



Ecofys GmbH  
Eupener Strasse 59  
DE 50933 Cologne  
Germany  
www.ecofys.de  
tel +49-(0)221-510907 0  
fax +49-(0)221-510907 49  
e-mail [info@ecofys.de](mailto:info@ecofys.de)

## **ECOFYS International Projects**

Ecofys is working on a sustainable energy supply for everyone. More efficient use of energy and the use of renewable energy contribute to a cleaner environment. In our opinion, economically feasible possibilities exist in all sectors. This is the starting point of projects we initiate. We also advise and support clients, work on better products, and conduct research for businesses, agencies and governments.

### ***ECOFYS Energy and Environment***

ECOFYS is an internationally operating company with offices in Utrecht (the Netherlands), Cologne, Nürnberg and Berlin (Germany), Brussels (Belgium), Poznan (Poland), Bristol (UK) and Barcelona (Spain). Founded in 1984, Ecofys is the leading company on sustainable energy in the Netherlands and one of the largest of its kind in the world. Its areas of expertise include technological, organisational and managerial aspects.

A staff of over 150 highly qualified, motivated, enthusiastic professionals work within the following fields: Solar heat, Solar power in the built environment, Solar power in systems and equipment, Wind energy, Energy in buildings, Energy systems, Energy and Environmental Policy studies, Biomass energy, and Small-scale hydropower.

### ***An integrated approach***

Ecofys aims to meet energy demand issues in an integrated approach. Having specialist knowledge and experience for all energy fields available in the organisation, a multi-disciplinary approach is commonly used for projects. Ecofys' sister companies Ecostream (business to consumer services) and Eenergy International (business to business services) complement Ecofys core competencies and allow for complete *one-stop-shop* solutions for energy problems. Additionally, Ecofys has established strategic alliances with other organisations for co-operation in the development and implementation of sustainable energy solutions.

An integrated approach is especially needed in energy deficiency situations, which exist in large parts of the world. Such an approach is a precondition for success. Solving energy problems requires a broad view, including environmental, financial and socio-economic questions. Ecofys can tackle all aspects related to renewable energy and energy conservation, complemented with other specialist areas through its excellent international network.

## **Photovoltaic Energy**

Ecofys has a unique strong position being able to cover all aspects of the introduction of photovoltaic (PV) systems, both in stand-alone and in grid-connected PV systems, small as well as large-scale.

Ecofys experience includes activities on:

- Design, implementation, commissioning and monitoring of PV-systems for all kinds of applications: water management, domestic power supply, PV-streetlights, PV-boats and grid-connected systems Innovative PV products (AC-modules, patented PV-support structure) and services including low cost quality control systems (Econfirm)
- Participation in a centre for assessing and testing PV systems and components (AP-test)
- PV market introduction
- Organisation of workshops and seminars
- Development of training materials and handbooks

The integrated approach of Ecofys is especially relevant for rural electrification projects around the world in which Ecofys is involved:

- Project development for the introduction of solar home systems
- The use of hybrid systems (PV-diesel, PV-wind)
- Product development (solar home systems, PV powered cooling systems)

Ecofys plays an important policy advice function to Governments, utilities and international bodies. Ecofys participates in various networks targeting at the international exchange of experiences:

- EUREC-Agency
- European Commission
- International Energy Association PV
- Power Systems Program

## **Solar thermal energy**

Ecofys is a leading company in the field of **hot water systems** for domestic purposes and for industrial and service applications. Several large-scale introduction programmes of Solar Domestic Hot Water (SDHW) systems (300-1000 units) have been co-ordinated by Ecofys. This approach has led to standardisation, improved quality and considerable cost reduction. Ecofys has been granted a European project in which at least 3000 SDHW-systems

are being realized using the same programme approach, with Ecofys being responsible for **research and development, engineering, quality control, monitoring and overall project management**. Ecofys has also developed several projects concerning large hot water systems for **hospitals**, prisons, swimming pools, camping places, hotels, etc. This includes feasibility studies and market introduction, realisation, monitoring and research into financing aspects.

Regarding **solar drying** of agricultural products, Ecofys has carried out market studies to identify suitable market areas and suitable technologies. Consequently pilot projects were started in which Ecofys is responsible for the design, engineering and monitoring of the set-up. The experiences are now being used to disseminate and further introduce the technology. A global inventory on the potential of solar drying is being carried out in the framework of the IEA.

## **Wind energy**

Ecofys gathered a great deal of expertise in applying **hybrid stand-alone systems** in the Terschelling wind / diesel / PV demonstration project. Together with turbine manufacturers, Ecofys is developing opportunities to apply this experience in stand-alone systems for developing countries. Ecofys develops and applies optimal **energy control mechanisms** for grid connected wind turbines to provide quality power, especially in weak grids.

Furthermore, **feasibility studies** are carried out, and advice is provided to governmental bodies and electricity companies on the application of wind energy. This kind of advisory services is supported by high quality visualisations of planned wind farms.

Ecofys also carries out analysis of **power curves, wind speed measurements** and time series of produced power to gain insight in the performance of wind turbines under offshore, coastal and inland conditions.

Energy conservation and infrastructure

Ecofys has an important position in the field of energy conservation for domestic and utility buildings, including applications of district heating, passive solar energy, co-generation, heat pumps and other technologies.

Studies and consultancy into energy rationalisation in buildings, in combination with product development, have contributed to a firm

experience and knowledge basis applicable in both northern and southern countries.

Keywords relevant for this field of work are:

- Energy in buildings and industry:
- consultancy in buildings and industries regarding energy efficiency
- demonstration and monitoring systems (Energy mirror)
- energy audits
- feasibility studies
- (domestic) hot water systems
- legislation (Energy Performance Coefficient, EPL)
  - Energy infrastructure:
- heat pumps
- co-generation
- distribution of heat, district heating
- concept development of energy systems
- system integration
- optimal energy infrastructure

Energy and environment policy studies

Integration of the theoretical and practical knowledge on renewable energy sources and energy conservation measures on policy levels makes Ecofys an important consultant for policy makers on a national and international level. Ecofys has the power to abstract project specific information without losing insight in the relevant qualitative and often non-technological parameters that influence the success of **energy policies**. Ecofys is also specialised in identifying and characterising measures for reducing the emissions of various **greenhouse gases**, such as carbon dioxide, methane, nitrous oxide and others. Ecofys has developed a database on various emission reduction measures, which can be used to analyse emission mitigation policies and joint implementation programmes. Ecofys **Climate Change Services** assists project developers and financing organisations in the specific climate change aspects of energy related projects.

## **Biomass**

Ecofys performs work in the complete biomass energy chain, including work on a wide range of conversion technologies. This comprises studies regarding biomass energy, project development and implementation, and project management.

Biomass resources

Ecofys performed a range of studies on biomass resource assessment. For example, an overview

of the present use and a study on the biomass energy potential in the Netherlands has been undertaken a few years ago. In a European context, Ecofys played a role in the INSPIRE project where a GIS based biomass resource assessment was made for the EU, followed by several other initiatives. Ecofys was involved in the GRAIN project to assess the global potential for biomass energy.

Regarding municipal solid waste, Ecofys undertook work in the field of organizing and optimising the waste treatment in various cities in Eastern Europe and in Peru.

Biomass conversion technologies

Ecofys is involved in CHP generation from different sources, including chicken litter at farm level or biogas from water treatment facilities. Ecofys assisted in the successful biogas introduction project in Nepal and undertook training a.o. in India on marketing and after-sales services for renewable energy technologies, of which biogas was one of the components.

For the Dutch Development Agency (DGIS), Ecofys undertook a feasibility study for setting up a landfill gas installation at the landfill sites of Lima (Peru).

## **Small-scale hydro**

Experience in small-scale hydro is available with several staff members of Ecofys. This includes both applications within Europe and outside. Ecofys developed, in cooperation with local organisations, training materials on small-scale hydropower for technical training institutes. Feasibility studies were carried out on different applications.

## ***Ecofys International Projects – Examples***

Field	Example	Client
Project development	Market introduction for PV/diesel hybrid systems for houseboats	Utilities, industry, water boards
	PV systems for water management	
	Initiation of utility twinning programmes with India, Zimbabwe and Bolivia	
Project management /implementation	Efficiency Improvement and Pollution Prevention programme for the dairy and rubber sector in India	Industry
	Community participation programme in waste recycling in Lithuania and Poland	
Feasibility studies	Assessment of the feasibility of a Joint Implementation landfill gas project in Lima, Peru	Utilities, industry
	Feasibility study for small JI projects in Bolivia	
Business plans	Business plans for large scale rural electrification in Peru and Northern Morocco	Industry
	Business and marketing plan for a small solar water heater company in Ghana	
Formulation	Formulation of a dissemination programme of 100,000 household biogas installations in Nepal	International organisations
Monitoring and evaluation	Quality control of domestic solar water heaters and small and large PV power supply systems, including large hybrid systems	Industry, utilities, international organizations
Training and education	Various training projects on all kinds of renewable energy treating the technology, financial aspects, quality control, marketing and after sales	Training institutes, industry, utilities, NGOs
Policy studies	Development of a policy for large scale introduction of renewable energy services on Curaçao	National and local Governments, Utilities
Modelling	Large village power supply on the island of Terschelling	Local Governments
Product development	Development of low cost monitoring equipment for battery operated energy services	Industry
Installation, commissioning and maintenance	Wind turbines, Diesel generators, Solar water heaters, Stand-alone and grid connected PV systems in a variety of applications	Industry, utilities

For more information:

**Ecofys GmbH**

Frank Wouters

Eupener Straße 59

DE 50933 Cologne - Germany

Tel: +49-(0)221-510907 0

Fax: +49-(0)221-510907 49

E-mail: [info@ecofys.de](mailto:info@ecofys.de) Web-site: <http://www.ecofys.com>