

## Sustainable Energy Infrastructure: Law, Policy and Practice

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**Abstract:** This paper focuses on the complex relationships and some of the tensions in reconciling economic, social, and environmental goals as necessary for achieving sustainable energy infrastructure development in developing countries. It introduces the rationale of sustainable development, and uses examples to demonstrate that reconciling the three dimensions to achieve sustainable energy infrastructure engenders intricate legal relationships and interests that require a reorientation in our appreciation of law and policy beyond traditional models. It identifies an adequate legal framework through which sustainable energy infrastructure can be secured, and recommends a regulatory model that is best for achieving sustainable energy in developing countries.

### 1. Introduction

The concept of sustainable development is rooted in the ideology of introducing change in the way states and businesses exploit natural resources in production processes for economic purposes. The 1972 Stockholm Declaration (Stockholm), identified a common outlook and link between resource exploitation for development and environmental protection. Then Brundtland Report popularised the phrase ‘sustainable development’ and officially define it to mean ‘development that meets the needs of the present without compromising the ability of the future generations to meet their own needs’ (WCED 1987 p.43). The concept was later adopted by nations through the Rio Declaration and Agenda 21, and it was formally for legal use within the corpus of international environmental law (Sands 1992). The Johannesburg WSSD reinstated commitment from world leaders to advancing the goals of sustainable development at the national, regional and global levels, with emphasis on social and economic development and the regulation of corporate activities through transparent regulations, international initiatives and public-private partnerships.

The Stockholm, Rio and Johannesburg Declarations and related implementation documents (Agenda 21 and Johannesburg Plan of Implementation) prescribed principles for legal and policy guidance in environment and development matters. These include:

- § the principle of *environmental protection* which has an economic and social component by which, protection evinces as right to utilize environmental resources in production processes to meet the needs of mankind, but with consideration for the limits of nature (Stockholm 1; Rio 1).
- § The *integration principle* requires a coordinated approach to environmental and development issues (Rio 3, 4).
- § *Inter and intra generational principles* speak to equity in terms of allocation of resources, and fairness in the formulation and application of laws regulating economic activities (Stock.1, 2; Rio 3, 6).
- § *Sustainable utilisation* advocates prudent use of resources in production and consumption (Stock. 2; Rio 8).
- § The *polluter-pays principle* ensures that polluters bear the cost of polluting activities through sound regulatory framework, economic mechanisms, and liability and compensation regimes (Stock.22; Rio13 & 16).
- § *Precautionary principle* aims to mitigate environmental threats and damage by recommending planning and adopting cost effective measures. (Rio 15)
- § *Environmental Impact Assessment* (EIA) canvasses the need to weigh environmental, economic, and social concerns in deciding whether to allow a project to go on. (Rio 17)
- § *Principle of participation* aims to improve the level of public participation in environmental decision-making through provision of environmental information and access to administrative and judicial remedy (Rio 10).

- § *Corporate accountability principle* seeks to make corporations responsible for their environmental and social wrongs through law, voluntary initiatives and Public Private Partnerships (Rio 16; Johannesburg Declaration).
- § The *principle of cooperation* requires states to cooperate to promote a supportive and open international economic system that will lead to economic growth and sustainable development in all countries to address the problems of environmental degradation. (Rio 12).

States, international institutions, and businesses should cooperate through multilateral and bilateral agreements to formulate and apply policies, guidelines and best practice to promote environmental friendly economic activities (Stock. 24/25; Rio 12 and 27; see also Agenda 21, paragraph 30:2 and 10).

The forgoing principles of sustainable development speak to a development-oriented view from the perspective of regulating development activities in terms of economic viability, social acceptability, and environmental soundness. In this context, 'sustainable development' represents primarily as a principle in international environmental law aimed at reconciling ideological barriers between environmental protection and economic development imperatives by advocating a regulatory framework that should inform and guide development projects.

This perspective of sustainable development for regulating environmental and socially economic activities is distinct from articulations of a wider development strategy of countries. In the wider context, sustainability represents value judgement on countries' level of development and is usually in relation to other international law benchmarks like poverty, human rights, democracy, population, education and conflicts. The reference to sustainable development in this paper is concerned with this wider paradigm. Instead, the analysis will concern the former in terms of regulating energy projects and service delivery in developing countries, in a manner and by a process that aims to accommodate the varied, competing, but complimentary interests in undertaking energy projects.

Energy infrastructure herein refers to electricity, in context of investment in power plants, sales, revenue and prices, generation, trade, demand, and plant emissions. It also covers energy use in households, commercial buildings, manufacturing, and transportation on the one hand and to fuel use, including renewable and alternative fuels (e.g. hydropower, solar etc.). It precludes discussion of Petroleum energy, Natural gas and Coal.

The analysis on regulating energy infrastructure for environmental and socially acceptable economic activities serves to highlight the competing economic, social, and environmental goals inherent in energy projects. This imperative underscores the legal significance of sustainable development. The application of its principles to regulate energy projects for sustainability will thus depend on the following:

- § the nature of electricity venture sought to be undertaken-, power plants, hydropower, Nuclear, etc.
- § who commissions, undertakes or underwrites the project - whether, public, private or donor sponsored investment
- § the nature and extent of use of natural resources - land, air, wind or water
- § the distribution of benefits/profits acquired from electricity projects- Tax revenues, dividends, community development funds; and
- § the responsibilities of various entities in energy development, *vis-à-vis* the redress of those negatively affected by it.

Sustainability here symbolises a continuous and ongoing process of change and adaptation in which, resource exploitation, investments, technology and institutional change relate in harmony to enhance current and future needs and aspirations (Lindner 1991). The process engenders an intricate and complex net work of rights, obligations and other socio-legal relationship that transcends traditional legal models. The paper provides an overview of the economic, social and environmental aspects of sustainable energy infrastructure in developing countries. It uses examples to demonstrate that reconciling the dimensions to achieve sustainable energy infrastructure engenders intricate legal relationships and interests that require a reorientation in our appreciation of law and policy beyond traditional models. It also provides a general overview of some relevant legal sources and attributes that form the legal framework for balancing these competing goals and recommends a regulatory model that is best for achieving sustainable energy in developing countries.

## 2. Issues of sustainability in energy infrastructure

Electricity is crucial for enhancing industrialisation, trade and consequently stimulating economic development. However, electricity infrastructure remains inadequate in least developed countries (LDCs), particularly in Africa. According to the World Bank, the need for access to good quality, reliable and affordable infrastructure is universal in developing countries but the nature of the infrastructure 'gap' varies. The gap in LDCs in sub-Saharan

Africa relate to demand for increased access to basic infrastructure services in addition to improving service quality and efficient service delivery (World Bank 2005).

Electricity infrastructure thus has imperatives for development from an economic, social, and environmental viewpoint and present sustainability issues which tend to undermine conflict with the development needs it aims to address. In order to reflect an adequate context of sustainable energy infrastructure this paper will analyse the value of electricity in relation to the three dimensions of sustainable development - economic, social, and environmental, as essential in the process of addressing the needs of humankind. It will also identify the roles of various actors and stakeholders, including the challenges presented by the interactions, trade-offs and complementarities inherent in energy sector investment, energy resource development, supply policy, consumption and demand management, and institutional development.

## 2.1 Economic, social and environmental aspects of energy sustainability

The main thrust of economic aspects of sustainable energy development is the promotion of growth of the countries' economies through business. At a country specific level, such as Ghana and Sierra Leone, energy policy objective seek to maintain adequate and reliable energy supply, reduce energy intensity in creation of economic growth, achieve high levels of end-use efficiency and to increase access to modern energy forms - (reduction of energy poverty) (Ofosu-Ahenkorah A.K; Ministry of Energy & Power SL 2007). The West African Gas Pipeline (WAGP) project a regional development, aims to enable customers in Ghana, Benin, and Togo to access Nigeria's resources of natural gas as fuel for power generation and industrial development with consequential benefit of providing a foundation to facilitate regional economic growth and development (Ministry of Energy, GOG 2005). Building energy infrastructure or its supply side could facilitate economic growth in diverse ways through attracting private investments, facilitating industrialisation, and manufacturing improving trade efficiency and competition including provision of access to global markets and trade via transport and communications.

Economic sustainability in the energy sector therefore requires integrated strategies and policies. In one respect, the focus is on the supply side, on the allocation of financial resources and adoption of innovative energy financing approaches. Alternatively, energy strategy should employ models of rational segmentation of energy markets into commercial, hybrid, and non-commercial. This mechanism helps determine the merits individual projects and define the actual role for different players at different levels. For instance, a purely commercial model is market driven, tariff oriented and aims at profits cost recovery. Hybrid model epitomises public private partnerships, with a balance between cost recovery, and representing among other things selling power to grid, community participation, education, and awareness of service utility function and cost. Moreover, the non-commercial model is social project driven, where tariff and cost recovery factors weigh less (UNESA 2005).

The commercial model envisages the need to converge and direct investment capital to large-scale projects especially regional or continental. An example is the WAGP Project, which is cross border between Ghana, Benin, Togo, and Nigeria. The project is wholly on commercial terms with funding plan as equity contributions by the pipeline Shareholders. Neither project finance nor multi-lateral agency finance is involved. Such investments, which cross sovereign borders, (cross-country pipelines), are common, where user fees target large wholesale customers rather than retail customers (IMF & World Bank 2004; EIB 2008). The Bumbuna Hydroelectric Project (BHP) in Sierra Leone is an example of a hybrid model designed to accelerate growth, and reduce poverty, through the development of least-cost, power generation for domestic use in an environmentally sustainable and efficient manner (World Bank Projects 2005).

Thus, with the emphasis on growth and business, price tends to be a highly important in economic aspects of energy infrastructure. However, the price factor can pose difficulty in valuing non-market impacts - distributional, environmental and impacts on vulnerable groups, which factor in the social dimension of energy sustainability. Sustainable energy strategy should internalise these social externalities into the market function.

From the purely social dimension energy sustainability issues evolve around access, the merits and demerits of low fixed charge tariff, the extent to which awareness and attitudinal changes influence consumption and demand management and whether the public interest *vis-a-vie* energy infrastructure impacts is being adequately considered. WSSD Report (2002), defines an ideal source of infrastructure including electricity as one that must be socially acceptable - (accessible and affordable) economically viable (attracting investment, service quality and efficiency) and environmentally sustainable (mitigating environmental impacts on the poor, improving standards and investing in environmental initiatives).

Social sustainability in Ghana and Sierra Leone for example, especially relates to households energy consumption from biomass in the form of firewood and charcoal. In Ghana, firewood and charcoal together account for more than 93% of energy used for cooking (Ministry of Energy, Ghana 2008). Available and reliable supply of electricity will improve the quality of their life by avoiding reliance on firewood and charcoal for cooking, the use of noisy, polluting, and expensive generators and, will lead to substantial improvements across a broad spectrum of public services such as health and education. Thus socially sustainable energy infrastructure will

require law, policy, and strategies that balance service supply with accessibility, affordability, demand management, and participatory processes that instil awareness, and attitudinal change. Unlike the economic dimension where commercial and hybrid model dominates, in respect of social dimension, a non-commercial model operates. This is social project driven, with tariff and cost recovery factors weighing less. Development grants and subsidies usually ensure equitable service, and cushion specific projects to meet social and environmental goals.

In terms of environmental issues, sustainable energy infrastructure relates to energy security and pressures for reduction in carbon intensity of energy on the one hand and how distributed generation, innovative technology, and renewable energy can contribute to that security, the other. Applicable sustainability strategies will include improving efficiency in energy supplies as well as in end users such as diversification of energy supplies, adoption of clean and advanced technologies and enhancing the utilisation of renewable energy resources (UNECAP 2006). The carbon finance strategy (financing greenhouse gas reduction projects), and the Clean Development Mechanism (purchase of carbon credits) under the Kyoto Protocol are viable policy options. In addition, reducing dependency on imported energy could help developing countries lessen vulnerability to volatile energy markets such as represent current challenges. The scale of technology transfer and intellectual property rights are similarly important policy consideration.

In effect, viable energy policy options include strategic environmental assessment (SEA). This is an analytical and participatory tool to ensure an integrative approach to policy-making, planning and programming. Unlike the traditional environmental impact assessments (EIA), SEA stresses the inter linkages among environmental, economic and social considerations to identify the impact of the use of such infrastructure as opposed to focus on cost benefit analysis of construction. (See generally, UNECAP 2006).

Overall, sustainable energy infrastructure strategy and policy must identify and adopt the best-fit infrastructure needs based on the reconciliation or coordination of the various dimensions and by developing different options that could meet the need for sustainable economic growth. To do this, is important to establish the categories of actors, stakeholders, or interest in energy projects and their respective roles in reconciling and enhancing economic, social, and environmental goals.

## **2.2 Categories of participants and roles**

The categories of actors, stakeholders, or interest usually involved in energy projects and their respective roles in enhancing economic, social, and environmental goals represent variedly through investing in the building of power plants, managing distribution and energy use in households or industries, or sourcing renewable and alternative energy supply. Identifying participants and their respective roles will serve to highlight their interrelationship and competing interest in electricity projects.

The first category is the host state in whose territory the energy project is usually situated. The state or central government (public regulatory body), has a role to facilitate investment decision-making, enhance competitive and well-regulated markets, where energy projects go on tender in an open and transparent manner, and contracts are honoured. The state's role is not limited to economic or fiscal actions of governments but also the responsibility for the overall institutional environment, encompassing the rule of law, the protection of property rights, and the effectiveness of administrative machinery.

The second category of participants is citizens who desire to benefit from electricity infrastructure. Local communities living in energy development zones who compete for natural resource employed for power plants and dam constructions and whom such projects directly affect are a recognised category of participants. The respective roles of these groups relate to mechanisms and processes that afford them say in energy infrastructure decisions and sector governance.

There are also private actors, usually business entities, and transnational companies. The private sector has a role in financing for infrastructure and delivering infrastructure services in the most efficient and effective way in terms of competition, adequate pricing arrangements, and fair regulation. The regime and regulation of transnational companies is more complex, usually entailing other international connections or obligations in various respects. For instance, at a structural level, they comprise extensive network of decision-making, headquarters operational structure, branches, subsidiaries and other forms of independent company units throughout the world (Malanczuk P. 1997).

Other issues that condition the role of this category of actors will include international rules and practices governing the industry in terms of forms of investment and financing for energy infrastructure development, management and distribution, interaction with state energy distribution companies or agencies, legal issues affecting international dispute resolution, and instruments of joint operations among several companies designed to spread investment risk and applicable environmental laws and regulations. All of these issues have relevance primarily, for determining the scope of economic, social and environmental responsibility of companies on the one hand, and the regulatory and institutional capacity of a developing country host state.

Another category of actors is international financial and development institutions, usually comprising inter-governmental or regional institutions, individual state agencies, and private commercial interests. International financial and development institutions have a role to improve the environment for private investment, and providing policy advice in relevant infrastructure areas including funding socially important infrastructure projects that cannot attract private finance (IMF & World Bank 2004).

Then there is a hybrid of public and private actors through the practice of public-private partnerships. This involves private sector supply of infrastructure assets and services that is traditional domain of public sector while recognizing the complementary roles of both sectors, and reflecting political and social realities of different countries and companies. The Sierra Leone BHP exemplifies this hybrid in its financing structure in USD.

- § The Government of Sierra Leone – 8.4m
- § Government of Italy -21.1m
- § World Bank /IDA - 12.5m ;
- § Netherlands Clean Development Facility – 1.9m;
- § African Development Bank - 3.5m
- § OPEC fund – 8.4m; and
- § Commercial banks will loan of 38 m guaranteed by an IDA “Partial Risk Guarantee” (World Bank BHP 2008)

The various interests and roles analysed are highlight the interactions between the three dimensions of sustainable energy development. These in turn necessitates an interaction of sources of law, which will represents an adequate legal framework for reconciling and balancing the varied interests beyond traditional legal models.

### **3. The legal Framework**

The main contributions of sustainable development is its implications for policy and law formulation in areas such as access to and use of natural resources, alongside questions of policy integration between economic development and impacts on the environment (Sands 2000). An energy infrastructure regime should have an appreciable legal framework by which to understand, interpret, and implement, sustainability goals from an international and national perspective. This section will analyse the legal sources of sustainable electricity development - substantive, procedural, regulatory, standards setting and normative practice. The analysis is set against the backdrop of the multidimensional overview of the nature of sustainable energy development, and the varied but interweaving categories of participants, interests, and roles discussed above.

#### **3.1 Energy policy and law making**

Primarily, sustainable development represents an arena in which law-making and other law-related activities take place and international law requires development decisions to be the outcome of a process that promotes sustainable development, and to establish appropriate for doing so ((Lang 1995; Boyle and Freestone, 2001). Three core functionalities emerge from this process namely: a discussion of the operational objectives required achieving sustainable development; the management of principles needed to generate more sustainable policies; and the adoption of practices required to achieve sustainability (see generally Jacobs 1999).

Host states, international private and institutional investors or electricity management agencies may determine particularities of sustainability measures in terms of accommodating their respective interests a roles and translating it as an ongoing process through applicable law and regulation, policy d practice. The principles evolved through Stockholm, Rio, and Johannesburg summits could provide guidance in decision-making and implementation process.

International public or private capital usually supports energy infrastructure transactions, necessitating involvement of international law and actors at various levels. Treaties are used when the interest of more than one state is involved, to provide the framework for the projects or harmonization of applicable regulatory requirements. An example is the Inter-Governmental treaty between Ghana, Benin, Togo and Nigeria to facilitate the West African Gas Pipeline (WAGP) development by harmonising their legal, regulatory and fiscal regimes. The four states appointed a consortium of public and private companies, West African Pipeline company (WAPCo) as Project Developer and formed and International Project Agreement between WAPCo and States. Further, bilateral agreements (including grant agreements) are effective between international donors (or national development agencies) and states. Bilateral agreements provide cushion for dire infrastructure investment needs and usually reflect international and diplomatic conditioning of host governments’ exploitation of the funded energy project.

Still on the international sphere are loan agreements International Financial Institutions (IFIs) as lenders or guarantors of projects. Loan agreements can be direct commercial arrangement between private and public investors for energy development in a developing country, or awarded indirectly in favour the host



country. They create obligations supporting the financing; exchange & transfer of foreign currency, while investors and financiers would procure political risk (risk insurance and sovereign guarantees) in order to secure the investment. The International Finance Corporation (IFC) of the World Bank Group in 2004 financed Takoradi International Company (TICO) (Project Company) a joint venture between CMS Energy of the U.S. and Volta River Authority (VRA), a state-owned electric utility up to 60 Million USD. The loan was for the completion of a 330 MW combined cycle power plant at Aboadze in Ghana, the Takoradi II Thermal Power Plant. This economic instrument also incorporates various social and environmental issues that should counter balance in implementing the Takoradi projects. These include social issues of health and safety, land acquisition, impacts on fishing industry; impacts on natural environment (air pollution, noise), and other impacts of associated facilities like transmission lines (IFC Projects 2008).

At domestic level, legislation in various sectors- planning, health and safety, forestry, EIA, electricity Acts and investment Acts could constrain, legitimise or empower certain conduct in electricity infrastructure because they are sources of binding law. They may provide the framework from which 'specific obligations' can arise or 'individualised rights' tested (Handl 1995, p.36). Some legislation may have clear treaty basis on MEAs and government can use their role as procuring authority, regulator and regulator of energy infrastructure to promote sustainable development in a holistic and integrated manner.

Private participation in electricity projects at the domestic level is usually by corporate entities. Traditional models of contracts usually define the legal relationship between host states and company performing the respective energy function. Examples of such contracts include service contracts (contracts to provide specialists services), management contracts (or leases) for existing infrastructure facilities and concessions (requiring the private sector to invest in facilities) (Kirkpatrick *et.al*, 2006). Other contractual instruments deal with divestitures (sale by the state of some or all of the equity in state owned enterprises and green field investments including Build operate and transfer (BOT) or Build owned and operate (BOO) type schemes. One example is the West African Gas Pipeline (WAGP) which will be built, owned, and operated by the West African Gas Pipeline company Limited (WAPCo), a Consortium of six companies, under authority granted by the Governments of Benin, Ghana, Nigeria, and Togo.

A variant of this structure is the Bumbuna Hydroelectric Project (BHP) in Sierra Leone. There, Salini Construttori (Salcost) will carry out the completion of the construction of the dam and of the powerhouse. ABB Italia will carry out the construction of the transmission lines, and an Italian engineering firm Studio Pietrangeli, is responsible for the supervision of works. A cabinet Subcommittee of the host state is responsible for all issues related to policy decisions concerning the BHP. A Technical Committee addresses the technical aspects of the project. A Project implementation Unit (PIU) is the executing body of the project to ensure the liaison with all stakeholders and donors.

Where MNCs are involved, as in the BHP in Sierra Leone the legal rules that may apply can be complex. The national laws of the home jurisdiction where MNC is incorporated and the host jurisdiction where it builds infrastructure, does business, or acquires assets (*Lex loci*) could be applicable. The law of the place where the project is located (*Lex situ*) is also applicable as is the body of international economic law that represent universal and customary norms of commerce and investment protection (*Lex mercatoria*) (Doug W., 2006). The body of contract law (including all provisions of the contract resulting from parties negotiations (*Lex contractus*) and dispute resolution forum (*Lex fori*), all acquire relevance in one or in combination of legal relationships in developing sustainable energy infrastructure. In the circumstances, States (host and incorporation state) should use their executive, legal and administrative machinery to implement applicable laws and contractual provisions, as should arbitral tribunals.

### 3.2 Liability and enforcement

Governments are required under Principle 22 of the Stockholm Declaration and Principle 13 Rio Declaration to develop international and national laws regarding liability and compensation for the victims of pollution and other environmental damage. International law will apply where the respective harm have cross-border effect. Principles of state responsibility and compensation schemes of treaties and MEAs will apply and only states can enforce these.

However, with the complex network of legal relationships in energy development, imputing responsibility for environmental and social impacts especially on the poor can be a challenging task for developing countries. States, (especially developed countries where companies are incorporated or headquartered), could mitigate the challenges by using their legal machinery for transnational enforcement irrespective of whether the impact has a transboundary effect. National law should be enabled to allow for Transboundary access to justice and public interest litigation in environmental cases on the one hand and the opening of national courts to use by foreign plaintiffs seeking redress against MNCs. A principle of global relevance for such international environmental jurisdiction is the principle of liability of MNCs for the acts or defaults of their subsidiaries in environmental matters (ILA- CEEL 2004). The United States Courts use of the Alien Tort Claims Act (28 U.S.C.S. § 1350

(Revised 2004) is example of such process which target human rights abuses by MNCs in petroleum energy development in Nigeria (*Wiwa v. Royal Dutch Petroleum Co., et al.*, 226 F.3d 88 (2nd Cir. 2000))

In case of liability for harm with purely domestic effect, it is dealt with on the one hand, by national regulatory regime, risk avoidance procedures and criminal penalties (see Boyle A.E., 2005). On the other hand, tort law or statutory liability schemes can apply either as strict or fault-based. Strict liability will entail imposing a price on conduct that causes harm or loss, while fault based liability would exact damages payment for harm caused where an actor fails to observe relevant standard of care analogous to a regulatory standard.

### 3.3 International standards setting

International Standards are increasingly becoming important for directing sustainable energy projects. Such standards mostly translate in project agreements, by international financial and development institutions as conditions for financing or donor support. They could relate to procurement policy, environmental management strategy or construction and maintenance cost. Some examples include the "Equator Principles" (adopted by over forty financial institutions) and "European Principles for the Environment." Both instruments provide benchmarks for funding international projects, requiring borrowers to meet certain environmental criteria before a project can qualify for investment. (Thomas S. 2006).

The World Bank Group also has its own environmental and social Safeguard policies and guidelines for energy projects in developing countries that it finances or guarantees (World Bank Report:2000). The WBG helps advance this agenda by providing policy advice to governments on the instruments that can effectively facilitate standard setting through partnerships and support firms' sustainability strategies on environmental stewardship and building best practice (IMF & World Bank, 2004). In addition, the Banks Doing Business project acquires systematic information on good practices for the design and implementation of laws and regulations. This could allow easy identification of particularly useful solutions and ways to adapt them to different legal systems.

These standards are particularly important as leverage by financial institutions for regulating MNCs and maintain international standards in developing countries where domestic environmental standards are often lax and administrative systems are weak. However, if it should be effective tool, there is need for convergence and cohesion of various international standards, especially applicable ones where cross border effects are present.

### 3.4 Regulatory and procedural techniques

Regulatory and procedural mechanisms are vital for enhancing economic, environmental and development outcomes in terms of effectiveness and efficiency of electricity projects. Effective regulation can achieve the social goals (including wider goals of sustainable development and poverty reduction) set down by the government for the regulatory authority. Efficient regulation achieves the social welfare goals at minimum economic costs- *i.e.* cost of directly administering the regulatory system and compliance cost of regulation, external to the regulatory agency and fall on consumers and producers. Quality of regulatory process on the other hand derives from balancing accountability, transparency and consistency (*et. al.* p.15).

In some legal systems, the doctrine of social responsibility has helped write public interest concerns into the role of profit-making Corporations. 'Enforced self-regulation' or 'management based regulation' is a regulatory model now initiated by national jurisdiction where companies are incorporated and headquartered, so as to compel the regulatory entities to improve or disclose their internal management to achieve public goals (Wendy Doug 2006 1191-2). This raises issues of applicability of traditional private law - namely property law and public trust doctrine, equity and fiduciary duties (including, third party beneficiaries, and agency relationships) to address social goals. According to Doug, these existing legal principles are common to 'civilised nations' and must be formerly injected into international economic law and implemented through the existing mechanism of real life commerce (Doug 2006 p.1192). In my view, the need to address the nature and scope of contemporary global environmental threats and challenges should underscore this need.

Similarly, polluter-pays principle, which advocates use of effective economic instruments and incentives, has legal relevance for ensuring sustainable energy projects and services. The need to provide an effective legal and regulatory framework is what drives the process. Regulation by economic instruments compliments to States' traditional command and control regimes. It possesses value in the sense that it combines different sets of regulatory techniques- economic, voluntary, and self-regulation to promote sustainability. Companies and state administrative machineries are dominant users of this regulatory model. It is especially effective for addressing local community interests, since these do not always translate into binding agreements because some of the impacts are not always avoidable.

Two further legal technique for regulating companies and industry generally are 'negotiated rule-making' and 'regulation by litigation' (Morris *et. al* 2005 p.181). In the former, main interest groups move from the public regulatory process to negotiations, through an agency-directed process that places emphasis on the creation of trusts funds for adversarial relations. In 'regulation by litigation', agencies use enforcement actions against

regulated entities and interest groups to create new substantive obligation for the regulated. An example of this approach is a case in the United States, involving the major producers of heavy-duty diesel engines signing a \$1 billion settlement with the US/ EPA. The settlements new controls for nitrogen oxide emissions (Morris et. al 2004). It is through appropriate regulation that real life shifts in direction become possible with a view to achieving sustainability objectives.

Further procedural techniques are also applicable to regulation of energy projects. These techniques include requirements for consultations defining public participation in decision-making, requirements for EIA, and environmental monitoring and reporting obligations. The terms of the process could derive from specific statutory provisions on the one hand, or where a legitimate expectation has arisen either by previous practice or by explicit assurance (Stallworthy 2008).

However, owing to the intricate and complex issues and interest in environmental matters, including the procedural technicalities and cost of judicial reviews of administrative actions, deliberative processes become vital as quasi-legal methods. The values of deliberative and participatory process not only speak for immediate redress to environment concerns, but also of imputing new and further obligations on companies.

### 3.5 Normative aspects

Normative relevance in sustainable development is primarily attributable to recognition, acceptance, adaptation, or state practice of implementation of environmental principles. For example in the *Gabcikovo Nagymaros case* (1997), the ICJ identified the normative relevance of y in the 'consideration' and 'proper weight' that must be given to its objectives in decisions initiating and continuing development projects. The objectives could be inferred from 'new norms and standards' that are set forth in a great number of instruments including those affiliated with 'principles of current international law' on the one hand, and from wide, general use and acceptance by the global community (para 141; Judge Weramantry p. 89 & 93).

There is a however a view that sustainable development is incapable of acquiring normative status as a principle of international Law unless it entails a clear or specific obligation, that will constrain the behaviour of states or restrain other actors within the international legal system. (Lowe, V. 1999 p.23) .This argument does not displace the normative argument, but only demonstrate that there are degrees in legal capacity through which the objectives apply to address environment and development challenges.

### 3.6 Sustainability and legal rationality

Legal rationality of sustainable development moves away from concerns with analysis of duty and obligations to inquiry on legality by transposition or application. Rosalyn Higgins points out, international law as a process must seek to encourage interpretation and choice that is more compatible with the values and objectives we seek to promote and achieve, and the possibility of including actions of variety of authorised decision-makers within the fabric of international law (Higgins 1994 p.210). In line with this rationale, sustainable development can transpose as an element of the process of judicial reasoning in applying the concept to resolve disputes in which environmental objectives and developmental goals conflict. Essentially, this regime allows legal intervention to occur on a variety of levels. An example of such intervention is the Indian judiciary applying principles of sustainable development in determining sustainability dam construction in the *Narmada Bachao Andolan v. Union of India* case (2000) 10 SCC 664).

Lord Carnwath sees this legal method of application and implementation as a judicial function to achieve the principles of sustainable development, using judicial ingenuity 'even with limited black-letter legal weapons'. Use of this 'ingenuity' could ensure enforcement of basic environmental standards or even provide the substantive basis for protection of the environment (Carnwath (2004) p.217-8). Accordingly, the specific role of the judiciary in a particular case may either be supervisory, determined by the regulatory competence of individual countries; or by using ingenious articulations to fill in 'the gap', where administrative systems are relatively underdeveloped. This method could aid the development of a more perceptibly principles based environmental jurisprudence.

Finally, the various dimensions of construing sustainable development elaborated ein reflect elasticity in legal dynamics required to deal with the interrelationships that exist between economic, social, and environmental goals in energy development in developing countries. The need to balance interests and roles of varied particip in electricity ventures explains the necessity of garnering various (international, domestic, industry and institutional) sources of law, policy and practice, to achieve sustainable energy projects. This allows legal development to take place at pace with the contemporar global economic, social, and environmental challenges that delay energy development.



#### 4. Conclusion

The paper has shown that sustainable energy development involves complex set of actors and stakeholders, with varied and complementary interests that need protection within an adequate legal framework. Applicable legal sources that represent such a framework have been analysed. The outcome does not represent a one-size fit all approach, but must tailor to fit the type, nature and size of energy project and more particularly the institutional capacity to implement. Liability and enforcement mechanisms could come at great cost in developing countries because of the concern with strict rights and duties, which does not serve public interests including the expenses of litigation. The regulatory and procedural technique is in my view best for developing country energy development provided the citizens are educated, empowered and made aware of their respective roles in the process and administrative institutions are viable. International and industry policy objectives and standards can be implemented through regulatory model.

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