

Ethical Aspects of Energy Policy Formulation for the Developing Countries

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Abstract. The ethical aspect of welfare maximization through relative enhancement of social welfare over personal welfare has been an interesting area of research for long. Many researchers all over the world have endeavoured in questioning the ethical aspect of development incorporating both positive and normative concepts. 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. This paper highlights the issue of normative concepts defining ethical behavior and the contextual concepts addressing the conditions influencing ethical behavior, particularly in context of the energy sector. 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. Thus, incorporation of ethics while adopting country specific energy policies can be a solution to numerous energy issues resulting from policies that are implemented keeping the vested interests of a certain group of individual or political party into consideration.

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. Back in the 1970s, economic concerns following world potential oil supply shocks were in prime focus while later on in the 1980s environmental issues associated with combustion of fossil fuels

gained prominence amongst economists and policy makers around the globe. Finally, in the 1990s the societal dimensions emerged into the priority agendas whereby the idea of achieving sustainable societies through ensuring sustainable energy availability across the world came under the spot light. Energy sustainability was acknowledged to be inextricably connected to social development as energy services were believed to be crucial inputs to primary development social welfare challenges of providing adequate food, shelter, access to safe drinking water, sanitation, medical care, schooling, and access to information.

Energy employment as a means to achieve sustainable development of the economy is an undisputed matter in context of both developing and developed countries. Thus, for an economy to embrace overall development energy can be achieved by providing universal access to a cost-effective and clean mix of energy resources that are appropriate and in line with different requirements of various countries and regions. This should include giving a greater share of the energy mix to renewable energies, improving energy efficiency and greater reliance on advanced energy technologies, including fossil fuel technologies.

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 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 aboard due to personal interest of certain groups which can be an ethical issue holding back the development of the energy policies in the country. The objective of this paper is to

shed light on such ethical issues surrounding economic modeling of energy policies in a developing nation like Bangladesh.

Research on ethical issue in formulating energy policy options is a relatively new topic and very few literatures have focused on this area. This paper fills this gap and highlights the issue of normative concepts defining ethical behavior and the contextual concepts addressing the conditions influencing ethical behavior. In addition, the paper attempts to identify the conditions under which conversations about ethics are likely to occur, the process by which ethical dilemmas and disagreements are resolved, the process by which ethical principles are adapted to changing conditions, and the ways that leaders influence ethical awareness, dialogue, and consensus.

Literature Review

Existing literature has highlighted few elements which typically affects the economic decisions based on ethical grounds. Therefore, this chapter discusses an autonomous system to help decision makers incorporate ethics in energy policy decisions. For example, it is necessary to make a system model of ethical business decision-making in the networked economy: what are the elements and environments involved in the decision making process, how the elements are connected or related to each other, how the elements, environments, and the interconnections can influence each other, etc. Moreover, this chapter provides a brief examination of the concept of simplification and various approaches to simplification utilised by model builders and simulationists. It will then attempt to provide an ethical analysis of the implications associated with how much and what kind of information should model and simulation builders be reasonably required to disclose to potential users of their products so that any decisions these users make on the basis of information obtained from a model or simulation output can be undertaken in the utmost good faith.

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.

Shannon (1998) states that while the development and use of model and simulations have undoubted advantages, such as testing new designs, the exploration of existing situations without disturbing current practice, hypothesis testing, the control of time in that a

simulation can be run under manipulated time conditions, and of course experimentation, there are also some disadvantages. These include, the need for practitioners to receive specialized training, difficulties associated with obtaining quality input data, and the recognition that simulations do not offer optimal solutions but rather should be seen as tools for 'analysis of the behavior of a system under conditions specified by the experimenter.' Shannon (1998) makes two further important statements. Firstly, the 'utility of a (simulation) study depends on the quality of the model and the skill of the modeler' and secondly, the 'essence of the art of modeling is abstraction and simplification'. The first is a particularly important observation in that it recognizes a fundamental limitation of the modeling and simulation process. That is, the development of a model and a working simulation is no automatic guarantee of a valid or successful outcome. The second observation highlights the basic nature of modeling and simulation practice. That is, identifying the critical characteristics of the system or event which can then be usefully used to develop a valid and reliable model and simulation. Fundamental to the model building process then, is the selection and use of various abstraction techniques used by model builders to simplify the system or event they are seeking to represent. They give a brief examination of the concept of simplification and the various approaches to simplification utilised by model builders and simulationists. They further attempt to provide an ethical analysis of the implications associated with how much and what kind of information should model and simulation builders be reasonably required to disclose to potential users of their products so that any decisions these users make on the basis of information obtained from a model or simulation output can be undertaken in the utmost good faith.

Balci et al (2002) suggest the evaluation and credibility or acceptability assessment of modeling and simulation products demands rigorous collaborations among those individuals and groups associated with their development. More broadly however, Sterman (1991) earlier argued that whether members of society like it or not they are all becoming consumers of computer models and observed. The ability to understand and evaluate computer based models is fast becoming a prerequisite for the policymaker, legislator, lobbyist, and citizen alike.

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 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, 2006). 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.

Ethical Concepts in Development

Development ethics is a novel social science and philosophical approach that to my scholarly sense needs further investigation and gives the opportunity for even advanced knowledge contribution to the ethical study of development both for social scientists and philosophers. Astroulakis (2013) argues that development ethics, and its subject matter may be accurately interpreted within a political economy context in relation with the ethical theory's reflections to international development. Development ethics came at the stage in the middle of 20th century by Louis Joseph Lebret and became widely known by his student Denis Goulet. In contrary to economic positivism, for development ethicists the issue of international development is viewed not as growth in a narrow sense of material expansion of wellbeing, but as the qualitative enrichment of human beings in all relevant aspects of human life.

The discussion on ethics and development got an important position during 20th century and this interesting dialogue holds until now. Development ethics is the field of studying ethics and development issues. For development ethicists (Goulet, 1975 and 2006; Dower, 1988; Gasper, 2006; Crocker, 2008), development ethics perceived as both the ethical reflection on the means and on the ends of local, national and international development. This ethical reflection not only takes the form of a philosophical discourse, but also offers “a space of analysis, evaluation and action regarding the trajectory of societies, with special reference to suffering, injustice and exclusion within societies and between societies at a global scale” (Gasper and Truong, 2005). To this concern, development is accepted both as an end state and as an action. However, development ethics’ foundation, as all other intellectual fields of study, appears areas of consensus and controversies (Crocker, 1998 and 2008; Clark, 2002) as well as contradictions and constitutional gaps. Further, searching the literature on development ethics, one can easily understand that there appears a “black box” according to the development ethics methodological synthesis.

In 1941, Lebret established in Marseille an interdisciplinary research center known as Economy and Humanism. Essentially, Economy and Humanism constituted a philosophical movement. The main contribution of Lebret’s ethical study of development is concentrated to the problem of the unequal distributions of goods within societies. Lebret systematically investigates the human and societal needs and the role of development if accessing these needs in order to addressing the problem of the inequality and to what it incurs to the social and human development. In brief, for Lebret ethical development should subordinate the attainment of the aforesaid needs to all and for all, individuals and societies.

According to Goulet (1975), existence rationality is defined as “the process by which a society devises a conscious strategy for obtaining its goals, given its ability to process information and the constraints weighing upon it” (Goulet, 1975). Interpreting Goulet’s words, based on a political economy view, existence rationality is considered to be the system of meanings (customs, norms, beliefs, social attributes etc.) within the economic, social and political structure that exists in any society and determines the course of action undertaken to serve societal aims. More specifically, the system of meanings refers to how societies evaluate, employ and apply particular strategies in order to assist to what Goulet (1975) sets as universal goals of development, those of life sustenance, esteem and

freedom. In general, Goulet accepts the taxonomy of the societies to traditional, transitional and modern. Each of them has built an alternative system of meanings under a historical and social process. Development should not be perceived as an alien body to the existing system of meaning of any societal type. If development is to be addressed, three conditions ought to be followed: "(a) new capacities for handling information must be generated; (b) vital resources hitherto not available must become exploitable; and (c) the alien rationality implicit in modernization must be re-interpreted in terms of traditional existence rationalities" Goulet calls this progress as "expanded existence" (Goulet, 1975). The core value of existence rationality is to be concerned of the provision of those ingredients that ensure what any society defines as the good life. Thus, any change should be integrated in the principle of "existence rationality" or differently the system of meanings determined by each society.

Economics in its very positive form has refused to investigate ethical issues within the concept of development. During 20th century, economics, in lines of mainstream methodology, took a shape, to a large extent, of positive science. Just recalling mainstream Chicago School economists and Nobel laureates George Stigler, Milton Friedman and Cary Becker both founders and prominent representatives of economic positivism. Alvey (1999), among others, examines the decline of economics from its ethical dimension during 20th century. To more recent references, Milonakis and Fine (2009), and Fine and Milonakis (2009) explore the transformation of political economy to mainstream economics or better how political economy has transformed to a positive science under a historical and ideological process. They also discuss for an economics imperialism of economics science, in its positive shape, on the other social sciences perspectives. For positive economics, during 20th century, development has been supposed as a synonymous of growth, a material expansion in terms of a westernized development. Qualitative indicators and models have again and again measured the development problem but they do not seem to solve it. Development was perceived as an absolutely measurable matter, as a synonymous of economic growth- the variation of GDP for instance.

Importance of Energy in Economy

The role energy plays within an economy is multidimensional and diverse in nature and it is viewed as a cornerstone of socioeconomic development. It is also empirically acknowledged that energy consumption within an economy directly and indirectly contributes to its socio-economic development. As part of the development of the economy is concerned, energy acts as fuel that expedites the process of industrialization, transforming a traditional agrarian economy into a modern industrial economy. Traditionally, labor and capital were considered to be the main factors of production. However, with time, energy emerged as crucial input in production of almost all goods and services. Thus, energy augmented growth models made their way replacing the traditional capital-labor models of growth. It is estimated that the global industry sector accounts for almost 30% of the world energy consumption (Bergasse, 2013). This clearly points out the importance of energy in production of industrial outputs leading to economic development worldwide. Moreover, several empirical studies have found energy consumption per capita to be cointegrated with economic development with the direction of causality running from the former to the latter (Quolin, 2005 and Stern, 2011). On the other hand, energy also contributes to social welfare improvement, especially in the form of job creation, educational and healthcare betterment, etc. In addition, energy availability in the remote areas can also contribute to rural development creating employment opportunities in rural areas. It is believed that rural energy use can significantly raise rural income levels whereby the grueling problem of poverty in the underdeveloped world can effectively be taken care of.

Energy sector development is one of the prioritized agendas of policymakers all across the globe. However, in the developing nations there are multiple problems acting as barriers to uphold the development of this sector. The energy sector of most developing countries is characterized by a mixed economy framework rather than an optimal perfectly competitive market structure and as a result cost reflective prices don't exist. This is the main problem with regard to energy markets in the developing economies whereby economic development is hampered adversely. Excessive government interventions within the energy sectors in the LDCs have primarily restricted their development drives. Unlike the

developed world, the governments in developing countries provide subsidies to artificially keep energy prices low. Thus, energy prices in these nations are not cost-reflective in nature, leading to irregularities in the form of inefficient energy use. Although energy subsidy contributes to individual welfare keeping energy costs low for producers and end-consumers of energy, it actually depresses economic development through a number of channels. For instance, following artificial fixation of energy prices below the long run marginal cost levels can potentially discourage investment in the energy sector and as a result expansion of the energy sector cannot be attained. Such unnecessary provisions attribute to expansion of the fiscal deficits, ultimately putting the burden on the shoulders of the energy consumers. Moreover, energy subsidies can also crowd out relatively more productive public investments, further restricting economic development. In addition, the energy price distortions send incorrect price signals in the energy market and thereby trigger non-optimal energy resource employment, which can jeopardize the nation's energy security as well.

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.

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 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.

Conclusions

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 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.

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.

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