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Policy Brief

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Green growth and energy security

Fossil-endowed middle-income countries at a crossroads

This policy brief synthesises the findings of political economy analyses (PEA) in the energy sector in three fossil-endowed middle-income countries (MICs): Colombia, Indonesia and Kenya. It is based on a research project on political economy constraints and enablers influencing governments' decisions on green growth options in the energy sector, where policy directions for a robust green growth trajectory are explored.* The link between energy security and green growth objectives is a tenuous one, and involves many trade-offs. Tensions between fossil fuel phase-out (compatible with the objectives of the Paris Agreement) and use of fossil fuel for local consumption or exports is strong. We find that, amongst others, land issues, intermingled private and business interests and inconsistent energy policies as a result of conflicting stakeholders' interests constrain green growth efforts. As these countries struggle to marry their stated climate ambitions with a steep increase in domestic energy demand, they risk losing out in positioning themselves well in the future global economy. Colombia and Kenya already rely on renewable energy for two-thirds of their domestic electricity consumption, but either have strong coal and oil exports (Colombia) or have newly discovered fossil resources (Kenya). Indonesia is still highly dependent on coal and oil for its domestic energy supply and export income, while having large potential for renewable energy production and efficiency gains. In all three countries energy security has been the overarching objective and is generally believed to be best served by available domestic fossil resources. This overrides the emerging desire for 'greenness' of growth, which could be fostered by support from international investors, mobilisation of citizens affected by climate change and a greater focus on the domestic co-benefits of green options such as employment and the future competitiveness position of a country.

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Introduction

Colombia, Indonesia and Kenya are different in size, population and income levels, but all three are middle-income countries with endowments of fossil fuel resources,[1] experiencing economic growth, urbanisation, population growth and a rising middle class. They are facing enormous and increasing demands for energy, electricity and transport fuel over the coming decades. Demand is so great that in many cases supply will need to double or more within the next few decades. The question is whether domestic elites are willing to look for the 'greenness' of growth, implement (national) objectives laid out in the Paris Agreement and how these can be married with legitimate energy security concerns. With alluring coal and oil discoveries (Kenya), profitable coal and oil exports (Colombia) and historical dependence on coal, oil and gas (Indonesia) the three countries are certainly at a crossroads: a fossil-based development path is unsustainable, while huge infrastructure investments are needed to bring the necessary changes for a transition towards (large-scale) renewable energy systems.

Dependency on fossil fuels is not easily foregone. As in other countries, green growth requires policy action, and decisions affecting it will emerge from a highly politicised process involving numerous actors.[2] While energy security is sometimes portrayed as a logistical problem it almost always involves trade-offs and political choices. For fossil fuel-endowed middle-income countries (MICs), the real challenge is avoiding the 'middle-income trap' through increased competitiveness, economic diversification and investment along with the simultaneous expansion of the energy sector whilst al making it climate compatible.

The increased importance of international climate and development commitments such as the Sustainable Development Goals (SDGs) and the Paris Agreement (2015) clearly set the international scene for low-carbon development. All three countries firmly asserted their profile by submitting ambitious mitigation pledges as part of the 2015 Paris Agreement (see table 1, Nationally Determined Contributions, or NDCs). At the same time, fossil fuel production for export income and domestic use still provide a cheap way of sustaining economic activity in the short or medium term. Implementation of the Paris pledges is therefore not a given, which makes it all the more relevant to focus on how political forces and considerations on energy security and green growth objectives interrelate.

Energy security and green growth

In our research we followed the International Energy Agency (IEA) definition of energy security: *the uninterrupted availability of energy sources at an affordable price*.[3] As for green growth, we used the OECD definition: *fostering economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies*.[4] In middle-income countries, millions (even billions) of people still have no or insufficient access to modern energy services. Changing this is not simply a matter of providing physical access; the challenge is affordability: most people cannot afford energy without public support. Although the number of people affected is very large and social development impacts are huge, they often contribute a relatively small share of economic growth and are least responsible

1 Middle-income countries are defined as countries with per capita gross national income ranging between US$1,026 and $12,475, middle-income countries are home to five of the world's seven billion people, representing a third of global GDP, and major engines of global growth; see World Bank, 2016, *Middle Income Countries*.

2 Van Schaik, L.G., Van Tilburg, X. and Briscoe, I., 2016, *Political economy of green growth and energy security: A framework for country-level analysis*, The Hague, The Clingendael Institute, p. 12.

3 International Energy Agency (IEA), 2014, Energy Security (accessed December 2016).

4 OECD, *Towards Green Growth*, 2011, May.

for greenhouse gas emissions. Hence, the types of investment and policies needed to address energy access can be very different from those needed to stimulate green growth and energy security.

From a climate change mitigation perspective, linking energy security with green growth is essential in order to curb emissions and to comply with international climate goals. Yet, in the short and medium term the link between energy security and green growth is not as clear as one might think. Each energy sector (primary, conversion, end-use) has distinct energy security vulnerabilities and challenges that must be addressed and presents different options for and obstacles to green growth.

The primary issue for the middle-income countries is whether they should make use of the available fossil fuel resources for domestic consumption (and export) or leave them in the ground. Although the latter option would be in line with a green growth trajectory, it involves opportunity costs and therefore is in most cases not considered attractive. Where energy efficiency gains (i.e. demand reduction) can generally improve energy security, low-carbon development in the energy sector can lead to various trade-offs and does not necessarily improve energy security.[5] For example, replacing coal-fired power plants with hydropower may decrease energy security in regions where water availability fluctuates or is declining due to the effects of climate change.[6] Diversification of renewable energy sources, such as by increasing the share of wind and solar energy, can mitigate these risks. Replacing baseload supply with renewable supply systems that are intermittent by nature requires high technology infrastructure, and technological know-how to work efficiently, and may involve higher uncertainty and costs. Especially when there is cheap coal available (*e.g.* in Indonesia) this can disincentivise green energy growth. For fossil fuels to be replaced sustainably, large-scale electrification of society is furthermore necessary. This is a major challenge, all the more in industrialising MICs with growing production and transport sectors heavily relying on hydrocarbons. At the same time, green energy growth can improve energy independency and reduce vulnerabilities to oil price fluctuations and geopolitical tensions and hence can provide a more stable base for economic development.

Political economy analysis as a tool for strategic action

Coupling energy security and green growth does not depend on technical-economic considerations alone. It is ultimately the product of a larger political reality where different ideas, interests and influences compete or align in a highly politicised decision-making process.[7] An energy political economy analysis (PEA) aims to combine the technical-economic and political spheres in order to get a full picture of the links and forces at play. Besides conducting an energy analysis, this project mapped out the *networks of influence* and the *interests and power of the stakeholders* involved, thus focusing on both formal and informal structures of power as well as the larger political-institutional framework in which they are embedded. This approach allows for a thorough and cross-disciplinary understanding of the context 'on the ground', enabling one to move beyond institutional silos to address the underlying tensions,

5 For more information on the link between climate change and energy security, see Luft, G., Korin, A. and E. Gupta, 2011, 'Energy Security and Climate Change: a tenuous link', in: *The Routledge Handbook of Energy Security*, ed. B.K. Savocool, Routledge, Oxon, 2011.

6 Colombia and Kenya rely on hydropower for a large proportion of electricity supply.

7 As well as material incentives, the PEA approach taken in our study also includes the role of ideological factors on decision making, for instance: 'how the global debate affects perceptions and policies, and what networks and coalitions are being created around these issues – and by whom'. See conceptual study by Van Schaik, L.G., et al., 2016, *Political economy of green growth and energy security: A framework for country-level analysis*, The Hague, The Clingendael Institute, p. 15.

conflicts and potential for change that may not be apparent on the surface.[8] It thereby does provide good insight into dominant discourses, preferences and interests of those in power.

One limitation of this approach is that PEA is often not suitable for sharing widely, because the analysis may challenge the politically correct views of reality. In our project we decided to publish our findings, and this may be a reason why it was more difficult to obtain highly confidential information from interviewees. In some countries it also proved difficult to connect with private sector representatives. A well-known limitation of PEA is that it is usually considered to be used primarily to inform donors. Indeed by disclosing problems and issues related to institutions and power relations, ownership by domestic elites of the countries studied can be difficult to obtain. At last, PEA targets actors and networks who are currently considered powerful in a country, whereas it could be argued that green growth typically is pushed for by new players.

Cross-country synthesis: similarities and differences

Colombia, Kenya and Indonesia share common characteristics: in each country, economic growth and (fossil fuel-based) energy security have higher political priority than environmental sustainability.[9] Uninterrupted and affordable energy supply is perceived as more essential to domestic stability and the economy than the 'greenness' of growth or the health, social and environmental benefits it brings. This undermines their climate pledges as well as their position in the ongoing global energy transition. Green energy choices can succeed insofar as they contribute to national development priorities such as increasing economic competitiveness — thus ensuring stable and affordable energy supplies.

In all of the country studies, either corruption or the dominance of vested interests were found to pose challenges to renewable energy implementation efforts. In Colombia and Indonesia, this coincides with a powerful alliance protecting the fossil-based energy sector. A blurring divide between public and private interests impedes efficient energy planning and increases resistance to green growth efforts where vested interests dominate. In addition, land ownership, land rights and permit issuances often play a central role in opposition to new renewable energy projects. Opportunistic behaviour allows certain actors to gain individually from green growth initiatives. Furthermore, the decentralisation processes that emerged during the 1990s in Colombia and Indonesia and from 2010 onwards in Kenya have led to more bureaucracy and have hampered strong national decision making on green growth. This impedes implementation efforts as the required government support is lacking and the investment environment that is needed for green growth is not sufficiently enabling.

There are also differences among the countries, both in political-economic structure and the energy system. In Kenya and Colombia, improving the business environment is a central objective with economic policies designed to 'overcome the legal hurdles' that impede competitiveness.[10] Indonesia has a more South East Asian-style economic model of 'state-sponsored capitalism' and takes a more economic protectionist stance. Politically, Kenya and Indonesia are more ethnically fragmented

8 This approach builds on the so-called first, second and third generation of Political Economy Analysis as developed in the past two decades by incorporating elements of each, see for the three generations of PEA the conceptual study by Van Schaik, L.G., et al., 2016, *Political economy of green growth and energy security: A framework for country-level analysis*, The Hague, The Clingendael Institute, p. 13–15.

9 Kenya is less dependent on fossil fuels. See Owino, T.O., Kamphof, R., Kuneman, E., Van Tilburg, X, 2016, *Towards a 'green' trajectory of economic growth and energy security in Kenya?* The Hague, The Clingendael Institute, ch. 2.

10 See e.g. Briscoe, I., et al., 2016, *Green or grey growth for Colombia? Challenging fossil-based energy security*, The Hague, The Clingendael Institute, October 2016, p. 36.

Table 1 Political and economic indicators

	Colombia	Indonesia	Kenya
GDP in million USD (2015)	292,080	861,933	63,398
GDP per capita USD (2015)	6,056	3,346	1,376
GDP growth (2015)	3,1	4,8	5,6
Population in million (July 2016)	47,22	258,32	46,79
Government type	Presidential Republic; decentralisation process since 1990s	Presidential Republic; limited decentralisation since 1990s	Presidential Republic; devolution process since new Constitution in 2010
INDC/Climate pledge CO2 reduction	20% reduction BAU in 2030	29% reduction BAU 2030	30% reduction BAU 2030
Fossil production (mtoe)	120	379	0
Fossil trade balance (mtoe)	82	185	-4.6
Emissions per capita (tCO2e)	4.2	8.0	1.6
Electrification ratio	97%	81%	20%

Source: CIA Factbook; World Bank; WRI CAIT

than Colombia. With regard to (geo)political challenges, Kenya and Indonesia have more external threats (terrorism from Somalia in Kenya, resource conflicts in the South China Sea affecting Indonesia) while Colombia's tensions are especially driven by the fragile peace process with the FARC. Furthermore, whereas Colombia and Indonesia rely on fossil fuels for a large proportion of their foreign income, Kenya has only recently started with exploration and production activities. Regarding green energy sources, Colombia exploits its hydropower potential – accounting for 67 percent of its electricity supply; Indonesia prefers to invest in coal plants and leaves vast resources of its geothermal potential untapped; and Kenya exploits both its hydro- and geothermal power potential to a significant degree.[11] At the same time, public awareness concerning the effects of climate change is high in Colombia and Kenya but low in Indonesia. There are major differences in terms of energy access: in Colombia almost the entire population has access to electricity, while in Kenya that proportion is much lower (table 1). Those living in unconnected regions are generally the poorest, are hit hardest by the effects of climate change and have the least power to influence decision making.

Enablers and constraints of green growth options in the energy sector

Ambitious green (energy) growth policies have been formulated in each country, especially in Colombia and Kenya, while implementation has been difficult. Indonesia is still highly dependent on a fossil-based energy system relying on inexpensive coal from domestic reserves. In Colombia and Kenya serious plans also exist for building new coal-fired power plants in light of increasing energy demand. Nonetheless, significant progress is being made: Colombia and Kenya currently rely on renewable energy for roughly two-thirds of their power supply.

The challenge of finance

Ambitious green energy targets exist in parallel to objectives of substantially increasing fossil energy production. Green energy growth is an option as long as it contributes to concerns about overall

11 Bertani, R., 2016, 'Geothermal Power Generation in the World 2010-2014 Update Report', *Geothermics*, 60, https://pangea.stanford.edu/ERE/db/WGC/papers/WGC/2015/01001.pdf (accessed December 2016). Indonesia is 3rd on the global list of installed geothermal electric capacity; Kenya is 8th with the ambition of becoming 6th in the coming years.

energy demand increase, as well as price and supply stability. In all three countries, there remain political, technical-economic and financial obstacles to green energy growth. A major obstacle is the availability of financial capital. In preparing for energy demand growth, large investments are required, especially for clean energies, which typically have high upfront (but low marginal) costs. The countries analysed in this project have limited government budgets and shallow financial markets, often leaving fossil fuel investment as a more viable option in the short term. The lack of sufficient domestic resources to finance large-scale energy infrastructure improvements and to fund renewable energy projects is thereby a major constraint. It also increases the importance of the availability of international (private and public) capital to successfully implement green growth objectives. Indeed, the 'greening' of energy policies is (partly) influenced by an international consensus on green growth since the Paris Agreement and the SDGs. Nevertheless, access to finance still is a real obstacle for green energy investment. For these fossil-endowed MICs, green funds and investments could be an important source of financial support. This has helped to implement large-scale renewable energy projects in Kenya. It does raise the question about the degree to which green growth in itself is a domestic priority versus an internationally induced ambition: countries may well decide to green their energy policies because it enables them access to transnational capital.

Energy subsidies

Another constraint to green growth is posed by (fossil) energy subsidies. Many countries still have historically subsidised energy consumption to promote economic development and alleviate poverty. Commitments have been made in the G20 and other international bodies to phase them out, since this not only reduces emissions, but also reduces pressure on public budgets and incentivises efficient use of energy. However, without subsidies, customers are directly exposed to high and volatile energy prices, making them less energy secure. The low oil price of recent years has provided the ideal context for a smooth phase-out of fuel subsidy in the transport sector because customers will not experience a price hike. But if the oil price surges again, consumers will feel the effect immediately at the petrol station and protests could emerge where a sense of entitlement is high (*e.g.* in Indonesia). In the power sector, removal of end-use subsidies leaves consumers more exposed to price fluctuations in the generation mix, although this is generally less volatile than fuel prices in the transport sector as renewable sources can act as stabiliser.

Energy infrastructure

The state of energy infrastructure development can be either a constraint or enabler as it is critical to avoid supply disruptions, inefficiency and high costs in the energy sector. Especially in Kenya, this is a pertinent issue constraining energy security and large-scale green growth. Whereas international donors and investors seem very keen to keep investing in new renewable energy projects, green growth might benefit more from solid investments in the electricity distribution infrastructure when generation capacity is already in place. This can improve efficiency and result in lower prices, making green energy growth more attractive. Certain processes may impede this. In Indonesia, a context of economic nationalism has led to unfavourable land arrangements that send negative signals to foreign investors. The same is true for Kenya, where project delays and contractual uncertainty on the part of the Kenyan central government may increase investment risk. In Colombia, on the other hand, territorial integrity and a potentially declining divide between the centre and periphery in a post-conflict environment *could* provide a new context of national development in which green growth policies can be more effectively realised.

Public support and decentralisation

Support of the public for green growth can be an important enabler of implementation efforts, especially in light of decentralisation measures. However, the empowerment of citizens and local elected leaders presents both opportunities and obstacles to green energy growth, as local demands might not always be in line with national interests and ambitions. This increases the need to increase policy coherence between

the national and subnational levels and incorporate local demands into energy policy in order to mitigate local resistance.

A robust green growth trajectory?

The political economy analyses of the energy sectors in Colombia, Kenya and Indonesia reveal that a range of actors – not necessarily those within the energy sector – have a significant influence on decisions influencing green growth and energy security. Our research confirmed the often-stated observation that ministries of energy and finance, and offices of the (vice) presidents, are more influential than environment ministries.[12] The domestic private sector is important but should be more involved in green investment and production. Also, international financial institutions and business actors have large influence on national policy formulation regarding green growth. Particularly in Kenya, we noted the continuing influence of large international donors on the country's energy sector and policy. In Indonesia, weak local government accountability and clientelism has impeded substantial improvements in service delivery. There are win-win options for energy security and green growth but they are highly context-specific, as costs, feasibility of energy options, and political alliances for green growth depend on a broad range of factors that vary from place to place. Nevertheless, the analyses in these three middle-income countries point to a few recommendations that can strengthen green growth development paths.

First, mobilisation and allocation of financial resources to 'green' energy projects is needed. Therefore, the interests of central and local governments, development partners and the private sector need to converge as much as possible for the required funds to be successfully mobilised. Measures that could be taken vary from 'Special Economic Zones' in the renewable energy sector,[13] taxing carbon,[14] green investment funding provided by the private sector, international donors and impact investors checking for the 'NDC compatibility' of investments as well as de-risking private investment and creating an enabling investment climate. To support such efforts, governments could use sovereign wealth funds to divert a share of oil, gas and coal profits towards sustainable investment.[15]

Second, energy security trumps green growth in the path of economic development and industrialisation. Therefore, it is crucial to align energy security with low-carbon development in energy policies while ensuring policy coherence with green growth. To do this, countries could focus on promoting the domestic 'non-climate' benefits of green solutions – for example, productivity, employment, air quality, waste management and mobility. Removal of fossil-based subsidies can improve energy efficiency and shift consumption towards greener modes of transport. But for large-scale renewable energy development, targeted supply-side interventions are needed, such as preferential grid access, feed-in tariffs or fiscal incentives.

12 See also Bailey, R. and Preston, F., 2014, 'Stuck in transition: Managing the political economy of low-carbon development', *Chatham House, Briefing paper Energy, Environment and Resources*, February 2014. They state that environment ministries are weak within middle-income countries, but also in high-income and low-income countries.

13 Owino, T., et al., 2016, *Towards a 'green' trajectory of economic growth and energy security in Kenya?*, The Hague, The Clingendael Institute, December 2016, p. 51.

14 Pegels, A., 2016, 'Taxing carbon as an instrument of green industrial policy in developing countries', Deutsches Institüt für Entwicklungspolitik *DIE, Discussion paper* 23/2016.

15 On sovereign wealth funds see a.o. Van der Ploeg, F. and Poelhekke, S., 2009, 'Volatility and the natural resource curse', *Oxford Economic papers gpp 027*, http://oep.oxfordjournals.org/content/61/4/727.abstract (accessed December 2016).

Third, transparency of decision-making on energy projects is crucial to fight corruption and avoid conflict of interest. It would help unravel the intermingled interests of actors from the private sector and public officials. One concrete measure could include mandatory impact assessments of energy projects carried out by an independent commission.

Fourth, governments must build alliances of green growth by involving citizens, as citizens are becoming more and more aware of the domestic impacts of climate change as well as their own constitutional rights.[16] With decision making coming closer to citizens with decentralisation and devolution efforts, it is of utmost necessity that governments include and inform citizens on a green growth trajectory. As such, local decentralised renewable energy projects can function as 'vanguard' projects' that could be scaled up when successfully managed and exploited.[17]

More questions to answer

Our research has convinced us of the relevance of looking through a political economy lens at the enormous challenge of having fossil fuel endowed middle-income countries tuned into the global energy transition. We focused on the relationship between energy security and green growth and hope others will fill the research gaps we could not cover. These include how to bring green growth to the large agriculture sector of many middle income countries. Furthermore, what is the influence of big international oil, gas and coal companies? How can countries diversify their economies and ensure alternative sources of export income when breaking with fossil fuel dependence? What role could more decentral/disruptive solutions play in that regard? The contribution of (international) investors is another issue worthy of more attention. With the emergence of new financial products and increased understanding of investment risks related to both climate change impacts and energy transition, the question is how countries will compete to obtain access to finance and how this relates to the interests of domestic stakeholders.

16 Wike, R., 2016, *What the world thinks about climate change in 7 charts*, Fact Tank – Our Lives in Numbers, Pew Research Center, 18 April 2016, http://www.pewresearch.org/fact-tank/2016/04/18/what-the-world-thinks-about-climate-change-in-7-charts/ (accessed December 2016).

17 Briscoe, I., et al., 2016, *Green or grey growth for Colombia? Challenging fossil-based energy security*, The Hague, The Clingendael Institute, October 2016.

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