**"TO STUDY THE ALTERNATIVE SOURCES OF ENERGY IN NEPAL"**

**A PROJECT WORK SUBMITTED FOR THE PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE GRADE 11 SCIENCE IN PHYSICS**

**By**

**Name:**

**Grade:**

**Roll No:**



**National Academy of Science and Technology(NAST)**

**National Education Board(NEB)**

**Dhangadhi, Kailali, Nepal**

**Date:**

**CERTIFICATE OF APPROVAL**

The project work entitled "STUDY OF ALTERNATIVE SOURCES OF ENERGY IN NEPAL" by Mr. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ under the supervision of Mr. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Of\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ , Nepal, is hereby submitted for the partial fulfillment of requirement of Physics in Grade 11. This project work has not been submitted in any other school or institution previously for the award of Grade 11.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Supervisor: Head of the Department:

**Mr. Hari Datta Pant Mr. Krishna Singh Bhandari**

Department of Physics Department of Science

National Academy of Science National Academy of Science

and Technology(NAST) and Technology(NAST)

**DECLARATION**

I, ­­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ hereby declare that the project work entitled, "STUDY OF ALTERNATIVE SOURCES OF ENERGY IN NEPAL" under the supervision of Mr. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Of\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ , Nepal, presented herein is genuine work done originally by me and has not been published or submitted elsewhere for the requirement of any degree program. Any literature, data or works done by others and cited in this project work has been given due acknowledgement and listed in the reference section.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Grade:

E-mail address:

Date:

**TABLE OF CONTENTS**

**Chapter 1: Introduction to Energy**

**Chapter 2: Types of Energy**

**Chapter 3: Alternative Sources of Energy**

**Chapter 4: Conclusion**

**Chapter 5: Acknowledgement**

**Chapter 6: References**

1. Introduction to Energy:-

**The capacity of doing work is called Energy in Physics.** It may exist in [potential](https://www.britannica.com/science/potential-energy), [kinetic](https://www.britannica.com/science/kinetic-energy), [thermal](https://www.britannica.com/science/thermal-energy), electrical, [chemical](https://www.britannica.com/science/chemical-energy), [nuclear](https://www.britannica.com/science/nuclear-energy), or other various forms. There are, moreover, [heat](https://www.britannica.com/science/heat) and work—i.e., energy in the process of transfer from one body to another. After it has been transferred, energy is always designated according to its nature. Hence, heat transferred may become [thermal energy](https://www.britannica.com/science/thermal-energy), while work done may [manifest](https://www.merriam-webster.com/dictionary/manifest) itself in the form of [mechanical energy](https://www.britannica.com/science/mechanical-energy).[Energy source](https://www.lawinsider.com/dictionary/energy-source) means anything with the capacity for doing work and includes springs under tension or compression, accumulators, capacitors and other energy storing devices. Energy source means any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

1. Types of Energy Sources:-
2. Renewable (Alternative) sources of energy
3. Non-Renewable sources of energy

Now in this Presentation I am going to explain the alternative sources of energy in Nepal,

1. Alternative sources of energy in Nepal:-

Alternative Energy refers to energy sources other than fossil fuels. This includes all renewable sources and nuclear. The term "alternative energy" generally refers to sources of energy like solar power, wind power, and hydropower. These are non-polluting, renewable resources that represent an alternative to traditional fossil fuel sources like coal, oil, and natural gas. The term "alternative energy" is more or less synonymous with terms like "renewable energy" and "clean energy."

Alternative energy is considered "renewable" because the energy sources are not as limited as fossil fuels. Once burned, fossil fuels take hundreds of millions of years to replenish. Sources like wind, hydro, and solar are replenished every day. Although it is not fossil-fuel-based and it does not create air pollution, nuclear power is not usually considered alternative energy because it generated large quantities of radioactive waste.

Alternative energy in Nepal is a sector that is rapidly developing in Nepal. While Nepal mainly relies on burning biomass for its energy needs, solar and wind power is being seen as an important supplement to solve its energy crisis. The most common form of renewable energy in Nepal is hydroelectricity. Nepal aims to achieve universal access to clean, reliable and affordable renewable energy solutions by 2030. It is expected to reduce dependence on traditional and imported energy by increasing access to renewable energy. The use of solar energy is more reliable than traditional electricity in Nepal.

Some of the alternative sources in Nepal are:

1. **Hydropower:**

According to one estimate, Nepal has a hydropower potential of 83,000 megawatts (MW). Harnessing an estimated 40,000 MW is considered technically and economically feasible. Nepal currently has an installed capacity of 1142 MW coming from 88 hydropower plants across the country. Of this, 441 MW is produced by 60 hydropower plants owned by independent power producers. Most of Nepal's hydropower plants are run-of-the-river, which causes electricity supply to fluctuate according to the season. As of March 2018, as many as 113 hydropower plants are under construction. These plants will have a combined capacity of 3,090 MW once completed. As of July 2019, over 85% of the population of Nepal has access to electricity.

The Nepal earthquake in April 2015 is estimated to have destroyed at least 14 hydropower dams in the country, accounting for 115 MW of hydropower facilities. The earthquake affected 30 percent of Nepal's generating capacity at the time. This resulted in suggestions for Nepal to diversify its energy mix, as well as for "short, medium and long-term energy planning to have reliable, secure and sustainable electricity provided to households, businesses and industries in the country."

1. **Solar Energy:**

Nepal gets most of its electricity from hydropower sources, but it is looking to expand the role of solar power in its energy mix. The average global solar radiation in Nepal varies from 3.6-6.2 kWh/m²/day, sun shines for about 300 days a year, the number of sunshine hours amounts almost 2100 hours per year with an average of 6.8 hours of sunshine each day and average insolation intensity about 4.7 kWhm²/day. The commercial potential for a solar power grid is about 2100MW.

Power cuts with an average of 10 hours per day in the past time had been common in Nepal and Nepal Electricity Authority used to publish a time table for power cuts. Solar energy can be seen as a more reliable source of energy in Nepal than the traditional electricity. Private installations of solar panels are more frequent in Nepal. The People living in places such as Madi, Chitwan, where the Electricity Authority does not provide electricity because of Chitwan National Park, have been relying on solar power for several years.

1. **Wind energy:**

Nepal launched its largest wind-solar power system in December 2017 to serve rural households in the Hariharpurgadi village, Sindhuli district, under the South Asia Sub regional Economic Cooperation Power System Expansion Project. The system has the capacity to produce 110 kilowatt-hours of energy per day. The country also operates a mini-grid wind-solar system in rural village of Dhaubadi the Nawalparasi district, which supplies 43.6 kilowatt-hours of energy per day.

1. **Electric Vehicles:**

Electric powered public three wheeler have been in use to reduce carbon dioxide (CO2) emissions. There are about 600 safe tempos in Kathmandu Valley and more than 50,000 around the country. According to clean energy Nepal, The electric vehicle industry in Nepal is growing.

1. **Conclusion:-**

From this study, we get to know about the importance and benefits of alternative sources of energy in Nepal. Ongoing concerns about climate change have made alternative energy sources an important component of the world energy consumption. Hence, the use of alternative energy should be maximized and globalized. This is the main conclusion of this study.

1. **Acknowledgement:-**

I would like to express my special thanks of gratitude to my teacher Mr. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as well as our principal Mr. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ who gave us the golden opportunity to do this wonderful project on the topic “STUDY OF ALTERNATIVE SOURCES OF ENERGY IN NEPAL”, which also helped me in doing a lot of research and I came to know about so many new things I am really thankful to them.

Secondly, I would like to thank my parents and friends who helped me a lot in finalizing this project within the limited time frame.

1. **References:-**

* [www.wikipedia.com](http://www.wikipedia.com)
* www.byjus.com
* [www.quora.com](http://www.quora.com)