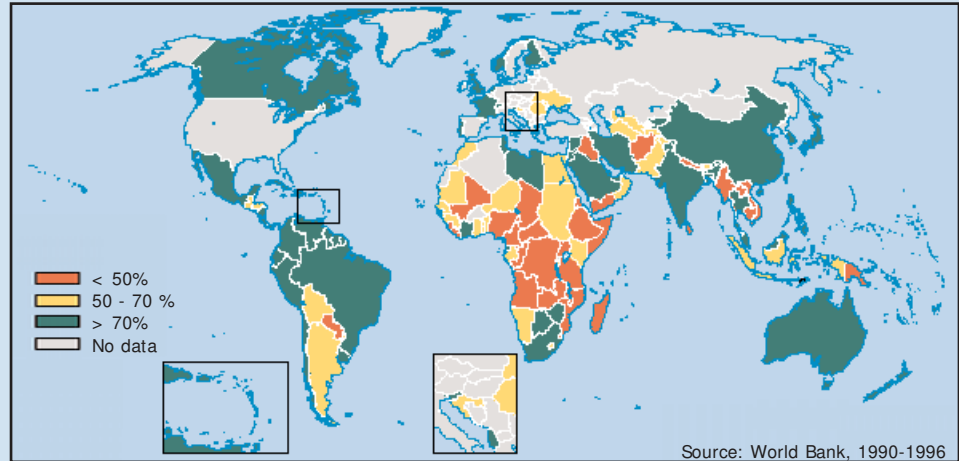




Renewable Energy Powered Water Services

1.5 billion people in the world currently do not have access to adequate clean water needed for drinking, hygiene and domestic use. For many people, water is also scarce for use in income generating sectors such as agriculture. The tenth Millennium Development Goal (Water supply and Sanitation), set by the Millennium Assembly of the UN, aims to provide safe water supply to an additional 1.3 billion people by 2015.



Percentage of population with access to safe water

Energy services are key for meeting the goal through

- Purification of drinking water
- Pumping to gain access to water
- Water desalination



Water purifier

Water service applications can be powered by renewable energy. Photovoltaic (PV) systems are uniquely attractive as a clean, sustainable energy source to provide services to people who do not have access to electricity. A broad range of technology options offering PV powered water services is available



Drip irrigation

backed up by some 40 years of experience. Products range from high-technology to simple, but very robust devices withstanding high mechanical and thermal stress.

Water supply and irrigation providers, decision makers and end consumers nowadays look for the most appropriate solution to meet their individual requirements. It is sensible to compare different technological options and their costs. PV appliances or PV supported hybrid systems often present the best option to meet their needs.



Diesel option

PVPS



Selection of the technology meeting individual requirements

Various issues must be considered in the assessment to select an appropriate solution which meets individual project needs:

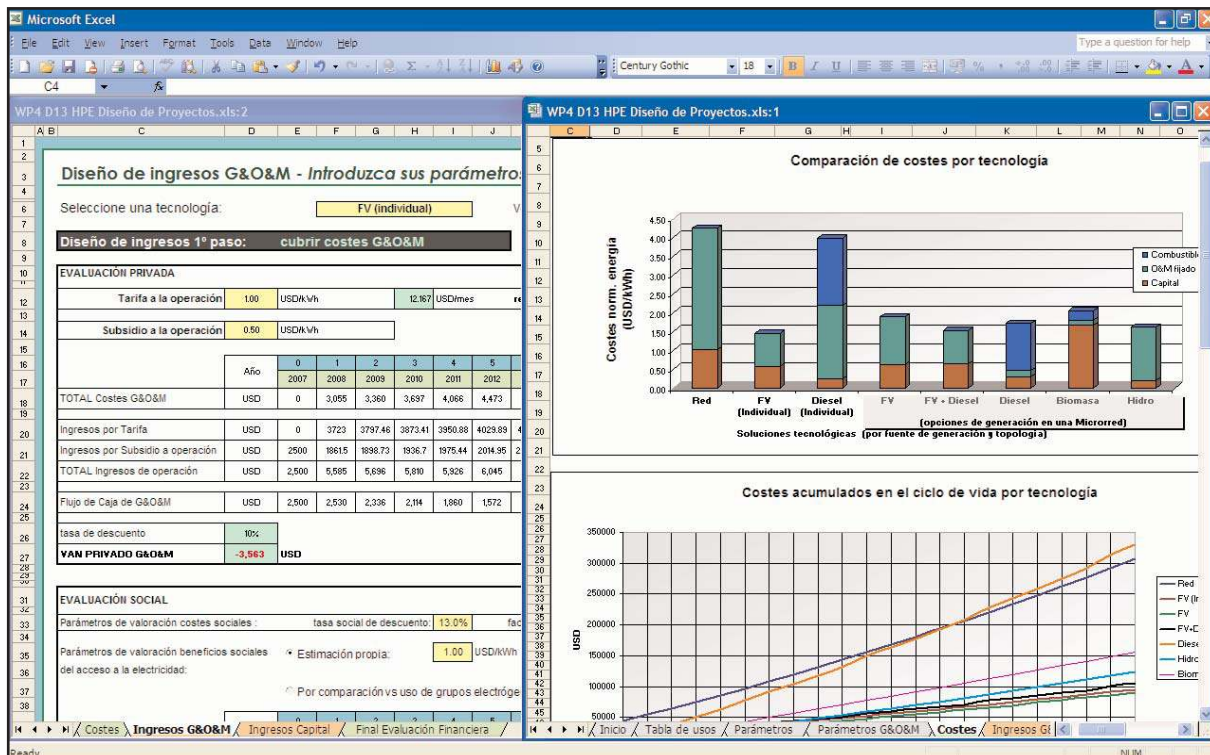
- Energy consumption profile
- Distance to electricity grid connection
- Fuel: Availability on site, transport and costs
- Emissions in operation
- Costs of planning, installation, operation and maintenance
- Source of financing (when, how and by whom are the costs covered?)
- Required system operator training
- Maintenance necessities
- Circumstances in case of repair (spare parts)



Water as key for income and life



To select the most appropriate technology solution, taking all issues into account, is a considerable challenge. Various selection tools that are available that help stakeholders consider the complex relations between the issues mentioned above.



Results of a selection software tool comparing various grid connection, diesel and PV options

Costs, pros and cons of different scenarios can be assessed using these tools. The outcome is based on the individual situation and may sometimes surprise experts, who will appreciate the support of a good decision tool.



Support for water service projects

The following activities are undertaken by the IEA PVPS group experts:

- Technology overviews
- Project examples & case studies
- Recommended Practice Guides*
- Information dissemination (Workshops, conference participation)

The quality of these services is assured through the shared experience of hundreds of successful (and less successful) projects carried through by project developers over the past decades. The information is impartial, independent and objective. The IEA PVPS group experts maintain a network of connections to financing institutions, suppliers, development organisations, governmental organisations and research institutes.



Application example: PV powered irrigation in India



Over 1000 solar pumping units have been installed in a programme led by the Punjab Energy Development Agency (PEDA), by and large based on 1800 Wp PV power and a 2hp DC pump (e.g. adequate water supply for irrigation of 2-3 hectares). Site surveys and selection was done by the suppliers. All suppliers have been obliged to offer a maintenance contract for at least 5 years and to open a service centre in Punjab to ensure sustainability. The successful implementation and the lessons learnt in Punjab encouraged other states in India to come up with their own schemes. Nearly 35 % of the solar pumping systems installed in India are used for drinking water services.

Application example: Safe drinking water in Sahel

Between 1991 and 1997 626 solar photovoltaic pumping systems and 644 community electricity systems were installed in 9 Sahelian countries under the EU funded Regional Solar Programme. The user payments cover costs for operation, maintenance and renewal costs for equipment within 20 years. Water village committees are responsible for the daily caretaking, collections and management of water payments. Important is the development of local know-how through training, the realisation of an integrated quality control and that local, private operators play a key role. As a result, the turnover of local companies was increased by 150 - 300 % between 1992 and 1996. Five to ten years after installation, more than 95 % of systems are still providing water. The sustainability of water usage is ensured by limiting it to 40 - 60 % of the full potential. For large villages (1500 to 3000 inhabitants) PV has proven to be more beneficial than the diesel alternative.



Water improves the living conditions significantly

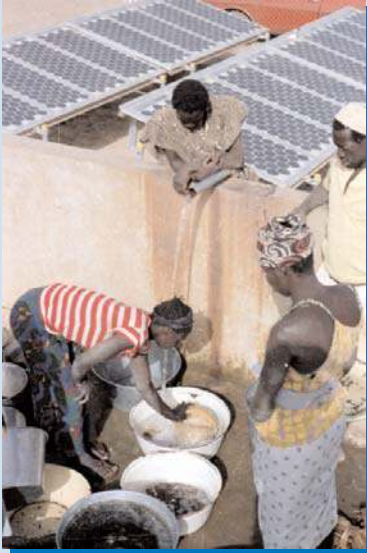


* Download at <http://www.iea-pvps.org/tasks/task9.htm>

Who we are



The International Energy Agency (IEA) supports the Photovoltaic Power Systems (PVPS) Programme. This is sponsored by 19 countries (Australia, Austria, Canada, Denmark, France, Germany, Israel, Italy, Japan, Korea, Mexico, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States of America) together with the European Union and the European Photovoltaic Industry Association. Within this programme one task focuses on PV Services for Developing Countries (PVSDC). The mission of PVSDC is to increase the sustainable use of PV & other renewable energy technologies in developing countries in support of meeting the Millennium Development Goals set by the Millennium Assembly of the United Nations. The application of PV for water services in developing countries is one of the main issues in the current phase of the programme.



Water improves sanitation conditions

Contact details of other global, national and local organisations and initiatives active in the field of renewable powered water services can be provided upon request.



PV as a path into future



PVSDC Water Services Workshop in Bangkok 2007

The PVSDC team members are appointed by the IEA participating countries and include scientists, engineers, economists and development specialists.



Rates of school attendance for girls increase with easier access to water

For further information

Please see the websites: www.iea-pvps.org or www.ieatask9.org

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