

Contribution of Renewable Energy and Sustainable Development in Sweden

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Abstract:- Sustainability have become a major goal for the various countries across the world and are putting numerous efforts to achieve this goal. One of the major factors which can help in achieving the goal of sustainable development is renewable energy sources. This report will discuss renewable energy and sustainable development in Sweden and contribution which renewable energy source can make in helping a country to achieve the goal of sustainable development.

Keywords: Renewable Energy, Sustainable Development, Sweden

1. INTRODUCTION

Entire world is under the verge of making a huge transformation in a way various countries are producing and using energy and thus shift is taking a people away from the consumption of non-renewable source of energy. As these resources are the major drivers of climatic change. So, societies across the world shifting towards the renewable source of energy which can result in sustainability and are the cleaner forms of energy sources available. Now renewable energy sources are market ready as well as price competitive and has the capability of meeting 19% of worlds energy demand. Making use of

renewable sources of energy is the best solution for promoting and achieving the sustainable development. There has been rapid development within the renewable energy which is mainly driven by the range of objectives like enhancing access to energy, minimising climate change, energy security etc.

2. LITERATURE REVIEW

2.1 Relationship Between renewable energy and sustainability

As per the views of Kumar and et.al., (2017) the words renewable and sustainable are often used for describing the certain sources of primary energy and interchangeably. World is globalising rapidly which is mainly due to increase in the energy requirements so, all the societies across the globe call for various services of energy to meet their energy needs. As, non-renewable energy sources are vanishing slowly so energy users have focused on using renewable sources of energies but only those energies which are sustainable in nature. Renewable source of energy replenishes naturally without being depleted which may includes hydro power, bioenergy, solar energy, wind energy, tidal energy, etc, Most renewable form of energy is given in a table below:

Energy sources	Energy conversion and usage options
Hydropower	Power generation
Morden biomass	Heat and power generation, pyrolysis, gasification, digestion
Geothermal	Urban heating, power generation, hydrothermal, hot dry rock
Solar	Solar home systems, solar dryers, solar cookers
Direct solar	Photovoltaic, thermal power generation, water heaters
Wind	Power generation, wind generators, windmills, water pump
Wave and tide	Numerous design, barrage, tidal stream

In order to address the issue of unsustainable situations, renewable sources are the best alternative and the best solution for meeting the energy. In 2012, renewable source of energy have supplied approximately 22% of world's total energy generation. Besides these energy sources also reduces emission of green house gases and also renewable sources of energy are obtained in natural so, it has to be

sustainable. Also there are various technologies available at present which can make these energy source much more sustainable than non-renewable sources of energy.

2.2 Scope and contribution of renewable energy in promoting as well as achieving sustainable development

As illustrated by Tokar and et.al., (2019) Renewable source of energy has got a broader scope for achieving the goal of sustainable development as huge investments are made across the world for making optimal use of renewable sources of energy which are really less harmful for the environment. Renewable sources of energy includes all the sources which cause minimal impact on the surroundings. Various project are been installed such as solar power plants, hydro-power plants, wind farms etc across the world which are considered as sustainable and renewable energy sources. Renewable energy can result in vary huge contribution towards the sustainable development as most of the developing and developed countries across the world are focusing on making the sources of energy more sustainable and renewable beside various policies are been established by different countries in relation to make energy sources more sustainable. Also, will increase in the future due to development of technologies which will contribute towards the sustainability. National and local bodies across the world are adopting renewable policies which can result in the sustainable development and meet the higher energy demands.

2.3 Benefits and challenges renewable energy in promoting and achieving sustainable development

It has been elucidated by Foley and Olabi, (2017) There are various benefits for using renewable sources of energy in promoting and achieving sustainable development, one of the major benefit is that it will help in minimising the environmental impact which causes harm to environment. Besides various energy producing companies can make an effective approach towards shifting from fossil fuels to renewable sources of energy as they become one of the major drivers in shifting towards the energy choice. Besides it has also allowed various countries across the world to formulate the policies and strategies on how to make an effective use of renewable sources of energies which can result in the sustainable development. There are various goals and objectives which are set by different nations in order to indulge in the sustainable practices by adopting the technologies and projects which can promote the sustainability and make effective use of renewable sources of energy.

As illustrated by Paramati, Apergis and Ummalla, (2018) there are also various challenges through renewable sources of can promote and achieve sustainable development, one of the major challenges is that projects related to sustainable energy sources are very costly. Installing a hydro-power project or geo-thermal project or solar projects can prove very costly. Besides it also results in the high maintenance costs which has to be beard by the energy producing companies. Another challenge faced is that people are not fully wiling to make use of such energies in backward countries or in some parts of developing countries. Also, there is a lack of adequate technologies available which can turn renewable energy sources in to fully sustainable.

3. RESEARCH METHODOLOGY

3.1 Geographic location of study

This research study has been performed in the Sweden in different locations of the country which includes the collection of data related what is the scope and contribution of renewable energy in order to promote and achieve the sustainable development objective (Ramalho and et.al., 2015). It also includes gathering of data within the country like the relationship between the renewable energy and sustainable development within the country. Also, the benefits a country can achieve form the adopting sustainable renewable sources within the country.

3.2 Age of data source

Data which is taken for this research paper is taken from both current and old data sources which will give a proper information about the use of renewable sources of energy in past and the future. By using the latest data sources could get an idea of what are the opportunities for increasing the scope as well as contribution of renewable sourced of energy which can result in the sustainable development. By taking the old data sources can give an estimation of energy sources which were used in the past and their impact on the environment and society.

3.2 Sources of data

This research paper is based on the secondary data i.e. it is a secondary research. This research will be conducted by collecting a data from the various research articles and gather can information from such secondary sources will make this research paper more valid and will also increase its quality (Clark and et.al., 2017). It is important that data for the research should be valid, reliable, maintaining the transparency and certainty while performing the research. In this research paper no sources of information was collected from the primary sources which may result in the uncertainty and variability of the research.

4. DATA ANALYSIS

4.1 Renewable energy and sustainable development in Sweden

As per the views of Böliük and Mert, (2015) Sweden is on the target for meeting its one of the major renewable energy targets by 2030, country is continuously increasing its efforts in making its energy sources more renewable and meet their energy demand for the future. Sweden is the country which to make its energy resources more sustainable and attempts to use only those resources of energy which can be easily renewed and even does not contribute of environmental pollution. It is the aim of the country to become fossil free country in the world and for this country has got the technologies to achieve this goal. The technologies used can provide their home as well as businesses an energy which will not destroy the climate of the country and also at the same time could create more jobs and can contribute for the growth. In order to make the renewable energy more sustainable, Government of Sweden has aimed to achieve its target and has expanded the green energy policies within the country. So, Sweden is totally focusing on achieving sustainable development through renewable energy sources which is a target to be achieved in 2030.

4.2 Process of promoting and achieving sustainable development through renewable energy sources

As illustrated by Gyamfi and et.al., (2018) Sweden's process of reaching its target of sustainable

energy is very effective, country has taken into account the number of projects which can help the company in reaching its target by 2030. Energy target of Sweden is given below.

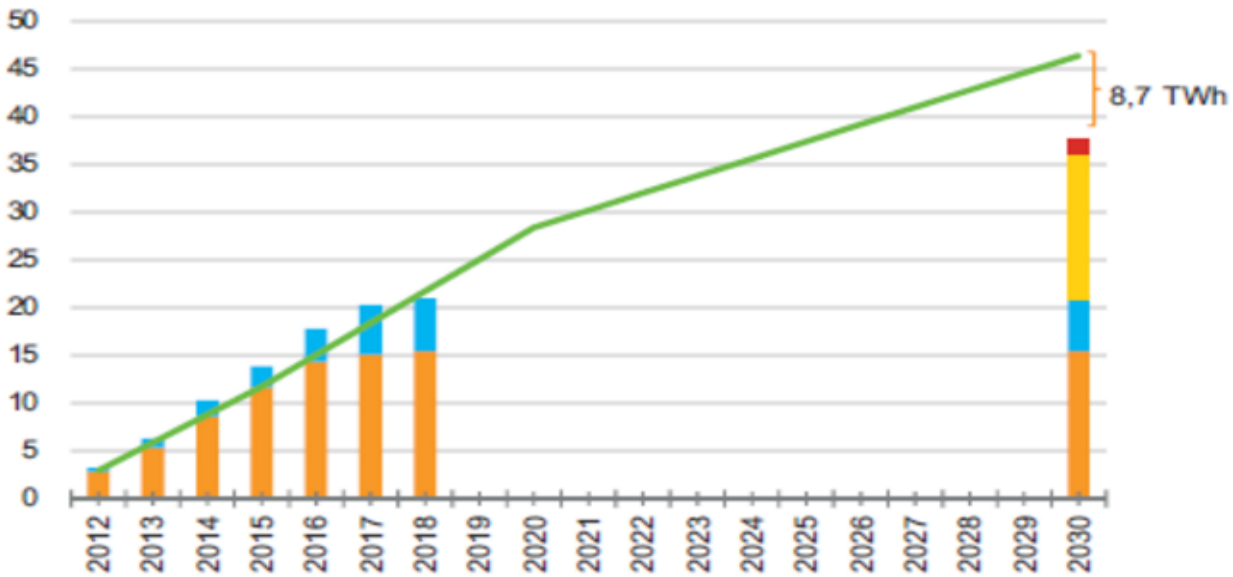


Illustration 1: Sweden Energy Target

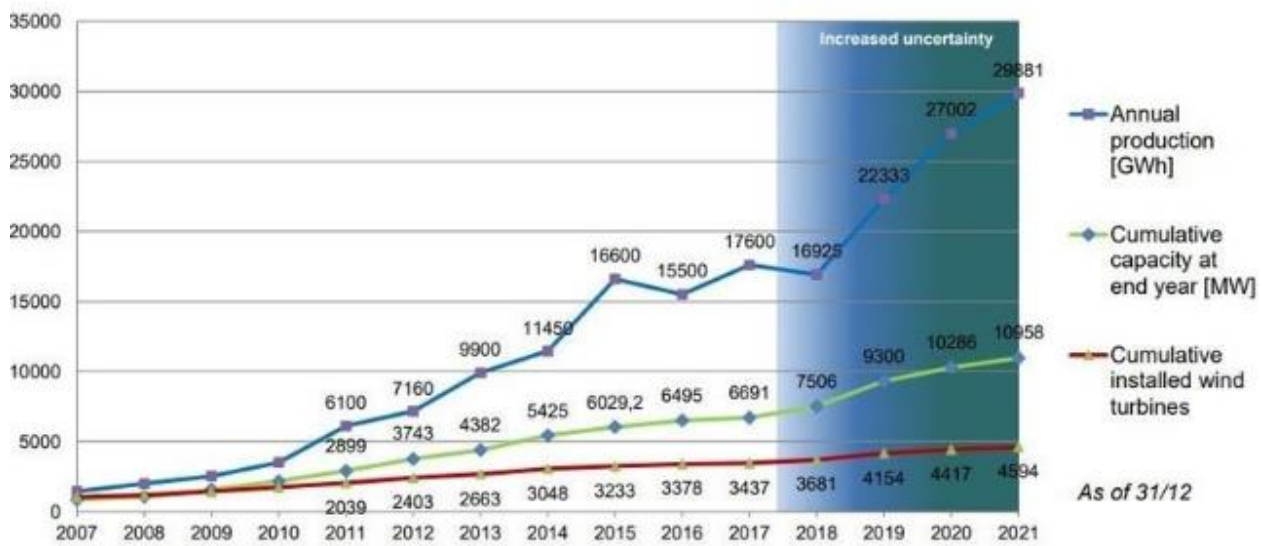


Illustration 2: Sweden's Energy Target

(Source: Sweden to reach its 2030 renewable energy target this year. 2018)

In the end of the year 2018, Sweden has installed more than 3,681 turbines which has got the capacity of producing more than 7,506 MW of electricity and it was also estimated the annual production will be 19.8 Th. On the other hand in order to reach this estimation country have to put lot of investment in these projects and also majority of renewable energy project are under construction at present. It is the ambitious goal of the country to use more than 50% of renewable energy by the

year 2030 and make 100% of renewable energy by the year 2040. So, country has set a target of net zero emission for energy resources within the country which is the best policy as well as strategy for achieving the goal of sustainable development by using renewable sources of energy.

5. CONCLUSION

It can be concluded from the study that in order to achieve the goal of sustainable development, various countries across the world should make use of renewable source of energy. Also, renewable energy is a type of energy which can help a country to achieve its goal of sustainable development. It can also be concluded that various countries across the world can make use of renewable energy sources mitigate the risks of environmental pollution. Present study also concludes that by using renewable energy sources can be beneficial for the countries in various ways.

6. RECOMMENDATIONS

- Country should make effective use of technologies which can help in optimum out of renewable sources of energies like wind energy, solar energy, tidal energy etc.
- Also, country should focus on its policies and make all the possible attempts of reaching the targets of sustainable development in the future.
- Country keep in finding the alternatives for the traditional sources of energy and should try to avoid make use of non-renewable sources of energy.
- Also, country should ensure that more and more investment is made on clean energy sources and should adopt cost effective standards of technologies to be used.

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