

Chapter 18

Global Energy Governance



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Abstract This chapter states that energy governance has become increasingly discussed in academia and global politics as countries continue to combat energy insecurity set against the background of a climate crisis and global economic turbulence. Her chapter seeks to add to the discourse by uncovering the drivers that merit a global energy governance (GEG) system and therefore the objectives that a unitary regime should meet. These drivers, including global energy insecurity, market failure in a liberalised energy market, and the increasingly volatile relationship between politics and energy, have pointed to the necessary mechanisms, dialogues, rules, and collaborations that effective GEG should establish. Beyond that, this chapter explores the existing fragmented ecosystem of various regimes that try, yet largely fall short of meeting these objectives. By assessing selected significant energy and related institutions, we can learn from the deficiencies and opportunities of these organisations and, therefore, characteristics that should be incorporated or mitigated in an idealised integrated GEG system. While it may be established that no coherent GEG exists today, this chapter concludes optimistically by pointing out how we are now witnessing game-changing normative factors that may enable a unitary regime in the near future.

Introduction

As the world continues to promote international security; clean and green development; liberalisation of economies; and democracy and equality, energy is key to the discussion. Faced with the severe challenge of post-pandemic economic recovery and the existential threat of climate change, the need to assure the future of energy sourcing, transportation, trading, and consumption has become more urgent than ever. Despite this, there exists no unitary global regime for the coordination of the international community in addressing its collective energy needs. Governance refers to the structures and processes to ensure accountable, transparent, and equitable

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participation alongside the norms and values of the system by which public affairs are managed.¹ Global energy governance (GEG) can be defined as the “international collective efforts undertaken to manage and distribute energy resources and provide energy services”.² In this chapter, I outline the drivers for a GEG system, and therefore, the objectives it must achieve. These drivers include global energy security and equity, alleviation of market failure, and the preservation of geopolitical stability. Based on the objectives demanded by these drivers, I assess the existing mishmash of energy governors and actors, highlighting the deficiencies, and opportunities for coherent governance within these existing institutions. In conclusion, a holistic assessment shows that global energy governance appears impossible given the present-day fragmentation of institutions. At the same time, I affirm the urgency for GEG, and spotlight the game-changers that might lead to a successful global energy governance regime in the near future.

Why Do We Need Energy Governance?

To understand the need for energy governance, we must explore the complexity of global energy needs and management at current state. These factors help us to understand the failings of the existing energy ecosystem, at the same time justifying that there is no alternative to a unitary global framework for energy coordination. These drivers then feed into the objectives that a GEG system should meet, which sets the tone for us to assess the ability of the existing network to present an effective governance regime that meets these aims.

Global Energy Insecurity and Inequity

The overarching driver for any system of governance should be the betterment of humanity. This is conveyed in the United Nations Declaration of Human Rights. These rights are upheld in various international institutions and frameworks, as a necessary condition for international development.³ Part of these rights is that to an adequate standard of living,⁴ of which energy is a key component. People around the world rely on energy for heating, cooking, transportation, electricity, and economic activity. Yet, access to energy is not equally distributed. The United Nations estimates that 789 million people, predominantly in sub-Saharan Africa, lacked access to electricity globally in 2020, and this was only exacerbated by the pandemic. In 2019, on

¹ International Bureau of Education, UNESCO (n.d.).

² Florini and Sovacool (2009).

³ World Bank (2016).

⁴ Universal Declaration of Human Rights, United Nations (1948).

average, the proportion of the population with access to electricity was 46% in sub-Saharan Africa, while advanced economies like Australia, New Zealand, Europe, and North America stand at 100%.⁵ This inequality is only expected to worsen. According to the International Energy Agency (IEA), electricity demand is due to increase by 4.5% in 2021. This increase in demand is driven by emerging markets and developing economies.

This unequal distribution of electricity is a symptom of the imbalance of access to energy around the world. The data shows how the normative system benefits already industrialised economies, leaving the global south disadvantaged in the attainment of a higher standard of life through safe and reliable energy supplies. The 193 member states of the United Nations (UN) should support global energy security, as consented to by the seventh Sustainable Development Goal of “Affordable and Clean Energy”,⁶ which focuses global support on ensuring access to affordable, reliable, sustainable, and modern energy for all. Yet, there exists no real universal instrument that prioritises energy security for all. This aspiration towards universal energy security and equity as part of our humanitarian duty is the fundamental crux for a global energy governance system.

The Failures of a Liberalised Energy Market

In a perfect market, energy security and equity should be attained through the invisible hand⁷ where those who demand it are met by supply at an optimal price determined by the equilibrium. On the flip side, market failure occurs in a situation where there is an inefficient distribution of goods in the free economy. Energy is a highly lucrative industry, characterised by its high barriers to entry and public dependency. This creates a highly imperfect global energy market, thwarted by externalities and the tragedy of the commons. Yet, there exists no international market intervention to combat this.

The energy market is an internationalised and liberal market, susceptible to price volatility, and profit-making agendas. This means that much of energy policy is shaped around private good energy sources, so that we allow market solutions to regulate the provision of energy services.⁸ The first problem with this relates to the “tragedy of the commons”. This is a term coined by Hardin (1968) that describes a form of market failure where a common resource is used without restraint, as rational users exploit a resource to the fullest potential in order to maximise their own self-gain before the resource is depleted. This tragedy causes market failure by leading to the eventual depletion of key resources essential to our future. So long as the world

⁵ United Nations, Sustainability Development Goals Report 2021, Available at <https://unstats.un.org/sdgs/report/2021/goal-07/>

⁶ Ibid.

⁷ Smith (2000).

⁸ Goldthau and Witte (2010).

remains dependent on fossil fuels, the unregulated energy market pricing mechanism fails to take into account the threat of depletion, thereby allowing the exploitation of fuel. The biggest winners would, therefore, be large international oil companies and states blessed with an abundance of natural resources. Some efforts⁹ have been made towards internalising the costs of this tragedy, through punitive policies like carbon pricing, but there remains no international standard. So long as one country is allowed to continue depletive practices, this will continue to lead to energy insecurity on a global scale.

The second form of energy market failure is that of externalities. Externalities are the indirect costs borne by parties other than the consumer and producer as a result of either parties' activities. This becomes a problem for the energy market as fossil fuel producers and consumers continue to produce pollution and greenhouse gas (GHG) emissions that create an existential threat to humanity as a whole. Climate change does not discriminate against territorial lines and borders. The richer countries of the world, including the United States, Canada, Japan, and the European Union (EU) account for just 12% of the global population, but are responsible for 50% of all greenhouse gas emissions released from fossil fuels and industry over the past 170 years.¹⁰ Yet, it is much of the global south that suffers from the devastating effects of climate change through rising sea levels and extreme weather change. Exacerbating this is the role of the international private oil companies that operate across different legal jurisdictions. National decision-making does not provide the scope to account for the international externalities of the energy market.

A market solution cannot address a failure in the market system. The market intervention will be necessary to transition the global community towards rapid innovation in technology and institutions. Headway is being made in this regard through encouraging the transition towards renewable, non-polluting energy sources, and internalisation of the costs of fossil fuels, however, the fragmentation of current governance is limiting the speed at which this is taking place. True progress will require a single reference point to prioritise the objectives of the market, disseminate technologies, and enable collaboration in establishing extensive governance innovation.

The Relationship Between Energy and Politics

Market failures can be solved by effective market intervention. However, there also exists non-market forces that will be more difficult to contain the effect of. The most significant non-market force in the realm of energy is politics. States have traditionally regarded the energy sector as critical to national sovereignty,¹¹ leading to self-interested behaviour that prioritises internal security and economic development.

⁹ At least 40 countries have implementing carbon pricing mechanisms, according to the World Bank (2021).

¹⁰ Global Carbon Project, the World Bank (2021).

¹¹ Van de Graaf and Colgan (2016).

This becomes problematic when one country's pursuit of self-interest affects the entire energy market. This presents a "paradox of sovereignty", where states end up having less control over energy policy, due to the globalised energy market and its related externalities, but remain unwilling to act in cooperation.¹² An effective form of GEG must, therefore, sufficiently incentivise each nation-state of the benefits of participation and the disbenefits of exclusion. This is no easy task, as seen in historical case studies.

Up till today, the majority of our energy demand is fulfilled by finite fossil fuels that are geographically unevenly distributed. International conflicts and territorial claims have been an outcome of this natural inequity. The South China Dispute is an example of an ongoing conflict motivated by access to oil reserves. It is estimated that the South China Sea holds about 14 trillion barrels of natural gas and up to 33 billion barrels of oil reserves¹³—an amount that would substantially help to meet the rising energy demands of nearby countries like China, Vietnam, the Philippines, and Malaysia. While regional organisations like ASEAN, and the bilateral ASEAN-China Comprehensive Strategic Partnership (CPS) exist, the South China Sea conflict continues. These institutions aim to provide a platform for peaceful dialogue and encourage trade reliance to disincentive disputes. However, the prioritisation of trade security over energy security in these agreements exacerbates the effects of the paradox of sovereignty. A separate vertical to govern energy relations would be a more appropriate medium to prevent political conflict due to oil and gas.

Other conflicts fuelled by oil and gas have taken place in Iraq, Syria, Nigeria South Sudan, and most recently, Ukraine. As energy affects geopolitics, geopolitics affects energy. Oil remains the single largest source of global primary energy supply, accounting for 31.6% of the world's total energy supply in 2018.¹⁴ This dependency means that oil price volatility creates severe market instability that exacerbates inaccessibility and inequity. The ongoing Ukraine crisis has truly displayed the market failures of the global energy markets as oil prices hit a 14-year high,¹⁵ regardless of the origin of the fuel and its market of export. So long as international security is related to energy security, a global energy governance system is imperative.

Similar to how the World Trade Organisation (WTO) provides a single point of reference and mediation, a singular system of energy governance should provide the rules, mechanisms, and opportunities for dialogue that should prevent conflict-related to energy. A feasible and desirable GEG framework should possess the formal mandate to enforce rules and norms that avoid conflict related to energy.

¹² McGowan (2009).

¹³ US State Department (2013).

¹⁴ International Energy Agency (2020).

¹⁵ During the crisis, oil jumped to \$139 a barrel at one point. Source: BBC News. Retrieved from <https://www.bbc.com/news/business-60642786>.

Table 18.1 Drivers for energy governance and the desired objectives

Driver	Objective
Global energy insecurity and inequity	Establish a collective goal of universal energy security Create enforceable mechanisms and incentives to streamline universal access to clean and sustainable energy sources
Market failure in a liberalised energy market	Create market intervention that: <ul style="list-style-type: none"> • Prevents the depletion finite energy resources; • Internalises the cost of externalities created by energy producers and consumers; • Incentivises the development of green technology; Encourage collaboration in establishing extensive governance innovation Encourage transparency and access to information
Volatile relationship between energy and politics	Provide a single rulebook of reference for international conflict over the grounds of energy Establish mandate to enforce rules Establish norms that incentives self-interested states towards the collective goal of universal energy security Act as a mediator and platform for dialogue between sovereign nations

The Objectives of a Desirable Global Energy Governance System

Synthesised, these drivers set the basis for the objectives of a global energy governance system. The agenda of this system should be to prioritise global energy security through policy mechanisms, dialogues, and frameworks that should correct market failures and increase transparency; encourage dispute resolution, and parity to prevent the politicisation of the energy market; and encourage the uptake of cleaner, greener energy sources. Table 18.1 maps out the drivers for energy governance and the desired objectives from GEG.

From here, we can assess the feasibility of implementing a global energy governance system based on an existing network of governance.

The Feasibility of Achieving Global Energy Governance at Current State

The objectives outlined exhibit how it would be no small feat to establish an effective global energy governance system. Energy policy as it currently stands is made up of various governmental and non-governmental institutions, frameworks, dialogues,

networks treaties, and contracts. None of which function as internationally enforceable policy mechanisms. This governance is fragmented at multiple levels—international, regional, bilateral, national, and local. Alternatively or complementarily to these themes, energy governance has also historically been fractured by energy sources—oil and gas, coal, renewable, and nuclear being the main ones.¹⁶ Thematic, these forms of governance should address at least one of the aforementioned drivers for global energy governance (as covered in Table 18.1). To do so, these governance platforms might address at least one of five subsectors of energy: trade; investment; environmental protection; energy transit; and energy security.¹⁷ This system resembles a “regime complex”,¹⁸ which refers to the “array of partially overlapping and non-hierarchical institutions governing a particular issue area”. While there is a benefit to the acknowledgement of energy management under the umbrella of other domains of governance like trade and climate change, the regime complex lacks an overarching authority that can guide, police, and arbitrate in matters of energy. An assessment of some of the key energy-related agencies would show trends in the deficiencies and opportunities of the current system across a range of governors attempting to advocate for global energy governance. For the purpose of this chapter, a select few agencies of diverse scope across levels, themes, and subsectors have been chosen to display the varied deficiencies and opportunities of the existing ecosystem of energy governance.

IEA

The International Energy Agency (IEA) is primarily concerned with the energy security of its members by coordinating a collective response to major disruptions in the supply of oil. It is an intergovernmental organisation primarily focused on energy security. The IEA is a daughter organisation of the Organisation for Economic Cooperation and Development (OECD). To join the IEA, a candidate must be a member of the OECD, and fundamentally demonstrate oil reserves equivalent to 90 days of the previous year’s net imports. IEA is made up of 31 member countries and is a relatively small organisation, headquartered in Paris, run by about 500 employees.¹⁹ The IEA is governed by energy ministers and senior representatives of member countries, who meet three to four times a year to discuss global energy development. The outcomes of Governing Board meetings are determined through a majority vote based on a system of voting with weightage allocated to each member country. These outcomes are then binding on all member countries. The IEA interacts with non-members mainly through data-sharing and consultation. The IEA is debatably the most influential intergovernmental organisation in the field of energy. Its sound regulatory mechanisms and depth of technical knowledge support its ability to coordinate responses amongst importing countries during shocks and disruptions to the

¹⁶ Dubash and Florini (2011).

¹⁷ Leal-Arcas and Filis (2014).

¹⁸ Raustiala and Victor (2004).

¹⁹ Craft, The International Energy Agency. Retrieved from: <https://craft.co/the-international-energy-agency-iaa>.

global energy market.²⁰ However, given its limited membership and capacity, it does not serve as a global energy governor.

WTO

The World Trade Organisation (WTO) is the largest international economic organisation, made up of 164 member states, representing 98% of world trade.²¹ The WTO is the most influential organisation in the regulation and intervention of international markets. The WTO has been prolific in achieving its mandate in reducing tariffs and ensuring compliance of member countries.²² Yet, the WTO is somewhat uninvolved in the trade of energy. The defining rule of the WTO is the General Agreement on Tariffs and Trade (GATT). There are a number of rules of the GATT that are relevant and applicable to energy trade, such as the general rules prohibiting unjustifiable discrimination, and import and export bans on all products. However, these rules remain general and insensitive to energy-specific market failures. Similarly, the General Agreement on Trade in Services (GATS) expresses low levels of commitment related to energy services. Given its broad scope across the trade of energy goods and services, and encourage innovation (such as intellectual property protection through TRIPS); high membership; and history of successful dispute settlement, the WTO could be a strong governor in the realm of energy. This, however, would require an energy market-specific policy, which may be difficult to incorporate. These challenges would largely stem from potential conflicts with sovereign agendas, where—as mention in Sect. “[Why Do We Need Energy Governance?](#)”, energy remains critical to individual state security. A second challenge would be bridging the gap between a new WTO energy-related framework with existing non-WTO energy-related provisions.²³

ASEAN

The Association Southeast Asian Nations (ASEAN) is a regional economic bloc made up of ten countries. Unlike the EU, ASEAN is not a supranational organisation, instead, an intergovernmental organisation that operates across the Southeast Asian region. ASEAN deals with energy policy via its Agreement on ASEAN Energy Cooperation (1980) which acknowledges energy as a national and regional priority, and outlines the provision for a range of cooperation relating to energy development, distribution, conservation, training, security of supply, and the exchange of information.²⁴ This cooperation is guided by the ASEAN Plan of Action for Energy Cooperation (APAEC), which is a series of five-year implementation plans for energy sector

²⁰ Florini and Sovacool (2009).

²¹ WTO in Brief, World Trade Organisation (n.d.). Retrieved from: https://www.wto.org/english/thewto_e/whatis_e/inbrief_e/inbr_e.htm.

²² WTO Annual Report (2021).

²³ Marceau (2010).

²⁴ ASEAN (1986).

cooperation.²⁵ The pillars of the APAEC are energy security, accessibility, affordability, and sustainability. These factors are highly in line with the agenda for global energy governance. This framework of guiding policy documents is a tremendous step towards regional energy governance, one that seems more flexible and feasible to replicate at a global scale than the sophisticated energy policy of the EU. At the same time, ASEAN has historically faced difficulty in addressing regional issues due to its consensus-based, consultative, and non-interference approach. This method of decision-making means that ASEAN only adopts policies of the “lowest common denominator”.²⁶ As discussed in Sect. “Why Do We Need Energy Governance?”, this has limited ASEAN’s ability to confront issues like the conflict in the South China Sea. In the field of energy governance, this would hinder the effectiveness of ASEAN as a mediator in energy conflict, and leave energy insecure states more vulnerable than the energy-rich. At the same time, the very existence of a guiding policy framework grounded in energy security, made up of mainly of developing countries—as opposed the highly industrialised economies of Europe—suggests a consensus on the importance of energy security regardless of economic status.

IRENA

The International Renewable Energy Agency (IRENA) is an intergovernmental organisation aimed at supporting states in their transition towards a sustainable energy future, by conducting policy analysis and advice, enabling technology transfer, offering capacity building, and providing financial and technical advice.²⁷ 167 countries are members of IRENA, with 17 more in accession. Similar to IEA and founded by the same founding members, IRENA focuses on energy security, however, it does so through the promotion of renewable energy uptake. IRENA is, therefore, the first major international organisation that holds the primary objective of enabling the transition to sustainable energy sources. It, therefore, tackles the root cause of energy insecurity and inequity, and the tragedy of the commons by encouraging us to move away from finite fuels. It also tackles the externalities of the existing international energy market by promoting renewable energy technology that does not produce such effects. IRENA is an anomaly amongst international organisations in that it leads us down a “radical departure”²⁸ from the current energy path. While IRENA acts as a repository of political and technical advice for clean energy governance, it does not possess the ability to enact binding decisions or finance energy development. This limits the organisation’s ability to create tangible action. IRENA is also the newest kid on the block, having only been established in 2011, and fully functioning for a few years. This may imply that it has yet to develop the international sway and financial backing that historically prominent organisations possess. Inversely, the very emergence of IRENA appears to be a signal of dissatisfaction with existing regimes. Much of IRENA’s objectives towards energy security overlap with institutions such

²⁵ ASEAN (n.d.).

²⁶ Mahaseth and Subramaniam (2021).

²⁷ IRENA (n.d.).

²⁸ Van de Graaf (2013).

Table 18.2 Deficiencies and opportunities of the existing energy governance regimes

Regime	Deficiencies	Opportunities
IEA	<ul style="list-style-type: none"> • Limited membership and accession criteria • Limited capacity • Remains focused on carbon-based fuels 	<ul style="list-style-type: none"> • Binding regulatory mechanisms • Depth of technical knowledge • Weighted majority voting system
WTO	<ul style="list-style-type: none"> • Lacks sector specific policy to address energy security • May appear to threaten sovereign energy security of members with diverse energy ecosystems 	<ul style="list-style-type: none"> • Broad scope across the energy value chain • Mechanisms to encourage innovation through protection of IP (TRIPS) • High level of international membership • Robust dispute settlement process
ASEAN	<ul style="list-style-type: none"> • “Soft law” approach limits the effectiveness as a governor 	<ul style="list-style-type: none"> • Cooperation grounded in energy security, access, affordability, and sustainability • Flexible guiding policy enables participation of developing countries
IRENA	<ul style="list-style-type: none"> • Lack of a binding enforcement mechanism limits effectiveness • Infantilism of the institution limits its budget and influence 	<ul style="list-style-type: none"> • Tackles the root cause of energy insecurity • Addresses failures of the current energy market • High level of international membership • Consensus-based decision making facilitates implementation • Signals a growing consensus towards renewable energy

as IEA and OPEC, and establishing a new organisation would require high transaction costs.²⁹ That the international community initiated a new governance regime, as opposed to modifying existing institutions indicates a paradigm shift in the global approach towards energy and its governance.

An exploration and assessment of a diversity of existing energy governance regimes paints a picture of the legitimacy and efficacy of the fragmented energy regime as it stands today. Table 18.2 summarises these deficiencies and opportunities.

While these regimes only represent a selection of international energy governance institutions, it constructively represents the impossibility of attaining cohesive global energy governance. These different institutions represent different agendas, often made exclusive through membership criteria. Each institution is also defined by differing, and commonly incompatible policies, guides, and mechanisms. For global energy governance to exist on this basis would require the arduous task of reconciling, the provisions of the various institutions into one cohesive network related to each other along and in lieu of thematic lines and subsectors. These actors and initiatives would need to coordinate with each other at each stage of collective action, from agenda-setting, legislation passage, policy implementation, financing, consultation,

²⁹ Keohane (1984).

and enforcement. This challenges the very norms and nature of international organisations as entities possessing certain interests and beliefs. Therefore, as it stands, given the gravity of the objectives it should achieve, global energy governance seems impossible.

Concluding Optimism

It appears unsurprising that the existing energy regime does not resemble an international energy governance order, but I posit that we remain positive. The exercise conducted in this chapter elucidates a need for a global energy governance system (Sect. “[Why Do We Need Energy Governance?](#)”), and the need to address the inadequacies, and capitalise on the positive qualities of the current order described in Sect. “[The Feasibility of Achieving Global Energy Governance at Current State](#)” in order to address the objectives outlined in Sect. “[The Objectives of a Desirable Global Energy Governance System](#)”. This exercise sets the parameters for the future of GEG. I conclude optimistically by saying that there appear to be indications that the possibility of GEG may appear within reach as we witness game-changing normative factors that may enable a unitary regime.

Most influential is the gravity of climate change and a growing urgency towards climate action and the energy transition. The Glasgow COP26 at the end of 2021 affirmed and accelerated the aim of limiting the rise in global temperature to 1.5 °C, and agreed on a position to phase out coal power and fossil fuel subsidies altogether.³⁰ Alongside renewed ambitions, renewable energy presented itself as a success story of the global pandemic. Demand for renewables across all sectors grew by 3% in 2020, with the power sector expected to expand its demand for renewables by more than 8% in 2021.³¹ The breakdown of the world’s reliance on fossil fuels should alleviate the current insecurities of individual states in participating in energy cooperatives. The move towards renewables is already beginning to initiate innovation, technology transfer, and knowledge-sharing. This cooperation will demand a robust system to support it.

Secondly, brought together by the devastating effects of the COVID-19 pandemic, the global community has shown its newfound ability and propensity for international cooperation. International organisations like the World Health Organisation (WHO), regional institutions like the EU, and bilateral agreements were instrumental in the transfer of critical information, resources, technology, and finances that helped the global community tackle this global emergency as efficiently and quickly as possible.³² The pandemic painfully displayed the imperative of global solidarity—we should remain hopeful that this solidarity may apply to the global emergency that

³⁰ UK Climate Change Conference (2021).

³¹ International Energy Agency (2021).

³² Bump et al. (2021).

is energy and climate security. These are two substantial factors that present an optimistic trajectory that the world is showing a hopeful transition towards willingness to cooperate in the field of energy and its governance.

References

- ASEAN, Agreement on ASEAN Energy Cooperation [online] (1986) Available at: <https://asean.org/asean2020/wp-content/uploads/2021/02/energy-cooperation-agreement.pdf>
- ASEAN, Overview on ASEAN Energy Cooperation (n.d.). Available from: <https://asean.org/our-communities/economic-community/asean-energy-cooperation/>
- Bump JB, Friberg P, Harper DR (2021) International collaboration and covid-19: what are we doing and where are we going?
- Craft, The International Energy Agency. Retrieved from: <https://craft.co/the-international-energy-agency-iea>
- Dubash NK, Florini A (2011) Mapping global energy governance. *Global Pol* 2(s1):7
- During the crisis, oil jumped to \$139 a barrel at one point. Source: BBC News. Retrieved from <https://www.bbc.com/news/business-60642786>
- Florini A, Sovacool BK (2009) Who governs energy? The challenges facing global energy governance. *Energy Policy* 37(12):5239–5248
- Global Carbon Project, the World Bank (2021)
- Goldthau A, Witte JM (2010) Global energy governance: the new rules of the game. Global Public Policy Institute, Berlin
- Ibid.
- Integrating human rights into development, World Bank (2016)
- International Bureau of Education, UNESCO (n.d.)
- International Energy Agency (2020)
- International Energy Agency (2021) Global Energy Review 2021
- IRENA (n.d.) Available from: <https://www.irena.org/aboutirena>
- Keohane RO (1984) After hegemony: cooperation and discord in the world political economy. Princeton University Press, Princeton, NJ
- Leal-Arcas R, Filis A (2014) Certain normative aspects of the institutional architecture of global energy governance. In: Boule L, Laryea E, Sucker F (eds) *International economic law and African development*. Siber Ink, pp 27–60
- Mahaseth H, Subramaniam K (2021) Binding or non-binding: analysing the nature of the Asean agreements. *Int Comp Law Rev* 21(1):100–123
- Marceau G (2010) The WTO in the emerging energy governance debate, World Trade Report 2010, World Trade Organisation. Available at: https://www.wto.org/english/res_e/publications_e/wtr10_forum_e/wtr10_marceau_e.htm
- McGowan F (2009) International regimes for energy: finding the right level for policy. In: Scarse I, MacKerron G (eds) *Energy for the future: a new agenda*. Palgrave Macmillan, Basingstoke, UK
- Raustiala K, Victor DG (2004) The regime complex for plant genetic resources. *Int Organ* 58(2):277–309
- Smith A (2000) *The wealth of nations, 1723–1790*
- Van de Graaf T, Colgan J (2016) Global energy governance: a review and research agenda. *Palgrave Commun* 2:15047
- Universal Declaration of Human Rights, United Nations (1948)
- UK Climate Change Conference (2021) COP26 The Glasgow Climate Pact
- US State Department (2013)
- Van de Graaf T (2013) Fragmentation in global energy governance: explaining the creation of IRENA. *Glob Environ Politics* 13(3)

United Nations, Sustainability Development Goals Report 2021. Available at <https://unstats.un.org/sdgs/report/2021/goal-07/>

World Bank (2021)

WTO Annual Report (2021)

WTO in Brief, World Trade Organisation (n.d.) Retrieved from: https://www.wto.org/english/thewto_e/whatis_e/inbrief_e/inbr_e.htm