Smarter water for a smarter planet.

Water flows through everything—the air, the land, our own bodies and the global economy. In fact, every time a good or service is bought or sold, there is a virtual exchange of water. It takes 700 gallons of water to make a cotton T-shirt, 2,000 gallons to make one gallon of milk, and 39,000 gallons to make a car.

We use water to process raw materials, manufacture products, generate electricity, and to transport people and goods. We desalinate it to build cities in the desert. Is it any wonder that in the last 100 years global water usage has increased at twice the rate of population growth?

Every time we interact with water, we change its direction, chemistry, usefulness or availability. Because of this daunting complexity, water is poorly understood and often mismanaged. For example, global agriculture wastes an estimated 60% of the 2,500 trillion liters it uses each year. Municipalities lose as much as 50% of their water supply through leaky infrastructure. And there are nearly 53,000 different water agencies in the United States alone, each managing a short stretch of river or a handful of reservoirs.

Amidst this inefficiency, one in five people still lacks access to clean, safe drinking water, and the United Nations predicts that nearly half the world's population will experience critical water shortages by the year 2080.

But we can do better. Today's technology can monitor, measure and analyze entire water ecosystems, from rivers and reservoirs to the pumps and pipes in our homes. We can give all the organizations, businesses, communities and nations dependent on a continuing supply of freshwater—that is, all of us—a single, reliable, up-to-the-minute and actionable view of water use.

Already, we are using sophisticated sensor networks to collect and analyze the tremendous amounts of data generated in complex water systems. Together with the Beacon Institute for Rivers and Estuaries and Clarkson University, IBM is creating a data platform to support instrumentation of the entire length of the 315-mile Hudson River for a real-time view of a river system that supplies both industry and individuals. In the Netherlands, IBM is working with partners to build smarter levees that can monitor changing flood conditions and respond accordingly. And sensors are revolutionizing agriculture, providing detailed information on air quality, soil moisture content and temperature to calculate optimal irrigation schedules.

Smart metering can give individuals and businesses timely insight into their own water use, raising awareness, locating inefficiencies and decreasing demand. IBM and the Dow Chemical Company, through its Dow Water Solutions business, are working together to enable unprecedented visibility into water usage—starting with desalination plants. And IBM itself is saving over $3 million a year at one North American semiconductor plant, through a comprehensive water management solution.

Finally, we can apply advanced computing and analytics to move beyond "real time" to prediction, supporting better-informed policy and management decisions. IBM is involved in a collaborative research initiative with the Marine Institute in Ireland, which aims to turn Galway Bay into a living laboratory—instrumenting the bay to gather data on water temperature, currents, wave strength, salinity and marine life, and applying algorithms that can forecast everything from wave patterns over 24 hours to the right time to harvest mussels.

The flow of clean, plentiful water is as essential to our economy and society as it is to our planet. Let's stop taking it for granted, and start managing it as the precious resource it is. Let's build a smarter planet. Join us and see what others are thinking at **ibm.com**/think

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