# Commercialize Hydroelectric Power for Household

## Electric Power is Generated for the Help of Mankind

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***Abstract*—Hydropower is based on a straightforward mechanism that utilizes the kinetic energy released by falling water. In practice, depending on the electrical services needed and the unique site circumstances, this method is used in a variety of ways. As a result, there is a vast range of hydroelectric projects, each offering different sorts of services and creating varying types and magnitudes of environmental and social consequences. This article demonstrates the importance of evaluating each hydroelectric project in terms of the services it offers and comparing power supply projects based on comparable societal services. The presence of a reservoir and the impoundment stand out as the most important sources of effects. A reservoir, on the other hand, provides the greatest degree of power supply services: it is the most efficient way of storing huge amounts of energy, and a hydroelectric plant can release this energy in proportions that can be changed immediately to meet electricity demand. A reservoir can also be used for a variety of other purposes outside energy storage, such as the cost-effective building of downstream run-of-river facilities with little environmental impact.**

***Keywords*— *Electricity, Hydroelectric power, Power Generator***

## I. INTRODUCTION

Concerns about global climate change have intensified in recent years, as have critiques of traditional fossil fuel-based energy sources. As a result, interest in creating domestic renewable energy sources has surged. However, no single technology has yet shown to be the cure for the country's energy issues, therefore work on a variety of renewable energy fronts continues. In line with these developments, the number of states passing Renewable Portfolio Standard (RPS) legislation, which imposes percentage-based renewable energy output requirements on electrical consumption, has exploded in recent years. Only three states had approved RPS legislation in 2003, but by 2008, that number had increased to 34[1]. Real-world data is frequently stale, with data error rates ranging from 0.5 percent to 30%[2]. Poor data quality affects nearly every area of a business, from operational efficiency to decision making, yet few companies have an effective data governance strategy in place; they do not have enough accurate, trustworthy, and timely data to make dependable and safe judgments[3]. It is difficult to assess and improve the data quality manually without the help of professional domain experts, and human decisions are inherently subjective due to fatigue, stress, and others [4,5].

## II. LITERATURE SURVEY

Hydropower generates sixteen percent of the world's energy supply.[6] To guarantee that relevant papers were obtained and reviewed for this study, a systematic approach was used. gives an outline of the method for locating possibly related articles. India has one of the world's greatest hydropower resources, with a gross theoretical hydropower potential of 2,638 TWh/year, with a technically possible potential of 660 TWh/year, and an economically viable potential of 442 TWh/year.

Hydropower accounts for roughly 21.6 percent of India's total installed power generating capacity of 1,760,990 MW (as of June 2011)[7].

## III. METHODOLOGY

On the daily basis, there is much need for electricity, as the per capita demand is icing day by day, so now there are a number of hydropower generators situated in different dams, rivers, etc. So now as per capita demand is increasing day by day, it is becoming difficult to produce electricity for all, so before there was a power cut in the basic of an hour or 2 hours in a day, but nowadays it has become discrete. So if the population increase in this manner day by day in INDIA then we might face a situation of shortage of electricity for all, Now day by day consumption rate of units is increasing day by day, In future, we might see electricity will be available for only the richer once, so to sustain this problem we have brought an ultra-Small Water Power Generator, it can convert small hydraulic energy ( water flow ) into the electrical energy. So if we install this type of ultra-Small Water Power Generator in commercial use we might find an alternate source of electrical energy in the future, so there

are a number of chances that electrical energy will be available for all.

### A. Block Diagram

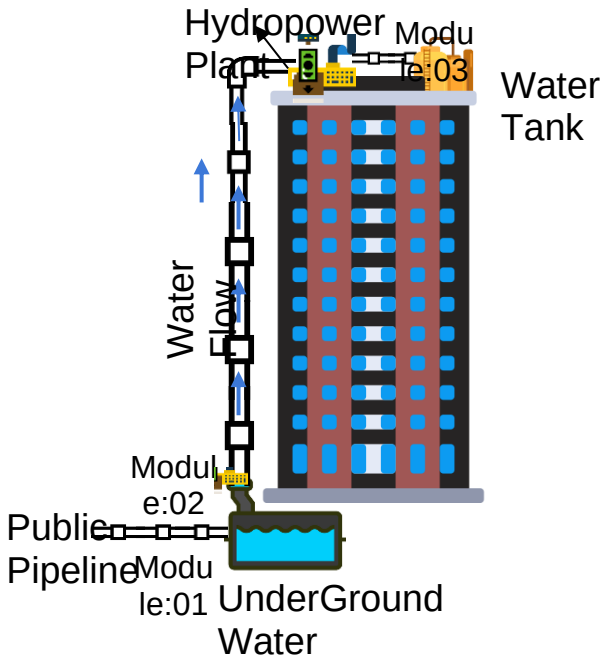
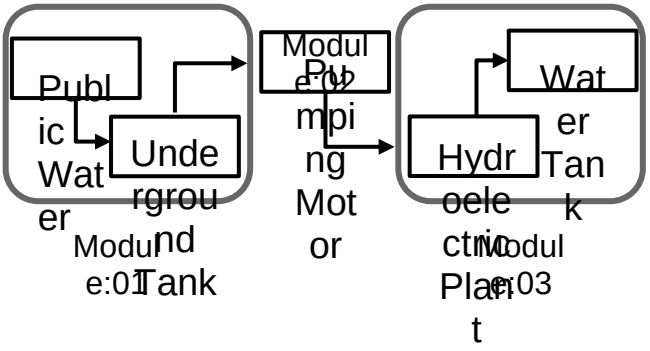



Figure:01 Block Diagram of Commercial Hydroelectric Power

Water is an essential requirement for all living things. It plays an important role in agricultural, industrial, household, and recreational activities. Water is usually transported through a series of pipe networks from the public water storage units like streams, ponds, etc..to the private underground water tanks passing through the various stages of screening, straining, coagulation, flocculation, etc. the pipes majorly used for the underground water lines are HDPE Pipes and PEX pipes, these pipes are durable and resistant to corrosion and rusting. After the water reaches the underground water tank the water gets lifted up with the help of high pressure by using various types of pumps, the lift in the water happens due to the pressure difference and head variations. The pumps can be of a centrifugal type and positive displacement type which are majorly used in the transportation of water from low-pressure region to higher .so basically we will be transporting the water to the overhead tanks via the ultra-small water power generator that will be placed which used in converting this hydraulic source of energy to an electrical source this electricity that can be derived from the flowing water can be utilized for various purposes like water heaters etc. This type of idea will be more beneficial in apartments and residential plots where electricity and water both will be simultaneously used and in large quantities, this source of renewable energy is more efficient and modern, as the water passes through the ultra-small water power generator the water will thus continue to reach the overhead tank hence there won't be any wastage of water, the water thus in turn from the overhead tank will be safely delivered through pipes reaching the taps and other places in the households.

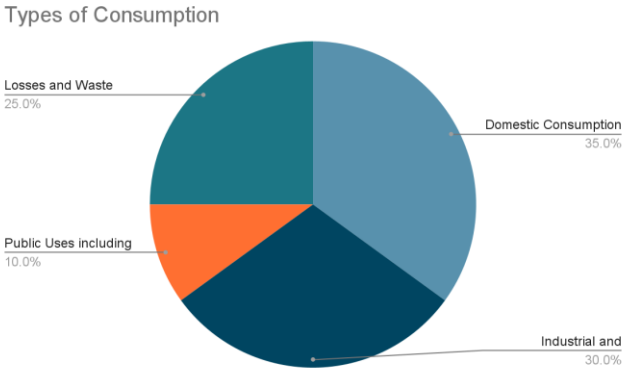
### B. Flow Chart




### 1.Module:01

According to Per Capita Demand and Population, there will be tonnes of liters of water flowing from public to private storage units. Public storage units day by day may be in the form of lakes, ponds, streams, storage reservoirs, etc. and whereas the private storage unit may be individual underground storage tanks. In order to meet the water demand, the water in huge quantity is transported through a series of pipe networks from the public storage units to the underground tanks, According to the Seasonal demand, there will variation in the water flow and whereas the in day time also like in the morning sections there will be the max number of water usage because maximum of the householders will be taking a shower, and their basic needs in this time there will be more water flow compared to them throughout the day. So in this timing, there will be a more number of chances of usage of the machine. So at this time, we can use that energy in the solar heaters, especially in the time of winter season at this time there will be a minimal number of chances of using solar energy.

According to the sources we can see in the above chart that the use of water demand for the domestic use, so from this we can estimate that the rate of flow of water per day and the from that discharge, like how much energy can be saved and utilized for the different purposes daily and the power consumption will be minimal.



**2.Module:02**

The Freeflow system will not be used because the surface of the water flows freely, so here we will be transferring water from the downstream stream to upstream, so this method cannot be used and we need to go for Pressure system, where pressure system distributes of Discharges water from the lower level to upper level with the help external machines like motors. Here we convert mechanical energy into hydraulic energy by the method of pumping. where pumping lifts water from the lower level to a higher level at discrete pressure. Here pumping will take place from the private storage unit to consumer individual tanks. But before reaching the consumer individual tanks we will place an Ultra-Small Water Power Generator which converts hydraulic energy into electrical energy. While transferring water from the lower to a higher level there are no methods but here we will be using a Buoyancy Pump or we can call it an airlift pump. It transfers or lifts water by compressed air. By this Pumping there will be minimum pressure in the higher end while the water gets delivered, There are chances of high-pressure direct hits our machine then it might get damaged, so by using this pumping method, there will be a minimal chance. And the only disadvantage is, it cant lift water where the depth of the water is very low like in the wells, but here we are using it only for Individual apartment purposes, so depth will be limited We won't be facing any issues while using this type of Pumping method.

**3.Module:03**

Here the actual part begins where our machine starts working according to the water flow. So our machine converts hydraulic energy into electrical energy. We can see using this technology mostly in dams, Rivers, etc. This hydroelectric generator will work when there is a flow of water. we will keep this machine when the water is flowing, so when the water flows from one end to the other of the machine the turbine will start rotating when the turbine starts rotating the electricity will be generated, so this the process of converting hydraulic energy into the electrical energy. So the size of the machine will be in large size, so we can have introduced ultra-Small Water Power Generator when its approximate dimensions are 28cm wide,28ch height and 100cm length. So this type of machine we can use this in commercial use like in the city apartments, where daily tons of liters of water will be flowing .so they're we can place this machine and we can use this machine to gain electrical energy. So this ultra-Small Water Power Generator can generate electrical energy up to 500W, this much energy is enough to ``run small household where only ceiling fans, tube lights, television, and small electrical appliances or we can use this as to store electricity into a battery and we can use simultaneously when we need it. This we can fix the machine where after the pumping from lower level to a higher level, after the higher level where the water enters into the individual tanks their we will place this machine and so that it can have max space to adapt and starts its work and we have shown in the block diagram. Before proceeding with everything we need to make sure of the hazards of this machine and to contain it and proceed further. The generation of electricity is one metric by which hydropower systems may be judged. However, there have been few studies that have looked at the performance of hydropower systems throughout the world in terms of electricity generation. There was a lot of variation in power generating performance amongst the systems. Nearly half of the participants exceeded their power generation objectives on average, with around 15% exceeding them by a substantial margin. Also, around 20% of the schemes in the sample accomplished less than 75% of the intended power objectives, and more than 50% of the projects in the sample fell short of their power output targets (WCD, 2000a)

**C. Result**

So, by using this ultra-Small Water Power Generator, we can get an output of 500W electricity which is enough for a single simple house to run. where and if we install it to the commercial building it can be used for different purposes. So by using this ultra-Small Water Power Generator we save some power, it might help for the people who really need it. And it is successful we can install this type of ultra-Small Water Power Generator in villages where power is not available.

## D. ACKNOWLEDGMENT

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