

Legal Regime Regulating Energy Sector In India

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Abstract: The main theme of this paper will certainly be appreciated and well understood unequivocally by one and all if the following queries are answered.

- ✓ *How the people of India will support and lend their hand to our beloved Prime Minister of India, Sri Narendra Modi ji in making the mission of "SWACHHA BHARAT" a reality and dream come true*
- ✓ *How the present legal regime affect the regulatory mechanism in India, of clean energy technology in preventing and control of the climatic changes?*
- ✓ *To what extent the solar energy can be better generated, stored, conserved, distributed and utilized for the benefit of humanity in the generations to come?*
- ✓ *Is it not the need of the hour to update the laws, regulations in order to protect and upkeep the natural resources which are abundant in India, so as to make BHARAT not only Swacha but also healthy, prosperous and role model in the World.*

The author has taken great care to highlight the keen interest and sincere efforts shown by Telangana State Government, to which the author belongs to, in spreading the message and importance of solar energy resulting in formulating "Telangana Solar Power Policy-2015", which indeed is a boon to the people of Telangana.

The following conclusions are important:-

- ✓ *Stresses the need to go for a strong worded, legislation to overcome certain lacunae, ambiguity and prevent any shortcomings that hamper India's law / no carbon economy targets.*
- ✓ *The study highlights the urgency and significance to understand the judicial activism with regard to the Nation's ultimate aim of reduction of greenhouse gases emission by the application of clean energy technology.*

Keywords: Solar energy, Renewable energy, Legal framework, Covenants, Power Policy.

I. INTRODUCTION

The energy sector plays a key role in the economic development of a country; the worldwide increase in the consumption of energy has led to a scarcity of fossil fuels. This has resulted in the need for exploring other alternatives for energy resources commonly known as renewable resources yielding clean energy. Globally, 19% of total energy sources are renewable and 14% of this is predominantly derived from biomass resources. Though there is a continuous increase in total installed capacity, but the gap between supply and demand is continuously increasing. This is expected to increase the approximately 33% by 2035. India ranked 8th in the world for investments in renewable energy sector.

Investments rose 25% to US \$ 3.8 Billion, dominated by wind power projects (US \$2.3 Billion), followed by US \$ 400 Million each for solar and biomass power (including waste-to-energy).

In India, Renewable Energy Sources (R.E.S) currently contributes 9% of total power generation of India. Renewable Energy can influence energy security by mitigating concerns with respect to both availability and distribution of resources, as well as to the variability of energy sources. In India energy contributes more than 25% of total imports. Renewable Energy can stimulate development locally economically and socially. In response to the financial and economic crisis many governments have included substantial spending on clean energy technologies in their stimulus packages.

Renewable Energy (R.E) has become an important agenda of India's energy planning process, since the climatic changes has taken a center stage in the domestic and international policy arena. The Government of India has set aggressive targets, with a view to demonstrate its commitment to renewable energy, for renewables and several incentives and policy initiatives at the central and state levels by arranging high level grids connected and off-grid renewable energy.

Needless to say that the development of renewable energy sector hinges on the combination of legislative frameworks, funding mechanisms, institutional arrangements and co-ordination mechanisms, which work together to support the implementation of Renewable Energy strategies, policies, programmes. The experience shows that despite the growing rate of activity in this sector, there are certain issues which highlight the gaps in the governance of renewable energy in India. A serious attempt is made in this legislative, legal and governance issues which have a direct bearing on Renewable Energy sector. All the issues relate to technical and institutional capacity, planning and budgetary allocations, transparency and accountability, regulatory compliance and that apart social and environmental concerns. A great care is taken to eugolise these issues with specific examples and sums up the way forward for addressing some of these gaps.

It is not out of place to mention herein that Renewable Energy has become an important agenda of India's energy planning process especially since climatic changes occupied high pedestal not only in the domestic but also international echelons.

In a nutshell, the areas have grouped under the following heads for better appreciation and understanding the scope of this paper.

- ✓ Technical and Institutional Capacity
- ✓ Planning and budgetary allocations
- ✓ Transparency and accountability
- ✓ Regulatory compliance with respect to Renewable Purchase Obligations (R.P. O's)
- ✓ Social and environmental issues
- ✓ Suitable legislative framework
- ✓ Legal regime regulating energy sector and necessary plans
- ✓ Pollution control and clean energy measures

The study is based upon a review of literature and is informed by discussions with renewable experts and stake holder consultations.

Renewable Energy in poor rural areas without grid access has shown to bring about potential cost savings compared to fossil fuels such as diesel generators. India spends more than 45% of their export earnings for importing energy. In analyzing the Indian scenario Shukla et al. (2008) found that the share of Renewable Energy is higher in cases which included additional sustainability policies.

Effective policies and major investments in the area would help achieve a higher penetration of modern energy.

It is important and pertinent to mention herein that India with demonstrated high energy requirements from renewable sources, having a set target of 78.7 GW renewable capacity to be added during the period from 2007-2012 and 20 million rural lighting systems by 2002 doesn't have a Renewable Energy Act drafted till date. Also protection and utilization of

public funded Intellectual Property Bill 2010 has still not been enacted which may have some influence on the clean energy technology commercialization. There is a global climatic change scenario that needs to be combated. The emission of greenhouse gases results in increase in global warming which can lead to greater variation in temperatures, increased frequency and intensity of extreme weather-related events and average sea-level rise.

Intellectual property rights, climate change and clean energy trade as is shown is very closely related. Intellectual Property Rights promote innovation in climate change technologies by providing incentives for investment in research and development. They also contribute towards promoting transfer of climate- friendly technologies when companies export or invest in foreign countries, as they provide legal security to technology owners. However, for technology recipients, intellectual property rights risk increasing the costs of acquisition of climate-friendly technologies and may hamper the rate of their diffusion. It is therefore, mandatory to further deepen the dialogue on the role of I.P.R's in the development and transfer of climate friendly technologies, taking an evidence based approach.

Therefore, it is evident that a relationship exists between Environmental Laws, Climate change and I.P.R. However, it has to be seen how the policies and legislations provide any needed help in this regard.

II. ENERGY SECTOR IN INDIA

The Indian Power Sector has made significant progress over the years. The installed capacity of the industry grew manifold from 1,361 M.W (Mega Watts) in 1947 to 156.8 G.W (Giga Watts) in January 2010. The sector has also undergone substantial structural changes. Regulatory policies have played a predominant role in changing the landscape in the Indian power sector. Though the sector has come a long way from the early nascent stage, it is still lagging on several fronts, such as power shortages, transmission and distribution losses among other and has a long way to go.

This chapter traces the evolution of the industry and how the policies and measures adopted by the government at various intervals have changed the industry's structure. This chapter lays emphasis on the developments that took place in the sector since 1991, this was the watershed year for Indian power sector, as a number of measures adopted in this year altered the functioning of power sector.

The industry has been regulated for almost a century and the Electricity Act 1910 was the first act that was introduced to govern the India power sector. The Electricity (Supply) Act 1948 was introduced after independence, but it did not achieve the desired results, as the power sector's performance started to deteriorate and a need was felt to restructure the sector. Several regulatory changes were made since 1991, which transformed the industry's performance.

Based upon the government's regulations and policies, the evolution of Indian power industry can be divided into two broad phases, (i) Pre-reform and (ii) Post-reform phases. The Pre-reform phase (up to 1991) can be divided into pre-independence phase (prior to 1947) and post-independence

phase (1947-1990) and post-reform phase can be broken down into three phases.

PRE-REFORM FRAMEWORK (BEFORE 1991)

PRE-INDEPENDENCE ERA (UPTO 1947)

The first instance of commercial generation of electricity in India dates back to 1879 in Kolkatta (then Calcutta). In 1897, the government of Bengal granted an exclusive 21-year licence to the Calcutta Electricity Supply Corporation to supply electricity in Calcutta. Mumbai (the Bombay) was the second city to get electricity and with the progress of time, private companies set up power supply systems in major urban areas under franchises, which allowed them a reasonable rate of return. The Electricity Act 1910 was the first Act (one of the earliest regulation) in the power industry, which was introduced before independence in 1910. The Act provided the basic framework for supply of electricity in India. The Act encouraged the growth of the industry by issuing licences to private companies as such Tata Power (formerly known as Tata Electric) commissioned its first hydro-electric station with a capacity of 72 MW at Khopoli, Maharashtra.

POST-INDEPENDENCE ERA (1947-1990)

Under the Electricity (Supply) Act 1948, the Central Electricity Authority (C.E.A) was established at the Central level and the State Electricity Boards (S.E.B) at the State level. The objective of the C.E.A was to develop a sound, adequate and uniform national power policy to coordinate development of the power sector in India.

In the initial period, the S.E.B's performance was satisfactory and they played a vital role in the development of the sector. The Central government amended the Electricity (Supply) Act 1948 and established the National Hydro Power Corporation (N.H.P.C) in 1975 to build hydropower plants and the National Thermal Power Corporation (N.T.P.C) to set up coal based power plants to supplement the generation capacities of the S.E.B's and private companies. In 1992, Power Grid Corporation of India Limited was established.

POST-REFORM PHASE (AFTER 1991)

The government restructured in 1991 and liberalized the power sector. The Post-reform phase can be divided into three phases. (i) First Phase (Started in 1991), (ii) Second Phase (Started in 1996) (ii) Third Phase (Started in 2003)

FIRST PHASE (STARTED IN 1991)

INDEPENDENT POWER PRODUCERS (I.P.P)

The government liberalized the sector and opened it for foreign and private investments to increase the availability of funds for the power sector. The operators and S.E.B's entered into Power Purchase Agreements (P.P.A's) as the S.E.B's were responsible for transmission and distribution of power generated by private players.

INTRODUCTION OF MEGA POWER POLICY 1995

In 1995, the government introduced the Mega Power Policy to increase private investments in over 1000 MW generation projects that would supply electricity to more than one state, so named as Mega Power Projects.

SECOND PHASE (STARTED IN 1996)

In December 1996, the Common Minimum National Action Programme (C.M.N.A.P) was structured in consultation with the State governments. The Electricity Laws (Amendment) Act was passed in 1998 to enable private participation in the power transmission sector. The C.E.R.C issued the first Indian Electricity Grid Code (I.E.G.C) in January 2000 to ensure grid discipline and to set operation and governance parameters for players in the transmission and distribution (T & D) sectors.

THIRD PHASE (2003 ONWARDS)

The Electricity Act 2003, which came into effect from June 10th 2003, replaced the earlier laws. The Electricity Act 2003, liberalized power industry, promotion competition, protecting interests of consumers and supply of electricity. This Act was amended on May 28th 2007.

CONTRIBUTION OF REGULATORY BODIES

In order to make competitive, transparent and consumer friendly environment, an independent C.E.R.C at the center and independent S.E.R.C at the state level were considered as the need of the hour for regulating the power sector.

STATUS OF REFORMS

Reforms have played a crucial role in each segment of the power sector. Orissa was the first state to unbundle its S.E.B into five corporatized entities. Generation, transmission and the three distribution zones in the state. Around 25 states have regulatory commissions.

GOVERNMENT OF INDIA POLICY

The Electricity Act 2003 states that, "The Central government shall from time to time, prepare the national electricity policy and tariff policy, in consultation with the state governments and the authority of development of power system based on optional utilization of resources such as coal, natural gas, nuclear substances or materials, hydro and renewable sources of energy."

NATIONAL ELECTRICITY POLICY (N.E.P)

This policy, which was introduced in February 2005 aims at laying guidelines for accelerated development of the power sector, providing electricity to all areas and protecting interests of consumers keeping in view the availability of energy resources, technology available to exploit these resources,

economies of generation using different resources and energy security issues.

This policy was prepared in consultation with the state governments, C.E.A and other stakeholders.

NATIONAL TARIFF POLICY (N.T.P)

The policy lays down the guidelines for attracting adequate investments to the sector and ensuring reasonable charges for the consumers. These guidelines stress on competitive procurement of power. The central government formulated this policy in consultation with regulatory commissions and C.E.A. Regulatory bodies are guided by tariff policy in framing the tariff regulation.

Objectives of N.T.P

- ✓ Providing electricity to consumer at reasonable and competitive rates.
- ✓ Ensure financial viability of the sector and attract investments.
- ✓ Promote competition efficiency in operation and
- ✓ Promote transparency, consistency and predictability in regulatory approaches across jurisdiction and minimize perceptions of regulatory risks.

III. MAINTENANCE AND CONTROL OF RENEWABLE ENERGY IN INDIA

Renewables contribute about 12.3% of the total installed capacity in the country (C.E.A 2013). Around 97% of the installed capacity is grid connected and off-grid power constitutes a small share (M.N.R.E 2013). Wind continues to be the mainstay of grid connected renewable power in India. Globally, India ranks 6th in terms of renewable electric power global capacity (R.E.N21, 2013). The historical growth of renewables has been tremendous with a compounded annual growth rate of 22% over the last decade (2002-2012). The rate of growth has been particularly significant for solar over the last three years (2009-2012), which grew from less than 10 MW to more than 0.7 GW, MW in 2005-2006 to about 30 GW in 2013 (as on 31st October 2013)(M.N.R.E;2013)

LEGAL AND INSTITUTIONAL FRAMEWORK

The key legislation which guides the development of renewable energy in India is the Electricity Act 2003. The Electricity Act 2003 mandates the State Electricity Regulatory Commission (S.E.R.C) to promote generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person. The National Tariff Policy 2006 directs S.E.R.C to fix certain minimum percentage for purchase of renewable power.

There are multiple agencies involved in renewable energy sector in India. At the Central level, the Ministry of New and Renewable Energy (M.N.R.E) is the nodal ministry of the Government of India (G.O.I) for all matters relating to new and Renewable Energy¹³. The broad aim of the ministry is to develop and deploy new and renewable energy for supplementing the energy requirements of the country.

M.N.R.E also conducts resource assessments for renewable energy technologies. There are specialized technical institutions set up under M.N.R.E such as the Solar Energy Center, C-W.E.T and Sardar Swaran Singh National Institute of Renewable Energy (S.S.S.-N.I.R.E), which serve as technical focal institutes for solar, wind and bio-energy respectively.

At the State level, there are nodal agencies and departments which operate under the purview of the respective state governments for the effective implementation of all renewable energy and cogeneration schemes. These agencies promote renewable energy deployment at the local level by channeling central-level subsidies, implementing demonstration projects and Providing assistance to interested parties. Many of the State agencies are also designated agencies for the implementation of the Energy Conservation Act 2001. The M.N.R.E provides grants to these agencies for their recurring and non-recurring expenditure. Financial assistance to renewable energy projects is provided through the Indian Renewable Energy Development Agency (I.R.E.D.A) - the financial arm of the M.N.R.E- which provides loans and also channels funds and other initiatives to promote renewable energy. I.R.E.D.A is registered as a non-banking financial company and arranges its resources through market borrowing and lines of credit from bilateral and multilateral lending agencies.

In addition, there is a member of government institutions whose mandate encompasses the renewable energy sector. For example, the Ministry of Power (M.O.P) is responsible for the national electricity policy and national tariff policy, both of which play a key role in promoting procurement of renewable energy-based power. The Ministry of Environmental and Forests (M.O.E.F) is responsible for providing environmental clearances for renewable energy projects. The institutions classified according to their roles in the renewable energy sector.

POLICY FRAMEWORK

The Government of India (G.O.I) has enacted several policies which support the expansion of renewable energy. The National Electricity Policy 2005 allows the S.E.R.C's to establish a preferential tariff for electricity generated from renewable sources to enable them to be cost competitive. The tariff policy 2006 requires fixation by S.E.R.C's of a minimum percentage of R.P.O from such sources taking into account availability of such resources in the region and its impact on retail tariffs. The Tariff Policy also states that procurement of renewable power for future requirements shall be done through a competitive bidding process and in the long need to compete with other sources in terms of full costs. So M.N.R.E framed guidelines in December 2012 after several rounds of consultations with stakeholders.

The flagship policy initiative for solar energy in India is the Jawaharlal Nehru National Solar Mission (J.N.N.S.M) launched in 2010, which has set ambitions, goals on generation capacity additions from solar photovoltaic –in terms of both grid- connected and off-grid applications. The J.N.N.S.M establishes a national level policy framework for solar energy utilization including power generation in India.

STATE SOLAR POLICIES

Encouraged by the success of J.N.N.S.M in 2010, several states have announced their own state solar policies and programmes with the exception of Gujarat which took a lead in announcing the solar policy a year before J.N.N.S.M while the introduction of state solar policies are certainly good steps in complementing the J.N.N.S.M and attracting private investment, the way in which the bidding process was managed in some states has created regulatory uncertainty and negatively impacted the investors' confidence. Andhra Pradesh announced a change in allocation policy after the completion of bidding, where the lowest bid (L.I) process was changed to a fixed tariff of Rs 6.49/KWH.

REGULATORY FRAMEWORK

The regulatory oversight in the sector is provided by the C.E.R.C and S.E.R.C's. However, at present only one grid – connected renewable energy based systems come under the regulatory purview. The off-grid decentralized renewable energy based systems are not regulated in the present set up. For the grid-interactive systems, the C.E.R.C sets guidelines for feed-in-tariffs for different renewable energy technologies and issues regulations for interstate open access.

The regulatory framework for renewables in India is continuously evolving with increasing penetration and progressively higher shares coming from these sources. The Government of India has brought the Renewable Regulatory Fund (R.R.F) regulations in 2010 as per the provisions of the Indian Electricity Grid Code Regulations, 2010. It aims to achieve better generation prediction using weather forecasting tools and immunize wind generation from paying deviation in Unscheduled Interchange (U.I) charges up to a certain level of variation, beyond which the deviation charges will be socialized across states.

REGULATORY COMPLIANCE

Most of the states have specified R.P.O's targets with separate solar and non-solar targets. However, due to the lack of enforcement of R.P.O regulations and in the absence of imposition of penalties on obligated entities, many of the state discoms (distribution companies) are not complying with their R.P.O targets.

In all cases, instead of imposition of penalty, the state regulatory commissions have allowed to carry forward the shortfall to next year i.e. FY 2012-13. However, the recent order by the Maharashtra Regulatory Commission could be seen as a breakthrough order as far as enforcement of R.P.O is concerned.

In this context, the benchmark judgement of Rajasthan High Court on the applicability of R.P.O on captive and open access consumers can be considered to be a favourable development which will strengthen R.P.S enforcement and set a precedent for other renewable energy rich states¹⁵. The non-compliance with R.P.O targets also has had implications on the R.E.C market. The recent trends in R.E.C market in India indicate a surplus of sellers and paucity of buyers, which is attributed to the non-compliance of obligated entities to R.P.O

target. The following trend in prices (Non-Solar) is clearly indicative of the lack of demand, which again is mainly due to non-compliance by obligated entities

SOCIAL AND ENVIRONMENTAL ISSUES

The environmental and social concerns associated with renewable energy projects have generally not been very widely discussed in India. There could be two reasons for the same, firstly, its being the fact that typically renewable energy projects are outside the purview of Environmental Impact Assessment considering the fact that such projections have negligible negative impact on surrounding environment. Secondly, cases where there have been problems on this front are not many in number and are therefore not widely reported. The recent commissioned report by M.N.R.E on development impact and governance issues of renewable energy projects has put forth similar views on this subject. Many of the Renewable Energy Projects such as biomass and municipal solid waste plants (up to a capacity of 15 MW), wind, small hydro power and solar photovoltaic plants (up to a plant size of 50 hectares) are exempted from Environmental Impact Assessment. Wind projects require vast tracts of land to the order of 15-to-20 acres per MW (on total land covered basis) whereas a foot-print basis they require significantly less at about 5-to-6 acres per MW. Private land acquisition is again challenging, involving issues of first remuneration of land and resources. Protests by farmers, in Sangli and Dhule districts of Maharashtra demanding higher land compensation is a case of point.

Given the increasing scarcity of permissible sites with adequate wind potential M.N.R.E through its communication dated 15th May 2012, has requested State governments to examine.

Their land policy for wind power installation and formulated a policy for land allocation on a "foot-print" basis. This refers to the land required for setting up wind projects, turbine pads, electrical support equipment and link roads.

IV. LEGAL ASPECTS OF SOLAR ENERGY IN U.S.A

STATUTORY APPROACHES FOR ACCESS TO SUNLIGHT

As of now we are in the age of uncertainty and challenge. Present day problems affect our way of life. The main problem is energy. As such the need of the hour is to develop alternative energy resources or free fundamental changes in the way we live.

This article will examine several approaches for protecting that access. First common law access to sunlight and the movement to codify the common law as it applies to solar energy will be discussed. Second, two statutes which use land use control methods to protect solar access will be examined. A final statutory approach for access to sunlight involves an administrative procedure to allocate solar access rights.

COMMON LAW: ACCESS TO SUNLIGHT

The concept of common law access to rights to sunlight for a Solar energy has been voiced by many a scholars. The issue of access to sunlight is an old one. The story goes like this. Earlier one house owner erected a structure in such a way that it blocked the sunlight from entering his windows. The common law device creating a third party's right to use another's property is an easement.

An easement is a beneficial right which a landowner, "dominant tenant", has on or over the real property of a neighbor, the "servient tenant".

Easements for sunlight are described as negative easements. Negative easements also benefit the dominant tenant, but they do not permit him to go upon or otherwise use the servient tenant's property. The easement merely prohibits the servient tenant from using his property in a way which would restrict the benefit the easement conferred on the dominant tenant.

An express easement is created by a deed or other writing in which the servient tenant conveys the easement on the dominant tenant²¹. Courts have consistently upheld the creation of express negative easements²². This suggests that drafters of an express easement for solar energy should clearly and completely describe the airspace which is to remain unobstructed²³.

RECENT LEGISLATION

ACCESS TO SUNLIGHT

Recently a number of States have passed "Solar Rights" statutes. These statutes provide a mechanism for solar energy to obtain a legal right to unobstructed sunlight. Solar right statutes may be divided into four categories. They are

- ✓ Common Law codification
- ✓ Prior Appreciation statutes
- ✓ Shade control statutes
- ✓ Administrative allocation procedures.

COMMON LAW CODIFICATION

In order to codify the common law doctrine of express easements, several states enacted laws suitably, which allow the landowners to convey the right to use airspace above their property as an unobstructed conduit for sunlight? The right is conveyed to an adjoining the grantor's property which may not be obstructed is described in some form of conveying instrument. The "Common Law" statutes generally regulate the only form of the description which must be contained in the conveying instrument. Some statutes also require liquidated damages clauses. "Common Law" statutes require that the landowner agrees to grant the easement to the solar user.

Statutes in Missouri and Washington declare that an easement for sunlight necessary to fuel a solar collector is a property right which may be transferred to an adjoining property owner²⁴. Popular writers often vehemently question "who owns the sunlight?" meaning thereby the sunlight is actually "owned" by the solar energy user. The answer is that

no one owns the sunlight under any resource allocations scheme. In fact a solar energy user is using the airspace above the land of his neighbor as a conduit for the energy resource.

States have been active in enacting solar access legislation. Generally those statutes which codify common law easement doctrine require that various terms be included conveyance, such as a description of the dimensions of the easement and remedies in the event of violation. Additionally, the statutes require that the easement be in writing and that it be made subject to the recording acts in existence²⁶. Under "Common Law" statutes a solar energy user must reach an agreement with adjoining landowners to purchase the right to use needed airspace. Keeping in view the problems as stated above, New Mexico, California and Iowa have enacted statutes which provide a new approach to the problem²⁷.

PRIOR APPROPRIATION

THE NEW MEXICO EXPERIMENT

The New Mexico passed a Solar rights act which creates a legal right to unobstructed sunlight based not upon agreements between adjoining landowners, but upon the first beneficial use of sunlight for solar power²⁸.

The New Mexico statute defines a "Solar right" as an "Unobstructed line-of- sight path from a solar collector to the Sun". It provides that the first user of the Solar right has priority over any subsequent users. The extent to which the Solar energy is "beneficially used" determines the extent the Solar right. Since the ability to use Solar energy varies with the seasons, so does the extent of the Solar right.

The purpose of the New Mexico Act is not limited to encouraging the erection of active solar energy systems in underdeveloped areas. The Act gives local governments the power to ordain a solar right for a proposed solar energy system even though the collector would be obstructed by existing buildings, trees or other structures. The New Mexico's Solar Rights Act also recognizes a right to solar access for passive systems.

A passive solar energy system is one in which the building itself acts as a solar energy collector; the design and location of windows, drapes and thickness of walls act to heat or cool the building. The New Mexico Act then provides an access to those landowners who construct solar energy collector systems.

The most important feature of the New Mexico statute is the recognition of "the right to use the natural resources of solar energy", as a property right²⁹. This is a radical break from traditional American Property Law. It provides an immediate right to sunlight upon its use by a solar energy collector.

This act is a legislative attempt to address a fundamental problem in solar access rights and it has been the subject of much criticism³⁰. New Mexico's solar right involves neither ownership of sunlight nor the right to use natural resource of solar energy. Instead, it creates a right to use the airspace above neighbouring land as a conduit through which the sunlight travels. This adjacent airspace, unless conveyed away, is the property of neighbouring landowner.

The New Mexico Act passed in 1977, has not yet generated litigation³¹. Various attempts are being made to suggest modifications. As enacted the New Mexico Act is a noble experiment designated to encourage use of solar energy. However, it is unworkable, impractical and probably unconstitutional.

CALIFORNIA'S SOLAR CONTROL ACT

Another unique approach for precting solar access in California's Solar Shade Control Act. The Act declares that certain obstructions of solar collectors are public nuisances. The prohibited obstructions consist of planted vegetation which shades greater than 10% of the solar collector surface at any time between 10:00 A.M to 2:00 P.M³³ Thus, the solar user's right to unobstructed sunlight is not absolute³⁴.

The Act is not limited to regulating the planting of trees and shrubs on adjacent property. It also sets up certain restrictions on the unlimited use of a solar collector. First, the Act regulates the placement of the solar collector on the user's property. The collector location must be at least 5 feet from the dotted line, and at least 10 feet above the ground. Second, the Act provides that existing passive solar heating systems may take precedence over solar collector systems, trees and shrub placement may work "passively" with the design of a building to naturally heat or cool it, at least in part. The legislature provided that adjoining landowners with natural or passive solar energy systems may seek relief from the provisions of the Act³⁵. Without such a provision, even if neighbor locates his solar collector carefully, an adjoining landowner may be precluded from enjoying the energy benefits of well-placed trees. The Act then regulates activity by both landowners.

Two general constitutional problems arose by the California Solar Shade Control Act. First, the Act may involve a "taking" of a neighbour's airspace without just compensation. Second, if no "taking" is involved and the Act is deemed to be a mere regulation of land use, it may still exceed the state's police power upon which land use regulation is based. The Constitution requires that such regulations bear a rational relationship to the health, morals or general welfare of community rather than merely regulating private landowner disputes. The regulation must also be for public purposes. One may argue that under the California Act there is no taking of any airspace in a constitutional sense. The Act is akin to height and set-back regulations which are clearly within the state's police power to prescribe and which do not effect unconstitutional takings. Even if the Act does not authorize the unconstitutional "taking" of a neighbour's property, as a land use regulation, it must confirm with the limits of the state's police power to regulate land use. Statutory land use restrictions based on the police power must be for the public benefit.

One of the myths of solar energy is that it is "free". It is not free because it usually requires the acquisition of a negative easement through some adjoining neighbour's airspace. The California and New Mexico Acts both attempt to remove the necessity of a neighbour's conveyance of an easement to a solar energy user by simply allowing him to

take it. Both Acts abuse the police power of state and are unconstitutional.

The legislature may not simply declare something a public nuisance which is not a public nuisance. The planting of trees or bushes which obstruct a neighbour's sunlight access is not a public nuisance. A member of California cases supports the conclusion that obstruction of sunlight passing across one's property is not in and of itself a nuisance. These cases affirm that public nuisance requires interference with the community's right.

Another criticism of California Shade Control Act is that it contains no requirement as to either the amount of power to be generated by the solar collector system the type of use for which that power is intended or the efficient use of that power.

The California Solar Shade Control Act reflects a greater awareness of the rights of both the solar energy user and his adjoining neighbor than the New Mexico statute.

Unlike New Mexico's legislation, California's Act attempts to balance the interest of the solar energy user in unobstructed sunlight and that of the neighbouring landowner's in the continued use of his airspace. To accomplish this goal, the Act provides that the prohibited obstruction be by vegetation only, the vegetation must be planted after the collector is built, the obstruction occurs during certain hours of the day and cover a certain percentage of the collector; the collector be placed at a distance from the property line and be elevated and a passive system may be excepted from the Act's requirements.

These problems are serious deficiencies and point out that California's answer to the issues of solar access is far from satisfactory.

IOWA ADMINISTRATIVE ALLOCATION FOR SOLAR EASEMENTS

A fourth approach for providing access to sunlight has been taken by Iowa⁴¹. The Iowa Solar Energy Access and Use Act is a legislative attempt to balance the needs of solar energy users against the rights adjoining landowners. Under the Act, a Solar Access Regulatory Board reviews applications by solar energy users for solar access easements. The Act lists criteria for granting such easements and provides that the solar user must compensate the servient tenant for the easement.

The Iowa Act resembles a grant of eminent domain power to individual solar energy users. The user, with the approval of the Board, may take the airspace property of a neighbor for the limited purpose of guaranteeing sunlight access. The Iowa statute responds in a reasonable manner to many of the other problems raised by the New Mexico and California attempts. This is a major improvement over the New Mexico Act. Although the Iowa approach is more flexible than the solar access approaches of New Mexico and California, it too poses several problems. There are two problems with the constitutionality of the Iowa approach. Both involve construction of the eminent domain power-in particular, the meaning of public use. Eminent domain is the right of the government, upon payment of just compensation, to assert its domain (to "take") over private property for public use without the property owner's consent⁴⁴. However, the

eminent domain doctrine may be analysed in such a manner as to minimize those constitutional problems.

Therefore, the first constitutional question -whether the Iowa Act involves a purely private taking- is not at issue. The Second constitutional issue raised -a public taking for private use-turns on the meaning of public use. The Iowa Act fails to meet this view of "Public Use" because the only person with a right to use the easement is the individual solar energy user. The easement does not involve the public and the public does not have the right to use that airspace any more than it has the right to use coal purchased by an individual homeowner as fuel for his coal burning furnace. Under this narrow view, the Iowa statute would appear to be unconstitutional.

Unlike the New Mexico and California Acts, the Iowa Act provides compensation to the servient tenant for the use of his property. The Iowa Act involves a creative attempt by Iowa to meet the need for adequate legal protection and encouragement for solar energy users, while continuing to be fair in the treatment of their neighbours. "The inn that shelters for the night is not the journey's end. The Law, like the traveler, must be ready for tomorrow. It must have the principle of growth. Thus, the expanded meaning of public use is appropriate here, and such, the statute is constitutional.

The Second problem with the Act, arises with respect to the termination of the solar access easement. The list of factors for extinguishing the easement limits the reason for termination to lack of use by the dominant tenants. Solar energy collection is a new technology; it may be that the amount and location of open space needed for solar collection any change as new collection devices are developed. Yet, under the statute an easement owner retains the entire easement, even if his most recently installed. Collector system requires less unobstructed airspace than a previous collector. Simply because the right granted to the solar energy user is called an easement, the legislature makes it a virtually permanent part of the solar user's property.

One of the reasons 19th century courts rejected prescriptive creation of easements for sunlight, was that they would be inconsistent with the ever-changing uses and development of land. Easements would unduly restrict future use of the property. To remedy this potential problem, it would make sense to have a procedure for the return of unneeded airspace to the servient tenant, in the event that the solar energy user's needs change; perhaps the reverse of solar access granting procedure contained in this Act. Such a procedure would eliminate the only major weakness in the Iowa Law on Solar access.

V. LEGAL ISSUES REGARDING FUTURE OF RENEWABLES IN UNITED KINGDOM

Lee Gordon, a planning law partner, highlights some of the key legal issues relating to planning and construction work for renewable energy storage developments in U.K. He also emphasizes the relevance of environmental and climatic changes or the influence of renewable energy. The impact of renewable energy on environment is not mild but if enough and due care is taken diligently; undoubtedly colossal loss can be averted. Keeping in view these facts several lawful

measures have been undertaken. As solar and wind farms produce greater percentages of the U.K's energy requirements, there is a fundamental issue that will need to be addressed. By their very nature solar and wind energy production sites do not provide a stable and consistent level of output. When winds are high, turbines produce an excess energy, when they are low very little. When the sun is up, solar panels produce solar energy in large quantities, at night of course very little is the outcome.

Due to the global warming renewable energy strategy needs to be studied carefully and prompt care and planning is essential. In the contrast, other forms of more predictable low carbon generation, such as tidal, have traditionally been viewed in U.K as expensive and very challenging in terms of technology.

HOW TO TACKLE EFFECTIVE STORAGE

Despite facing their own considerable challenges, solar and wind farm development will continue to be an important part of the U.K energy mix for the foreseeable future. The question then turns to how we can store or use renewable energy efficiently, particularly renewable energy generated from unpredictable sources. The quantities involved can be massive. The development of renewable sources of energy at existing facilities, such as waste water treatment plants, provide opportunities for the efficient use of renewable energy, and we are beginning to see more of this form utility clients to power on-site-equipment. For example, solar panels are often capable of being developed by statutory undertaken under permitted development rights at sewerage treatment works without the need for a full planning permission.

PRIORITY FOR COMMUNITY ACTIVITIES

On the other hand, the development of major new storage facilities of the type mentioned above alongside major onshore wind turbine proposals or solar farms in open countryside are likely to be challenging. It is already becoming increasingly difficult for onshore wind development in U.K to secure planning permission and there is generally perceived to be less political will, behind such developments.

The recent refusal by the communities' secretaries of state, Greg Clark, of R.E.G wind power's planning application for just four turbines near Peterborough is a case in point. This decision follows hot on the heels of an announcement by Government of its intention to implement earlier cuts to subsidies for new onshore wind projects than previously proposed. Applicants should seek as far as possible to demonstrate that all relevant planning matters have been addressed and that residual local concerns are either not justified, relevant or contrary to the views of statutory consultees.

One potential positive from the June guidance is that planning authorities are encouraged to ensure that suitable areas for wind energy development are allocated clearly in local or neighbourhood plans.

STORAGE / GENERATION AND LEGALITIES

The significant issue for major energy storage, on the construction matters, relates to the exclusion under the Housing Grants Construction and Regeneration Act 1996(as amended). The Act grants significant rights relating to payment time-schedules, adjudication and the ability to suspend elements of the works. However, there is an exclusion relating to ; “assembly, installation or demolition of plant or machinery or erection or demolition of steel work for the purposes of supporting or providing access to plant or machinery, on a site where the primary activity is-nuclear processing, power generation or water or effluent treatment, or... (Section 105(2) (c) of the Act). Here an interesting question arises on the legality about the term “Power generation”. The question is not simple as said. This being a new area, there is no significant case law that can assist in this area. In case of water storage is not as issue at all. However, the problem is with electricity, but as some other form of potential energy (be it heat, chemical or gravitational potential). Therefore it has to be regenerated into electricity when one removes the energy from storage.

If we have the whole energy cycle from power station to consumption as one process, irrespective of the intermediate steps, then the answer is that storage and release is not generation. However, if production means the change of the form of energy from (say) heat to electricity, then the answer is “yes”, means power is generated at storage site. Either of these answers is arguable. The answer may also be different, if one considers battery storage, where no generators are required, as opposed to gravitational or thermal processes where turbines are required to create the electricity.

In practice the answer to the problem is simple. The best approach, if one is building a power storage site is to make sure that the terms of the contract are in fully compliance with the H.G.C.R.A. In that case, if the site is not deemed to be excluded under section 105(2) (c) of the Act. Hence, we are protected from claims that the contract is not in conformity with the rules and regulations as provided in the said Act.

VI. ENERGY AND ENVIRONMENTAL LAWS

A number of federal laws, regulations and executive orders apply to solar energy development activities. For the most part, state laws and regulations do not apply to solar energy development on tribal lands.

The extent to which the federal requirements will apply to specific solar projects on tribal lands depends upon the nature of the project, its location, and size. In addition, the requirements applicable to projects conducted under a Tribal Energy Resource Agreement (T.E.R.A) may be different from those that apply to projects developed under other existing regulatory programmes.

Acoustics (Noise)

- ✓ Noise Control Act

Air Quality

- ✓ Clean Air Act

Ecological Resources

- ✓ Bald and Golden Eagle Protection Act

- ✓ Clean Water Act
- ✓ Endangered Species Act
- ✓ Executive Order 11988: Floodplain Management
- ✓ Executive Order 11990: Protection of Wetlands
- ✓ Executive Order 12996: Management and General Public Use of the National Wildlife Refuge System
- ✓ Executive Order 13112: Responsibilities of Federal Agencies to Protect Migratory Birds
- ✓ Federal Insecticide, Fungicide and Rodenticide Act
- ✓ Fish and Wildlife Coordination Act
- ✓ Migratory Bird Treaty Act
- ✓ National Wildlife Refuge System Administration Act
- ✓ Noxious Weed Act
- ✓ Rivers and Harbours Act
- ✓ Wild Free-Roaming Horses and Burros Act
- Energy Resource Development
- ✓ Tribal Energy Resource Agreements
- Environmental Justice
- ✓ Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations
- Hazardous Materials & Waste Management
- ✓ Comprehensive Environmental Response, Compensation and Liability Act
- ✓ Emergency Planning & Community Right-to-Know Act
- ✓ Executive Order 12856: Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements
- ✓ Federal Insecticide, Fungicide and Rodenticide Act
- ✓ Hazardous Materials Transportation Act
- ✓ Pollution Prevention Act
- ✓ Resource Conservation and Recovery Act
- ✓ Toxic Substances Control Act
- ✓ Health & Safety
- ✓ Emergency Planning & Community Right- to-Know Act
- ✓ Executive Order 13045: Protection of Children from Environmental Health Risks and Safety Risks
- Occupational Safety & Health Act
- ✓ Land Use
- ✓ Air Commerce and Safety Act
- ✓ Coastal Zone Management Act
- ✓ Farmland Protection and Policy Act
- ✓ Federal Land Policy and Management Act
- ✓ National Trails System Act
- ✓ Rivers and Harbours Act
- ✓ Soil and Water Resource Conservation Act
- ✓ Wild and Scenic Rivers Act
- ✓ Wilderness Act
- National Environmental Policy Act
- ✓ National Environmental Policy Act
- Paleontological Resources
- ✓ Antiquities Act
- ✓ Paleontological Resources Preservation
- ✓ Theft and Destruction of Government Property
- Water Quality
- ✓ Clean Water Act
- ✓ Safe Drinking Water Act

VII. TELANGANA SOLAR POWER POLICY-2015

Telangana announces new solar policy on Thursday, 21st May 2015. State offers many incentives to project developers, including allowing the acquisition of agricultural land for solar projects.

A grid –connected solar rooftop plant (Photo Courtesy; India's Ministry of New and Renewable Energy)

The Telangana State government announced its new solar power policy this week, with many incentives for solar power developers. The policy, valid for the next five years, aims at “creating an enabling environment for prospective solar power developers to harness substantial quantum of solar power in the best possible manner.” “Telangana Solar Power Policy 2015” will be applicable to grid-connected solar power projects based on both photovoltaic (PV) as well as solar thermal technologies. These projects will supply power to state distribution companies and sell it to third parties within the state.

The policy proposes a flurry of sops for developers. The incentives include a single-window and speedy clearance to all solar projects, exemption from the Land Ceiling Act, deemed conversion to non-agricultural land status for the land acquired for the project, 100 percent refund on Value Added Tax (V.A.T) and Goods and Services Tax (G.S.T), refund on stamp duty, exemption from electricity wheeling charges and consent from the state pollution control board within 7 days.

All solar projects that are commissioned during the operative period of the policy will be eligible for the incentives for a period of ten years from the date of commissioning. To avail the benefits under this policy, the power generated has to be consumed within the state.

“Telangana has vast solar potential with average solar insolation of nearly 5.5KWH/m² for more 300 sunshine days. Government of Telangana intends to make use of the positive environment in solar market and push given by Government of India for substantially harnessing the solar potential in the state of Telangana,” says the policy.

A Solar Policy Cell (S.P.C) will be set up for policy implementation. S.P.C will undertake single-window clearance for all the projects. A transaction charge of Rs 10,000/- per MW shall be charged for processing through single-window clearance with a maximum of Rs. 2, 00,000/- per project. The modalities of the single-window clearance mechanism will be notified within 30 days.

SOLAR PARKS

A solar park is a concentrated zone of development of solar power projects, which provides developers an area with good infrastructure facilities. The policy proposes to form a solar park implementing agency by the state government with partial private sector participation or independently by the private sector.

Solar parks will host an array of players in the solar power sector, including solar power plants, component manufacturers, research and development centers, training centers and financial institutions. “The state will extend all facilities and fiscal incentives provided by the Central

government or National Solar Mission to the manufacturers and others in solar parks,” says the policy.

LAND FOR PROJECTS

It will be the responsibility of the project developers to acquire land for the solar project. Even agricultural land can be acquired for this purpose, says the policy. Land acquired for any solar project or for solar park will be deemed to be converted to non-agricultural land status on payment of applicable conversion charges to the S.P.C and no further conversion procedures will need to be followed by the developers regarding the acquired land. The conversion charges would be as per the Agricultural Land (Conversion for Non-Agricultural Purposes) Act 2006.

For the land acquisition for solar projects and solar parks, the ceiling limit under the Land Ceiling Act will not be applicable. However, the land requirement will be decided at the rate of 2 Hectares/MW or any lower limit based on the advancement of technology.

ROOFTOP PROJECTS AND PUMP SETS

Rooftop solar power producers (consumers) are free to choose either the net or gross metering option for sale of power to the state power distribution companies (discoms), for 25 years, with tariff variations between the two. Applications for rooftop projects or open access clearances will be processed by the respective discoms within 21 days from the date of application, or else, they will be deemed to have been approved.

The policy also proposes a gradual conversion from conventional pump sets to solar-power pump sets through subsidy support. The state government, in collaboration with the Central government and other agencies will undertake measures to enable this. The scheme of gross metering facility would be extended to project developers and farmers for setting up solar pump sets.

ENERGY BANKING

All the projects will be awarded “‘must-run’ status, which is to say that power thereof must be purchased by discoms and when produced. Producers can bank energy, and use at a later date, except during peak months and hours. The utilized banked energy will be considered as deemed to be purchased by discoms.

MONITORING

A seven-member high level committee will be constituted for monitoring the progress of the projects, with state energy secretary, senior representatives of state power distribution companies and Non and Renewable Energy Development Corporation, besides two representatives from industry bodies (rotating), and two representatives of solar power developers.

VIII. CONCLUSION

Having discussed at length about the scope ambit of the solar energy, renewables and legal aspects in this respect in U.S.A, U.K and India, the following conclusions are made to make it more effective, predictable and adaptable with the resources available in the energy sector in India.

- ✓ Ambitious targets for renewables set by the central and various state governments can be achieved only if there are sound implementation and enforcement mechanisms to oversee the compliance of several statutes, rules, regulations and notifications in this regard.
- ✓ In view of the strategic and policy focus on solar energy, there is a compelling need to ramp up the manufacturing capabilities in the solar industry.
- ✓ Land issues faced by the project developers could be resolved to a certain extent if the land banks could be created under the aegis of the land and revenue departments of states and enabled through information technology.
- ✓ There is an immense need to critically analyse the significance of clean energy technology in the reduction of greenhouse gas emissions.
- ✓ There is an urgent need to establish and organise independent, authenticative, department at the center to guide and supervise state governments exclusively to lay down policies (national and international) and laws governing clean energy sector.
- ✓ To lay focus on the judicial activism relating to reduction of greenhouse gases emission by the application of clean energy technology.

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