International
Water Association

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IWA Water and Energy Declaration

Introduction

As a global organisation devoted to helping water professionals create innovative, pragmatic and sustainable solutions to challenging global water needs, the International Water Association (IWA) **recognises its responsibility to tackle water issues associated with global warming and subsequent climate change**.

Water related climate change impacts include shifting historic rainfall patterns and an increased frequency of extreme events resulting in **flood** and/or **drought** situations. **Rising sea levels** will increase salt water intrusion of freshwater supplies and impact vulnerable infrastructure. These pressures result in an **enormous need for adaptation measures** in water management including water supply and sanitation infrastructure.

IWA further recognises that the consumption of fossil fuels and use of energy is a contributor to global warming and climate change, and that **water and energy issues are indivisible**.

Water is essential to energy supply and is required for hydroelectricity, cooling of thermal power plants and the processing of petroleum and primary energy sources. If water is unavailable, even for a limited period of time, power plant facilities may have insufficient water for cooling or may lead to conflict with protection of environmental values

The construction and operation of dams and hydropower plants can contribute to reducing greenhouse gas emissions, smooth operating peaks and store energy and water as well as provide improved ship traffic safety however they also may have significant impacts on river ecology and need to be assessed in their local context.

Large quantities of water may also be required by new emerging energy technologies, such as the conversion of biomass to liquid and gaseous fuels, tapping the large reserves of petroleum in tar sands and oil shales, and as a source of hydrogen via electrolysis for a hydrogen economy.

Energy is central to water security - it is needed to extract water from sources, treat it to acceptable standards and transport it to where it is used and consumed. Energy is also used in the collection and treatment of wastewater and for returning it safely to the environment. The treatment of water for reuse and the desalination of brackish water or seawater also have high energy requirements.

On 29-31 October 2009, and under the leadership of IWA, water professionals from around the world (researchers, developers, consultants, supply industry, representatives of utilities and associations) assembled in Copenhagen to discuss the nexus between water and energy.

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Declaration

The IWA calls upon decision makers and the international community to recognise the relationship between water and energy and to create professional platforms and policy environments that support joint efforts in addressing global climate change.

The IWA urges World Leaders to consider the following during the negotiations toward a treaty on world climate management:

§1. Water and energy are indivisible and equally important for society

§2. Water and energy policies must be integrated in order to meet basic requirements of people and nature

§ 3. The requirement to deliver water for basic needs must not be compromised by the need to cut greenhouse gas (GHG) emissions

§4. Behavioural changes must be initiated in order to facilitate prudent use and consumption of water and energy

§5. Recovery of water and energy must be put high on the agenda of policy formulation and technology development

§6. Technological solutions do exist – and more will be developed – to improve the water and energy efficiencies in both the energy and water sectors

§7. Development and use of fiscal instruments will accelerate the implementation of behavioural changes and of sustainable technologies in households, industry and supply sectors

§8 Novel professional platforms must be established to help balance competing interests of water and energy needs, and to develop appropriate legislative and regulatory frameworks.

Declaration from IWA Members **December 2009**

International Water Association

Explanations

§1. Water and energy are equally important for society

Water and energy are physically linked and cannot be separated. Energy is needed for water supply and wastewater treatment and water is a critical component in the production of power. Energy is also used when water is used, and vice versa. The design of our cities, suburbs, homes and appliances has enormous implications for water and energy consumption. Population growth, climate change, urbanisation and rising health and environmental standards will demand an integrated approach in our increasingly water and fossil fuel constrained economies and world. Development of new policies and technologies which reduce the use of water and energy are required and may also stimulate economies.

§2. Water and energy policies must be integrated in order to meet the basic requirements of people and nature

Water policy influences energy choices, and vice versa, creating a need for the integration of policies. The right pricing, policy and regulatory frameworks are critical to encourage behavioural changes, to motivate innovation, to ensure sustainable use of water and energy resources and to simultaneously adapt to and mitigate climate change. Within such frameworks different solutions may be applied for local circumstances.

§3. The requirement to deliver water for basic needs must not be compromised by the need to cut greenhouse gas (GHG) emissions

Over 50% of the world's population does not have access to safe drinking water or sanitation.
The global community is committed to improving the standard of living for people in low and middle income countries. This means more than just meeting basic needs, but includes economic development which requires water, food and energy. As standards of living increase the demands for water and energy will also increase. An inability to ensure a basic standard of living and improve livelihood can cause migratory chaos, political instability and threaten food supplies, thus meeting water and energy requirements is essential to avoid these eventualities.

§4. Behavioural changes must be initiated to facilitate efficient use and consumption of water and energy

Energy savings in households and in industry will have a direct impact on the need for electrical energy and therefore indirectly on water use. Saving water means saving energy in the extraction, treatment and distribution of water and the collection and treatment of wastewater. Minimising hot water usage is highly effective of saving both water and energy as heating water can use substantial energy and fossil fuels.

§5. The recovery of water and energy must be put high on the agenda of policy making and technology development

Energy recovery from wastewater treatment is common; and biogas can be used for power generation, fuel for transport or heating. Heat transfer from groundwater and wastewater resources, for both heating and cooling systems provide solutions when the costs of fossil fuel based energy are increasing.

§6. Technological solutions do exist – and more will be developed – to improve the water and energy efficiencies in industry and the energy and water sectors, respectively

Technology development, such as instrumentation control and automation combined with more efficient pumps, refrigerators, air conditioners, heating systems and power electronic motor control will offer a most significant impact on the total electrical energy use.

Energy use at water and wastewater utilities often follows a daily, weekly and sometimes seasonal pattern. Power plant operations are dynamic in order to match supply and demand on the grid. There is a potential to compensate some of the daily use patterns by pumping water to storage reservoirs, conducting certain water treatment processes etc., during low load hours for the grid. In particular, combinations of desalination plants and power production from wind, wave or solar energy may provide sustainable solutions.

§7. Development and use of appropriate policies and mechanisms will accelerate the implementation of behavioural changes and of sustainable technologies in households, industry and supply sectors

Fiscal means, such as water pricing, tariff structures, environmental taxes, carbon trade schemes as well as subsidies to implementation of novel green technologies provide tools for policymakers and regulators to accelerate the implementation of mitigation measures. In this process, planning tools are needed to quantify an “eco-footprint” of the sustainable alternative technology or management scenarios, including policy measures for driving more sustainable investment decisions.

Life Cycle Assessment (LCA), which has further developed into Life Cycle Impact Assessment (LCIA) provides systematic concepts and methodologies to quantify eco-footprints in a broad sense. Measuring carbon footprints puts a focus on greenhouse gas emissions and measuring water footprints puts a focus on water as a natural resource. Including the full range of footprints in the design of these fiscal means may assist policy makers to maximise environmental and economic benefits.

§8: Professional platforms

The regulatory aspect of balancing the competing water and energy needs of several sectors and industries is a multidisciplinary task. There is an emerging need to create professional platforms where the shared challenges and opportunities in water and energy can be discussed and further developed.