Future and Growth:

SDGS IN THE ENERGY SECTOR

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Introduction

What are SDGs?

“A blueprint to achieve a better and more sustainable future for all by 2030”

A set of 17 targets set out by the United Nations to be adopted by all UN member states, The **Sustainable Development Goals** (**SDGs**) or the **Global Goals** are a collection of interlinked global goals designed to be a "blueprint to achieve a better and more sustainable future for all".

Set up in 2015 by the UN General Assembly, the SDGs are planned to be achieved by the year 2030 and are hence included in a UN Resolution as the **Agenda 2030**. Succeeding the Millennium Development Goals which ended in 2015, the SDGs were developed in the Post-2015 Development Agenda as the “future global development framework”.

In total, there are **17** SDG goals, with **169** targets and **232** indicators. Each goal has anywhere between 8–12 targets, and each target has between 1 and 4 indicators that are used to measure progress towards reaching the “targets” of these goals. These targets are either "outcome" targets (i.e. circumstances to be attained) or "means of implementation" targets.

What is SDG 7?

The mission statement for SDG 7 is to ensure access to affordable, reliable, sustainable and modern energy for all. With this goal, energy is recognized as a crucial factor when it comes to development. For years to come, universal access to energy, a higher share of renewable energy and bigger strides in energy efficiency are top priorities to ensure sustainable development for years to come.

The SDG consists of 5 targets with their respective indicators:

Target 7.1: By 2030, ensure universal access to affordable, reliable and modern energy services
Indicator 1: Proportion of population with access to electricity
Indicator 2: Proportion of population with primary reliance on clean fuels and technology

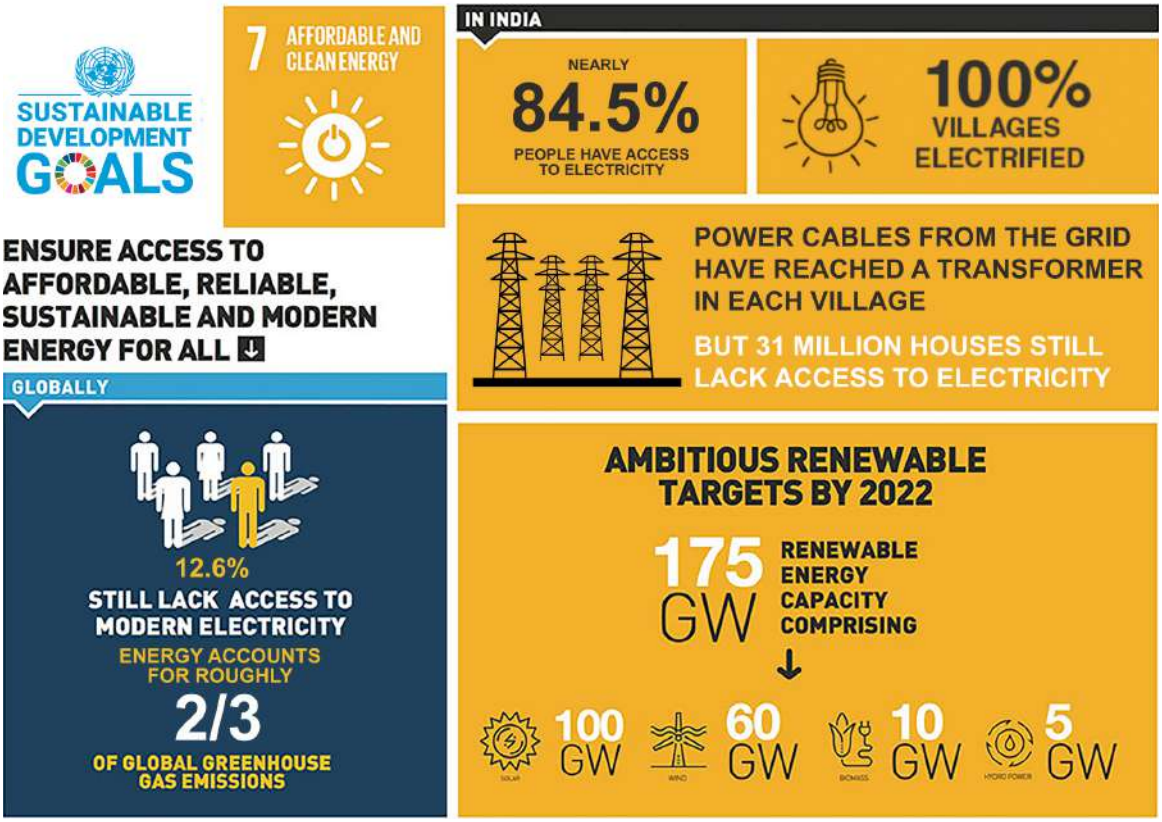
Target 7.2: By 2030, increase substantially the share of renewable energy in the global energy mix
Indicator 1: Renewable energy share in the total final energy consumption

Target 7.3: By 2030, double the global rate of improvement in energy efficiency
Indicator 1: Energy intensity measured in terms of primary energy and GDP

Target 7.a: By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology
Indicator 1: International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems

Target 7.b: By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support
Indicator 1: Investments in energy efficiency as a percentage of GDP and the amount of foreign direct investment in financial transfer for infrastructure and technology to sustainable development services

India and SDG 7



India with its increasing population and economy, is an important contributor to the rise in global energy demand. The government's policies and initiatives like the "National Solar Mission", "Green Energy Corridor" etc. are playing a crucial role in encouraging renewable energy, with interventions in rural electrification and new ultra-mega power projects moving India closer towards achieving universal energy access.

Targets for Goal 7

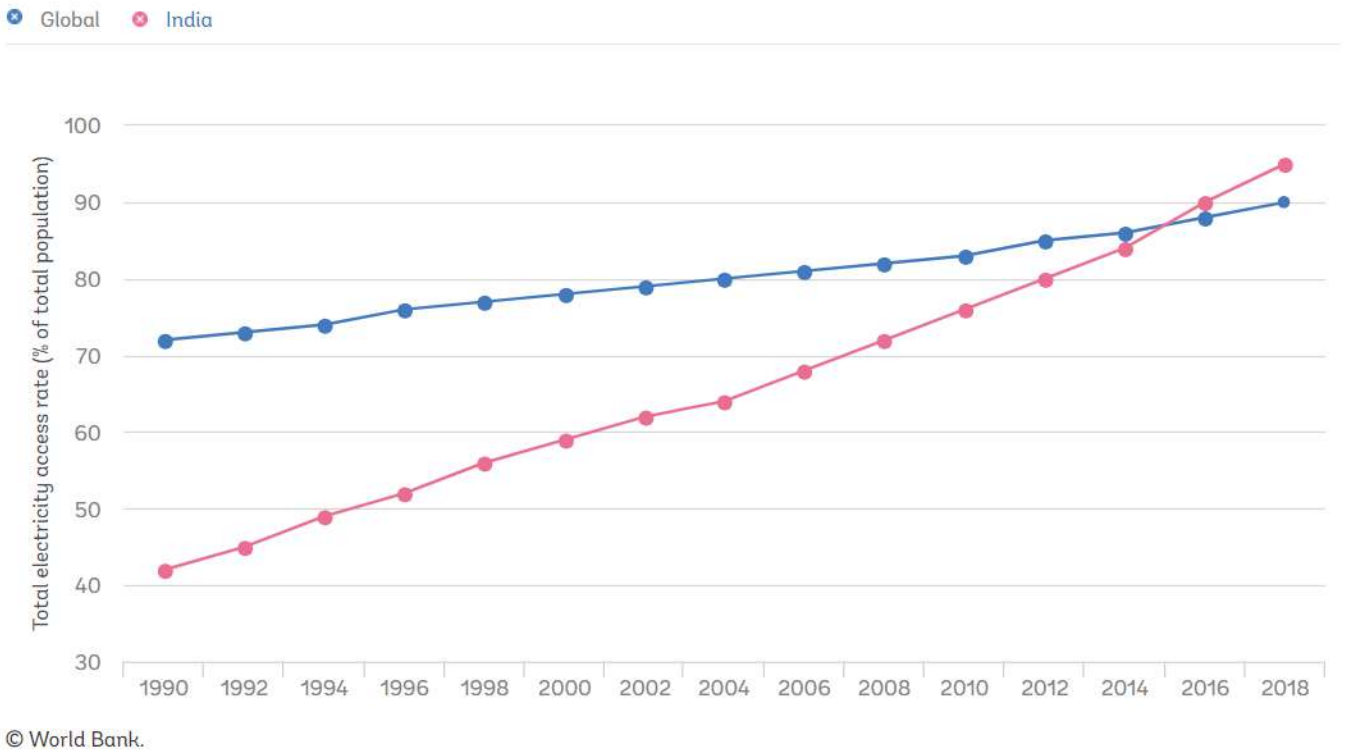
By 2030, India plans to:

- ensure universal access to affordable, reliable and modern energy services
- increase the share of renewable energy in the global energy mix substantially
- double the global rate of improvement in energy efficiency
- enhance international co-operation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology
- expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing states and land-locked developing countries, in accordance with their respective programmes of support

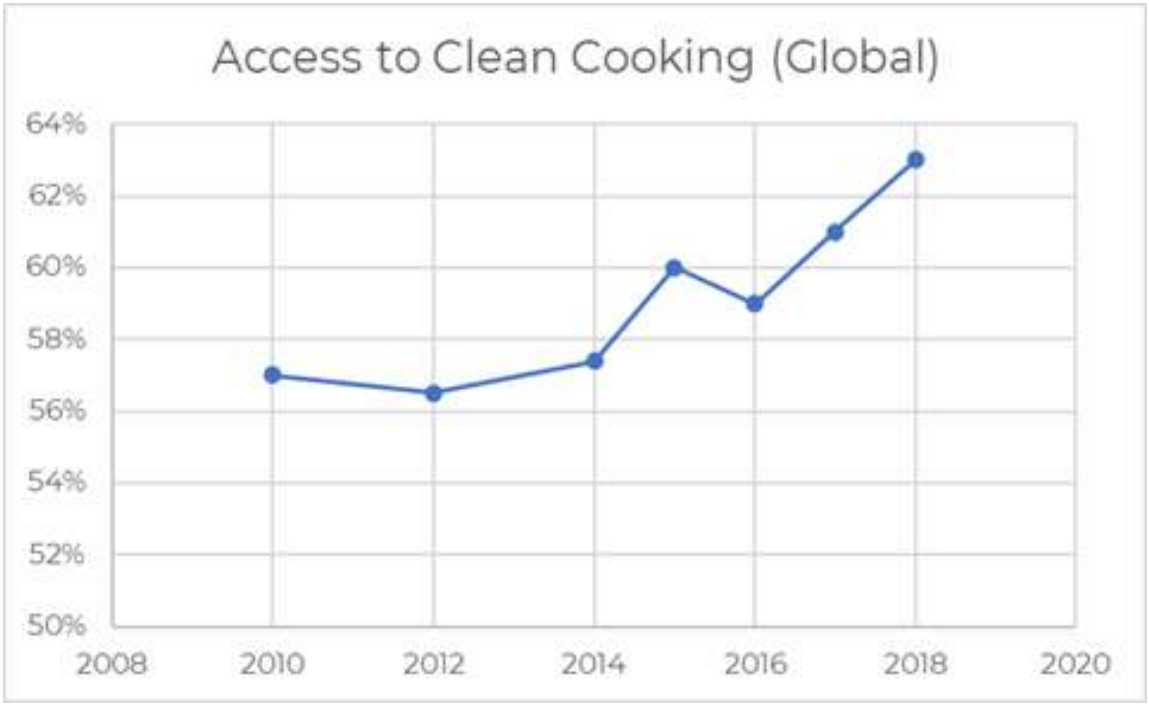
Looking at the indicators mapping progress of SDG7 in India wrt the world:

Source: https://trackingsdg7.esmap.org/time

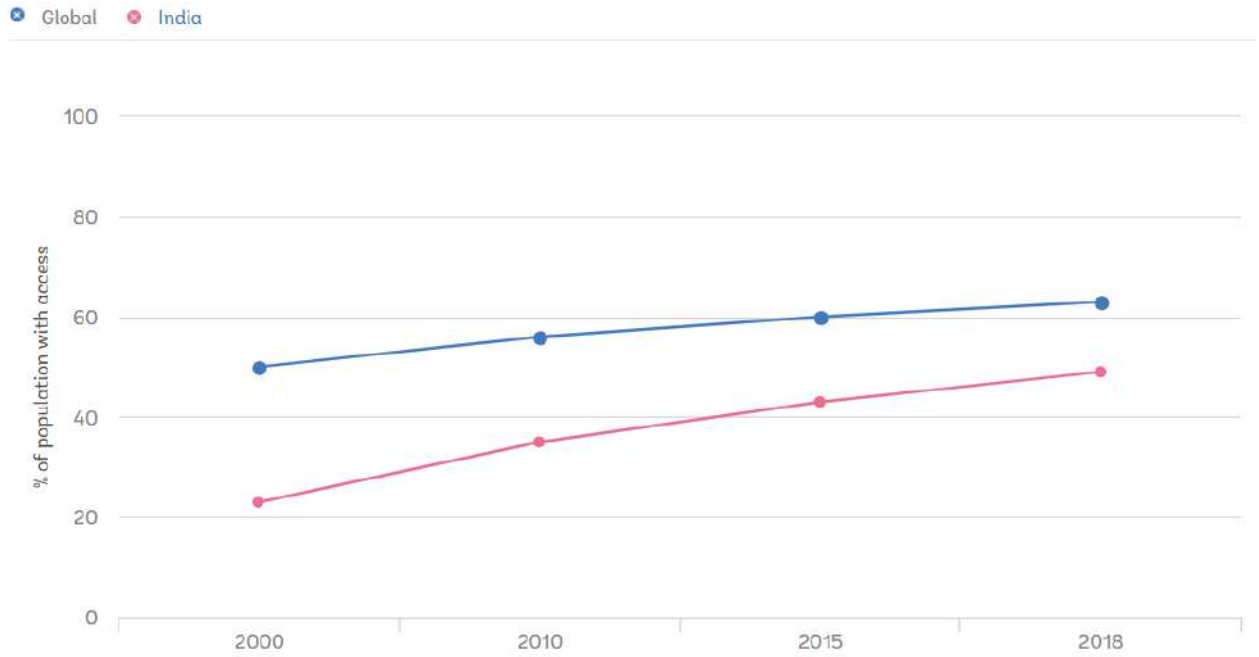
Electricity Access Rate, Total(%)



Access to clean cooking:

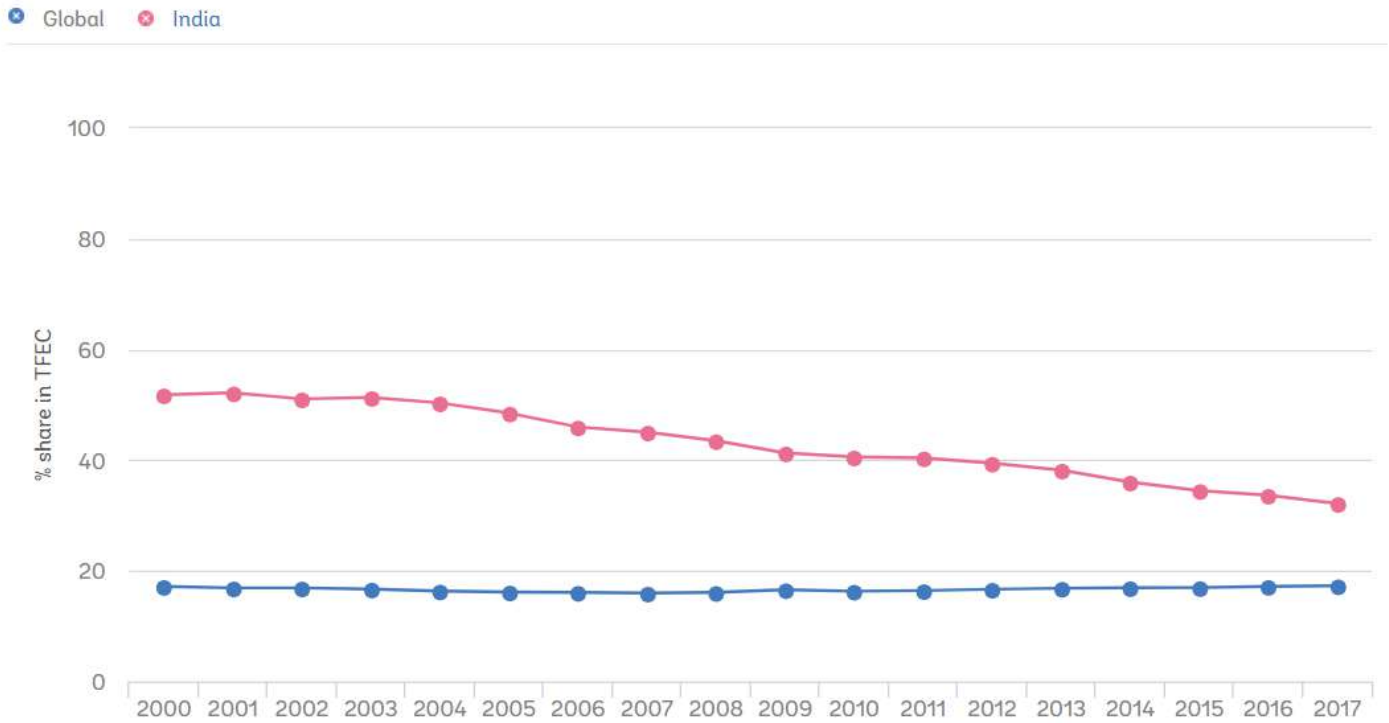


Source: https://energypedia.info/wiki/Energy_and_the_Sustainable_Development_Goals#cite_note-10



© World Health Organization. Population estimates based on UN population data.

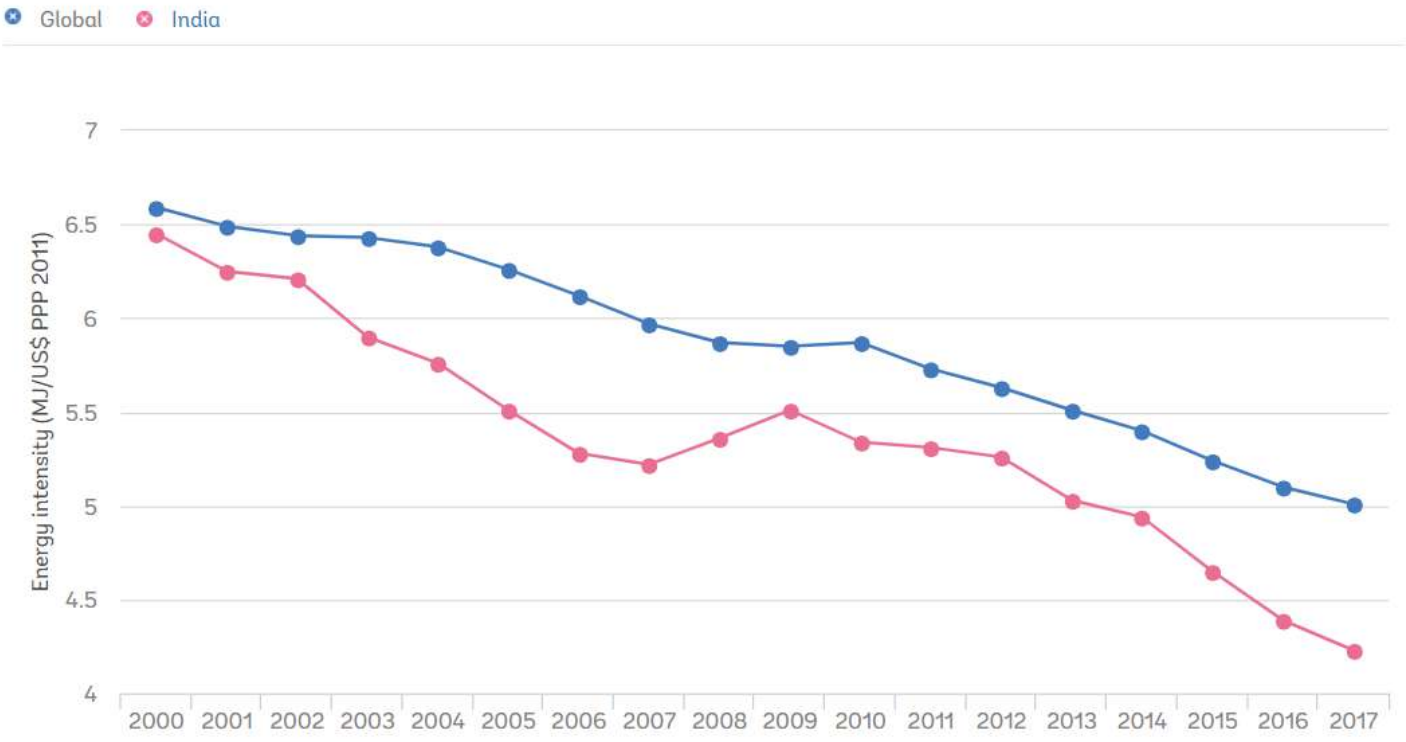
Renewable Energy Consumption (% of total energy consumption)



© International Energy Agency (IEA) and UN Statistics Division (UNSD).

Global energy intensity decreased by 2.8% in 2015 from 2014, **double** the rate of improvement seen from 1990 to 2010. Even though the absolute level of renewable energy consumption has grown by more than **18%** since 2010, only since 2012 has the growth of renewables **outpaced** the growth of total energy consumption.

Energy Efficiency



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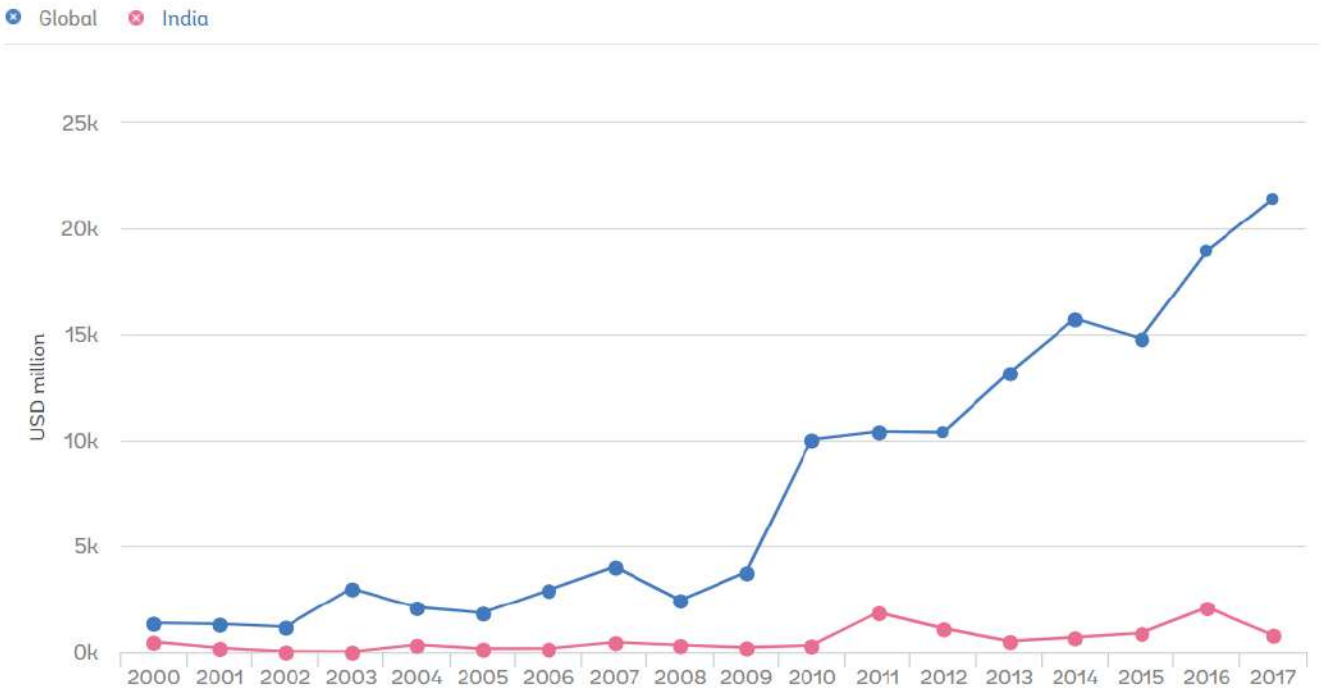
International financial flows represent the international public aid in support of clean and renewable energies to developing countries:



© International Renewable Energy Agency (IRENA) and Organisation for Economic Co-operation and Development (OECD).

Corporates and SDGs

Encouraged by falling prices for renewable energy sources, push for renewable energy through government policies, as well as penalties for pollution and handling coal, many power firms in India have made long term provisions to gradually transition to a primarily green power driven country. Considering the current pace, it's safe to say that by 2040, if not by 2030, all countries in the G20 will be running on green energy.

Taking a look at the top 3 power producers in India and their corporate sustainability reports:

1. **NTPC Limited**

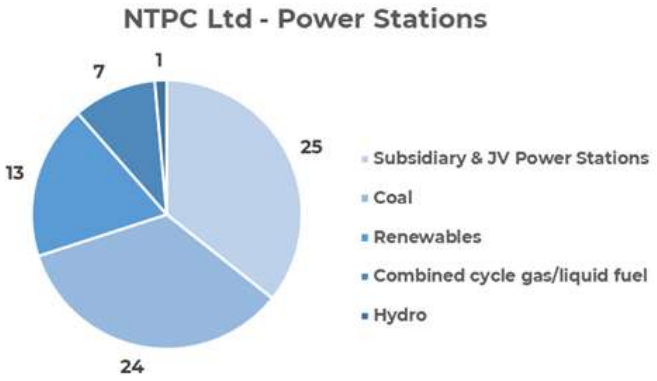
   Total Capacity (MW): 62910

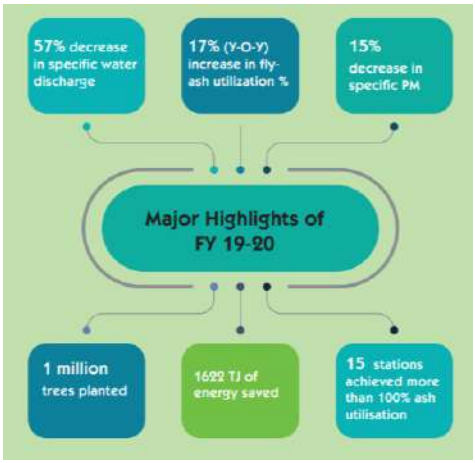
   Renewable (MW): 920

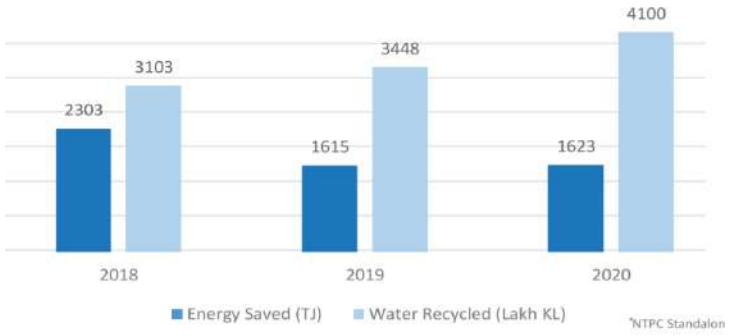
   As per NTPC Limited's Sustainability Report, the organization values sustainable production and continuously wants to upgrade their systems to be in line with the global benchmark of environmental compliance, practices and stewardship.

   NTPC Ltd. is currently focusing on the following in terms of natural capital and is hence targeting **SDGs 6, 7, 9, 11, 12, 13, 14, 15**:

   - ➢ Compliance Management
   - ➢ Climate Change impacts
   - ➢ Water Management
   - ➢ Air emissions
   - ➢ De-carbonization of generation mix
   - ➢ Biodiversity
   - ➢ Effluent management
   - ➢ Waste management
   - ➢ Fly ash utilization





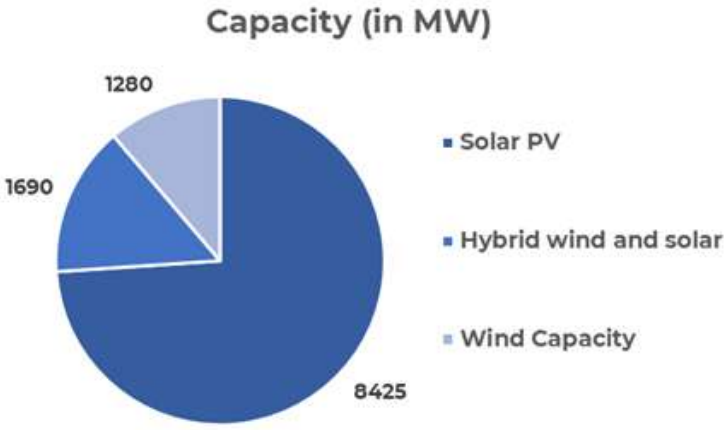


Source:https://www.saurenergy.com/solar-energy-news/indias-top-5-power-producers-and-their-renewable-energy-plans, https://www.ntpc.co.in/sites/default/files/downloads/44-final-NTPC-AR-30082020.pdf

2. **Adani Group**

Total Capacity (MW): 15000

Renewable (MW): 2595



As per their sixth ESG or Environment (E), Social (S) and Governance (G) Report, Adani Group's focus is to mainstream these ESG considerations in key business decisions, responding dynamically to rapid developments in the external environment.

The key strategic objectives focusing on **SDGs 3, 5, 6, 8, 9, 12, 13, 15, 16, 17** :

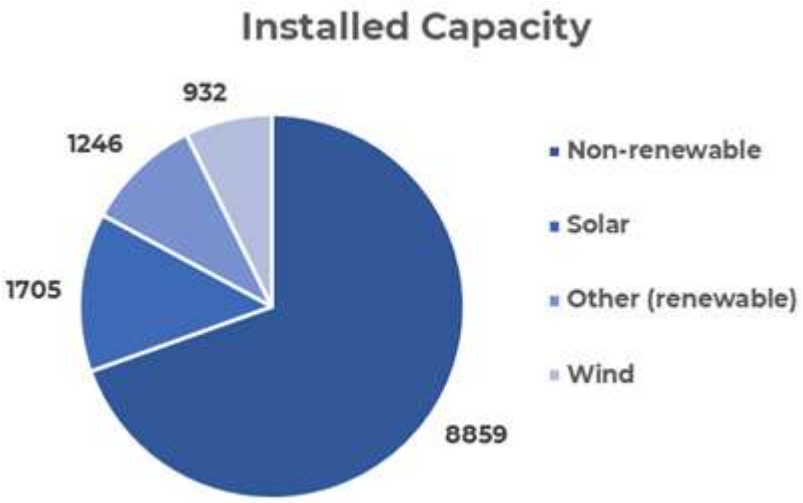
- Minimising GHG Emissions
- Focusing on Climate Adaptability
- Digitization of Operations
- Achieving benchmark performance in Operational Efficiency
- Being the Employer of Choice
- Creating lasting Customer Relations and Sustainable Supply Chains
- Upholding Good Governance
- Occupational, Health & Safety
- Minimising Environmental Footprint

Source: https://www.adanipower.com/-/media/Project/Power/Sustainability/documents/Adani-ESG_REPORT-2019-20.pdf

3. **Tata Power**

Total Capacity (MW): 12742

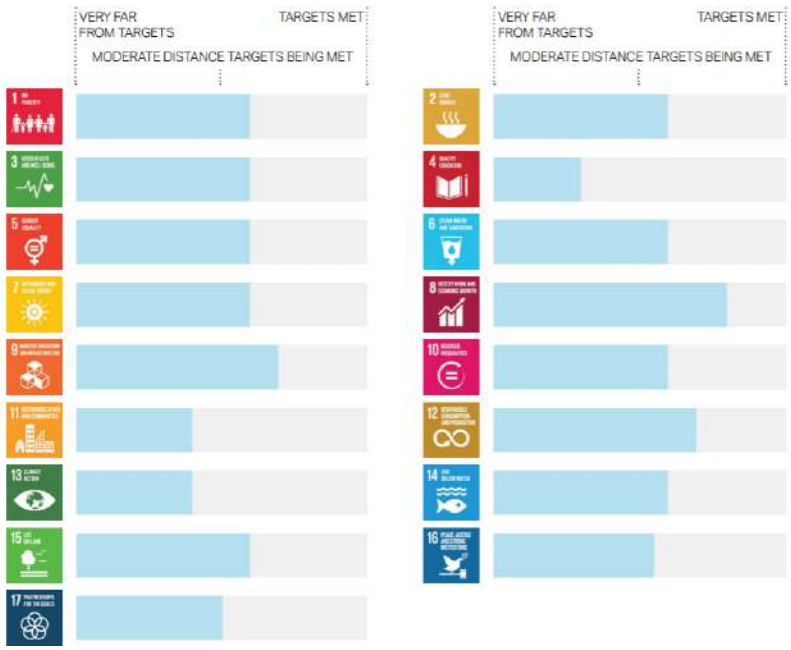
Renewable (MW): 2637



Tata power, one of the top 3 power distributors in the country is one of the only top power producers which has made an unequivocal commitment to renewable energy, by announcing a decision to move away from fresh thermal capacity creation. In their SDG roadmap report they have prioritised on **SDGs 5, 6, 7, 8, 9, 11, 12, 13, and 15**. Spread over 4 themes - Climate & Energy, People & Communities, Nature and Circular Economy, the 7 "impact opportunities" are as follows:

- ➢ Decarbonize electricity generation in line with limiting global warming to 1.5°C
- ➢ Enhance electricity system flexibility, resilience and efficiency
- ➢ Ensure access to affordable, reliable, sustainable & modern electricity services for all
- ➢ Attract and retain a diverse and inclusive workforce
- ➢ Leave no one behind in the energy transition and respect human rights
- ➢ Protect, restore and promote sustainable use of ecosystems and drive net biodiversity gains
- ➢ Transition to a circular electric utility sector

Overview of SDG progress (extrapolated from UN DESA SDG progress charts 2020)



Source: https://www.tatapower.com/pdf/report-on-sdgroadmap.pdf

Methodology

Secondary Research Methods were used as the main research methodology for the report.

Why Secondary Research?

- Readily available information, multiple relevant sources from where data can be collected, used and analysed
- Reduces cost and time spent as data is readily available from open sources and can be downloaded without cost/with very less cost
- Secondary research gives an opportunity to analyse historical data and compare with current situation, while also providing authentic sources backing the data

Sources of Data Collection

- Open-source articles and blogs
- Government websites like sdgs.un.org
- News articles and websites
- Whitepapers and reports made by organizations

Conducting Secondary Research

1. **Identifying the topic of research**
   Prior to beginning the research, its crucial to identify the topic that needs to be studied. Preparing a hypothesis, or problem statement, or hyper-focusing on one part can help in narrowing down the search and giving direction to the efforts
2. **Identifying research sources**
   Next, streamlining sources of information will help providing the most relevant data and information applicable to the research, quickly
3. **Collecting existing data**
   Collecting data from authentic sources considering its relevance to the topic, and the time period of the research. The data can be obtained from both online & offline sources
4. **Combining and comparing**
   It might be the case that collected data is overlapping, or is irrelevant. Hence post collection, one must ensure they combine, compare and then assemble the data in a usable format.
5. **Analysing data**
   Analyse the data collected and try to answer the hypothesis or draw conclusions. If not, repeat the process and dwell deeper if necessary

Results

The renewable energy industry is instrumental in achieving all SDGs. Considering the short time frame and utmost urgency with which the world needs to transition to clean energy and renewables, it is critical that we understand the potential impacts on all SDGs - be it positive or negative - on all countries and sectors. Although SDG 7 i.e. affordable and clean energy, is directly related to the energy sector, all other SDGs can also help facilitate and enable relevant development processes. Here's a look at the SDGs in brief:

SDG 1: No Poverty

Mission statement: To eradicate every form of extreme poverty including the lack of food, clean drinking water, and sanitation

Relevant Targets:

By 2030,

- eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day
- reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions
- ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance

Relevance to Energy sector:

- Creation of jobs for men and women, small businesses due to production and commercialisation of efficient stoves as well as the rise of the renewable energy sector (e.g. sale, installation and services of solar panels, pico PV lamps etc) giving rise to small businesses
- Additionally, families will save money and time due to reduced fuel demand for cooking and lighting, as well as efficient sources of power provided easily and affordably
- Access to energy services is a prerequisite for economic development and hence would make entrepreneurial activities beyond daylight hours possible

SDG 2: No Hunger

Mission statement: To ensure that everyone everywhere has enough good-quality food to lead a healthy life

Relevant Targets:

By 2030,

- ➢ end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round
- ➢ double the agricultural productivity and income of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment
- ➢ ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality

Relevance to Energy sector:

- ➢ Since 95% of staple food needs to be cooked before it can be eaten, supply of sufficient cooking fuel, easily accessible and affordable - is very important. Providing people with efficient technologies to prepare this meal can reduce cost, time and effort
- ➢ In the agricultural sector, energy is needed for various activities like irrigation, cooling, drying, milling, pasteurizing, etc. Better energy efficiency can boost productivity in the agricultural sector and provide food for everyone

SDG 3: Good Health

Mission statement: To achieve universal health coverage, that seeks equitable access of healthcare services to all men and women

Relevant Targets:

By 2030,

- ➢ end preventable deaths of newborns and children under 5 years of age
- ➢ reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being
- ➢ substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination

Relevance to Energy sector:

- Close to half of deaths due to pneumonia among children less than 5 years old are caused by indoor air pollution from household solid fuels
- 3.8 million premature deaths annually from noncommunicable diseases including stroke, ischaemic heart disease, chronic obstructive pulmonary disease (COPD) and lung cancer, are attributed to exposure to household air pollution
- According to WHO smoke from traditional cooking technologies causes 3.8 million premature deaths per year
- Shift to Clean energy can prevent these deaths, hence improving the quality of life

SDG 4: Quality Education

Mission statement: To ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Relevant Targets:

By 2030,

- ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes
- ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university
- ensure that all youth & a substantial proportion of adultsn achieve literacy & numeracy
- substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship
- Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all

Relevance to Energy sector:

- Efficient cooking energy ensures less time collecting firewood thus more time to go to school. Additionally, less fuelwood reduces cost for school feeding programmes, thus more children attending school get a warm meal
- Lighting can permit studying at home even at late hours, and also makes evening classes possible
- The use of educational media and communications in schools, including computers, Internet or movies is not possible without energy
- Basic services for effective learning environments include access to electricity.

SDG 5: Gender Equality

Mission statement: To end all forms of discrimination against all women and girls everywhere

Relevant Targets:

- Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate
- Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women

Relevance to Energy sector:

- Modern energy services reduce the time spent by women and girls on basic survival activities like gathering firewood, fetching water, cooking, etc. hence giving them more time to go to school and to dedicate to studies and skill development
- Information and communication technologies like mobile phones that increase their reach and make them feel safe and more connected to the world need energy to operate

SDG 6: Clean Water and Sanitation

Mission statement: To ensure availability and sustainable management of water and sanitation for all

Relevant Targets:

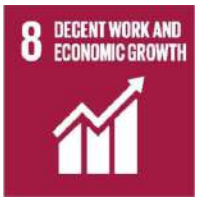
By 2030,

- achieve universal and equitable access to safe and affordable drinking water for all
- protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes

Relevance to Energy sector:

- Since 579 million people do not have access to clean, protected and treated drinking water, water purification and desalination using solar or wind energy could help to address this issue and make clean water more accessible to all
- Energy-saving cookstoves and more efficient technologies for charcoal production reduce the pressure on forests and other woody ecosystems by reducing the demand for firewood and charcoal hence preventing erosion

SDG 8: Good Jobs & Economic Growth



Mission statement: To promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Relevant Targets:

- Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity & innovation, encouraging the formalization & growth of micro-, small- & medium-sized enterprises, including through access to financial services
- Achieve full & productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value

Relevance to Energy sector:

- The production/selling/installation of PV products, improved stoves and related services creates jobs and small businesses for all
- Additionally, energy access and energy efficiency enable enhanced productivity and inclusive economic growth
- Renewable energy can be a huge source of employment for people around the world creating opportunities for all

SDG 9: Innovation & Infrastructure

Mission statement: To build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation

Relevant Targets:

- By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities
- Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020

Relevance to Energy sector:

- Investment in research & development of modern and efficient energy technologies can ensure less to no CO2 emissions
- Information and communication technologies, including Internet and mobile phones, need energy to work

SDG 11: Sustainable Cities & Communities

Mission statement: To make cities and human settlements inclusive, safe, resilient, and sustainable

Relevant Targets:

- By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums

Relevance to Energy sector:

- Access to energy is part of basic services needed to meet human needs such as safe and healthy cooking, indoor and outdoor lighting in the evening, clean running water
- Clean cooking and lighting addresses household and ambient air pollution

SDG 12: Responsible Consumption

Mission statement: To ensure sustainable consumption and production patterns

Relevant Targets:

By 2030,

- achieve the sustainable management and efficient use of natural resources
- halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses
- Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production
- Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances

Relevance to Energy sector:

- Modern & efficient cookstoves, sustainable forestry practices including efficient charcoal production and green energy can contribute to the sustainable management and efficient use of natural resources
- Energy can act as a crucial source and method to reduce food losses along with food supply and value chains via cold storage, drying etc.
- Renewable energy generation doesn't contribute to global warming, since sun and wind energy are non-exhaustive compared to fossil fuels
- Fossil fuel combustion and consumption is the major source of CO2 emissions (89%)

SDG 13: Climate Action

Mission statement: To take urgent action to combat climate change & its impacts by regulating emissions and promoting developments in renewable energy

Relevant Targets:

- Integrate climate change measures into national policies, strategies and planning
- Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning

Relevance to Energy sector:

- Up to 25% of black carbon emissions come from burning solid fuels for household energy needs. Shift to a clean and green form of energy can help reduce that. While, reduction in usage of fossil fuels like wood can save forests from deforestation
- Raised awareness about climate change can encourage people to act upon policies set out by the government and accelerate the shift to clean energy

SDG 15: Life On Land

Mission statement: To protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Relevant Targets:

- By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements
- By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally
- By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world

Relevance to Energy sector:

- Efficient technologies for cooking and heating can reduce pressure on forests, thus helping us in combating deforestation and desertification
- Less land degradation as efficient technologies reduce burning of dung, which can be used as fertilizer instead as for cooking
- Sustainable forest management practices, afforestation and reforestation are already part of many projects promoting sustainable access to cooking energy

SDG 17: Partnerships for the Goals

Mission statement: To strengthen the means of implementation and revitalize the global partnership for sustainable development

Relevant Targets:

- Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge-sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism
- Fully operationalize the technology bank and science, technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of enabling technology, in particular information and communications technology

Relevance to Energy sector:

- The G20 Summit including 19 countries and the European Union are resolved towards their move to renewable energy till 2030
- Any device that connects to the Internet needs electricity, as well as Internet providers, servers, etc.

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