# Title of Article:

A DESCRIPTIVE STUDY OF SUSTAINABLE DEVELOPMENT GOALS AND THEIR COMPREHENSION IN THE INDIAN CONTEXT

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ABSTRACT:

The competition for expansion and excellence has shifted the ecological balance by leading to an imbalance in the economic development of many nations and the depletion of some natural resources. Climate change and global warming are the effects of this that are currently being felt. It is urgent to take action to preserve a secure environment for future generations since this threatens human life itself on Earth. A phrase called "sustainable development" was developed to describe development that preserves natural resources and ensures they are preserved for the benefit of present and future generations. By their own goals and global environmental concerns, they offer clear principles and targets for other nations to accept. The Sustainable Development Goals (SDGs) are an agenda that includes everyone. By 2030, everyone must have access to cheap, dependable, sustainable, and modern energy, according to Sustainable Development Goal 7 (SDG 7). There are many connections and linkages between this objective and the other SDGs, especially with goals 1, 3, 4, and 15. However, when past unsuccessful projects are considered, reaching this aim while providing access to economical and sustainable contemporary cooking energy would be exceedingly difficult. The interconnected, deeply ingrained socioeconomic, cultural, and technical variables contribute to poor accomplishment. Without removing these obstacles and establishing an integrated economic and social agenda, this objective remains lofty and unattainable. As a result, sticking with the current policy may not be effective. In addition, this article will highlight more about the socio, economic factors, and the initiative that India is taking to achieve the targets.

Keywords: Affordable & clean energy, Sustainable Development Goals, Modern Energy, Socioeconomic factor, Sustainable Development Goal 7.

INTRODUCTION:

The Sustainable Development Goals (SDGs), sometimes known as the Global Goals, are a set of 17 interconnected global goals aimed at creating a "blueprint for a better and more sustainable future for all." The United Nations General Assembly established the SDGs in 2015, intending to achieve them by 2030. They are part of the 2030 Agenda, often known as Agenda 2030, which was adopted by the United Nations General Assembly. The SDGs were created as part of the post-2015 Development Agenda as the next global development framework to replace the Millennium Development Goals, which expired in 2015. Even though the objectives are wide and interrelated, a UN Resolution voted by the General Assembly two years later (6 July 2017) made the SDGs more "actionable."

The 17 SDGs are:

(1) No Poverty, (2) Zero Hunger, (3) Good Health and Well-being, (4) Quality Education, (5) Gender Equality, (6) Clean Water and Sanitation, (7) Affordable and Clean Energy, (8) Decent Work and Economic Growth, (9) Industry, Innovation, and Infrastructure, (10) Reduced Inequality, (11) Sustainable Cities and Communities, (12) Responsible Consumption and Production, (13) Climate Action, (14) Life Below Water, (15) Life On Land, (16) Peace, Justice, and Strong Institutions, (17) Partnerships for the Goals.

Sustainable Development Goal No.7-Affordable and Clean Energy

The United Nations General Assembly created 17 Sustainable Development Goals in 2015. Sustainable Development Goal 7 (SDG 7 or Global Goal 7) is one of them. Its goal is to " Ensure access to affordable, reliable, sustainable and modern energy for all." Access to energy is a critical component of people's well-being, as well as economic development and poverty reduction. This target has several connections and synergies with the other SDGs, particularly goals 1,3,4,5, and 15. The aim comprises five objectives that must be met by 2030. Six indicators are used to track progress toward the goals.

Three out of the five targets are "outcome targets":

1. Universal access to modern energy

The first target of SDG 7 is target 7.1: “By 2030, ensure universal access to affordable, reliable and modern energy services”. This target has two indicators:

Indicator 7.1.1: Proportion of population with access to electricity.

Indicator 7.1.2: Proportion of population with primary reliance on clean fuels and technology. This metric is derived as the proportion of persons who use cleaner fuels and technologies for cooking, heating, and lighting divided by the total population who report using any of these methods.

1. Increase the global percentage of renewable energy

The second target of SDG 7 is target 7.2: “By 2030, increase substantially the share of renewable energy in the global energy mix”. It has only one indicator:

Indicator 7.2.1: Renewable energy share in the total final energy consumption. In 2016, renewable energy accounted for 17.5% of total worldwide energy consumption. Concerning power, renewables increased the quickest of the three end users (electricity, heat, and transportation). The growth of wind and solar technologies was the driving force behind this. Renewables continue to encounter financial, regulatory, and technological challenges.

1. Double the improvement in energy efficiency

The third target of SDG 7 is target 7.3: “By 2030, double the global rate of improvement in energy efficiency”. It has one indicator:

Indicator 7.3.1: The ‘Energy intensity measured in terms of primary energy and GDP”. To meet the SDG 7.3 objective, global primary energy intensity must fall from 5.6 megajoules per USD in 2010 to 3.4 by 2030. The global primary energy intensity in 2018 was 4.75 MJ/USD (2017 PPP), according to Tracking SDG7: The Energy Progress Report, after a 1.1 percent global yearly improvement. This is considerably below the annual 2.6 percent that was originally estimated as a need for meeting SDG 7.3's target, which now requires an average annual rate of 3 percent from 2018 to 2030.

The remaining two targets are "means of achieving targets":

1. To promote access to research, technology, and investment in clean energy

The fourth target of SDG 7 is 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". It has one indicator:

Indicator 7.4.1: The "International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems". A progress update by the United Nations in 2020 found that international financial flows to developing countries in support of clean and renewable energy reached $21.4 billion in 2017. This is a twofold increase from flows committed in 2010. Hydropower projects received 46 percent of 2017 flows, while solar projects received 19 percent, wind 7 percent, and geothermal 6 percent.

1. Expand and upgrade energy services for developing countries

The fifth target of SDG 7 is formulated as "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, following their respective programs of support”. It has one indicator:

Indicator 7.5.1: The "Investments in energy efficiency as a proportion of GDP and the amount of foreign direct investment in financial transfer for infrastructure and technology to sustainable development services". As of August 2020, there is no data available for this indicator. It was reported in 2020 that Indicator 7.b.1 might be removed as it is identical to indicator 12.1.1 of SDG 12.

In other words, these goals include increasing the amount of renewable energy in the global energy mix while providing affordable and dependable electricity. This would entail increasing energy efficiency and international collaboration to promote greater open access to clean energy technologies as well as increased investment in clean energy infrastructure. Infrastructure support for least developed nations, tiny islands, and landlocked developing countries is a priority in the plans. According to a 2019 analysis, the globe is making progress toward SDG 7, however, at the present rate of advancement, the objectives will not be met by 2030. Climate change mitigation (SDG 13) and SDG 7 are strongly linked and complimentary. To achieve long-term climate goals, the world needs to put more effort into renewable energy.

Socioeconomic, Cultural, and Technological Factors

The availability of contemporary energy technologies is also influenced by socio-economic and cultural considerations (Ni and Nyns, 1996; Urmee and Gyamfi, 2014). Cooking, lighting, heating, and powering appliances all need various amounts of energy in different houses. Many homes without contemporary energy services live in tropical climes, where the need for cooking energy outweighs the demand for other energy services. Not only does energy demand differ between services, but it also differs between rural and urban families. Because of the intake of uncooked food that needs extensive cooking times, rural households demand a considerable quantity of energy for cooking. In addition, due to a shortage of storage for prepared food, households cook regularly. Long cooking hours combined with frequent cooking results in a high energy demand share. The energy demand for cooking in rural and disadvantaged urban families might account for up to 90% of the total demand. Urban homes may be able to connect to the grid and utilize their energy for cooking. They also have more access to semi-processed foods, which use less energy than raw foods. However, charcoal remains the primary source of energy for routine cooking services and the preparation of regional delicacies. Furthermore, impoverished urban households that do not have access to electricity or cannot afford it rely on biomass energy. According to the study report, local cooking practices, culture, food varieties, and gender norms impact the household's decision to continue utilizing firewood for cooking (Malakar et al., 2018). Local socio-cultural norms, technological appropriateness, and human perceptions all influence access to current cooking energy technologies (Kowsari and Zerriffi, 2011). The influence of local socioeconomic and cultural factors on the decision to accept technology and its long-term use has been documented for over two decades (Masera et al., 2000; Kowsari and Zerriffi, 2011; Mwirigi et al., 2014). In earlier research, socioeconomic considerations were identified as the most important driver of the adoption of better household cooking energy technologies, but the characteristics of the stoves and their unique design are also important elements in consumer decisions (Johnson and Takama, 2012). Users are less likely to embrace energy technology that does not fit local socioeconomic and cultural requirements. A vast number of people who do not have access to better cooking energy technology, on the other hand, rely on seasonal subsistence farming revenues from the sale of crops and animals that are not linked to the official money system. Even if families are linked to the grid, the money from such sources may not be adequate to cover monthly power bills and the price of electric appliances. Furthermore, because livestock both serves as a source of food and a reflection of socioeconomic standing, selling animals to purchase energy appliances may not be realistic. Due to these limitations, rural families are typically unable to access energy systems and technology available in urban and money-regulated contexts. As a result, energy solutions that may be used in rural areas should rely on non-monetized local resources. Providing all homes with inexpensive, dependable, sustainable, and contemporary energy appears to be a lofty goal that is far from reality in developing nations. Furthermore, current global and national energy policies may substantially impact achieving the target.

Energy Policy:

Many measures have been implemented to transfer the conventional energy system to more efficient and effective energy technology. Improving household income may make it easier to purchase technology, but continued usage is dependent on local conditions and cultural preferences (Masera et al., 2000). There may be differences in how rural and urban families evaluate local and cultural circumstances. In comparison to their rural counterparts, urban families are more knowledgeable about technology, are connected to the formal money system, and are economically better off to adopt enhanced energy technologies. Another global agenda is the Sustainable Development Goals, which include 17 goals that work together. SDG 7 aspires to guarantee that everyone has access to cheap, dependable, sustainable, and modern energy by 2030. This objective strives to solve five significant and critical concerns linked to purchasing power, technological dependability, system sustainability from an environmental and resource standpoint, and the provision of better and enhanced technologies to all humanity. To achieve this aim, all residents' socioeconomic levels must improve, allowing them to purchase contemporary energy technologies or providing low-cost technologies that the poor may afford. The supply of dependable electricity for all is the second problem addressed by SDG 7. It has to do with improving efficiency and modernizing the infrastructure so that renewable energy can be delivered without interruption. This necessitates reducing the present energy system's loss to zero or incorporating a backup mechanism to compensate for it. Improving dependability entails improving the old system while also investing in new infrastructure that aids accessibility, which may need additional expenditures. The topic of sustainability is linked to the supply of environmentally friendly, clean, and efficient energy services. It concerns the development of renewable energy supplies, which raises issues of availability, distribution, and appropriateness. Furthermore, with the existing socio-economic and settlement scenario, extending energy availability to all people, especially in rural locations, remains impossible, which off-grid energy cannot address at reasonable rates.

Clean cooking energy technology, which is directly attributed to goal seven and other Sustainable Development Goals, such as goal 3: aiming to ensure good health and wellbeing for all; goal 5: aiming to ensure gender equality; and goals 13 and 15 focusing on climate action and life on land, respectively, need to be given special attention (Rosenthal et al., 2018). Achieving energy-related sustainable development objectives necessitates modifications to other development goals. Improving the local economy and eliminating poverty would help increase access to superior energy technology, but it would not be enough to complete the transformation. Households may improve their lifestyle and purchasing power with increased income, breaking the vicious cycle of low earnings resulting in limited access to modern energy services. This will need the significant mobilization of local and global resources, as well as a pro-poor policy plan that incorporates energy provision into socio-economic growth.

Clean Solar Energy SDG7: India’s Challenges

Climate change, poor air quality, and loss of life are all compelling reasons to switch to cleaner, more sustainable energy sources. As a result, according to UN Sustainable Development Goals (SDGs) number 7, global policymakers and citizens are growing expectations for clean energy. Alarming air quality levels have been reported in several Indian cities and throughout the world, highlighting the deteriorating environment and the tremendous cost that people are paying as a result of the harmful impact on their health. According to recent WHO studies, 13 Indian cities are among the top 20 for bad air quality. As a result, we must make significant efforts to develop clean energy.

In this line, the Indian government announced the National Solar Mission (NSM) in 2010, intending to achieve 20 GW of solar electricity by 2022. However, Prime Minister Narendra Modi has set a lofty goal of 100,000 megawatts of solar power generation by 2022. Our country generates more than 60% of its electricity from coal, while renewable energy accounts for just 23.39 percent of total energy consumption (MNRE).

The Ministry of New and Renewable Energy (MNRE) has launched several initiatives to encourage solar energy, including rooftop solar PV plants for rural and mountainous locations, as well as net metering systems. The Indian government teamed up with the French government to form the International Solar Alliance (ISA), which has 120 members and is headquartered in India. India is working on the "One Sun, One World, One Grid" and "World Solar Bank" concepts to harness the world's immense solar power.

The Indian Trends of Solar Power:

Since 2008, India has made steady progress in terms of solar power capacity development. By July 2016, installed capacity has increased to 8000 MW (8GW) from 3 MW in 2008-09. By 2022, India has established a goal of 100 GW, divided into 60 GW of land-based grid-connected solar power and 40 GW of rooftop grid interactive solar power.

India has a large renewable resource base and potential. With a total installed capacity of 372.69 GW as of August 31, 2020, India is the world's third biggest power generating industry. Hydropower and renewable energy account for 35.94 percent of India's total installed capacity. The private sector's share of total installed capacity is growing, presently accounting for 155 GW (45.2%), followed by state and federal governments with contributions of 84 GW (24.6%) and 103 GW (30.2%), respectively. Renewable energy's proportion has risen dramatically from 3.5 GW in 2002 to 69 GW in 2018. (Image courtesy of MNRE, the Indian Renewable Energy Development Agency.)

India Progress Records on Sustainable Development Goals:

According to the latest NITI Aayog's SDG India Index, which shows the country's progress in social, economic, and environmental development over the past year, India has made steady progress toward achieving the United Nations' Sustainable Development Goals (SDGs) in areas such as health, energy, and infrastructure. According to an official NITI Aayog announcement, India's total score across SDGs has improved from 60 to 66 in 2021 owing to nationwide improvements in 'clean water and sanitation and 'cheap and clean energy.'

Clean water and sanitation and 'cheap and clean electricity have improved across the country.

Kerala was ranked first on the index, followed by Himachal Pradesh, Tamil Nadu, Andhra Pradesh, and Goa.

With one-third of the way to the 2030 Agenda completed, the newest edition of the SDG India Index focuses on the role and importance of partnerships in this endeavor. "The report examines the partnerships we've formed and deepened as part of our SDG activities. The story shows how collaborative activities may lead to better outcomes and bigger benefits," says Shri Amitabh Kant, CEO of NITI Aayog, on how working together can assure success in the coming decade.

Status of Sustainable Development Goal 7 in India:

There can be no progress without fuelling the growth engine. People who do not have reliable access to energy are robbed of the potential to participate in national and global progress. Despite this, one billion people worldwide lack access to electricity. In 2016, more than 781 million people, or 39% of the world's population, lacked access to clean cooking fuels and technology.

Goal 7 of the Sustainable Development Goals aims to redress this massive disparity by 2030, ensuring that everyone has access to cheap, dependable, and advanced energy services. Improving energy efficiency and investing in renewable energy are critical for expanding energy availability. Asia has been the engine of success in this sector, with access growing at double the pace of population increase. Between 2010 and 2012, emerging regions, particularly portions of Asia, accounted for 72 percent of the growth in energy consumption from contemporary renewable sources. Renewable energy sources such as wind, water, sun, biomass, and geothermal energy are infinite and clean. Renewable energy now accounts for barely 15% of the global energy mix, despite being the answer to the climate catastrophe. It is past time for a new global collaboration on sustainable energy for everyone, driven by SDG 7 on universally accessible, efficient, clean, and dependable energy sources and services.

India (as per UN2016)

-Nearly 85% of the people have access to electricity

-100% of villages electrified -30 million households still lack access to electricity (about 300 million people)

-National Solar Mission has set up a target of Renewable Energy of 175GW by 2022 Which includes 100GW of Solar Energy, 60GW of energy from Biomass, and 5 GW of energy from micro hydro projects.

In India, energy access represents a major business potential of $48 billion per year by 2030, according to some estimates. Despite the prize, the sector is far smaller than it might be. Based on incomplete data for the Fiscal Year 2016–17, India's DRE sector installed 3.6 million solar lanterns, 92,000 solar household systems, 206 mini-grids, and 144 productive use projects, according to a new study from India's DRE industry group Clean Energy Access Network (CLEAN). With more supporting policy and the funds that such policy would liberate, it may develop even faster.

India- China Partnership:

According to a recent analysis, India faces a financial deficit of US405 million in meeting the SDG 7 objective. India and China are collaborating to develop commercial solutions that are in line with sustainable infrastructure development, such as renewable energy technologies. The 2017 Business and Sustainable Development Commissions Report outlines 17 business possibilities related to energy concerns, with a total potential value of US$ 4.3 trillion in 2030 at current prices. For firms in the energy industry, crowding in the private sector and public-private partnerships at both the national and international levels offer enormous possibilities. Both China and India are among the world's greatest energy consumers, therefore complementarities in market prospects matched with energy security are critical for both countries.

Comprehensive Conclusion Regarding Sustainable Development Goal No.7:

You are benefiting from having access to electricity, which is necessary to power your gadget if you are reading this article on a computer or smartphone. Your capacity to acquire and utilize energy differs significantly from that of others throughout the planet. One thing you and everyone else on the earth have in common is that how we choose to create and utilize energy influences the entire planet. How will we collaborate to promote energy equality, ensuring that everyone has access to the energy they need to live, work, grow food, and do other things that are vital to their well-being, while also ensuring that the way we create and use energy does not harm our planet?

Leaders from 193 countries have agreed to ensure access to affordable, reliable, sustainable, and modern energy for all people by the year 2030, which is Goal 7 of the United Nations (UN) Sustainable Development Goals. The Sustainable Development Goals are 17 interconnected goals that seek to transform our world by ending all forms of poverty, eliminating inequalities, and improving the state of the world’s natural and human-made environments through sustained international cooperation and efforts over the next 15 years.

Here are five important facts, and some educational resources, related to Goal 7 of the Sustainable Development Goals that can help youth learn and engage as global citizens.

1. One in five people lacks access to modern electricity: Lack of power has a significant impact on people's life. "Electricity allows students to study after dark," according to the United Nations. It allows for the pumping of water for crops and the refrigeration of commodities and medications. Modern cooking and heating fuels save women from the time-consuming and dangerous task of gathering wood across great distances." Although development in the last two decades has had a considerable influence on boosting global energy access, some regions of the world, such as Sub-Saharan Africa and South Asia, continue to lag.
2. Three billion people rely on wood, coal, charcoal, or animal waste for cooking and heating: According to "Sustainable Energy for All: Achieving Universal Energy Access," using these sorts of fuels for cooking and heating increases indoor air pollution, which kills roughly four million people each year.
3. Energy is the dominant contributor to climate change, accounting for around 60 percent of total global greenhouse emissions: Although the intensity of the effects is unequal, and the sources of emissions are not equal, the effects of human-related greenhouse gas emissions are felt all around the world. According to Global Goals, "America produces 25% of the world's carbon dioxide from fossil fuel emissions with just 4% of the world's population."
4. Reducing the carbon intensity of energy is a key objective in long-term climate goals: Developing and making low-carbon and renewable energy sources more widely available would help reduce carbon emissions and their adverse effects on the environment while also supplying electricity to more people throughout the world.
5. Women, who are the primary users and managers of energy in many households globally, are more likely to conserve energy than men: According to the UN Industrial Development Organization and UN Women's report "Sustainable Energy for All: The Gender Dimensions," women use 22 percent less energy than men in some areas and are "more receptive than men to energy conservation efforts and are more willing to change their everyday behavior to save energy."

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