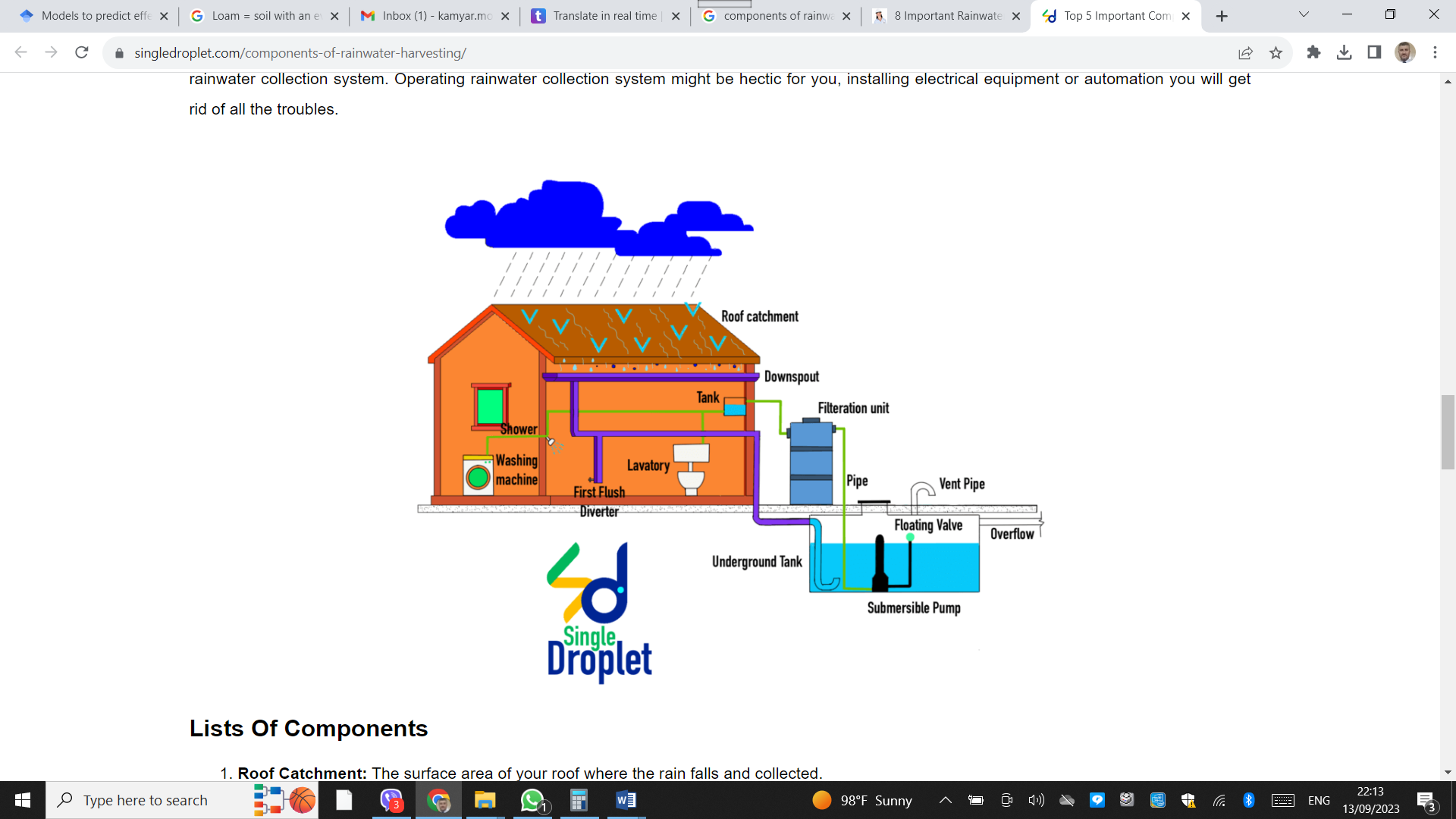
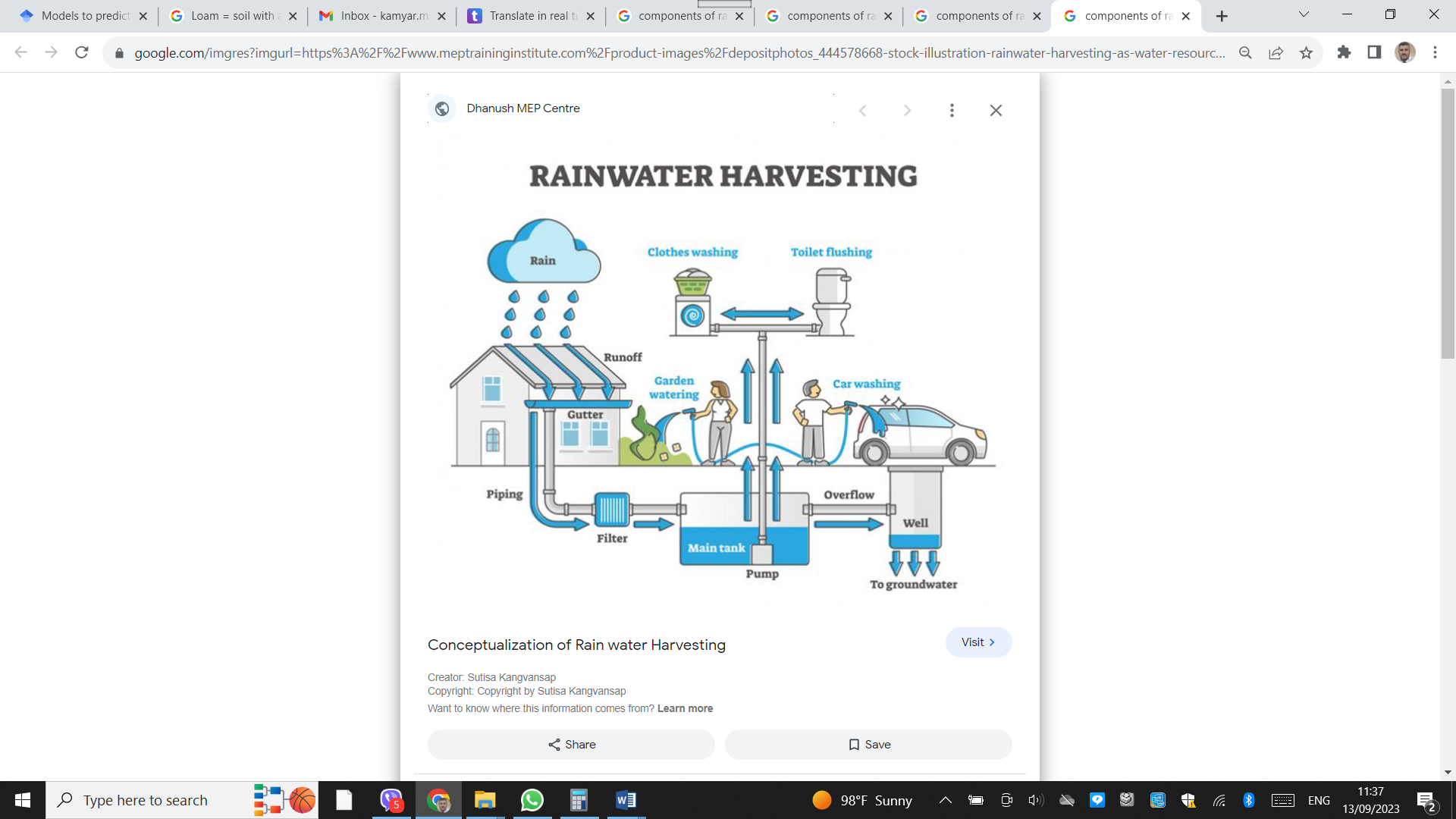
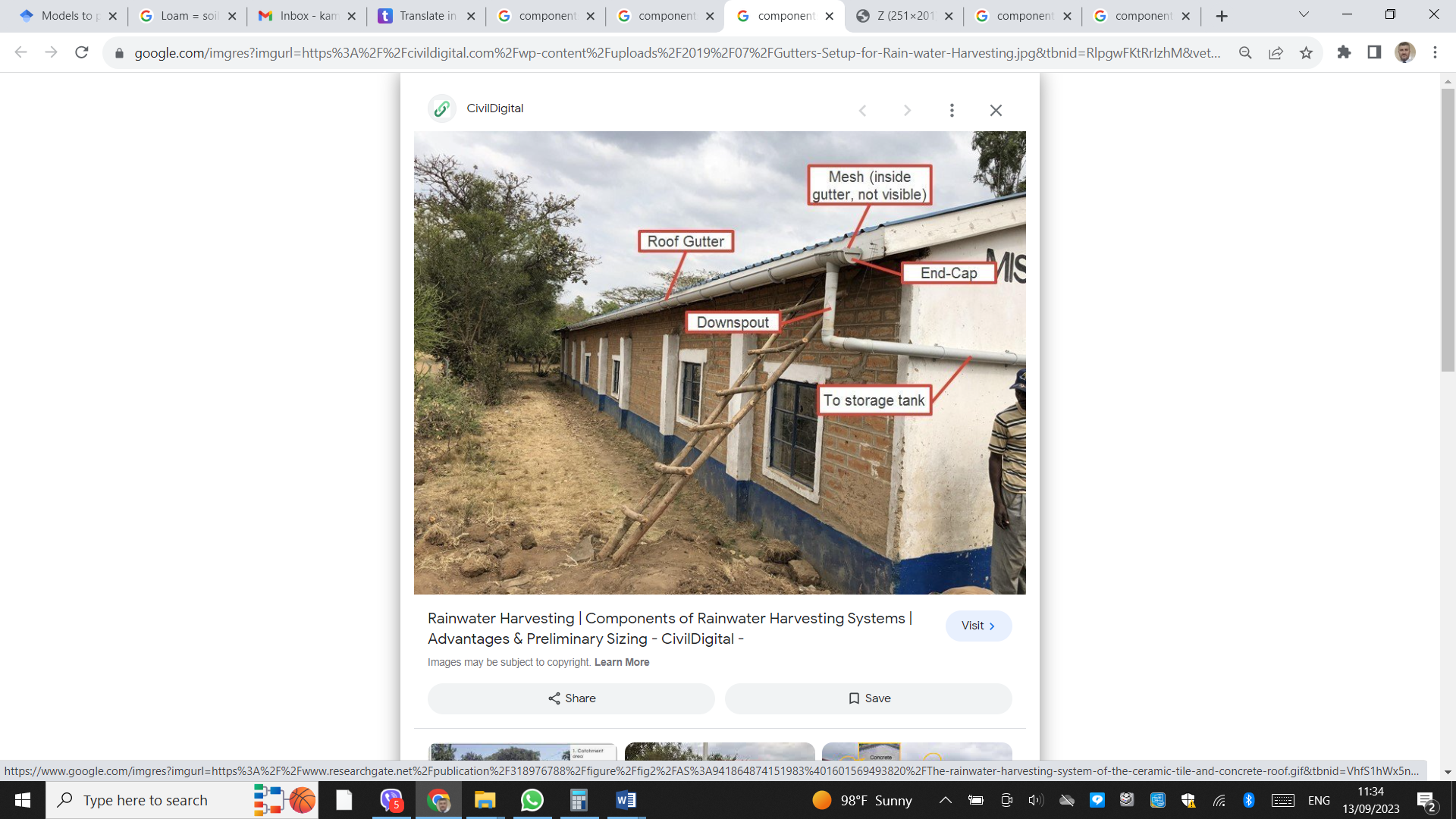
**Factors play a vital role in the amount of water harvested**

1. The quantum of runoff
2. Features of the catchments
3. Impact on the environment
4. Availability of the technology
5. The capacity of the storage tanks
6. Types of the roof, its slope and its materials
7. The frequency,  quantity  and the quality of the rainfall
8. The speed and ease with which the rainwater penetrates through the subsoil to recharge the groundwater.

**The project on rainwater harvesting components**

1. **Roof Catchment:** The surface area of your roof where the rain falls and collected.
2. **Downspout/Gutters:** The semicircular or semi rectangular pipe use to catch the rainwater from the sloped roof.
3. **Primary filtration:** Screens are used as a primary filtration to keep larger particles like silts and debris from entering into your storage tanks.
4. **First flush diverter:** It helps to removes the smaller size debris which are not captured in primary filtration. It mainly diverts the first flow of water from entering into your system as the first wash of your roof contain high suspended solids and can settle in your storage tank overtime.
5. **Underground tank:** You can install your storage tank above or below the ground based upon your maintenance ease and land availability. Submersible pump would be a good option if you want to transport the rainwater to a filtration unit.
6. **Vent and Overflow pipe:** A vent pipe with mosquito and pests screen is also necessary to keep the water fresh and to avoid nuisance odor. Overflow pipe must be installed to allow the water to overflow if your storage tank get full.
7. **Filtration unit:** You can purchase or make a DIY filter based on your end use. A simple filtration unit consists of layers of sand, gravel and charcoal. Further, Reverse Osmosis and UV filtration unit can also be installed, if you want to use the rainwater for drinking and potable purposes.
8. **Electrical Equipment’s:** water level indicator, sensors, control system and automation can also reduce your ease of operation.





**Water Harvesting in Different Uses**

1. **Domestic use**

Rooftop rainwater harvesting is used to provide drinking water, domestic water, water for livestock, water for small irrigation, and a way to replenish groundwater levels.

1. **Agriculture**

In regards to [urban agriculture](https://en.wikipedia.org/wiki/Urban_agriculture), rainwater harvesting in urban areas reduces the impact of runoff and flooding. The combination of urban ‘green’ rooftops with rainwater catchments have been found to reduce building temperatures by more than 1.3 degrees Celsius. Rainwater harvesting in conjunction with urban agriculture would be a viable way to help meet the United Nations [Sustainable Development Goals](https://en.wikipedia.org/wiki/Sustainable_Development_Goals) for cleaner and sustainable cities, health and wellbeing, and food and [water security](https://en.wikipedia.org/wiki/Water_security) ([Sustainable Development Goal 6](https://en.wikipedia.org/wiki/Sustainable_Development_Goal_6)). The technology is available, however, it needs to be remodeled in order to use water more efficiently, especially in an urban setting.

Kenya has already been successfully harvesting rainwater for toilets, laundry, and irrigation. Since the establishment of the country's 2016 Water Act, Kenya has prioritized the regulation of their agriculture industry. Additionally, areas in Australia use harvested rainwater for cooking and drinking Studies done by Stout et al researching the feasibility in India found RWH was most beneficial used for small-scale irrigation, which provides income with the sales of produce, and overflow used for groundwater recharge.

Missions to five Caribbean countries have shown that the capture and storage of rainwater runoff for later use is able to significantly reduce the risk of losing some or all of the year's harvest because of soil or [water scarcity](https://en.wikipedia.org/wiki/Water_scarcity). In addition, the risks associated with flooding and soil erosion during high rainfall seasons would decrease. Small farmers, especially those farming on hillsides, could benefit the most from rainwater harvesting because they are able to capture runoff and decrease the effects of soil erosion.

Many countries, especially those with arid environments, use rainwater harvesting as a cheap and reliable source of clean water. To enhance [irrigation](https://en.wikipedia.org/wiki/Irrigation) in arid environments, ridges of soil are constructed to trap and prevent rainwater from running down hills and slopes. Even in periods of

low [rainfall](https://en.wikipedia.org/wiki/Rainfall), enough water is collected for crops to grow. Water can be collected from roofs, dams and ponds can be constructed to hold large quantities of rainwater so that even on days when little to no rainfall occurs, enough is available to irrigate crops.

1. **Industry**

[Frankfurt Airport](https://en.wikipedia.org/wiki/Frankfurt_Airport) has the biggest rainwater harvesting system in Germany. The system helps save approximately 1 million cubic meters of water per year. The cost of the system was 1.5 million dm (US$63,000) in 1993. This system collects water from the roofs of the new terminal which has an area of 26,800 square meters. The water is collected in the basement of the airport in six tanks with a storage capacity of 100 cubic meters. The water is mainly used for toilet flushing, watering plants and cleaning the air conditioning system.

Rainwater harvesting was adopted at The Velodrome – The [London Olympic Park](https://en.wikipedia.org/wiki/Olympic_Park,_London) – in order to increase the sustainability of the facility. A 73% decrease in potable water demand by the park was estimated. Despite this, it was deemed that rainwater harvesting was a less efficient use of financial resources to increase sustainability than the park's [blackwater](https://en.wikipedia.org/wiki/Blackwater_(waste)) recycling program.

1. **Rainwater harvesting by solar power panels**

Good quality water resource, closer to populated areas, is becoming scarce and costly for the consumers. In addition to solar and wind energy, rainwater is major [renewable resource](https://en.wikipedia.org/wiki/Renewable_resource) of any land. The vast area is being covered by [solar PV panels](https://en.wikipedia.org/wiki/Photovoltaics) every year in all parts of the world. Solar panels can also be used for harvesting most of the rainwater falling on them and drinking quality water, free from bacteria and suspended matter, can be generated by simple [filtration and disinfection](https://en.wikipedia.org/wiki/Water_purification) processes as rainwater is very low in [salinity](https://en.wikipedia.org/wiki/Salinity). Exploitation of rainwater for value-added products like bottled drinking water, makes solar PV power plants profitable even in high rainfall/ cloudy areas by the augmented income from value-added drinking water generation. Recently cost-effective rainwater collection in the already dug wells found to be highly effective in bringing groundwater level up in India