BRIEFING PAPER

Greening the Belt and Road Initiative (BRI)

How Indonesia can use BRI to accelerate clean energy infrastructure development

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IESR (Institute for Essential Services Reform) | iesr.or.id

BRI at glance

Belt and Road Initiative (BRI) previously known as One Belt One Road (OBOR) is a Chinese-led transnational mega-project, launched at September 2013 with aims:

- Enhance policy coordination
- Improve regional connectivity
- Facilitate trade liberalisation and economic integration
- Facilitate financial integration
- Enhance cultural and scientific technical exchange

BRI is organised along 7 corridors, encompass 84 countries (2018) that represent two-thirds of global population, 40-50% of gross global national product, and 75% of energy resources, and 15 Chinese provinces.

Total investment for infrastructure under BRI is estimated $ 1 to 8 trillion. There were 7000 BRI projects contracted in 2017, coal and hydro projects made up 34% of total projects. China is both the largest coal fired power plant exporter worldwide, and also responsible for almost 70% hydropower project that is under construction outside China (WWF, 2017).

Indonesia can use BRI to accelerate the development of renewable energy on a large scale (1)

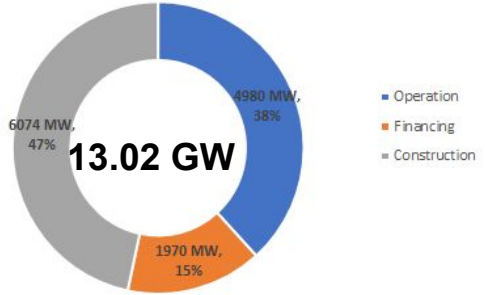
- Chinese factors:
  - Energy is one of the key sectors under BRI.
  - China is undergoing an energy revolution. It has the largest renewable energy capacity and the fastest growth in renewable-based power globally.
  - China has the largest production capacity of solar cell/module technology. China is also one of the top five wind manufactures in the world and the largest EPC contractor in hydro power globally.
  - Chinese banks invest in various energy projects and have experience in financing renewable energy projects globally. The Chinese banks have sufficient capital to invest in renewable energy projects and recently those investments are channeled through BRI.
  - China is the largest investor and contractor of coal fired power plants (CFPP) in Indonesia. However, there is a risk for CFPP to become stranded assets in the near future.
- Indonesia factors:
  - Indonesia has large untapped renewable energy resources and require a massive investment to develop this resources to power the country.
  - Developing this resources require low-cost, concessional finance on the capital. This type of finance is not easy to access. However, G to G cooperation would unlock the access to low cost finance.

Indonesia can use BRI to accelerate the development of renewable energy on a large scale (2)

- Cooperation and partnership
  - Technology, including transfer technology
  - Finance and investment
  - Technical assistance on resource mapping and project development
- With experience and skill, China can assist Indonesia to map renewable energy resources and develop renewable project portfolio on a large scale.
- Combination of competitive technology, concessional finance, and the prowess of EPC capacity can deliver renewable energy project at competitive cost that can lead to competitive price of renewable electricity.
- Both Government, through Government to Government cooperation, has to structure the cooperation and partnership in a way that involve state owned companies (PLN, PGE/Pertamina, GeoDipa), local financial institutions (e.g. PT SMI. PT IIF), and credible Indonesia private companies to joint their chinese counterparts (technology provider/vendor, EPC contractor, state banks/financial institutions, and Chinese Engineering agency).
- Chinese shall provide first rate technology, concessional finance, technical assistance on various technical aspect, and capacity development.
- Indonesia shall work on improving policy and regulatory framework to secure investment, streamlining license and permit, and building project portfolio that the country can offer.

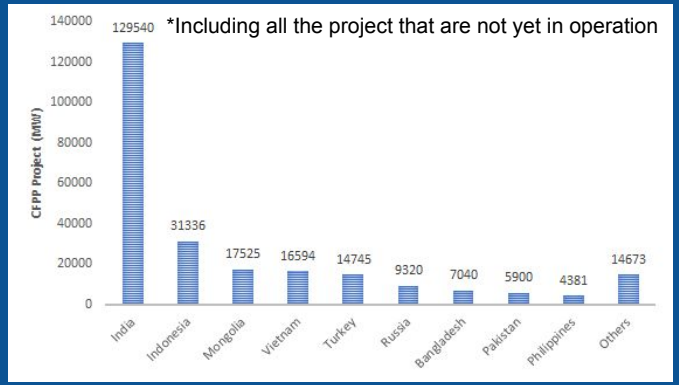
Since 2003, China has clinched investment in coal fired power generation in Indonesia

China involvement in CFPP Indonesia (MW)



Source: RUPTL 2019, MEMR 2018

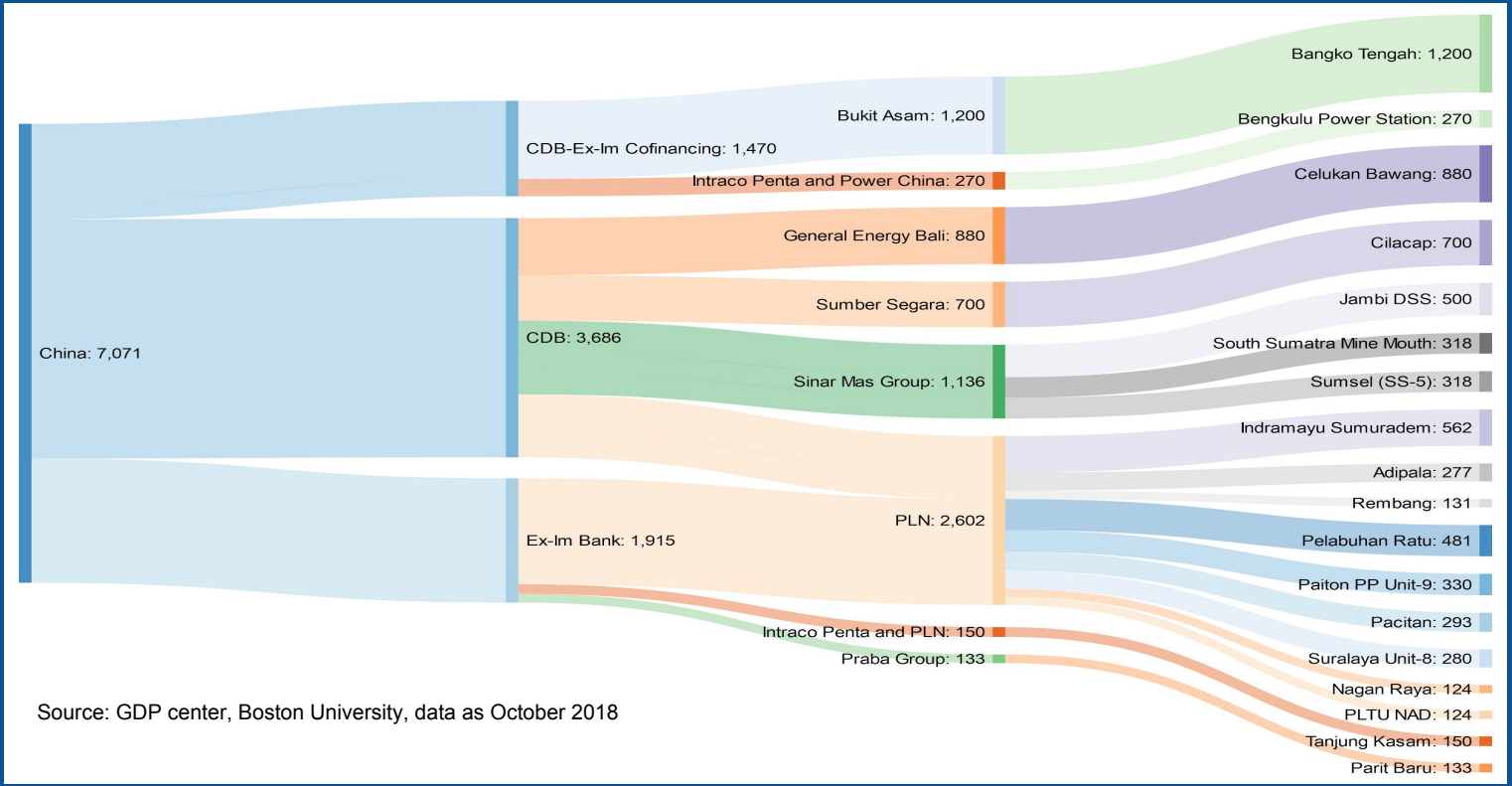
China Participation in CFPP Project around the world (MW)*



Source: GEI 2017

According to MEMR, Chinese investors are involved in 13.02 GW of built CFPP installed capacity in Indonesia. That accounts to almost half of CFPP installed capacity in year 2018. Taking into account the project that are not yet in operation, the number rises into 31.34 GW, putting Indonesia into ranked 2nd in CFPP project with China involvement among BRI countries

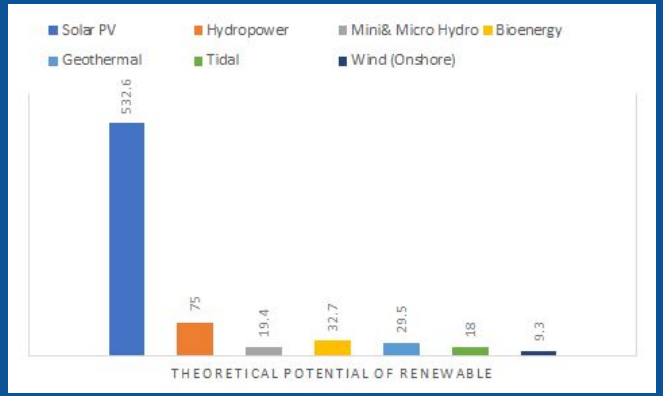
Total CFPP investment from China to Indonesia reached USD 8.6 billion over the last decade (2008-2017)



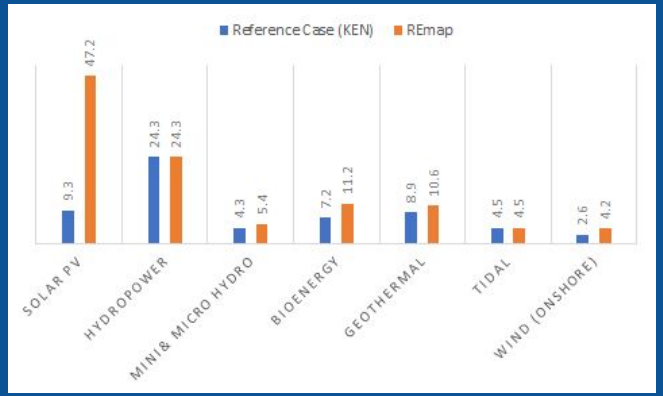
Source: GDP center, Boston University, data as October 2018

Indonesia may exceed KEN target by reaching 32.3% RE mix in 2030 by only utilizing 15% of its RE potential

Theoretical Potential of Renewable Energy (GW)



Target Installed Capacities of Renewable Energy in 2030 (GW)



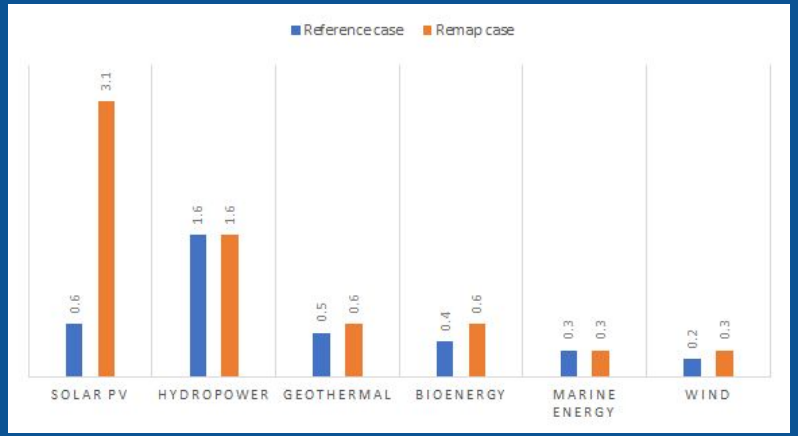
Source: IRENA 2017

According to IRENA, Indonesia has the potential of 716.5 GW of Renewable Energy Installed Capacity, mostly dominated by solar PV with 532.6 GW. Two scenarios are investigated by IRENA, reference case (based on KEN) and REmap case (for additional RE use to increase RE primary energy mix from 23% of KEN scenario to 32.3% of REmap scenario). Both scenarios are for year 2030. The REmap calculates that Indonesia has the potential to build 107.4 GW of RE power plants by 2030, accounting for 15% of total RE potential the country has.

Source: IRENA 2017

REmap scenario (32.3% RE mix in 2030) will require USD 13.2 billion of investments in power sector annually

Annual installed capacity needs based on IRENA scenarios between 2016-2030

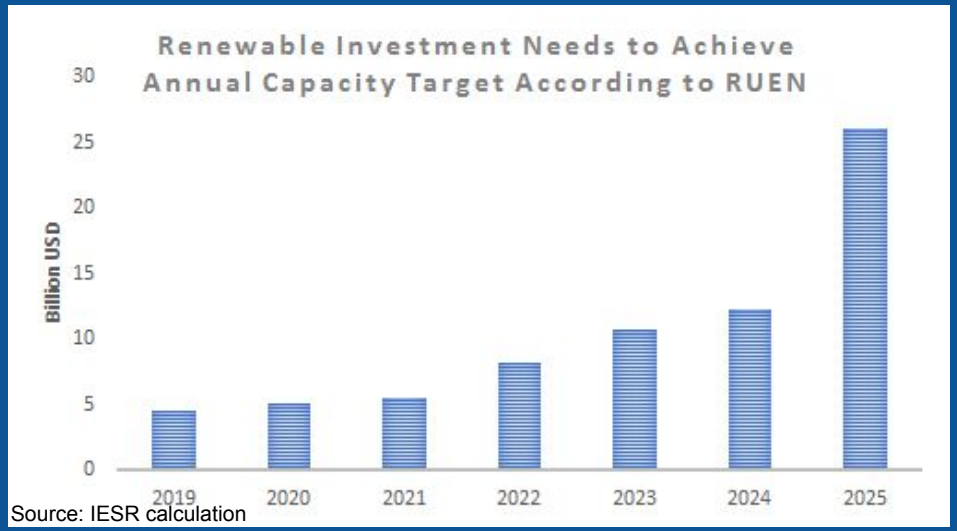


Source: IRENA 2017

Between 2016 and 2030, USD 9.4 billion of investment is needed annually to build all renewables in reference case. The investment requirement will increase to USD 13.2 billion annually in REmap case. Half of those investments will go to solar PV.

Source: IRENA 2017

At least USD 72.5 billion is required to achieve 2025 RUEN target for renewables

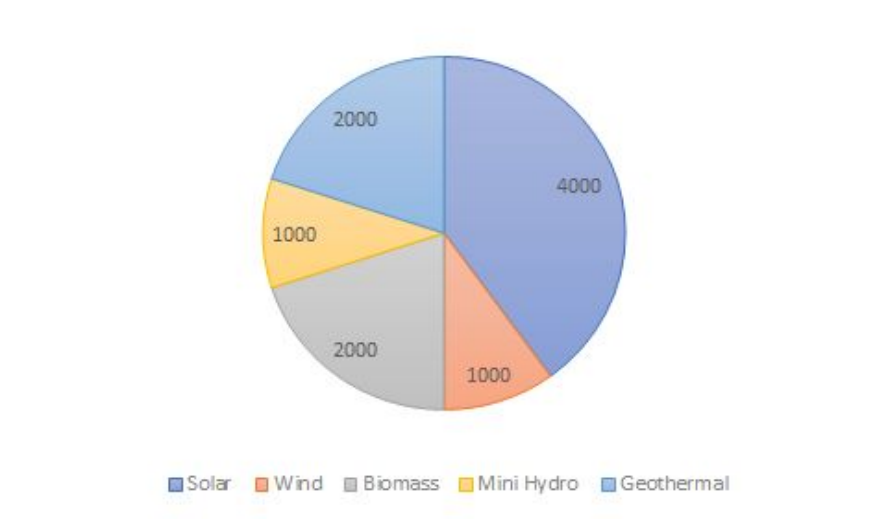


Source: IESR calculation

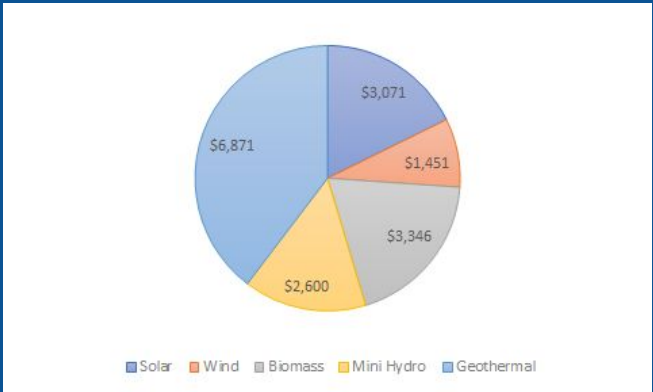
According to RUEN, Indonesia will have 45,2 GW of renewables power plants by 2025. Total investments required to achieve that target are USD 72.5 billion (in present value). This figure only covers the capital cost, excludes the operational cost and financing cost.

Greening the BRI with the “10 GW Clean Energy Acceleration Development Initiative” worth USD 17.3 billion

Installed Capacity of RE under 10 GW Clean Energy Acceleration Program (in MW)



Breakdown of Investment Needs for 10 GW Clean Energy Acceleration Program (in million USD)



Source: IESR calculation

The 10 GW Clean Energy Acceleration Development Initiative will consist of 4 GW of Solar PP, 1 GW of Wind PP, 2 GW of Biomass PP, 1 GW of Mini-Hydro PP and 2 GW of Geothermal PP with a total investment of USD 17.3 billion. Geothermal will need the highest investment/MW capacity while solar is the lowest.

Some consideration

- Avoid the cooperation becoming China-centric. BRI is about cooperation and partnership therefore Indonesian interest should be reflected in the cooperation agreement and project implementation.
- Indonesia should look at the “10 GW Clean Energy Acceleration Development Initiative” as the opportunity to start the international cooperation in renewables development in the later stage.
- While the cooperation with China under BRI can bring benefits to Indonesia, the country should build standard and safeguard instruments for BRI-funded projects in the area of environmental integrity, social and indigenous people protection, anti-corruption, and compliance mechanism.
- Ensure the effectiveness and the quality of the project to prevent the projects from becoming debt-trap for the country.

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