**SCRIPT**

**KASH**: Good \_\_, respected panel thank you for giving us this opportunity and your time. My teammate Pratichee Mishra and I from class CSE-B, MIT SOE would like to present our idea which is based on a renewable source of energy, Hydroelectricity.

In addition to a sustainable fuel source, hydropower efforts produce a number of benefits, such as flood control, irrigation, and water supply, We shall talk about the advantages drawn from statistical data collected and an circuit experiment performed by our team in the further slides

Now, I'll hand it over to my teammate Pratichee, to continue with the slides.

**PRATS**: slide problem statement-

Problem statement:

1. Electricity sounds like a basic facility, but it is still a luxury for many in India. In today’s time and age electricity plays a major role in people's lives.
2. And we can clearly see that COVID has just proven it. Electricity is a necessity for everyone and that one does not realize how widely we use it.
3. India's rural households (around 31 million) still remain in acute darkness.

**KASH**: main concerns - novelty of idea

SOLUTION :

1. Demand for electricity is not "flat" and constant. Demand goes up and down during the day.Hydroelectric plants are more efficient at providing for peak power demands during short periods than fossil-fuel and nuclear power plants, and one way of doing that is by using "pumped storage", which reuses the same water more than once.
2. Yet to make it even more economical our team supports the idea that moving forward, hydropower development must adopt a dual perspective of integrated water resources management and energy development that takes into account the broad range of social,economic and environmental issues. Scaling up also calls for mobilizing adequate financial resources,building capacity across all layers of the sector and expanding the pipeline of high-value investments in each country or basin.

HYDROPOWER VS OTHER RENEWABLE ENERGY:

1. Before explaining this further i’ll like to answer a question that everyone must have right now,

“How does the cost of generation from Hydropower Plant compare with other sources of electricity?”

The hydro power generation is a highly capital-intensive mode of electricity generation but being renewable source of energy with no consumables involved; there is very little recurring cost and hence no high long term expenditure. It is cheaper as compared to electricity generated from coal and gas fired plants. It also reduces the financial losses due to frequency fluctuations and it is more reliable as it is inflation free due to not usage of fossil fuel.

ADVANTAGES AND DISADVANTAGES:

READ FROM SLIDE

OUR PROPOSAL:

READ FROM SLIDE

SUITABLE CONDITIONS FROM POWERPLANT:

The ideal geographical areas for exploiting small scale hydro schemes is where there are steep rivers flowing all year round. Islands with moist marine climates are also suitable.

To understand more about a suitable potential site, the hydrology of the site needs to be known and a site survey carried out so as to determine the actual flow and head data. Site surveys usually give a more detailed information of the site conditions to allow power calculation to be done and design work to begin. Flow data should however be collected over a period of one year where possible, this is to ascertain on the fluctuation in the river flow over the various seasons.

Promoting Micro Hydro Plants:

Most incentives are given on the supply side, based on the installed capacity of the scheme. On the other side, beside direct subsidies for the installation on the plant, some countries have fiscal measures that can facilitate the purchase and import of certain equipment. Guarantees are however applied where a donor funded project promotes the financing of micro hydropower plant through local banks. With this the most prominent generation based instrument to promote the use of renewable energies are feed-in tariffs.

The demand side however, quota obligations force utilities and/or the demand side to deploy a certain percentage of renewable energy technologies.

Novelty:We believe that Hydropower infrastructure plays a dual role in meeting the climate change challenge. It is the largest source of affordable renewable energy, and as a low-carbon fuel, plays a critical role in mitigating greenhouse gas emissions.

1. Involve large scale afforestation activities under various schemes like Compensatory Afforestation, Catchment Area Treatment, Green Belt Development, Voluntary Afforestation etc. which ultimately improve the environmental quality of the project area.
2. Hydro projects are a boon to the society and the population in and around the projects. With enhanced employment opportunities, increased earnings, enriched lifestyle and improved standard of living, the people in these localities experience an economic and social upliftment.

**PRATS**: economically viable- applications

Economically Viable:

READ FROM SLIDE

Applications:

Small hydropower can provide clean, renewable, and relatively inexpensive energy. They can be constructed in any location where there is enough water flow and head to make energy generation viable, even in rural or undeveloped locations. This can include natural water sources such as streams and rivers, or existing manmade infrastructure such as water distribution networks, wastewater collection and treatment systems, and dams. In this way, small-scale hydropower can take advantage of current infrastructure to produce power and reduce the environmental impact

**KASH**: Hereby we conclude our ppt by the following points:

1. The hydro power potential of India is around 1,48,701 MW and at 60% load factor, it can meet the demand of around 84,000 MW.
2. Hydroelectric power plants are the most efficient means of producing electric energy. The efficiency of today's hydroelectric plant is about 90 percent.
3. Hydropower can increase/decrease the amount of power it is supplying to the system almost instantly to meet shifting demand. With this important load-following capability, peaking capacity and voltage stability attributes, hydropower plays a significant part in ensuring reliable electricity service and in meeting customer needs in a market driven industry.

Now, I request Pratichee to show the panel a video of the working experiment

**PRATS:**

Video:

As we can see the bulb glowing, it indicates that electricity is being produced.We can conclude the same if we connect a multimeter with the generator and get to see how much electricity is being produced.

**KASH+PRATS:**

We are open for questions

EXTRA POINTS:

1. Electricity production in small-scale hydropower plants is attractive from both an economical and an ecological point of view, and an expansion of output is perfectly feasible, as long as ecological aspects are duly taken into account. The potential is estimated at around 2200 GWh(gigawatt hour) per annum. Technological innovations and measures to lessen environmental impacts make small-scale hydropower plants inexpensive energy sources that provide renewable energy on an independent basis and help protect the environment.
2. In addition to small-scale hydropower plants in rivers and streams, it is now possible to utilize other sources, for example, excess pressure in drinking water systems.
3. Small hydropower plants can be setted up at several places in small rivers.
4. Mini/micro hydropower that has the capacity of which is less than 1000 kW(kilowatt) has several advantages.These mini/micro hydropower production is not mostly impacted by weather conditions and capacity execution rate is almost 70%. Further, the CO2 emission in 1 kWh(kilowatt hour) of electricity achieved is 11 g-CO2.
5. MHP operations cause local vitalization by creating jobs. The mini/micro hydropower facilities were mostly settled in mountainsides and steep slopes.
6. Hence, these systems can be built anywhere as it has minimal climatic impact