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WATER WISE

## Rainwater harvesting benefits industries

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This concept makes sense for industries because it saves money, replenishes ground water and brings productive use of soft rain



**USEFUL DEVICE: A water recharge well**

*This is the seventh in the Rainwater Harvesting series that comes to you with added vigour every week, as the author finds an awe-inspiring response from people across the globe. We do hope the Waterwise column helps people get wiser to save every drop.*

Industries are booming in Bangalore and its suburbs. A 10 per cent economic growth rate also means a 10 per cent growth in water demand. Since industries are usually located in the periphery of the city they are not usually connected to the piped network of the city and depend on ground water for their needs. If they are indeed connected, they pay one of the highest tariff for water in India at an effective Rs. 72 a kilo-litre.

Many industries buy water from water tankers too. Some buy bottled water for drinking purpose and if soft water is required as part of the process requirement, water softeners or reverse osmosis systems are opted for. It therefore makes eminent sense for industries to harvest rainwater because it saves money, it replenishes the ground water and it brings to productive use soft rain water.

How should industry harvest rain? The principle of rainwater harvesting remains the

same:

- collect and store rainwater.
- recharge the aquifer and use the ground as storage.

Modern tools such as google earth help identify the catchment of your industry if it is large, the slopes and the overall context where it is located in the urban watershed. This helps plan design and implement rainwater harvesting systems better from a couple of acres to thousands of acres.

There are five components in a rainwater harvesting system:

Catchment; Conveyance; Filtration; Storage; and Recharge.

### Catchment

Roofs are excellent catchment. Paved areas which are clean can also be treated as a catchment. Unpaved areas are usually best reserved to ensure increase in soil moisture or to recharge groundwater. Many factories have sloping roofs, some have flat roofs.

Irrespective of the kind of roof each of them is an excellent catchment as long as it is kept clean. The use of bitumen and asphalt as water proofing in some of the old factories may render the catchment unfit. Chimneys which deposit soot may need to be isolated.

### Conveyance

Conveyance systems include rainwater gutters and down pipes which move the rainwater from the catchment to the filtration system. It is good to build gutters at the construction stage itself and to slope them in the direction of storage or recharge. Down pipes should also be built in for easy connections.

PVC is the material generally used for both gutters and down pipes though other materials are also now coming in.

### Filtration

Filtration systems remove organic material, silt and other debris from the rooftop rainwater. These are designed with gravel and sand and sometimes with nylon meshes of various fineness. Rainwater passes through the filter and is cleaned considerably for storage.

### Storage

There are many ways to store rainwater. Rain barrels are one method where HDPE tanks are used to collect and store rainwater. Underground open or closed sumps are preferred by some. These take the rainwater and allow it to go into the shallow aquifer or the deeper aquifer at fairly rapid rates. These can be recharge pits or recharge wells. Some industries with large areas have even used recharge ponds. Storm water drains are conveyance systems for larger catchments and are excellent places to harvest storm

water.

Recharge wells can be placed inside the storm water drains or immediately adjacent to them in series to ensure maximum recharge. Storm drains can also be led to recharge ponds of 2 to 10 lakh litres capacity to store and recharge the groundwater.

For the landscaped areas, swales and berms capture water and soak it into the soil, increasing soil moisture and enabling plants to thrive. A well-designed landscape in an industry will do with very little water or only treated effluent water. It is always wise to work with tree-based landscapes or with plants which demand very little water.

A water audit and identification of the demand at various points through metering is an excellent idea. An industry should know its sources of water and how much water is consumed from these sources each month and should monitor it closely. Water can only be managed if you measure it. Key points of demand should also be measured to see how much efficiency can be brought in.

Through a clear demand management strategy, rainwater harvesting and water recycling, an industry can become water smart or water positive. This will contribute to sustainable development.

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