

# Development of an Efficient Pipe to Separate Reusable and Non-Usable Water

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South Africa receives below world average rainfall and despite that, the country has limited water resources. It is also well known that people do not use water sparingly. This work focuses on developing a device that could reduce the amount of water wasted without affecting the normal behavioural operation of people. The device has to save wasted re-usable water passing through drainage pipes. Multiple prototypes were developed as an attempt to accomplish the chosen task. Using basic fundamentals of electronics. A standard/benchmark was developed to determine the amount of turbidity and impurities in the water. Even during power outage from the utility, the developed device has a power back up system that uses batteries. The final prototype is novel in that it can distinguish between reusable and non-reusable water. This enables the device to be able to store the re-usable water being wasted. A case study on a household of a family of 5 people showed that water savings of up to approximately 16% was possible. The ROI (return on investment) period of the device was calculated to be around 7 months. In conclusion a research was successfully conducted and the smart water pipe has proven to be a viable solution to current water problems. This device is not only restricted to South Africa however to any place in the world where water needs to be utilized wisely.