

## **On Energy, Economics, Environment and Ethics: The Case of Bangladesh**

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*Sustainable economic development is required for any country. Thus, energy policy should be carefully taken since energy can affect both growth and economy. Ethics can also help to coordinate all these. The social value depends crucially on the social objective, which is not necessarily self-evident, e.g., since some individuals tend to value nature intrinsically. The importance of being explicit about value judgments is emphasized, and it is argued that environmental economics should consider non-conventional assumptions which take the social context into account to a larger degree. In a fast growing country like Bangladesh, the concept of ethical energy policy structuring is of utmost importance following the fact that energy has been enlisted as one of the crucial factors of production complementing labor and capital. Existing literature reveals that how much they paid attention on the role of ethics. But no one focus on the fact of ethics. Therefore, the paper objective of this paper is to combined ethics with energy, economics and environment for sustainable development in Bangladesh economy. The paper concludes that energy economists and policy makers are often bombarded with ethical issues in developing energy policies whereby unequal access to energy is resulted amongst the population of developing countries in particular.*

**Field of Research:** Economics

### **1. Introduction**

The concept adhering energy sector development within an economy has progressively gained utmost importance following the enlistment of energy as one of the main inputs driving the production processes concerning all goods and services. In addition, development of the energy sector has also been referred to be in line with the global sustainable development drives as energy security is considered to be one of prerequisites to attainment of economic development as a sustained rate. The notion of energy development has broadened over time to incorporate economic, environmental, and social aspects, subject to the several constraints and realities perceived by society.

In spite of a good energy policy having the potential to exert positive externalities within the economy, there are considerable pitfalls and hurdles affecting the policy making decisions. Divergence in political standpoints of various stakeholders often invite controversial ethical values and sectional interests influencing such policy making whereby social welfare is often axed amidst the unethical vested interests of a certain

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group of people. For example, switching from traditional use of fossil fuels to greater use of renewable energy resources is considered to be a potential tool to achieving energy security in developing countries in particular. Moreover, use of renewable energy resources as an alternative fuel can also be extremely effective in curbing carbon dioxide and other Green House Gas (GHG) emissions keeping the natural environment in balance. Thus, adoption of Renewable Energy Technologies (RET) is important for underdeveloped nations like Bangladesh. However, despite the immense benefits associated with using RET, Bangladesh is not welcoming the skills and investment, necessary for RET adoption, from abroad due to personal interest of certain groups which can be an ethical issue holding back the development of the energy policies in the country.

Ethics is the branch of philosophy which is concerned with the determination of right and wrong goals and actions. There is a close relationship between economics and ethics. Both are closely related to axiology - the answering of questions about goodness and badness-and to deontology which deals specifically with the goodness and badness of a particular decision rule, action or design regardless of its consequences. The decision disciplines are, in a sense, applied ethics. Perhaps economics is the "queen" of the decision disciplines. It has a highly developed theory of decision making and many of its classical writers are also classicists in the ethical and philosophic value theory literature.

Many ethical issues arise as a result of unequal access to energy and of the environmental repercussions of the various ways of meeting energy demands. They require that we consider the consequences for future generations of satisfying the energy needs of the present and that we carefully evaluate the implications for the functioning of the environment on which we and other species depend. We cannot resign ourselves to the fact that nearly one human being out of every four today does not have access to adequate energy resources. The actors in world energy policy (government, industry, research and development teams) must ultimately ensure the availability and upkeep of vital resources at a cost sufficiently low so that each country, whatever its geographical location and economic situation, has access to them.

Bangladesh has recently recognized as a lower middle income country (per capita income is 1610 USD) with an aspiration to become an upper middle income country by 2021 and high income country by 2041. In this development process, a gradual shift in the economy is evident - from agriculture to industry and services. Between FY07 and FY17, share of agriculture sector in GDP declined by (-) 4.5% whilst industries and services sectors gained 3.5%. The energy sector will be required to cope with the changes of industrial structure in line with the economic growth as expected in order for Bangladesh to join the developed nations. In a short period of time, Bangladesh has increased a huge success in expanding generation capacity, but should put more emphasis to the development of the energy sector for the future energy security. In fact, energy crisis is one of the major problems in Bangladesh since its independence and the gap still exists in the demand and supply which needs more attention, where the fundamental problem lies in the balance between the energy resources. Although the country possesses natural endowments like gas and coal, lack of proper skill and

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technical knowledge imposes hurdle for the country to utilize them. Bangladesh previously relied heavily on import, but the situation seems to get brighter with the introduction of LPG & LNG, but the nation still needs to tap all the energy resources for a steadfast growth. The existing policy needs to incorporate the structural changes along with remittances, women participation, and leadership and this book draw upon these important factors along with other prerequisites.

Although many studies have been conducted on the nexus between the relationship of energy sources and economic development (Among others, Amin, 2009; Amin and Rahman, 2015; Amin et al., 2016, Tsani, 2010), no work has been done on the grounds of ethical issues in Bangladesh. This paper sheds light on the research gap between the ethical issues of energy sector in Bangladesh energy sector. The aim of this paper is to evaluate ethical issues and bring about the effects of energy supplies for adequate energy policies. We find that ethics can play a very crucial role for Bangladesh economy through the coordination of energy plan among the energy stakeholders which is key for future energy security.

Rest of the paper is organized as follow: In section 2 we have described the ethics of energy, relationship between 4E is discussed in section 3, in section 4 Bangladesh scenario is shown, in section 5 some case studies are demonstrated, in section 6 consists of ethical issue of different polices and lastly section 7 has conclude the whole concept.

## **2. The Ethics of Energy: A Framework for Action**

The ethics of energy focuses two sections. One is the ethical challenge of energy and other one is the way forward.

### **2.1 The Ethical Challenge of Energy**

Almost every aspect of human endeavor is related to a greater or lesser extent to energy cost and supply and any consideration of the ethical aspects of these efforts will involve an analysis of energy. Consideration of energy issues has implications for many other aspects of human society. Development of nuclear power, once seen as the answer to the energy dilemma, has proven to be difficult, a possible health risk, and less reliable and more expensive than initially predicted. The industrialized world should therefore take greater responsibility in developing renewable energy and help advance the rural sectors of the poorer countries without jeopardizing their ecosystems. As a result of the dramatically uneven distribution of energy and the disparate rates of its consumption, the World Energy Council at its 17th World Congress concluded that the number one priority in sustainable energy development today for decision-makers in all countries is to extend access to commercial energy services to the people who do not now have it and to those who will come into the world in the next two decades, largely in developing countries. Another example is the Renewable Energy and Energy Efficiency Fund, a commercial equity fund sponsored by the International Finance Corporation, which provides the investment-stage capital for renewable energy projects in developing

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countries. The complexity of energy issues, and their interconnectedness to every other issue that COMEST is concerned with, shows that all potential solutions to individual energy questions involve a social cost, an ethical dilemma and an impact on the way other problems are resolved.

### **2.2 The Way Forward**

Many ethical issues arise as a result of unequal access to energy and of the environmental repercussions of the various ways of meeting energy demands. We cannot resign ourselves to the fact that nearly one human being out of every four today does not have access to adequate energy resources. The actors in world energy policy must ultimately ensure the availability and upkeep of vital resources at a cost sufficiently low so that each country, whatever its geographical location and economic situation, has access to them. We cannot merely allow market forces alone to take care of balancing the relations involving the supply and consumption of energy, from national down to individual levels. There can be no pretext for unduly maintaining the countries of the South in a state of forced 'energy restraint' when they so urgently need adequate infrastructures, and the governments of the industrialized countries should step up efforts to help the developing world meet its energy requirements by 'leapfrogging' to clean technologies. In short, the ethics of energy must concern the whole energy cycle, from extraction and distribution to consumption and waste disposal. The World Commission on the Ethics of Scientific Knowledge and Technology has, through its Sub-Commission on the Ethics of Energy, sought to explore the ethical dimensions of the following:

#### **Accessibility**

Energy should be available to individuals at a level that permits them to achieve their personal security, aspirations and social responsibilities, while not compromising the environment and the rights of others. To make energy affordable for the poor, governments should accept responsibility to absorb part or all of the costs of energy infrastructures needed to serve them, favor decentralized renewable energy systems for rural areas where their lifecycle cost is comparable to or lower than the extension of the grid, and build the capacity of local energy enterprises by training managers and other personnel.

#### **Sustainability**

Energy sources should be renewable in order to be sustainable. We must develop and deliver renewable sources of energy and find combinations of renewable energy strategies to facilitate the transition from non-sustainable to sustainable energy supply. We have specific duties towards future generations: the resources must be exploited in as economical and rational a manner as possible, above all when we know full well that a large part of the non-renewable energy resources may be depleted within one or two centuries.

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### **Precaution**

We must avoid creating irreversible situations with regard to the environment and the management of energy and apply the principle of precaution to avoid an increase in the CO<sub>2</sub> content of the atmosphere. Feedback from experience should permit the rational production and consumption of energy and prevent, insofar as possible, the occurrence of any event with irreparable consequences. Precaution requires that the social and environmental benefits and costs of shifts in the balance of energy sources, the rate of energy use, and the financial framework for energy be carefully evaluated before changes are instituted.

### **Environmental Responsibility**

The generation and utilization of energy can be a risk to the earth, henceforth the pressing need to take every single fitting measure as fast and as productively as could reasonably be expected. This includes decreases in the negative natural outcomes of energy investigation, creation, and capacity and conveyance. Specific accentuation ought to be on constraining arrivals of nursery gasses to the environment, on the issue of capacity of atomic power squander items, and on the ecological effects of unmanaged biomass utilize. The energy segment is one territory in which new and promptly accessible advances have effectively diminished outflows and hold out prospects for future change. In any case, these earth cordial advancements have to be produced, dispersed, kept up and extended in all parts of the world. Thus, there is a need to cultivate satisfactory neighborhood ability to guarantee that the innovations can be utilized and kept up by nearby individuals.

### **Innovation, Adaptation and Research**

Research, development and capacity building in the energy field are vital, particularly with regard to harnessing renewable energy sources. We must foster a strategic view of research and development activities and not just a tactical approach based on cost reduction and the prospect of abundant short-term resources. This downturn must be reversed and we must continue to seek new sources and uses of energy which are even more economical. Against this background, the exploitation of natural gas, the rationalization of the energy produced by biomass, the development of fuel cells and the use of solar energy in photovoltaic and thermal form are all vast areas for research, both fundamental and technological.

### **Education and Public Information**

Education and public information need an open, transparent, independent, lively and provocative debate. There is a vital need for governments and business to support national and international energy institutions so as to provide a forum and context for such discussion to take place. The focus in energy education needs to be global and long term. It needs to foster regional and local decision-making and to allow for a meaningful dialogue between those who have commercial energy services and those who do not, between those who compete and those who determine energy policy or set

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the rules. The emphasis should be on calling attention to the models and best practices that have proven effective.

### **International Co-operation**

In a globalized society, companies operating internationally should act as world citizens. They should not only respect national laws and regulations, but also move the overall energy and environment agenda forward. Voluntary energy and/or environment audits, their widespread publication in civil society, common standards for safety, performance, best industrial practices, and respect of energy workers should be fostered in all plants in all countries in which a company operates. It is evident that global thinking with regard to the ethics of energy is indispensable and that consensus and agreement must underpin action programs in co-operation with the industrial sector. National and international decision makers thus have the responsibility not merely to react to energy crises but to demonstrate leadership and statesmanship in the transition to sustainable, affordable and environmentally acceptable energy policies.

### **3. Theoretical Underpinnings**

Energy, economics, environment and ethics are linked to each other. One has huge impact on others. We cannot deny the fact of their inter linkages.

#### **3.1 Energy and Environment**

Energy and Environment is considered as an interdisciplinary diary welcoming energy strategy examiners, common researchers and designers, and additionally legal advisors and financial analysts to add to shared comprehension and picking up, trusting that better correspondence between specialists will improve the nature of arrangement, propel social prosperity and help to decrease struggle. Increased energy efficiency is key for achieving simultaneously environmental and energy security as well as competitiveness objectives. Energy improvement has advanced our life it has declined eco-pollution. As we have gone into industrial age with autos and production lines, natural decimation has additionally picked up energy. Even with the current extension of sustainable power source, non-renewable energy sources keep on fueling the majority of society's expanding requirement for energy.

For example, China is facing four aspects of the energy-environment problem, namely (1) air pollution, (2) water pollution, (3) the emission of CO<sub>2</sub> in the atmosphere that causes global warming, mainly from the burning of coal, and (4) shortage of future energy supply that relies on exhaustible resources. Environmental pollution from coal combustion is damaging human health, air and water quality, agriculture and ultimately the economy.

### 3.2 Energy and Economics

History has shown the increase in efficiency lead to more energy consumption, not less the mainstream economics concept of the production function is next used to examine the key factors that could reduce or strengthen the linkage between energy use and economic activity over time. This production theory is very general and is less subject to criticism than are the specific models of economic growth. These key factors are (1) substitution between energy and other inputs within an existing technology, (2) technological change, (3) shifts in the composition of the energy input, and (4) shifts in the composition of economic output. Each of these themes will be discussed in detail. GDP is strongly correlated with energy consumption and in many regards Gross Domestic Product is energy utilization. Each administration and great in an economy is delivered by utilizing energy. "Riches" is truly quite recently the word we use to name the merchandise made and benefits rendered through our energy utilize. In light of the fact that GDP indicates to quantify "The money related estimation of all the completed merchandise and ventures delivered inside a nation's fringes" it will definitely mirror the measure of energy devoured to create those products and enterprises. The ramifications of the connection between energy utilization and financial development are wide coming to, however an exhaustive examination lies past the bounds of this post.

### 3.3 Environment and Ethics

Environmental ethics is the piece of ecological theory which considers expanding the customary limits of ethics from exclusively including people to including the non-human world. It applies impact on an extensive scope of controls including natural law, natural humanism, ecotheology, biological financial aspects, biology and ecological topography. This entry covers: the challenge of environmental ethics to the anthropocentrism embedded in traditional western ethical thinking; the early development of the discipline in the 1960s and 1970s; the connection of deep ecology, feminist environmental ethics, and social ecology to politics; the attempt to apply traditional ethical theories, including consequentialism, deontology, and virtue ethics, to support contemporary environmental concerns; and the focus of environmental literature on wilderness, and possible future developments of the discipline. These two important areas of applied ethics are central to understanding many important contemporary issues, such as those related to sustainable development, climate change, and environmental management. Issues are also raised by environmental and development ethicists in relation to another important area of applied ethics: corporate ethics. There are numerous ethic choices that people make as for the earth.

### 3.4 Energy and Ethics

There are many advantages to using renewable energy sources instead of non-renewable energy sources. Unlike coal, oil, or gas, the renewable energies of the sun, wind, water, and geothermal are: Clean: using renewable energies lowers carbon (CO<sub>2</sub>) emissions. Accessible: most are available everywhere in the world. Abundant: together, the supply is everlasting. Sustainable: they can support ecosystems and ensure future availability.

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The benefits of renewable energy are clear. Yet, approximately 80% of the energy human beings use around the world still comes from non-renewable sources that are environmentally destructive. There are many reasons why this is the case, including: Economic and political systems of the developed world which are deeply rooted in fossil fuel use Lifestyle habits of people in the developed world that are shaped by these economic and political systems and expend large amounts of non-renewable energy The necessity for millions of people living in poverty in the underdeveloped world to burn biomass for energy In 2014, the number of human deaths due to air pollution emitted by fossil fuel use in China was estimated at 670,000. It is also estimated that in the United States approximately 20,000 people die prematurely each year due to fossil fuel pollution. World estimates put the global rate of mortalities directly caused by the burning of fossil fuels at 3.1 million people per year.

### **3.5 Economics and Ethics**

Ethics and economics, also philosophy of economics, studies topics such as rational choice, the appraisal of economic outcomes, institutions and processes, and the ontology of economic phenomena and the possibilities of acquiring knowledge of them. Although these inquiries overlap in many ways, it is useful to divide philosophy of economics in this way into three subject matters which can be regarded respectively as branches of action theory, ethics, and philosophy of science. Economic theories of rationality, welfare, and social choice defend substantive philosophical theses often informed by relevant philosophical literature and of evident interest to those interested in action theory, philosophical psychology, and social and political philosophy. Economics and ethics are not positively related to each other. The problem is the self-interest focus of rationality prevailing within economic analysis, assumes that the vision of human motivation based on ethics could be outside. Thus, the real problem would be to know if it is a plurality of motivations, or exclusively self-interest that moves individuals.

### **3.6 Environment and Economics**

Environmental Economics undertakes theoretical or empirical studies of the economic effects of national or local environmental policies around the world Particular issues include the costs and benefits of alternative environmental policies to deal with air pollution, water quality, toxic substances, solid waste, and global warming. Environmental economics is distinguished from ecological economics in that ecological economics emphasizes the economy as a subsystem of the ecosystem with its focus upon preserving natural capital. One survey of German economists found that ecological and environmental economics are different schools of economic thought, with ecological economists emphasizing "Strong" sustainability and rejecting the proposition that natural capital can be substituted by human-made capital. The period change of human social economy development will inevitable cause corresponding huge change of environment, which embodies the change of the relationship between economy and environment. In 1992, representatives of over 150 countries met at Rio in Brazil to discuss the environmental issues and their implications for future development of the world.

### 4. Literature Review

Existing literature has highlighted few elements which typically affects the economic decisions based on ethical grounds. Therefore, this section discusses an autonomous system to help decision makers incorporate ethics in energy policy decisions. For example, Lessig (1999) identifies four elements such as laws, the market, code, and social norms, as the primitive elements of a system for ethical business decision-making. Walstrom (2006) identifies six elements such as social environment, legal (or government) environment, personal environment, private environment, professional environment, and work environment, as the primitive elements. In addition to all these elements, the literature also cites the following primitive elements: interacting agents, leaders, shareholders, etc. Lessig (1999) incorporates ethics under the broad category of “social norms” where social norms have only cultural or community value. Spinello (2003) argues that ethics is given a directive role, that is, ethics should guide and direct the ways in which the constraints such as laws, the market, code, and social norms, exercise their regulatory power.

Boomer *et al.* (1987) consider four other factors which can influence on ethical decision making: i) Personal environment: individual attributes including personal goals, motivation, position, demography, ii) Private environment: peer group, family, and their influences, iii) Professional environment: code of conduct, professional meetings, licensing, and iv) Work environment: corporate goals, stated policy, corporate culture.

Under stakeholder analysis, three theories of ethics are applied in business environments. These are stockholder theory, stakeholder theory, and social contract theory. The social contract theory is the most restrictive one, demanding that the whole society should be taken care of by the agents when they conduct business exchanges. The stakeholder theory is lesser restrictive than the social contract theory, as instead it demands that all the stakeholders of the business (not the whole society) should be taken care of. Finally, the stockholder theory is the least restrictive one, as it demands that only the stockholders are to be taken care of by the agents. In summary, stakeholder analysis presented above suggests that first we draw a list of all the elements (stockholders, customers, etc.) potentially effected by an ethical decision; then, we evaluate net economic benefits that the ethical decision will cause on each elements on the list.

Cook & Skinner (2005) asserts that modeling and simulation are typically used for one of three purposes: descriptive, predictive and normative models. In brief descriptive models are used to explain how real-world activities function, predictive models are used to predict future events in addition to describing objectives and events, while normative models are designed to not only describe and predict, but also provide direction about a proper course of action.

In a broader ethical context, Jones (1991) has argued decision-making must be ‘issue-contingent’. That is, it must consider the characteristics of the issue itself. He uses the term ‘moral intensity’ which he suggests has six components: magnitude and

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consequence, social consensus, probability of effect, temporal immediacy, proximity, and concentration effect. Magnitude and consequence is defined as total harm/benefit resulting from the moral action in question, social consensus as the degree of agreement that an alternative is evil or good, probability of effect as the probability that the action will take place and will cause the harm/benefit expected, temporal immediacy as the time between the present and the consequences of the moral action, proximity as the feeling of closeness that the moral agent has for the victims/beneficiaries of the action in question, and concentration effect as the 'inverse function' of the number of individuals affected by a given act. Many 'remote' users and consumers of simulation product outputs, such as members of the 'public', are very much dependent upon and vulnerable to the competence and professional expertise of simulation builders and users (Barlow, 2009). In essence decision-makers are increasingly vulnerable to the quality and appropriateness of the assumptions the model and simulation builders have made when developing a product, as well as its perceived credibility or believability. Taken further, they increasingly rely on the output of simulation products to provide the 'facts' on which they base their decisions.

Gupta (2017) investigate the unethical practices undertaken by the oil and gas firms vis-à-vis other firms. We find that oil and gas firms operating in non-competitive industries are more likely to engage in unethical practices.

### **5. An Overview of Energy Related Issues in Bangladesh**

Energy has become essential to the functioning of modern economies and the government of Bangladesh has been putting its best efforts to develop the indigenous energy resources, which ultimately plays a vital role in the socio-economic development of the country. Energy use in Bangladesh is quite low when compared to other developing countries. Total energy uses in Bangladesh in 2012 is only 0.20% of world consumption.

Domestic natural gas and solid biomass and waste account for the majority of Bangladesh's total primary energy consumption with the remainder being oil, coal, and hydropower. In 2015, Bangladesh's primary energy consumption is estimated 62% natural gas, 12% traditional biomass and waste, 21% oil, 2.5% coal, and 2.5% hydropower and solar. Fossil fuel comprises coal, oil, petroleum, and natural gas products represent around 85% of total energy consumption in Bangladesh. The main energy resources of Bangladesh are non-commercial resources and commercial energy resources. In the early 1980's biomass dominated energy requirement of the country. Although with the increase of commercial energy use, the contribution of biomass is decreased, still it is the 3 principal source of energy for the rural population and comprise almost one-sixth of the total primary energy consumption.

#### **Natural gas**

The gas sector started its rapid expansion and gas becomes the energy of choice now and plays a key role to national development in Bangladesh. Electricity generation in

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Bangladesh was almost entirely dependent on natural gas and the whole of the urea fertilizer manufacturing are based on natural gas. Natural gas is also used as a feedstock for petrochemicals, as Compressed Natural Gas for vehicles. Bangladesh's natural gas resources were first exploited by the national public energy company, PETROBANGLA. More recently, International Oil and Gas Companies have established exploration and production activities. The project includes an expansion of the existing gas plant to process increased natural gas volumes, additional development wells to boost natural gas production in future.

### **Petroleum Products**

The use of petroleum products is varied; octane, petrol and diesel are the major fuels for transportation. The transport sector dominates in terms of petroleum product usage, consuming around 44.80% of total sales in 2014. Most of the petroleum demand is met by imports in Bangladesh which is mainly used in the transportation sector although the importance of petroleum in this sector has been decreasing since the government policy of encouraging CNG as a transportation fuel. Still a major share of all petroleum consumption in the country is by the transport sector. Sales of petroleum by agricultural sector represent 18.09% of total petroleum sales in Bangladesh.

### **Biomass**

Biomass as a versatile source of energy is primarily used in rural areas to meet the energy needs for cooking. 8 The traditional biomass sources include agricultural residue, animal waste and fire wood. These renewable biomass resources are considered to have significant potential to meet the energy demand, especially in the rural areas. In the early eighties biomass contributed more than 55% of the entire energy requirement of the country. With the increase of commercial energy use that contribution has come down to 15% now.

### **Coal**

Although substantial amounts of coal reserves in seven fields have been discovered in the north-western part of the country, still the coal sector of Bangladesh is quite underdeveloped. The major coal deposits are at Jamalgonj, Baropukuria and Khalashpir. The total amount of coal reserve is estimated at 1.756 Gtonne. The Baropukuria coal mine was discovered in 1985 by the Bangladesh Geological Survey Department. Indigenous coal, developed in a sustainable manner with social and environmental safeguards, can supply a vital part of the total energy and electricity demand in the mid to long term future as coal-based power plant takes 3-5 years for installation.

### **Renewable Energy**

At the same, as the renewable energy is environmental friendly, it is necessary to preserve the environmental balance by expanding the use of renewable energy and lessening the dependency on non-renewable energy. The renewable energy policy

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passed in December 2008 aims at exploring the country's electricity generating potential from renewable energy resources to meeting the nagging electricity crisis across the country. The policy encourages the private and public sectors to investment in renewable energy projects to substitute 3 indigenous non-renewable energy supplies and scale up contributions of existing renewable energy-based electricity productions. According to the Renewable Energy Policy, the government aims to produce 500 MW of electricity from the renewable energy by 2015. Realizing the future energy need and to ensure energy security, government put due emphasis to mainstreaming the renewable energy.

### **Environmental Impacts from Energy Systems**

Bangladesh's contribution to global climate change via emissions of CO<sub>2</sub> from energy systems is insignificant compared with many industrialized nations. Ali discusses the possible impacts of climate change in Bangladesh through tropical coastal cyclones, storm surges, coastal erosion, floods and droughts and reveals that natural disasters cause heavy loose of life and property and threatening the development activities in Bangladesh. A number of studies examine the impact of global climate change towards world economy. Study the relationship between geography and growth to evaluate the economic impact of coastal flooding due to climate change and show that a 6-meter rise in sea levels would flood 1% of land, home to 6.6% of the world's population and cause welfare losses of around 8%. Moreover, Stern (2008) highlights that the economic costs of doing nothing to combat climate change could be up to 20 times greater than taking action now to avoid catastrophic climate change in the future. Stern (2008) further claims that tackling climate change is the pro-growth strategy; ignoring it will ultimately undermine economic growth.

## **6. Case Studies**

Case study is a process or record of research in which detailed consideration is given to the development of a particular person, group, or situation over a period of time. This paper gathers three countries that can help to understand how they try to imply ethics on 3E (Energy, Economics, Environment).

### **6.1 India**

#### **Environmental Ethics**

Traditional Hindus believe that trees can bring peace, prosperity and consolation to mankind, worship of god a green tree is considered to be a sin and sacrilege which can spell disaster for the family and even for the entire village community a traditional Hindu father is specially guided by the moral restrictions of destroying a green tree. Hindu homes worship peepal tree off widowhood; they worship of god Coconut tree is believed to be a symbol of fecundity and so Hindu women who nurse the desire to get a son worship coconut trees and eat coconut fruits as a „divine gift“. Modern civilization is experiencing the wrath of flood due to erosion of river embankments everywhere and

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only tree plantations along river banks cannot prevent erosion. Brhadaranyaka Upanishad equate trees with human beings as follows: Just like a tree, the prince of the forest, so the man is, in truth. The VarahPurans says that "One who plants a peepal, one neem, one Banyan, two pomegranates, two oranges, five mango trees and ten flowering plants or creepers Renugadevi 3 shall never go the hell".

### **Ethical Energy**

From Indonesia to Mauritius, India is working on a web of energy relationships that seeks to leverage India's position as a big source of petroleum products, sharing of technology and building interdependencies. Mauritius, one of India's closest partners in Indian Ocean Region could become a hub for petroleum storage and bunkering for which India has started building infrastructure. There is a new project by India to build floating storage and degasification units for Indonesia to help it supply energy to the thousands of islands in the country. Bangladesh is allowing India to use transit facilities and even the Bangladesh grid to supply to India's northeast. India is working on building a 7.5 mmt LNG terminal in Qutubdi island off Bangladesh's coast. As part of BBIN, there is an electricity sharing MOU between India, Bangladesh Bhutan and Nepal which could allow Bangladesh to source power from Bhutan or Nepal once the Himalayan country can get its act together to build more hydropower projects.

### **Ethical Economy**

Customers across all regions of India are taken for a ride by unethical business practices. In 2011, India received only 6.5 million foreign tourists as compared to 57 million in China, according to World Bank. Is moral degeneration in an increasingly consumerist society like ours responsible for ignoring its cultural best practices - with implications for doing business environment? Perhaps, but what about India's record on contract enforcement? As shown in the table, below, India is above only Timor when it comes to enforcing contracts. A system of online filing of complaints will improve complaint registration and empower unorganized customers against unethical business practices. Further, India needs tough regulators for high complaint sectors, like real estate and travel and tourism.

## **6.2 China**

### **Ethical Energy**

China's large investments in renewable are best understood as enhancing the country's energy security and not solely as a means of reducing carbon emissions. Expanding renewable industry this goes against the grain of most commentary on China, which sees the country as fully committed to a black, coal-fired energy future but there is another, green side to China's energy story - as argued on The Conversation by Ross Garnaut. While the rest of the world has been fixated on China's build-up of black, fossil-fuelled energy systems, the country has been quietly building a mammoth green energy system, based on water, wind and solar power. China is rapidly expanding its renewable energy industries and its use of renewable devices to generate electric

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power. China is leading the way to a world of decarbonizes energy, by placing the emphasis of its policy on growing the markets for renewable and building the industries to supply wind turbines, solar cells, batteries and other devices.

### **Ethical Economy**

What is particularly provocative, and in need of sustained inquiry, is how these matters are increasingly represented as ethical failures specific to China's position in a global moral economy: Baby formula tainted with melamine in 2008, and other recent food safety events; the Foxconn/Apple affair, held as a representative case of the exploitation endured by workers in outsourcing plants who contribute to maintaining the cheap prices and high profits enjoyed by consumers and investors in developed nations; daily reports on the quotidian experiences of businesses at every scale with political corruption and the bribery of state officials; China's shameful merit of having the majority of what many media outlets have deemed to be the world's most polluted cities. For even casual observers of contemporary China, the concept of business "Scandals" appears euphemistic; the frequency and degree of these infractions seem to confirm that China is leading in a systematic race to the bottom in all dimensions of corporate social responsibility. The duplicitous Chinese merchant played a significant role in the popular publications of the late nineteenth century American missionary, Arthur Smith, who claimed that "The commerce of the Chinese is a gigantic example of the national insincerity." The more recent past, particularly during first period of China's turn to economic liberalization, has seen a fixation on the inadequate rationality of those economic actors embedded in cultural norms that frustrate market presumptions about efficiency: the Chinese family firm; the often-debated role of guanxi in economic relationships; workers accustomed to state enterprises who are unable to adapt to market discipline.

### **Environmental Ethics**

Industrial pollution is a major problem in China, where massive, low-cost manufacturing has taken priority over environmental protection. Background to China's Market Minimum wage rate causes poverty and poor housing class therefore labor turnover is likely to be higher than usual. Companies trading and exporting in China are meeting new government legislations where the factories have to meet health and safety standards to avoid accidents e.g. a factory in India that collapsed that was manufacturing for Primark. Ethical Issues Business ethics is a form of applied ethics that examine the ethical principles and moral or ethical problems that arise in a business environment. Often factories didn't meet the requirements but because the corruption and bribery in China meant they were passed as safe which meant workers often didn't have the conditions they expected and were likely to be working in unsafe areas.

### 6.3 Japan

#### Ethical Energy

Smoke is seen coming from the area of the No. 3 reactor of the Fukushima Dai-ichi nuclear power plant in Tomioka, Fukushima prefecture, Japan, March 21 in this handout photo from Tokyo Electric Power Co. The ongoing nuclear plant disaster in Japan raises not only environmental and health issues, but ethical questions about energy use and the future of nuclear power, according to Catholic scholars and other ethicists. The bishops asked if there was enough water available for the plant, if nuclear energy was the best way to decrease Alberta's greenhouse gas emissions, if the safety of future generations was being considered, if the plant should be built before Canada had a nuclear waste storage plan, and if subsidizing nuclear energy was the best use of government funds. Since the commercial nuclear energy industry rose from the ashes of the atom bomb in the 1950s, research and development and plant construction have received hefty government subsidies. Nuclear energy companies receive tax breaks, loan guarantees, limits on liability and other subsidies that sometimes add up to more than the power the plants produce, said a 2011 report by the Union of Concerned Scientists. If subsidies are not counted, electricity from natural gas is cheapest, followed by hydroelectricity, conventional coal technology, wind, geothermal, biomass, nuclear and solar energy, according to the U.S. Department of Energy.

#### Ethical Economy

The Japanese work principles presented here, most of which are actually humanistic principles, are part of the Japanese employee's way of life. Koehn presents the influence of 'Eastern philosophy', such as the contribution of Confucius and Watsuji-Tetsuro, on the Japanese work and business culture. The Japanese work outlook, which provides the employee with respect and appreciation, also concerns itself with the employee's feelings. Universal values do exist but new work situations require new consideration and a renewed ethical outlook among both ancient and new cultures. Western companies have contributed greatly by encouraging employees to rely on their internal roots, and there is no doubt that the Japanese can learn from this work approach and enable their employees to express themselves as individuals, to take initiative and utilize creativity in a personal framework.

#### Ethical Environment

Japan is a nation comprised of four main islands and thousands of smaller islands located off the northern Pacific Coast of Asia. Environmental Issues of Japan While Japan has become a cleaner and environmentally more responsible nation in recent decades, the country's business, agricultural and industrial activities still contribute to a broad range of environmental issues. Japan's official Strategy for a Sustainable Society also described the supports for a sustainable Japanese society: low-carbon economy, smart material-cycle measures and maintaining equilibrium with respect to the use of natural resources. The adoption of clean technology was brought into focus after Japan began shutting down many of its nuclear reactors in the wake of the Fukushima

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disaster. Japan is widely considered one of the most modern and progressive when it comes to economic issues.

### **7. Ethical Issues and Energy Policies**

Ethics has to do with determining whether decisions and acts based on decisions are right or wrong. Decisions can be right or wrong depending on whether the normative and positive information which goes into them is true or false. Decisions can also be right or wrong depending on the correctness of the decision rule used to process the positive and normative information into a prescription or decision as to what ought to be done.

The rightness of a decision also depends on the accuracy of the analysis which uses a given decision rule to produce a prescription. Decision rules also possess deontological characteristics of goodness and badness in and of themselves. Distributions of power are essential characteristics of decision rules and the goodness or badness of a decision rule depends importantly on the goodness or badness of those power distributions. It is also clear that the ethical issues involving energy have to do with the accuracy of normative and positive information about energy and related matters, the appropriateness of the decision rules used in making policy decisions with special attention to the rightness of the power distributions involved and the correctness of the analyses leading to decisions.

The price and market system is another important part of the information system. It transmits normative information from consumers to producers who combine it with positive information and other normative information from input suppliers to make decisions on energy production. Cost and quantity information are then transmitted to consumers and resource owners who use them to allocate consumer expenditures and the use of resources. This iterative interactive process goes on and on to transmit information and produce prescriptive decisions on resource use, production levels, consumption and prices. This information system also suffers several current ailments including being burdened by both its friends and critics with responsibility for determining a "just" distribution of the ownership of income producing rights and privileges, a function it cannot do well and, generally, cannot do except haphazardly unless burdened with regulations which seriously interfere with its information transmitting and allocative functions.

One of the needs is to keep the price system honest. The relative values or exchange prices it should convey deal with values in exchange as determined by (1) relative scarcity or cost of production and (2) demand based on intrinsic value and purchasing power. It seems better to keep the tasks of pricing goods and services and of allocating resource and product use separate from the task of redistributing the ownership of income producing rights and privileges because (1) it is more honest to do so, (2) it helps preserve the allocative efficiency of the price mechanism, and because (3) direct redistributions of resource ownership without resorting to price regulations are likely to be more effective and more permanent in helping the disadvantaged.

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Decision makers need objectively tested positive and normative information about energy and about decision rules for making energy decisions. Ethically, decisions on energy policy can be improved by recognizing power distributions with formal representation, advisory roles, and special voting procedures.

The connection between rising energy costs and inflation is long and tenuous, not direct to the consumer price or wholesale price index. Inflation results from an increase in the supply and velocity of money arising primarily from two sources: (1) the fiscal activities of government (deficit financing) and (2) the operation of the credit system (loose monetary policies). In order for increases in the prices of energy and energy related products to generate more money and/or higher velocity, there must be a political connection between the price increases and the control of monetary and fiscal policies as there is no economic one.

There are serious ethical questions involved in energy price decisions. Energy price is considered to be a crucial macroeconomic determinant since it attributes to widespread economic activities. Thus, sudden changes in energy prices may affect an economy adversely if adaptive measures are not taken in due time. The effects of changes in energy prices on real economic activities can be understood from both demand and supply side channels. As per the demand side is concerned, a rise in energy prices is synonymous to a fall in demand of other goods and services by a household. This happens because as price of energy increases and there is less scope for reduction in minimum energy consumption, the household is forced to reallocate its fixed disposable income from non-energy to energy expenditure. On the flip side of the coin, the supply side hinges on the argument that as energy prices goes up, the cost of production of goods and services go up as well. As a result, producers are compelled to cut down on their output levels and operate at below capacities which in turn have a negative impact on supply of goods and services in the economy.

Developing energy-importing countries like Bangladesh are vulnerable to world energy price shocks. For instance, Bangladesh imports oils from developed nations in order to generate electricity, the most important form of energy used in the nation. As a result, a surge in world oil prices is likely to raise input costs for industries in Bangladesh which eventually may lead to fall in outputs and a simultaneous rise in domestic price levels. It has been acknowledged worldwide that higher oil price may eventually lower income levels in underdeveloped nations. Thus, in order to protect the economies from such shocks the governments in the less developed countries resort to provision of energy subsidies, artificially keeping energy prices low. Although such measures to combat the atrocity of energy price shocks are required to some extent, provision of subsidies in the energy sector usually generate negative impacts on the economy which in the long run can even outweigh the nominal short run benefits.

Subsidizing energy prices is considered to be a crucial policy tool amongst governments of developing countries and at times such policy moves are also stimulated by political motives. Energy subsidies in Bangladesh are both directly and indirectly extended to producers and consumers whereby the subsidies lower the cost of energy inputs and raises revenues for the producers while it also reduces the price paid by the end

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consumers as well. In Bangladesh, energy subsidies are specifically provided in the form of direct subsidies, equity injections, artificial fixation of retail energy prices, natural gas purchase, concessional power sector loan financing from national budget, preferential tax treatments, and distribution channel subsidization. Government intervention in the energy sector can depress macroeconomic indicators within an economy. Thus, the governments in the developed nations purposively abstain from intervening into the associated markets letting energy prices automatically adjust by responding to the market forces of energy demand and supply. Conversely, in developing countries like Bangladesh, the government intervenes into the market subsidizing energy prices and keeping it below the market price which in turn mitigates competition within the energy sector.

### 8. Conclusion

Energy is considered as the lifeblood of the economy and an essential input for almost every good and service. The energy sector will be required to cope with the changes of industrial structure in line with the economic growth as expected in order for Bangladesh to join the developed nations. For this Bangladesh needs to prepare a long term integrated energy policy for which the ethical background is crucial. There was no literature so far to address the ethical context of energy and environmental issues in Bangladesh economy. Ethics is the branch of philosophy which is concerned with the determination of right and wrong goals and actions. There is a close relationship between economics and ethics. Both are closely related to axiology - the answering of questions about goodness and badness - and to deontology which deals specifically with the goodness and badness of a particular decision rule, action or design regardless of its consequences. The decision disciplines are, in a sense, applied ethics. Perhaps economics is the "queen" of the decision disciplines. It has a highly developed theory of decision making and many of its classical writers are also classicists in the ethical and philosophic value theory literature.

Many ethical issues arise as a result of unequal access to energy and of the environmental repercussions of the various ways of meeting energy demands. They require that we consider the consequences for future generations of satisfying the energy needs of the present and that we carefully evaluate the implications for the functioning of the environment on which we and other species depend. We cannot resign ourselves to the fact that nearly one human being out of every four today does not have access to adequate energy resources. The actors in world energy policy (government, industry, research and development teams) must ultimately ensure the availability and upkeep of vital resources at a cost sufficiently low so that each country, whatever its geographical location and economic situation, has access to them.

In the long-term, there is no question that energy supplies will have to come from renewable sources since we know that the non-renewable fossil carbon fuels will eventually be exhausted. The only question is how rapidly we should move to such sources and what mix should be used in various parts of the world over time. This is an extremely complex question and the answer depends on careful analysis of the costs

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and benefits at local, national and global levels, and must take into account the implications for land, air, water, other organisms, food, human security and health, economics and trade, culture and other social and environmental considerations. In short, the ethics of energy must concern the whole energy cycle, from extraction and distribution to consumption and waste disposal.

That spirit of co-operation must also be the guiding light for the development of bonds between individuals in the same society or country, between rich and poor. We cannot, therefore, merely allow market forces alone to take care of balancing the relations involving the supply and consumption of energy, from national down to individual levels. Government inevitably has a vital role to play in ensuring equity and justice and in encouraging solidarity in these areas. There can be no pretext for unduly maintaining the countries of the South in a state of forced 'energy restraint' when they so urgently need adequate infrastructures, and the governments of the industrialized countries should step up efforts to help the developing world meet its energy requirements by 'leapfrogging' to clean technologies.

We find that a sustainable energy future requires strategies that address the goals of efficiency and cost competitiveness, universal access, energy security, and environmental accountability of energy systems. These strategies should include continued market reform, greater role for decentralized energy systems based on renewable energy sources, technological diffusion, and financial flows into developing countries, generally improving energy efficiency with a focus on demand-side management and the establishment of efficient structures. To achieve all these goals ethical practices are inevitable. For future studies, we would like to introduce the practice of ethics in decision making process for Bangladesh energy sector at disaggregate level.

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