THE GLOBAL PEACE FESTIVAL EUROPE

- environmental group -

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Internationales
Forschungszentrum für Erneuerbare Energien e.V. (IFEED)

International Research Center for Renewable Energy
IFEED e.V. Kirchweg 4a, 31275 Lehrte-Sievershausen, Deutschland

www.ifeed.org

1. IFEED-Mission: "Serving Unserved People"

The International Research Center for Renewable Energy e.V. Germany (IFEED) was founded in 1999 and promotes the use of renewable energies and the implementation of new developments in this field. The function of the Center is research, application as well as consulting and education.

The main tasks are:

- The integrated use of all available energy resources in a location, especially in rural regions, and worldwide.
- The development of energy allocation and utilization management.
- Improvement of the social and economical structures in developing countries.
- The combination of food and energy production.
- The planning and implementation of projects.
- The organisation and realisation of workshops, seminars and events.

Realization: Elaboration of strategies for the sustainable development of rural regions, settlements and communes through establishing integrated energy farms and desert-solar-oases by means of solar-thermal power stations, food and energy plantations, improvement of economic, hygienic and social living conditions through creation of processing units and educational opportunities.

IFEED is also participating in three studies, whose content is, among other things, the available renewable energy resources of MENA, the growing need of electricity and water in EU-MENA until 2050 and the creation of an electricity network between the EU and MENA.

The sponsor of these studies is the federal ministry for environment, nature conservation and reactor security (BMU), and directing the studies is the German Center for Aviation and Astronautics (DLR).

The realisation period for the first two studies named "MED-CSP" and "TRANS-CSP" were conducted from 2004 to 2006. The study "AQUA-CSP", a study about the demand, the potential and the effects of solar sea water desalinization in MENA, is under way.

Collaboration: IFEED is closely working together with different national and international institutions and organizations such as "Club of Rome", FAO, EU, DLR, NEPAD, TREC.

November 2007

2. Clean Transportation and Sustainable Mobility for Development

Prof. Dr. Nasir El Bassam
International Research Centre for Renewable Energy (IFEED)
Kirchweg 4a, D-31275 Lehrte-Sievershausen, Germany
Tel.: +49-5302-1303, Mobile: +49-170-3254301
Fax: + +49-5302-1303 E-mail: info@ifeed.org
www.ifeed.org

Transport and mobility are now high on many agendas as countries and regions across the world seek to increase mobility and to lessen transport's impact on the environment and the climate.

Sustainable mobility and clean transportation comprise various factors:

Societal Factors: Safety, affordability, accessibility, consumer acceptance, perceived investment required in infrastructure.
Economic sustainability: Fuel cost impact on public expenditure, impact on private companies.
Environmental Sustainability: Improved fuel standards and vehicle technology to reduce emissions of GHG and mileage fuel consumption, recycling options.

Other key elements for developing mobility options for people and freight are power train technologies, mobility demand trends, public policy, etc.

The goals of clean transportation and sustainable mobility are attainable and we should work together to achieve better understanding of the challenges and options. It is clear that if we are to achieve sustainable mobility it will require contributions from every part of society throughout the world.

Intelligent polices, innovative vehicle technologies and the generation of alternative fuels will be the main 3 drivers. The policy, the companies and individuals are committed to making their contributions. The progress in all these issues in the last years is considerable.

The future strategies of clean transportation depend of the availability of fuels, appropriate engine technologies and their impact on climate and environment. The transition from fossil fuels into alternative and renewable fuels is already taking place along with new engines and will continue to grow. Leading car and vehicle manufactures have contributed and are contributing in creating the adequate technologies.

Progress has been achieved in implementation of legislative structures, directories, improving of engine efficiencies, fuel generation and marketing strategies in the USA, EU and other parts of the world.

Present and future Transportation Fuels
Commercially available
• Gasoline, diesel, CNG & LPG, CTL, bio ethanol, bio diesel, batteries (electric)
Not commercially available:
• Biogas, methanol, butane, GTL, BTL, DME, hydrogen

Worldwide present and projected biofuels contribution in the transportation sector

It is worthwhile to mention that 80% of the newly released cars (2007) in Brazil are flex-fuel vehicles, running with pure ethanol or with gasoline and ethanol.

Biofuels

Fuel supply from biofuels implies a complex analysis of the local natural and environmental conditions. Perspectives of increasing and improving of biomass productivity, via plant breeding, gene- and biotechnologies and optimising management practices of conventional and new crops as well as new species including algae and micro organisms, improving of conversion technologies and engine efficiencies are considerable. The potential of biofuels share in total fuel consumption and could amount up to 20% in long-term time scales. This would have positive effects on income of the farmers, poverty alleviation, the mitigation of GHG and the environment as well as food security. This would also have positive effects in Developing Countries. The companies BASF (Germany) and Monsanto (USA)has reached an agreement in March 2007on collaboration aimed at developing higher-yielding crops that are more tolerant to adverse environmental conditions such as drought. As first stage, $1.5 billion has been devoted to the joint pipeline collaboration.

Around 35% of the world-wide existing areas of arable land are not under cultivation, currently 4 Mio ha in the EU cannot be used for food production due to the "Overproduction Set Aside Policy". Food production corresponds to 140% of the needs of world population. The OECD member states are spending $1 billion every day for supporting their farmers, resulting in exporting of cheap food commodities into Developing Countries which inhibits the development of their agriculture, decreasing the income of poor farmers and accelerating depopulation of rural areas.

Tall grasses, i.e, Miscantus, Arundo donax, Bamboo, Eucalyptus, Acacia, Salicornia, Sweet and Fibre Sorghum are some of most promising energy crop candidates in the future. They are naturally high productive, the majority are perennial and need less chemicals and water. They can be converted to a wide variety of biofuels.

Integrated food and energy crops farm, Braunschweig, Germany

Algae grow rapidly, are rich in vegetable oil and can be cultivated in ponds of seawater, minimising the use of fertile land and fresh water. Algae can double its mass several times a day and produce at least 15 times more oil per hectare than alternatives such as rape, oil palm, Soya or Jatropha. Facilities can be built on coastal land unsuitable for conventional agriculture. In the long term, algae cultivation facilities also have the potential to absorb waste carbon dioxide directly from industrial facilities such as power plants. Oil companies, DOE (USA) and other institutions are intensifying research activities in this field. Shell and Hawaii-based algal biofuel company HR Biopetroleum have formed a joint venture to grow marine algae for conversion into biodiesel.

Some companies have far surpassed the 15,000 gallon per acre accepted benchmark.
In fact, one company can produce 180,000 gallons of biodiesel every year from just one acre of algae. That comes to about 4,000 barrels, at a cost of $25 per barrel or $.59 per gallon

A farm in Southern Japan grows chlorella in circular pond and New Ambadi farm in India grows spirulina in raceway style ponds.

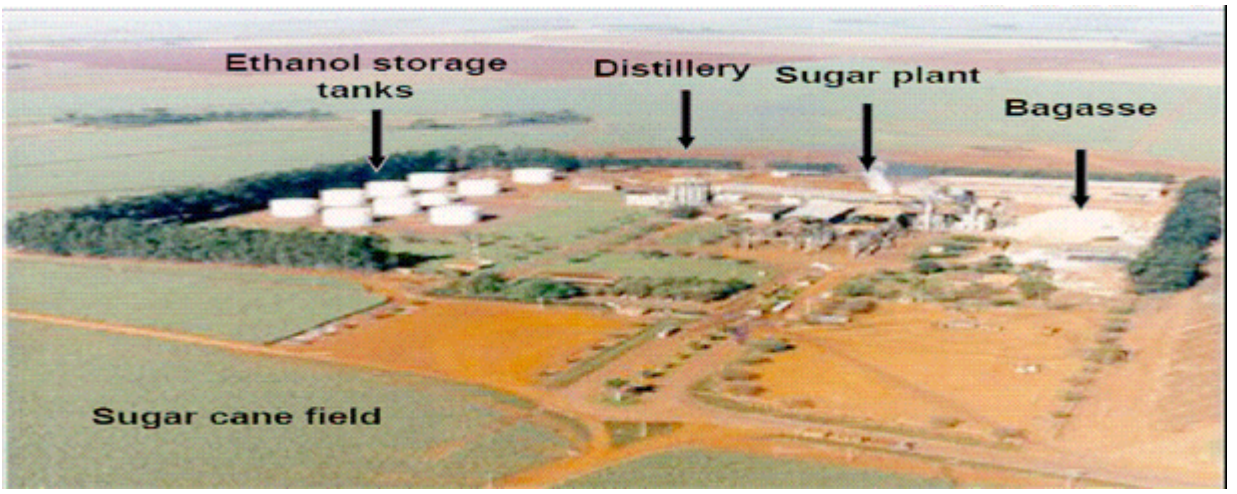
It should be clearly stated that deforestation or shifting large areas for growing of energy crops is not only unnecessary but also cannot be tolerated. Up to 10 % of the arable land, (in Brazil the current land under sugar cane cultivation for sugar and ethanol production amounts to less than 4%), could meet the requirement of biofuel production without influencing the worldwide food security. This will boot the food production capacities especially in Developing Countries and contribute to poverty alleviation.

Conversion Efficiencies of Biofuels:

Field to processing plants: Very positive

Field to wheel: Almost positive

The improvement of these efficiencies is underlying continued efforts and will achieve great successes in the future. The integration of renewable energy sources in the conversion processes will accelerate this improvement. The whole plant use in the ethanol production in Brazil is a success story in this context.



Typical Sugar & Ethanol Plant in Brazil

Power Generation 5 million kWh from Biogas in Jühnde which could also fuel electric cars

Vehicle and Engine Types:

Combustion and Combined Combustion Systems:

Types of engines are: Hybrid, flex-fuel for gasoline, diesel, ethanol, and bio-diesel as well as well as 100% electric power trains.

Total Flex Technology (alkohol or gasoline), Brazil

Major car companies i.e. GM, Volkswagen, and Toyota are intensifying their efforts to improve all-round efficiencies and to develop alternative engines for various fuels and purposes. General Motors Corp. will introduce 14 new or significantly revised power trains in the 2008 model year - including five 1.0L to 2.0L small-displacement engine variants - with a focus on saving fuel and improving performance in GM's cars and trucks. For 2008, GM's power train lineup includes hybrids, clean diesels and fuel-saving technologies such as Active Fuel Management, direct injection, variable valve timing, six-speed transmissions and flexfuel options for consumers.

German industries are joining their forces to develop high-performance batteries for stationary and mobile operation. Volkswagen is one of the initiators of this alliance with a two-door city vehicle which offers more space and a four-door microvan with maximum variability and zero emissions thanks to an electric engine and fuel cells.

VW zero emission vehicles
Toyota is very successful with Lexus and Prius hybrid cars.

Air New Zealand announced plans to mount the first test flight of a commercial airliner partially powered by biofuel in 2008.

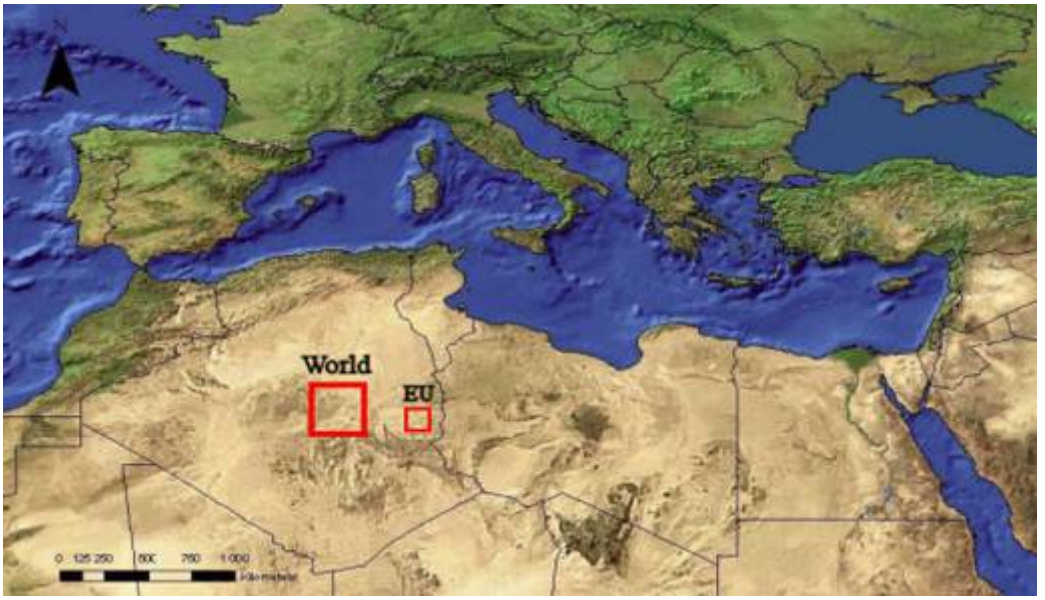
Boeing 747 of Air New Zealand will be powered by ethanol in 2008

Electric vehicles along with hybrid and flex-fuel power trains represent the best option for the future because they are more efficient even than hydrogen-powered vehicles. Along with a high degree of efficiency, electricity can be generated from renewable energy resources such as solar, wind and hydro power.

Electricity generation

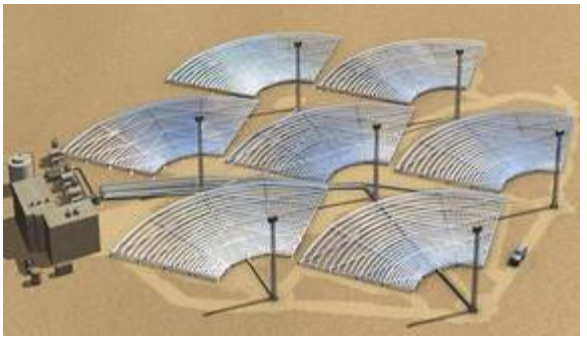
Electricity could be produced in deserts or in dry and hot regions by means of Concentrated Solar Power (CSP), Photovoltaic (PV), and Wind-power worldwide.

Global power requirements could be generated from 1% of the desert areas by using CSP technologies.



Proportion of desert area required to produce global electricity demand

The following images demonstrate some existing, under construction and projected CSP and PV power plants worldwide.

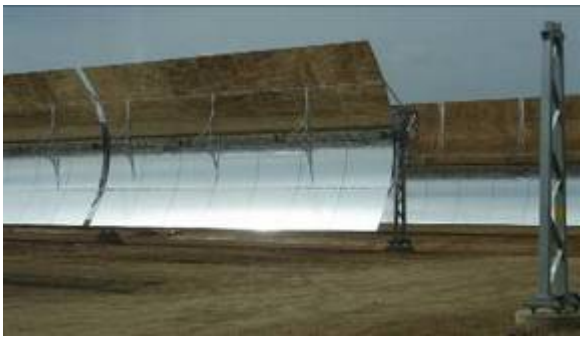


Projection of CSP power plant

SEGS 350 MW, California

Nevada Solar I, 64 MW

Planta Solar 10 MW, Sevilla



Andasol 2 x 50 MW, Guadix

Dish/engine systems, Umuwa

PV-power generation plant

Conclusion

The future strategies of clean transportation and sustainable mobility depend on the availability of fuels, appropriate engine technologies and their impact on climate and environment. The process of transition from fossil fuels into alternative and renewable fuels is already taking place along with the development of new engines and power train technologies and will continue to grow. Leading car and vehicle manufactures and alternative fuel producers have contributed and are contributing in creating the necessary mainstreams.

The goals of clean transportation and sustainable mobility are attainable and we should work together to achieve better understanding of the challenges and options. It is clear that if we are to achieve sustainable mobility it will require contributions from every part of society throughout the world.

Transportation fuels will never run out. The targets of clean transportation and sustainable mobility will be achieved with intelligent policies, along with the innovation capability of our scientists, engineers and technicians.

Let us act while we still have the choices.

El Bassam
19 December 2007

END

3. Energy from biomass as a chance for the renaissance of the agriculture

Energy and fuels out of biomass contribute effectively to the renaissance of agriculture and offer chances to alleviate poverty and avoidance of hunger in developing countries. Headlines such as "experts fear food and water shortage through the organic gas boom", are in a journalistic sense, very effective but misleading. They misconstrue the actual causes of the price increases and the hunger in the world.

(Press1) - 2nd of May 2008 – anyone who converts potential foodstuffs into biofuels injures, in the opinion of the UN expert Jean Ziegler, the human right to nourishment.

In his speech at the Europe Africa Business Summit 2008, 28th - 30th of April, Hamburg (http://www.eabs.info), Prof. Dr. Nasir El Bassam, director of the international research center for renewable energies e. V. Germany (IFEED), warned against the twisting of ecological facts. "The key to future capable and durable rural regions lies in the provision of sufficient, environmentally friendly energy", said Prof. Dr. El Bassam in his speech. According to investigations by his institute, renewable energies offer the decisive chance to the solution of subordinate problems. With the use of such energy, essential provision areas can be expanded: Increase of the food production; profits, preparing and distribution of water; light, warmth, warm meals, mobility, education and employment, transportation of goods and persons. "We must look more exactly and objectively in analyzing the situation, because everyone has a large responsibility" said Prof. El Bassam. "Worldwide there is no scarcity of foodstuffs, and food production amounts to, at present, 130% of the world requirement."

In order to reduce the surpluses, ten years ago the EU introduced the 'Set-aside policy'. The volume of the set-aside areas in the EU in 2005 was about 5.4 million ha and 2007 in 3.8 million ha. In Germany, the annexed area of biomass for the production of heat, electric and organic fuels out of biodiesel, biogas and bioethanol is approximately 1.7 million ha, which amounts to only 0.5 millions of ha more than the 'Set-aside' areas. Therefore, food deficiency is not the cause for price increases of foodstuffs. The global finance crisis and speculations in the food area are authoritatively responsible for the price increases in resent times.

The agricultural area in Germany amounts to nearly 17 millions ha. For the production of biofuels to manufacture ethanol in Brazil, no more than 2% of the agricultural area is cultivated. The EU, USA, Japan and Canada subsidize the agriculture in its countries daily with the equivalent of 1 billion U.S. dollars. The farmers in the developing countries cannot compete with this. Moreover, the industrial nations impose high import taxes on agricultural products from these countries. The subsidized cheap agricultural products from the industrial nations lead the small farmers in Africa, Asia and Latin America to impoverishment. Poverty and hunger are a result of economic, social and political mismanagements and disorders, both nationally and internationally.

4. Waste Not, Want Not -Who Wants our Waste?

E-waste, animal waste, nuclear waste, mining waste, chemical waste, industrial waste, domestic waste, the list goes on and on. Heavy metals, unburned toxic chemicals, new pollutants such as dioxins and furans, fugitive emissions, incinerator ash – a motley crew that causes controversy when waste to energy and incinerators are brought to the table.

As reported at the World Future Energy Summit 2008 by Nickolas Themelis of Columbia University, the GHG (greenhouse gas) emissions of global land-filling generates up to 50 million tonnes of methane, 90% of which escapes into the atmosphere. Open burning of other biomass contributes another 40 million tonnes of methane.[1]

Environmentally sound management of waste is coming to the fore with increased waste legislation[2], global regulation of toxic waste management[3] and the net value of alternative energy-production cycles, such as nuclear and biomass by-products, coming under increased scrutiny.

According to Juan Unda, President of Zabalgarbi, Waste to Energy produces electricity “with less environmental impact than the majority of energy sources available nowadays. The public doesn’t consider it as a renewable energy but that of out-dated incineration methods from the 1970’s and 80’s”.

When asked about the modern dangers of waste to energy recovery, Prof. Dr. Nasir El Bassam, President of the Board and Director, International Research Centre for Renewable Energy (IFEED), says “we need to recognize that transformation of waste to energy is one of the best options to make use of waste and to get rid of waste. Modern methods of purification means there is no emission of toxic waste.”

With the Kyoto clock ticking, industries are all vying for different emission standards. However, Brian Dooley, Director of Marketing, EnerTech Environmental, are hoping that Copenhagen 2009 goes a step further than setting emission limits and regulating carbon trading and hopes the global community will ‘directly encourage investment in environmentally sustainable technology development and transfer’.

What remains to be seen is whether the global ban on exporting hazardous waste to the poorer developing world will be fully ratified, forcing waste producers to deal with their own toxins.[4] According to Okechukwu Ibeanu, a special rapporteur of the UN Human Rights Council, poverty still fuels the developing world to accept mountains of toxic waste despite health and environmental risks and inadequate waste management facilities. [5]

All these issues and more will be examined in the Waste to Energy technical stream at the World Future Energy Summit, Abu Dhabi, January 19-21, 2009. The summit will focus on sustainable solutions to manage resources and energy recovery in the future covering both new technologies and case studies of implementations that reduce or eliminate waste that would otherwise have gone to landfill.

Speakers will include Dr Marc Kapteijn, Commercial Director, City of Amsterdam Waste and Energy Company and Kevin Bolin, President & CEO, EnerTech Environmental Inc. confirmed[6]

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