



**Earthquake Reconstruction  
and Rehabilitation Authority  
(ERRA)  
Prime Minister's Sectt. (Public)  
Islamabad**

**"Promotion of  
Rain Water Harvesting (RWH)  
in Earthquake Affected Areas (EQAAs) of  
KP & AJK"  
(A Pilot Project of ERRA-WatSan Sector)**

**Estimated Cost  
Rs 495.757 (M)  
(\$ 6.2 M)**



Typical Rooftop RWH Model Installed at ERRA HQ, Islamabad



### **Factors Compelling for Alternate & Supplementary Solutions**

- In Pakistan per capita availability of water in 1950s was over 5300 Cubic meter, which is reduced to around 1100 Cubic meter today.
- Improved living standard caused increase in per capita consumption of water.
- Exponential increase in water demand in EQAAs because of Reconstruction / Rehabilitation activities.
- Developmental activities, like construction of buildings, roads etc. have changed the surface water drainage pattern, thereby reducing the recharging process of under ground water sources, in EQAAs of KP & AJK.
- Capital cost of piped water supply, either through long distant gravity sources or lifting water from hill bottoms is comparatively very high.
- Deforestation caused flash flooding, hence lesser recharge into the ground.

### **Scope of Project**

- Rainwater Harvesting System for 40,000 house of 20 Union Councils in 10 districts of EQAAs. directly benefitting a population of 2,40,000.
- Rain Water Harvesting System for about 400 public/community institutions
- 20 demo Rainwater Ponds, one in each selected Union Councils
- Rain Water Harvesting Promotion through workshops, seminars, awareness campaigns, trainings of master trainers, development of MIS.



Rainwater Harvesting Pond at ERRA HQ, Islamabad

## Rainfall Data of Earthquake Affected Areas

Region	Average Annual Rain Fall*
Rawalakot / Bagh Muzaffarabad / Neelum	1507mm
Abbottabad	1319mm
Mansehra / Battagram	1540mm
Shangla / Kohistan	1058mm
Murree	1804mm

\* - SOURCE - Meteorological Deptt - Pakistan  
- Average Annual Rainfall based on lat 30 years data

**“Water if Life,  
save every possible drop of it  
for your future generations”**



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## Methods of Rain Water Harvesting (RWH):

### i) For Potable Water

- Collection of water from rooftop to a storage tank, sump etc.
- Collection of water from rooftop and surface runoff to recharge bore hole, open well, hand pumps etc.

### ii) For Groundwater Recharge

- Abandoned well running bore holes, hand pumps, recharge pits, recharge trenches, recharge wells etc.

### iii) To Prevent Surface Runoff

- Percolation Ponds,
- Check Dams,
- Recharge Pits,
- Recharge Trenches,
- Water Ponds.
- Small / Medium Dams

### Usage of Rain Water

Rain Water can be used for:

- Drinking
- Cooking
- Washing / Bathing
- Sanitation
- Kitchen Garden
- Small Scale Agriculture
- Live Stock
- Under Ground Recharging



There are four basic elements / components of a Rooftop Rain Water Harvesting system.

- **Catchments:** of a RWH system is the surface, which receives the rain water directly. This would be the roofs in a rooftop system.
- **Gutters / Pipes:** are pipelines and drains that carry rain water from the catchments to the rain water harvesting Storage tank. Gutters can be of PVC/PE or Galvanized Iron sheets.
- **First Flush Diverter (FFD)** helps to collect directly water of initial rain and allows only clean water to the storage tank.
- **Storage:** Rain Water can be stored in any commonly used water storage containers such as RCC, Masonry, Polyethylene etc. Rain Water can also be charged into the ground water aquifer through any suitable structure like dug well, percolation well, boreholes, recharge trenches/pits of water ponds.