Global Energy Interdependence: Strategizing for a Secure Future

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Energy has acquired a strategic dimension in the contemporary global context by virtue of its vital significance for the future of human civilization. For this reason, energy as a commodity is often associated with multi-faceted geopolitical rivalries and geo-economic calculations. With the definitions of security undergoing a fundamental change, concepts of non-traditional as well as human security have become the new paradigms of the global security framework. Energy security forms a fundamental component of these changing approaches to global security, as we grapple with complex environmental challenges such as balancing economic development with environmental sustainability and the changing nature of the global energy mix with a larger share for renewable energy resources. These are crucial problems that require collaborative approaches in order to find fundamental solutions, as reiterated by the recent Paris Climate Change Convention. This article focuses on this parallel approach to global security concerns through mechanisms of clean energy interdependence on a global scale. It discusses a number of on-going projects promoting energy cooperation among allies and competitors alike, and suggests that the concept of global energy interdependence should evolve as a strategic platform for identifying viable solutions for global security in a much more comprehensive manner.

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Introduction

Energy is the driving force of human civilization. Bikash Sinha has commented, "energy is at the root of all creation and annihilation, too much of it can destroy and too little of it, means death. Thus a dynamical balance, a kind of universal equilibrium between too much and too little has to be our ultimate goal."[1] It is crucial to achieve this balance, as energy influences human interactions on so many levels – economic, social, political, bureaucratic, legal, technological, and most important for this discussion, environmental.

Energy security has become a much more multi-dimensional concept, extending beyond the traditional binary notion of security of demand and supply. The conceptual spectrum ranges from diversification of the nature of available energy sources (i.e. bio-energy, nuclear, solar, hydro, wind, geothermal, and ocean energy), to ensuring efficient as well as ethical usage of energy resources, to prioritizing environmentally sustainable economic development. It is well-known that energy use in various forms (including electricity generation, transportation, industrial use, commercial and residential use, agriculture, forestry, etc.) is the leading cause of carbon dioxide emissions. Namely, "energy accounts for two-thirds of the total global greenhouse gas emissions and 80 per cent of CO2," and "any effort to reduce emissions and mitigate climate change must include the energy sector."[2]

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In response to these various challenges, we need long-term, well-designed strategies to ensure comprehensive energy security for the future generation. Significantly, during the UN Climate Change Conference in Paris (COP21) in December 2015, the first ever universal legally-binding global climate deal set a target of keeping the rise of global temperature below 2 degrees Celsius (under 1.5 degrees if possible) above the pre-industrial level to reduce the risks and impact of climate change, and to reach peak emission target as soon as possible so that rapid reductions can be made thereafter. More importantly, the agreement encouraged the involvement of non-governmental stakeholders such as civil society, private sector bodies, cities and local authorities, in pro-

1 Sinha, B. (2014) 'Saving the Earth with Clean Energy', in Ganguli, S. (ed.) *Strategising Energy: An Asia Perspective*'. New Delhi: Knowledge World Publishers, p.10.

2 IEA (2015) *IEA Statistics - CO2 Emissions from Fuel Combustion*. Available at: http://www.iea.org/publication/CO2..Highlights 2015.pdf, (Accessed:4 September 2016); IEA (2015) *IEA Statistics – CO2 Emmission from Combustion Highlights*. Available at: http://www.iea.org/publication/CO2EmissionFromCombustionHighlights2015.pdf (Accessed: 4 September 2016).

moting regional and international cooperation to mitigate the adverse effects of climate change.

This article focuses on some of the significant trends in the contemporary global energy scenario. These trends show that energy is increasingly considered as a strategic asset; a vector around which mutual interests of friendly and even not-so-friendly nations meet. The author also analyzes the parallel trend of global concern for a greener, safer energy regime that motivates allies and rivals to undertake joint research for environmentally friendly technology, and to transform renewable energy into a platform for global collaboration.

This article first of all evaluates energy security as a nuanced, multi-faceted concept, examining the ways in which it is inherently linked to environmental security. This introductory section aims to present a more comprehensive understanding of energy security as it affects each global citizen. In the next part of the paper, the need for practical cooperation and interdependence in green and renewable energy sectors on a global scale will be discussed. Finally, the article will present some of the existing trends in bilateral and multilateral green energy cooperation which attempt to change how we look at energy security, and to provide a better vision for the future.

Energy security - the environmental angle

Economic competition and geopolitical tensions over energy sources, routes and markets are by no means new phenomena. The nascent oil industry built up by Tsarist Russia around Baku first gained global attention in the 1870s, due to the rising global demand for oil and Russian's decision to open up the oil industry to international private investors, including the Rothschilds, Nobel brothers, Samuels and company, etc.[3] This is also a contemporary trend: Iraq's occupation of Kuwait in 1990; the continuing struggle by ISIS to wrest control of oilfields in Syria and Iraq; and the recent rivalry among China, Philippines and Vietnam in regard to the energy-rich South China Sea are all illustrative cases.

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The use of energy purely as a means of acquiring economic as well as political leverage promotes the basic presumption of the Zero-Sum Game concept- i.e. a win for one party entails the

3 For a detailed discussion on energy and geopolitics, see Ganguli, S. (2016) 'Energy Interdependence as a Strategic Factor in the Post-Cold War Context'. *Strategic Analysis*, 40(3), pp.185-198

other's loss. As Goldthau has noted, "Oil and gas have always been politically charged commodities as they have been […] the primary sources of global energy supply," pointing out that "this lopsided attention to the geopolitical dimension of energy security is based on the myopic and erroneous presumption that global energy politics is necessarily a zero-sum game, in which one country's energy security is another's lack thereof."[4] In a way, this is the survival of the fittest, which in this context means the country with better investment potential, better technological know-how, and, most importantly, more political clout in the international arena. But the question remains, will the human civilization survive in such a scenario?

In a sharp departure from the traditional concept of security, Barry Buzan elaborated on a new interpretation, based on five sectors of security – political, military, economic, societal and most pertinent for this discussion, environmental. He notes that these "five sectors do not operate in isolation from each other. Each defines a focal point within the security problematique, and a way of ordering priorities, but all are woven together in a strong web of linkage."[5] The concept of Human Security also re-conceptualizes security, moving away from the traditional state-centric approach and promotes an integrated, comprehensive and people-centered approach towards security. It identifies a multi-sectoral and contextual understanding of security in seven spheres – economic, food, health, personal, community, political and environmental.[5] According to this concept, environmental security denotes freedom from environmental degradation, resource depletion, pollution and natural disasters, each of which bears a direct linkage with energy security.

Notably, the first Quadrennial Defense Review Report (QDR) of the Obama administration in February 2010 referred to "climate change and energy [as] two key issues [...] in shaping the future security environment"; it added that "climate change could have significant geopolitical impacts around the world, contributing to poverty, environmental degradation, and the further weakening of fragile governments."[6]

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4 Goldthau, A., Witte, J.M. (eds.) (2010) *Global Energy Governance: The New Rules of the Game*, USA: Brookings Institution Press, p.2.

5 See UN Human Security Unit (2009) *Human Security in Theory and Practice*. Available at: www.un.org/humansecurity....human_security_in_theory_and _practice (Accessed: 28 August 2016).

6 US Department of Defense (2010) *Quadrennial Defense Review Report*. Available at: www.defense.gov/Portals../defenseReviews/QDR/QDR_as_of_29Jan10_1600.pdf (Accessed: 5 September 2016).

Sovakool analyzed the linkage between climate change and energy security and observed that "The unchecked growth in fossil energy consumption and the ensuing acceleration of global climate change as well as related air and water pollution act as 'threat multipliers' impinging on national security globally. These environmental dimensions are just a subset of a larger array of environmental concerns that threaten energy security including land pollution, forestry and biodiversity loss".[7]

Energy security is fundamentally linked with environmental security. The unrestrained and inefficient use of fossil fuels increases carbon emissions, which depletes the ozone layer, leading to rise in sea levels due to the melting of the polar ice cap. This poses dangers for not only the marine ecosystem, but also the populations of low-lying areas and small islands, which are particularly vulnerable to rises in the global temperature levels, which influence extreme weather events such as droughts, floods, storms, volcanic eruptions, and tsunamis. It is worth to mention that the whole world has experienced 2015 and 2016 as the hottest years in human history.

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In this light, Article 4 of the Paris Climate Convention marks a crucial step in agreeing that "All Parties should strive to formulate and communicate long-term low greenhouse gas emission development strategies, mindful of Article 2 taking into account their common but differentiated responsibilities and respective capabilities, in the light of different national circumstances"[8].

This discussion above makes it clear that there is interdependence among countries for green energy, therefore country-level and regional cooperation in energy sector is an urgent need.

Green concerns as the vector of global energy interdependence

The growing trend of energy cooperation, in different forms and at various levels, demonstrate the range of current and future challenges at play, including energy poverty, balancing economic development with environmental sustainability, changing the nature of global energy mix with a larger share for renewable energy resources, developing innovative technologies, e.g., commercially viable carbon capture and storage (CCS) and clean

7 Sovakool, B.K. (June 2014), *Environmental Issues, Climate Changes, and Energy Security in Developing Asia,* ADB Economics Working Paper Series, No.399, Available at: www.adb.org/ewp.399.pdf, p. 6 (Accessed: 24 August 2016).

8 United Nations (2015) *Paris Agreement*. Available at: http://unfcc...paris_agreement_english_pdf, p. 8 (Accessed: 4 September 2016).

coal technology (CCT), and promoting energy efficiency. Indra Overland noted that "Renewable energy has emerged as a primary tool in the global strategic race towards a low-carbon economy [...] The ability to forge fruitful partnerships across borders will be a decisive factor".[9] Notably, the need for international collaboration for low-carbon technology innovations has gained momentum "with the newly created Mission Innovation and the Breakthrough Energy Coalition aimed at catalysing investments in transformational technologies to accelerate decarbonisation".[10]

In their analysis, Verrastro and Ladislaw posits that "The challenge going forward is to manage the increasing complexity of an energy-interdependent world while striving to meet economic, security, and environmental goals. This requires a much more sophisticated approach to energy policymaking, one that more fully appreciates the interdependencies of global markets, the complex nature of energy security, and the need to manage the trade-offs inherent in energy policy decisionmaking."[11]

It is important to note that in this vein, the majority support for India's candidature for the Nuclear Suppliers' Group in 2016 was not only a vindication of India's impeccable non-proliferation record – in contrast to some of its neighbors – but also a demonstration of international support for India's plan to change its energy mix. The country plans to improve access to clean energy (with an ambitious target of achieving renewable energy generation of 175 GW by 2022, with current capacity to generate 6,000 MW of nuclear energy); to acquire the newest technology to limit carbon emissions and reduce air pollution from coal-based power plants; and finally to propose plutonium trade for its indigenous thorium-based nuclear program to gain green energy security.

The Report of the 2015 Pacific Energy Summit (on the theme 'Strengthening Markets for Energy and Environmental Security') noted that in view of the transformational rise in energy demand and the rising carbon emission, "The economic and environmental costs of the status quo are rising, and addressing these challenges will require political courage and unprecedented collaboration on both a regional and global level."13

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9 Overland, I., Kjaernet, H. (2009) *Russian Renewable Energy: The Potential for International Cooperation.* USA: Ashgate, p. 1.

10 IEA (2016) *Energy Technology Perspectives 2016, Towards Sustainable Urban Energy Systems, Executive Summar.* Available at: *www.iea.org,* p. 4 (Accessed: 1September 2016)

11 Verrastro, F., Ladislaw, S. (2007), 'Providing Energy Security in an Interdependent World', *The Washington Quarterly*, 30(4), p. 19.

require political courage and unprecedented collaboration on both a regional and global level."[12]

In view of the Summit discussions and the ongoing global debate over how energy sources and usage are affecting climate change, the call for de-hydrocarbonization of energy systems and the search for innovative solutions, there has been discussed three broad trends in mutual energy dependence in the global energy scenario. Within each category, there are several energy cooperative ventures. The list is not exhaustive, but the focus is on those trends that express the need to achieve a balance between environmental concerns and energy security needs. It is important to note that a strategy of cooperation and mutual dependence, as evident in these trends, might seem to be overly optimistic and also futuristic in the current context. However, any successful strategy requires a long-term planning vision that addresses the possible consequences; moreover it is also likely that the present geopolitical scenario will change.

Cooperation in future technology

The first such venture is cooperation among the competing nations for the advancement of scientific and technological knowledge in order to determine the future global energy strategy through ITER[13] (International Thermonuclear Experimental Reactor), the project working to produce electricity through nuclear fusion. This endeavor was originally conceptualized in 1985 at the Geneva Summit (as proposed by President Gorbachev, then president of the USSR) and was born through a treaty among the USSR, the US, the EU (through EURATOM), and Japan. It was a move towards energy cooperation, taking this as an opportunity to break away from the Cold War mentality, and to reset US-Soviet relations. China and South Korea joined the project in 2003 and India in 2005. Located in the south of France, the Project is funded and run by the seven members - the EU provides nearly 45 per cent of the cost, while others share the rest equally. The main aim was to search for a new source of energy that would not harm the environment by generating more greenhouse gases. ITER will produce at least ten times more energy than the energy required for its operation. It is designed to produce 500 MW of power, but only 50 MW is required to generate it. The project is scheduled to start the final fusion experiment in 2027. It is an am-

12 NBR (2016) *Pacific Energy Summit 2015 Report.* Available at: www.nbr.org/pacificenergysummit, p. 15 (Accessed: 14 March 2016).

13 Data collected from *ITER: The Way to New Energy*, http://www.iter.org (Accessed: 16 March 2016)

bitious, yet visionary project. While there are many roadblocks ahead, its possible success would be monumental. There are two crucial points.

First, it is safe, as fusion energy is called 'evergreen atomic energy' – unlike the fission technology; chances of nuclear explosion in this process of power generation are comparatively minimal. More importantly, the project involves an unprecedented level of international scientific and technological collaboration to recreate the fusion process of the Sun in order to produce energy for commercial use. This is a rare show of global cooperation in the search for a safer, greener, more energy-secure future for humankind.

The other important cooperative endeavor is the grouping of Sunshine Countries in regard to solar energy. The International Solar Alliance, an initiative of the Indian Prime Minister Narendra Modi, is comprised of the 121 'sunshine countries', i.e., countries with high solar power potential, situated between the Tropic of Cancer and Tropic of Capricorn.

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GOBITEC is an ambitious project of sharing renewable energy resources of Russia, Mongolia, China, Japan and South Korea.[15] It plans to exploit the immense potential of solar and wind energy in Mongolia's Gobi desert and hydropower in the Irkutsk region of Russia, and to transport this energy to Shanghai, Seoul and To-

14 See ISA Working Paper (2016), http://pib.nic.in/newsite/backgrounders.aspx?relid=135761, p. 3 (Accessed: 11 February 2016).

15 Data from *Gobitec and Asian Super Grid for Renewable Energies in North East Asia* (2014), Available at: www.energycharter.org./DocumentsMedia./Gobitec_and_the_Asian_Sper grid_2014_en.pdf, (Accessed: 30 August, 2016).

kyo through cross-border transmission lines, forming the Asian Super Grid connectivity system. The project requires an enormous amount of financial investment, technological input, and a common legal framework. If successful, it will become a model of regional cooperation for renewable energy resources. This initiative was significantly influenced by another similar initiative, DESERTEC, which was launched by an international consortium of companies in 2009 to export solar energy from Sahara Desert to European markets. The project was abandoned in 2013 due to financial constraints, outdated technology and lack of physical infrastructure. Nonetheless, it may offer useful lessons for future similar initiatives.

In terms of successful initiatives to date, there is the inter-regional hydropower project CASAREM[16] (Central Asia – South Asia Regional Energy Market, or CASA1000). It is funded by the Asian Development Bank (ADB), European Bank for Reconstruction and Development (EBRD), Islamic Development Bank (IsDB), World Bank (WB), and involves Kyrgyzstan, Tajikistan (as exporters) Afghanistan and Pakistan (as the market). The goal is to develop a common electricity market.

Energy cooperation over political fault lines

The one of the most significant trend of the post-Cold War era is the emergence of collaboration on energy projects among states whose relations may otherwise be problematic.

The one of the most significant trend of the post-Cold War era is the emergence of collaboration on energy projects among states whose relations may otherwise be problematic. What makes this cooperation unique is that as in developing energy initiatives, the parties try to balance competition with cooperation, short-term tactical calculations with long-term policy-planning mechanisms. In this section, two such partnerships are discussed: US-Russia and US-China. It is true that Russia's relations with the US remain strained, even after the end of the Cold War, due to different policy stances on a host of issues from NATO's eastward expansion, the color revolutions in the Eurasian space, Russia's involvement in Georgia and Ukraine, to Western involvement in Afghanistan, Iraq, and Syria. The relations between the US and China are also affected by a number of factors, ranging from human rights issues, trade imbalances, maritime strategy in the Indo-Pacific region, the South China Sea dispute, to the rebalancing of Asian Pivot concept. It is therefore important to note that there do remain small areas in the energy sectors where

16 Kravtsov, N. (2009) 'Project CASAREM(CASA1000) and Its Impact on Central Asian Countries', *Perspectives from the Region,* Available at: www.forum-adb.org/docs/BW2009Q3-4.pdf (Accessed:15 May 2014).

these competitors have found it both valuable and necessary to cooperate.

One important sphere of energy cooperation is covered by the US–Russia Civil Nuclear Energy Cooperation Action Plan Working Sub-Group, which facilitates the growth of safe, secure and affordable nuclear energy through development of innovative nuclear energy technologies and the key elements of this collaboration are reactor demonstration projects; R&D for innovative nuclear energy technology options; modeling, simulation and safety; and development of a Global Civil Nuclear Framework.[17] Notably, Global Nuclear Energy Partnership (GNEP) was started by the US government in 2006 as an international partnership to promote the use of nuclear energy, without compromising on nuclear proliferation, through reprocessing of the nuclear fuel waste. In 2010 it was re-christened as the International Framework for Nuclear Energy Cooperation (IFNEC). Russia, the US, France, China, and Japan are the founding members of this program, which now consists of 33 participants and 31 observer countries. The program has two principal working groups, the reliable nuclear fuel services working group and nuclear infrastructure development working group. While it is true that there has been US-Russian bilateral competition in the nuclear proliferation arena since the advent of the Cold War, it is also true that they do now cooperate on the research and development agenda of a multilateral program. The program's Vision Statement declares that "The Framework provides a forum for cooperation among participating states to explore mutually beneficial approaches to ensure the use of nuclear energy for peaceful purposes, proceeds in a manner that is efficient, safe, secure and supports non-proliferation and safeguards."[18]

US-China clean energy cooperation is another example bilateral cooperation between two not-so-friendly nations, one of whom is viewed as the reigning global power and the other, the challenger, in a transitional international power scenario. In June 2008, the US-China Ten-year Framework for Cooperation on Energy and the Environment was signed, and its scope was expanded during the November 2009 Beijing Summit.

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17 See Bureau of European and Eurasian Affairs (2012) *Fact Sheet: US-Russia Energy and Energy Efficiency Cooperation*. Available at: www.state.gov/p/eur/rls/fs (Accessed: 10 September 2015).

18 INFEC (2016) *International Framework for Nuclear Energy Cooperation*. Available at: http://www.world-nuclear.org/information-library/current-and-future-generation/international-framework-for-nuclear-energy-coopera.aspx (Accessed: 20 November 2016).

gram now includes US-China Clean Energy research Centre, Electric Vehicles Initiative, Energy Efficiency Action Plan, Renewable Energy Partnership, 21st Century Coal and Shale Gas Resource Initiative. As US Department of Energy Secretary Steven Chu commented, "Science is not a zero-sum game [...] As the world's largest producers and consumers of energy, the United States and China share many common challenges and interests [...] At the US Department of Energy, we are committed to working with Chinese partners to promote a sustainable energy future. Working together, we can accomplish more than acting alone".[19]

Regional green cooperation

The ASEAN and the EU offer globally recognized models of regional economic cooperation. Still, it is particularly significant that better energy management and implementation of clean energy initiatives provide them with new opportunities for future cooperation to ensure better and more effective energy security.

ASEAN Energy Cooperation (AEC) was initiated in 2003 in order to intensify cooperation on the development and exploitation of regional energy resources. The ASEAN Vision 2020 (adopted in 2007) envisaged the establishment of interconnecting arrangements in the fields of electricity and natural gas through the ASEAN Power Grid, (which operates 16 projects) and the Trans-ASEAN Gas Pipeline Projects. In September 2014, a new theme for the ASEAN Plan of Action for Energy Cooperation (APAEC) was endorsed during the 32nd ASEAN Ministers on Energy Meeting, proposing "Enhancing Energy Connectivity and Market Integration in ASEAN to achieve Energy Security, Accessibility, Affordability and Sustainability for All".[20] In addition to the implementation of ASEAN Power Grid and the Trans-ASEAN Pipeline, the APAEC 2016-2025 identified new areas of energy cooperation. These are related to research and development of clean coal technology and civilian nuclear energy technology and regulation, reduction of energy intensity by 20 per cent in 2020, and reaching the 'aspirational' target to increase the component of renewable energy to 23 per cent in the ASEAN energy mix by 2025.

The European Energy Union was proposed by the European

19 US Department of Energy (2011) *US-China Clean Energy Cooperation Progress Report*. Available at: www.us-china-cerc.org/pdfs/US_China_Clean_Energy_Progress_Report.pdf, p. 2 (Accessed: 31August 2016).

20 Zamora, C.G. (2015) *ASEAN Plan of Action for Energy Cooperation (2016-2025)*. Indonesia: ASEAN Centre for Energy, Available at: www.aseanenergy.org...HighRes-APAEC-online-version-final.pdf (Accessed: 30 August 2016).

The idea of this Union is heavily influenced by the Commission's 2030 Climate and Energy Package, which seeks to reduce greenhouse gas emission by at least 40 per cent by 2030, and to increase the share of renewable energy to 27 percent during the same period.

Commission in February 2015 via the adoption of the 'Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy', aimed at providing secure, sustainable, competitive and affordable energy for its citizens. The idea of this Union is heavily influenced by the Commission's 2030 Climate and Energy Package, which seeks to reduce greenhouse gas emission by at least 40 per cent by 2030, and to increase the share of renewable energy to 27 percent during the same period. Three of the five dimensions of the Energy Policy are related to the green dimension of energy security: energy efficiency, de-carbonization of the economy, as well as research, innovation and competitiveness in areas of renewable energy, smart grids, carbon capture and storage and nuclear technology. The exceptions are ensuring diversification of energy supply and implementation of a fully integrated energy market. Raines-Thomlinson commented that "The Energy Union will need to accommodate potentially competing factors, embodied in the tension between energy security, economic competitiveness and climate change policy".[21]

Conclusion

Maull[22] has argued that "Energy interdependence intertwines national economies in two major ways. First, most economies […] depend on cross-border flows of energy resources for important parts of their total energy requirements. Second, this global energy system is supported by and critically dependent upon information, knowledge and investment capital." He further notes a significant point that "High levels of interdependence between nations and societies mean that energy objectives cannot be pursued in isolation: energy independence is a chimera."

Buzan makes an important point about security: "security is a relational phenomenon. Because security is relational, one cannot understand the national security of any given state without understanding the international pattern of security interdependence in which it is embedded."[23] Global security, in its broadest

21 Raines, T., Tomlinson, S. (2016) *Europe's Energy Union: Foreign Policy Implications for Energy Security, Climate and Competitiveness*. Available at: www.chathamhouse.org...europe-energy-union-raines-tomlinson.pdf, p. 4 (Accessed: 31 July 2016).

22 Maull, H.W. (2011) 'Global Shift The Challenges of Energy Interdependence and Climate Change'. *Washington D.C.: Transatlantic Academy*, Available at: www.transatlanticacademy.org/maull_climateenergy_aug11_final_web1.pdf, p. 2-3 (Accessed: 30 August, 2016).

23 Buzan, B. (1991) *People, States and Fear: An Agenda for International Security Studies in the*

sense, cannot afford to remain a victim of energy insecurity and needs the assurance of mutual cooperative interdependence on a global scale. In the post-Cold War context, the use energy as a strategic asset, not a weapon, is not a choice, but rather a necessity in terms of providing human civilization with a new hope for survival. Energy, as a commodity, has acquired its strategic dimension only because human existence has become fully dependent on energy.

Significantly, the UN Document 'Our Common Future' asserts that "A safe, environmentally sound, and economically viable energy pathway that will sustain human progress into the distant future is clearly imperative. It is also possible. But it will require new dimensions of political will and institutional cooperation to achieve it."[24]

Energy security is fundamentally significant for the progression of human civilization, but more importantly, it impacts on influences the very survival of the human race on earth, the only planet in the solar system, where environmental conditions are conducive for life. If the earth becomes uninhabitable due to human failures to address environmental degradation, then the only possible option might be to relocate the global population to Proxima B, which may offer conditions for life. However, Proxima B is 4.3 light years away.

Thus, there is an urgent need for a long-term, comprehensive strategizing the global energy interdependence in order to find viable, alternative and innovative solutions to make life on the earth secure for us, and most importantly, for the future generation, to whom we owe this responsibility, as we inherited the earth from our forefathers.

Post-Cold War Era, London: Harvester Wheatsheaf, p. 187.

24 UN Documents, *A/42/42. Our Common Future: Report of the World Commission on Environment and Development- Chapter 7: Energy: Choices for Environment and Development*, Available at: www.un-documents.net/our-common-future.pdf (Accessed: 21 November 2015).