

**Hydropower is an under-utilized resource in Jamaica. Discuss this statement, indicating the pros and cons of using this form of energy.**

Flowing water creates energy that can be harnessed and converted into electricity. This is called hydropower, and as the name suggests, its source is water, (hence the 'hydro').

Energy from flowing water is arguably the oldest renewable energy technique known to man. It has been in use since the time of ancient Egypt, and today hydropower produces twenty-four percent of the world's electricity, and supplies more than a billion people with power.

In Jamaica, 'The Land of Wood and Water', there are numerous sources of water such as rivers, springs, and waterfalls. Even though we have these resources at our disposal, we make little effort to utilize them properly.

For many years, countries have been in search of alternative energy sources hoping to provide their people with more affordable electricity. While some countries like United States of America have been harvesting rewards from their hydroelectric plants, Jamaica and other countries sit back and empty our their pockets paying ridiculously high prices for fossil fuels.

Our utility company, Jamaica Public Service (J.P.S.), has been operating a number of hydroelectric stations around the island for a number of years. Of the few, the oldest station is located at upper White River, (located on the border of St. Mary and St. Ann) has been in existence since 1945. Another hydroelectric plant may be found at Morant River (located in St. Thomas), which produces 0.2 megawatts of power. The total number of megawatts that was generated by the eight stations was 24.0. A lot of power, would you agree?

In 1995, L. Duckers compiled a table showing sixteen potential hydroelectric schemes in Jamaica. One of these schemes, (The Back Rio Grande in Portland to be precise) would yield 50.5 megawatts of power, but like other schemes, example, Great River located on the border of St. James and Hanover, (8.0 MW), will remain 'potential' schemes as the government and local agencies do not see it fit to invest in hydroelectric plants. Do they not want to take advantage of the many megawatts of power that these schemes have to offer?

Instead of wasting the hard-earned money from tax-payers on unnecessary ventures, the government could build hydropower plants around the areas where the potential schemes are located to harvest the tremendous amount of energy created by the flowing water. There are two main types of hydropower plants; convectional and pumped storage.

Many hydropower plants are convectional in their design, meaning they use one-way water flow to generate electricity. Two categories of convectional plants are run-of-river and storage plants. Run-of-river plants use little or no stored water to turn the turbines. Some plants store a day or weeks supply of water, but weather changes cause run-of-river plants to experience great fluctuations in power output. Storage plants have enough storage capacity to off-set seasonal fluctuations in water flow, (caused by weather changes) and provide a constant supply of electricity throughout the year. Large dams can store many years' worth of water.

Pumped storage plants reuse water, (a contrast to the convectional hydropower plants). After the water is used to produce electricity, it flows from the turbines into a lower reservoir located below the dam. During periods of low energy demand, (off-peak hours), some of the water is pumped into an upper reservoir and reused during periods of peak demand (high energy demand).

One disadvantage of hydropower plants is that they have low operating costs. Due to this trait, they are considered extremely cost-effective when used continuously. Systems such as those are very attractive for utility companies such as Jamaica Public Service.

Many of the plants that could be built would be a part of a multi-purpose project. In addition to generating electricity, dams and reservoirs could provide flood control, water supply, and irrigation. They could also be used for transportation.

Hydropower is a clean, domestic and renewable source of energy. The hydropower plants provide cheaper electricity and produce no pollution. The hydropower schemes, (by replacing oil or coal-fired electricity) can significantly decrease that amount of carbon dioxide released into the atmosphere. In the case of Back Rio Grande alone, this could be as much 90,000 tonnes of carbon dioxide from coal per year. Such an attractive environmental benefit may be supported by soft financing, thus making the projects more viable. Unlike other sources such as fossil fuels, water is not destroyed during the production of electricity as it can be reused for other purposes.

With any good plan, obstacles have to appear. Hydropower plants can impact greatly on the surrounding area; reservoirs may cover towns, scenic locations and farmlands, as well as affect the natural habitat of wildlife and fish. But to lessen the impact of migration patterns and wildlife habitat, dams maintain a steady stream flow and can be designed or retrofitted with fish ladders and fishways to help fish migrate upstream to spawn.

The best sites for hydroelectric plants are swift-flowing rivers, mountainous regions and areas with heavy rainfall. Jamaica has many of these ideal locations such as the Blue Mountains

found in both the parishes of Portland and St. Thomas, and the John Crow Mountains found in the parishes of St. Thomas and Portland. These areas often experience high levels of rainfall.

Only a small portion of our potential hydropower has been tapped, and if our existing hydropower plants were to be upgraded, we would see an increase in efficiency and energy production. By using a domestic resource (water), Jamaica's dependence on imported fuels and its susceptibility to major increases in fuel prices would be reduced.

Let us change the statement "hydropower is an under-utilized resource in Jamaica" to "hydropower a highly-utilized resource in Jamaica".