

# Water and energy partnerships: Lessons learnt

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## *Why water and energy partnerships?*

Water is important for energy and energy is important for water. However beyond the “water for energy” and/or “energy for water” concept it is important to focus on a practical examination of how the two problems can be handled together allowing trade-offs to be properly taken into account so as to take advantage of the synergies and the co-benefits involved.

Recognition of this interconnection has led some observers to call for a greater level of integration between the two domains. It is also widely recognized that an increased level of collaboration and coordination would create favorable outcomes in nearly all situations.

### ***Access to W&E***

Uncertain water supply is becoming a major business risk for some energy sector managers. Securing access to modern energy services represents a major challenge in pursuing sustainable development.

Access to W&E is a limiting constraint to sustainable economic growth, which is the ultimate hope for widespread poverty reduction.

### ***W&E Efficiency***

Increasing water use efficiency in energy production (essentially producing more kWh per drop of water), is a way to save both water and energy

Enhancing the efficiency with which water is used in all the economic activities is a way to save water energy.

Many efficiency improvements in utilities, such as the repair of leaks, require regular attention to ensure a steady supply of new water and energy savings.

### ***W&E Sustainability***

Recognizing that ecosystems provide a variety of services to the water–energy nexus can help the management of trade-offs and ensure that short-term gains do not undermine services that are critical for resilience and long-term environmental sustainability.

Policy-makers, planners and practitioners in the water and energy areas need to take steps to overcome the barriers that exist between their particular domains.

The challenges involved in the Water and Energy Nexus are beyond the scope of any individual public authority, business or stakeholder. The way to make cooperation happen is by building partnerships capable of acting together and supporting the finding and implementation of effective actions. With the aim of ***achieving access, efficiency, and sustainability in water and energy.*** Making partnerships work requires understanding the inter-linkages and interdependencies, the differences and tradeoffs between the two sectors.

## *What are the interdependencies between water and energy?*

Water and energy are highly interdependent, (WWDR 2014):

- Choices made in one domain can have impacts, both direct and indirect; positive and negative.
- Water and energy are both drivers and constraints on economic growth and improving human health, all choices made in water and energy have widespread impacts and are impacted by all other sectors in the economy.

- Water and energy are enablers of widespread poverty reduction and job creation, and generators of wellbeing.

### *How different are the water and energy domains*

Differences need to be recognized as these affect the scope, speed and direction of change in the respective domains of water and energy (WWDR 2014) and affect the way actors collaborate:

- While energy is often synonymous with big business and carries great political clout, water is not and generally does not attract the same level of political attention.
- There is a marked difference in the pace of change and on how the energy and water domains respond to the evolution of markets and technologies.
- Those responsible for water must step up their own governance reform efforts so as to respond to the pressures from developments in the energy sphere that might make the tasks facing water planners, and securing water much more difficult to achieve. Failures in water can also lead directly to failures in energy.

### *Partnerships, what for?*

#### *Policy making, planning and investments*

- Integrating energy and water **resource management and planning** ensuring policy coherence among water and energy departments, involving industry and other stakeholders.
- **Developing and implementing decision making tools** providing a common space and a platform for different decision making entities to create various scenarios and predict their resource demands in an integral resource management framework in national development planning.
- Integrating **environmental considerations** into existing energy and water planning and decision-making is key to achieving sustainable development.
- Decisions on **investment approvals** for power and hydroelectricity stations, in relation to other major water users, can and do take account of all relevant local factors.
- **Investing** in energy efficient systems and maximizing the use of renewable energy. Example: Coal based thermal power plants in South Africa and India water consumption rates leading to risks of water security for the future.
- **Broadening participation** to involve the different resource uses and stakeholder needs and to mobilize knowledge at national and local levels as a means of jointly identifying priorities and synergic solutions to reducing trade-offs.
- **Developing flexible and dynamic institutional and regulatory frameworks** to adapt the mechanisms and be able to bring collaborative solutions that benefit the final users.
- Enabling processes to reach agreement on resource allocation priorities.

The Alliance to Save Energy “Watergy Program”  
 Established in 1977, the Alliance to Save Energy is a non-profit coalition of prominent **business, government, environmental, and consumer leaders** who promote the efficient and clean use of energy worldwide to benefit consumers, the environment and economic growth. The Alliance has been working internationally for more than a decade in over 30 developing and transition countries. Funding for Watergy™ is provided by the U.S. Agency for International Development (USAID), the Renewable Energy and Energy Efficiency Partnership (REEEP), the International Finance Corporation (IFC), the Coca-Cola Company, and others. The Alliance Watergy Program’s efforts are based upon a holistic model that incorporates the participation of important stakeholders of their technical, managerial and financial capacities to overcome the energy inefficiencies in municipal systems.

- **Improving transparency** in the water and energy sectors. For instance, improving the transparency in the water and energy sectors is crucial for effective decision-making in South Africa.
- **Building capacity for practitioners and policy makers.** For example, on resource efficiency as recommended by the alliance promoted by the Zaragoza City Council and the Ecology and Development Foundation (ECODES). Or on enabling policy and mechanism for pro-poor public private partnership (5P) in establishing a mechanism for mobilizing and allocating financial resources for rural basic energy and water services promoted by the UNESCAP partnership in Indonesia.
- A **national agency** should be identified as a focal point to lead to establish a national team/ **Coordinating Committee** to comprise of key government agencies in charge of promoting PPPs. (e.g. UNESCAP partnership).
- **Improving legal regulations**, for water and energy efficiency as recommended by the alliance promoted by the Zaragoza City Council and ECODES.

### *Supply management*

- **Allowing for the joint management of multipurpose infrastructures** involving stakeholders can provide opportunities for partnership and cooperation.
- **Providing basic water and energy services.**
- **Capturing water and energy savings** opportunities in water (improving energy efficiency) and energy utilities (reducing leakage), which will help reduce financial pressures on these industries. For instance, the Veolia partnerships allow a saving of up to 50 and sometimes 90% of either water, or energy expenses on individual processes, whether they are municipal or industrial. For the total scope of the partnerships, efficiency gains reach from 10 to 30% with subsequent emission reduction and cost savings.
- **Managing utilities efficiently** for example through improved coordinated bill collection.
- Introducing **best practices and cleaner technology** leading to economic and environmental benefits, including access to grants and financing schemes. E.g. UNIDO MED Transfer of Environmentally Sound Technology (TEST) partnerships initiative.
- **Training** the industry staff on cleaner production, such as in the UNIDO MED TEST partnerships initiative.
- Achieving environmental compliance and **enhancing relationships** with stakeholders, e.g. UNIDO MED TEST partnership initiative.
- **Pooling the capacities and experiences** of leading private sector industry allows mobilizing the comparative advantages of both partners for the advancement of inclusive and sustainable industrial development. Example: The partnership between UNIDO and Carlsberg to help resource efficiency improvements (water and energy) in its Baltika brewery processes.

### *Demand management*

- **Raising civic awareness** of water efficiency, as in the alliance promoted by the Zaragoza City Council and ECODES.
- **Improving communication**, for instance the alliance promoted by the Zaragoza City Council and ECODES advertisement in sustainable consumption.

## Assessment tools

- **Water and energy audits** for industries that are at a starting point to benchmark its status, measure usage and identify areas for improvement in both the demand and supply sides.
- **Certification Programs for Irrigation** to encourage the use of water and energy efficient practices
- A comprehensive **evaluation framework** which includes water use assessment methodologies adapted to the energy companies' and fitted to their specific situations and needs, as well as being well-suited to a specific area or process and involving risks and impacts related to the use of the resource. For instance, the Water for Energy Framework (W4EF) is producing an adapted framework to assess energy companies' water use and related impacts. Another example is the Hydropower Sustainability Assessment Forum and Protocol.
- **Accounting** and understanding water use in energy productions. e.g. The BP-funded consortium of experts which coordinates 15 leading universities to develop a common understanding of the relationships between natural resources and the supply and use of energy.
- **Resource Assessments, Risk assessments, Life Cycle Assessments, Strategic Environment Assessments, Strategic Environmental Impact Assessment (SEIA), and economic valuation and other indicators and tools** able to strengthen the case for improved efficiency in both the water and energy sectors, throughout the production, distribution and use phases, as well as in products and services where they are used and contribute to economic growth.
- Mandatory **disclosure and reporting** of water and energy data and information. For example, the disclosure and reporting on water withdrawal and consumption by power plants, mining operations as well as other water intensive industrial projects in China.

## Technology, Research and innovation

- **Technological innovations**, particularly in relation to renewable energies, can increase water availability from water savings and improve water quality through pollution control. Managing the energy domain's water vulnerabilities will require deployment of better technology and greater integration of energy and water policies (IEA, 2012).
- Making key water quantity and quality **data accessible** to research institutions, NGOs and the public. For example, the disclosure on water use by energy and industry projects in China.
- **Cooperation** between water and energy researchers would benefit the understanding and reduce the energy-water risk.
- The development of environment **innovation models** for implementation in relation to the water and energy nexus foreexample, Water saving projects currently progressing in Vietnam and Indonesia using the Joint Crediting Mechanism (JCM) system of the Japanese government.
- Implementing more **energy and water efficient technologies**. Decreasing production losses and costs through a more efficient use of

### Examples of W&E utilities partnerships in the U.S.

- *Sacramento Alliance for the Conservation of Water and Energy Together*
- *Southern California Water and Energy Conservation Partnership*
- *Northeast Utilities, Connecticut*
- *San Diego Area Utilities*
- *Seattle-King County 'Home Water Savers'*

resources (energy, water, raw materials). For instance in the case of Veolia operational water and energy efficiency partnerships or UNIDO.

- The relevance of **water metering**, for example, in order to promote water and energy efficiency by households, SMEs and local authorities in cities (see the Zaragoza City Council -Ecodes partnership).

### *Who is engaged in partnerships?*

- **Sector Ministries** and actors for policy development and planning as well as the development of major infrastructures; for governments and regulators, opportunities exist to provide enabling environments and institutional frameworks that operate to integrate these sectors.
- **Industries, farmers** and governments/regulators of efficiency improvement in water use. Due to its private management structure, industry has the flexibility to effect changes and improve efficiency in water and energy use within itself, its immediate sphere of influence and along its supply chain.
- **Science and industry** through technology innovation and policy research.
- **Water and energy utilities** by improving efficiency and management.
- **NGOs, Foundations and Local authorities** through the implementation of household efficiency programmes and by providing access to basic services of water and sanitation.
- **Financial sector** in innovation partnerships, e.g. European Innovation Partnership (EIP)
- **ICT sector** in innovation partnerships, e.g. EIP.
- **International organizations** such as the UNESCAP partnership.

### *Lessons learnt from partnerships*

#### **What are the advantages of partnerships?**

- Partnerships are relatively easy to establish
- The ability to raise funds may be increased, as two or more partners may be able to contribute more funds and their borrowing capacity may be greater.
- A partnership may benefit from the combination of complementary skills bringing together stakeholders that would not normally meet e.g. water and energy sectors. There is a wider pool of knowledge, skills and contacts.
- Partnerships can be cost-effective as each partner specializes in certain aspects of their business.
- In the community, access to technical and financial support can provide the possibility of entrepreneurship..

#### **What are the disadvantages of partnerships?**

- Unlimited liability: business partners are jointly and individually liable for the actions of the other partner and profits may need to be shared with others.
- A partnership is for the long term, and expectations and situations can change, which can lead to dramatic and traumatic separation. Since decisions are shared, disagreements can occur.
- The partnership may have a limited life; it may end upon the withdrawal of a partner

- It is necessary to consult a partner and negotiate more as independent decisions are not advisable. You therefore need to be more flexible.
- Less involved groups might not have a voice.
- Having an unbalanced output – one group might railroad the process.

### What are the keys to success in partnerships among water and energy utilities?

- **Leveraged Costs and Mutual Benefits**
- **Public Trust** (united utilities, not isolated utilities).
- Improved private partnerships (vendors, service providers)
- Multiple Partners
- Addressing **gender** issues throughout the process (e.g. UNESCAP partnership)
- Importance of **community ownership** should be a priority (e.g. UNESCAP partnership)
- A **facilitator** is needed (as suggested by the Zaragoza City Council-Ecodes partnership)
- **Measurable goals** (e.g. Zaragoza City Council –Ecodes partnership).
- **Public milestones** (e.g. Zaragoza City Council –Ecodes partnership).
- **Platforms for collaboration**, through which the various sector entities can come together, plan jointly, solve problems, innovate or set up partnerships. Once completed, or with agreed plans or coordination mechanisms in place, sector entities would then implement through their normal, proven channels e.g. IUCN nexus dialogue on water infrastructure solutions.
- Improved **consensus** among stakeholders on principles of best practice for sustainable management of multi-purpose water infrastructures, builds new capacities to identify and integrate best practices applicable to the water, food and energy nexus e.g. IUCN nexus dialogue on water infrastructure solutions.
- The nexus can become overwhelmingly complex very quickly. In practical terms, at least in relation to the water infrastructure dimensions of the nexus, **scale** is therefore very important. Both practical challenges and solutions are more readily identified for smaller basins than larger river basins. Hence, for larger basins it is preferable to break problems down by sub-basins.

#### Successful partnerships

- ✓ Focusing on the **most cost effective programs** Ensuring **equity among partners**
- ✓ Reducing costs by **avoiding lost opportunities**
- ✓ Ensuring program success by monitoring and **evaluating program savings and costs**
- ✓ Testing program design with **pilot projects**

*Al Dietemann, Seattle Public Utilities*

Likewise, depending on the priorities in a particular basin, it can be more practical to deal with the water-energy or water-food linkages separately, at least while trying to identify and understand the ‘pinch points’ that will have the biggest impacts, unless solutions are found.

### How can collaborations be more effective?

- By building institutional capacity to improve water and energy resource management

- Advocating and assisting in the integration of energy efficiency considerations in developing countries, primarily in the efficient operation and maintenance of systems supplying water services
- Promoting energy-efficient technologies and practices, especially in optimizing and modernizing municipal water supply systems
- Increasing education and awareness concerning energy efficiency and environmentally sound water and energy systems
- Developing innovative financing mechanisms to implement projects aimed at improving energy use in water delivery
- Developing centers of excellence in energy for sustainable development to support and promote capacity building efforts and technology transfer activities and serve as information clearing houses

### *Forms of promoting partnerships*

- **Government support.**
- Triggering stakeholders to work in Action Groups, which have no funding but offer **incentives of branding, networking, visibility and working in partnership.** The European Innovation Partnership on Water (EIP Water) is a bottom-up initiative that facilitates the development of innovative solutions to address major European and global water while at the same time creating market opportunities for these innovations, both inside and outside of Europe. The EIP Water aims to remove barriers by advancing and leveraging existing solutions. In its implementation phase, the EIP Water will promote and initiate collaborative processes for change and innovation in the water sector across the public and private sector, non-governmental organisations and the general public, forming Multi-stakeholder Action Groups.
- **Funding mechanisms** and mobilizing national or private funding to support the activities. The European Commission Joint Programming Initiative aims to ‘increase the value of relevant national and EU R&D funding by concerted and joint planning, implementation and evaluation of national research programmes’. The Joint Programming Initiative is a contribution to the reduction of fragmentation of efforts by Member States and mobilization of skills, knowledge and resources, with a view to strengthening Europe's leadership and competitiveness on water research and innovation. These challenges are being implemented through different activities. Calls for proposals of collaborative projects is an important type of activity in the Water JPI.