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RESEARCH ARTICLE

RENEWABLE ENERGY REGULATIONS IN INDONESIA AND INDIA: A COMPARATIVE STUDY ON LEGAL FRAMEWORK

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ABSTRACT

Individually and collectively, climate change has become the international agenda due to global warming and unusual weather patterns. The International Renewable Energy Agency (IRENA) claims that the future world can only survive if the human civilisation takes a drastic turn towards renewable energy production. Besides, the pandemic COVID-19 has ventured us to revisit our behaviour towards the environment. Indonesia and India, being two giant economies, has promised under the Paris Climate Agreement to support the international agendas of climate change and sustainable development goals. Many countries have shown their commitment to lower their carbon emissions by using renewable

energy sources significantly. Renewable energy generation opens a feasible door to attempts to combat climate change. This comparative analysis assesses the renewable energy laws and policies in Indonesia and India, as they work towards their climate change commitments (UNFCCC). This research operates within comparative qualitative methodological structures and uses secondary empirical sources. Building on similar and relative exposures, both the countries should benefit from each other and learn the legal and political implications to speed up the production of renewable energy and reduce greenhouse gas (GHG) emissions.

Keywords: Renewable Energy; Law; Policies; Climate Change; Sustainable Development

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INTRODUCTION

The ever-increasing demand and supply for energy have a substantial impact on climate change. Such a climate-changing pattern in the developing world is happening mainly because of the exploitation of fossil fuels. A transition in the energy sector from the traditional fossil fuels centred energy generation to environmentally friendly sources of energy, will certainly help mitigate the menace of climate change, especially in developing and least-developed countries. This transition may be achieved

only by reducing the demand for energy and increasing the generation of renewable energy (hereinafter referred as RE). However, reducing energy demand is not a good option due to many factors, including the economic factor. As a country develops, energy demand is projected to be increased. Therefore, utilization of RE is needed to successfully achieve the targets in climate plans by diversifying the energy mix of a country.[1] Since excessive and inefficient consumption of energy contributes to carbon pollution, hence, effective management of natural resources including renewable and non-renewable energies are additionally crucial factors for developing countries.[2]

Due to emerging climate concerns, the Paris Agreement to the United Nations Framework Convention on Climate Change (UNFCCC) was adopted on 12 December 2015 to boost a low carbon intensity future globally. This agreement is a milestone in global climate change governance and has attracted participation across the world, including all major emitters.[3] The Paris Agreement is the first international agreement on climate change containing obligations for all countries[4]. This agreement works both horizontally and vertically, as climate governance is a concern across the border and also a responsibility of every state. Thus, there is a need for meaningful policy integration, despite the involvement of particular government agencies and private institutions.[5] Via this agreement, developed countries have emphasized on mitigation and adaptation, financial assistance, technology transfer and robust global transparency for national mitigation actions.[6] The Paris Agreement requires all parties to regularly report their commitments through their NDC (National Determined Contribution), which must be evaluated every five

1 IRENA, R. E. (2017). Accelerating the global energy transformation. *International Renewable Energy Agency, Abu Dhabi*.

2 Chu, S., Cui, Y., & Liu, N. (2017). The path towards sustainable energy. *Nature materials*, *16*(1), 16-22.

3 Downie, C., & Williams, M. (2018). After the Paris Agreement: What Role for the BRICS in Global Climate Governance?. *Global Policy*, *9*(3), 398-407.

4 Dimitrov, R. S. (2016). The Paris agreement on climate change: Behind closed doors. *Global Environmental Politics*, *16*(3), 1-11.

5 *Supra* Note 3.

6 Xiang, J. Y. (2020). Cleantech Innovations by Developing Countries. *BU Int'l LJ*, *38*, 183.

years. Besides, all parties are obliged to impel new NDCs every five years to demonstrate their progress and expectations.[7]

Based on the report by the Intergovernmental Panel on Climate Change (IPCC), many countries have extensive exploitation to the best of their abilities of RE as an effort to mitigate climate change.[8] Many successful RE policies in developed countries have been transplanted to developing countries with or without suitable modifications and followed to support renewables sourced electricity.[9] It is pointless to dispute the position of RE against fossil fuels in terms of environmental advantages, as it leads to a positive impact to reduce greenhouse gas (GHG)[10] emissions.[11] Furthermore, RE is the best tool to be used to solve climate issues,[12] as RE generation leads to emissions reductions in the power sector as to compare to fossil fuel.[13] This indicates that one of the vital aspects of the Conference of the Parties 21 (COP 21),[14] climate negotiations in Paris was an initiative at a national level in which the municipal governments and local authorities also had to play a significant role in promoting utilisation of RE technologies on a large scale.

Indonesia and India, a member of the Tiger Cub Economies, has signed the historic Paris Agreement to the United Nations Framework Convention on Climate Change (UNFCCC). The provisions of the Paris Agreement have imposed an increased burden on developing countries, including Indonesia and India, to take actions on the reduction of GHGs fostering climate change. A careful look of the provisions of the Paris Agreement will reveal that the common principles of differentiated responsibilities and respective capabilities are retained in the Agreement while developed countries still continue to take the leadership role on the

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7 Falkner, R. (2016). The Paris Agreement and the new logic of international climate politics. *International Affairs*, *92*(5), 1107-1125.

8 Karim, M. E., Karim, R., Islam, M., Muhammad-Sukki, F., Bani, N. A., & Muhtazaruddin, M. N. (2019). Renewable energy for sustainable growth and development: An evaluation of law and policy of Bangladesh. *Sustainability*, *11*(20), 5774.

9 Elizondo Azuela, G., & Barroso, L. A. (2012). *Design and performance of policy instruments to promote the development of renewable energy: emerging experience in selected developing countries*. The World Bank.

10 Hereinafter referred as "GHG".

11 Manish, S., Pillai, I. R., & Banerjee, R. (2006). Sustainability analysis of renewables for climate change mitigation. *Energy for sustainable development*, *10*(4), 25-36.

12 *Voice of Future Generations: The World Future Council Annual Report 2007* (Hamburg, World Future Council Hamburg, 2008), 8.

13 *Supra* Note 1, 11.

14 Hereinafter referred as the "COP".

means of implementation.[15] However, this bottom-up Agreement has included provisions for all countries in the world i.e. developed, developing and least developed countries and imposes responsibilities on them to mitigate the effects of climate change.[16] Hence, this Agreement is not like the Kyoto Protocol to UNFCCC, the provisions of which made only the developed countries responsible to take mandatory initiatives to reduce GHG. Southeast Asia's largest economy and democracy is approaching a demographic shift.

In the next 10 years, almost half of Indonesia's population will enter the work force. Only three in 10 people will not be of working age by 2030. Conventional poverty rates are declining and millions are moving into cities each year. The island nation's labour force will surge, and with it, disposable income and energy demands. The picture is similar elsewhere in Southeast Asia, but while its neighbours have spent years developing clean energy options, Indonesia has not negotiated a new renewable energy contract in three years. Indonesia's room for growth means it will be the largest contributor to the region's ballooning energy demand, joining India and China as a global hotspot for power needs. Indonesia, which is Southeast Asia's most populous nation with more than 250 million people, expects its electricity needs to almost double in the next 10 years, tripled from 2010. But its heavy reliance on fossil fuels, the highest in the region, means it may offset the rest of the region's positive growth toward renewable energy.

Similarly, in India, CO2 emissions in the country are rising at a rate of 4.8% because of their fossil-fuel based energy sector. Hence, although both of the countries are obliged to take actions against climate change, they are lacking to achieve their target due to ineffective regulatory framework that can support the renewable energy innovation and development. Hence, to understand the regulatory measures and to recommend both the countries, the paper specifically dwells with the following objectives:

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[15] Karim, R., Karim, M. E., Muhammad-Sukki, F., Abu-Bakar, S. H., Bani, N. A., Munir, A. B., ... & Mas'ud, A. A. (2018). Nuclear energy development in Bangladesh: A study of opportunities and challenges. *Energies*, 11(7), 1672.

[16] Karim, R., Muhammad-Sukki, F., Karim, M. E., Munir, A. B., Sifat, I. M., Abu-Bakar, S. H., ... & Muhtazaruddin, M. N. (2018). Legal and regulatory development of nuclear energy in Bangladesh. *Energies*, 11(10), 2847.

1. To identify the existing legal frameworks that regulate the production of renewable energy in Indonesia and India.

2. To analyze whether the real options existing within the legal frameworks are consistent with country's commitments towards the Paris Agreement?

RENEWABLE ENERGY DEVELOPMENT IN INDONESIA

As the fourth nation in terms of population on the planet and the biggest economy in South East Asia, Indonesia's energy constraints are extensive, and the government has set an objective of accomplishing power production of 56,395MW by 2028, which incorporates accelerated advancement in their energy industry.[17] Despite the fact that Indonesia's lion share of energy originates from non-renewable energy sources, there remains space for sustainable power sources to develop. The PLN Electricity Plan 2019 proposes that the renewable energy generation will expand up to 23 percent before the end of 2025.[18] In light of Indonesia's more extensive all-inclusive strategy, the administration expects that by 2050 the utilization of sustainable power source will increment to 31 percent.[19]

The most evolved sustainable power sources are hydropower and geothermal vitality, with an all-out introduced limit of 5,024MW and 1,403.5MW separately.[20] These figures, notwithstanding, are low in examination with its absolute potential. In 2015, the improvement of the renewable power source just arrived at 2 percent of the absolute potential sustainable power sources in Indonesia.[21] Regardless of endeavours to

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17 Maulidia, M., Dargusch, P., Ashworth, P., & Ardiansyah, F. (2019). Rethinking renewable energy targets and electricity sector reform in Indonesia: A private sector perspective. *Renewable and Sustainable Energy Reviews*, *101*, 231-247.

18 Choi, C. S., Siregar, I. Z., & Ravi, S. (2020). Reframing the Competition for Land between Food and Energy Production in Indonesia. In *Land Cover and Land Use Change on Islands* (pp. 241-260). Springer, Cham.

19 Mamat, R., Sani, M. S. M., & Sudhakar, K. J. S. O. T. T. E. (2019). Renewable energy in Southeast Asia: Policies and recommendations. *Science of the total environment*, *670*, 1095-1102.

20 Maulidia, M. (2019). Enhancing the role of the private sector in achieving transitional renewable energy targets in Indonesia.

21 Hakam, D. F. (2019). Mitigating the risk of market power abuse in electricity sector restructuring: Evidence from Indonesia. *Utilities Policy*, *56*, 181-191.

widen the renewable energy generation, PT Perusahaan Listrik Negara (Persero) (PLN) are required to accept an arrangement with independent power producers (IPPs) for the new tariff approval.

For a renewable energy future in Indonesia, most of the experts have concluded that the below points may have added to thwarting potential interest in the improvement of sustainable power source:

1) fuel subsidies;
2) legal uncertainties;
3) a lack of incentives for the use of renewable energy;
4) a land acquisition backlog;
5) issues associated with the use of forestry areas for the development of renewable energy; and
6) a new mechanism for the determination of Basic Production Prices as stipulated in MEMR 50/2017, as amended (see Section III).

Disregarding the administration's responsibility to upgrading the improvement of sustainable power source, there remain inquiries on how these above issues would be approached.

I. THE RENEWABLE ENERGY POLICY IN INDONESIA

The energy policy of the Government of Indonesia can be found in some predetermined regulations. The energy management law listed in article 3 of the Law of Republic of Indonesia No. 30 years 2007 set the goal of the energy management as obtaining energy independence, ensuring the availability of domestic and non-domestic sources of energy, ensuring an optimal, integrated, sustainable energy resources management, energy efficiency use, guaranteeing the access of individuals to energy, improving the capacity of domestic energies.[22]

Chapter 1 , Article 1(2), in the Regulation of the Minister of Energy and Mineral Resources of the Republic of Indonesia Number 12 of 2017, defines renewable energy sources as sustainable energy sources, for example, geothermal, wind, bioenergy, hydropower, solar, etc. Presidential

[22] Wisaksono, A., Murphy, J., Sharp, J. H., & Younger, P. L. (2018). The multi-level perspective analysis: Indonesia geothermal energy transition study. In *IOP Conference Series: Earth and Environmental Science* (Vol. 106). IOP Publishing.

regulation number 27 of 2017 on the National General Energy Plan Rencana Umum Energi Nasional (RUEN), chapter 1, article 1, paragraph 3, stated that the National Energy Policy should be considered as a management energy policy based on justice principles, and promote sustainable and environmental-friendly resources for securing and diversifying of national energy. The national energy policy in Indonesia thus refers to the wording of the RUEN policy, including the development of renewable energy.

A study on the development of renewable energy and energy efficiency policies in Indonesia notes that the Ministry of Finance of the Republic of Indonesia has established three pillars which provide a foundation for sustainable Indonesian development: to increase resilience, to improve macroeconomic stabilization, and to enhance international competitiveness. Integrated strategies for renewable energy can contribute to achieving the above.[23]

Three different, interconnected pillars depend upon the integrated approach to renewable energy production:

1) The economic measurement of the project is sufficient, but not unreasonable, to provide an acceptable rate of return.
2) Support for good investment opportunities with logical criteria should be open.
3) Each pillar is interdependence, and the state of the political economy should allow investors to have faith in investment.

The national energy policy has a goal to be met, i.e. the renewable energy mix is at least 23 percent in 2025 and at least 31 percent by 2050 so that renewable energy can be considered as a transitional energy source to transform Indonesia into an industrialized country.[24] In particular, because of its high economic benefits, the production of renewables is pushed by the Indonesian government further by providing tax incentives on the investments in RE.[25] The renewable energy capacity in Indonesia is 400 gigawatts (GW), but its usage aspect amounts to only around 8.8 GW

[23] Colenbrander, S., Gouldson, A., Sudmant, A. H., & Papargyropoulou, E. (2015). The economic case for low-carbon development in rapidly growing developing world cities: A case study of Palembang, Indonesia. *Energy Policy*, *80*, 24-35.

[24] Sugiawan, Y., & Managi, S. (2016). The environmental Kuznets curve in Indonesia: Exploring the potential of renewable energy. *Energy Policy*, *98*, 187-198.

[25] *Id*.

(2%).[26] This optimization of renewable energy has been regulated in National Energy Policy Regulation 79 of 2014.

The Indonesian government also offers electricity subsidies to meet the community's needs. Energy subsidies as forms of government action designed to reduce energy costs, increase revenue from energy producers and reduce costs paid to energy consumers. Politicians also justify subsidizing energy on the grounds that it can lead to economic development, minimize poverty and ensure energy supply stability.[27]

Nevertheless, the budget for energy subsidies in Indonesia decreased by RP187.4 trillion or on average 27.0% per year in the period 2012-2015.[28] In 2016, the budget for energy subsidies dropped relative to the previous year, mostly because of the decrease in the budget for fuel subsidies. Fuel subsidies are given in order to control the selling price of subsidized fuel, as one of the basic needs of society, so that it can be reached by the purchasing power of the people, especially those with low incomes. Since 2015, fuel subsidies are only given to certain types of fuel (kerosene, fixed subsidies for diesel oil or gas oil), and subsidies for 3 kg LPG tubes.[29]

Then in 2017, the Ministry of Energy and Mineral Resources of the Republic of Indonesia allocates budget of more than Rp 1 trillion for the development of renewable energy, among others for the development of Solar Power Plant, Micro Hydro Power Plant, and provision small-scale energy in the area.[30] Targets in the renewable energy sector in 2017 include the addition of Geothermal Power Plant of 215 MW, bioenergy of 314 MW, Solar Power Plant and Micro Hydro Power Plant, and increased production target of biofuels to 4.6 million KL.[31]

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[26] Shezan, S. K. A., Al-Mamoon, A., & Ping, H. W. (2018). Performance investigation of an advanced hybrid renewable energy system in Indonesia. *Environmental Progress & Sustainable Energy*, *37*(4), 1424-1432.

[27] Winarno, O. T., Alwendra, Y., & Mujiyanto, S. (2016, November). Policies and strategies for renewable energy development in Indonesia. In *2016 IEEE International Conference on Renewable Energy Research and Applications (ICRERA)* (pp. 270-272). IEEE.

[28] Tasri, A., & Susilawati, A. (2014). Selection among renewable energy alternatives based on a fuzzy analytic hierarchy process in Indonesia. *Sustainable energy technologies and assessments*, *7*, 34-44.

[29] Hidayatno, A., Destyanto, A. R., & Handoyo, B. A. (2019). A conceptualization of renewable energy-powered industrial cluster development in Indonesia. *Energy Procedia*, *156*, 7-12.

[30] Mustikaningsih, D., Cahyandito, M. F., Kaltum, U., & Sarjana, S. (2019). Building business performance through partnership strategy model: Evidence from renewable energy industry in Indonesia. *International Journal of Energy Economics and Policy*, *9*(5), 297.

[31] *Id.*

Achieve these targets, the Ministry of Energy and Mineral Resources of the Republic of Indonesia has issued three regulations supporting the increase of renewable energy usage and also supporting the availability of electricity, ie Regulation of Minister of Energy and Mineral Resources of the Republic of Indonesia Number 10 of 2017 on Principles in Power Sale and Purchase Agreement, Number 11 year 2017 on Utilization of Natural Gas for Power Plant, and Number 12 of 2017 on Utilization of Renewable Energy Sources for the Provision of Electric Power.

II. LEGAL FRAMEWORK RELATED TO RENEWABLE ENERGY IN INDONESIA

Under the National Energy Policy (2014), 23% of all electricity must be procured from renewable sources of energy by 2025.[32] The 2018-2027 RUPTL stated a 23% renewables target by 2025.[33] However, despite the increased number of PPAs signed by PLN this target is unlikely to be achieved by the Government.[34]

From 2014 to 2016, tariff regulations were issued for geothermal, mini-hydro, solar, waste to energy, biomass and biogas IPPs.[35] Wind only became subject to a regulated tariff regime in 2017.[36] Progress has been sluggish due to resistance from PLN owing to the subsidy required to support these tariff regimes. In December 2016, the Indonesian Parliament rejected a proposed renewable energy subsidy to PLN. In 2017, new regulations were released, capping renewables tariffs by reference to PLN generation costs; this was designed to avoid a subsidy to PLN from renewables development.[37]

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[32] *Supra Note* 25

[33] *Supra Note* 27

[34] Udin, U. (2020). Renewable Energy and Human Resource Development: Challenges and Opportunities in Indonesia. *International Journal of Energy Economics and Policy*, *10*(2), 233-237.

[35] Guerreiro, S., & Botetzagias, I. (2018). Empowering communities–the role of intermediary organisations in community renewable energy projects in Indonesia. *Local Environment*, *23*(2), 158-177.

[36] *Id.*

[37] Hidayatno, A., Setiawan, A. D., Supartha, I. M. W., Moeis, A. O., Rahman, I., & Widiono, E. (2020). Investigating policies on improving household rooftop photovoltaics adoption in Indonesia. *Renewable Energy*.

In 2017, a Presidential Regulation implementing the 2014 National Energy Policy was issued, providing the general long-term policy at the national level regarding energy management. This regulation sets out the policy and strategy on national energy management until 2050 (to be revised every five years).

Minister of Energy and Mineral Resources No. 50 of 2017 ("Regulation 50/2017"), took effect on 8 August 2017 and revoked the previous MEMR Regulations No. 12 of 2017 ("Regulation 12/2017") and No. 43 of 2017. This regime applies to solar PV, hydro, wind, biomass, biogas, waste to energy, geothermal and wave and tidal. Tariffs are indexed to PLN's generation costs, both locally within the relevant region and nationally. Pursuant to Regulation 50/2017: (i) if the local generation cost is higher than the national average, the tariff is capped at 85% or 100% of the local generation cost; and (ii) if the local generation cost is the same as or lower than the national average, the tariff will be determined by agreement of the parties.

The method of procurement applicable for the different renewable energy projects (i.e. solar PV, wind, hydro, biomass, biogas and wave & tidal) under Regulation 50/2017 is the direct selection method. However, for municipal solid waste and geothermal, the procurement is to be made in accordance with applicable laws and regulations. The regulation does not provide details of what is involved in a direct selection process, although it does state that PLN must prepare and publish technical guidelines on the implementation of direct selection method of procurement. Typically, a direct selection process in the power sector involves a competitive tender process involving a minimum of two bidders. This new tariff regime does not apply to PPAs already signed, as these will be grandfathered using existing tariffs. The focus is on using renewables in regions where it can lower (or at least not increase) PLN's generation costs.

The Minister of Energy and Mineral Resources ("MEMR") has also issued a new regulation on the mechanism for setting PLN's BPP for particular procurement, both locally and nationally. The BPP will be set annually by MEMR on the basis of a proposal from PLN which references the BPP from the previous year (i.e, the "BPP" for 2017 will be applied for procurement from April 2018 to March 2019). This regulation does not set out a formula or components for calculating the BPP – it merely stipulates numbers – and there is no BPP for particular energy sources. This means

renewables energy needs to compete with other cheaper electricity sources, such as coal, because pricing will be linked to the BPP which includes all energy sources, rather than having a specific feed-in tariff for renewable energy.

MEMR has separately set the actual BPP of PLN for 2018, which is valid from 1 April 2018 until 30 March 2019, that will be used as the reference in procurement documents during that period. The national BPP is set at USc7.66/kWh, and there are separate local BPP for different regions in Indonesia. If there is any region that does not have a BPP, then the BPP will refer to the highest BPP stipulated in the Minister's decision.

Under Presidential Regulation No. 4 of 2016 on the Development of Electrical Infrastructure as amended by Presidential Regulation No. 14 of 2017 ("Perpres No. 4"), power projects may obtain incentives from the central and/or regional government in the form of, among other things: (i) fiscal incentives; (ii) facilities for licensing and non-licensing; and (iii) subsidies.

In addition, based on MOF Regulation No.130/PMK.08/ 2016 on the Granting of Government Guarantees for the Acceleration of the Development of Electrical Infrastructure ("Regulation 130/2016"), there are two types of fiscal guarantee provided by the Government to support acceleration of power infrastructure development. The first type is the loan guarantee for loans to PLN for development of its own power infrastructure. The second type is the business viability guarantee for IPPs to secure certain payment obligations of PLN. In order to obtain the guarantees as mentioned above, the power projects will have to be included on a list drawn up by PLN. This list is officially approved by the Ministry of Energy and Mineral Resources, and forwarded to the Directorate General of Risk and Financing Management.

The Government has provided: (i) income tax incentives in the form of reductions in taxable income, extended tax loss carry- forward period, accelerated depreciation and amortisation rates, and dividend WHT concessions; and (ii) various concessions on import duties and taxes. However, the ability of Government to achieve its new renewables target may depend on the willingness of the Government to provide further incentives (fiscal incentives or subsidies) to renewables developers.

The requirement that smaller-scale renewable projects (other than geothermal projects) between 1 MW and 10 MW are subject to a majority

domestic ownership requirement gives rise to investment viability and operational challenges for prospective foreign sponsors in these types of projects. However, the Indonesian investment law (Law No. 25 of 2007) does not require that an Investor's economic benefits and returns must correspond to its shareholding portion. It is therefore open to sponsors to seek to:

There are various possible ways to do this (non-voting shares, preference shares, shareholder loans and service agreements, etc.), each raising different issues under Indonesian law that need to be assessed and managed.

Electricity generation capacity of ‹1 MW – reserved for 100% national ownership Electricity generation capacity of 1 MW-10 MW – maximum foreign ownership is 49% Electricity generation capacity of ›10 MW – maximum foreign ownership is 95%, or 100% during the concession period if tender is carried out through the PPP mechanism Geothermal power plants less than or equal to 10 MW (open up to 67%) re-distribute the economic risks and returns from the project; and despite their 49% shareholding, exercise effective management and operational control over the project company.

Whilst the Government's desire to adopt a pricing structure for renewables that assists in reducing the existing average cost of generation (and in turn reducing the subsidy dependency of "PLN") is laudable, it remains debatable as to whether benchmarking renewables against the cost of generation from other energy sources at a particular point in time is a legitimate comparison. In particular, this methodology, in comparing the cost of procuring renewables generation against (for example) the cost of procuring coal-fired power generation at a point in time, arguably does not take proper account of either fluctuations in fossil fuel prices (which are passed through to PLN and included in the cost of generation) over time or indirect environmental costs of continued reliance on fossil fuels in the fuel mix.

Regulation of the Minister of Energy and Mineral Resources No.10 of 2017 on Basic Provisions of Power Purchase Agreement ("Regulation 10/2017") which prescribes certain PPA risk allocation concepts that PLN must follow for certain power projects was amended by Minister of Energy and Mineral Resources Regulation No. 49/2017 ("Regulation 49/2017") and Minister of Energy and Mineral Resources Regulation No. 10/2018

(Regulation 10/2018). Regulation 10/2017 caused much consternation in the industry, as it appears to codify certain risk allocation principles – particularly with regard to political risk and PLN grid risk – that roll back safeguards that have for years underpinned the bankability of Indonesian PPAs. As a result, Regulation 49/2017 and Regulation 10/2018 were introduced to improve upon the position surrounding risk allocation principles with regards to political risks and government related force majeure for the IPPs. However, there are still some concerns affecting the IPPs under Regulation 10/2017 which remains unchanged in Regulation 49/2017 and Regulation 10/2018 including the absence of deemed dispatch payments to IPPs where a force majeure event affects PLN's electricity grids.

Regulation 10/2017 (as amended by Regulation 49/2017 and Regulation 10/2018) only applies to new PPAs to be entered into by PLN and importantly for the renewables sector does not apply to "intermittent" power generation projects (e.g. solar and wind projects), mini-hydro projects below 10 MW, biomass power projects and municipal waste to energy projects. However, Regulation 10/2017 (as amended by Regulation 49/2017 and Regulation 10/2018) will still apply to, for example, large-scale hydro projects and geothermal projects.

Even though Regulation 10/2017 (as amended by Regulation 49/2017 and Regulation 10/2018) does not apply to many PPAs in the renewables sector (on the basis that these will be separately regulated), it remains to be seem how the PPA form will be rolled out by PLN across these renewables sectors. To date, PPAs in the smaller-scale renewables space (such as mini- hydro and solar PPAs) have been short-form PPAs that do not in any event reflect an internationally bankable risk allocation on issues such as political risk and PLN grid risk.

Indonesian Law No. 7 of 2011 on Currency, together with the implementing regulations issued by Bank Indonesia, imposes certain currency restrictions, including that Rupiah must be used to settle financial obligations within the territory of Indonesia.

PBI 17/3/2015 also provides that business entities must also state the price for goods and/or services only in IDR. It is further clarified by SEBI 17/11 that business entities are prohibited from stating the price for goods and/or services simultaneously in both IDR and foreign currency (dual quotation).

BPP figures are denominated in USD and IDR which leaves open the possibility to denominate the tariff in the PPA in USD under Regulation 50/2017 although payable in Rupiah. For recent large-scale power projects, PLN has accommodated sponsor and lender concerns on currency risk inherent in this arrangement by entering into a tripartite converting agreement with a local bank under which PLN will guarantee the USD amount on conversion back from Rupiah. However, we expect that PLN may be reluctant to offer this concession for the smaller-scale renewables developments, and accordingly residual currency risks will need to be assessed and managed carefully by the sponsors.

In 2012, Indonesia enacted a new regulatory framework governing land procurement in the public interest. Power plants and electricity transmission distribution fall within the scope of this law. The recent successful application of these regulations in the context of the Central Java IPP project has given renewed hope that these new laws can actually deliver large-scale infrastructure projects that would once have been incapable of development.

However, another key problem in this area is the misalignment between the national and regional spatial layout plans. The Government has recently introduced amendments to the spatial planning regulatory framework to accelerate amendments to spatial plans and potentially for strategic projects to proceed on the basis of their inclusion in the national spatial layout plan. Nevertheless, only time will tell if these changes will in practice facilitate the issuance of local permits, such as location permits required for land acquisition, that have been held up due to misalignment between the national and regional spatial layout plans.

RENEWABLE ENERGY DEVELOPMENT IN INDIA

India has great potential and resorting to harness several RE sources, including solar, wind, biomass, waste and hydropower. Emerging local industries for RE technology manufacturing, including for solar and wind, have given substantial impact to RE development and has helped uphold the country's RE targets. The manufacturing industry for solar PV has been supported by small companies with a total capacity of 1.38 GW of solar

cells and 2.75 GW solar module integration.[38] As for wind energy development is concerned, the tax-credit scheme has attracted investment, especially in terms of private sector generation. With increased generation capacities from wind farms, wind-related technologies have been improved and matured. This achievement has driven the cost-effectiveness of RE based electricity, as the costs have started to drop since 2010. Therefore, by embracing advanced technology, increased energy output and reduced capital costs can be accomplished.[39]

With a considerable portion of the population and a large percentage of rural citizens having limited access to electricity, the trend in electricity consumption is anticipated to increase hastily. Industrialization and rapid economic growth have triggered the amplified scenario of electricity consumption.[40] The accessibility and reliability of the electricity supply is vital for support India's economic development and for enhancing lifestyle in the nation and has pushed the government to improve electrification.[41] The government has introduced off-grid or decentralized RE projects to meet the country's energy demands in rural areas.[42]

The government strives to achieve complete electricity access in their nation, under the Eleventh Plan. The effort is demonstrated by the diversity of generation, where 24.6% is gained from the states, 31.3% from the central sector, while the private sector dominated 44.1% of the generation sector.[43] Along with the National Action Plan on Climate Change (NAPCC), the government has placed steadfast steps for the development of renewable energy RE. The centre government has assisted in providing incentives and embarking on support programs for the states to achieve RE goals. An example is grid-interactive renewable power projects, which are mainly navigated through private investment with the

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38 *Renewable energy's transformation of the Indian electricity landscape* (India: PwC, 2015), 5. http://www.pwc.in/assets/pdfs/publications/2015/renewable-energys-transformation.pdf.

39 *Id*., at. 6.

40 Meisen, P., & Quéneudec, E. (2006). Overview of renewable energy potential of India. *Global energy network institute*, 1-26.

41 Apostoli, A. J. (2016). India's energy-climate dilemma: The pursuit for renewable energy guided by existing climate change policies. *J. Earth Sci. Clim. Change*, *7*, 362.

42 Distributed/decentralized renewable power projects using wind energy, biomass energy, hydropower and hybrid systems are being established in the country, to meet the energy requirements of isolated communities, and of areas which are not likely to be electrified in the near future.

43 "Power Sector at a Glance ALL INDIA," Ministry of Power, http://powermin.nic.in/en/content/power-sector-glance-all-india (accessed 15 December, 2017).

support of the Ministry of New and Renewable Energy (MNRE), but with tariff rates regulated by the state through the State Electricity Regulatory Commissions (SERC).[44] Therefore, reforms in the Indian electricity sector will deliver significant impact to RE development, not only due to the involvement of two ministries including the Ministry of Power and the Ministry of New and Renewable Energy, but also the multifaceted relationship with state actors. The complexity continues through provisions under Article 48A of the constitution, which signify the state's obligation to protect and improve the natural environment.[45]

The Paris Agreement on Climate Change Mitigation has demonstrated India's commitment to saving the world's climate, as India has firmly reiterated its commitment towards clean energy and reducing carbon emissions.[46] More than a quarter of India's GHG emissions were contributed by the electricity generation sector, and this figure will continually increase by more than 3000 million tons by 2030. With an increasing pattern of coal-based generation and energy demand, India is more likely to face both environmental and health issues, as there is a clear nexus between global warming and health problems.[47] India's longevity commitment has been reflected in its submitted Intended Nationally Determined Contributions (INDC), a month before the Paris Climate Accord took place. The Indian government has pledged to cut emissions intensity around 33% to 35% by 2030. increasing non-fossil fuel electricity generation up to 40% by 2030.[48] This target will be achieved with assistance from the Green Climate Fund (GCF), in terms of technology transfer and finances, and increasing investments in climate change mitigation measures.[49]

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[44] "Schemes", Ministry of New and Renewable Energy, http://mnre.gov.in/schemes/ (accessed 15 December, 2017).

[45] Kaladharan, M. (2016). Renewable Energy in India: An Analysis of the Regulatory Environment and Evolving Policy Trends. *Centre for Policy Research*.

[46] Bansal, N., Srivastava, V. K., & Kheraluwala, J. (2019). Renewable energy in India: Policies to reduce greenhouse gas emissions. In *Greenhouse Gas Emissions* (pp. 161-178). Springer, Singapore.

[47] *Id*.

[48] *Id*.

[49] *Nationally Determined Contribution (NDC) to the Paris Agreement: India*, International Energy Agency, https://www.iea.org/policiesandmeasures/pams/india/ (accessed 17 December, 2017).

I. LEGAL FRAMEWORK RELATED TO RENEWABLE ENERGY IN INDIA

India has extensive RE policies at national and state levels. Environmental factors are also important in understanding one of the reasons for RE deployment. The increasing RE installations could result in a significant reduction of GHG emissions. Several factors may have contributed to auspicious RE development in the country, including technology advancement. Nonetheless, an effective policy that supports RE technology will be able to generate a massive difference in RE's share within the country's generation mix. India has introduced a vast range of energy policies at central and state levels. Among the outstanding policies are Integrated Energy Policy 2006, Strategic Plan For New and Renewable Energy Sector (2011-2017), India National Policy on Biofuels 2015 and Comprehensive Policy on Decentralized (Off-grid) Energy Generation Projects based on New and Renewable Energy (Non-Conventional) Energy Sources 2016. The Tariff Policy 2006 provides financial incentives through implementing Feed-in Tariffs and feed-in premiums.[50]

Apart from policies, a legal framework is undeniably crucial in regulating the electricity sector, as the broad sector covers generation, transmission and distribution divisions. A number of legislation were passed to support Indian energy sector:

1) The Energy Conservation Act 2001;
2) The Electricity Act 2003;
3) The Damodar Valley Corporation Act 1948;
4) The Punjab Re-organization Act 1966;
5) The National Electricity Policy, Plan and Tariff Policy;
6) The Indian Electricity Rules 1956;

[50] Apart from the above-listed policies, India has also presented numerous RE related policies and RE targets. These include the Gujarat Wind Power Policy 2016-2021, the Gujarat Waste to Energy Policy 2016, the Gujarat Small Hydel Policy 2016, the Maharashtra Renewable Energy Policy 2015, and others. The Strategic Plan for the New and Renewable Energy sector (2011-2017), has outlined specific implementation plans for every RE sector, including wind power, small hydro, biomass, biogas, waste-to-energy and solar PV (both on-grid and off grid). Among the strategies adopted under this plan are growing financial assistance for small power plants projects for solar and biomass, enhancing the publicity for rural electrification entrepreneurs to receive banks financial aids or grant funds, and introducing other fiscal mechanisms, for instance, the Risk Guarantee Fund.

7) The Central Electricity Authority Rules 1977;
8) The Central Electricity Authority Regulations 1979;
9) The Electricity (Supply) Annual Account Rules 1985; and
10) The Electrical Wires, Cables, Appliances and Accessories (Quality Control) Order 1993.

All laws and regulations have supported both electricity and renewable energy development in India. With the enactment of the Electricity Act of 2003, a national energy transition has been portrayed as the law has made a special remark on renewable generation. The Act further authorizes the State Electricity Regulatory Commissions (SERC) to regulate matters related to the tariffs. The Electricity Act echoed the transparency and accountability of the electricity sector. This policy pursued India's aspirations in the energy transition towards clean energy, and further stipulated mechanisms for supporting RE development, such as preferential tariffs from renewables electricity which have assisted in achieving grid parity and competitive bidding, when selling power to the distribution licensee. A year later, the National Tariff Policy (NTP) was created to both promote RE development in India and to assist central and state regulators in tariff determination. Moreover, the National Action Plan on Climate Change (NAPCC) has set a target for renewable energy purchase, of about 15% by 2020. Apart from that, there are several central and state policies which indicate specific goals for each renewable energy source, including the Biogas Power (off-grid) Program 2013, and the India National Policy on Biofuels 2015.

The Energy Conservation Act 2001 is an Act that promotes energy efficiency and conservation, and is applicable throughout India, except in the states of Jammu and Kashmir.[51] Chapter II of the Act provides for matters related to the establishment of the Bureau of Energy Efficiency and its governing structure. The Act further provides the bureau's functions, detailed in section 13, which includes promoting EE in processes, equipment and systems.[52] It also provides financial aid for organisations that promote EE.[53] The Act also empowers the Central Government to enforce the efficient use of energy and its conservation through 22 listed

[51] Section 1 of the Energy Conservation Act 2001 [No 52 of 2001] (India).
[52] Section 13 (2) (k) of the Energy Conservation Act 2001 [No 52 of 2001] (India).
[53] Section 13 (2) (m) of the Energy Conservation Act 2001 [No 52 of 2001] (India).

measures under the same Act, in consultation with the Bureau.[54] Penalties are also served in cases of non-compliance with sections 14 or 15 of the Act, where the penalty's amount shall not exceed ten lakh rupees for each failure, and ten thousand rupees for every day during which such failures continue.[55]

The Electricity Act 2003 is comprehensive legislation regulating matters on generation, transmission, distribution, commercialization and the usage of electricity.[56] The Act also covers issues of the electricity industry, such as competition, consumer rights and electricity supply and electricity tariff. This Act further promotes the efficient use of energy and environmental protection.

Up to date, no statute on RE has been passed by the Indian government. However, the draft of the Renewable Energy Act 2015 has encapsulated the regulation on RE development, in accordance with other principles related to climate, environment and economy. The Act to be implemented is capable of limiting the use of fossil fuels, enhancing energy security, and reducing emissions intensity. This law is seen as a prevailing tool for assisting governments in carrying out national and international duties to grow the RE share in the generation mix, and to combat climate change.

II. Renewable Energy Regulatory Actors in India

As the world's seventh-largest country, India has a diverse regulatory body in regards to energy and electricity. This section will discuss electricity regulatory bodies only. The electricity regulatory system in India involves both central and state levels.

India's electricity sector is mainly regulated by the Ministry of Power. The Ministry of Power is in charge of matters pertaining to the below:[57]

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54 Section 14 of the Energy Conservation Act 2001 [No 52 of 2001] (India).

55 Section 26 (1) of the Energy Conservation Act 2001, [No 52 of 2001] (India).

56 [No.36 of 2003]. The Act applies in all states in India except the State of Jammu and Kashmir, as stated in Section 1 (2) of the said Act.

57 "Responsibilities," Ministry of Power, http://powermin.nic.in/en/content/responsibilities (accessed 17 December, 2017).

1) Enacting and regulating general policies in the electric power sector and other related issues;
2) All matters relating to hydro-electric power, other than projects below a 25 MW capacity, and thermal power, transmission and distribution systems, including research, development and technical assistance;
3) Regulating the Electricity Act 2003, the Energy Conservation Act 2001, the Damodar Valley Corporation Act 1948, and the Bhakra Beas Management Board, as provided in the Punjab Reorganization Act 1966;
4) All matters relating to the Central Electricity Authority, the Central Electricity Board, and the Central Electricity Regulatory Commission, which involve rural electrification and power schemes on central and state levels; and
5) All matters concerning energy conservation and energy efficiency in the power sector.

The Ministry of New and Renewable Energy (MNRE) was established in 2006 to substitute the Ministry of Non-Conventional Energy Sources. MNRE is the key player which regulates all matters relating to new and renewable energy in India, assisting the country in developing renewable energy as a means of supplementing its energy requirements. Several organizations are involved accordingly, including the National Institute of Solar Energy (NISE), the National Institute of Wind Energy (NIWE), the Sardar Swaran Singh National Institute of Bio-Energy (SSS-NIBE), the Indian Renewable Energy Development Agency (IREDA), and the Solar Energy Corporation of India (SECI).[58]

The Indian Renewable Energy Development Agency Limited (IREDA) is a Government of India Enterprise, under the administrative control of the Ministry of New and Renewable Energy (MNRE). IREDA is a Public Limited Government Company, established as a Non-Banking Financial Institution in 1987. It is engaged in promoting, developing and extending financial assistance for setting up projects relating to new and renewable sources of energy, and supporting energy efficiency and conservation.[59] IREDA's objectives are to aid EE and RE projects

[58] "Institutes/Agencies", Ministry of New and Renewable Energy, www.mnre.gov.in/ (accessed 17 December, 2017).
[59] "About IREDA", Indian Renewable Energy Development Agency, http://www.ireda.gov.in (accessed 17 December, 2017).

financially, to be a competitive institution, and to lead in providing resourceful monetary assistance to EE and RE projects. Among the sectors financed by IREDA is RE, including hydro, wind, solar and bioenergy, and also EE and conservation.[60]

The Central Electricity Regulatory Commission (CERC) was established in 1998, under the Electricity Regulatory Commissions Act 1998. The State Electricity Regulatory Commissions were also instituted under the same Act. Throughout the Act, the Government of India aims to rationalize the electricity tariff, to provide more transparent policies, and to promote efficient and environmentally-friendly policies.[61] The Electricity Act 2003 has mandated that the CERC carry out its functions.[62] These include regulating the tariff of generating companies owned by the Central Government and other companies. However, they are also subject to the specified clause which governs the inter-state transmission of electricity and matters connected therewith, including tariff and licenses, to settle disputes among generating companies or transmission licensees, and to impose levies for the Act's purposes. CERC is also involved in specifying the grid code, and in managing the trading margin for the inter-state trading of electricity. In addition, CERC is also involved in the formulation of the National Electricity Policy and Tariff Policy, and in promoting activities in the electricity industry, including investment.[63] As for the State Electricity Regulatory Commissions, 27 State commissions are currently parked under this commission.

III. OTHER REGULATORY SUPPORT MECHANISMS IN INDIA

Renewable Energy (RE) generation is presently inferior when compared to fossil-fuel generation. Therefore many countries have deployed multi-policy support mechanisms that allow for reasonable competition with fossil-fuel

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60 *Id.*

61 Tamil Nadu Electricity Regulatory Commission, http://www.tnerc.gov.in/ (accessed 17 December, 2017).

62 [No.36 of 2003]. Central Electricity Regulatory Commission, www.cercind.gov.in (accessed 17 December, 2017).

63 "Functions (Mandate)", Central Electricity Regulatory Commission, http://www.cercind.gov.in/Function.html (accessed 17 December, 2017).

generation. India has also adopted a versatile approach on RE support mechanisms, including FiT, tendering systems, renewable portfolio standards (RPS), and net metering. The Central Electricity Regulatory Commission (CERC) has iss ued guidelines on FiT rates and implementation in 2009. According to this regulation, all RE technologies are eligible for the tariff, and the review of tariff rates, which would be conducted every three years, except for solar PV and solar thermal projects.[64] Another important aspect in the Indian FiT program is the duration for tariff payment, which is approximately 13 years for all RE technologies, excluding solar PV and solar thermal, as well as small hydro.[65] Apart from this, there are several states policies on FiT for solar energy, such as the Uttar Pradesh renewable energy Feed-in Tariff 2014–2019, and the Jawaharlal Nehru National Solar Mission (Phases I, II and III).[66] Some Indian states have offered FiT schemes for biogas and biomass projects, such as the Rajasthan Generic Tariff for Biomass and Biogas Plants 2014-15, the Uttar Pradesh Captive and Renewable Energy Tariff Regulations 2014-15, the Gujarat Biomass Feed-in Tariff Regulations 2013-2016, and also examples for wind power, such as the Andhra Pradesh Wind Feed-in Tariff Policy and the Gujarat Wind Feed-in Tariff. However, it was suggested that the FiT rates introduced by the Indian Central government are not attractive, yet still able to attract investors.

As auctioning and tendering systems have gained popularity in recent years, India has been actively engaged with solar auctions at the state and central levels, aligned with the country's aim to achieve approximately 100 GW solar generation by 2022.[67] As of 2015, tendering systems have been extended to several states, exclusively to enhance solar-generated electricity. As of 2017, the national onshore wind capacity auction was embarked on, to boost onshore wind generation in India.[68] In respect to net metering for solar PV, the states of Himachal Pradesh and

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64 Annual review for tariff rates.

65 "RE Tariff regulations", International Energy Agency, http://www.iea.org/policiesandmeasures/pams/ india/name-24652-en.php?s=dHlwZT1yZSZzdGF0dXM9T2s (accessed 17 December, 2017). Payment duration under the Feed-in Tariff (FiT) for solar is 25 years and as for small hydro (below 5MW) is 35 years.

66 International Energy Agency, https://www.iea.org/policiesandmeasures/renewableenergy/?country=India (accessed 17 December, 2017).

67 *Renewable Energy Auctions: Analysing 2016* (Abu Dhabi: IRENA, 2017), 6.

68 International Energy Agency, https://www.iea.org/policiesandmeasures/renewableenergy/?country=India (accessed 17 December, 2017).

Rajasthan successfully implemented this approach and encouraged other Indian states to adopt the same policy. As for RPS or quota policies, these have been widely applied in various Indian local jurisdictions.[69]

Net metering has also been adopted by several states in India.[70] All these policies support the installation of solar PV systems, and participants are permitted to sell excess solar energy to the utility company.[71] Other than that, India has initiated several economic instrument-based policies to accelerate RE development, such as Renewable Energy Certificates system and Accelerated depreciation tax benefit, specifically for wind energy.[72]

COMPARISON AND CONCLUDING REMARKS

When we compare Indonesia with that of the India law, policy and power generation from renewable sources, we find that India has taken precedence over Indonesia. It is perhaps because India is under pressure by the world community to reduce carbon emission in spite of the facts that India, because of its high population, has high energy demands. India has laid greater emphasis on renewable sources and atomic energy sources. So far renewable energy is concerned, India has strategized to convert miles long solid waste dump sites into PV-Parks around the country. The hydropower is another renewable source of greater importance in the country. The reliance on coal-fired thermal power generation plants is still there, but India is now interested in having nuclear power generation instead. Indonesia has a high potential for solar energy, but the production of electricity from this source is insignificant. Coal-fired and gas-based power generation are still the primary sources of power generation. So far

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69 *Renewable Energy Auctions: Analysing 2016* (Abu Dhabi: IRENA, 2017), 114.

70 Examples of these include the Madhya Pradesh Net Metering Policy, the Bihar Net Metering Policy, the Uttar Pradesh, the Net Metering Policy, the Rajasthan Net Metering Policy 2015, the Odisha Net Metering Policy, the Punjab Net Metering Policy, the Karnataka Net Metering Policy, the Tamil Nadu Net Metering, the India Net Metering Policy, and the West Bengal Net Metering Policy.

71 "Net Metering", Akshay Urja Renewable Energy February 2012 vol. 5 issue 4, http://mnre.gov.in/file-manager/akshay-urja/january-february-2012/EN/44-45.pdf (accessed 1 March, 2018).

72 International Energy Agency, https://www.iea.org/policiesandmeasures/renewableenergy/?country=India (accessed 17 December, 2017).

FiT is concerned, Indonesian law and practice is more appreciable than India. So far, providing tax and cash incentives to renewable energy sources is concerned, are more or less are the same. The main problem in Indonesia is the purchase price of electricity generated by independent power producers by renewable means is not encouraging. In India, the price plus tax and cash incentives provided are quite encouraging. In both countries, there is plenty of scopes to learn from developed countries. They also need financial and technological support to fulfil their commitments towards carbon reduction made under the Paris Agreement. There is one more are going mention here is that India is much ahead of Indonesia with respect to energy efficiency and conservation of energy, where many companies are competing in the market. In Indonesia, the position is entirely different.

There are several identified areas in which Indonesia can learn from India. To move forward in the energy transition, Indonesia needs to have insight into the RE industry and coming evolutions. This insight may be derived from the experiences of other countries, which are not different from Indonesia in terms of economy, technology and geography, but yet has to perform better than Indonesia in regards to RE development. There are several lessons Indonesia can learn from India's RE sector, namely, a specific ministry on renewable energy, which shows the government's commitment to developing RE, significant key players in supporting RE development in India. These agencies exist at both central and state levels, which can enhance the transparency of each agency in its administration and avoid the arbitrary management of funds. Moreover, there is a need for specific policies for each RE source, as there is in India, for example, the five-year plan for national wind energy and national solar energy and the establishment of a specific organization to financially support RE development, such as IREDA in India.

Both the courtiers have to go a long way on the treacherous pathways to keep their promise to reduce carbon emission. Both should further reduce their reliance on traditional sources of power generation and maximize wind, solar, hydro and biomass energy sources. India has nuclear energy and trying hard to increase its contribution to the energy-mix. India and Indonesia should also seriously work on having offshore windmills and underwater turbines. These sources of energy have great potential in both countries.

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