



The project “RENEW”

An interdisciplinary and international consortium of scientific institutions from Vietnam, Greece and Germany has jointly carried out the one-year project “RENEW- Renewable energy from organic waste and biomass” in 2005 / 2006.

➤ Guidelines

The specific objective of this project has been to develop practice-oriented “Guidelines for the preparation of integrated feasibility studies for the production of renewable energy from organic substrates”, integrating technical, economical, environmental, social and legislative aspects. The guidelines specifically aim at Vietnam and ASEAN countries. Target groups are planners, managers and decision-makers of energy projects.

➤ Feasibility study for Phú Quốc, S.R. Vietnam

The development of the guidelines has been supported by the exemplary development of a concrete feasibility study: *The feasibility study for renewable energy on the Vietnamese Island Phú Quốc*. The study represents a vital prerequisite for the implementation of a new (and renewable) energy producing facility and thus supports local efforts for sustainable energy generation, sound (organic) waste management and environmental protection on Phú Quốc. Three options have been assessed:

1. Biogas plant – dry fermentation technology
2. Biomass combustion plant – pebble heater process
3. Combined biogas and biomass combustion plant.

➤ Workshop

A Workshop has been carried out on the 05.12.2005 in Duong Dong/ Phú Quốc Island, to present and discuss the results with Vietnamese decision-makers, planners and managers, and to facilitate an exchange between European and Vietnamese know-how and best practices.



➤ Contact details:

Institut für Kreislaufwirtschaft GmbH
(Institute for Recycling and Environmental Protection)
Dr. Martin Wittmaier
Neustadtswall 30, 28199 Bremen, Germany
Tel.: +49 (0)421-5905 2311
Fax: +49 (0)421-5905 2349
Email: wittmaier@hs-bremen.de
Web: www.ikrw.de



Downloads of results & further information:
<http://www.renew.hs-bremen.de>

Figure 1: Participants of RENEW- Workshop on Phú Quốc, 5th December 2005

Figure 2: Address of Welcome by Dr. Do Ngoc Quynh (Can Tho University, S.R.Vietnam) during the RENEW-Workshop



Background of RENEW

Against the background of global climate change and increasing prices of fossil fuel, the importance of producing sustainable, renewable energy increases significantly. Carbon dioxide neutral energy generation using biomass or organic waste is an alternative option, which deserves attention particularly in countries like Vietnam. Due to favourable climatic conditions and the prevailing economic structure, potential input materials, i.e. organic substrates from farming, forestry and waste, are very abundant.

Two processes are suitable for energy generation from biomass: the biogas process (i.e. fermentation) and biomass combustion. Both technologies are cost-efficient and environmentally sound options which are suitable for decentralised applications. Using waste as input material can also eliminate environmental problems like ground water pollution, smell or diseases arising from uncontrolled disposal of untreated waste.

An example for the suitable application of a renewable energy facility is Phú Quốc Island. It is the biggest Island of Vietnam, situated 30 km off the mainland. It belongs to Kiên Giang Province, with a total area of 568 km² and more than 85,000 inhabitants. The provincial government plans to develop Phú Quốc Island as one of the country's leading tourist destinations. Also, it is the political aim to "keep the island green" by promoting sustainable development and eco-tourism. The increasing number of tourists and anticipated population growth will lead to considerable infrastructure developments. Therefore, appropriate measures will be required to avoid adverse impacts on the environment.

Currently, electricity is generated by diesel-based decentralised power generation facilities with a total capacity of 10 MW. The supply is not sufficient to meet the current demand. In addition, the island's north will be linked to the main grid network within the next couple of years, leading to a further increase of demand. Due to diesel dependency, electricity tariffs for the end consumer are relatively high.

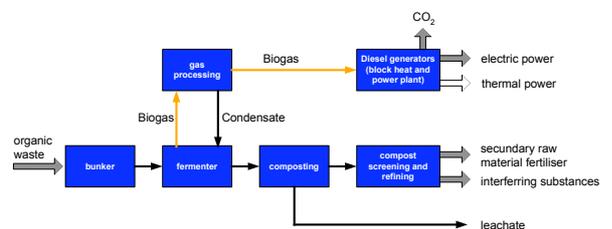


Figure 3: Market in Vietnam – market waste, typically having an organic content of over 80%, is suitable for fermentation

Figure 4: Waste analysis during data inventory by members of Can Tho University, Vietnam

Figure 5: Typical flow chart of a biogas plant

Figure 6: Current power generation by diesel fuel



Prevailing framework conditions of Phú Quốc Island are very favourable for the application of renewable energy processes using organic substrates. It would lead to an improved and cheaper energy supply and thus would represent the basis for further economic growth and improved standard of living. As side benefit, prevailing problems related to the current waste handling practices would be addressed, leading to considerable improvements of the local environmental conditions. The fertiliser produced as by-product of the biogas process could be applied for the extensive agricultural activity on the island and substitute imported mineral fertiliser. As a consequence, this integrated approach is in line with the development goals set by the local and regional governments and thus will receive support from relevant project stakeholders.

Both, the biogas and combustion process, are already widely applied in Vietnam, however mainly in small scale, often family sized or low-tech facilities. Middle sized or large plants are not yet implemented in Vietnam, which would be suitable to supply energy into an electricity grid network. As a consequence, there is a significant demand for European know-how and exchange of experiences relating to the planning and implementation of renewable energy projects. This project provides a contribution to this by addressing a vital prerequisite for any renewable energy project: the production of feasibility studies.

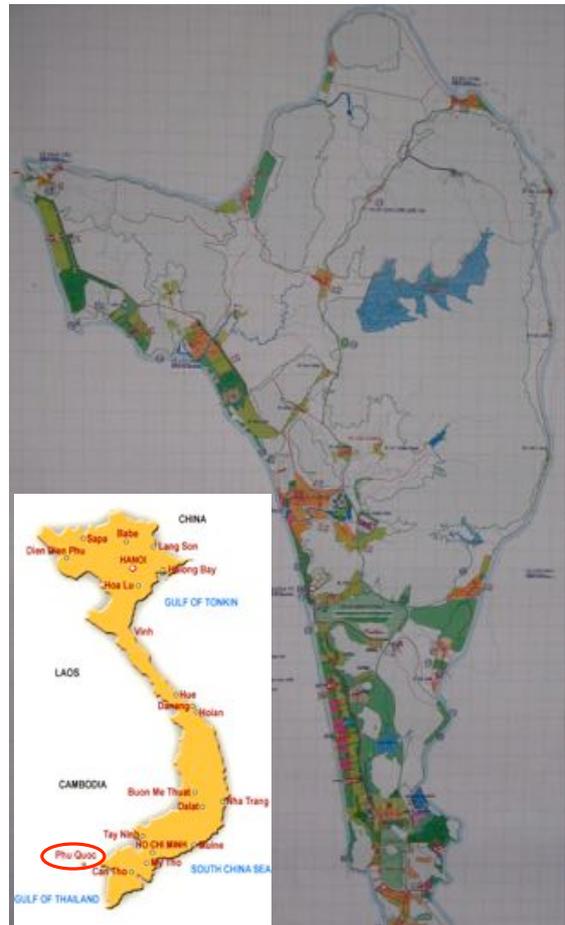


Figure 7: Masterplan for the development of Phú Quốc, S.R. Vietnam and location of the island

Overall objectives of RENEW

- to promote environmental protection at global and local level by supporting the implementation of renewable energy solutions
- to promote the installation of a renewable energy facility on Phú Quốc which can serve as demonstration plant for an appropriate solution for ASEAN countries and European know-how and technology
- to contribute to the cooperation between countries of the European Union and ASEAN member countries by transfer and exchange of knowledge and know-how in the field of renewable energy
- to promote the ASEAN Plan of Action for Energy cooperation 1999-2004
- to support the export of European products and services of the renewable energy sector into the ASEAN market.



RENEW- Consortium



Institut für Kreislaufwirtschaft GmbH (www.ikrw.de) /
Institute for Recycling and Environmental Protection, Bremen, Germany



Đại Học Cần Thơ (www.ctu.edu.vn) /
Can Tho University, Can Tho, Vietnam



Viện Năng Lượng (www.evn.com.vn/ie) /
Institute of Energy, Hanoi, Vietnam



ΑΡΙΣΤΟΤΕΛΕΙΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΕΣΣΑΛΟΝΙΚΗΣ (www.auth.gr) /
Aristotle University of Thessaloniki, Thessaloniki, Greece



Technische Universität Dresden (www.tu-dresden.de) /
Dresden University of Technology, Dresden, Germany



Handelshochschule Leipzig (www.hhl.de) /
Leipzig Graduate School of Management, Leipzig, Germany

Funding

The project is co-funded by the European Commission, under the EC-ASEAN Energy facility programme (EAEF).

The EC-ASEAN Energy facility (EAEF) is a programme of cooperation between the European Commission (EC) and the Association Southeast Asian Nations (ASEAN) to facilitate partnerships between ASEAN and European organisations in developing specific joint regional projects in the energy sector. The objectives are: 1) to increase the security of energy supply of ASEAN countries and indirectly of Europe; 2) to increase economic cooperation between European Union and ASEAN countries; 3) to improve environment of local and global levels; and 4) to facilitate the implementation of the ASEAN Plan of Action for Energy Cooperation 1999-2004, and subsequently its continuation for 2004-2009. EAEF was launched in March 2002 with duration of five years until February 2007.

The total value of the Programme is estimated to be 38.5 million EUR including the estimated individual project partner contributions in the amount of 16.5 million EUR. The commitment of the EC is fixed at 21.5 million EUR as grant. ACE makes in-kind contributions to the Programme at a counter value of 0.51 million EUR.

For further information: http://www.aseanenergy.org/eaef/index.php?view=what_eaef_is

Disclaimer:

This document has been produced with the financial assistance of the European Union. The contents of this document are the sole responsibility of the authors and can under no circumstances be regarded as reflecting the position of the European Union.