Construction of rainwater harvesting tanks

Drinking water can be harvested using rainwater, collected from rooftops. The rainwater can be guided by gutters to the tank. These systems are elaborately discussed in reports (Roofwater Harvesting by T.H. Thomas and D.B. Martinson, Rainwater harvesting for domestic use by Janette Worm and Tim van Hattum, Water from roofs by E. Nissen-Petersen and M. Lee). These reports deal with design, construction and maintenance. Father Erasto has these reports.

A shortlist of important points for design and construction are given below:

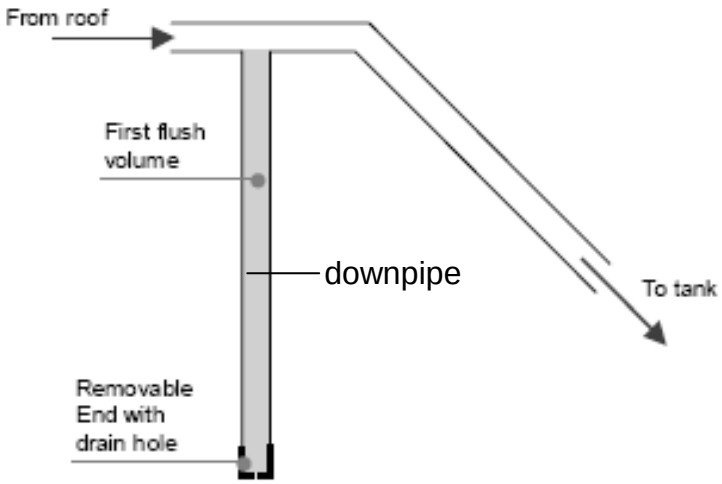
- Total amount of water available (liter) = rainfall (m/year) x roof area (m^2) x 1000
    - 1 m^3 = 1000 liter
    - 1 m = 1000 mm
    - On average there is 750 mm (= 0.750 m) of rain each year. For a roof of 5 m x 4 m this means that there is 15,000 liters of water available per year:
      0.750 m x 5 m x 4 m = 15 m^3 = 15,000 liter
    - With enough storage capacity for 300 mm of rain water can be stored all year. With a roof of 20 m^2 a tank of 6 m^3 can collect all water. But a smaller tank will also collect the major part of it, since during the year water is used and the amount in the tank is reduced. 3 m^3 will be sufficient for a single house.

- The roof has to be made of iron sheets. Thatch roofs will produce to much dirt.

- The water will be collected by a gutter. The gutter runs the water to the tank. The gutter has to be cleaned regularly!

- To prevent large pieces of dirt, sticks etc to flow into the tank a mesh wire is placed at the end of the gutter. This mesh-wire filter has to be cleaned regularly!

- A first flush diverter is installed. The primary purpose of a first-flush diverter is to take the first flow of rainwater from the roof and divert it away from your storage reservoir. The bottom of the downpipe has a small hole so the water drains out slowly. So the downpipe is empty before the next rain starts.



- Users have to be informed about the usage of this first-flush system
- The tank has to be closed completely. No light and small animals are allowed to enter the tank since this could decrease the water quality.
- Water can be obtained from the tank from a small tap.
- The tank has to have a hatch. From this the tank can be entered for maintenance. The tank has to be cleaned at the start of each rainy season.
- An overflow has to be constructed into the tank
- Users have to be informed about maintenance

Maintenance rainwater harvesting tank

The rainwater tank can provide clean and safe drinking water, but only when the following activities are carried out thoroughly each season!

To do before the rainy season:	• Clean the tank • Clean the roof • Clean the gutters • Clean the mesh filters • Clean the downpipe

The rainy season starts

The first minutes of each rain rains will wash away any remaining dirt on the roof and gutter. This dirty water fills the downpipe. Once the downpipe is full the clean water will flow into the tank.

The rains continue

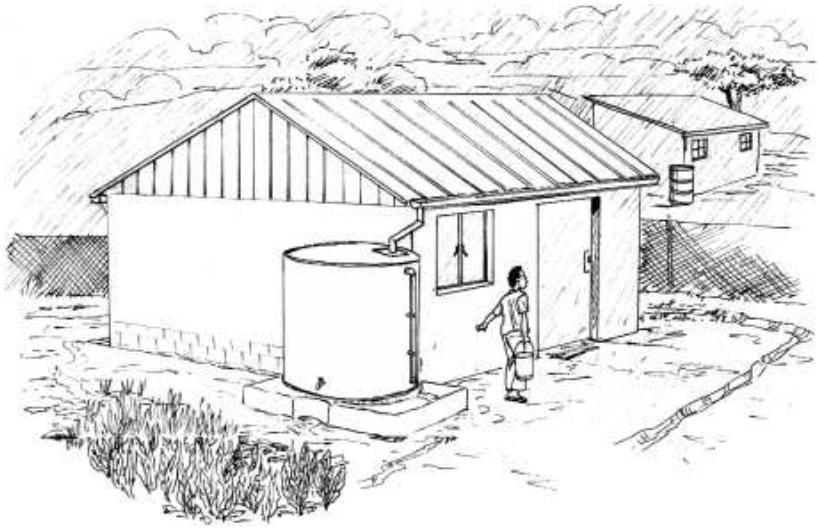
The water in the downpipe will slowly drain out through the small hole. This ensures that the dirty 'first flush' water of each rain doesn't enter the tank.

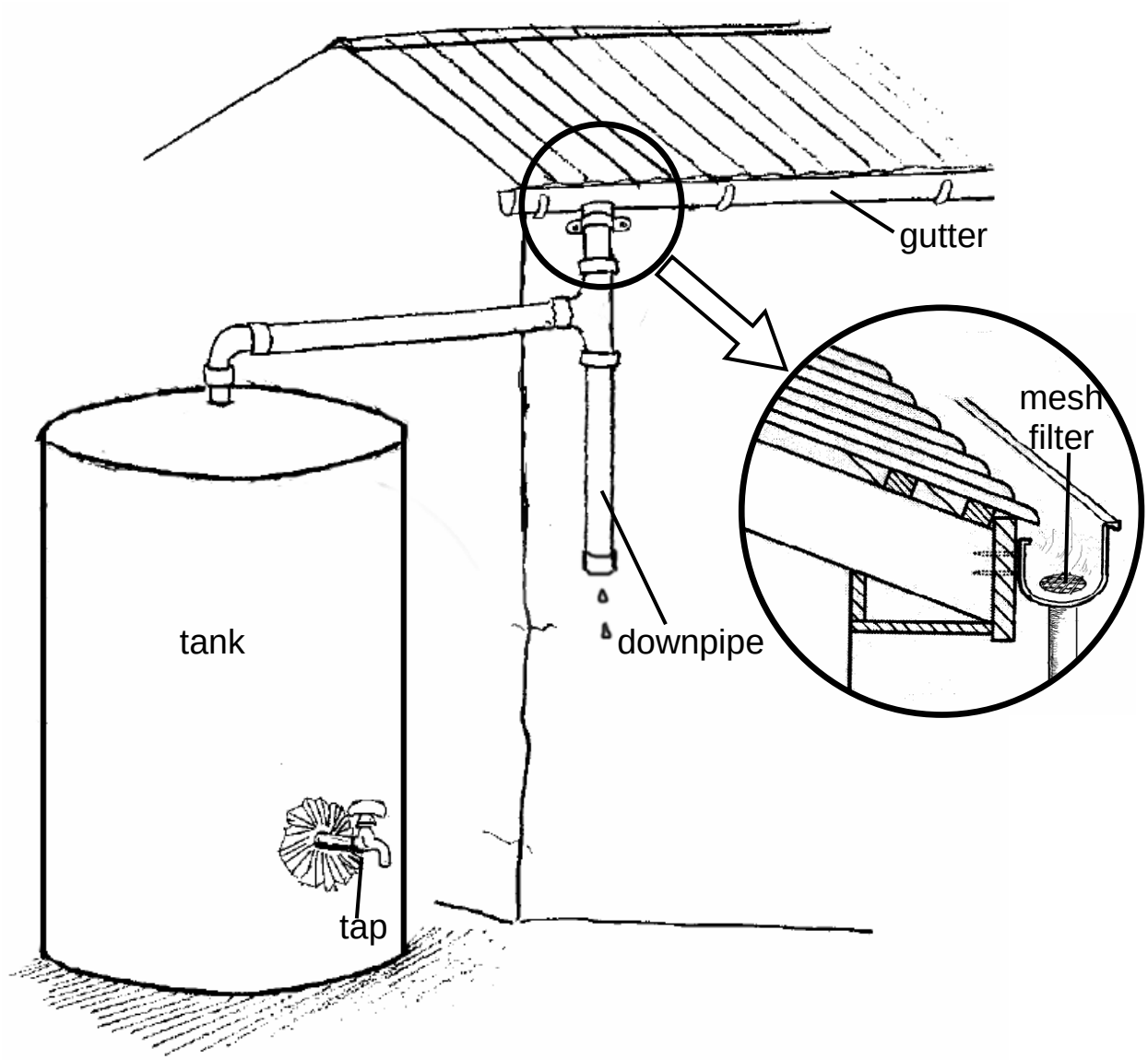
To do regularly during the rainy season:	• Empty downpipe after each rain • Check and clean roof • Check and clean gutters • Check and clean mesh filters • Check and clean the downpipe

It's the end of the rainy season (or your tank is full)

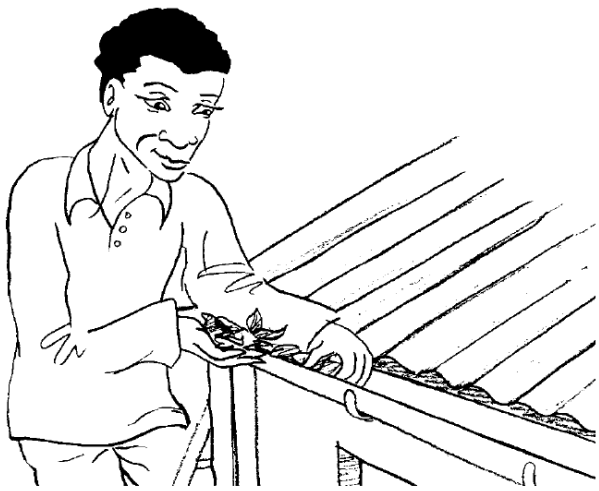
Preparations have to be made to make sure you can have safe and clean drinking water during the next months

To do at the end of the rainy season or when the tank is full:	• Make sure the hatch is closed properly • Make sure no animals, mosquitoes or light can enter the tank (this can decrease the water quality!)





Rainwater harvesting system



Cleaning the gutter