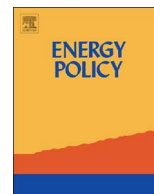




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## Challenges and policies in Indonesia's energy sector

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## HIGHLIGHTS

- Indonesia's energy sector faces many regulatory, environmental and infrastructure hurdles.
- Indonesia's energy policy can be improved through greater use of renewables, especially geothermal.
- The gas sector should be further developed until more renewable energy come on line.
- Government control over the oil industry should be reduced to boost investment.
- Clarifying and simplifying regulations is key to attracting foreign companies and protecting the environment.

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## ABSTRACT

Fossil fuels are central to Indonesia's energy policy, and its main source of export revenues. However, insufficient investment, the lack of transport infrastructure and an unwieldy regulatory environment are inhibiting the sector from reaching its full potential. Looking ahead, growing environmental concerns combined with sharp falls in coal prices and the on-going shale gas revolution call into question the sustainability of an energy strategy based almost exclusively on fossil fuels. This viewpoint challenges Indonesia's current energy policy and proposes ways to increase its energy efficiency and use of renewables. In particular, its gas sector should be further developed to plug the gap until sufficient renewable energy, especially geothermal, comes on line. Government control over the oil industry via state-owned Pertamina should be gradually reduced. Clarifying, streamlining and publicising simple regulations in energy, especially regarding land rights and on-shore processing, and removing foreign-ownership restrictions will help bring much needed investment. The pressure on the environment of natural resource exploitation should also be addressed by properly defining property rights and regulations regarding forest land, and implementing a positive implicit carbon price.

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## 1. Introduction

Indonesia abounds with energy resources. It is the world's largest exporter of steam coal and possesses huge reservoirs of natural gas and oil. As a result Indonesia's top two exports have long been fossil fuels (coal and gas), with palm oil recently overtaking the latter (Fig. 1, Panel A). At the same time Indonesia also holds an estimated 40% of the world's geothermal energy reserves (IEA, 2015).

The energy sector faces several challenges, however. First, the rising share of coal and gas in Indonesian exports coincides with the rapid increase in commodity prices that took place between 2003 and 2011 (Panel B). As prices rose, the supply of steam coal more than quadrupled between 2002 and 2012 (but production of oil fell). Now that prices have fallen significantly, the sustainability of the expansion is in question. Second, Indonesia's energy sector faces a number of regulatory challenges. After years of stable mining legislation, Indonesia overhauled the legal framework with Law 4/2009 on Minerals and Coal Mining. It replaced Law 11/1967 and its widely used Contract of Work (CoW) scheme with mining business licenses, or *Izin Usaha Pertambangan* (IUPs). Among the most controversial aspects of this new law were divestment requirements for foreign firms and the replacement of CoWs with a dual exploration and exploitation license system (not to mention the mineral ore export ban coupled with a requirement for on-shore value added processing for most commodities). In addition, the 2009 law no longer protects companies from changes in

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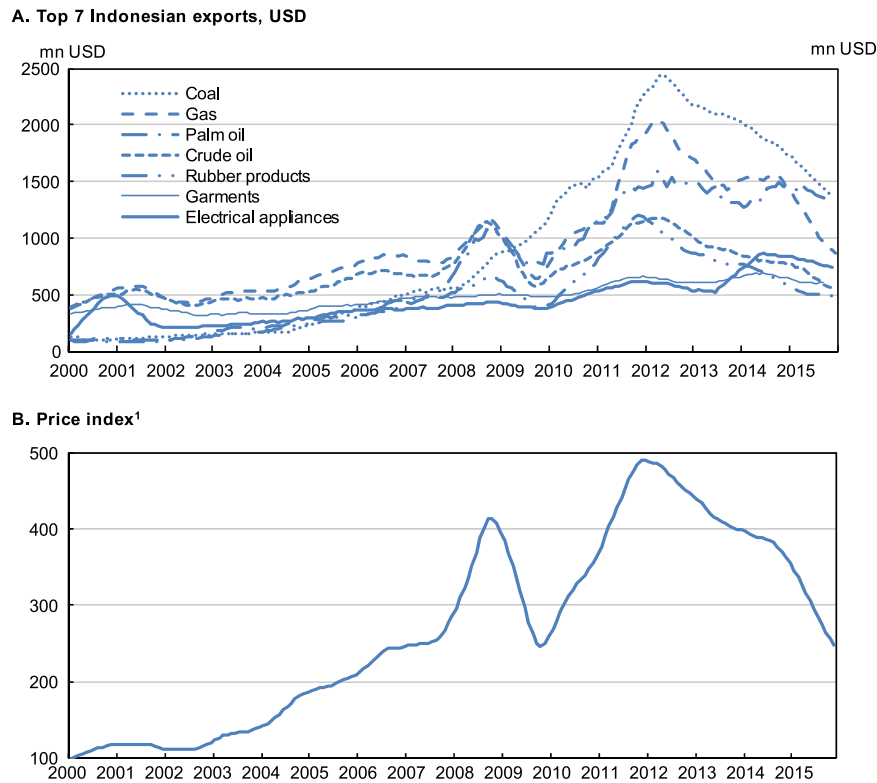


Fig. 1. Top exports and commodity prices. 1. Price index (2000=100) of Indonesia's top 5 exports in value in 2012 (cf. Panel A). Source: CEIC.

royalty rates (Gandataruna and Haymon, 2011). Also, the fact that the maximum timeframe for mineral exploitation of 30 years is now a decade shorter than under the 1967 law might also be dissuasive. Third, after decades of centralisation under Suharto's New Order, in the late 1990s Indonesia began a decentralisation process, giving the regions greater political autonomy and allowing resource-rich regions to retain a substantial share of the income generated. This process contributed to blurring the governance picture by handing additional powers, notably of taxation, to regional authorities eager to increase their revenues but lacking the capacity to handle their new responsibilities. Too many licenses were granted to unqualified businesses as a quick way to raise revenues. It also contributed to the development of illegal mining, as control by the central government diminished.

In the end the new regulatory environment for natural resources extraction is now less attractive to investors. In fact, under currently applicable Indonesian regulations, Indonesia's ranking in the Fraser Institute (2015) summary Policy Perception Index (which measures overall perceived policy attractiveness) is 91 out of 109 jurisdictions. Yet, when considering room for improvement, Indonesia jumps to 1st place in that ranking.

These problems are exacerbated by the issue of land rights. Land rights in Indonesia are very complex. The Basic Agrarian Law of 1960 (BAL, 1960) required that all land rights be registered, but no time limit was given at the time of its promulgation. Land registration (titling) is still ongoing, and during the last four decades the National Land Agency (BPN) has managed to register only around one-third of privately owned plots. Thus, most rural households have unregistered land rights usually acquired through inheritance. Although Article 56 of the Law recognises the continuing validity of rights, the right of the new holder cannot be fully recognised by the State until a new certificate is issued confirming that the land is not State land (USAID, 2010). The slow progress in land registration therefore creates an important barrier to consolidation in the sector. Despite further efforts to implement

the BAL, existing ambiguity over land rights remains one of the reasons for land conflicts. In 2012, the office of the President recorded 8305 land disputes, 2002 of which are likely to turn into violence (Jakarta Globe, 2012).

This article examines specific challenges and possible policies for each of the three fossil fuels central to the Indonesian economy, i.e. coal, oil and gas, and how they could benefit from a clearer, more streamlined regulatory environment. It also examines the (often dramatic) impact of fossil fuel exploitation on Indonesia's environment, what can be done about it, and how a better utilisation of Indonesia's renewable energy potential could help it achieve its CO<sub>2</sub> and pollution reduction targets.

## 2. The expansion of coal production is reaching its limits

Indonesia has abundant proven reserves of steam coal (Fig. 2, Panel A) with its share of the world's output and exports rising fast (Panel B). It is thus well placed to take advantage of growing coal demand as the five biggest coal importers in 2014 were all in Asia: China, Japan, India, Korea and Chinese Taipei, all of them buyers of Indonesian coal (Fig. 3). In 2014, Indonesia produced 471 Mt (million tonnes) of coal, placing it fifth for output but first for exports in terms of tonnage, as in the three previous years. Indonesia's coal is mostly steam coal used for heat and energy production.

With 400 million people still without electricity, ASEAN countries will rely increasingly on coal as a cheap way to generate electricity. It is hard to know, however, how long Indonesia will be able to take advantage of that growth, given talk of an Indonesian ban on low calorific value coal exports and the commitment of the new Chinese government to more efficient and sustainable growth. In addition, the transition of the US economy towards shale gas and light tight oil is taking place at the expense of coal, whose share in US power generation has collapsed. Given that the

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