

# securing energy in a water-constrained world



## the energy-water challenge

Significant amounts of water are needed in almost all energy generation processes, from generating hydropower, to cooling and other purposes in thermal power plants, to extracting and processing fuels. Conversely, the water sector needs energy to extract, treat and transport water. Both energy and water are used in the production of crops, including those used to generate energy through biofuels. Population growth and rapidly-expanding economies place additional demands on water and energy, while several regions around the world are already experiencing significant water and energy shortages.

Today, more than 780 million people lack access to potable water, and over 1.3 billion people lack access to electricity. At the same time, estimates show that by 2035, global energy consumption will increase by 35%, while water consumption by the energy sector will increase by 85%. Climate change will further challenge water and energy management by causing more water variability and intensified weather events, such as severe floods and droughts.

These interdependencies complicate possible solutions and make a compelling case to expeditiously improve integrated water and energy planning in order to avoid unwanted future scenarios.

## will water constrain our energy future?

While a global water crisis could take place in the future, the energy challenge is present. Water constraints have already adversely impacted the energy sector in many parts of the world. In the U.S., several power plants have been affected by low water flows or high water temperatures. In India, a thermal power plant recently had to shut down due to a severe water shortage. France has been forced to reduce or halt energy production in nuclear power plants due to high water temperatures threatening cooling processes during heatwaves. Recurring and prolonged droughts are threatening hydropower capacity in many countries, such as Sri Lanka, China and Brazil.

Despite these concerns, current energy planning and production is often made without taking into account existing and future water constraints. Planners and decision-makers in both sectors often remain ill-informed about the drivers of these challenges, how to address them, and the merits of different technical, political, management, and governance options. The absence of integrated planning between these two sectors is socio-economically unsustainable.



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[www.worldbank.org/thirstyenergy](http://www.worldbank.org/thirstyenergy)

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## what is thirsty energy?

To support countries' efforts to address challenges in energy and water management proactively, the World Bank has embarked on a global initiative: thirsty energy. Thirsty energy aims to help governments prepare for an uncertain future, and break disciplinary silos that prevent cross-sectoral planning. With the energy sector as an entry point, thirsty energy quantifies tradeoffs and identifies synergies between water and energy resource management.

Thirsty energy demonstrates the importance of combined energy and water management approaches through demand-based work in several countries, thus providing examples of how evidence-based operational tools in resource management can enhance sustainable development. This created knowledge will be shared more broadly with other countries facing similar challenges.

Thirsty Energy tailors approaches depending on the available resources, modeling experience, and institutional and political realities of a country. In order to ensure client ownership and successful integrated planning, thirsty energy focuses on building the capacity of relevant stakeholders and leveraging existing efforts and knowledge. The energy-water challenge is too large for any organization to tackle alone. Due to the pivotal role of the private sector in the energy and water sectors, a Private Sector Reference Group (PSRG) has been established to share experience, to provide technical and policy advice, and to scale-up outreach efforts.

# thirsty energy

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## what is thirsty energy doing?

### increasing awareness

regarding the water requirements of energy projects among political decision makers, the private sector and other stakeholders in order to reduce energy projects' vulnerability to water constraints.

### enhancing stakeholder capacity

to plan and manage energy and water resources comprehensively, by improving the tools and technical solutions available to assess the economic, environmental and social implications of water constraints in energy and power expansion plans.

### fostering interdisciplinary collaboration

between the energy and water sectors and promoting knowledge exchange to help develop an integrated management framework and ensure its practical application.

### developing innovative technical tools and approaches

and policy-oriented material and guidance to help countries develop and manage their energy and water resources in a sustainable way.



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