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Renewable Energy.

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Renewable Energy is that stream of energy which originates and flow from the sun. All life on earth is dependant from this energy. It maintains the temperature and is the force of all biological life, because the plants via the sunlight (photosynthesis) can grow and be the source of food for the other species on earth.

When the energy from the sun reaches the earth, it is transformed to biomass, wind power, hydropower, solar power etc. These different sources of renewable's can be used to produce some of the energy we need.

The use of the natural warmth from the inner of the earth (geothermal energy) is also categorized as a renewable energy source.

Renewable energy is CO₂-neutral. Its use does not course emission of the greenhouse gasses to the atmosphere, which the use of fossil energy sources does.

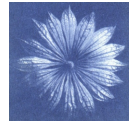
Please take note at our consumption of energy. From 1973 until 2006 the world's energy consumption has risen from 4.672 million ton of oil equivalent to 8.084 million ton of oil equivalent. Almost a doubling, and the by far, the greater part of this was covered by fossil fuels.

Such a development courses more and more concern because the dependence on imported fossil fuels put us at the mercy of insecure supplies and unpredictable variations in energy prices, like the one we witnessed last year.

Fortunately, and especially within the last decade, focus has been more and more on the renewable energy sources. Not that we can substitute fossil energy with renewable energy, but we certainly can bend a trend.

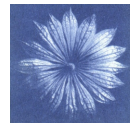
In 2007, more than \$100 billion was invested in new renewable energy capacity, manufacturing plants, and research and development—a true global milestone. Yet perceptions lag behind the reality of renewable energy because change has been so rapid in recent years.

✕ **Renewable electricity generation capacity** reached an estimated 240 gigawatts (GW) worldwide in 2007, an increase of 50 percent over 2004. Renewables represent 5 percent of global power capacity and 3.4 percent of global power generation. (Figures exclude large hydropower, which itself was 15



percent of global power generation.)

- ✗ Renewable energy generated as much **electric power** worldwide in 2006 as one-quarter of the world's nuclear power plants, not counting large hydropower. (And more than nuclear counting large hydropower.)
- ✗ The largest component of renewables generation capacity is **wind power**, which grew by 28 percent worldwide in 2007 to reach an estimated 95 GW. Annual capacity additions increased even more: 40 percent higher in 2007 compared to 2006.
- ✗ The fastest growing energy technology in the world is **grid-connected solar photovoltaics (PV)**, with 50 percent annual increases in cumulative installed capacity in both 2006 and 2007, to an estimated 7.7 GW. This translates into 1.5 million homes with rooftop solar PV feeding into the grid worldwide.
- ✗ Rooftop **solar heat collectors** provide hot water to nearly 50 million households worldwide, and space heating to a growing number of homes. Existing solar hot water/heating capacity increased by 19 percent in 2006 to reach 105 gigawatts-thermal (GWth) globally.
- ✗ **Biomass and geothermal energy** are commonly employed for both power and heating, with recent increases in a number of countries, including uses for district heating. More than 2 million groundsource heat pumps are used in 30 countries for building heating and cooling.
- ✗ Production of **biofuels** (ethanol and biodiesel) exceeded an estimated 53 billion liters in 2007, up 43 percent from 2005. Ethanol production in 2007 represented about 4 percent of the 1,300 billion liters of gasoline consumed globally. Annual biodiesel production increased by more than 50 percent in 2006.
- ✗ **Renewable energy**, especially small hydropower, biomass, and solar PV, provides electricity, heat, motive power, and water pumping for tens of millions

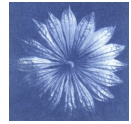


of people in rural areas of developing countries, serving agriculture, small industry, homes, schools, and community needs. Twenty-five million households cook and light their homes with biogas, and 2.5 million households use solar lighting systems.

✘ **Developing countries** as a group have more than 40 percent of existing renewable power capacity, more than 70 percent of existing solar hot water capacity, and 45 percent of biofuels production. Including all these markets, an estimated \$71 billion was invested in new renewable power and heating capacity worldwide in 2007 (excluding large hydropower), of which 47 percent was for wind power and 30 percent was for solar PV. Investment in large hydropower was an additional \$15–20 billion.

Here we have an overview of the countries which made the largest investments in renewable, as well as an overview of the ranking of the existing capacity

Top Five Countries	#1	#2	#3	#4	#5
Annual amounts for 2006					
New capacity investment:	Germany	China	United States	Spain	Japan
Wind power added:	United States	Germany	India	Spain	
Solar PV added (grid-tied):	Germany	Japan	United States	Spain	South Korea
Solar hot water added:	China	Germany	Turkey	India	Austria
Ethanol production:	United States	Brazil	China	Germany	Spain
Biodiesel production:	Germany	United States	France	Italy	Czech Republic
Existing capacity as of 2006					
Renewables power capacity:	China	Germany	United States	Spain	India
Small hydro:	China	Japan	United States	Italy	Brazil
Wind power:	Germany	Spain	United States	India	Denmark



Biomass power: Germany/Sweden/Finland	United States	Brazil	Philippines	
Geothermal power: Indonesia/Italy	United States	Philippines	Mexico	
Solar PV (grid-connected): Netherlands/Italy	Germany	Japan	United States	Spain
Solar hot water: Israel	China	Turkey	Germany	Japan

Even though there has been a substantial growth in the use of renewable energy over the last decade, the analysis of the renewable energy share of the total energy consumption shows that renewable sources could have been utilized to a larger extent.

In 1997 the EU formulated the target that the renewable energy should cover 12% of the total energy need within the EU, in year 2010.

Today it is clear that this target as such shall not be met.

According to the EU Commission a major obstacle has been the lack of legally binding goals and weakness in the common EU rules.

In a new schedule for the use of renewable energy, proposed March 2007, the EU-Commission suggest as a mandatory target that minimum 20% of the total energy consumption should be covered by the use of renewable energy in 2020.

Further to this the Commission suggest that minimum 10% of all fuel should be covered by bio-fuel, both ethanol and biodiesel.

To secure the fulfillment of this goal, the Commission shall suggest a new set of EU laws for the promotion and use of renewable energy which commits the member states for the fulfillment of this goal.

The importance of reaching this goal is obvious.

-There will be an annual reduction of emission of CO₂ of between 600 and 900 million tons

-There will be annual savings of 250 million tons of oil equivalents, whereof 200 million shall represent savings on the energy import.

It is good for our climate

It is good for our economy.

With the latest energy plan as approved by the Region of Calabria, certainly Calabria is well ahead, helping achieving this European Goal.

We, in the Baltic Energy Group are dedicated to assist with intelligent solutions in the areas of Wind, Biomass and Solar Energy.

Baltic Energy Group

