# Drastic Worldwide Water Shortage by 2040

Water scarcity is expected to become an ever-increasing problem in near future, for various reasons as reported by recent studies and the IPCC 2014. First, the distribution of precipitation in space and time is very uneven, leading to tremendous temporal variability in water resources worldwide. Second, the rate of evaporation varies a great deal, depending on temperature and relative humidity, which impacts the amount of water available to replenish groundwater supplies.

Key hydrological issues associated with climate changes include: changes in the seasonal distribution and amount of precipitation, changes in the balance between snow and rain, increased evapotranspiration and a reduction in soil moisture, changes in vegetation cover resulting from changes in temperature and precipitation. The combination of shorter duration but more intense rainfall (meaning more runoff and less infiltration) associated with increased evapotranspiration (the sum of evaporation and plant transpiration from the earth's land surface to atmosphere) and increased irrigation is expected to lead to groundwater depletion.

Combining the research results with projections of water shortage and the world population shows that by 2020, 30-40% of the world will no longer have access to clean drinking water. Water demand will outstrip supply by as much as 50% by 2030. Moreover, by 2040, a severe shortage will affect the entire planet and it will be impossible to keep current water-based electricity production systems and meet the water demand associated with increasingly strained by economic development and population growth. It is a clash of competing necessities, between drinking water and energy demand.

In most countries, electricity is the biggest source of water consumption, since the power plants need cooling cycles for proper functionality. The demand for both energy and drinking water would combine to aggressively speed up drought, which in turn could exacerbate large-scale health risks and other global development problems. The only energy systems that do not require cooling cycles are wind and solar systems, and therefore one of the primary recommendations issued by these researchers is to replace old power systems with more sustainable wind and solar systems, as appropriate as possible, depending on the conditions of feasibility.

General recommendations below could be followed by decision-makers in order to handle the water crisis around the world:

* -Enhance energy efficiency
* -Conduct further research on alternative cooling cycles of the power plants
* -Strengthen the development of wind and solar energy
* -Abandon fossil fuel facilities in all water stressed places (which means half the planet)