



# IWAVE

## The IAEA Water Availability Enhancement Project

### Water resource assessments

The Water Availability Enhancement Project (IWAVE), recently launched by the IAEA, aims to strengthen Member States' national capacity to conduct assessments.

Since the early 1970s, the international community has recognized that adequate national assessments do not exist in many countries, particularly in relation to the water residing in aquifers. These resources hold about 97% of the Earth's easily recoverable fresh water; they are often poorly understood and poorly managed.

To uncover vital information about water resources, it is essential to understand:

- How much water exists and where it comes from;
- How sustainable water resources are for current and future uses;
- How vulnerable water resources are to pollution and climate change.

# Elements of an assessment Pilot studies

		Hydrological data and information
Natural water system	Surface water	<b>Hydrographic maps and models</b> — hydrography, storage volume and flux
		<b>Streamflow hydrographs, maps and models</b> — discharge, channel geography, rating curves
		<b>Flood risk and drought risk maps and models</b> — recurrence intervals, trends
		<b>Surface water quality maps and models</b> — water chemistry, common and emerging pollutants, trends
	Groundwater	<b>Hydrogeological setting maps</b> — surface and subsurface geology, aquifer thickness and extent, resistive layer thickness and extent
		<b>Aquifer characteristics maps</b> — porosity, hydraulic conductivity, transmissivity, anisotropy, storativity
		<b>Groundwater storage and flow maps and models</b> — saturated thickness, water levels, vertical/horizontal gradients
		<b>Groundwater quality maps and models</b> — water chemistry, common and emerging pollutants, trends
	Water budget	<b>Precipitation maps and models</b> — point precipitation, areal/regional precipitation, extreme events
		<b>Runoff and recharge to groundwater maps</b> — runoff coefficients, infiltration and recharge rates
		<b>Evapotranspiration maps and models</b> — temperature, point evaporation, meteorological data
		<b>Surface and groundwater interaction maps and models</b> — hydraulic gradient, groundwater discharge to surface water, surface water seepage to groundwater
	Engineered water system	<b>Withdrawal rate and location maps and models</b> — withdrawal by category, rates, trends
<b>Conveyance rate and losses maps and models</b> — conveyance by category, rates, trends		
<b>Consumptive use maps and models</b> — consumptive use by category, rates, trends		
<b>Reclaimed wastewater maps and models</b> — rates, volumes, trends		

The IWAVE project has pilot studies under way in:

- Philippines,
- Oman,
- Costa Rica.

Each pilot study will:

- **Identify** national gaps in hydrological data and information;
- **Determine** the expertise, technology and infrastructure support required to fill identified gaps;
- **Formulate and implement** the optimum methodology for utilizing isotope techniques;
- **Develop** an approach for collaborating with other multilateral and bilateral organizations to fill identified gaps.

While the three pilot studies are at different stages of progress, several gaps in hydrological data and information seem to be commonly identified, including:

- Groundwater — aquifer extent, aquifer characteristics, groundwater storage and flow;
- Water balance — runoff and recharge to groundwater, surface and groundwater interaction;
- Water use — withdrawal rate and location, consumptive use.

IWAVE builds on, and complements, other international, regional and national initiatives to provide decision makers with reliable tools for better management of their water resources.

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