods and services, and only 22% on capital expenditures. Combined with the

71 Hill, H. 2014. *Regional Dynamics in a Decentralised Indonesia*, edited by Hal Hill, ISEAS Publishing, Singapore, 2014, p. 19.

72 Mietzner, M. 2014. *Indonesia's Decentralisation: The Rise of Local Identities and the Survival of the Nation-state*, in Hill (2014).

73 Revenues from mining are relatively small compared to those from oil and gas.

apparent accumulation of capital at district level (in times of central government fiscal limitations), there are voices that suggest budgeting or earmarking central government funds for delivery of key basic services such as infrastructure, education, and health.[74] The most serious constraint of decentralisation is the weak accountability of local governments and insufficient demand for improvements in services delivery. Money politics and vote buying dominates Indonesian elections and provision of infrastructure does not lead to improved electoral support.[75]

4.3 Urbanisation and the rising middle class

Urbanisation has transformed Jakarta and several other cities on Java into Asian megacities. Currently, the city of Jakarta is the tenth largest in the world with around 10 million inhabitants, while the greater Jakarta area is home to over 30 million people. Whereas in 1970 18% of the population lived in urban areas, this has grown over 50% in 2015 and is expected to grow to two-thirds in 2030.[76]

Inequality in Indonesia has reached historically high levels: by 2014, the richest 10% consumed as much as the poorest 54%. However, economic growth in the past decades did help to reduce poverty and helped to create a stronger consumer class with now 45 million people considered economically secure and enjoying a higher quality of life,[77] and the share of middle-class and affluent consumers will grow to double or even triple in the coming 10-15 years.[78] Urbanisation and the rising middle class will create more consumer spending on vehicles and motorcycles, appliances, and luxury products. The rising middle class will likely be more vocal on public service delivery and have high(er) standards regarding energy and mobility.

Demographic dividend and productivity

This increase in urbanisation and middle class affluence coincides with what is called Indonesia's demographic dividend: the reduction in birth rates during the late Suharto era, resulting in a very high proportion of the population being of productive working age, compared to the proportion that depends on their income. In 2020, the ratio will be

74 ISEAS. 2015a. *Bringing the (Central) State Back In: Governing Pemekaran in Indonesia*; ISEAS Perspectives 22/2015.

75 Arifianto, Fionna, and Njoto-Feillard. 2015. *A Snapshot of the Campaigning in Indonesia's 2014 Legislative Elections*, *in* ISEAS Perspective: Watching the Indonesian Elections 2014. *p* 58.

76 DEN (2015:5).

77 World Bank. 2015. *Taxes and Public Spending in Indonesia: Who pays and who benefits*, Washington, 2015. pp. 6-7.

78 BCG (2013) *Indonesia's Rising Middle-Class and Affluent Consumers*, BCG Perspectives, Boston Consulting Group, 2013.

46 dependents per 100 workers. This demographic dividend has the potential to lead to higher disposable incomes, driving the domestic market for goods and services.[79] ASEAN integration will add to competitive pressures, but it will also help integrate Indonesia into one of the most rapidly growing regions in the world.[80] In this context, the demographic dividend can only pay off if capital and labour productivity increase to competitive levels: "productivity isn't everything, but in the long run it is almost everything."[81]

4.4 International projection

In 2014, President Jokowi introduced his foreign policy vision based on 'Indonesia as a maritime power in a conflict-prone region, with the aim to make Indonesia a regional hub for maritime trade, to ensure territorial integrity (including access to fishing resources), and improve the maritime infrastructure'. Jokowi clearly builds his foreign relations around national economic interests: while SBY in his 2009 inaugural speech emphasised the aim of "having a million friends and zero enemies", Jokowi was more critical in stating, "What's the point of having many friends but we get only the disadvantages?"[82]

Indonesia is proud member of the G20: former president SBY followed their cue to reduce energy subsidies, and the G20 was also the platform chosen to announce the voluntary 2020 emission reduction targets. The government actively associates itself with the UNFCCC, hosting the annual Conference of Parties in 2007 and submitting an ambitious climate pledge in the run up to the Paris conference in 2015. Since last year, Indonesia has re-associated itself with the International Energy Agency (IEA) and it has re-joined OPEC (despite being a net oil importer). Not all international relations are smooth; experts observe that the Indonesian government has at times displayed reluctance and a certain distrust towards the World Bank and the IMF specifically, and Western development partners in general.

Underneath lies a fundamental discussion in Indonesian politics between those who view globalisation as inevitable and posing opportunities, and nationalists who see the role of the government as protector of the economy from external threats and pressures.[83] Consequently, trade policy has swung from one extreme to another since

79 Reid, A. 2012. *Indonesia Rising: repositioning of Asia's Third Giant*, Indonesia Update Series, ISEAS, p. 4.

80 ADB (2015a:17).

81 Krugman, P. 1994. *The Age of Diminished Expectations – US Economic Policy in the 1990s*, MIT Press.

82 Economist. 2016a. *Let's talk more action - Indonesia's stance towards the rest of the world has become more assertive*, Economist print edition, February 25th 2016.

83 Called 'rationalists' in the national debate (Booth, 2016:2).

independence.[84] This ambiguous attitude towards international engagement is typical for Indonesia's relationship with the world. Pisani points out that in international relations, Indonesia has "consistently punched below its weight" and is unlikely to assume a higher profile. This is a result of what she calls the 'paradox of decentralisation': electoral arrangements and transfers of power to keep the archipelago together, which are at the expense of setting investment priorities and creating an enabling environment for domestic and foreign businesses.[85]

Indonesia urgently needs foreign direct investment in order to support its 7% economic growth target. The current government focuses on making it easier for foreign investment in Indonesia, with a focus on infrastructure projects. This openness causes frictions with nationalist sentiments and rising protectionist measures driven by economic nationalism have sent negative signals to potential investors.[86]

The historically important economic relations with China are changing. Once a large importer of Indonesian coal, it expects lower imports due to pollution-related pressures at home leading to a move away from coal-based power generation. At the same time China has emerged as a keen investor in (energy) infrastructure in the region, changing the relationship from coal trade to coal-related infrastructure investment. Development finance also helps China build political good will: The New Development Bank (headquartered in Shanghai) and the Asian Infrastructure Investment Bank will channel South-South public finance to developing countries, much of it in energy and mining. Indonesia is optimistic of receiving finance from these Chinese led funds[87] as well as from the Green Climate Fund (GCF) under the UNFCCC (though the latter is small and hardly comparable in size to the banks).

84 Reid (2012; pp 28-29).

85 Pisani (2014).

86 ISEAS. 2015b. *Rising Economic Nationalism in Indonesia*, ISEAS Perspectives 59/2015. P11; ISEAS. 2015c. *Amidst Indonesia's Nationalist Atmospherics: The Changing Politics of Jokowi's Economics*, ISEAS Perspectives 2015/64.

87 ISEAS. 2016b. *The China-Indonesia Energy Entanglement Moves in a New Direction*, ISEAS Perspectives 13/2016. pp. 7-8.

5 Challenges and opportunities

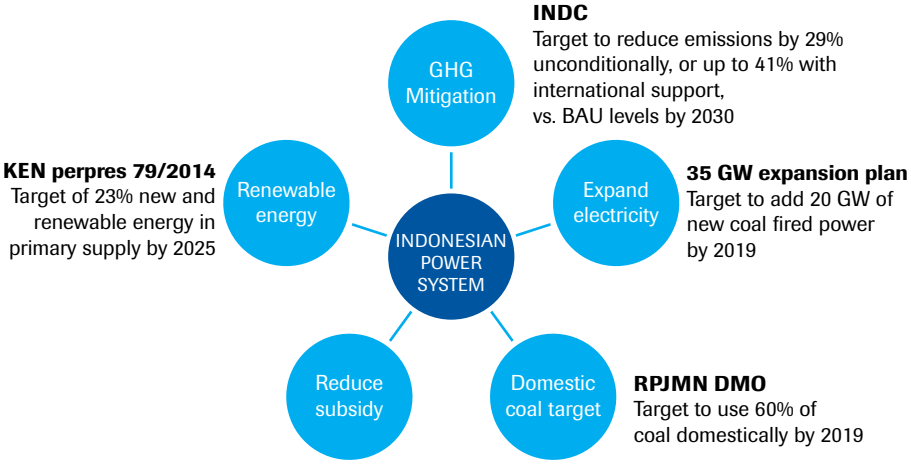
Previous sections show that Indonesia faces serious energy security vulnerabilities. Investments across the energy sector have been inadequate for over a decade due to unavailability of finance in combination with constraints in policy, planning, and implementation arrangements. State-owned enterprises have been in rather bad financial shape and private investors have to date been reluctant because of regulatory, institutional, and policy risk. Unless the government is able to mobilise investments at scale, an energy crisis is a real and imminent threat. Driving factors of future development discussed in the previous section can make this situation more difficult to handle if not addressed strategically. This section considers challenges and opportunities for green growth in Indonesia, given these circumstances and energy security constraints.

5.1 Challenges

5.1.1 Lack of consistent, co-ordinated, long term direction

The Indonesian government has a range of different priorities for the energy sector: fast and cheap expansion to keep up with demand and ensure energy security, improved access to modern energy services, increased share of renewable energy in the mix, increased use of domestic (coal) resources, and reduced greenhouse gas emissions.

Figure 3 Five government priorities for the power sector (source: Cameron and Van Tilburg; 2016)



Each goal has an ambitious top-down target, which on its own might make sense; but combined, the policies that would be needed to implement these objectives can lead to competing and conflicting solutions.[88] There will thus be a need for a more consistent long-term direction. When combined with the structural challenges identified in section 3.3, in particular decentralisation, the diversity of priorities leads to an even greater inconsistency of policy goals and signals. The trade-offs are not made explicit and implementation of the competing priorities is left to the sectoral ministries and state-owned enterprises, often without earmarked budget to reach the targets. This presents a major challenge for any green growth and energy security agenda and greatly lessens the chance of identifying and implementing policies and measures that deliver win-win outcomes across both agendas. The lack of coordination and consistency occurs at several levels: between the national and sub-national levels of government (where it is greatly accentuated by decentralisation); between ministries with competing or misaligned priorities; and between the government and the state owned enterprises who are responsible for the implementation of some of the national directives. The following paragraph provides some examples of how the lack of consistency creates conflicting incentives for SOEs.

88 For a discussion of competing priorities in the power sector, see Cameron, L.C. and X. van Tilburg. 2016. *Coal power and climate change in Indonesia*, Jakarta, March 2016

Both PLN and Pertamina are controlled by the Ministry of State Owned Enterprises and instructed to pursue efficient, well-managed, and profitable operations. The profitability of Pertamina is guaranteed through revenues from its upstream activities. PLN on the other hand depends on the Ministry of Finance for half of its income, and has very little control over its profitability. It has to sell electricity to customers at fixed prices, which until recently at least were lower than generation costs (the difference is made up by the subsidy). When PLN buys renewable electricity from IPPs, it has to do so at the fixed feed-in tariff, which is often higher than the average generation costs. Similarly, whenever PLN provides electricity access to a remote community, it is likely to incur additional costs for infrastructure that it cannot recover. Since there are no separate budget lines for these costs, and since PLN is under pressure to improve profitability, there is an incentive towards developing grid-connected cheap (often coal fired) electricity instead of renewables (which often makes more sense for remote access). PLN thus finds itself in a difficult position. In the short term, there is pressure to build new coal power to meet demand and achieve nearly full electrification (even though smaller scale renewable solutions are likely more suitable), and in the medium term it is expected to manage the transition to a much larger share of renewable energy in the generating mix. PLN views itself as technical organisation, but is often dragged into political discussions because of conflicting targets, as was seen early in 2016 when ESDM refused to accept PLN's updated 10-year Electricity Supply Business Plan (RUPTL) because it was inconsistent with the mix set out in the KEN (National Energy Policy). Discussions escalated to presidential level before the RUPTL was finally accepted in June 2016.

5.1.2 Lack of investment capital

It has been widely acknowledged that a huge amount of investment will be needed to finance the low-emissions infrastructure required to transition to a green and energy secure future. In Indonesia this is exacerbated by overdue maintenance and high demand growth. This investment, in the order of 10% of the total state budget for the next decade, will need to come from a range of sources, both public and private, and both international and domestic.[89] On this front too, Indonesia faces a critical challenge, due to a significant shortage of investment capital. Access to this investment capital is an especially urgent challenge for the power sector, which as noted in Section 2.4, has suffered from a decade of inadequate investments. A shortage of capital, combined with inconsistent or competing policy signals as described above, is likely to favour business

89 According to PLN's medium term business plan RUPTL 2016-2025 the investments required for the coming ten years amount to 155 billion USD. Of the additional 81 GW, PLN will develop 18 GW and independent power producers (IPPs) 46 GW. The remaining 17 GW has not yet been allocated. Power plant investments are at least USD 32 billion from PLN and USD 79 billion from IPPs, with an additional 44 billion USD for network investments.

as usual infrastructure investments in fossil fuel generation capacity rather than riskier renewable options with higher upfront costs. Other sectors too will need a great deal of investment. The transport sector is in desperate need of investment to address growing congestion problems. Such investment could, if sensibly designed, address both the green growth and energy security agendas as well as offering additional co-benefits related to air pollution and health, and supporting economic growth.

The lack of capital stems from the fact that public finances are heavily constrained, due to the relatively small tax base and shallow domestic financial markets. As a result, there is a need to attract investments from abroad, either from foreign (multilateral) development banks or from private investors. Private investors however are wary of the many risks they perceive in investing in Indonesia, such as the lack of transparency that results from the structural challenges detailed in section 3.3, and the lack of policy certainty described above. In addition, the business environment is afflicted by red tape, and fears over the creditworthiness of state-owned enterprises (such as PLN). This creates a pressing need for international public money to play a risk-mitigation role and leverage private sector investment. However, the Indonesian attitude towards international public support has been ambiguous and signals to international investors have been inconsistent, and at times not welcoming.

5.1.3 Energy security is a priority, green growth is not

For the wider public and the private sector, and thus for politicians too, energy security is a much greater priority than climate change. It is generally understood that failure to provide secure energy supplies can bring rapid and major disruption, whereas the impacts of climate change will only be felt in the future. Section 3.3.3 described the transactional politics that currently hold sway in Indonesia, and which mean that (more so than many in other democracies) politicians focus their efforts on issues that will secure them votes. Secure energy supply trumps climate change in this respect.

The general public in Indonesia is acutely aware of the fragility of the energy system and looks to the central government to manage adequate supply. Since Indonesia has such an abundance of energy resources, energy security is often perceived as a logistical problem rather than one involving trade-offs and political choices. The recent phase out of subsidies is perceived as a deterioration of customer energy security. This is accepted because it frees up fiscal budget for social compensation and infrastructure development, but whether this will hold when prices increase remains to be seen. In the case of energy price increases or interruptions in fuel or power supply, the public has historically been known to mobilise quickly and violently. As a result, the cabinet, and especially the President and Vice-President, treat energy security as a short term priority issue. Within its first year in office the current government has continued energy subsidy phase-out, and commissioned PLN to install an additional 35 GW of power capacity within four years.

There is a growing concern about local environmental issues such as air pollution from forest fires and vehicle use. Since 2007, Indonesian citizens are more familiar with the concept of "climate change" than before. On the other hand, climate issues are still too complex: most people are aware of (and are experiencing) climate change impacts without realising their cause (and linking it with climate change). Most environmental civil society organisations are pushing for the government to do more to combat climate change. However, they are also of opinion that developed countries should support developing and middle income countries in their efforts to tackle climate change. Consequently, technologies that reduce emissions are likely to receive support only if there are co-benefits such as reduced costs, improved energy security and mobility, and cleaner air. As the urban middle class (see 4.3) swells, the level of interest in environmental matters is likely to grow.

In general, there is not so much opposition to green growth but rather a lack of specific interest. As noted above, the dominant priorities for energy policy are to keep up with demand growth while keeping costs low. Businesses are interested in resource efficiency, and there is some pressure on firms that export to international markets, or are part of a globalised supply chain, to be more efficient and adopt sustainable practices. The concept of green growth is promoted by international institutions and development partners, but has so far gained limited traction within Indonesia as a strategic paradigm.

The main energy SOEs, PLN and Pertamina, have no fundamental problem with green growth and are cautiously positive; it is just that institutional challenges prevent them from being more pro-active. Some unexpected opponents of green growth are the palm oil plantation holders. Whereas palm oil production for biofuels could fit in a green growth strategy, there has been fierce criticism about their (in)direct environmental impact and the fact that first generation biofuels compete with food production. Some plantation owners in Indonesia are not keen to adopt environmental arguments for their business for fear of introducing scrutiny and constraints, and vested interest (anti-reform) coalitions are emerging between powerful plantation owners and the local populations.[90]

Across most (if not all) constituencies in Indonesia, then, green growth is not a priority, and certainly far less so than energy security. Politically, this creates an obvious challenge. Without political support, making the difficult choices necessary to move to a greener development pathway will remain difficult.

90 Anderson, Z.R., K. Kusters, K. Obidzinski, J. McCarthy. 2015. *Growing the Economy - Oil palm and green growth in East Kalimantan*, pp 13-14.

5.1.4 Pressure to exploit domestic coal reserves

Indonesia has abundant reserves of coal and, as noted in section 2.1, is currently the largest exporter of steam coal worldwide. When faced with pressing energy supply challenges and the need to build substantial amounts of additional generation capacity, countries with ample domestic fossil fuel reserves are likely to face considerable internal political pressure to exploit such resources, regardless of whether this is economically or environmentally optimal or not (see for instance another report on this topic covering Kenya)[91]. Interest in exploitation of domestic coal reserves combines with the greater priority given to energy security over green growth and the generally low level of concern for environmental sustainability to severely limit the political space for ambitious green growth goals and policies.

5.2 Opportunities

In the midst of such complexity and challenge, several windows of opportunity are opening. These hold the promise to counterbalance the forces of rapid economic expansion and business-as-usual governance towards sustainable growth and a balanced mix of energy sources.

5.2.1 Political change

Joko Widodo's presidency raised expectations from its outset, despite having been formed as a national coalition that functions under the compromises of transactional politics. Jokowi, a forestry graduate himself, represents a first time break from political dynasties and from the military, two important factors that profoundly influence the viability of change and policy implementation. Military and political dynasties have vested interests in maintaining the status quo in land tenure, land usage and in lax regulation over natural resources licensing processes.

This break from political elites has reverted in a promising shuffle in some key ministries, including Fisheries and Energy and Mineral Resources. With reform oriented and green growth conscious ministers Jokowi has ensured a political endorsement of his own policies but it is still early to assess if such endorsement will translate into the mobilization of the Secretary Generals of key ministries to push the required policy implementation down through the layers of bureaucracy.[92]

91 Owino, T., R. Kamphof, E. Kuneman, and X. van Tilburg, 2016. *Towards a 'green' trajectory of economic growth and energy security in Kenya*, The Hague, Clingendael.

92 While ministers are political appointees, the secretary generals and division directorates within each ministry are public servants who often than not are embedded in patron-client networks, respond to their own political interests and are partakers of the spoils of endemic corruption.

5.2.2 Improved governance and coordination

As noted above, charting a course that maximises energy security while reducing emissions and realising green growth opportunities will require effective and coordinated policymaking and implementation. Indonesia currently struggles with this and there is a lack of consistent and long-term direction of the sort needed. Jokowi's platform recognises this and the reform mentioned in the previous subsection is creating space for initiatives to improve governance, coordination and service delivery. While many of these are nascent and it is too early to judge the impact they will have in enabling green growth in particular, they represent promising opportunities to remove barriers and better align the green growth and energy security agendas.

Bappenas (the National Development Planning Agency) leads the implementation of the national action plan for climate change adaptation and is in charge of the harmonization and operationalization of policy guidelines.[93] Within its tasks, it has engaged in a multi-stakeholder collaboration, working with lawmakers to draft a comprehensive legal package to be presented to the DPR that ensures both consistency between the tasks and responsibilities of ministries and state agencies with climate change mitigation and adaptation responsibilities, and a policy harmonization between green growth and energy security.

A number of specific initiatives are worth mentioning. In the forefront is the One Map initiative, introduced under Indonesia's previous administration, and reinforced by Jokowi at COP21 in 2015, as a way of governing land and forests areas. In February this year Jokowi signed a Presidential Regulation (*Perpres*) on the acceleration of the One Map policy, part of his eighth economic stimulus package. The *Perpres* aims to speed up the process of synchronizing all official maps to support land acquisition. Not only will it clarify administrative boundaries, help to resolve land use conflicts, and improve conservation and disaster management, but it will also help the government to create better spatial planning for economic development. Besides the technical obstacles that the One Map policy will resolve, it will also trigger much needed inter-ministerial communication and coordination, and offers an opportunity to move away from business-as-usual silo and sectoral approaches to governance.[94]

93 Bappenas. 2013. *National Action Plan for Climate Change Adaptation (RAN-API)*.

94 For the hopes of diverse stakeholders in the one map policy see Indonesia Business Insider (2016) *High hopes for government's "One Map Policy"* [link].

The KPK (Corruption Eradication Commission) is probing at local levels the legitimacy of licenses and Clean and Clear (CnC) certifications,[95] in particular in West and South Kalimantan, both amongst the regions with the lowest IKPD (Local Government Performance Index)[96] and with high concentrations of the oil palm industry. In tandem with the probing of licenses the GoI is currently working on standardized fire prevention programmes in peat land territories, and has initiated criminal actions on oil palm companies that are suspected of responsibility in the widespread fires of late 2015[97]. While it is too early to assess the seriousness and extent of law enforcement in such cases, a recent decision in Singapore to pursue Indonesian based firms over haze-belching forest fires will test the GoI commitment on this front.[98]

A pool of donors including the World Bank, the European Union, Canada and Switzerland have been supporting the government in testing more robust public financial management systems at the regency level. The Rapid Assessment and Action Plan to Improve Service Delivery in Indonesia (RAAP-Id) is based on an analysis of development indicators that are then used to help local governments identify areas of weakness, to unpack service delivery chains, identify blockages and develop action plans to solve them. The first pilot in the oil rich regency of Bojonegoro in East Java has been hailed as a success.[99] The RAAP-id program has the potential to spearhead significant service delivery improvements at local levels, pairing the financial gains in natural resource rich territories with adequate service delivery, including land registration and licensing processes.

5.2.3 Increased focus on bringing in foreign direct investments

With domestic financial markets unable and/or unwilling to finance green growth investments in Indonesia, and public finances heavily constrained, attention has turned to international investors to provide the investment capital the country sorely needs. Jokowi has made visible efforts to increase foreign direct investment (FDI) inflows to Indonesia, announcing tax-holidays for foreign investors and deregulation in key

95 The CnC certificate indicates that the mining, logging or oil palm company has no outstanding royalty and other tax debts, fulfilled its exploration and environmental commitments, has no property delineation issues and obtained the necessary forestry permits.

96 This index, compiled by Indonesia's Corruption Eradication Commission (KPK), measures the degree of coordination and supervision within Indonesian provinces regarding policies and actions related to the prevention of corruption in the mining and energy sectors.

97 Eco-business. 2015. *Indonesia gets tough on companies responsible for haze.*

98 The Straits Times. 2016. *Singapore to pursue firms over fires, despite Indonesian ire*, July 3, 2016.

99 World Bank (2016) *New Diagnostic Approach in Indonesia Helps Districts Deliver Better Public Services and Budget Allocation.*

sectors in late 2015.[100] In the energy sector, international public finance is likely to be a precondition to mitigate risks and leverage private sector investment, since this is hampered by a lack of policy consistency coupled with transparency issues. International development finance is increasingly integrating climate change considerations into its lending, and this could help provide additional arguments in favour of green energy infrastructure, as well as helping to provide the kind of investment needed to move away from traditional coal projects.

5.2.4 Win-win actions for green growth and energy security

Indonesia may be well-endowed with mineral resources, and most relevantly for this topic, coal, with all the tensions that creates between the green growth and energy security agendas. Yet Indonesia is also fortunate in that there are some options available that offer win-win outcomes for both green growth and energy security.

Starting in the energy sector, perhaps the most obvious opportunity comes from geothermal energy. Indonesia currently ranks third for installed geothermal capacity, but is only using around 5% of its potential. Geothermal can provide low carbon base-load electricity generation, so contributes to green growth goals while also supporting energy security. Another interesting green growth energy option for Indonesia is waste-to-energy, which can provide low carbon-energy based on a domestic resource (solid waste). Waste-to-energy can also help Indonesia's municipal waste management challenges, which have seen increasing waste volumes overwhelming the limited landfill capacity available.[101] Looking below utility-scale generation, there are also opportunities from small-scale renewables, especially where these displace diesel generators (e.g. in remote and/or island settings), reducing the exposure of those relying on them to unreliable and expensive supplies of liquid fuels.

Energy efficiency represents a third opportunity to unite green growth and energy security objectives. Years of subsidised energy prices have made the business case for most energy efficiency projects very challenging. With most subsidies now phased out, there is a real opportunity for the industrial and commercial sectors to increase their energy efficiency, making financial savings, reducing their emissions, and reducing the strain on the electricity grid.

Finally, the enormous need for investment in the transport sector was noted earlier. Upgraded public transport infrastructure has substantial potential for green growth and energy security outcomes, as it offers fuel savings and reduced need for oil imports

100 CNBC (2015) *Is Indonesia Finally getting serious about boosting FDI?* CNBC Asia Pacific News, September 3rd 2015 [link].

101 Carbon Trust. 2014. *Waste to energy in Indonesia.*

alongside reduced emissions, as well as a raft of other benefits including improved air quality and reduced urban traffic congestion.

5.2.5 Private sector mobilisation

The private sector has begun to recognise that sustainability presents opportunities to save costs and to develop new products and markets. The financial sector and business associations have launched several initiatives looking to turn green growth into a competitive option.

Promising developments in the financial sector include the following: Bank Indonesia (Indonesia´s central bank) has a memorandum of understanding with the Ministry of Environment for establishing ground rules for green banking, adding to the existing regulations guiding commercial banks to implement asset quality assessments.[102] Today two of the biggest Indonesian banks (state-owned Bank Mandiri and Bank Negara Indonesia –BNI) have initiated green banking practices. BNI has positioned itself as the leading supplier for soft loans on investments in pollution control schemes, renewable energy and energy efficiency projects. In tandem with these practices, the *Otoritas Jasa Keuangan* or OJK (Financial Services Authority) has drafted regulations to target agriculture, energy fisheries and microfinance enterprises, in particular the palm oil industry by ensuring that loans are given to companies that have CnC certifications. By 2017 the OJK will have put in place the *Sistem Informasi Debitor* or SID (debtor information system) offering a comprehensive vetting system for existing and potential bank clients (individuals and corporations); and by 2018 it is expected to introduce rules restricting bank lending to environmentally-damaging projects.[103]

Activity from business associations and their members includes an initiative by the Indonesian Business Council for Sustainable Development to promote green efficiency certification in buildings, as well as micro-hydro development projects in collaboration with local NGOs. Businesses are also mobilising to take advantage of new opportunities in energy efficiency, and in technological innovation in areas such as the production of low quality fuels and oils out of plastics and tires, as well as waste to energy opportunities in the ten major cities of the country. Businesses that are part of global supply chains, and which have international customers with corporate social responsibility (CSR) commitments to fulfil, also see opportunities to increase their own efficiency and improve their sustainability credentials to support their competitive positioning. Such trends are likely to grow in importance as Indonesia moves further towards manufacturing and value-added industries. Growing realisation among business and the financial sector that green growth offers economic opportunity should help

102 Bank Indonesia. 2016. *Green Banking: Enhancing banking role to support sustainable development.*

103 Bloomberg. 2015. *Indonesia to make green financing compulsory for banks by 2018.*

build support for national green growth policies that enable the realisation of these opportunities.

5.2.6 Grass-root mobilisation

Civil society has been active on pushing the government to do more on tackling climate change. The Indonesian IESR (Institute for Essential Service Reform), born in 2007 as a civil society response to the IMF's restructuring of the energy sector after the economic crisis,[104] is one of the main energy policy advocacy groups in the country. It has been lobbying relevant ministries on the need to adopt energy delivery models that highlight the socio-cultural impacts behind technical decisions as bases for reforming existing energy policies.[105] Currently this model is gaining some traction within ministries.

While civil society mobilisation has always played an important role in Indonesia, it has seldom managed to stand up successfully to powerful political and economic interests that are detrimental to the environment. However, there are some small signs that this is changing. Currently two examples of grass-root mobilisation that combine environmental groups, artisan fishermen, social activists and adat communities are making a stance. The Jakarta bay multi-million-dollar offshore land reclamation and development of 17 artificial islets triggered a confrontation between developers, the Jakarta governor and local fishermen. Using the right of information bill a class action was pushed forward to the PTUN (National Court for Country Administration) who together with the KPK have ruled against misappropriation of land by one of the developers, halting the construction of the most controversial islet.[106] This unprecedented result has been hailed as an institutional alignment between communities, state agencies and the curbing of negative environmental impacts. In Bali, a similar mobilisation under the umbrella of the "For Bali Forum" is in a deadlock with the governor, over a tycoon's USD 2.5 billion reclamation project in Benoa Bay, due to its detrimental effects over the whole coastline of the island.[107] The perseverance of these types of movements across the archipelago is an indication of major changes in the role of grassroots mobilisation in the leveraging of environmental protection and green growth, and along with private sector interest, and Jokowi's commitment to reform, could create a more promising political environment for green growth.[108]

104 Institute for Essential Services Reform [link].

105 Bellanca, R and Garside, B. 2013. *An approach to designing energy delivery models that work for people living in poverty*.

106 Jakarta Post. 2016. *Jakarta Bay Project against the law: KPK*, Jakarta, April 27, 2016.

107 Comprising over 50,000 people including environmental activists, students, local NGOs and the powerful Balinese adat communities; Jakarta Post. 2016. *Hindu priests declare Benoa Bay a sacred area*, April 10, 2016.

108 Inside Indonesia. 2016. *Punkrock and global protest culture*, Jakarta, July 7, 2016.

6 Conclusion

Indonesia is facing serious and imminent energy security challenges and if these are not addressed adequately and soon, it will hamper economic development in the coming decades. The Indonesian government has hence identified further investments into energy security as one of its priorities. This presents the opportunity to converge green growth solutions with improved energy security in Indonesia: increased efficiency can reduce pressure on supply expansion, renewable energy can offer economically attractive alternatives to fossil based power generation, and shifting from private to public transport and more efficient modalities can reduce exposure to international oil price fluctuations while improving mobility and air quality. Further analysis could identify other areas where energy solutions contribute to both objectives, especially as possible co-benefits, such as for example implications for employment, growth, regional development, and health are identified and taken into consideration

However, there is still a long way to go. Currently, energy security is not yet harnessed as a positive force for green growth – nor vice-versa. This leaves a number of opportunities untapped: Whilst energy security deteriorates and the Indonesian political environment faces significant structural challenges as outlined above, current energy investments are following a 'business as usual' fossil fuel-based path. This would make international climate and development commitments difficult to keep and would not contribute to meeting domestic demand for better mobility and improved air quality. However, this unsustainable pathway is not inevitable.

There is hope: win-win actions for energy security and green growth will occur more often as, for example, clean technology costs drop, the energy security situation becomes more dire, and the government reform agenda succeeds in strengthening the enabling environment for climate compatible investments, fostering increased private sector and grass roots mobilisation, and when foreign direct investments are focussed more specifically on climate and energy security. Overall, in order to harness the positive benefits of solutions for green growth and energy security, long-term credible policy coordination will be necessary to mobilise the required investments. The ongoing reform agenda of the Indonesian government and the positive influences presented here could become more prominent over time – especially if facilitated and fostered by the government and key stakeholders in Indonesia, thus reinforcing the convergence of green growth and energy security goals. This will then contribute to making, in the medium and long-term, a green growth development pathway for Indonesia a more and more convincing and obvious alternative.

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Annex: Interviewees

The following experts were interviewed by the authors in the period between March and May 2016. The analysis in this report builds on these interviews.

Batih, H. (Executive Director IIEE)
Butar Butar, P. (Director – METI/SouthPole)
Dalimy, R. (Commissioner to the National Council for Energy)
Girianna, M. (Deputy Minister on Coordination of Energy, Natural Resources and Environmental Management; Coordinating Ministry of Economic Affairs)
Hamid, S. (Country Representative, The Asia Foundation, Indonesia)
Ilyas, F. (Indonesia Corruption Watch)
Indriyanto, A. R.S. (Senior Energy Policy & Regulatory Advisor; ICED – USAID)
Isworo, B. (Journalist, Kompas)
Moniaga, S. (National Commission on Human Rights of the Republic of Indonesia)
Panjaitan, L. (Assistant Vice President sustainability, Bank Indonesia BNI)
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