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Bureau of Energy Efficiency: India'S Institutional Regime to Conserve Energy

by
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Arab-Israel War in early 1970s and the consequent oil crisis had one prominent silver lining[1]. It made the countries of the world cognizant of the pitfalls of energy scarcity and suddenly terms like energy security, energy conservation and energy efficiency assumed important space in both international and regional policy paradigms. Indian policy dispensation also responded to the need of the hour, albeit, not with requisite urgency or alacrity. Accordingly, in subsequent years, certain rudimentary and sporadic attempts were made to promote energy conservation[2]. A few decades later environmental concerns reached a crescendo and energy efficiency attained a much higher pedestal in the policy discourse courtesy its role as the most cost effective, least polluting and readily accessible energy saving option to stabilise greenhouse gas (GHG) concentrations[3]. It was then, that Indian policy makers, already cognizant of the importance of the sound institutional framework in facilitating an enabling framework for achieving energy conservation and efficiency[4], chose to create a statute backed institutional framework to facilitate efficient use of energy in various sectors of the economy. And, thus was born a new statutory organisation christened as "Bureau of Energy Efficiency" (hereinafter referred to as Bureau) and created by the Energy Conservation Act, 2001 (hereinafter referred to as the

Act). The Paper evaluates the constitution, management and working of the Bureau so far. This evaluation assumes importance in the wake of increasing integration of climate change initiatives with energy efficiency strategies and consequent change in both Bureau's functions and approach. The paper argues that while the Bureau, referred to as quasi regulator, was mostly seen as a facilitator at the time of its inception, its current role has to be more in the nature of an independent regulator *a la* Telecom Regulatory Authority of India (TRAI) or Insurance Regulatory Development Authority of India (IRDAI) and advocates stepping up of the ante on the regulatory front. The paper also examines the different institutional structures adopted to achieve energy efficiency and concludes that statute backed institutional structure augurs well for India albeit for the success of the framework industry players must be treated as equal stakeholders in the decision making process, the compass of Bureau's role must be upgraded from recommendation or quasi regulation to regulation and Bureau's penal authority in case of non compliance with the energy consumption standards, labelling requirements etc. must be stated in the Act itself.

I. NEED FOR A STATUTE BACKED ENERGY EFFICIENCY INSTITUTIONAL STRUCTURE IN INDIA

A suitable institutional framework is the basis for effective energy efficiency governance that can overcome technical, financial and market barriers to achieve energy efficiency. As per IEA report[5], "*implementation of energy efficiency policies and programmes is a complex enterprise. As a result, Governments often struggle to find the best organisational solution to deliver improved energy efficiency outcome*". Since the aftermath of the oil shock in 1973-74 till the enactment of Energy Conservation Act in 2001, India also experimented with a host of organisational structures to effectively implement energy conservation and efficiency.

The first of such organisation, Petroleum Conservation Action Group, was formed in 1976 by Ministry of Petroleum and Natural Gas (MoPNG). The group was subsequently registered as a society under the Society Registration Act, 1860 and called Petroleum Conservation Research Association (PCRA)[6]. Established as a nodal agency for promoting fuel efficiency in the country, the association continues to function through its Governing Body and Executive Committee, consisting primarily of senior

officials of MoPNG and Public Sector Enterprises[7]. While the association was lauded for commendable work after its inception[8], its role remained limited to petroleum products even as demand for a non statutory energy conservation authority for effective implementation of conservation initiatives continued to gain momentum[9]. The Advisory Board on Energy also recommended setting up of a distinct Energy Conservation Organization so as to integrate the energy conservation efforts of the Central Government just five years after the formation of PCRA[10]. However the Government again responded with a Society, registered under the Societies Registration Act, known as Energy Management Centre (EMC). Prior to this an Energy Conservation Cell was also set up in the Ministry of Power[11].

Functioning under the Ministry of Power, the EMC lacked any kind of legal backing or statutory basis and thus was found lacking in power required to frame regulations that may, *inter alia*, deal with energy consumption standards and labelling for notified appliances and equipments, enforcement of norms on energy consumption, establishment of energy conservation fund etc. In absence of these powers, Centre's efforts towards energy conservation, at best, remained half baked and the vast potential that the country had for reducing energy consumption by adopting conservation and efficiency measures remained unexploited[12]. Accordingly, the new initiative in the form of Bureau of Energy Efficiency was clothed with Statutory powers to enable it to perform effectively the onerous task of energy

conservation in India though many felt that the creation was superfluous in view of already existing organizations such as EMC, Central Electricity Authority and the bureaucratic nature of the institution[13]. Considering that the IEA Report also considers statutory basis desirable for effective energy efficiency governance and most of the countries favour a statutorily

empowered institution[14], India seems to have chosen the right model albeit calling it bureau has given it a rather subservient character[15].

II. INSTITUTIONAL STRUCTURE TO ATTAIN ENERGY EFFICIENCY: EXPERIENCES FROM AROUND THE WORLD

Distinct types of institutional frameworks, ranging from dedicated Energy Efficiency Institution within Government to independent private corporations, have been created in different countries to facilitate energy efficiency[16]. And, although the energy efficiency context and constraints vary in different countries, a review of energy efficiency implementation agencies around the world can provide us useful inputs for modifying, improving and augmenting the current set up in India

A. United States of America (USA)

Department of Energy (DOE), a cabinet level federal department headquartered in Washington D.C, is at the forefront of conservation and efficiency initiatives in the USA. Established in 1977, the department succeeded Federal Energy Administration and combined diverse federal agencies[17] to create a unified governance structure for energy related issues and challenges faced by the North American country that had been alerted to the necessity and challenge of energy security and conservation in the aftermath of the Arab Oil Embargo[18].

The Department traces its origin to the Department of Energy Organization Act[19] which was enacted to assign major Federal energy functions to a single department in the executive branch and pave way for effective coordination of energy supply and conservation programs[20]. Mandated to promote maximum possible energy conservation measures and to create and implement an effective energy conservation strategy, the department is headed by the Secretary of Energy who is appointed by the President on the advice of the Senate. Other principal officers of the Department include Deputy Secretary, Under Secretary, General Counsel and Assistant Secretaries, each of whom is appointed by the President of the country[21].

Additionally, the Act also empowers the department to improve the effectiveness of central energy data collection[22]. A notable aspect of the Act is that it establishes an independent Federal Energy Regulatory Commission (FERC)[23] within the department which regulates access to hydro power sites, the interstate transportation of natural gas and electricity and the wholesale price of these the power to promote energy conservation[24]. The commission, though being a component of the DOE, is largely independent as its independence is statutorily guaranteed[25]. Environmental protection agency (EPA) also plays an important role in energy conservation and efficiency interventions in US[26].

Important takeaways for India from Energy Efficiency Governance in USA are - broad responsibilities for energy efficiency are assigned to a cabinet level department which ensures requisite clout and influence to command compliance with policies. Further, the regulatory body is within the structural ambit of DOE itself which avoids the quagmire of multiple agencies operating in the same space which is still one of the problems in India[27].

B. Japan

Japan, like USA, responded to the oil Shocks of 1970s with a legislative enactment for enhancing energy efficiency. The legislation titled as "Law concerning the Rational Use of Energy" (hereinafter referred to as the Japanese Act) is the umbrella legislation for energy conservation and efficiency initiatives in the country[28]. Ministry of Economy, Trade and Industry (METI) is the nodal administrative body under the Japanese Act for promoting rational use of energy. As part of METI, the Agency of Natural Resources and Energy (ANRE) deals with energy conservation policy[29]. In addition, METI works through a no. of affiliate agencies[30] towards the goal of attaining 3Es — energy security, economic growth and environmental protection simultaneously[31].

Energy Conservation Centre, Japan (ECCJ) is one such affiliate which since its establishment in 1978 has been at the forefront of energy efficiency initiatives in Japan. A government agency, ECCJ, major activities include promotion of energy conservation in the industry, households, local communities, development of human resources engaged in energy conservation and promoting international cooperation for enhancing energy efficiency[32]. ECCJ also develops policies for promotion of rational use of energy at actories, workshops, building, etc[33]. Headquartered in Tokyo, the

Centre has eight branch locations across the country and works in close coordination with the private sector. In fact corporate organizations whose business objectives are in sync with Centre's aims can join the Centre and the Centre assists them with their energy conservation initiatives[34]. The Centre is administered

by a board of directors and councillors which includes members from academia, industry bodies and research organizations[35].

Japan, thus, has a two tier institutional structure for energy conservation and efficiency. On the top is METI, with overall responsibility for energy related issues, supported by an energy agency focussing primarily on Energy efficiency. This framework has representation from all categories of stakeholders, a feature India would do well to emulate.

C. Germany

Germany, currently, is one of the most energy efficient economies all over the world[36]. Consequently, the institutional mechanism followed by the country can provide us important inputs for India.

German Energy Agency —Deutsche Energie Agentur GmbH (DENA)[37], based on Public Private Partnership (PPP) model, was established in 2000 to facilitate transition of the country to a low carbon, energy secure and environmentally sound future. The Federal Republic of Germany[38] along with KFW Development Bank has over three —fourths shareholding in the company while three major private financial service providers of Germany hold the remaining shares[39]. DENA is a performance and profit oriented company[40] with the mandate to foster cooperation among Government Agencies inter se and the private sector[41] so as to fulfil energy efficiency objectives of the country. DENA, *inter alia*, imparts skills, formulates measures to raise energy efficiency, and encourages dialogue between different categories of stakeholders and implements model energy efficiency projects.

As DENA is at the confluence of the public and private sector, it has access to the expertise and financial resources of both the public and private sector which enhances its effectiveness. Administered by a dynamic supervisory board, the company brings all the stakeholders together in the bid to achieve energy efficiency which is the biggest strength of this type of institutional structure.

III. CONSTITUTION AND MANAGEMENT OF THE BUREAU OF ENERGY EFFICIENCY

Established by Section 3(1) of the Energy Conservation Act, 2001, the bureau came into being on 1st March, 2002. The bureau is the first institutional structure, with a statutory basis, to introduce and optimise energy conservation and efficiency in the country which hitherto had remained untapped despite vast potential. Accordingly, the avowed mission of the Bureau is to incentivize the demand side management of energy by establishing a comprehensive institutional, infrastructural and financial framework for stakeholders[42].

The constitution of the Bureau was preceded by detailed debates in both Houses of the Parliament wherein many members questioned the creation of yet another statutory organization to enforce a subject whose compliance, in any case, had in built incentive for industry players and consumers alike. Though the Act establishing the Bureau was proclaimed to be a progressive legislation which was long overdue, the Bureau itself was referred to as a bureaucratic asylum which would again relegate India to the days of Inspector Raj[43]. Even the Standing Committee on Energy, to which the Energy Conservation Bill, 2000 was referred for scrutiny, concluded that the constitution of the Bureau to achieve the objectives of the Bill was rather debatable and Government should focus on other mechanisms to achieve the objectives of the Bill[44]. To refute such apprehensions, however, Shri Suresh Prabhu-the then Minister of Power, announced on the floor of the House that the *Bureau would resort to self regulatory mechanisms which will obviate the need and rigours of inspectors*[45].

Headquartered in Delhi, the Bureau is modelled on the lines of another Bureau namely Bureau of Indian Standards (BIS) set up under Bureau of

Indian Standards Act, 1986[46]. The management of the Bureau is vested in a Governing Council with maximum sanctioned strength of twenty six members[47]. This cap on the maximum members is to ensure that the Bureau does not turn into a bureaucratic leviathan as is the case with many Government Organizations. Chaired by the Minister of Power, the Governing Council includes Secretaries from major energy producing/consuming Ministries/Departments such as Petroleum & Natural Gas, Coal, Non Conventional Energy Sources, and Atomic Energy in addition to Consumer Affairs and Environment, Forest and Climate Change each of whom is an ex-officio member. It also has representatives from Central Electricity Authority, Central Power Research Institute, PCRA and BIS etc. all of whom again are Ex Officio members[48]. While the Act mandates the Bureau to have four members capable of representing stakeholders' interest[49], the Governing Council currently has only Government officials[50]. The composition of Governing council was greatly debated prior to the enactment of the Act. While some stakeholders favoured an

autonomous commission with authority instead of a Governing Council, others opined that representatives from Industry and consumer organizations must also be included and such representatives must not be full time employees of the Central or state Government[51]. Ministry of the Power, however, justified the composition stating that the inclusion of the Government nominees would ensure their contribution both to policy formulation and implementation[52].

Similar bureaucratic regulatory bodies however, such as TRAI (Telecom Regulatory Authority of India), Insurance Regulatory and Development Authority of India (IRDAI) have requisite industry professionals owing to their legislative source[53]. Even in countries which have adopted similar institutional structure to achieve energy efficiency, such as Japan[54], the

energy agency has an eclectic mix of private and public sector which currently remains absent in India despite the recommendations of the Standing Committee on Energy[55]. In fact, even the Advisory committee of the Bureau lacks industry participation[56].

The Bureau is headed by Director General who is the chief administrative officer of the Bureau. Appointed by the Central Government, he is the ex-officio member secretary of the Governing Council[57]. It is not essential to be a bureaucrat for appointment to the post and any person having requisite knowledge and experience in dealing with matters relating efficient use of energy and conservation may be chosen for the job[58]. While the Act tries to ensure the independence of the Director General by providing for a fixed term and fixed salary and conditions of service, the selection is completely based on the pleasure of the Central Government with no statutory guidance on the contours of selection committee[59].

IV. FUNCTIONS AND POWERS OF THE BUREAU

Regulators in India have often been saddled with executive, legislative and judicial functions; the practice being antithetical to separation of power doctrine, has often been questioned. However in case of Bureau, it has no judicial or quasi judicial powers thus distinguishing it from other regulators. While the Bureau has executive and legislative powers, the ambit of its functions mostly remains advisory[60].

While the Act proclaims the Bureau as the nodal agency for achieving India's ambitious energy efficiency goals and mandates it to coordinate with all other stakeholders to achieve that end by complementing and strengthening their efforts, its approach essentially needs to be collaborative and consensus driven. The Act prescribes a slew of advisory, capacity building and promotional functions for the Bureau however its inspection and penal powers are not clearly stated[61].

The Bureau has the onus of advising both the Central and State Governments on a host of energy conservation related parameters[62] which, *inter alia*, include identifying energy intensive industries in the country referred to as "designated consumers" by the Act[63], specifying equipments/appliances that need to adhere to prescribed energy efficiency standards[64], stipulating target products for energy labelling[65], prescribing energy efficiency building codes[66] and determining the designated consumers who need to get energy auditing done or appoint energy auditors or managers[67]. The Bureau is also the accrediting agency for energy auditors and energy managers who are important functionaries under the Act[68]. Capacity Building functions of the Bureau, *inter alia*, include organizing training of personnel in energy efficiency techniques[69], giving financial assistance to institutions for augmenting energy efficiency efforts[70], including energy efficiency in education curricula[71], cooperating with international agencies and implementing common programmes[72]. Further, the Act recognises that achieving energy conservation and efficiency requires sustained efforts from a host of stakeholders who may contribute only if they recognize the benefits of saving energy and accordingly the Bureau has been assigned the responsibility of promoting energy efficiency and conservation through as many avenues and mediums as possible[73].

The Bureau was formed in March, 2002. However, the EC Act allowed time of five years for ensuring compliance with the mandatory provisions of the Act[74]. In fact, most of the energy efficiency and conservation schemes and initiatives were operationalized only in the eleventh plan period[75]. In 2008, with the release of National action Plan on Climate Change, a comprehensive climate change mitigation strategy, BEE became the implementing agency for National Mission on Enhanced Energy Efficiency (NMEEE), one of the Eight Schemes under the Plan and this significantly enhanced the scope of its work[76]. The implementation framework for PAT (Perform, Achieve and Trade) was approved in 2009 and consequently the EC Act, 2001 was amended in 2010 to provide the Bureau with the legal mandate to implement PAT, a flagship scheme of NMEEE[77].

The Energy Conservation (Amendment) Act, 2010 was enacted with the avowed aim of increasing the compass of energy conservation initiatives[78] that could be undertaken under the Act as also to make energy conservation a norm rather than choice[79] considering that the institutional and infrastructural arrangements were now in place[80]. Accordingly, the Amendment Act should also have provided more strength and teeth to the Bureau. However, the authority of issuing Energy Saving Certificates under PAT was accorded to the Ministry of Power rather than the Bureau which was even questioned in the Parliament[81]. While the Amendment Act did give the Bureau the power to appoint its own officers[82], the penal powers of the Bureau were left hazy. Also Bureau's powers were diluted by dividing the powers between multiple agencies. In case of PAT only, while administrative powers are with Bureau, power to issue Energy Saving Certificates is with the ministry of Power and regulatory powers are with State and Central Electricity Regulatory Commissions. Further, the Amendment Act remained silent on

the mechanism to ensure accountability of performance of the Bureau, a must for any institution.

V. WORKING OF THE BUREAU

The role of bureau in the current scenario is more of a facilitator than regulator. Since the focus of the Act is on providing a fillip to energy conservation by introducing demand side management of energy, the Bureau is mandated to works in sync with the designated consumers and its approach has to be more participative than authoritative. Even the parliamentary debates that preceded the establishment of the Bureau stressed that enforcement/inspection power given to the Bureau[83] for ensuring compliance with the mandatory provisions of the Act such as adherence with the energy consumption standards prescribed for designated consumers, labelling requirements, energy conservation building codes, etc should not create a new Inspector Raj[84]. In total conformity with this, the bureau has, as an administrator, of diverse schemes in varied sectors such as Energy Conservation Building Code, Standards and Labelling Program, Agricultural — DSM (Demand Side Management, Municipal DSM, Bachat Lamp Yojana, PAT, etc. always encouraged voluntary participation rather than regulatory enforcement. So much so that the 11th Five year plan in its discussion on legislative and institutional framework in the infrastructure sector did not recognise Bureau as a regulator and it was stated that there is no energy sector regulator while there are comprehensive regulators in the field of electricity and telecommunications[85]. In fact, even in case of PAT scheme which is being administered by BEE and involves trading of Energy Saving Certificates (ESCerts), the function of market regulator has been assigned to Central Electricity Regulatory Commission[86].

The Annual Reports of the Bureau highlight its role as a quasi regulatory and promotional authority and place significant emphasis on its functioning as an enabling body. Further, the annual reports bring to fore a number of commendable initiatives initiated by the Bureau such as institution of Energy Conservation Awards to encourage energy conservation amongst the industry, strengthening institutional capacity of SDAs (State Designated Agencies) so as to decentralise energy efficiency governance, supporting MSMEs (Micro, small and Medium efficient enterprises) in moving towards energy efficient technologies and suchlike measures. However,

a thorough scrutiny of the available annual reports also point out that the energy efficiency initiatives by the Bureau are progressing at snail's pace and more often than not Bureau lacks the wherewithal or even the inclination to accelerate the progress. For instance, the 2012-13 Annual Report of the Bureau states that there are financial barriers in speedy implementation of Bachat Lamp Yojana, a scheme to promote energy efficient lightning in India[87]. BEE Annual Reports 2013-14[88] and 2014-15[89] continue to state the same fact verbatim without any information as to whether, if any, intervention was made by the Bureau to overcome this barrier. Also, no clear cut information is provided in the annual reports on the exact magnitude of energy saving achieved by the Bureau. While the 2012-13 Report states that an avoided capacity generation of 3248.37MW was achieved for the year 2011-12, same fact is repeated in the 2013-14 Report and no such estimate is provided in the 2014-15 Report.

While the Act puts the onus of ensuring efficient use of energy on the Bureau and its conservation on the Bureau, Bureau's Annual Reports have no information whatsoever in this regard.

VI. BUREAU NEEDS TO UP THE ANTE ON THE REGULATORY FRONT

BEE, at the time of its inception, was largely required to play a promotional role. Considering, it was the first concerted institutional effort towards implementation of energy efficiency and conservation in the country, its effectiveness largely depended on its ability to work collaboratively with government and private bodies. And, accordingly BEE has hitherto played the role of a proactive enabling agency. While, this may have helped in creating social awareness, tangible benefits of BEE's efforts are not very flattering. There is no clear information on the magnitude of energy savings achieved over the years in BEE's annual reports even as the energy consumption and energy intensity of the country continue to rise[90].

Considering energy demand is all set to rise in India with implementation of schemes such as Make in India[91], and in light of India's ambitious goals to enhance its contribution to the climate change during the next decade and after, the role of BEE assumes importance. Not only would the Bureau need to envisage, formulate and administer innovative schemes and measures to enhance efficiency, it will also need to clamp down on industrial units that falter. Accordingly, its role as a regulator needs to be given due legislative backing so as to ensure its legitimacy among the stakeholders which also includes other sectoral regulators. With requisite infrastructural, institutional and financial framework in place, it may be safely concluded that energy conservation and efficiency efforts are no longer in infancy but rather embracing adulthood in India[92]. Accordingly, the administrator of these efforts, an agency which has hitherto lacked requisite strength and teeth, also needs to be accorded sufficient powers commensurate to its functions.

In addition, it is very important to have an independent monitoring mechanism for the Bureau which is currently lacking. In fact, there is hardly any independent evaluation of the Bureau. While Standing Committee on Petroleum and Natural Gas has evaluated the functioning of PCRA and submitted a detailed report in respect of the same[93], sadly its counterpart, Standing Committee on Energy, has lagged behind and there has been no detailed analysis of the functioning of BEE by the legislative wing of the Government. Interestingly, the Committee has even scrutinised the functioning of Central and State Electricity Regulatory Commission[94]. But BEE has to yet to come within its radar. Lack of an appropriate mechanism to ensure accountability of the Bureau dilutes its legitimacy in the democratic set up[95]. Considering the bureau is already in 15th year of its existence, lack of such evaluation impedes constructive and corrective improvement of India's energy efficiency watchdog which may prove to be counterproductive for the country that has heavily pinned its hopes on the Bureau for leading it to an energy efficient future.

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[1] *Energy Conservation Measures in India, in* Energy Conservation, 29 (Dr. Parag Diwan & Dr. Prasson Dwivedi, eds., 2009).

[2] While the Fuel Policy Committee, Inter-Ministerial Group on Energy conservation and the Advisory Board of Energy initiated deliberations on the contours of India's energy conservation policy, and mostly recommended setting up of a well structured and adequately funded energy conservation organization to act as a nodal point, the Government responded with Petroleum Conservation Research Association and the autonomous though not statute backed Energy Management Centre.

[3] Ali Reja Osmani, *Greenhouse Gas Mitigation through Energy Efficiency, in* Handbook of Research on Climate Change Impact on Health and Environmental Sustainability, 539 (Souymananda Dinda ed., 2015).

[4] The Seventh Five Year Plan indicated that strong administrative structures would be created for expediting decisions on energy conservation measures while also stating that energy auditing would be institutionalized.

[5] International Energy Agency, "*Energy Efficiency Governance Handbook*, 22, 2010, *available at* http://www.iea.org/publications/freepublications/publication/gov_handbook.pdf (last accessed on June 2, 2016).

[6] A. Bhattacharyaa, *Energy Conservation in Petroleum Industry, in* Strategy for Energy Conservation in India, 77 (Pradeep Chaturvedi, Shalini Joshi eds., 1997).

[7] Petroleum Conservation Research Association, *Annual Report 2013-14, available at* http://www.pcra.org/pcra_adm/writereaddata/upload/reportts/Annual_Report_2013-14.pdf (last accessed on June 2, 2016).

[8] *Energy Conservation Measures in India, in* Energy Conservation, 29-30 (Dr. Parag Diwan & Dr. Prasson Dwivedi, eds., 2009).

[9] *See Introduction, in* Strategy for Energy Conservation in India, 13 (Pradeep Chaturvedi, Shalini Joshi, eds., 1997).

[10] *Energy Conservation Measures in India, in* Energy Conservation, 29 (Dr. Parag Diwan & Dr. Prasson Dwivedi, eds., 2009).

[11] Pradeep Chaturvedi & M.P. Narayanan, *Energy Conservation Perspectives for India, in* Strategy for Energy Conservation in India, 18 (Pradeep Chaturvedi & Shalini Joshi (eds.), 1st ed., 1997).

[12] Statement of Objects and Reasons, Energy Conservation Act, 2001.

[13] Standing committee on Energy 1999-2000 Lok Sabha, *Ninth Report, Energy Conservation Bill, 2001*, 11-17,

[14] World bank, "An Analytical Compendium of Institutional Frameworks for Energy Efficiency Implementation, 2008, 12, *available at* http://www.indiaenvironmentportal.org.in/files/EE_Institutional.pdf (last accessed on August 5, 2016).

[15] While there is no established principle for classification of statutory agencies, the terminology for naming different statutory agencies ranges from Bureau to Authority. Though, it is difficult to decipher the legislative intent behind this variation and to determine whether or not it stems due to variation in power and autonomy of the statutory agency, usually Bureaus are seen to be less autonomous than an Authority.

[16] As per a study conducted by the World Bank, seven distinct institutional models are discernible for administering energy efficiency across the world. They are Government agency with broad energy related responsibilities, Government agency focussed on clean energy technologies, Government agency focussed on energy efficiency only, Independent Statutory Corporation, Independent Corporation owned by the Government, Public Private Partnership with ownership by government and non government entities and Non Government Organization. *See* World Bank, "*An Analytical Compendium of Institutional frameworks for Energy Efficiency Implementation, Formal Report 331/08*", *available at* http://www.indiaenvironmentportal.org.in/files/EE_Institutional.pdf (last accessed on June 2, 2016).

[17] Roger Anders, *The Federal Energy Administration*, 6-7 (November 1980), *available at* http://energy.gov/sites/prod/files/FEA%20History.pdf, (last accessed on June 5, 2016).

[18] A. Dan Tarlock, "*Chapter on USA*" in International Encyclopedia of Laws, USA—12, (Prof Dr. K. Deketelaere, ed., 2005).

[19] 42 USC, Chapter 84, Department of Energy Organization Act, 1977.

[20] The core thrust of the department, at the time of its inception, was on ensuring affordable and reliable supply of energy and to that end the department was mandated to undertake energy research, development, optimal energy production and conservation measures. However, a spate of

energy legislations, since the establishment of the department, particularly the Energy Policy Act of 2005 and Energy Security and Independence Act, 2007 have placed significant importance on energy efficiency as a means to attain energy security and conservation and accordingly altered the compass of Department's focus.

[21] 42 USC Section 7131, 7132 (United States).

[22] 42 USC Section 7112(7) (United States).

[23] 42 USC Section 7112(7) (United States).

[24] A. Dan Tarlock, "*Chapter on USA*" in International Encyclopedia of Laws, USA—27, (Prof Dr. K. Deketelaere, ed., 2005).

[25] 42 USC Section 7171, 7173, 7177 (United States).

[26] *U.S. A. Energy Policy, in* Energy Law and Policy, 48 (Dr. Parag Diwan & Prof. A.C. Kher, eds., 1st edition 2009).

[27] Though Bureau is at the forefront of India's conservation and efficiency initiatives, major regulatory and penal authority has been assigned to the Central and State Electricity Regulatory Commissions.

[28] Yasuo Tanabe, "*Energy Conservation Policy Development in Japan*" *in* Energy Conservation in East Asia; towards greater Energy Security, 240 (Elspeth Thomson, Youngho Change, et al.eds., 2011).

[29] OECD "*Eco Innovation Policies in Japan*", 2008, *available at* https://www.oecd.org/japan/42876953.pdf (last accessed on 2 June, 2016).

[30] Apart from ECCJ, organizations such as New Energy and Industrial Technology Development Organization (NEDO), The Research Institute of Economy, Trade and Industry (REITI) work in close conjunction with METI.

[31] *Japenese Energy Policy*, in Energy Law and Policy, 41 (Dr. Parag Diwan & Prof. A.C. Kher, eds., 2009).

[32] *Brunei Energy Efficiency Strategy-Important Developments, in* Brunei Energy Policy, Laws and Regulations Handbook, 162(Volume 1, USA, 2015), *available at* https://books.google.co.in/books?id=s_XxCQAAQBAJ&pg=PA162&lpg=PA162&dq=who+established+energy+conservation+centre+of+japan&source=bl&ots=6kSv_ULhZH&sig=evNRUj_M7jsuy-VOB22iv8tpmyA&hl=en&sa=X&ved=0ahUKEwiG-7T7k4DNAhXLPY8KHZqLBCcQ6AEIVzAJ#v=onepage&q=who%20established%20energy%20conservation%20centre%20of%20japan&f=false (last accessed on June 2, 2016).

[33] World Bank, "*An Analytical Compendium of Institutional frameworks for Energy Efficiency Implementation, Formal Report 331/08*", *available at* http://www.indiaenvironmentportal.org.in/files/EE_Institutional.pdf (last accessed on August 5, 2016).

[34] The Energy Conservation Centre, *Brochure 2012-13, available at* http://www.asiaeec-col.eccj.or.jp/brochure/pdf/eccj_2012-2013.pdf (last accessed at May 22, 2016).

[35] The Energy Conservation Centre, *Brochure 2012-13*, *available at* http://www.asiaeec-col.eccj.or.jp/brochure/pdf/eccj_2012-2013.pdf (last accessed on May 22, 2016).

[36] *See*, World Economic Forum, *The Energy Architecture Performance Index, 2015*, available at http://reports.weforum.org/global-energy-architecture-performance-index-report-2015/the-energy-architecture-performance-index-2015/major-economies/ (last accessed on May 22, 2016).

[37] GmbH stands for Gesellschaft mit beschränkter Haftung - This is German for Limited Liability Company.

[38] The Federal republic of Germany is represented by The Federal Ministry of Economic Affairs and Energy in consultation with the Federal Ministry of Food, Agriculture and Consumer Protection, Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety Federal Ministry of Transport and Digital Infrastructure.

[39] Allianz SE, Deutsche Bank and DZ bank each have a eight percent shareholding in DENA.

[40] Fraunhofer, *Energy Efficiency Policies and Measures in Germany*, 2012, *available at* http://www.isi.fraunhofer.de/isi-wAssets/docs/x/de/publikationen/National-Report_Germany_November-2012.pdf (last accessed at May 20, 2016).

[41] World Bank, "*Energy Efficiency: Lessons Learned from Success Stories*", 2013 *available at* https://books.google.co.in/books?id=6QIWVN2M6M0C&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false, (last accessed on May 7, 2016).

[42] Standing committee on Energy 1999-2000 Lok Sabha, Ninth *Report, Energy Conservation Bill, 2001, 6*, 2000.

[43] Statement of Shri Sudarshan Natchiappan, Lok Sabha Debates, 3, 17th August, 2001.

[44] Standing committee on Energy 1999-2000 Lok Sabha, Ninth *Report, Energy Conservation Bill, 2001*, 16-17, 2000.

[45] Statement of Shri Suresh Prabhu, Lok Sabha Debate, 6, 17th August, 2001.

[46] Standing committee on Energy 1999-2000 Lok Sabha, Ninth *Report, Energy Conservation Bill, 2001*, 18, 2000.

[47] Section 4(1), Energy Conservation Act, 2000.

[48] Section 4(2), Energy Conservation Act, 2000.

[49] Section 4(2)(p), Energy Conservation Act, 2000.

[50] The Annual Report of the Bureau has no information on the composition of the Governing council. However the Bureau has divulged this information in accordance with proactive disclosure under Section 4(1)(b) of the Right to information Act, 2005. The information can be accessed on https://beeindia.gov.in/sites/default/files/ctools/10.pdf, (last accessed on May 20, 2016).

[51] Standing committee on Energy 1999-2000 Lok Sabha, *Ninth Report, Energy Conservation Bill, 2001*, 1-3, 2000.

[52] Standing committee on Energy 1999-2000 Lok Sabha, *Ninth Report, Energy Conservation Bill, 2001*, 20, 2000.

[53] *See* Section 4, Telecom Regulatory Authority of India Act, 1997, Section 4, Insurance Regulatory and Development Authority of India, 1999. Also see Insurance Regulatory and Development Authority of India, Annual Report 2014-15, 132, *available on* file:///C:/Users/DEe/Downloads/Annual%20Report%202014-15.pdf, (last accessed on May 20, 2016).

[54] The Energy Conservation Centre, *Brochure 2012-13*, *available at* http://www.asiaeec-col.eccj.or.jp/brochure/pdf/eccj_2012-2013.pdf (last accessed on May 22, 2016).

[55] Standing committee on Energy 1999-2000 Lok Sabha, Ninth *Report, Energy Conservation Bill, 2001*, 20, 2000.

[56] As per Sec 8 of the Act, Advisory Committees are mandated to aid the Bureau in effective discharge of its functions. The Bureau of energy Efficiency (Advisory Committees) Regulations, 2008 provide the composition of such Committees which unfortunately provides for less industry participation.

[57] Section 4(2)(r), Energy Conservation Act, 2001.

[58] Section 9(1), Energy Conservation Act, 2001.

[59] Section 9, Energy Conservation Act, 2001.

[60] *See* Sections 13 and 58 of the Energy Conservation Act, 2001.

[61] *See* Sections 17 and 26 of the Energy Conservation Act, 2001.

[62] Sections 14, 15, Energy Conservation Act, 2001.

[63] As per Section 14(e) of the Energy Conservation Act, the Central Government in consultation with the Bureau has the power to notify Designated Consumers for the purposes of the Act depending upon quantity of energy consumed, amount of investment required to switch over to energy efficient equipments, availability of energy efficient machinery required and capacity of the industry to invest in it. The list of Energy Intensive Industries which are the Designated Consumers as per the Act has been appended in the Schedule and the Central Government in consultation with the Bureau has the power to prescribe energy consumption norms and standards for them as stated in section 14(g) of the EC Act and direct them to abide by such norms as per Section 14(n) of the EC Act.

[64] Section 14(b), Energy Conservation Act, 2001. Energy Efficiency Standards are the procedures and regulations that prescribe limits on the energy consumption of manufactured products.

[65] Sections 14(b), 14(c), 14(d), Energy Conservation Act, 2001. Currently, appliances such as Room Air Conditioners, Frost Free refrigerators and Passenger Cars have to adhere to mandatory energy consumption regime as per the Annual Report, 2014-15, of Bureau of Energy Efficiency.

[66] Sections 14(p), 14(q), Energy Conservation Act, 2001.

[67] Sections 14(h), 14(i), 14(l), Energy Conservation Act.

[68] In case designated consumers are directed to get energy auditing done as per provisions of the Act, they require the services of accredited energy auditor while energy managers guide the energy conservation efforts of the designated consumers and report it to the designated agencies.

[69] Sections 14(u), 15(f), Energy Conservation Act, 2001.

[70] Sections 13(l), Energy Conservation Act, 2001.

[71] Section 13(s), Energy Conservation Act, 2001.

[72] Section 13(t), Energy Conservation Act, 2001.

[73] *See* Sections 13(m), 13(n), 14(t), 14(v), Energy Conservation Act, 2001.

[74] Section 17(1), Energy Conservation Act, 2001.

[75] Energy conservation Building Code (ECBC) and energy intensive industries both were notified in 2007. Even labelling of four appliances became mandatory in 2007 while the Agricultural DSM Scheme was initiated in 2009.

[76] Saurabh Kumar, *"India's own emissions trading scheme*, Business Line, December 18, 2011, *available at* http://www.thehindubusinessline.com/opinion/indias-own-emissions-trading-scheme/article2726531.ece (last accessed on June 2, 2016).

[77] PAT creates a market for energy saving by prescribing a mechanism for certifying energy savings and then allowing these certificates known as Energy Savings Certificates (ESCerts) to be traded across the 478 industries which are mandated to achieve the target for Specific Energy Consumption.

[78] The Act empowered the Central Government to issue Energy Saving Certificates to the Designated Consumers whose energy consumption was less than the prescribed norms. These Certificated could then be bought by Designated Consumer whose Energy Consumption was more than the prescribed norms to fulfil their obligations under the Act.

[79] While the time period given to comply with the provisions of the Act was decreased to two years from the initial five, the amount of penalty in case of non compliance was also increased considerably.

[80] Statement of Objects and Reasons, The Energy Conservation (Amendment) Bill, 2010.

[81] Statement of Shri Bharatkumar Raut, Rajya Sabha Debate, 17th August, 2010.

[82] Section 10, Energy Conservation Act, 2001.

[83] The power of inspection has been given to State Designated Agencies at the state level.

[84] Statement of Shri Pawan Kumar Bansa, Loksabha Debate, 6, 16th August, 2001.

[85] Planning Commission, 11th *Five year Plan*, 2007-12 Volume I, 242, *available at* http://planningcommission.nic.in/plans/planrel/fiveyr/11th/11_v1/11th_vol1.pdf (last accessed on June 2, 2016).

[86] Govt. of India, Ministry of Power, New Delhi, 5th January, 2016, *available at* http://knowledgeplatform.in/wp-content/uploads/2016/01/CERC_Advisory.pdf (last accessed on June 2, 2016).

[87] Bureau of Energy Efficiency, *Annual Report*, 2012-13, 16, *available at* https://beeindia.gov.in/sites/default/files/Annual%20Report%20%202012-2013%20%282%29.pdf, (last accessed on June 2, 2016).

[88] Bureau of Energy Efficiency, *Annual Report*, 2013-14, 13, *available at* https://beeindia.gov.in/sites/default/files/BEE%20Annual%20Report%202013-14%20%281%29.pdf (last accessed on June 2, 2016).

[89] Bureau of Energy Efficiency, *Annual Report*, 2014-15, 14, *available at* https://beeindia.gov.in/sites/default/files/Annual%20Report%20%202012-2013%20%282%29.pdf, (last visited on June 2, 2016).

[90] Ministry of Statistics and Programme, Implementation, *Energy Statistics, 2015*, 42, 2015, *available at* http://mospi.nic.in/Mospi_New/upload/Energy_stats_2015_26mar15.pdf, (last accessed on 2nd June, 2016).

[91] *See* International Energy agency, *India Energy Outlook, 2015*, *available at* http://www.worldenergyoutlook.org/media/weowebsite/2015/IndiaEnergyOutlook_WEO2015.pdf, (last accessed on June 2, 2016).

[92] Mayank Aggarwal, *Govt. to raise energy efficiency targets for Industry*, Mint, July 14, 2015, *available at* http://www.livemint.com/Politics/1ThmXYY1fgI0DA2HgvBNRL/Govt-to-raise-energy-efficiency-targets-for-the-industry.html (last accessed on June 5, 2016).

[93] Standing Committee on Petroleum and Natural Gas, Functioning of Petroleum Conservation Research Association, 2016, *available at* http://164.100.47.134/lsscommittee/Petroleum%20&%20Natural%20Gas/16_Petroleum_And_Natural_Gas_10.pdf, (last accessed on June 2, 2016).

[94] *See* Standing Committee on Energy, *Role of Central Electricity Regulatory commission and State Electricity Regulatory Commission in Protection of interests of consumers*, Thirtieth Report (January, 2009).

[95] Planning Commission, Govt. of India, *Approach to Regulation: Issues and Options*, 2006, *available at* http://planningcommission.nic.in/reports/genrep/infra_reglawl.pdf (last visited on September 20, 2016).