

RESEARCH ARTICLE | MAY 03 2023

# Strengthening energy diplomacy to achieve sustainable development goals no. 7 by 2030

Mochamad Subhan Alkyana ; Evvy Kartini

 Check for updates

AIP Conference Proceedings 2517, 030004 (2023)

<https://doi.org/10.1063/5.0121079>

  
View  
Online

  
Export  
Citation

CrossMark



Time to get excited.  
Lock-in Amplifiers – from DC to 8.5 GHz

[Find out more](#)

 Zurich  
Instruments

# Strengthening Energy Diplomacy to Achieve Sustainable Development Goals no. 7 by 2030

Mochamad Subhan Alkyana<sup>1, a)</sup> Evvy Kartini<sup>1, 2, b)</sup>

<sup>1</sup>National Battery Research Institute, 2<sup>nd</sup> Floor EduCenter Building Unit 22260 BSD, South Tangerang 15314, Indonesia.

<sup>2</sup>The Center for Science Technology of Advance Materials – National Nuclear Energy Agency of Indonesia, Puspiptek Area, South Tangerang, Banten 15314, Indonesia.

<sup>a)</sup> Corresponding author: [subhan.alkiana@n-bri.org](mailto:subhan.alkiana@n-bri.org)

<sup>b)</sup> [evvy.kartini@n-bri.org](mailto:evvy.kartini@n-bri.org)

**Abstract.** Energy is something that is essential, especially in modern society which cannot be separated from energy needs and the rise of electrification in various ways. The high demand for this energy is not proportional to the energy sources that we have. Many countries energy supply relies on fossil-based systems which contribute to climate change and will run out over time. This is what ultimately initiates the Global Energy Transition from fossil-based to renewable energy. The concern on energy is also part of Sustainable Development Goals 7 whose objective is to ensure universal access to affordable, reliable and modern energy services and increase substantially the share of renewable energy in the global energy mix. On the other hand, the diplomatic effort is needed to accelerate the energy transition. Energy diplomacy is a growing diplomatic field which aims to enhance access to energy resources in order to provide energy security. The data in this study shown how energy diplomacy as one of successful methods to achieve SDG's 7 especially in the least developed country. However, energy diplomacy is not always fully successful in some countries. But it is undeniable that energy diplomacy plays an important role in the current level of multilateralism.

## INTRODUCTION

### *Sustainable Development Goals*

The Sustainable Development Goals no. 7 aims to ensuring access to affordable, reliable, sustainable and modern energy for all has to be achieved by 2030. Energy is fundamental in our daily basis; it began since the invention of the steam engine in the 18<sup>th</sup> century which also pioneered the Industrial Revolution 1.0 the need for energy has always increased. Especially in this modern society which cannot be separated from energy needs and the rise of electrification in various ways. We need electricity to support all sectors including but not limited to businesses, medicine, and education, as well as agriculture, infrastructure, communications and high-technology. In 2030 global energy demand is set to rise by approximately 30% led by developing countries, it shows expanding global energy because of population growth, massive urbanization, and rapid industrialization.

The sustainability in energy has to be our concern as global energy demand will continue to grow as it driven by improved energy access, increasing prosperity and high living standard. Significant inequalities and access to energy persist. At the same we gather in facing global challenge of combatting climate change, protecting our environment and achieving sustainable development. These factors have made the development of sustainable sources of energy a pressing global priority, yet industry 4.0 came in time for the challenging decade for climate action.

Renewable energy is the new 'modern' game changer it brings out new challenges for the developing countries, the least developed countries and small island. However, some countries have less exposure on how to adapt transition to

clean energy. The lack of investment financial resources, research & development, technology, and most importantly public awareness of renewable energy will be the most common obstacle when it comes to renewable energy implementation. In this regard, no country can succeed alone that's why enhancing international cooperation to facilitate access to clean energy research and technology and promote investment in energy infrastructure and clean energy technology plays an important role in realizing this goal.

### ***Paris Agreement as The Opening Gate***

Paris Agreement was adopted at the United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties 21<sup>st</sup> in 2015. The purpose to achieve our common goal to keep global temperature to stay below 2 degrees and to limit the temperature increase more than 1.5 degrees as well as to achieve zero emission of greenhouse gases one of which is by shifting from fossil fuel to clean and renewable energy[1].

This agreement also aims to strengthen each country's ability to tackle and mitigate the climate change impact by enhancing framework in capacity building, advanced technology, and stimulating appropriate financial flows in order to accelerate the shifting towards renewable energy[2]. The ratification of the Paris Agreement compels each country to put maximum effort to achieve its target and report periodically through Nationally Determined Contribution.

The Paris Agreement is the opening gate for diplomacy and multilateralism has an important role for the future of energy. This agreement also underlines that each country could not achieve the goal alone, the developed country should assist the importance of support and strengthening international cooperation is one of the deciding points in enhancing action on adaptation.

### ***Addressing The Barrier***

The commitment towards Sustainable Development Goals and Paris Agreement encourages all countries to minimize reliance on conventional fossil-fuel and step forward to renewable energy. Although many countries have a great potential in renewable energy application, but some of them as if ignored their capability. The use of coal undeniably is a barrier in the development of renewable technology, data shown by International Energy Agency in 2017 that global energy supply one-third of them came from coal[3]. Lasting use of coal driven by high net energy yield from coal is higher if compared to other energy sources coupled with abundance of availability and many countries see coal is cheaper and favorable for high amount of energy that required for industries activity[3].

But our dependency in using coal might be worsened by other factors including but not limited to Socio-cultural, Policy, Technical, and financial matter. *First*, Socio-cultural; These socio-cultural barriers mostly dominated by lack of awareness and knowledge about renewable energy, the high price and fear of capability create public uninterest in the adoption of renewable energy[3]. *Second*, Policy and Regulation; Policy and Regulation needed to ensure the certainty of renewable energy development[3]. Government policy and regulation alignment in implementing renewable energy could help create predictable investment that is stable.

*Third*, Technical barriers; this barrier includes lack of infrastructure, lack of personnel to trained, demonstrate, maintain, and operate energy technology[2], [3]. The fear of failure made people a kind of unwilling to switch to renewable energy. *Fourth*, Financial; cost of renewable energy is relatively high when compared to conventional energy source, as this cost is above the average makes renewable energy technologies become unaffordable to producers and consumer as well[2], [3]. The economic status, cost of transaction, initial capital, and incentives availability is the defining factor in the adoption of renewable energy technology.

Many countries recognize that the progress to achieve sustainable development including switching to renewable energy might be uneasy. The lack of awareness, skills, policy, and technology become a baseline to take international cooperation as an effort. Speaking of international cooperation, liberalism become one of the famous theories in international relations. In meeting their needs and achieving progress, a mutually beneficial cooperation can be formed since basically international relations is more cooperative rather than conflictual[4].

## METHODOLOGY

### *Energy Diplomacy*

The modern diplomacy has undergone massive development and progress since Westphalia Treaty in 1648, throughout the time diplomacy is an integral element in succession of positive changes and upholding peace. As a dynamic and growing field, diplomacy also extend to the energy sphere in order to provides energy security. Energy resource often rising up tension between states that lead to (in worst case) military action. The beginning era of energy diplomacy start in the early of the 20<sup>th</sup> century, such diplomacy was dominated by fossil-fuel based corporation that is why such diplomacy is also known as ‘oil diplomacy’.

In the beginning of 20<sup>th</sup> century conflicts and proxy increase due to the interests of countries to obtain energy sources. Namely, British and Russian dispute over Persian oil exploration, 1935 Italy’s invasion to Abyssinia targeting access to oil and other resources, the 1941 US embargo on Japan to withdraw from war, 1941 Berlin invade Soviet Union in order to control Caspian energy resource. Therefore, using diplomacy as a tool to achieve energy source. However, as we now move towards international cooperation, such action should not be done as it will violate the multilateralism.

Although there is no exact definition about what energy diplomacy is but Marco Giuli defines Energy Diplomacy as a system to influencing foreign government policies or other International actors through diplomatic dialogue, negotiation, lobbying, advocacy, and other peaceful methods that design to enhance energy resources and market[5]. The premise of this definition is ‘not necessarily’ sought to maximizing business opportunity but rather focusing on how to achieve national security goal.

When implementing and achieving our global agreements towards energy will require ambitious strategies, policy and actions, energy diplomacy utilizing relations and foreign policy methods of a country with other country and organization to ensure flow of energy, safeguarding energy security and energy supplies through availability, reliability, and affordability[6], [7]. The Paris agreement and Sustainable development goals mandated all states to emphasizes dialogue and cooperation in which part of diplomacy itself. Through bilateral and multilateral cooperation initiatives will stimulate financial support to developing countries for their commitment towards global goals, this will enables sharing expertise and transfer technology for joint research and development in adaptation, mitigation, and preparedness for disaster risk reduction.

## RESULT AND DISCUSSION

### *Multilateral Level: South-South Cooperation*

South-South Cooperation (SSC) is one of the examples of the implementation of energy diplomacy in multilateral level. This cooperation is shows solidarity between people and states of the South that comes from common purpose that is national well-being and collective self-reliance guided by the principles of mutual benefit, non-interference, respect national sovereignty, equality, through bilateral, regional, and interregional basis[2]. Developing countries included SSC as a comprehensive way to address SDG’s and Climate Change. According to United Nations Office for South-South Cooperation SCC has basic objective that is to promote & strengthen collective self-reliance, Strengthen the capacity of developing countries to formulate strategies, Create & strengthen existing technological capacities, Increase and improve communication, and Participation in international economic activities & expand international cooperation [2].

The nationally determined contribution from Paris agreement shows that developing countries requires technical, capacity building, and financial support to implement their NDC’s. One of fundamental area of NDC is sustainable Energy and sustainable transportation.

In addressing and overcome the challenges towards achieving development priorities and implementation of NDC, SSC have several entities to support developing countries to collaborate with, including but not limited to Climate Vulnerable Forum (CVF) to shared best practice and resources for climate change adaptation and resilience. The Vulnerable 20 (V20) present to potentially increase investment in mitigation and adaptation to climate change[2]. Asia Infrastructure Investment Bank focuses on infrastructure development in the Asia region that cover important area such as energy and power. This SSC schemes allow members working to create partnership with multilateral development bank that led to sustainable development.

## ***Case Study CSS in Renewable Energy Technology Transfer in Ghana-Zambia and Green Global Value in Asia-Africa***

This project basically trilateral cooperation between People's Republic of China, Ghana and UNDP as well as People's Republic of China, Zambia, and UNDP in creating and strengthening, enabling environment for Renewable Energy Technology deployment and up-scaling, thus will narrowing market barrier for RET introduction. This development of a renewable energy masterplan set to be finalized in 2017, this collaboration expected to have pilot project that will focus on solar based such as photovoltaic, water pumping, and thermal, wind, mini-hydro and biogas. So far China has worked to engage with technology companies and research institutes from Ghana and Zambia.

This project provides renewable and clean energy as an alternative to biomass which produce carbon monoxide that caused respiratory diseases. The poor communities with limited electricity resources become the target of this project in order to ensure that the poor have an equal opportunity to technologies and economic resource that could reduce poverty in Ghana and Zambia. This masterplan cost approximately \$5.3 Million that covers Capacity-building, Transfer Technology, and Financial aid.[2], [8]

One of other projects from South-South Cooperation called "Green Global Value Chains", The project targeting developing countries s in Asia, Africa and Belt and Road regions who have interest in green trade and green global value chains. In the past few years, developing countries in these regions have witnessed rapid economic growth, growing integration into global value chains, and huge potential in "green" areas such as renewable energy, environmental technology, and sustainable agriculture[8]. With funding source from South-South Cooperation Assistance Fund, this project aims to reduce a gap in their knowledge, capacity and labor skills to integrate into sustainable global value chains.

### ***Regional Level: ASEAN***

According to ASEAN Energy Outlook, data shown the total primary energy supply in ASEAN in 2017 still dominated from oil and coal based and it is expected to increase in 2025 and 2040, but yet the renewable energy resources have a little progress from 2017 – 2040 compared to oil & coal [9]. Ensuring access to affordable, reliable, sustainable and modern energy might be challenging in ASEAN as majority of AMS's electricity came from coal-fired power plant. This region has abundance of coal resources notably Indonesia, one of the world's largest coal producers and exporters. In the region, the infrastructure in coal processing to generate electricity is well established causing lower prices that driven ASEAN reliance on conventional energy source will continue to grow.

As one of the fastest growing region ASEAN could be the example of how energy diplomacy and cooperation plays an important role. ASEAN Member States (AMS) have a diverse economic and political background, based on the awareness that none of member states can solve the energy issue alone, AMS stress the importance of build a well-connected ASEAN in order to create resilient, integrated, and competitive region[7]. In order to accommodate this challenge, AMS launch ASEAN Plan of Action for Energy Cooperation (APAEC) that has seven programs as key strategies. The first one is ASEAN Power Grid in 2018, with the aim is to initiate multilateral electricity trade in at least one sub-region. The second program is Trans ASEAN Gas Pipeline with the main aim is to enhance connectivity for energy security and accessibility via pipelines and regasification terminals. Another program is Coal & Clean Coal Technology that will be implemented by 2025. This program will enhance the image of coal through promotion of clean coal technologies.

The fourth program is about energy efficiency and conservation for reducing energy intensity by 20% based on 2005 level. This program has been implemented since 2020. APAEC program also covers the renewable energy initiative, in which the aim is to gain the aspirational target to increase the component of renewable energy to 23% in ASEAN energy mix by 2025. The sixth program is Regional Energy Policy & Planning with the target is to better profile the energy sector internationally medium-term target to 30% by 2025. Last but not least, APAEC program also concerns on Civilian Nuclear Energy to build capabilities in policy, technology and regulatory aspect of nuclear energy.

This APAEC program aims to accelerate the multilateral energy cooperation implementation to enhance connectivity and integration in the region, it is also a roadmap for better cooperation in enhancing sustainable and affordable energy security under ASEAN Economic Community framework[10]. This development plan of renewable energy in ASEAN includes hydro, solar photovoltaic, solar thermal, wind, bio-energy, geothermal, and waste[9]. Solar and wind are most common energy alternative but yet still remain capital intensive and not as cheaper as fossil-fuel

based energy. ASEAN needs more partnership and cooperation to boost transfer technology to make this energy source viable especially in reducing environmental impact of energy use in the region.

ASEAN face the same barrier when it comes to the implementation of renewable energy commitment and global goals, it is stated from ASEAN Centre for Energy such barriers may includes Political, Technical, and legal. Political barriers in ASEAN refers to different energy priorities and approaches at the national level to engage in cooperation and collaboration in renewable energy deployment, another issue will be Technical and Financial barriers as AMS has a deep concern about the uncertainty regarding cost and benefit, format of cooperation, and challenges to fulfill RE target as well as shortage of funding sources. The legislation concerning energy and the environment currently different between AMS this incompatibility national legislation causing legal barrier in the region.[7], [9], [10]

Although there are challenges but other benefits also await from the collaboration as a result of energy diplomacy. First, regional collaboration will contribute to cost-reduction that can lead to efficiency by means of scale effect for investors. Second, this collaboration can reduce dependency from import and also enhancing energy security, by strengthen collaboration could contribute to infrastructure development that could lead to increasing energy security and quality in the electric power supply. Third, support regional target achievement. Implementation of regional cooperation can help bridge the gap between national policies and the aspirational RE target by creating a space for dialogue and coordination between AMS. Fourth, Cooperation could increase competitiveness and advance global technological ambition in the region. [3], [7], [9], [10]

So far, ASEAN still needs a lot of improvement, but that doesn't mean it's left behind. ASEAN is a strategic region, especially when it comes to the implementation of policies related to renewable energy which is also closely related to our commitment to the Paris Agreement and SDGs through regional cooperation to enhance AMS Nationally Determined Contribution.

## CONCLUSION

Ensuring access to affordable and sustainable energy is fundamental especially in industry 4.0 today. Since the early 20th century, energy sources have become a crucial thing that not infrequently also brings conflict for the countries with interests. Since its implementation in 2015, the Paris Agreement has been like an opening gate for diplomacy to strengthen environmentally friendly energy. The Paris Agreement encourages countries to be able to realize their targets in reducing CO2 emissions, especially through the Nationally Determined Contribution. With full awareness that realizing this commitment cannot be realized alone and cannot be separated from barriers and challenges, diplomatic efforts are needed as an effort and opportunities in the creation of strengthening multilateralism.

The example of case studies from SSC indicate that result of energy diplomacy initiates regional collaboration to enhance an exchange of experience and knowledge among various actors, capacity-building, and also financial scheme in order to address the limitation among states. This framework partnerships include developed countries and multilateral organizations; this proves at some level energy diplomacy could successfully enhance how to accommodate to realizing SDG7. Energy diplomacy for sustainable development and climate action not only limited to governments but potentially enable greater cooperation among all stakeholder including, the private sector, international organization, academics and civil society.

## ACKNOWLEDGEMENT

This paper is financially supported by the LPDP National Research Priority (PRN) Mandatory number 84/E1/PRN/2020 under the Ministry of Research and Technology.

## REFERENCES

1. L. Glowka, "Second conference of the parties," *Environmental Policy and Law*, vol. 26, no. 2–3, pp. 71–75, 2015.
2. "South-South Cooperation," [South-South Cooperation](#), 2015, doi: 10.1057/9780230316812.
3. Union of Concerned Scientists, "Barriers to Renewable Energy Technologies," [Powerful Solutions: Seven Ways to Switch America to Renewable Electricity](#), no. February 2018, pp. 1–10, 2018, doi: 10.1515/energytoday-2018-2302.

4. S. McGlinchery, R. Walters, and C. Scheinpflug, *International Relations Theory*. 2017.
5. M. Giuli, "Getting energy diplomacy right: a challenge starting at home," no. October, pp. 5–8, 2015, [Online]. Available: [https://www.epc.eu/documents/uploads/pub\\_6052\\_getting\\_energy\\_diplomacy\\_right.pdf?doc\\_id=1677](https://www.epc.eu/documents/uploads/pub_6052_getting_energy_diplomacy_right.pdf?doc_id=1677)
6. A. Bovan, T. Vučenović, and N. Perić, "Negotiating energy diplomacy and its relationship with foreign policy and national security," *International Journal of Energy Economics and Policy*, vol. 10, no. 2, pp. 1–6, 2020, doi: 10.32479/ijeeep.8754.
7. ASEAN Centre for Energy, "Study on Regional Renewable Energy Cooperation in ASEAN Strengthening Cooperation to Reach Study on Regional Renewable Energy Cooperation in ASEAN: Strengthening Cooperation to Reach ASEAN Renewable Energy Target," 2018.
8. CCICED, "Global Green Value Chains: Greening China's 'Soft Commodity' Value Chain," pp. 1–50, 2020.
9. The ASEAN Centre for Energy, "ASEAN Energy Outlook," *Journal of Chemical Information and Modeling*, vol. 53, no. 9, pp. 1689–1699, 2015.
10. M. Manila, *Asean Plan of Action for Energy Cooperation*, no. 2015. 2016.