Corporates' Role in Addressing Energy Security: A Mahindra Perspective

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Abstract Energy security plays a crucial role in any economy. For a developing country like India with rapidly increasing demand for energy it takes a multi-dimensional role with its economic, social and environmental facets to the issue. In this article we examine the status of energy security in India and the government and corporate response to this crisis and ends with an appeal to corporates to play a larger role in changing the narrative on energy.

Keywords Indian energy security · Corporate role in energy security
Mahindra response to energy security

1 Energy Security: A Growing Concern

India's annual energy import was at $120 billion in 2014.[1] As the economy grows this will become bigger. As long as dependence on fossil fuels is high, this spend will remain a millstone around India's neck.

India's primary energy demand is growing at 4.2% per annum compared to the global growth rate of 2%.[2] India's power consumption was 5% of global consumption in 2012 and India had overtaken Japan to become the fourth largest energy consumer.[3] Despite the size and growth, India is still far below the global per capita consumption average with only 875 kWh per head (at a population of 1.2 billion) compared to 11,900 kWh for the average US citizen, 6,600 kWh of the average German citizen or even the global average of around 3,000 kWh.[4] With greater energy access to rural India, increasing urbanization and growth in vehicle

[1]GoldmanSachs Report 2014.
[2]BP ENERGY OUTLOOK REPORT 2017.
[3]US Energy Information Administration (EIA) report on energy outlook for India 2012.
[4]World energy council data.

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population, the overall consumption of energy can only become higher. Little wonder that India, with 66% energy sufficiency, ranks 81st in overall energy security.[5]

If by 2035 India were to provide its citizens (projected population of 1.5 billion) with the same amount of power that China generates today (2017), it would need to increase its energy generation to 5,250 TWh per year[6] up from 1,050 TWh in 2012. India's generation capacity will have to increase up to six times the present figure to meet our growth needs. This is the reality that shapes India's energy policy and dominates the external trade discussion.

Goldman Sachs anticipates that India's annual energy import bill could jump to $230 billion by fiscal 2023.[7] Greater import dependence for energy has driven up India's import bill and exposure to volatile energy prices. The import bill has declined in recent years with a dip in global oil prices, but increasing imports and fluctuating prices continue to pose risks. In 2014, India's net energy imports were at 6.3% of its gross domestic product while England which is heavily dependened on energy imports spend 2.8% of its GDP in the same period on importing energy.[8] Given the demand projections for the future, steps to enhance energy security are of paramount importance.

2 Energy Externalities

Besides the economic cost of fossil fuels there are also other risks associated with being over dependent on them. Turning fossil fuels into energy produces a variety of emissions that pollute our planet's air and water. Burning of coal, oil and gas has been linked to the rising levels of greenhouse gases in Earth's atmosphere and is a leading contributor of climate change. These damages or the true environment costs accrue at every point of the fossil fuel supply chain. The mining process involved in the collection of fossil fuels itself can cause damage to the environment. The Extraction processes of coal can generate air and water pollution, and potentially harm the climate of the local communities which could be detrimental to their health. Transporting fuels from the mine or well can cause air pollution and we have witnessed serious accidents and spills leading to irreversible damage. When these fuels are burned during their usage they emit toxins in the form of greenhouse gases. Even after years of their usage these gas are hazardous to public health and the environment.

Fossil Fuels are finite meaning they are non-renewable natural resource and will not be replenished. The limited nature of fossil fuels means we cannot rely on it

[5]US Energy Information Administration (EIA) report on energy outlook for India 2014.

[6]Bridge to India report.

[7]GoldmanSachs report 2014.

[8]Energy in brief, www.gov.uk.

indefinitely. Also with the eminent climate crisis we as a globe are facing it is being said that globally 82% of today's energy reserves must be left underground to ensure that we meet the 2^0 Goal. What this means is that in major coal producing nations like the US, Australia and Russia, more than 90% of coal reserves will remain unused and in China and India, both heavy and growing coal users, 66% of reserves are unburnt.[9]

And realizing this India is responding to this crisis.

3 Government Response

By investing heavily in solar and wind, Indian government has helped drive down the cost of those technologies to a point where, in many places, renewable sources can generate electricity more cheaply than sources of energy like coal. The shift from fossil fuels has thus been much faster and more pronounced than most experts expected. Indian officials have estimated that country might no longer need to build new coal plants beyond those that are already under construction.

India has the world's fourth largest wind power market[10] and also plans to add about 100 GW of solar power capacity by 2020[11] as announced in the national solar mission. In fact, this year India will likely overtake Japan as the world's third-largest solar-power producer, after China and the US. This is ensuring that our dependency on coal plants is decreasing. India also foresees an increase in the contribution of nuclear power to overall electricity generation capacity which is one of the highest energy guzzlers from 4.2 to 9% within 25 years[12] according to the government plans. The country has five nuclear reactors under construction and plans to construct 18 additional nuclear reactors by 2025.[13] These commitments showcase the importance given by the government in response to the energy requirement.

On the electricity front, the country has developed an Energy Efficiency Code for Buildings and has launched one of the biggest effort worldwide for LED's to replace bulbs at affordable prices for consumers. According to the manufacturer's association till a couple of years ago less than 5 million LED lights were being used in the country, they estimate that now more than 100 million have been put to use. Even this is small because the manufacturers see the investments multiplying 24 times from the current level in less than 5 years to cater to the demand.[14] Though the vast majority of India's electricity needs still comes from heavily-polluting coal

[9]World energy outlook 2012.

[10]Economic survey 2017.

[11]National solar mission—India.

[12]http://www.world-nuclear.org/information-library/country-profiles/countries-g-n/india.aspx.

[13]http://www.world-nuclear.org/information-library/country-profiles/countries-g-n/india.aspx.

[14]https://eeslindia.org/writereaddata/Ujala%20Case%20study.pdf.

power plants, just under two thirds of its total capacity, but India is aiming for a target of 40% renewable energy.[15]

In a recent auction in India, developers of solar farms offered to sell electricity to the grid for INR 2.44 rupees per kilowatt-hour.[16] That is about 50% less than what solar farms bid a year earlier and about 24% less than the average price for energy generated by coal-fired power plants.[17] Solar electricity price is going to become the benchmark price for deciding the other fuel prices (Petroleum products, LNG, CNG, LPG, coal, lignite, biomass, etc.) based on their ultimate use and advantages.

In all major energy intensive sectors—steel, aluminium, fertiliser, paper, cement—levels of energy efficiency in India are at global levels. The need for energy efficient products is also triggering innovation. The product portfolios of organizations are helping consumers become energy efficient with new energy efficient products accounting for a large and growing part of their revenue portfolio. Once upon a time there was a song that went "Video killed the Radio Star"; there can be a hundred songs like that now because energy efficiency is triggering innovation.

The good news is that India is on path and set to achieve this eight years ahead of schedule according to reports.[18] By doing right, India is finding that thinking green need not carry a big economic cost and can actually be beneficial.

4 Corporate Response

Companies are also partners in this response. Corporates today have an increasingly broad understanding of the risks and opportunities that climate change poses to their strategies and operations. There are discussions on the larger issues of sustainability triggered by climate change that are becoming an integral component of dialogues with the major stakeholders.

The most attractive environment-related initiatives that have evolved through these conversations involve the use of renewable energy, ranging from solar street lamps and lanterns to biomass cook stoves and using cleaner energy like the electric cars. One of the reasons why companies may prefer such projects would be that access to clean energy has several cascading effects on the social and economic development—ranging from opportunities for better education, health, and income to increased safety for women and lower deaths due to reduced indoor pollution.

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[15] http://www.business-standard.com/article/economy-policy/india-s-energy-mix-to-have-40-renewable-sources-by-2030-115092200057_1.html.

[16] http://www.thehindubusinessline.com/economy/solar-tariffs-fall-further-to-rs-244/article9694617.ece.

[17] http://www.independent.co.uk/environment/india-solar-power-electricity-cancels-coal-fired-power-stations-record-low-a7751916.html.

[18] http://indianexpress.com/article/india/india-aspiring-for-global-leadership-in-climate-action-4770895/.

There are already sustainable technologies, such as solar and wind power that can achieve energy independence and stabilize human-induced climate change.

Initiatives taken by corporates include initiatives like The Climate Group (a non-governmental organization) energy campaign—EP100—that aims to work with the world's most influential businesses in setting commitments to double their energy productivity and maximize the economic output from each unit of energy used. By signing up to EP100, companies commit to doubling their energy productivity by 2030, a core requirement for any business signing on to the campaign. The concept of energy productivity aligns energy efficiency more directly with business growth and development objectives. If more companies were to adopt energy productivity within their business models, the global fossil fuel bill could be reduced by an estimated €2 trillion (INR 1 crore 52 lakhs crores) and create more than six million jobs globally by 2020 as envisioned by the campaign.[19]

There is also RE 100 which as their website states is a collaborative, global initiative uniting more than 100 influential businesses committed to 100% renewable electricity, working to massively increase demand for—and delivery of—renewable energy. RE100 shares the compelling business case for renewables, such as greater control over energy costs, increased competitiveness, and delivery on emissions goals. It also showcases business action on renewables and encourages supplier engagement, while working to address barriers that will enable many more companies to reap the benefits of going 100% renewable. Companies joining RE 100 are strongly encouraged to set a public goal to source 100% of their global electricity consumption from renewable sources by a specified year. They disclose their electricity data annually, and RE 100 reports on their progress.[20]

There is also the Vision 2050 Project taken up by the World Business Council for Sustainable Development (WBCSD) which saw 29 WBCSD member companies develop a vision of a world well on the way to sustainability by 2050. The members were supported by the WBCSD secretariat, the wider business community and regional network partners around the world, in mapping out not what they think will be, nor what they fear will be, but what could be. Given the megatrends of climate change, global population growth and urbanization, and given the best efforts of business, governments and society, Vision 2050 is a picture of the best possible outcome for the human population and the planet it lives on over the next four decades. In a nutshell, that outcome would be a planet of around 9 billion people, all living well—with enough food, clean water, sanitation, shelter, mobility, education and health to make for wellness—within the limits of what this small, fragile planet can supply and renew, every day. And in this new world every corporation would be do its bit while being sustainable.

[19] https://www.theclimategroup.org/project/ep100.

[20] https://www.theclimategroup.org/RE100.

The critical pathway as mentioned in this document includes[21]:

- Halving carbon emissions worldwide (based on 2005 levels) by 2050, with greenhouse gas emissions peaking around 2020 through a shift to low-carbon energy systems and highly improved demand-side energy efficiency.
- Providing universal access to low carbon mobility.

The government has been an active participant in generating this dialogue within the industry.

India's Green Power Market Development Group (GPMDG), led by World Resources Institute (WRI) and the Confederation of Indian Industries (CII), is one such group that brings together government, utilities, regulators, companies and energy developers to scale up renewable energy purchasing in the private sector. So far, the group has worked with over 30 leading businesses in India to facilitate 200 megawatts (MW) of renewable energy transactions across several states, including Karnataka, Tamil Nadu and Maharashtra. The vision of GPMDG as stated on their website is that it aims to bring 1,000 MW of additional clean energy online by 2020, enough power to energize 200,000 typical two-bedroom apartments. Over the past four years, GPMDG has pursued several strategies to make clean energy procurement more streamlined and accessible to large buyers in India.[22]

Another major push has been through the National Action Plan for Climate Change which has 8 high impact programs which is also leading to improvements on the floor shop. There have been focussed programs like the energy rating program that has made air-conditioners about 70% more energy efficient.[23] The cement industry has moved from using 1000 kcal/kg of clinker to 680 kcal/kg, very close to the world best of 650 kcal/kg.[24]

Companies are eager to help the government on their energy goals, given the cost savings and environmental benefits of renewable energy, but many face barriers to sourcing wind and solar power. What is needed is a long-term certainty in policy implementation and access to innovative business models and financial products. Commercial and industrial customers account for close to 52% of India's electricity consumption and hence can have a significant impact on the energy story.[25]

A sustainable corporation needs to thus proactively work on the energy issue. Case in point is the Mahindra Group. A list a few initiatives taken by the group which demonstrate the possibilities for corporates to contribute towards addressing the issue of Energy security in the larger context of a Sustainable organization.

[21] http://www.wbcsd.org/Overview/About-us/Vision2050.

[22] http://www.wri.org/our-work/project/charge/buying-green-power.

[23] https://www.nrdc.org/experts/anjali-jaiswal/india-pushes-more-super-efficient-climate-friendly-acs.

[24] http://knowledgeplatform.in/portfolio/cement/.

[25] http://www.wri.org/blog/2017/03/how-companies-are-buying-clean-energy-4-lessons-india.

5 Baking Sustainability into Business

It wouldn't be wrong to say that the last few years have been witnessed a lot of action on the Sustainability front including response to the energy crisis. From adoption of the Paris Agreement and the UN Sustainable Development Goals (SDGs), we have witnessed historical achievements and generated hope that the international community is finally uniting in pursuit of ambitious, long-term solutions to mankind's most significant challenge. There is growing consensus among world leaders across business, government and civil society about the future direction of climate action and the need for concerted, coordinated, systemic responses to resource conservation and deployment. The focus is now on the deliverables.

And Mahindra is aligned to this purpose.

Delivering on the purpose requires an actionable definition of Sustainability. The most frequently cited definition comes from the 1987 report of the World Commission on Environment and Development, titled "Our Common Future" (also known as the Brundtland Commission Report). It reads, "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs."[26] Although this definition reflects the ethos of Sustainability, it does not specify a course of action.

So the group took upon itself to craft a working definition of Sustainability when viewed from the perspective of a Corporation (Fig. 1).

Fig. 1 Mahindra sustainability framework. http://www.mahindra.com/resources/pdf/sustainability/mahindra-integrated-report-FY17.pdf

[26] http://biodiversitya-z.org/content/sustainable-development.

The definition as laid out above reads, "Sustainability is to enable enduring business by rejuvenating the environment and enabling stakeholders to Rise." This definition is action-oriented, makes the areas of action clear and lays out the objectives for business and beyond, or shall we say, people, planet and profit.[27]

The definition translates into includes making its work places great places to work, fostering inclusive development and making sustainability personal for colleagues and their families on the People front. Through the planet pillar the company address carbon neutrality, water positive and making waste a resource and not just mere refuse while protecting biodiversity. In the profit pillar the company aims to develop products and services which generate an evergreen stream of green revenue, mitigate risks for its business including climate risk evangelizing sustainability through the supply chain for greater impact, recognize that the role of technology and innovation in shaping progress on sustainable development will remain paramount and ensure that they enhance brand equity through sustainable work. The base for all this would be the work that the company does on sustainability through sharing and learning of best practices and in the process the aim is to give back to the earth more than they take. There are multiple ways in which the definition is operationalized within the Mahindra Group.

The work that the group is doing has led to it attaining a leadership position on the Sustainability front with recognition coming in from across the globe. This has led to accolades, one of which was Mr. Anand Mahindra, Chairman, Mahindra Group representing the world's business community at the signing ceremony of the Paris Accord at the UN Headquarters in New York in 2016 and committing to invest in a greener future.[28]

6 Green Revenue Portfolio

One of the ways in which the definition has been operationalized is through Mahindra's green revenue portfolio. Mahindra Group is disrupting the narrative of sustainability from conservation to rejuvenation. Which is why they are committed to pursue the path of Carbon Neutrality which is aligned to the Sustainable energy story of the country. The company has been working on sustainability are the Multiple revenue opportunities being leveraged in its business. These areas are closely connected to climate change such as setting up solar power generation capacity (Mahindra Susten), micro-irrigation (Mahindra EPC), electric cars (Mahindra Reva), electric scooters (Mahindra GenZe), cars that run on CNG (alternative fuel), building green buildings (Mahindra Lifespaces), building a carbon neutral city (Mahindra World City) and leveraging cloud based services in IT

[27] www.mahindra.com.

[28] www.mahindra.com.

applications and the IT business (Tech Mahindra). Revenue from these businesses amounts to over 400 million dollars.[29]

It's widely acknowledged that increasing transportation efficiency is the best place to start efforts to reduce emissions of carbon dioxide (CO_2), which is a primary culprit in global warming. Climate action often focuses on energy and industrial activity, but the transport sector must be included to keep global warming below the dangerous two-degree scenario. Transport is responsible for 22% of energy-related greenhouse gas (GHG) emissions worldwide, according to a 2014 report by International Agency Energy's World Energy Outlook, and its emissions are increasing at a faster rate than any other sectors.[30] Implementing low-carbon transport options can create multiple economic and social development benefits, in addition to reducing emissions. These local benefits include improved air quality, safer streets, and poverty alleviation. Outdoor air pollution was associated with 3.7 million premature deaths in 2012, and fuel combustion in motor vehicles is responsible for up to 75% of urban air pollution.[31] Improving fuel technologies and shifting passengers to more sustainable modes like public transport, walking, and bicycling can both improve air quality and lower carbon emissions.

Electric cars produce fewer greenhouse gases. Although the cars can cause environmental damage when getting power from coal-producing plants, electric cars would dramatically reduce the amount of greenhouse gasses when powered by plants that don't produce greenhouse gases. Even when generated from coal-burning plants, electric cars would reduce carbon dioxide emissions by as much as 22% when compared to other fuel.[32]

To respond to this Mahindra Electric focuses on the future of transportation. In deploying their detailed "5C strategy" (clean, convenient, connected, clever, cost-effective) Mahindra Electric has managed to deliver sustainable transportation solutions to customers across the world. For a company who first made its name and profits largely through the manufacturing of rugged diesel-powered SUVs in India to so willingly explore the EV sector evidences the financial and ethical viability of alternative transportation.

Mahindra Electric has one of the world's largest deployed fleets of electric cars—customers in 24 countries have driven more than 200 million kilometers, absolutely emission free.[33] The company manufactures cars, licenses out its electric vehicle technologies, electrifies existing platforms, and helps to deliver. The business has developed e_2oPlus—A hatch back, built ground up by Mahindra Electric. Also the eVerito—The all-electric version of the sedan, Vertio eSupro—The electrified variant of the passenger vehicle, Supro.

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[29]http://www.mahindra.com/resources/pdf/sustainability/mahindra-integrated-report-FY17.pdf.

[30]International agency energy's world energy outlook 2014.

[31]World health organization survey 2017.

[32]http://www.newsmax.com/FastFeatures/cars-global-warming-electric-cars/2015/03/23/id/631734/.

[33]http://www.mahindraelectric.com/mahindraelectric/.

As researchers look for more alternative ways to replace oil-producing vehicles that can damage the environment, electric cars provide cleaner energy when power comes from a cleaner electric grid. The environment will benefit from the growing use of electric cars as improvements are made for renewable power generation and the Mahindra group is invested in this.[34]

Another example of the way in which the green product portfolio is being addressed by the Mahindra Group is Mahindra Susten. Driven by and committed to providing state-of-the-art climate sustainability solutions, Susten offers diversified services within the renewable energy sector, including utility scale and rooftop solar panels, solar DG hybrid solutions, solar car charging stations, telecom tower solarization, and solar PV O&M and analytics. Perhaps the leading player in Indian solar power, Mahindra Susten has over 556 MWp commissioned to date with 450 under current execution.[35]

India is endowed with vast solar energy potential. About 5,000 trillion kWh per year energy is incident over India's land area with most parts receiving 4–7 kWh per Sq. m per day.[36] Hence, both technology routes for conversion of solar radiation into heat and electricity, namely, solar thermal and solar photovoltaics, can effectively be harnessed providing huge scalability for solar in India.

On the energy front the company also strives for optimized use of resources. Hundreds of projects in the areas of heat recovery, energy efficient cooling, energy efficient lighting, retro fitment of equipment to enhance energy efficiency, etc. within the company and with suppliers has led to energy consumption per vehicle being reduced by one-third in less than a decade.[37]

Mahindra also worked extensively on its energy mix promoting use of renewable energy. Examples of the work that the company has done through its different businesses:

- Implementation of Renewable energy projects (Solar/Solar Thermal/Solar PV) at all manufacturing sites.
- Procurement of RECs from power exchange thus promoting renewable energy deployment.
- Installation of solar PV panels to harness solar energy.

Mahindra is also an active advocate in the corporate space. The company has already made important commitments on the energy front.

Mahindra & Mahindra (M&M), the largest company in the Mahindra group, became the first Indian company to sign up for the EP 100 program. Dr. Pawan Goenka, Managing Director, M&M, said on the occasion of the signing of EP 100, "Sustainability is an integral part of Mahindra's approach to business. At Mahindra, it has always been our endeavour to drive positive change by making every aspect

[34] http://www.mahindraelectric.com/mahindraelectric/.

[35] http://www.mahindrasusten.com/.

[36] http://www.mahindrasusten.com/.

[37] http://www.mahindra.com/resources/pdf/sustainability/mahindra-integrated-report-FY17.pdf.

of our business sustainable. This is our philosophy behind "Rise for Good". By signing up for EP100, the company is making a significant commitment to doubling our energy productivity by 2030 on a baseline of 2005, and hope to make a strong contribution towards achieving the climate goals agreed upon at COP21. We hope many other corporations will become a part of this campaign."[38] Mahindra Holidays & Resorts India Ltd. (MHRIL), another group company, has since then signed on EP 100 and in the process has become the first Indian hospitality company to join program.[39]

Post the commitment, the automotive and farm equipment businesses of M&M has found that they can replace all their lights with LED and magnetic induction lighting with a payback period of less than 15 months and returns that are higher than that generated by the core business. The company has learnt that every business will have multiple opportunities to get high returns from investments in energy productivity and the initial investment obviously thus is not a deterrent. If availability of funds is a problem, then businesses also have the option of getting the service provider make the initial investment.

The company knows that the energy productivity at suppliers is critical to reduce emissions and cost. Mahindra engages extensively with its suppliers to make this happen. The program includes capacity building, best practice sharing, goal setting, audits, technology exposure and recognition of work done by the channel partner. This helps Mahindra be a responsible manufacturer and take sustainability beyond its own boundary.

Mahindra & Mahindra was also the first company in India to launch an internal carbon fee. The internal carbon fee announced of $10 per metric ton will help reduce M&M's carbon footprint and achieve its goal of reducing GHG emissions 25% by 2019.[40] The carbon price helps the company to accelerate its transition to clean energy sources (for example, investment in LED lighting) as well as reduce the company's energy and operating costs.

The company has plans to spend the $4 million investment of funds raised from the carbon fee to convert all 17 manufacturing plants to LED lighting which will yield a return on investment in less than one year.[41] Since the adoption of the carbon fee in October 2016, M&M has continued to increase its investment in energy efficiency and renewable energy projects, including a 4.2 MW wind energy project, compared with its 2015 "business as usual" levels. The company has plans to add additional renewable energy projects in its new fiscal year.[42]

[38] www.mahindra.com.

[39] www.mahindra.com.

[40] www.mahindra.com.

[41] http://www.mahindra.com/resources/pdf/sustainability/mahindra-integrated-report-FY17.pdf.

[42] http://www.mahindra.com/resources/pdf/sustainability/mahindra-integrated-report-FY17.pdf.

7 Opportunities

Access to energy is the mainstay for economic growth in our country. India is on a fast trajectory of development with government boosting business through initiatives like 'Make in India', but to keep the momentum of growth high, availability of uninterrupted power supply is a must. India needs electricity to fuel the growth of every industry, be it large-scale or small scale, manufacturing or service driven across all sectors. This makes it important that corporates work alongside government and social sector to deliver a solution that works for all.

It is also important that one recognizes important to recognize that the role of technology and innovation in shaping progress on sustainable development which will remain paramount. The key is to increasingly look at cost-effective renewable technologies, new energy efficiency measures and exciting innovations in robotics and big data which could potentially change the way we address the energy requirements of the country. This can be achieved through challenging conventional thinking which is driven on high fuel and innovatively using all our resources in this specific case energy to deliver greener products.

Renewable energy has a lot of advantages and the time to make a move is now. India is aggressively pursuing the low-carbon power generation plan with the government pursing a lot of programs designed around the same. Energy statistics 2013 (twentieth Issue) pegged the potential of the Renewable energy generation in the country at 89,774 MW.[43] The country though a late entrant has the advantage of catering to a huge population not having access to fossil-fuel-generated power and is better placed to perform once the renewable energy rates beat the traditional ones.

The country's renewable energy programme would need investment to expand its generation capacity and eventually, to make the sector efficient and commercially viable. For the same what is required is supporting mechanisms within the corporate and the government sector to strengthen the call for clean and renewable energy policies. This can be done through advocacy and awareness building and creating a supportive renewable energy implementation environment across all sectors. The government can help by initiating activities aimed at helping compliance by evolving renewable energy deployment targets; and building supportive policy evidence through research around grid as well as off-grid business models.

Progress of the energy sector towards green power has tremendous potential with the opportunities for employment, accessibility to electricity and responding on the climate change combat plan. Besides this, these investments will also help us as communities to address the enormous challenge of energy security towards a better future for our planet.

The appeal is for corporates to play a larger role in this conversation.

[43]Energy statistics 2013 (twentieth Issue).