ERSTE GROUP

Renewable energy

Close to the tipping point - February 4, 2009

A ticking time bomb: Our current global energy mix (80% fossil fuels) is leading to a dead-end

EU 20% renewables target: We estimate that EUR 1,100bn investments will be required to reach this target by 2020

Key drivers for renewables: Increasing returns, energy independence and job creation

Top picks: We like Andritz as leading supplier of hydro power technology, Verbund as a strong hydro energy play and CEZ due to the expected recovery of electricity prices

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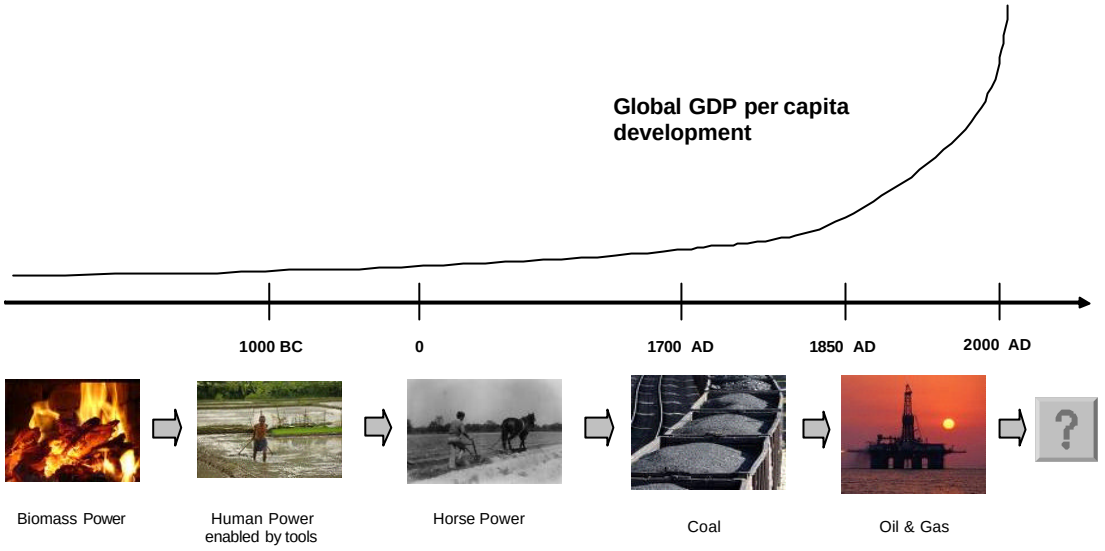
Executive summary

Economic development closely linked to quality of fuels

Human economic development (expressed as GDP growth per capita) is closely tied to humanity's ability to replace human power with other sorts of power. During this development, humans gradually switched to higher-grade fuels. It is clearly no coincidence that global per capita GDP growth took off (around 1850) as soon as humans extensively utilized fossil fuels.

Historic GDP development and fuel development



Source: Erste Group Research

Issues with our current energy system

Despite the advantages fossil fuels have brought mankind, there are several disadvantages attached. Recent developments - with prices for major primary energy sources going from boom to bust and significant supply disruptions due to political issues - have revealed the weakness of the energy system the world economy relies on.

(1) **Ecological damage** – 28,002 Mt of CO_2 in 2006)[1];

(2) **Limited supply** – supply of fossil fuels is limited (50 – 200 years of reserves);

(3) **Diminishing returns** – due to rising complexity to tap fossil fuel reservoirs;

(4) **Geographical concentration** – leads to transport costs and rising political tensions.

Renewables would substantially improve our energy system

Almost too good to be true, renewables would remove all of the major shortcomings of our current system:

(1) **Reduction of CO_2 emissions** – renewables generate no additional CO_2 emissions;

(2) **Unlimited supply** – hydro, wind and solar power are unlimited in their supply;

(3) **Increasing returns** – technological progress reduces costs for renewable energy;

(4) **Geographical diversification** – nearly every region on earth is well suited for at least one renewable energy source, either biomass, hydro, wind, geothermal or solar power.

Key political and economic drivers for renewables

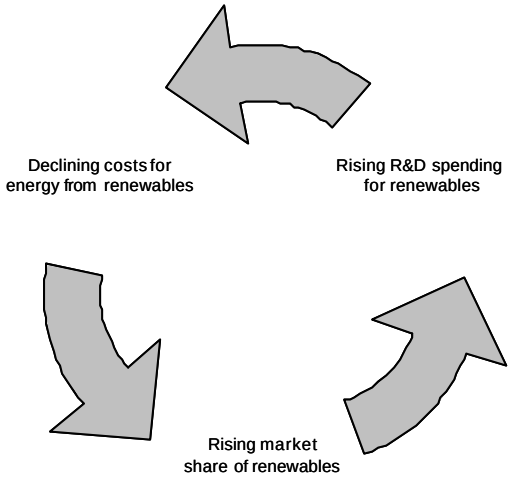
We believe that the following economic and political considerations will support dynamic development of renewables in the years ahead:

- **Job creation** – replacement of imported fossil fuels with energy from renewables creates jobs;
- **Energy independence** – the recent gas row between Russia, Ukraine and the EU has reminded politicians of the importance of energy independence;

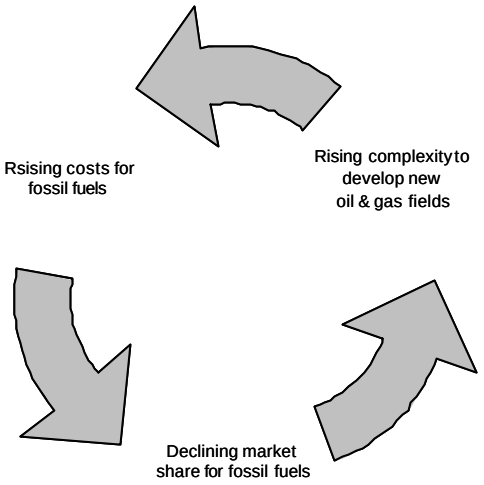
[1] IEA Key Energy Statistics 2008

- **Increasing returns** – rising R&D spending will lead to declining costs for renewables, which in turn will increase market shares, thus supporting even higher R&D spending.

Renewables – increasing returns



Fossil fuels – diminishing returns

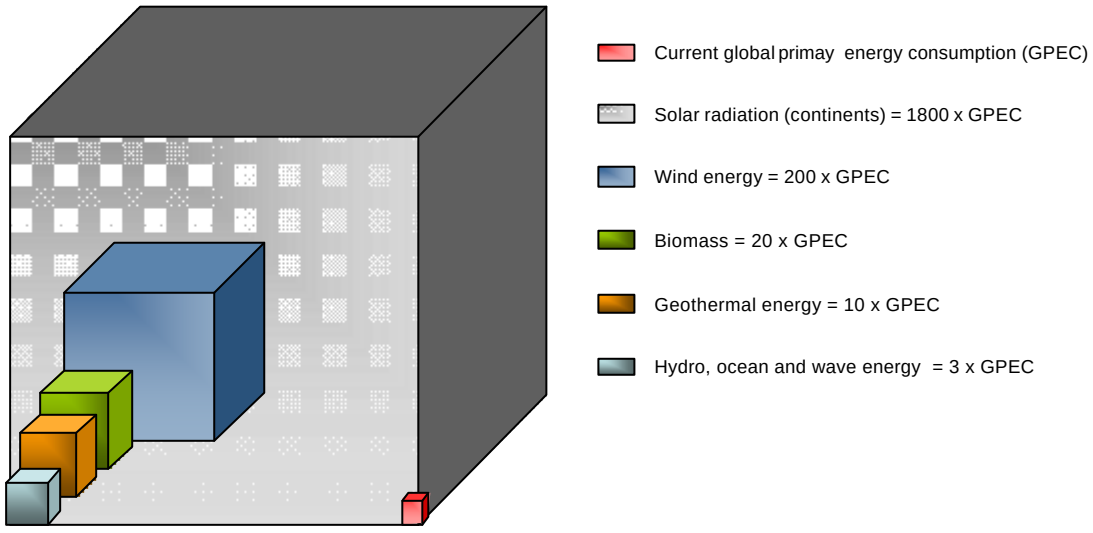


Source: Erste Group Research

Renewables could cover global energy demand several times over

The key question is: Can renewable energy sources like solar, wind and hydro power cover the global demand for energy? The answer is a resounding yes. However, so far, we lack the technologies to economically harvest this potential.

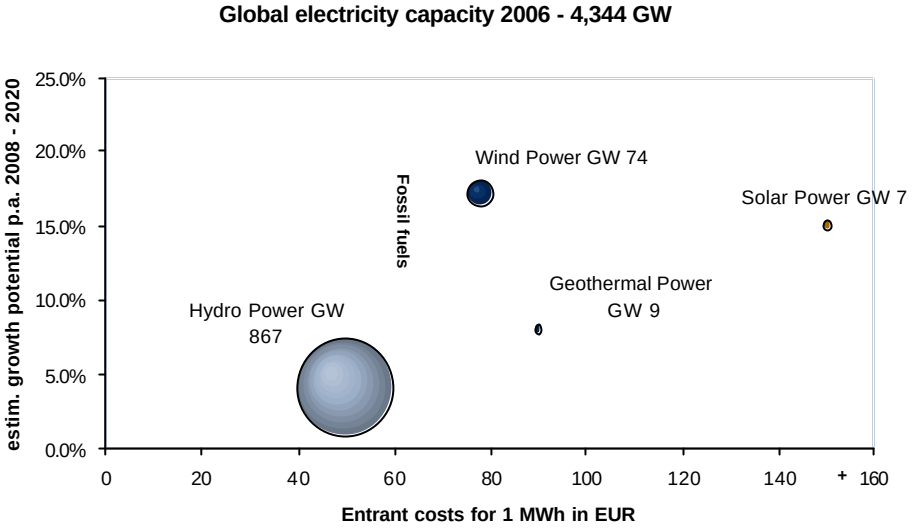
Physical potential of renewable energies



Source: IRENA, Deutsches Zentrum für Luft- und Raumfahrt

The graph below gives a short overview regarding the current contribution of renewable energy sources to our global electricity demand; furthermore, we have calculated the average costs of generating 1 MWh by different technologies and energy sources. The benchmark is the current cost for the generation of 1 MWh from fossil fuels (gas or coal), which currently is EUR 55-65.

Competitive position and relevance of renewables



Source: Erste Group Research
assuming EUR 12.1 per ton of CO_2;

The graph shows that electricity generated by **hydro power** is already cheaper compared to power generated with fossil fuels. Electricity from hydro power also has two major qualitative advantages: (1) it is highly predictable; (2) run-of-river plants generate electricity 24h a day. We therefore expect that hydro power will play an increasingly important role in the global energy mix in the near future. Since just 34% of the hydro potential is developed, plenty of opportunities remain for hydro power growth.

The graph also shows that electricity from **wind power** is already on the verge of being competitive. However, wind power has two major quality drawbacks: (1) it is difficult to predict; (2) depending on the site quality, windmills generate electricity a maximum of 6-7h per day. Thus, without major upgrades in the grids or a storage medium, the share of wind power in an energy mix is restricted. Nevertheless, the growth potential is substantial and countries like Denmark have already proven that extensive use of wind power (+20%) can work.

As of now, **solar power** is the most expensive renewable energy source. Thus, this industry will have to work very hard over the next decade to become cost competitive. To a certain extent, solar power shares the quality issues of wind power: (1) when the sun will shine is somewhat unpredictable; (2) it cannot generate energy during the night, so some kind of storage medium is required. A major qualitative advantage of solar power is ability to produce heat and electricity. Thus, solar power has tremendous potential, but will remain uncompetitive for the next couple of years.

For the time being, **geothermal power** is also not cost competitive. However, we believe that geothermal power has a very bright future for the following reasons: (1) with the use of enhanced technology, geothermal power can be used in more and more locations; (2) it can supply heat & electricity; (3) it can be used very predictably, 24h a day.

Renewables and the financial crisis

Investments in renewables perfect political vehicle to fight recession

Due to the substantial potential to create new sustainable jobs, especially in Europe and North America (around 1mn people are already employed globally in the hydro, wind and solar power industries), renewables will play a major role in government support to fight the global economic crisis and in turn drive energy independence. It is expected that the new US administration will double US renewables capacities within three years, from the current 24 GW to 48 GW, thereof around 20 GW are expected to be invested in wind power. We estimate that just the necessary investments to add 20 GW of wind power would translate into an investment volume of USD 36.4bn by 2011.

Right incentives should mobilize capital

We estimate that, in order to reach the 20% renewables target, EU member states will have to invest the tremendous amount of EUR 1,100bn (details enclosed in Appendix I) in new renewables capacity. We believe that, if EU governments were to create the right framework (including the following),

- Feed-in tariff - guaranteeing investors a stable return;
- Renewables targets - forcing utilities and clients to purchase renewables electricity;
- Gradually lowering feed-in tariffs - forcing industry to cut costs and improve efficiency.

Then it should be possible to mobilize the capital required. Under these circumstances, bond investors can tap a new market that offers stable, safe yields - an attribute that is highly favored in the current turbulent markets. Another requirement to provide a level playing field for energy from renewables is the modernization of grids.

Recommendation and target price overview

30/01/2009	Rep. Curr.	Mcap	Price		Recommendation	Performance in %			
Company		(EURmn)	Current (LC)	Target		1M	3M	6M	12M
Agrana	EUR	642	45.2	44.0	Hold	8.6%	-7.1%	-21.1%	-42.6%
Andritz	EUR	1,198	23.3	37.0	Buy	0.6%	-13.9%	-46.9%	-42.0%
A-TEC	EUR	162	6.15	6.2	Hold	-23.4%	-50.3%	-50.3%	-67.6%
CEZ	CK	14,573	753.5	1,230.0	Buy	5.7%	-14.1%	-40.5%	-35.2%
EVN	EUR	1,982	12.12	18.9	Buy	8.4%	-18.9%	-37.4%	-50.0%
PannErgy	HUF	49	700	793.0	Hold	-4.7%	-13.1%	-42.8%	-55.1%
Polish Energy Partners	PLN	404	21.47	n.r.	n.r.	13.8%	-19.6%	-18.9%	-27.1%
Verbund	EUR	9,237	29.97	43.0	Buy	-1.0%	-23.5%	-42.7%	-38.0%

Source: Erste Group estimates, Prices as of Jan. 30, 2009

Agrana

Agrana is one of the leading sugar and starch producers in CEE and world leader in fruit preperations for the diary industry. Agrana built the first industrial-scale bioethanol production facility in Austria with a capacity of up to 240,000m³ a year at a total investment volume of EUR 125mn. Revenues should reach at least EUR 100mn from the bioethanol sales this fiscal year.

Andritz

We confirm our Buy recommendation for **Andritz**. Andritz is a leading supplier (world no. 2) of hydro power technology. Due to its high order backlog (EUR 4.5bn) and rising sales exposure to the renewables industry (around 50% for 2009e), we believe that Andritz is in a good position to weather the storm.

A-TEC

We confirm our Hold recommendation for **A-TEC**. Via its plant construction division, A-TEC has interesting exposure to the waste to energy market. Additionally, the machine tools division supplies the wind turbine industry with specialized machinery. We remain cautious with regards to A-TEC's copper recycling and drive technology divisions.

CEZ

We upgrade our recommendation to Buy for **CEZ**. Despite the decreasing CO_2 permit price (which is, however, not favorable for any "green projects"), CEZ is also now considering a move into the renewable generation segment; mainly wind power could gain some 3% in its product portfolio. The ongoing financial crisis is also significantly affecting commodity markets, including electricity prices – from the record level of EUR 80-90/MWh in June/July, the price has dropped to below EUR 50 per MWh. Given the fact that CEZ already sold 75% of its installed capacity for 2009 for an average price of EUR 63-64/MWh (some 17% above the level seen in 2008), the negative impact of the current situation will be visible only as of 2010, as contracts will mainly be traded and sold during this year. However, our long-term sustainable electricity price remains at EUR 75-80/MWh.

EVN

Through its subsidiary naturkraft, EVN currently operates 68 hydropower plants (including five storage plants) and 63 windmills. In addition, EVN has electricity sourcing rights for the Melk, Greifenstein and Freudenau power stations on the Danube. With 44 heating plants, EVN is Austria's largest supplier of heating generated by using biomass. By 2009, the company will

complete the refurbishing of 11 small-scale hydropower plants in Macedonia. In addition, the company is currently screening the potential for wind and photovoltaic projects in Southeastern Europe. EVN envisages the raising of its share of renewable energy in overall production to one third by 2010.

PannErgy We confirm our Hold confirmation on **PannErgy**, which has successfully engaged in two heating plant development projects. The company has now contracted with 30 towns for geothermal energy cooperation. We put together three detailed models for different scenarios (i) the company remains a plastics producer (ii) it build heating plants without grants, and (iii) it builds heating plants with subsidies.

Polish Energy Partners **Polish Energy Partners** (PEP) is a company specializing in the development, implementation and management of electricity and heat generation projects. In the segment of green energy, the company develops wind farm projects for sale during their first stage of development. It also builds ready-to-use wind farms in order to provide electricity for sale.

Verbund We derive a new target price of EUR 43.0 and therefore reiterate our Buy recommendation for **Verbund**. We have significantly lowered our assumptions regarding electricity prices. This applies also for our terminal value assumptions, which now include electricity prices for baseload and peakload of EUR 65 and EUR 90/MWh, respectively, instead of EUR 75 and EUR 110/MWh, respectively. We have also reduced the terminal value growth rate to 2.0% (from 2.5%). However, this growth rate should still reflect the enormous investment program of Verbund (EUR 6.7bn until 2015), which will fully pay off beyond 2015.

Global energy overview

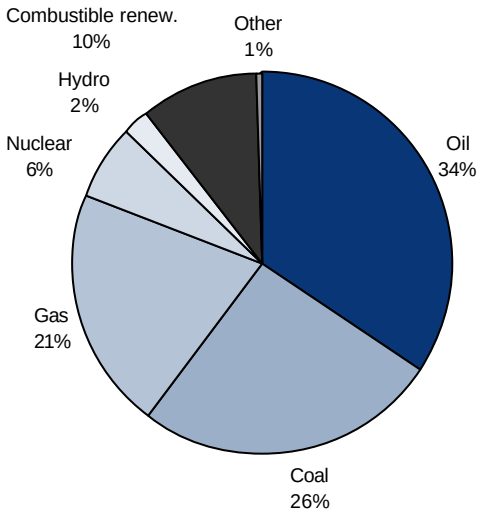
Current global energy situation

Global energy monopoly for fossil fuels (supplying 81%)

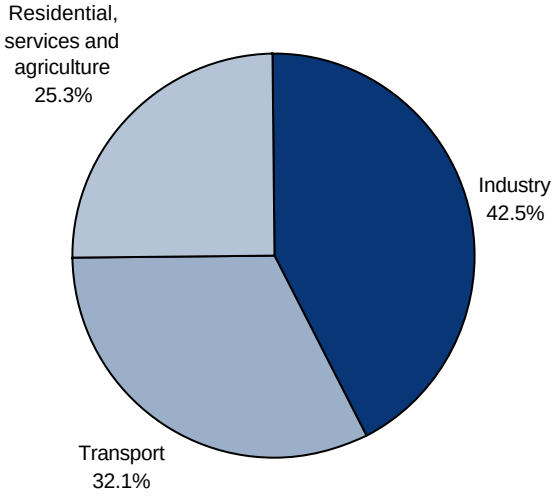
In general, it makes sense to distinguish between the overall global energy demand and the global electricity demand. When looking at the global energy supply in total, 'technical' renewables like hydropower, wind, solar and geothermal power are dwarfs. As of 2006, they contributed just 2.8% to our global energy supply. Combustible renewables (wood) and waste contributed 10.1%. Since 1980, global energy demand has risen by 38.4%, which translates into a CAGR of 1.6%. Sector-wise, industry is the largest consumer, with a share of 42.5% of annual energy production in 2006.

Global primary energy demand 2006

2006 energy consumption by fuel – 11,730 Mtoe [2]



2006 energy consumption by sector – 11,730 Mtoe



Source: IEA WEO 2008

This picture confirms that fossil fuels enjoy a global energy monopoly (supplying around 80%).

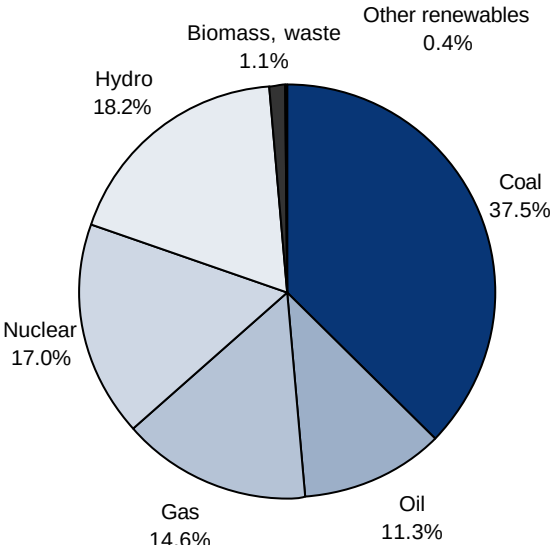
For electricity supply, renewables are gaining importance

Looking at the global electricity supply, renewables are gaining importance. However, the picture clearly shows that hydropower is by far the most important renewable energy source we currently have. Nevertheless, in total, renewable energy sources supplied 18.3% of the global electricity in 2006.

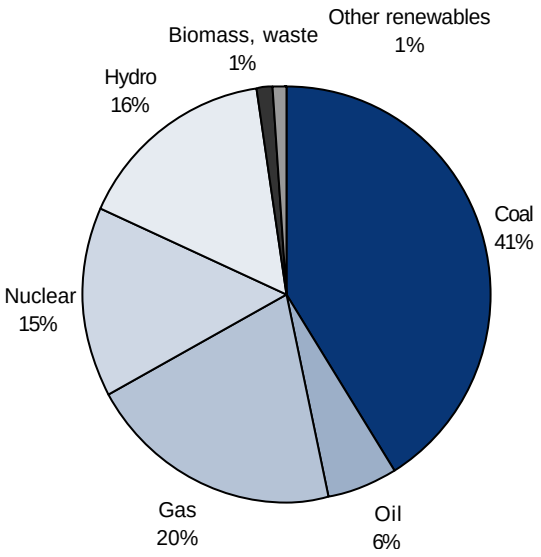
[2] In Appendix III we enclose an energy unit conversion table

Global electricity supply 1990 vs. 2006

1990 global electricity generation by fuel - 11,811 TWh



2006 global electricity generation by fuel - 18,921 TWh



Source: IEA Key Energy Statistics 2008

Global energy demand set to grow to 17,014 Mtoe by 2030

In a reference scenario, the IEA expects global energy demand to grow by 1.6% annually to 17,014 Mtoe by 2030. Despite substantial growth of 7.2% p.a., renewables other than Hydro and Biomass / waste would still supply just 2% of our global energy demand, rising from 66 Mtoe in 2006 to 350 Mtoe in 2030.

Development primary energy demand

	Energy demand in Mtoe					Shares (%)		Growth (% p.a.)
Energy Source	**2006**	**2015**	**2020**	**2025**	**2030**	**2006**	**2030**	**2006 -2030**
Coal	3,053	4,023	4,374	4,719	4,908	26.0	28.8	2.0
Oil	4,029	4,525	4,744	4,938	5,109	34.3	30.0	1.0
Gas	2,407	2,903	3,130	3,384	3,670	20.5	21.6	1.8
Nuclear	728	817	842	886	901	6.2	5.3	0.9
Hydro	261	321	353	383	414	2.2	2.4	1.9
Biomass and waste	1,186	1,375	1,465	1,562	1,662	10.1	9.8	1.4
Other renewables	66	158	215	276	350	0.6	2.1	7.2
Total primary energy demand	**11,730**	**14,122**	**15,123**	**16,148**	**17,014**	**100.0**	**100.0**	**1.6**

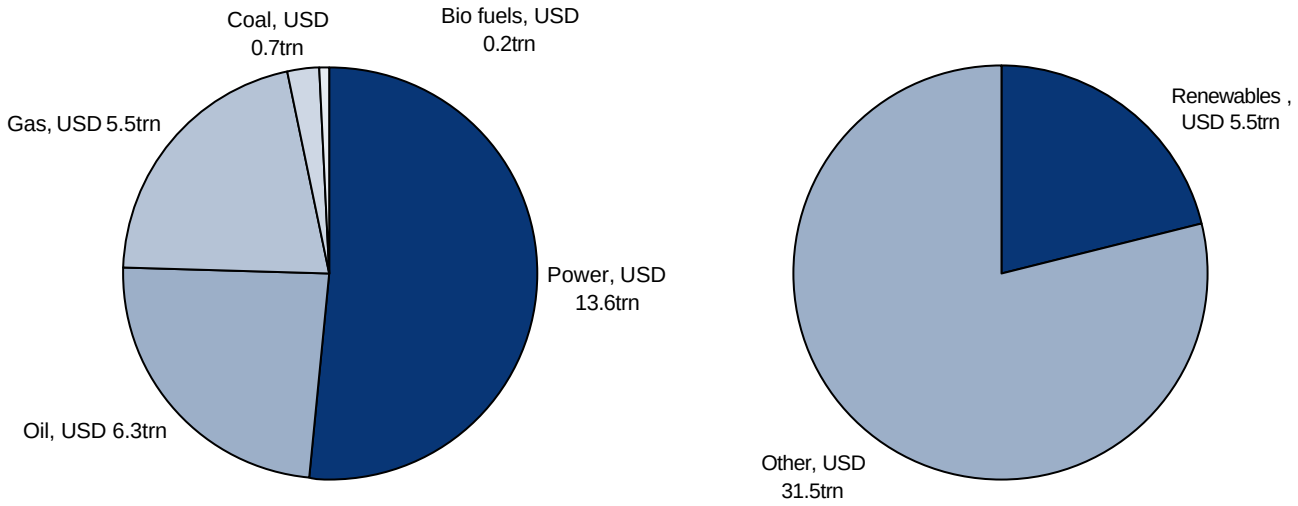
Source. IEA WEO 2008

USD 26trn energy investment until 2030 – thereof USD 5.5trn on renewables

The IEA estimates that, in order to deliver an estimated supply increase of 45% by 2030, global investments of USD 26trn in new technology and energy infrastructure will be required. Out of the total of USD 26trn, the IEA anticipates that USD 5.5trn will be invested in renewables. In 2007, around USD 84bn was invested in new renewable energy infrastructure[3].

[3] New Energy Finance

Cumulative investments in energy supply infrastructure 2007 - 2030



Source: IEA, WEO 2008

Global energy trends

Ecological and stability drawbacks of current energy mix

Due to the heavy reliance on fossil fuels as a primary energy source, the current global energy mix has the following major drawbacks:

(1) **Ecological damage** – Our current heavy reliance on fossil fuels (<80%) leads to significant annual emission of CO_2 (28,002 Mt of CO_2 in 2006)[4] ; so far, no one can really estimate the long-term costs these emissions will cause (and already cause);

(2) **Limited supply** – The supply of fossil fuels is limited and we will run out of these resources somewhere in the next 50 – 200 years, based on today's estimates;

(3) **Diminishing returns** – Rising complexity to tap fossil fuel reservoirs lead to further rising prices of this energy source; this also leads to rising energy demand just to deliver new oil and gas fields – so the energy return on invested energy for oil and gas is gradually declining;

(4) **Geographical concentration** – The majority of the richest oil and gas fields are geographically concentrated; this has caused and will cause political tensions in times of rising demand and leads to significant transport costs.

Increasing returns as major driver for renewables

All of these four shortcomings support the current emergence of renewable energy technology. However, we have to admit that the absolute rising costs of fossil fuels are the major driving economic force fuelling the development of renewables:

(1) **Reduction of CO_2 emissions** – a rising proportion of renewables in our energy mix would support the reduction of global CO_2 emissions; this in turn would reduce our future costs from ecological damage;

(2) **Unlimited supply** – hydro, wind and solar power are unlimited in their supply;

(3) **Increasing returns** – technological progress and a substantially growing market reduces costs for energy from renewable sources;

(4) **Geographical diversification** – nearly every region on earth is well suited for at least one renewable energy source, either biomass, hydro, wind or solar power. This diversification reduces transport costs and should help to stabilize the prices of energy.

[4] IEA Key Energy Statistics 2008

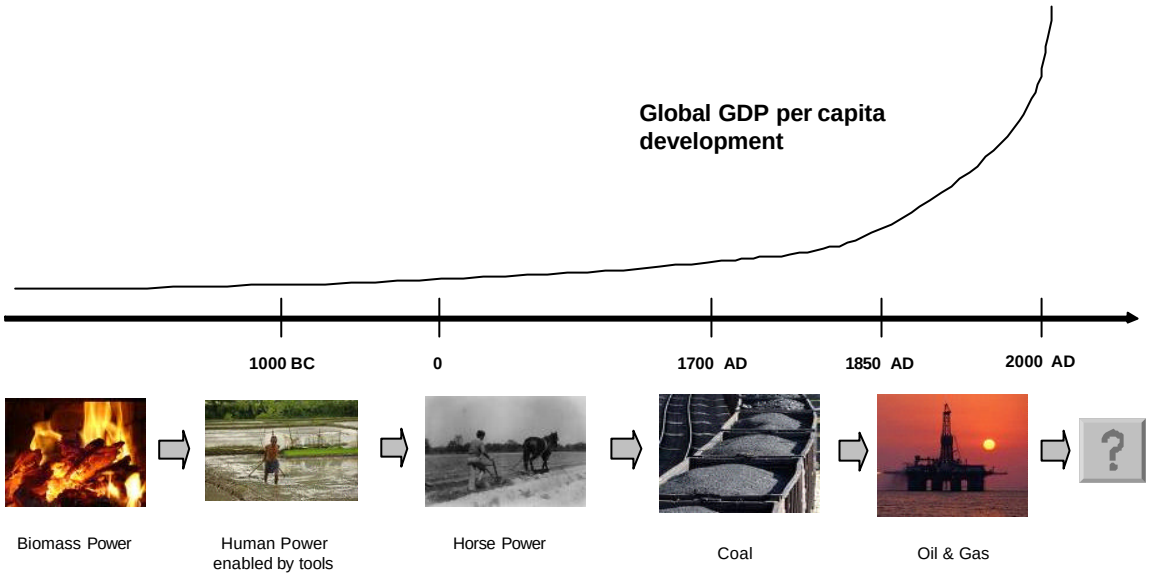
Key political and economic drivers for renewables

Historical economic development and power sources

Economic development closely linked to quality of fuels

Human economic development (expressed as GDP growth per capita) is closely tied to humanity's ability to replace human power with other sorts of power. During this development, humans gradually switched to higher-grade fuels. What is important to recognize in this process is the fact that, until the 18th century, global per capita income remained rather stable, without any significant progress – this is known as the Malthusian Trap. However, as the so-called Industrial Revolution kicked in, in the 19th and early 20th century, global per capita income suddenly took off[5].

Historical GDP development and fuel development



Source: Erste Group Research

Fossil fuels 'fired' economic miracle

There are several theories and arguments about the key factors behind this take-off (property rights, technology); however, without the use of fossil fuels, we would not have been able to gradually replace human and horse power. A big part of the European achievement in the Industrial Revolution was to escape a long-standing pattern in which all growth placed significant incremental demands on the land. Self-sustaining growth became possible through developments that eased pressure on the land. Increased use of fossil fuels, which yield far more power per unit of surface than wood or crops, is a very important factor in this equation. [6]

Limited fossil fuel supplies threaten global wealth

The problem we have is the fact that fossil fuels (despite several advantages) have a deteriorating energy balance and are furthermore limited in supply. It is not the first time in history that fuel shortages have dampened growth. By the Napoleonic era, when wood was the major fuel, the timber shortage was perceived as an acute Europe-wide crisis. In France, some sources estimate that the price of fuel wood rose 91% between 1726 and 1741. In Britain, firewood prices had already risen 700% between 1500 and 1630, three times as fast as the general price level between 1540 and 1630[5)]. Sound familiar?

We can thus say that, somewhere between 1700 and 1850, the increased usage of fossil fuels saved the global economy from its shortage of firewood, which, in turn, seriously threatened further economic development. This time, as we are running out of fossil fuels, renewable energy sources will have to step in, to allow for further prosperous global growth.

[5] Gregory Clark: A Farewell to Alms – A Brief Economic History of the World
[6] Kennetz Pomeranz: The Great Divergence

Key factors driving development of renewables

Several economic and political aspects drive renewables

Despite their qualities, fossil fuels also have several disadvantages. Therefore, there are several economic and political aspects that drive the development of renewable energy sources:

(1) **Hidden costs of fossil fuels** – Energy price volatility and ecological damage both cost economies dearly; another risk factor to be considered is a sudden delivery failure, such as the recent one concerning supplies from Russia to Europe;

(2) **Job creation** – By 2006, new renewables (wind and solar power) already employed 1mn[7] people globally (mainly in the US and Europe) in high-quality jobs like R&D and engineering; additionally, energy produced domestically replaces energy imports and thus improves trade balances;

(3) **Energy independence / import replacement** – The recent stoppage of Russia's gas supplies to Europe reminded the western world of the benefits energy independence offers; a rising installed base of alternative energy supply reduces foreign exposure;

(4) **Declining relative energy costs** – Development of renewable energy sources is the only option for declining relative energy costs that human society has; competition between technologies will lead to a continuous technological progress (around USD 18bn has been spent globally in R&D on renewables) to cut costs.

(1) Hidden costs of fossil fuels

Fossil fuel price volatility costs economies dearly

The recent stoppage of gas supplies from Russia to Europe reminded us of the significant risks attached to energy supplies from abroad. As Simon Awerbuch points out, it is not only absolute prices that are of importance. For economic planning purposes, the volatility of future prices are also decisive. Awerbuch argues that the uncertainty (risk) attached to fuel prices means that the costs for energy from fossil fuels are underestimated. Awerbuch says that, through their effects on economic growth and jobs, volatile prices for fossil fuels cost governments dearly. For example, the 1973 oil crisis is estimated to have cost the US economy USD 350bn. In December, UK Prime Minister Gordon Brown stated at a conference that the oil price hike to nearly USD 150 per barrel had cost the global economy some USD 150bn. Recently, Europe had to pay a significant price due to a shortage of gas supplies from Russia.

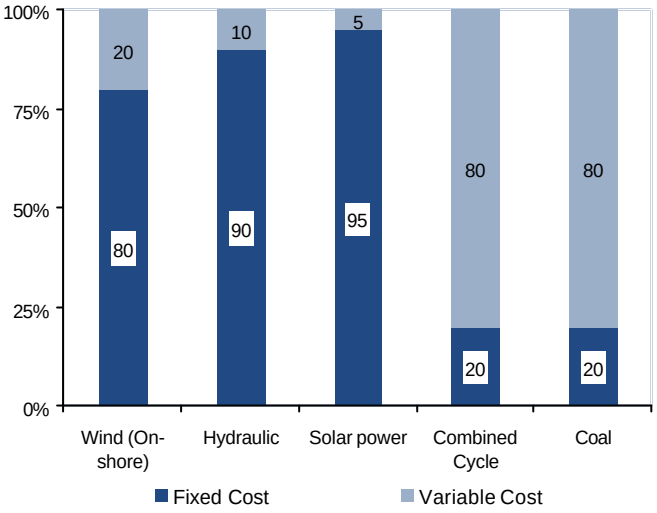
Taking fossil fuel price risk into consideration reveals real cost

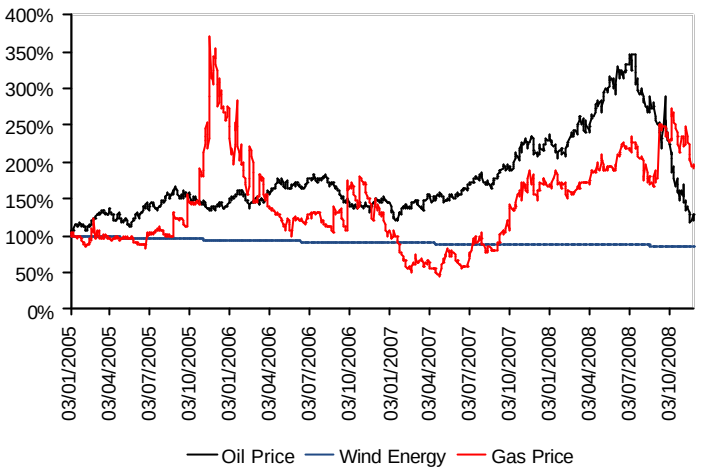
As everyone knows, risk costs money; that is why investing in risky bonds, which promise high annual returns, are often priced the same as 'safe' government bonds with much lower interest. Or discount rates for cash flows of stocks include an equity risk premium compared to cash flows of bonds. To put it simply, expected cash flow from power plants that use fossil fuels should be discounted with a 'fossil fuel risk premium' added to the discount rate one would use for a power plant using wind, water or the sun as a major input factor.

The major difference is the fact that an investor building a wind park can tell you pretty well today (80% fixed costs) what his costs will be over the next 20 years to produce a certain amount of energy. On the other hand, if you build a coal or gas plant, you only know the costs for the plant and equipment (just 20%). You cannot tell what the total production costs will be in 10 years time, since they will depend on the prices for fossil fuels at that point. Taking the rising complexity of oil and gas field development into consideration, the probability that oil and gas prices in 10 years in real terms will exceed today's price level is quite high.

[7] Worldwatch Institute

Fixed vs. variable costs for different types of energy plants





Source: Gamesa, Erste Group Research

The graphs above show the high proportion of variable costs for combined cycle or coal plants compared with wind or hydraulic power plants. Additionally, the right-hand graph shows the high volatility of fossil fuels (crude oil and gas) over the past two years. It also highlights the fact that, driven by improved efficiency and rising turbine sizes, the average cost for one MWh of wind energy has gradually dropped. Thus, the price for energy from renewable energy sources is very predictable - even steadily declining.

(2) Job creation

Renewables employ around 2.3mn people globally

Another factor that gives governments in the US and the EU major incentives to promote industries of renewable energies is jobs. A unit of energy produced from renewable sources like wind or sunlight is a classic example of import replacement. Money is invested in local infrastructure and creates high-quality jobs in R&D, engineering and operations, as well as maintenance of plants. Moreover, this industry has the potential to create a substantial amount of jobs. It thus also helps to improve the balance of trade for major oil-importing countries. The Worldwatch Institute estimates that, by 2006, about 2.3mn people worldwide worked either directly in renewables or indirectly at suppliers for the renewables industry. And keep in mind that, to date, renewables supply just 10% of our global energy mix.

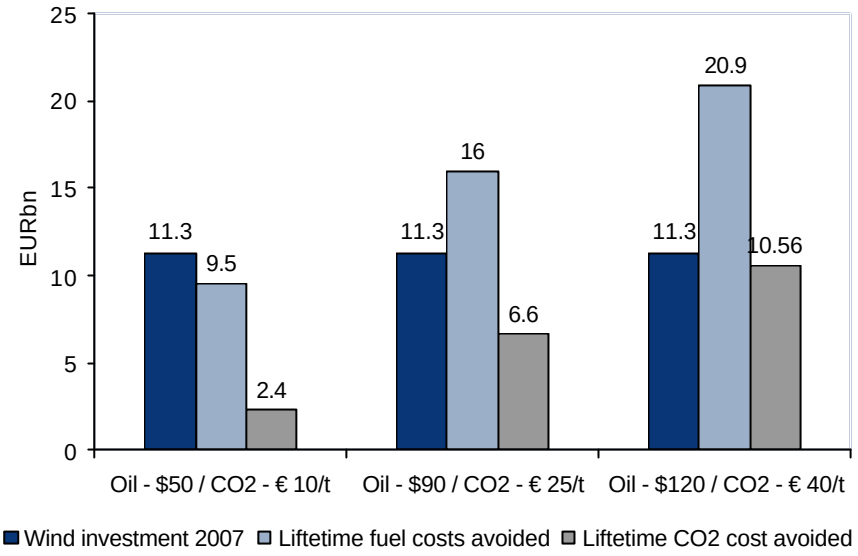
(3) Energy independence / import replacement

Investments in renewables replace future payments for fossil fuels

The big issue with the development of renewables is financing. However, we have to consider the fact that, in 2007, the EU spent EUR 335bn[8] to import energy (mainly oil and gas). The majority of this amount was sent to the Middle East and Russia. On the other hand, investments in renewable energy create jobs in the EU and replace future payments for oil or gas.

[8] Eurostat

Wind investments 2007 compared with lifetime avoided fossil fuel and CO_2 costs



Source: EWEA

The graph above shows that (assuming an average lifetime of around 20 years per installed MW of wind power in 2007) even at an average oil price of USD 50 per barrel, the investment costs of EUR 11.3bn in European wind power would save EUR 9.5bn in fuel costs. We doubt that, over the next 20 years, amid further rising demand and deteriorating supply, the crude oil price will be on average USD 50 per barrel. We deem an average oil price per barrel of USD 90 over the next 20 years as more likely. Under this scenario, the invested EUR 11.3bn saves EUR 16bn in fuel costs and another EUR 6.6bn in avoided CO_2 costs.

(4) Relative declining energy costs

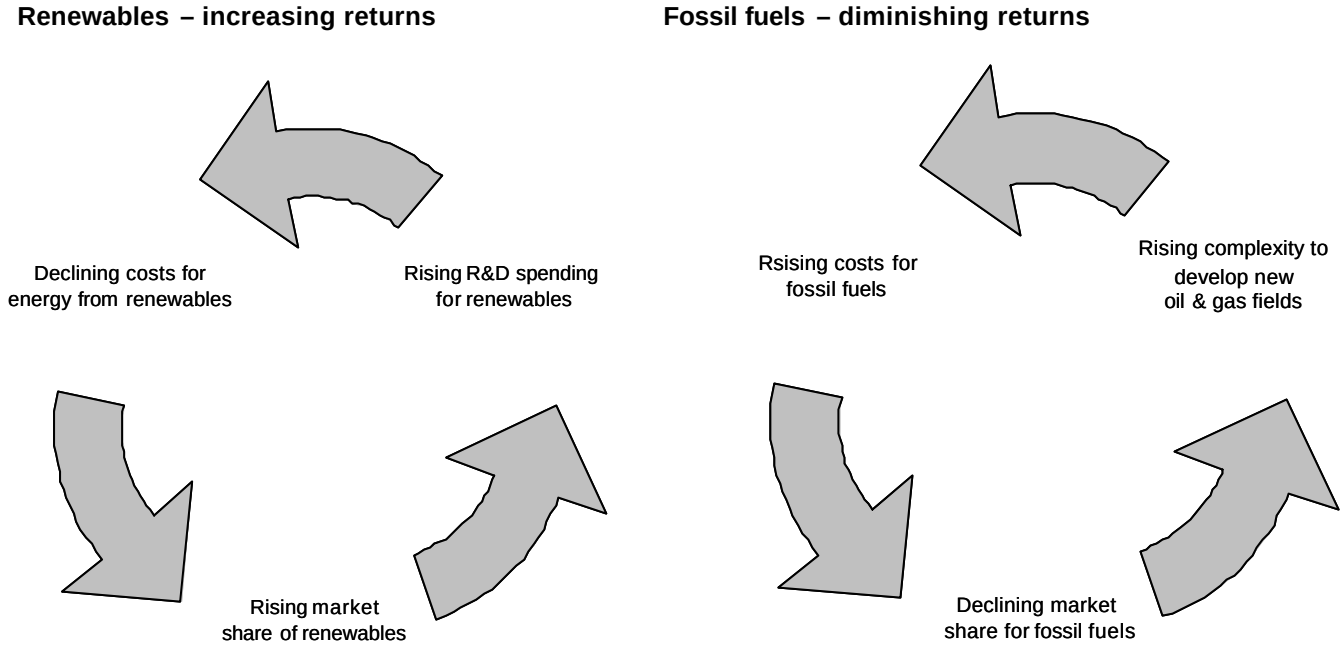
Market trends in favor of renewables

We are not believers in illusions. The big turning point for technological renewable energy sources will be when the absolute costs of generation (without any allowance for ecological damage or volatile prices) per unit of energy generated drops below the cost of energy from conventional sources. However, this may come sooner than later, due two the current metrics in the market.

- **Diminishing return for fossil fuels** - The oil and gas field service industry is not tiring in its efforts to emphasize that the low-hanging fruit has been picked; this implies that the development of future oil and gas fields will be far more complex compared with the past. This also means further rising costs of production per barrel of oil.
- **Increasing return for renewables –** At present, the metrics of the renewable energy industry work the other way round. As technological progress proceeds, the cost for a unit of energy from renewable sources drops. The bigger this industry gets (already USD 148.4bn in 2007; of which around USD 16.9bn in annual R&D investments), the more competition and faster the technological progress will be.

Based on these fundamental trends, we believe that the renewable energy sector will gain momentum, grow, and in turn, become more and more competitive each year in comparison with fossil fuels. And the bigger this market is, the greater the R&D outlay, and the sooner renewable energy becomes competitive with energy from fossil fuels in absolute terms.

Momentum cycle renewables technology vs. fossil fuels



Source: Erste Group Research

EROIE (Energy return of invested energy) – net energy analysis

As we gradually exit the age of fossil fuels, the concepts of net energy analysis and EROIE are barely known. However, as we enter the world of sustainable energy, this will become a very widely known and important concept in the coming decades.

Physical constraints of energy market

Approaching the energy sector from a thermodynamic view, it becomes clear that, whatever energy source we use, apart from hydro power, all are stored solar energy (oil, gas, coal, wood and crops). Now, in order to bring this stored solar energy to the market and convert it for marketable use, we have to invest energy (discovery, drilling, transformation and transport) as well. The EROIE measures the amount of energy needed to extract, transform and supply a certain amount of energy to the market (e.g. electricity, gasoline).

The graph below shows the simple formula. All energy technologies for which the EROIE is below 1 (which means that energy input exceeds energy output – so, energy is actually lost) will never be able to yield any long-term returns for investors.

$$\text{EROIE} = \frac{\text{Energy Output}}{\text{Energy Input}}$$

Energy Output
- Energy Input
Net Energy surplus

Oil and gas market dead-end, sooner or later

The basic problem we face today is the fact that, due to the rising complexity in discovery and drilling, we have to invest more and more energy to bring one barrel of oil or gas to the market. So, in this equation, even if global demand for oil and gas, excluding the energy invested in the development of new oil and gas fields, were to remain flat, the rising complexity of the development of new oil and gas fields would lead to continuously increasing global demand for energy. We thus have to consider two aspects that drive the rising global demand for energy:

- Increase in demand for non-energy purposes (transport, heating, electricity generation);
- Increasing energy demand from the 'fossil fuel production sector' itself, just to sustain its output level; we are not even talking about increases in supply.

Focus on renewables with high EROIE

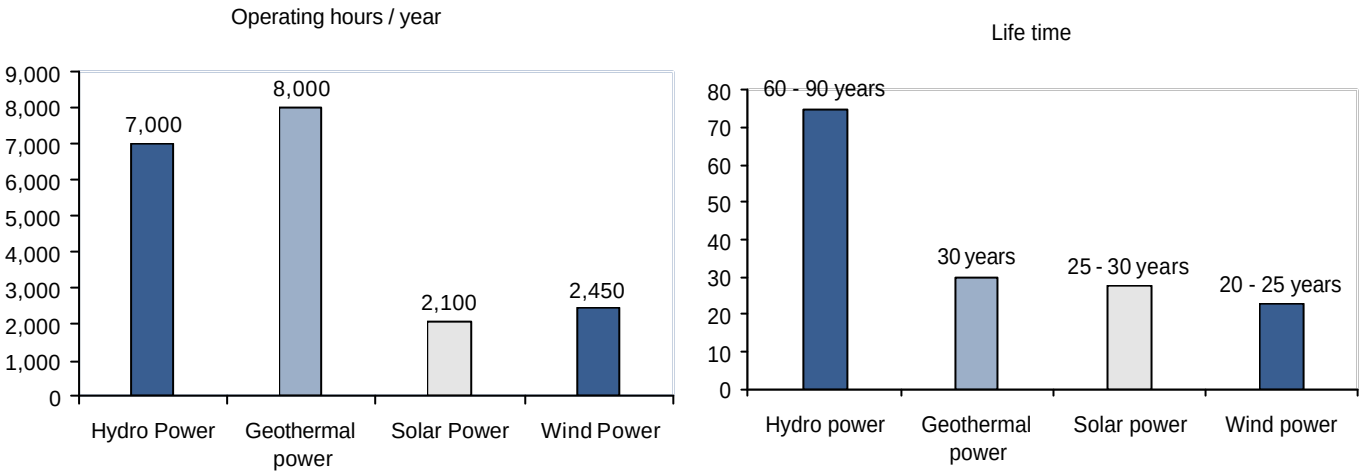
In the mid term (next two decades), we believe that the relative costs of energy will continue to rise, due to the fact that (1) the energy balance of fossil fuels is declining and (2) no major alternative energy source is able to replace fossil fuels in a short time. We therefore believe that investors should focus on renewable energy technologies that have a substantial energy output compared to their energy input required. The following attributes yield a high EROIE:

- As many annual operating hours as possible
- Long-lasting equipment

Hydro power champion among renewables

The following graph compares our current major renewable energy sources in terms of these metrics:

Operating hours and average lifetime for renewables



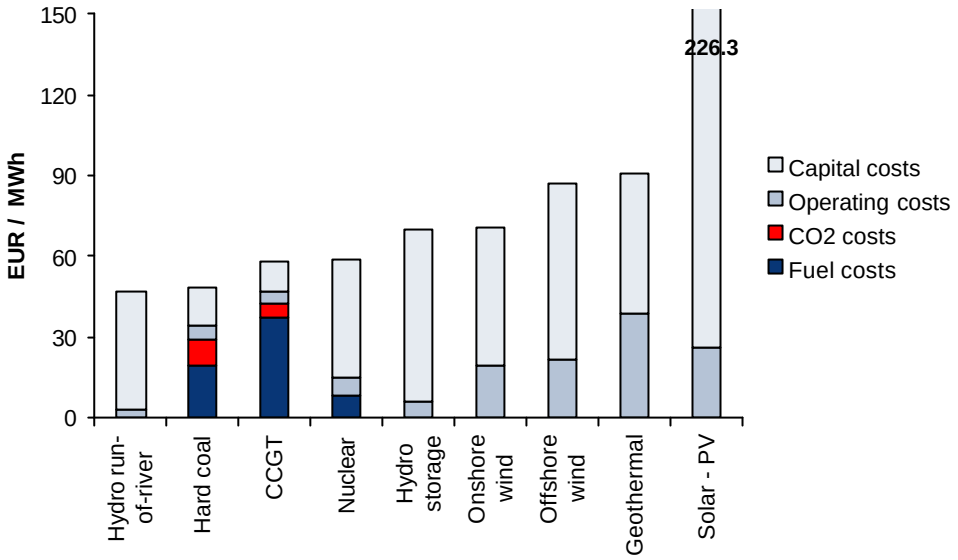
Source: Erste Group estimates

The picture shows that, as of today, hydro power has vastly superior metrics when compared to solar and wind power.

Entrant cost comparison

The graph below compares the entrant costs to generate 1 MWh of electricity from different types of energy sources. Clearly there are ranges to be considered, especially for energy from renewable source. Wind intensity as well as sun radiation differ from regions and sites.

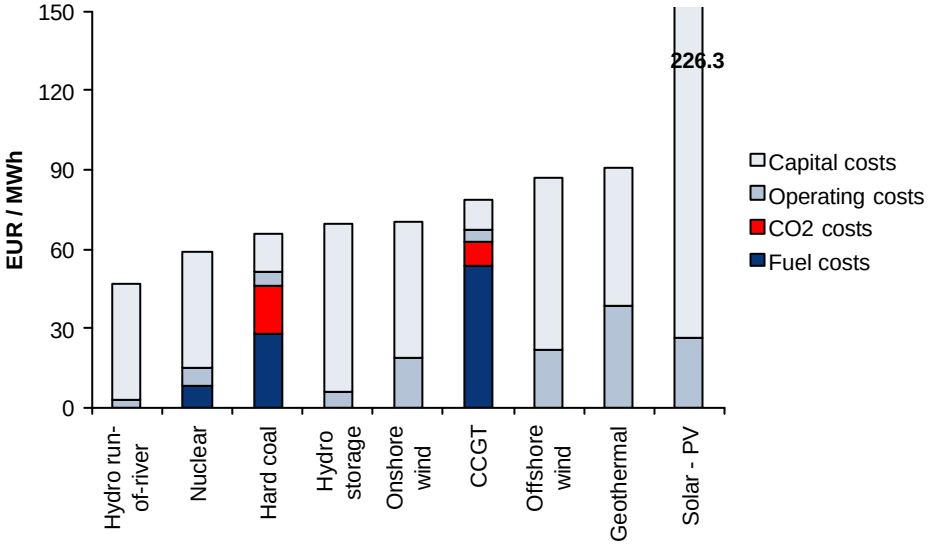
Entrant costs per MWh comparison – fuel and CO_2 costs as of January 2009



Source: Erste Group estimates

Based on current fuel- and CO_2 costs (EUR 12.1/t), only Hydro power run-of-river plants have lower entrant costs compared to hard coal and gas-fired (CCGT) power plants. The graph also shows that the cost structure for fossil fuel plants is heavily skewed towards variable input factors like fuel prices and CO_2 costs. Renewable energy sources on the other hand have substantial capital costs compared to modest operating costs.

Entrant costs per MWh comparison – average fuel and CO_2 costs 2008



Source: Erste Group estimates

If we take the average costs for fossil fuels and CO_2 emission certificates (EUR 22.5/t) that prevailed on average during 2008 we see that also onshore wind-power is already cost competitive to conventional power generation from fossil fuels.

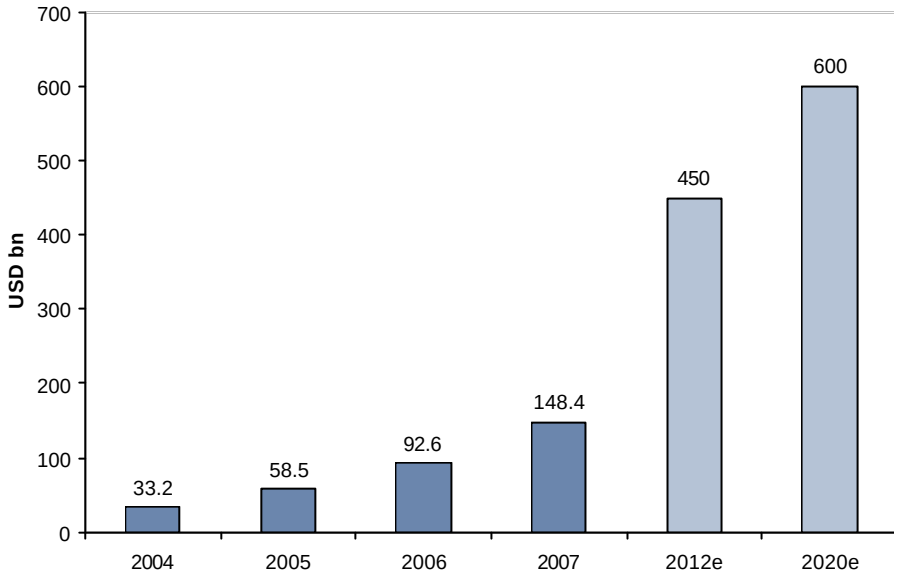
Renewables financial and capacity overview

Investment overview

USD 148.4bn market in 2007

The UN estimates that, in 2007, around USD 148.4bn (including acquisitions) was invested in the renewable energy sector (after USD 92.6bn in 2006). The USD 148.4bn consisted of a USD 84.5bn investment in new assets (capacity), USD 23.4bn public market activity (of which USD 13.8bn raised in IPOs), USD 19bn in small-scale projects, USD 16.9bn for R&D and USD 9.8bn stemming from VC and private equity.

Global new investment in renewable energy 2004 – 2020e



Source: New Energy Finance

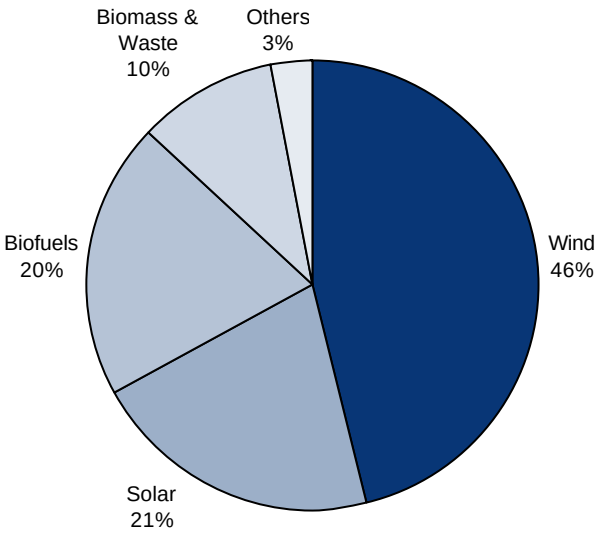
USD 450bn market by 2012 – short-term pressure from financial crisis felt

Leading industry research estimates that the annual investments in the renewable energy sector will reach USD 450bn by 2012 and will exceed USD 600bn by 2020. However, in the short term, the financial crisis has also hit the renewable energy sector. In 1Q08, total investments (including M&A) still rose by 30% to USD 39bn; however, in 2Q08, volume dropped by 21% to USD 33bn (from USD 40bn in 2Q07). The IEA anticipates that, by 2030, USD 5.5trn will have to be invested in renewables.

Wind energy attracts most funds

In 2007, wind was the leading sector in renewable energy investment, attracting 46% of total asset finance (new build). In absolute terms, wind power attracted around USD 39bn in 2007. This investment sustained the industry's rapid expansion: A massive 21 GW of new wind power capacity was added in 2007 (with a regional focus on the US, Spain and China). With shares of 21% and 20%, respectively, solar power and biofuels attracted around USD 17bn in funds each.

New investment in capacity (USD 84.5bn) by technology in 2007

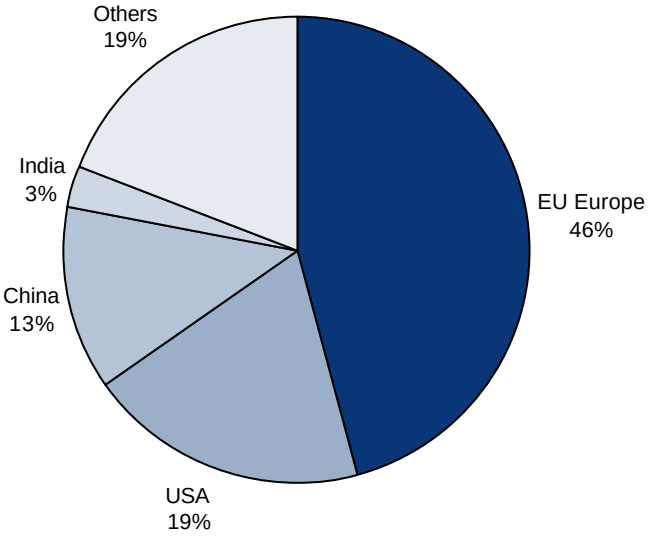


Source: New Energy Finance

Europe leads in new asset finance

In terms of asset finance for new capacity, Europe leads with investments of USD 38.8bn in 2007. Due to a lack of interest in bioethanol, the US remained rather flat y/y in 2007 at around USD 16.3bn. China (USD 10.8bn) and India (USD 2.3bn) saw tremendous growth in 2007 of 125% and 230%, respectively.

Asset finance (USD 84.5bn) new investment by geography in 2007

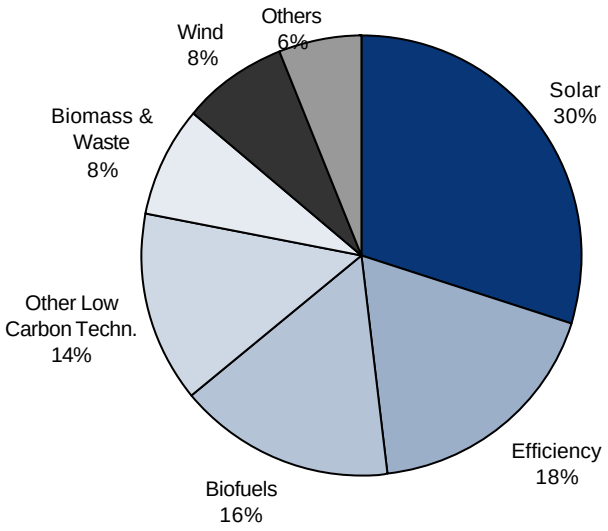


Source: SEFI, New Energy Finance

VC/PE investments focused on solar and efficiency – USD 9.8bn in 2007

Current venture capital (VC) and private equity (PE) investments could be an indicator for future sectors where investors can expect IPOs. VC and PE investments are currently focused on solar power, energy efficiency and biofuels. Solar took over from biofuels in 2007. PE focused on photovoltaic (PV) manufacturing capacity and pre-IPO funding. VC, on the other hand, focused on disruptive PV technologies, such as thin film. Due to rising concerns, biofuels was the only sector with declining funds. In terms of less mature technology, solar thermal activity saw renewed interest, mainly in Spain and the US. In biofuels, the market for second-generation is very appealing for VC (fuel made from non-food parts of crops, wood or algae).

VC/PE new investment (USD 9.8bn) by technology in 2007



Source: SEFI, New Energy Finance

US leads global VC market for renewables

In 2007, 48% (USD 4.7bn) of VC/PE finance was invested in the US. Thus, the US remains the leading market for early stage finance for renewables. US investment is particularly skewed towards venture capital (accounting for 75% of global VC), thanks to its established entrepreneurial culture and the leadership shown by California in the solar sector.

Technical overview

Three generations of renewables

Biomass is the oldest and still most important renewable energy source humans have. Due to the development of technological devices to convert water, sunlight and wind into energy, the renewable energy sector can be split into three generations:

- **First generation** - emerged from the industrial revolution at the end of the 19th century and includes large hydropower, biomass combustion and geothermal heat generation;
- **Second generation (new renewables) –** includes small hydro, wind power and solar heating, modern forms of bioenergy (biodiesel and bioethanol), as well as solar photovoltaic;
- **Third generation –** these are currently in an early development stage and include concentrating solar power, ocean energy, enhanced geothermal systems and integrated bioenergy systems (e.g. wood gasification).

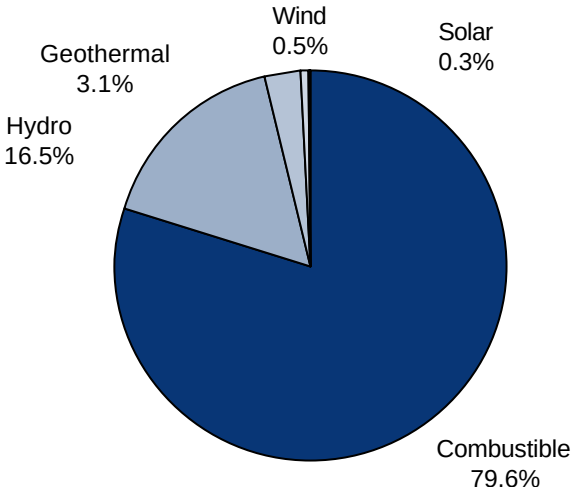
First generation renewables cost-competitive

Due to the long experience and significant technological improvements, the first generation renewable energy sources are cost-competitive. Due to a rising market and stronger players that can afford to invest heavily in R&D, some of the second generation renewable energy sources (e.g. wind power) are on the verge of becoming cost-competitive with conventional energy sources. The third generation renewable energy sources still need more time and R&D effort to pose competition to conventional sources.

Biomass major renewable energy source

The current contribution of different renewable energy sources to the supply mirrors the historical development. As of 2006, biomass (wood and waste) was the major contributor to our global renewable energy supply (worth around 11.1mn tons p.a.). Hydro power, with a share of 16.5%, is by far the most important technological renewables source at present. Despite tremendous growth rates over the last 30 years, to date wind and solar power (also referred to as second generation or new renewables) account for just 0.8% of the total renewable energy supply.

Renewables energy supply split by source 2006



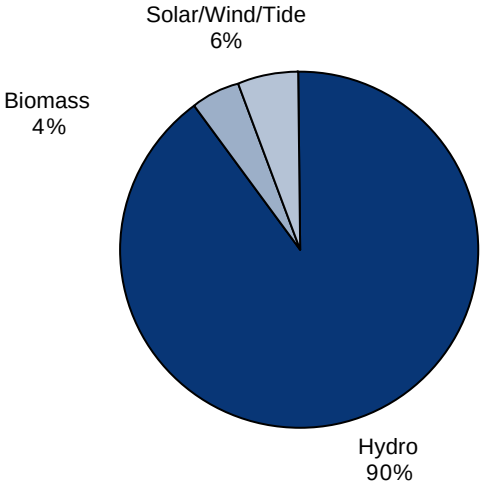
Source: IEA, Renewable Energy Policy Network for the 21st century

Hydro major renewable electricity supplier (89.9%)

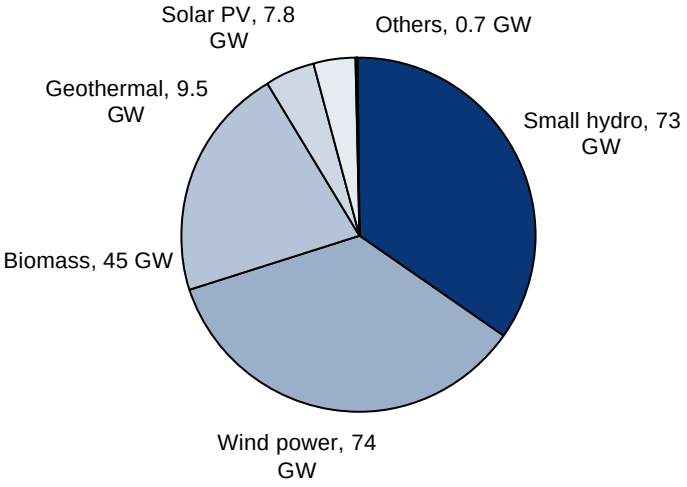
When we look at the global supply of electricity, the significance of hydro, wind and solar power rises. However, with a contribution of 89.9%, hydro power is far and away the leading renewable electricity supplier.

Renewables electricity supply split by source 2006

Total renewables eletricity capacity 2006 - 970GW



New renewables split 2006 - 207 GW

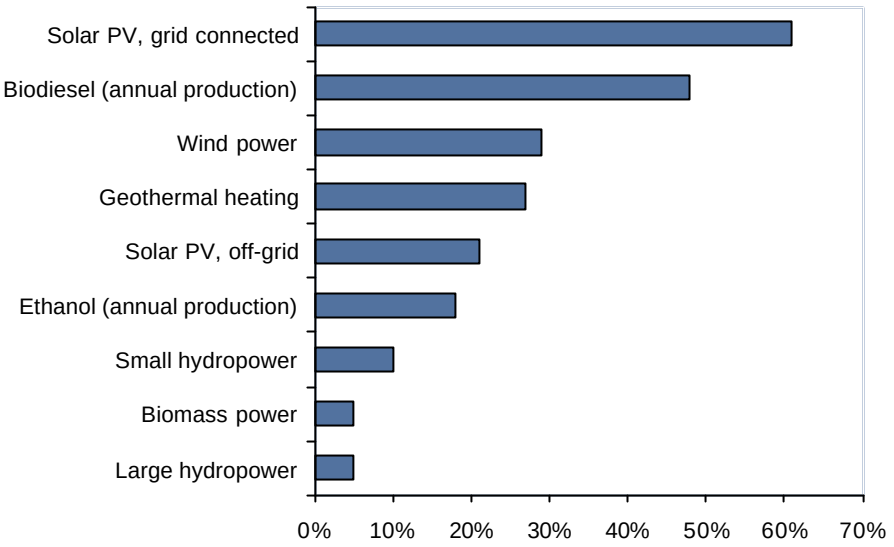


Source: IEA, Renewable Energy Policy Network for the 21st century
By 2007 renewables capacity has risen to 1,010 GW

Significant growth rates for solar and wind power

Due to technological progress and government support systems, the new technological energy sources like wind and solar power have displayed quite substantial growth rates over the last couple of years. The graph shows that new technological renewables like wind and solar power experienced the fastest growth rates, albeit from a rather low level. Thus, despite this tremendous growth, their share of around 0.8% in the total renewable energy supply remains rather small.

Annual growth rates of renewables 2002 – 2006



Source: Ren21, Renewables 2007 Global Status Report

Regulatory framework

Supranational and national regulations

There are regulatory frameworks on both the international and national levels. These frameworks can have either supranational (e.g.: the Kyoto Protocol, EU directives 2001/77/EC and 2003/30/EC for alternative energy) or national characters (EEG – the alternative energy law in Germany). Whereas the supranational frameworks define or suggest worldwide or regional (e.g. EU) CO_2 reduction targets, national bills outline subsidies and other incentives that should help to reach the CO_2 target reduction the respective country either committed to reach or simply aims to reach, given economic deliberations. Cooperation among countries regarding feed-in tariffs should further help increase efficiency in expanding the supply of renewable energy (e.g. IRENA - International Renewable Energy Agency; IFIC – International Feed-In Cooperation).

Kyoto Protocol

Kyoto Protocol – targets a reduction of greenhouse gases

The United Nations Framework Convention has defined the **Kyoto Protocol** as a legally binding commitment to reach a worldwide emission reduction of four greenhouse gases (CO_2, methane, nitrous oxide, sulfur hexafluoride) and two groups of gases (hydrofluorocarbons and perfluorocarbons). As of 2008, 183 parties have ratified the protocol, which entered into force in February, 2005.

Kyoto climate targets by regions and countries

Country	Targets vs. 1990 levels for 2008-2012
EU-15, Bulgaria, Czech Republic, Estonia, Latvia,Liechtenstein, Lithuania, Monaco, Romania,Slovakia,Slovenia, Switzerland	-8%
US (although it has withdrawn its support for the Protocol)	-7%
Canada, Hungary, Japan, Poland	-6%
Croatia	-5%
New Zealand, Russian Federation, Ukraine	stabilise emissions
Norway	+1%
Australia (although it has withdrawn its support for the Protocol)	+8%
Iceland	+10%

Source: Kyoto protocol

China and US follow their own approaches and targets

Although China has not ratified the Kyoto plans, it has confirmed its targets in its long-term plan in late 2007. Following this plan, China aims in the first place to increase its share of power generation from individual RE technologies, instead of reducing GHG emissions. The targets for 2020 are to increase hydropower to 300 GW, windpower and biomass to 30 GW each, and 1.8 GW from solar photovoltaics (PV).

Renewable energy governmental support systems

The legislation regarding renewable energies varies from country to country. In general direct and indirect measures are in use. The toolbox consists of direct financial transfers, preferential tax treatment and others. The table below should give you a short overview:

Government intervention	Examples
Direct financial transfers	Grants to producers
	Grants to consumers
	Low-interest or preferential loans to producers
Preferential tax treatments	Rebates or exemption on royalties, duties, producer levies and tariffs
	Tax credit
	Accelerated depreciation allowances on energy supply equipment
Trade restrictions	Quota, technical restrictions and trade embargoes
Energy-related services provided by government at less than full cost	Direct investment in energy infrastructure
	Public research and development
Regulation of the energy sector	Demand guarantees and mandated deployment rates
	Price controls
	Market-access restrictions
	Preferential planning consent and controls over access to resources
Failure to impose external costs	Environmental externality costs
	Energy security risks and price volatility costs

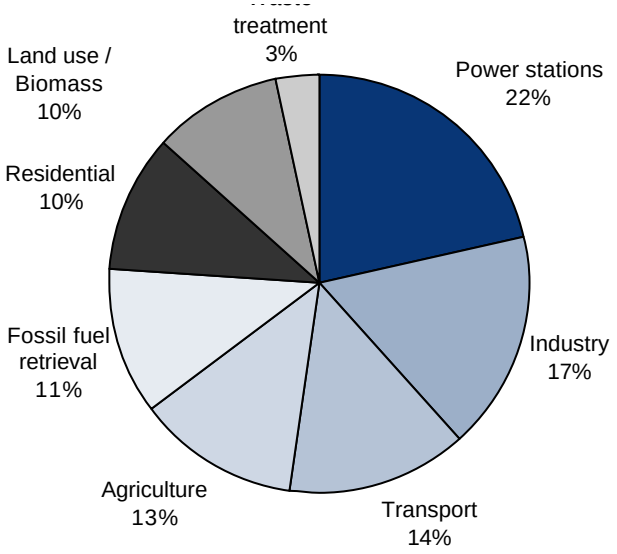
Source: IEA/UNEP (2002)

Tradable Green Certificates (TGC)

TGC to incentivize development of renewables

Following the Kyoto protocol, Tradable Green Certificates (TGC) (i.e. emissions trading) have been targeted to incentivize countries to stimulate the development of the renewable energy segment, as a higher share of renewable energy production would reduce costs for buying CO_2 certificates or even bring additional funds from selling them.

Annual Greenhouse Gas Emissions by Sector



Source: Emission Database for Global Atmospheric Research

The Clean Development Mechanism and Joint Implementation was aimed at helping industrial economies meet their greenhouse gas (GHG) emission limitations by purchasing GHG emission reduction credits from Industrial and Non-Industrial countries. Non-industrial countries have no GHG emission restrictions, but have financial incentives to develop GHG emission reduction projects to receive "carbon credits", encouraging sustainable development.

A typical TGC scheme works as follows: governments set a usually increasing quota for renewable energy in the supply portfolio. The producers, wholesalers, retailers and consumers

(depending on who is obliged) are obliged to supply or consume a certain percentage from renewable electricity sources. For each unit of renewable electricity (e.g. MWh), a certificate is generated and issued to the producer. This certificate serves as proof that renewable electricity was delivered into the grid. Certificates can be obtained by the following paths:

- A supplier owns generation plants;
- Certificates can be bought from other generation plants;
- Certificates can be bought from a broker who often acts as an intermediate.

TGC schemes have some drawbacks

As certificate prices are market-driven and hence volatile, a number of technologies will generate windfall profits, meaning that the compensation is higher than their actual generation costs. For this reason, TGC schemes have not proven to be cost-efficient and turn out to be more expensive than feed-in tariff schemes. By setting a quota, there is no incentive to produce more than the quota stipulates. A quota therefore acts like a cap, discouraging additional production of renewable power generation.

Regulatory framework EU – Germany as role model

EU commitment to develop low-carbon economy

EU leaders are committed to transforming Europe into a highly energy-efficient, low-carbon economy. They underlined their determination to see the union gain a 'first mover advantage' by committing the EU to cut emissions by at least 20% of 1990 levels by 2020, regardless of the actions taken by other countries.

EU directives 2001/77/EC and 2003/30/EC

20% renewable energy's share targeted by 2020

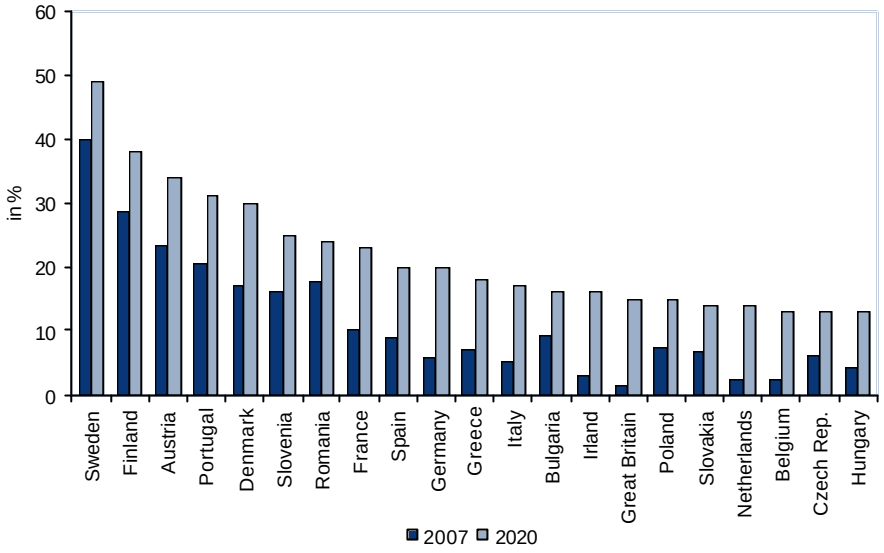
EU's emmission targets are underpinned by three energy-related objectives, which shall become law and are to be met by 2020:

- A 20% reduction in energy consumption through improved energy efficiency (vs. 1990);
- An increase in renewable energy's share of the market to 20% (from around 8.5% today); and
- As part of the renewable energy effort, a 10% share for sustainably produced biofuels in petrol and diesel in each EU country (for more details, see the chapter covering biofuels).

EUR 1,100bn investments required

The graph below shows that in order to achieve a 20% renewables target by 2020 all EU countries have to make quite substantial investments. In total we estimate that around EUR 1,100bn will have to be invested in new renewables capacity to reach the 20% target by 2020. Among western Europeans especially Great Britain, Netherlands and Belgium will have to do a lot until 2020. In CEE Poland, Slovakia and the Czech Republic are the ones with worst current renewables representation.

EU regional renewables contribution 2007 vs. 2020 target



Source: Austrian Biomass federation; EU

Emissions Trading System as key tool to cut CO_2 emissions

Central to the strategy is a strengthening and expansion from 2013 of the Emissions Trading System (EU ETS), the EU's key tool for cutting CO_2 emissions cost-effectively. The cap on emission allowances for the sectors covered by the system – power generation, energy-intensive manufacturing industry and, from 2011 or 2012, aviation – will be cut by 1.74% annually until at least 2028. This means that, by 2020, the number of emissions allowances will be 21% below 2005 levels.

EC targets 60-80% CO_2 reduction by 2050

In the medium term, the EC's (European Commission) strategic target aims at an average global temperature increase of 2% due to global warming, compared to an estimated 4% without reducing greenhouse gas emissions. Therefore, the EC is considering increasing the 2020 target regarding CO_2 emission reduction from 20% to 30% compared to the level from 1990. By 2050, this reduction could amount to 60-80%.

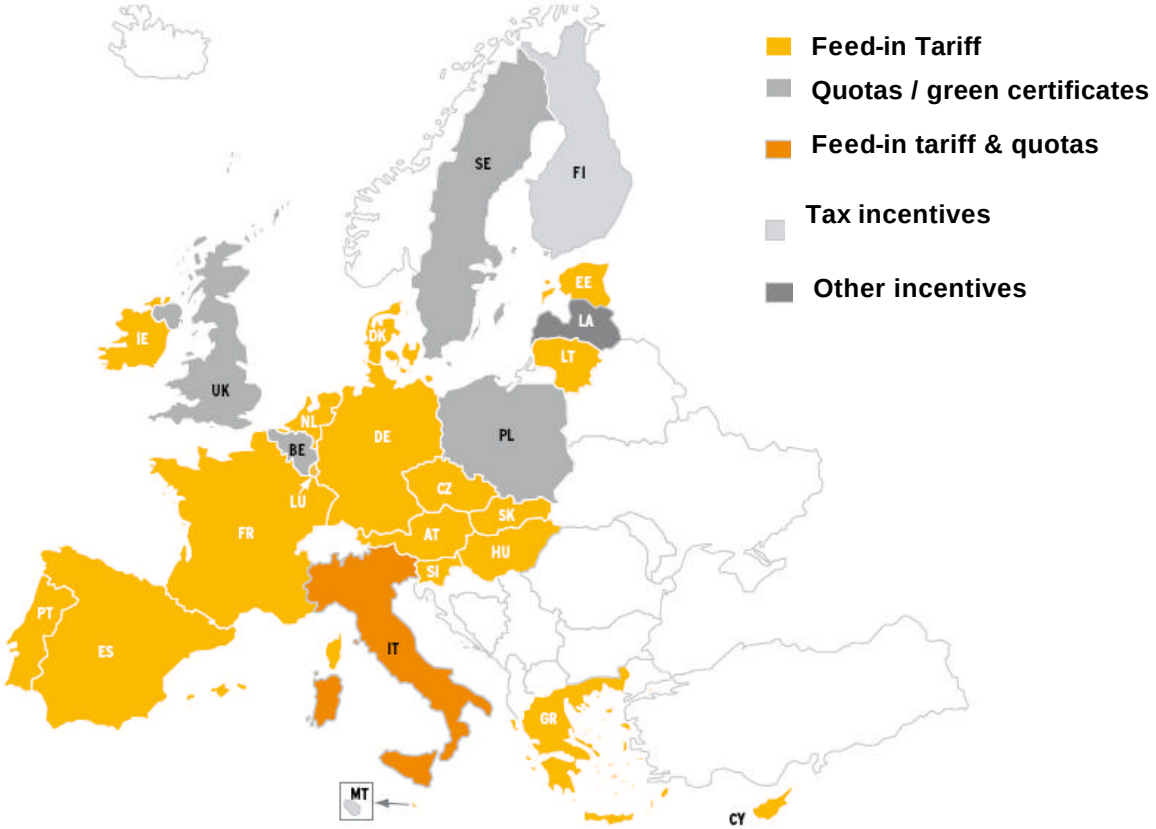
Best practice experience exchange among member states

Europe's drive to force alternative energy installation and production also manifests in cross-border cooperation between member states to exchange experience regarding both technological issues as well as successful incentive schemes. In this respect, Europe's leading countries in the renewable energy sector (Germany, Spain, Denmark) have founded the IFIC (International Feed-In Cooperation, 2004) and IRENA (International Renewable Energy Agency, 2007). Both organizations aim to work independently (compared to the IEA, which is an OECD organization); the latter may become a UN organization at a later point in time.

Feed-in tariffs as most successful support tool

Following the strong growth of (especially) Germany's and Spain's (which was among the first to copy German's approach) renewable energy production capacity, which has been largely driven by attractive feed-in tariffs, many European countries have copied this approach. As can be seen from the graph below, there are just a few countries that have not adopted the policy of feed-in tariffs at all. The approach differs, though, given the different lifetimes of earlier-defined subsidy brackets. Usually, the subsidy schemes are diminishing, as the national authorities aim to challenge active companies to continuously improve the technology of power generation for the respective energy source.

National renewable energy support systems



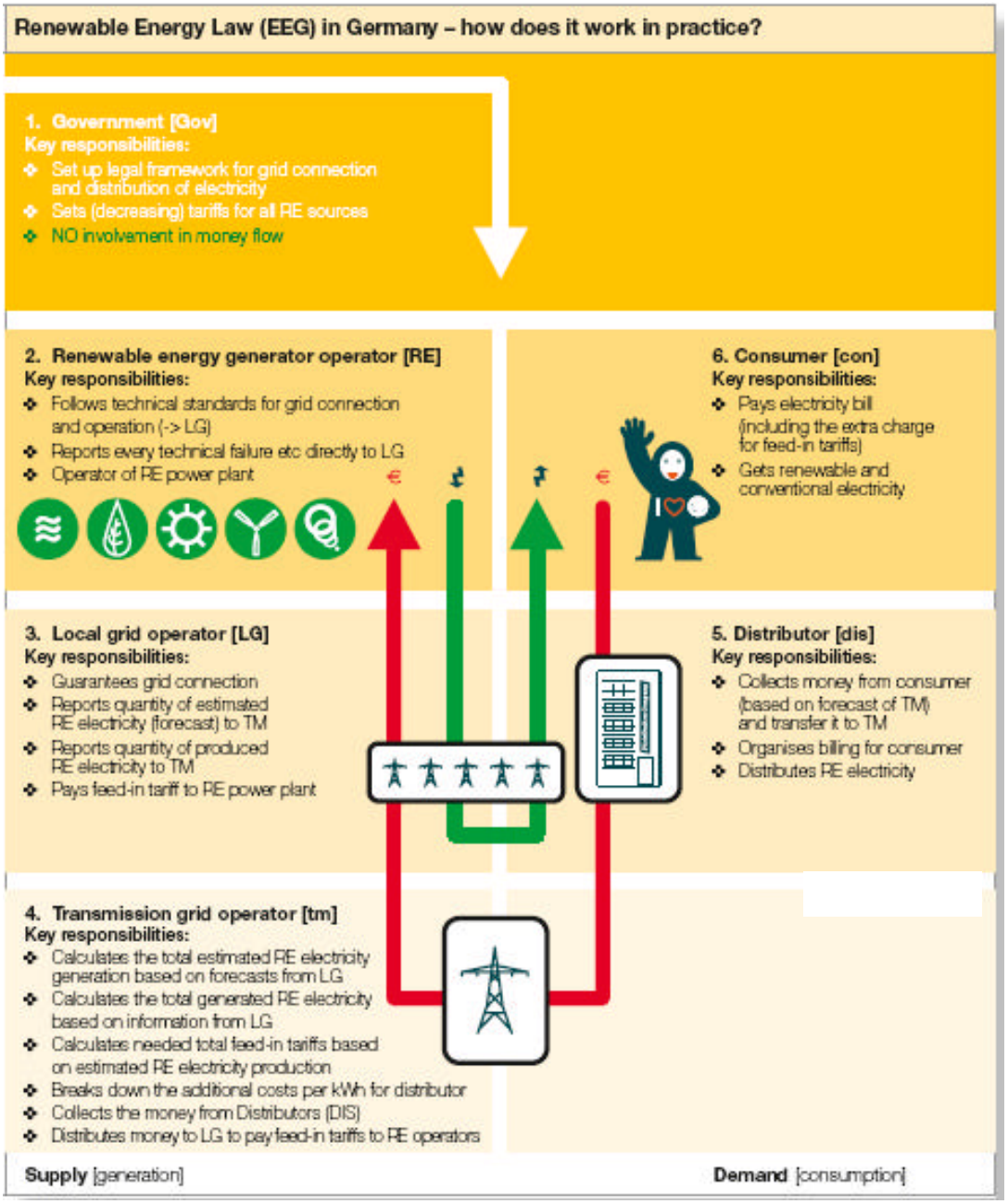
Source: EPIA

National renewable energy (RE) policy drivers

Germany as worldwide pioneer in expanding renewables

Germany has become the worldwide pioneer in expanding its renewables capacities and hence reducing GHG in the last few years. The strong development has been possible by introducing attractive public support, mainly in the form of feed-in tariffs, starting in 2000. It has to be mentioned, however, that the feed-in tariffs mark the most substantial part of German's RE subsidies. There are many other forms of policy support for renewable power generation, including direct capital investment subsidies or rebates, tax incentives and credits, sales tax and value added tax (VAT) exemptions, direct production payments or tax credits (i.e., per kWh) and direct public investment or financing. So far, the German model has been copied by about 50 countries.

EEG – how it works in practice



Source: BMU

EEG defines annual compensation scheme for newly installed renewables capacities

The EEG defines an annual compensation scheme for newly installed RE capacities (i.e.: hydro, photovoltaic, wind, biomass, geothermic). The recent amendment in 2008 (i.e. EEG 2009) was based on targeting 25-30% of RE in 2020. Unlike previous versions of the EEG, it only deals with the electricity market. A separate law (EEWaermeG 2008) will target the promotion of power generation for heating purposes, which has an RE target of 14%.

The compensation is fixed and held constant for 15 years (hydro power < 5 MW), 20 years (wind, biomass, geothermal energy, photovoltaic power) and 30 years (hydro power >5 MW). The base year for calculating the respective compensation is 2004. Each following year, the compensation for newly installed capacities decreases by 1% in the case of newly installed biomass plants, 1.5% for wind power and 5% for solar energy. In the case of geothermal energy, the compensation prices are held constant until 2010 and will then also decrease by 1% p.a. It should be noted, though, that the year of installation defines the lifetime compensation for 15, 20 or 30 years, respectively.

Total compensation based on the EEG scheme in Germany

		2000	2001	2002	2003	2004	2005	2006	2007	2008e	2009e
Total final consumption	[GWh]	344,663	464,286	465,346	478,101	487,627	491,177	495,203	495,000	details not available	
Off-grid consumption[1]	[GWh]	-	-	-	5,847	36,865	63,474	70,161	72,040		
Total final grid consumption	[GWh]	344,663	464,286	465,346	472,254	450,762	427,703	425,042	422,960	441,849	423,988
Total EEG-power	**[GWh]**	**10,391.0**	**18,145.4**	**24,969.9**	**28,417.1**	**38,511.2**	**43,966.6**	**51,545.2**	**67,120.4**	**74,540.0**	**82,508.0**
Hydro & gas (until 2005)	[GWh]	4,114.0	6,088.3	6,579.3	5,907.7	4,616.1	4,952.6	4,923.9	5,100.0		
Biogas	[GWh]	-	-	-	-	2,588.6	3,135.6	2,789.2	2,700.0		
Biomass	[GWh]	586.0	1,471.7	2,442.0	3,483.6	5,241.0	7,366.5	10,901.6	16,320.0		
Geothermic energy	[GWh]	-	-	-	-	0.2	0.2	0.4	0.4	details not available	
Wind energy	[GWh]	5,662.0	10,509.2	15,786.2	18,712.5	25,508.8	27,229.4	30,709.9	39,500.0		
Photovoltaik	[GWh]	29.0	76.2	162.4	313.3	556.5	1,282.3	2,220.3	3,500.0		
RE in % of grid consumpt.	[%]	3.0	3.9	5.4	6.0	8.5	10.0	12.0	15.8	16.9	19.5
Avg. compensation	[ct/kWh]	8.5	8.7	8.9	9.2	9.3	10.0	10.9	11.4	12.0	12.6
Total EEG costs	**[EUR bn]**	**0.9**	**1.6**	**2.2**	**2.6**	**3.6**	**4.5**	**5.8**	**7.9**	**8.9**	**10.7**

[1] off-grid subsidised separately

Source: Erneuerbare Energie in Zahlen, June 2008

Reductions of compensations should drive technological development

As can be seen from the table above, the overall RE costs are rising, despite the annual decrease of the technology-specific compensation scheme. This can be explained by the far-and-away highest compensation costs for solar energy (2009: 32-48 cents/kWh) compared to other RE technologies (3.7-15 cents/kW/h). There is an ongoing discussion in Germany to decrease the annual compensation schemes more drastically in order to put more pressure on technological development.

Regulatory framework in CEE countries

In the appendix we enclose details regarding the regulatory framework of the following CEE countries: **Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania, Slovak Republic, Ukraine.**

Regulatory framework in the US

Individual support systems differ between states

Despite the fact that the US is the biggest producer of CO_2 by far (about 24% of worldwide emissions), it has refused to ratify the Kyoto protocol. Former President Bush refused to submit the Kyoto treaty to the Senate for ratification, given the exceptions granted to China as the world's second largest emitter of CO_2. On the other hand, the US was the first country to enact feed-in tariffs known as the Public Utility Regulatory Policies Act (PURPA) in 1978, following the energy crisis. However, implementation was left to each individual US state. This is why there are various approaches in the US to promote RE - 29 states have their own RE support program.

The PURPA was amended in 2005, providing tax incentives and loan guarantees for energy production of various types (also for advanced nuclear energy). In August 2006, California (ranked 12th worldwide in terms of CO_2 emissions) committed itself to reducing its emissions by 25% by 2020. In 2007, 418 cities in 50 states (~25% of the US population) agreed to the Kyoto protocol.

New administration aims to double renew. capacity by 2011

US President Barack Obama has already communicated that he aims to double the production of renewable energy within the next three years. Even if this target seems rather conservative in this respect (e.g. wind energy has doubled from 2005-08 even without specific government support), it still indicates that the US will also drive the reduction of GHG and force renewable energies in the years to come.

Hydro power

Global overview – current capacity (2.4% of global energy supply)

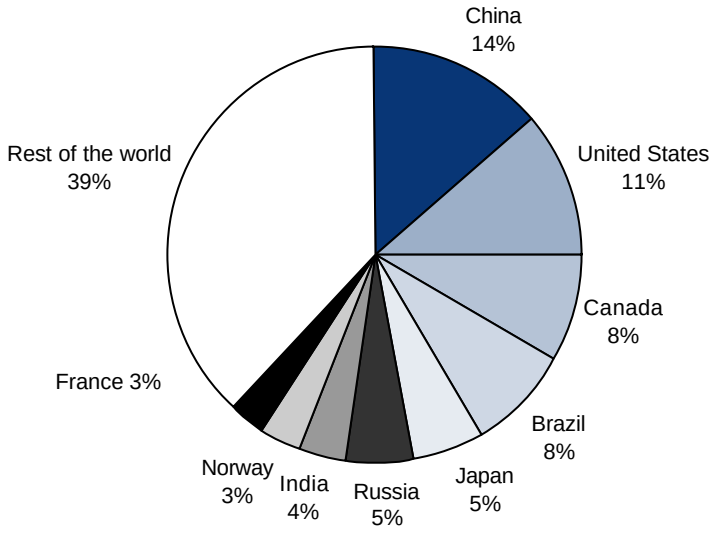
as of 2006	in Mtoe		in TWh
Global energy supply	11,730	Global electricity generation	18,921
thereof Hydro power	286.4	thereof Hydro power	3,121
Hydro power in %	*2.4%*	*Hydro power in %*	*16.5%*

Source: IEA, Erste Group calculations

Most important renewable electricity source – supplying 16% of global demand

The – by far – most important way of using the energy of water is hydroelectric power, taking advantage of the gravitational force of falling or flowing water. The installed capacity of hydropower supplied more than 867 GW in 2006. Total generation amounted to 3,121 TWh, or 16.5% of the world's electricity output (source: IEA). China had an installed capacity of 118 GW, representing 14% of the world's total installed capacity. The United States and Canada had installed capacities of 99 GW and 72 GW, respectively (or 11% and 8%, respectively).

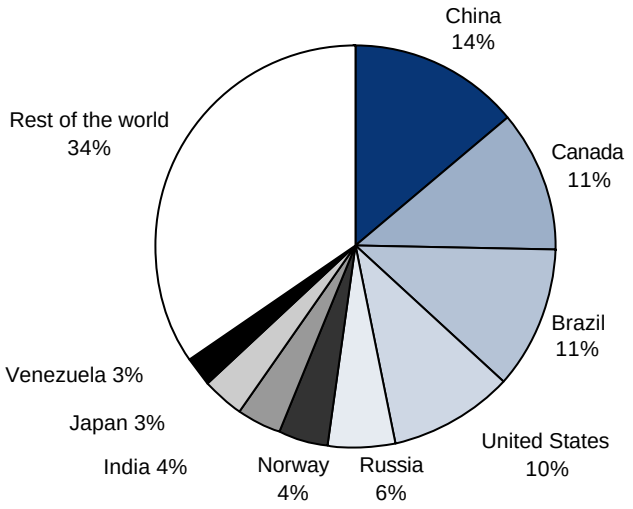
Global installed hydropower capacity – 867 GW (2006)



Source: IEA, United Nations

Figures for the generation output are available for 2006. China's hydropower output amounted to 436 TWh, representing 14% of the world's hydropower generation. Canada and Brazil produced 356 TWh and 349 TWh, respectively.

Global hydropower generation output – 3,121 TWh (2006)

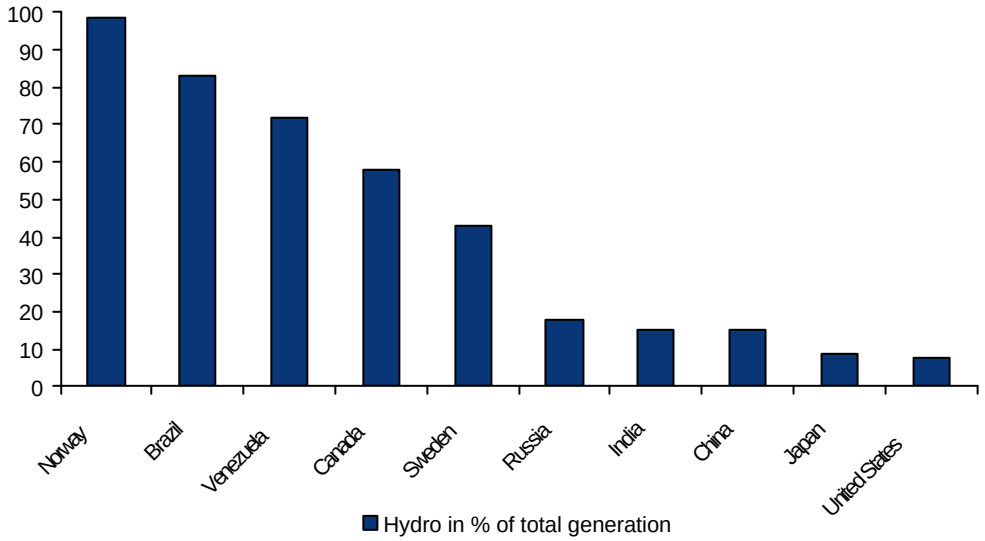


Source: IEA, United Nations

Hydropower as key energy source for Norway, Brazil and Canada

The importance of hydroelectricity production can easily be shown by comparing the percentage of hydro in total domestic electricity generation. The table below shows the 10 largest hydro producers. Norway produced 98.5% of its total electricity generation by hydro power. Hydroelectricity is also very important for the South American countries Brazil and Venezuela. Canada takes more than half of its generation from hydro power capacities. On the other side, hydroelectricity contributes only a small portion to the total generation for the other big hydro players China, the United States and Russia. For many other smaller countries, hydroelectricity is also the most important energy source. In Switzerland, Austria and Iceland, the percentage of hydropower in total domestic production amounts to 55%, 60% and 71%, respectively.

Hydro production in % of total domestic production



Source: IEA

Types of hydropower plants

The operation of hydroelectric power plants is rather simple: Flowing water is routed on to the blades of a turbine runner. This creates a force that drives the spinning turbine runner. Thus, the energy is transferred from the (dammed) water to the turbine. We can distinguish between two different types of turbines. A reaction turbine transfers potential and kinetic energy from water to the turbine. The force of the water declines while running through the turbine. Important types

are the Kaplan turbine (for run-of-river plants with high volume flows and low heads of water) and the Francis turbine (designed for medium volume flows and medium heads of water). The second type of turbine is the impulse turbine, where the pressure of the water passing the turbine remains almost unchanged. The water's pressure is converted into pure kinetic energy. The Pelton turbine represents this type of turbine and is designed for low volume flows but high heads of water.

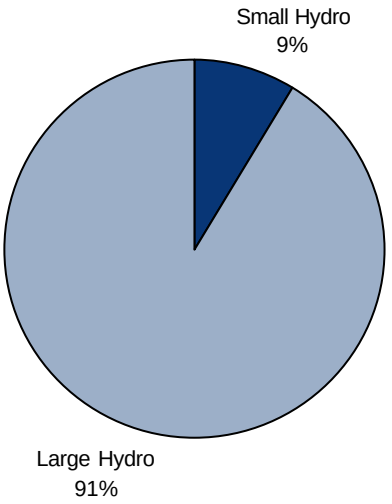
Run-of-river vs. Storage power plants

Hydroelectric power plants can be divided into run-of-river plants usually having no (or only a small) reservoir (and therefore operating for base load generation) and storage power plants, which are (with their reservoir capacities) predestined for the generation of peak load. Storage power plants might also have pumping facilities producing electricity to supply peak demand by moving water between different reservoir altitudes, i.e. pumping water during day periods when base load prices are rather cheap to higher reservoir levels.

Large vs. small hydro power

Another differentiation can be made regarding the size hydropower plants. While most of the installed capacities of the world's hydropower are related to large hydropower plants, the so-called small-scale hydroelectric plants (with generation capacities up to 10-30 MW) are very popular in China, which has over 50% of world small hydro capacity. Small hydro is ideal for isolated communities and has the advantage that "water to wire" packages (where a single contractor can provide all major elements of the plant) are offered at reasonable prices. The graph below shows that global hydro power capacity split between small and large hydro.

Global hydro power capacity split in small and large hydro (2006)



Source: REN21

Major advantages

Generally speaking, hydro power has a lot of advantages compared to other forms of electricity generation:

- Like most other renewable energy sources, hydroelectricity benefits from the elimination of fuel costs;
- In addition, hydropower plants tend to have long economic lives and low operating costs.
- Hydropower plants do not produce (directly) carbon dioxide, since they do not burn fossil fuels;
- In contrast to many other renewable energy sources, hydro power generally provides a steady generation of electricity. In addition, peak load facilities are able to provide supply for immediate demand (sometimes within less than one minute of the need arising).

Major dis-advantages

However, hydroelectric production also has some disadvantages:

- Hydropower projects may endanger nearby ecosystems, especially aquatic ecosystems;
- In addition, hydropower projects often require the relocation of people living where the reservoirs are planned; historically and culturally important sites might be flooded; the protection of the countryside is also an often-mentioned argument against such projects;

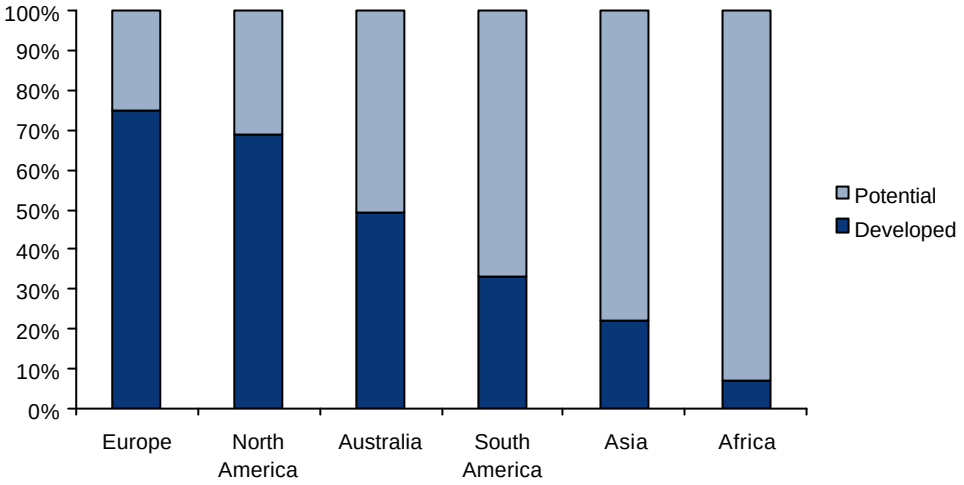
- In tropical regions, reservoirs of hydropower plants might produce methane and carbon dioxide, due to plant material in flooded areas decaying.

Future growth potential of hydropower

Still enormous potential – just 34% of potential developed

The future potential of hydropower is still enormous. Globally, hydroelectricity resources are still significantly underdeveloped, especially in regions with the highest electricity demand growth rates. According to the International Hydropower Association, Africa, Asia and South America show the highest potential for further developments.

Developed and potential hydropower resources



Source: International Hydropower Association, World Atlas of Hydropower & Dams

Asia and South America strongest growth market

Asia is currently showing the strongest growth of hydroelectricity generation capacities. From 2006 to 2007, China increased its generation output by some 51 TWh to almost 487 TWh and its installed capacity by 27 GW to 145 GW. 18 project with capacities of 2 GW or more are currently under construction and will be finished by 2015 (excluding the world's largest hydro power plant, the Three Gorges Dam, which has a capacity of 22.5 GW and will be completed in 2009). China is therefore impressively extending its lead in absolute terms.

Due to the fact that electricity wholesale prices significantly increased in the last five years (mainly driven by increasing prices for primary energy sources, the implementation of CO_2 certificate trading and climbing entrant costs), hydro power has become very attractive. The big advantage is the fact that there are no variable costs for fuels and thus operating costs (and therefore merit costs) are extremely low. Hydroelectricity is also ideal to support the deployment of intermittent renewables like wind and solar power. Therefore, we expect significant growth of demand for hydroelectricity capacities. The overall hydro potential can be seen at more than 8,000 TWh, which means more than a doubling of the current capacities of slightly more than 3,000 TWh.

Future hydropower technologies

There are some special types of hydropower that are not widely used yet, but which could play a more important role in the future.

Tidal power

Tidal power is the form of energy where the energy of tides is converted into electricity. Thus, the energy derives from the relative motion of the earth and moon (and to a lesser extent the distance between the earth and sun). The tides are responsible for changes in the water levels on the coasts that cause tidal streams. Tidal power plants work with the dam principle, where a bay or an estuary is dammed through an embankment ("barrage tidal power"). Reaction turbines

(e.g. Kaplan turbines) are moved by in-flowing water during the flood tide and out-flowing water during the ebb tide.

The first tidal power plant commenced operations in 1966 in France (near Saint-Malo on the Rance River on the Atlantic coast) and has an installed capacity of 240 MW. However, a minimal tidal range of five meters means that there are only up to 100 potential bays on earth that can be used for tidal power generation. Ecologic concerns, high entrant costs and high maintenance costs (due to salt water corrosion) are the main disadvantages of this kind of electricity production.

Tidal stream power

Other than barrage tidal power using the potential energy of the difference of heights, tidal stream generators make use of the kinetic energy of tidal currents. This relatively new technology is designed not only for tidal streams, but also for other thermal current systems (e.g. the Gulf Stream). The fact that ocean currents flow rather steadily is definitely one of the biggest advantages of stream generators, especially compared to wind power. Since the density of water is some 1,000 times higher than the density of air, only rather moderate water flows are necessary to produce electricity (1m per second). However, there are only prototypes currently in operation.

In Europe, only the UK might significantly benefit from this form of energy. According to some estimates, (tidal) stream power could contribute some 20% of the UK's electricity demand. For Europe overall, this energy source, which could cover 2-3% of the continent's total electricity demand, only plays a subordinate role.

Wave power

Wave power transfers energy from ocean (surface) waves into electricity generation. Waves are a result of wind activity, thus the energy is transformed from wind to energetic waves. There are different physical concepts for using wave power. However, wave power is not widely used yet.

The first commercial wave power device connected to the national grid was Islay Limpet in Scotland, which started operation in 2001. Islay Limpet uses an oscillating water column ("OWP-principle"), where waves press water into a pressure chamber filled with air, which leads to variation in the water level. Consequently, the waves compress and decompress the air through a specially designed air turbine (Wells turbine). Islay Limpet has an installed capacity of 500 KW.

Another concept is to install surface following elements with a buoy-like structure, where the rising and falling waves create mechanical energy. The so-called Wave Dragon concentrates waves in a v-formed barrier to run over a ramp. The water then returns to the ocean, using gravity to run hydroelectric generators. There are certain other technologies to be tested in the near future; however, wave power faces a lot of challenges, including the precondition that the single components survive winter storms, the high total cost of electricity and possible impacts on the marine environment.

The potential of wave power resources is enormous. The useful worldwide resources have been estimated at 2 TW. In Europe, the UK would have the biggest potential. However, it seems that these technologies are currently in their infancy.

Ocean thermal energy conversion

Ocean thermal energy conversion (OTEC) uses the temperature difference between shallow water and deep water with a heat engine converting some of the energy flows between a high temperature reservoir and a low temperature reservoir. The efficiency depends on the temperature difference. Therefore, places close to the equator, where the temperature of shallow waters is relatively high, would be the most appropriate. The main disadvantage is that OTEC projects require a large diameter intake pipe steepening kilometers into the oceans' depths to bring cold water to the surface. At the moment, OTEC is still in an experimental stage and only India seems to be working on OTEC facilities.

Osmotic power

Osmotic power is based on the natural process of osmosis, i.e. the diffusion of water through a semi-permeable membrane, from a solution with a low concentration to another with a high concentration. Osmotic power uses sea water and fresh water, with the sea water drawing the fresh water through a membrane and thereby increasing the pressure on the sea water side, which is used to produce electricity. Consequently, the best sites are river mouths. However, it has to be considered that, due to ecological and shipping reasons, osmotic power generation possibilities are limited. A first prototype of an osmotic power plant has been built in Norway.

Wind power

Global overview - current capacity (0.2% of global energy supply)

as of 2006	in Mtoe		in TWh
Global energy supply	11,730	Global electricity generation	18,921
thereof Wind power (2006)	14.6	thereof Wind power (2006)	170
Wind power in %	*0.12%*	*Wind power in %*	*0.90%*
thereof Wind power (2008)	23.7	thereof Wind power (2008)	276
Wind power in %	*0.20%*	*Wind power in %*	*1.46%*

Source: IEA, Erste Group calculations

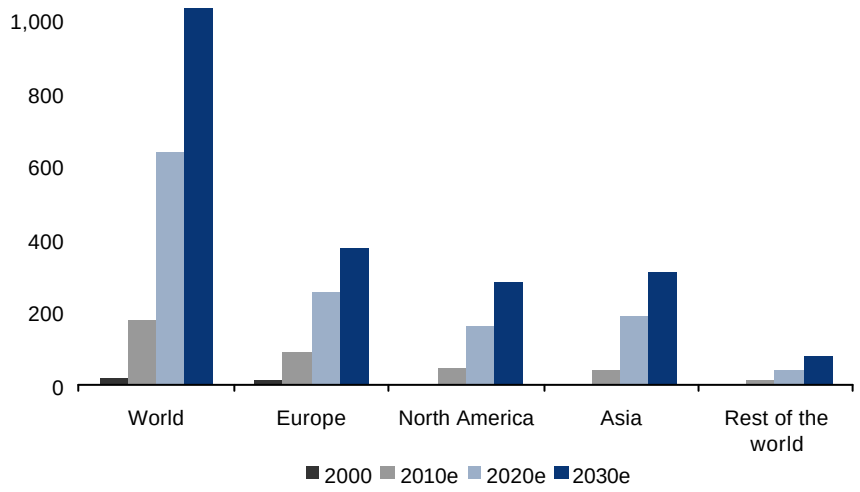
First initiatives in the 1970s – 120 GW capacity by 2008

Wind generation converts wind's kinetic energy into electricity. The first major research initiative to improve the efficiency of wind turbines was after the oil shock of the late 1970s. Since then, the technology has come a long way, increasing energy output per turbine 100-fold, halving the weight of turbines and reducing noise pollution. Due to these technological advances, the cost of wind energy was reduced from EUR 400/MWh in the 1980s to approximately EUR 70/MWh in 2008. The relative low costs make wind power the cheapest renewable energy resource after hydro and biomass. Government subsidies, the favorable prices and the wide availability of wind as a resource have helped to double worldwide capacity in the last three years, amounting to 120 GW of wind power capacity installed in 2008. Wind power thereby now provides 1.5% of current global electricity consumption.

Major wind capacities in Germany, Spain and the US

Currently, 80 countries are using wind energy on a commercial basis, with the main capacities in Germany, the US, Spain, China and India. These countries account for three quarters of the 120 GW global wind installations. At this level, less than 1% of estimated global wind power potential is utilized. Worldwide wind power capacity is estimated to increase to 630 GW by the end of 2020 and then double to more than 1,000 GW by 2030. With this projected growth and construction costs at EUR 1.4mn/MW, we estimate EUR 50bn in sales per year will be generated in the wind industry in the next six years. The majority of installations will be constructed in Europe (40%), followed by Asia (30%) and North America (25%). The main global growth in the medium term will come from further onshore installations, but in the long term particularly offshore wind power and the repowering of older turbines are going to drive growth.

Global Wind Power Capacity, 2000-2030e (GW)

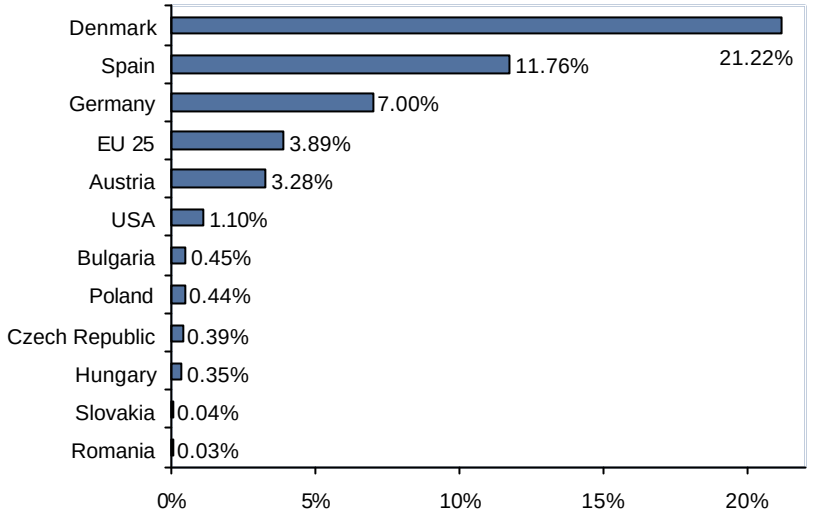


Source: Erste Group estimates based on GWEC, BTM Consult, EER

EU: 3.89% market share for wind electricity

The graph below shows, that in terms of market penetration, Denmark is by far the most advanced market. It also shows that with a total market share or 3.89% the EU is already quite well developed. Based on a rather low penetration level, many CEE countries and the US are in our view the major markets for future growth.

Regional wind share of electricity demand



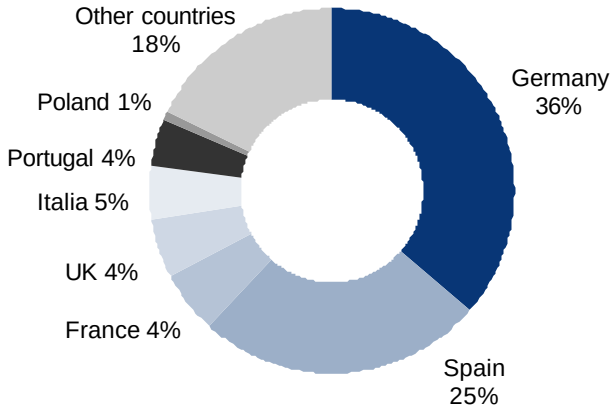
Source: EWEA

Europe – the most developed market

390% growth from 2000 - 2008

Most of the world's wind generating capacity is in Europe. In recent years, the amount of wind energy capacity installed in the EU has shot up. Between 2000 and 2008, capacity increased by 390%, reaching an estimated total of over 65.9 GW and thereby providing 3.7% of EU electricity. Due to this strong growth, wind generation accounted for 30% of all electricity capacity installed in the EU since 2000. Most capacity is installed in Germany, followed by Spain and Italy.

European installed wind power capacity 2008 – 65.9 GW

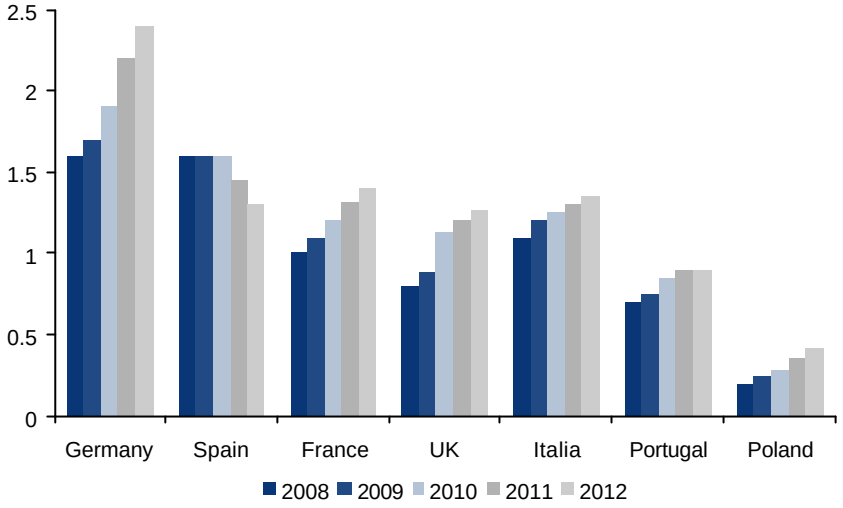


Source: EWEA

Poland and Romania attractive potential markets

The graph above shows that Germany and Spain already use wind-power quite extensively. In terms of density Denmark is the most advanced European market. Wind thereby supplied 21% of electricity consumption in Denmark last year and 7% in Germany, but its share is approximately 30% in the German state of Schleswig-Holstein. In the short term, the installed wind power is expected to grow at a CAGR of 15.3% to 118 GW in 2012. Particularly additions in France and the UK, which enjoy a lot of abundant wind potential growth, will increase. In the CEE area, countries like Poland (planned capacity of 12 GW by 2020) and Romania (potential for 14 GW) have quite good prospects to utilize energy from wind power.

European market development 2008 – 2012e, selected countries



Source: Erste Group estimates , EWEA, BWEA, FWEA, DEWI, PWEA

Feed-in tariffs, renewable obligations and certificates drive European wind investments

Main factors driving the rapid expansion of wind power capacity in Europe have been government subsidies through feed-in tariffs, renewable obligations and tradable certificates. By 2007, 46 countries and federal states worldwide had introduced feed-in systems as their major instrument to incentivize deployment of renewable electricity (18 out of 27 EU member states are using feed-in tariffs). For example, in France, the tariff for onshore facilities is 82 EUR/MWh for the first ten years. The tariff for offshore facilities is 130 EUR/MWh for the first ten years France operates an adaptive feed-in tariff system. This offers a EUR 82/MWh inflation-linked price for the first ten years for onshore installations. And is then followed by a load-based variable price factor for years 11-15, before the plants move onto the pool price for their last years of operation. For offshore wind farms, the starting figure is EUR 130/MWh.

CEE – Poland early stage – 350 MW installed capacity

EU regulations as key driver for renewables

The Polish wind farm market is in a very early stage of development, with total capacities of 350 MW and approx. 0.25% of total electricity usage in Poland. However, EU regulations (obliging Poland to reach a green energy share in total energy usage of 14-15% in 2020 and 20% in 2030) are a very strong motivation that will speed up the development of the market. The achievement of the minimum limits is enforced by the mechanism of green energy certificates, which forces energy companies to produce some share of electricity from renewable energy sources or purchase green certificates from other electricity producers that have a surplus in green energy production, like wind farm operators. The mechanism is very profitable for green energy producers, as the price of a green certificate for production of 1 MWh currently approximately equals the value of 1 MWh of pure electricity itself. This means double revenues in comparison with production from traditional energy sources.

Poland has very low wind energy densities, arriving at 0.0037 kW of capacity per capita and 0.45 kW per square kilometer of land. The government's plan assumes that, in 2010, the capacities of wind farms in Poland will increase to 2,000 MW from the current 350 MW and the share of wind generation in total energy usage will increase to 2.3% (vs. the current 0.25%). The government supports the development of the sector via subsidies for green energy projects amounting to 50% of total project costs (total subsidies for one project may amount to a max. of PLN 30-40mn). Currently, approximately 200 MW of new wind farm capacities is being constructed in Poland, with agreements for grid connection for an additional >4,000 MW.

Market development restrained by bureaucratic obstacles

The development of the Polish wind farm market is restrained by bureaucratic obstacles, including ecological permissions and difficulties in getting grid connections – the whole process can last five years or more. Moreover, in northern Poland, home to the country's best wind conditions, electricity lines are in miserable condition and do not allow for the connection of significant capacities without additional investments in infrastructure.

The Polish wind farm market has great prospects. Despite some difficulties with red tape and grid connections, it should develop dynamically, as it is strongly supported by EU and government regulations.

CEE – Romania highest wind power potential in southeastern Europe

Wind potential for 14,000 MW

Romania's potential in wind energy is considered the highest in southeastern Europe. The Moldova and Dobrogea provinces (in the southeast of the country, near the Black Sea) were considered the most appropriate areas for wind farm developments. In particular, the southeast of Dobrogea was ranked, according to different specialized studies, second in terms of potential in Europe. The wind potential of Romania is estimated at 14,000 MW installed capacity, equivalent to total annual production of 23 TWh. According to a development scenario proposed by the National Institute of Energy (IRE), it would be sustainable for wind farms units to make a contribution of 13 TWh in 2020, which would involve complementary development of flexible gas turbine power units up to production of 15 TWh.

Wind farms - technical restrictions to national grid integration of 3,000 - 4,000 MW

Last year, local and foreign investors announced a number of wind farm projects. The Romanian transmission and system operator announced that there were requests regarding connections to the national grid for projects with an installed capacity of 12,000 MW, while technical permits were already provided for 2,200 MW. In the medium term, according to Transelectrica, it is possible to connect to the national transport grid a maximum of 3,000-4,000 MW, meaning that many current projects could not go beyond the stage of business projects. From this point of view, there is a gap between putting wind farms into service and the time required for consolidating the transport and distribution networks, which can take 5-10 years. The implementation of 3,000-4,000 MW in wind farm capacity in the period up to 2015-17 would lead to an increase in the total investments in new capacities of over EUR 4bn (+28%).

Legal uncertainty prevails – green certificates encourage investments

Law no. 220 issued by Parliament in October 2008 regarding the promotion of renewable energy sources mentioned only that the connection to the transport/distribution grid would be evenly covered by the transmission/distribution company and the owner of the wind farm. According to the law, the new government soon has to approve detailed regulation to clarify the responsibilities related to capital expenditures required by the integration of the new power producers. This aspect represents the main business risk factor for the owners of wind farm projects in Romania, due to the high impact on the final cost of the project. However, the Romanian law sends a clear signal encouraging investments in new renewable power units via the new provisions related to green certificates.

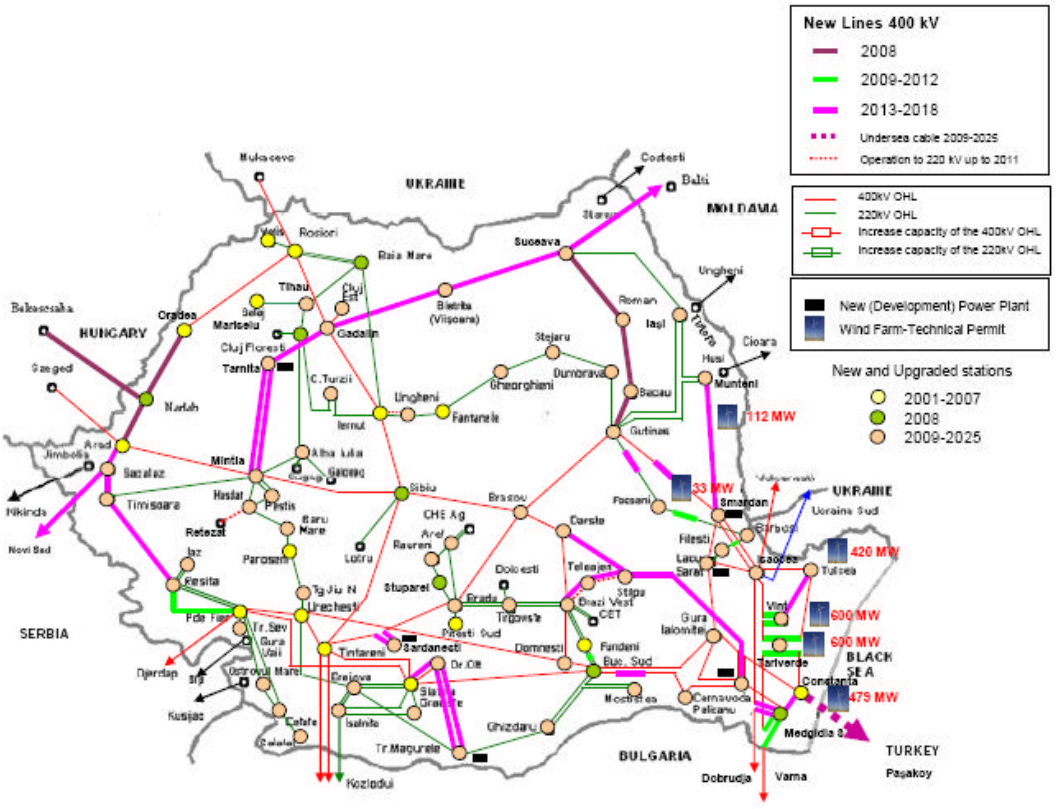
A new wind power producer will receive for each MW produced two green certificates until 2015 and one certificate after that. These certificates can be sold at a price within the range EUR 27-55/certificate between 2009 and 2014. Until this law took effect, a green certificate could be sold at a price between EUR 24 and EUR 42. The law specifies that the minimum price to be established between 2015 and 2030 will be over the level of EUR 27/certificate. The mandatory quote of green certificates acquired by electricity suppliers in 2008 was established by ANRE at 0.316% of the electricity provided to final consumers.

Main renewable projects in Romania

- The Moldova and (especially) Dobrogea provinces are considered the most appropriate from the point of view of weather conditions, with technical permits for wind farms with an installed capacity of 145 MW and 2,099 MW issued (see the wind farm projects chart).
- The most advanced major wind power project has an installed capacity of 600 MW and will start to supply electricity to the power grid this year. It was launched in the area Tariverde in Dobrogea, owned by an offshore resident in Cyprus and a Swedish businessman.
- CEZ acquired two wind farm projects in Dobrogea from Continental Wind Partners in the Fantanele-Cogealac area. These have installed capacities of 347.5 MW and 252.5 MW, with an investment of EUR 1.1bn. These will be commissioned in 2010 and 2011, with CEZ announcing that the company has all the approvals according to Romanian law, including the guaranteed connection to the national transport grid.

The most important local investors are Petrom, Electrica (an electricity distribution holding company) and Blue Investments. Among the strategic investors attracted by the wind power potential of Romania are EDP, ENEL, Verbund and Iberdrola.

Romanian wind farm projects



Source: Transelectrica

US - already big market with substantial potential for growth

US biggest market in 2008

In recent years, the US has added more wind energy to its grid than any other country, as the wind power capacity grew by 8 GW to 24 GW in 2008. Based on recent research by the Department of Energy, the supply of wind power could increase to 20% by 2030 if a substantial expansion of the power transmission grid takes place. Currently, the installed capacity in the US is still second behind Germany's, but in 2008 the US became the world's largest wind power producer, due to its higher average winds. Because of a favorable tax credit system and the fast resource supply, wind power accounted for 35% of all new US electric generating capacity in 2007. Nonetheless, overall capacity is small, as it contributes a mere 1% of total electricity production.

Intentions to double US wind power capacity by 2011

It is expected that the new US administration will double US renewables capacities within three years, from the current 24 GW to 48 GW, thereof around 20 GW are expected to be invested in wind power. We estimate that just the necessary investments to add 20 GW of wind power would translate into an investment volume of USD 36.4bn by 2011.

India and China – leading wind power investors in the emerging markets

Favorable policies drive Chinese wind power market

Among developing countries, only India and China have significant production of wind energy. Growth is particularly strong in China, where generating capacity is thought to have doubled in 2008. As the industry is benefiting from favorable policies, the capacity of wind power reached 10.5 GW in 2008, two years ahead of the deadline set by China's government to reach 10 GW by the end of 2010. The country is particularly rich in wind resources, with estimated technically exploitable resources of 1,000 GW. Estimates by the GWEC suggest that, by 2010, the total installed capacity will reach 20 GW.

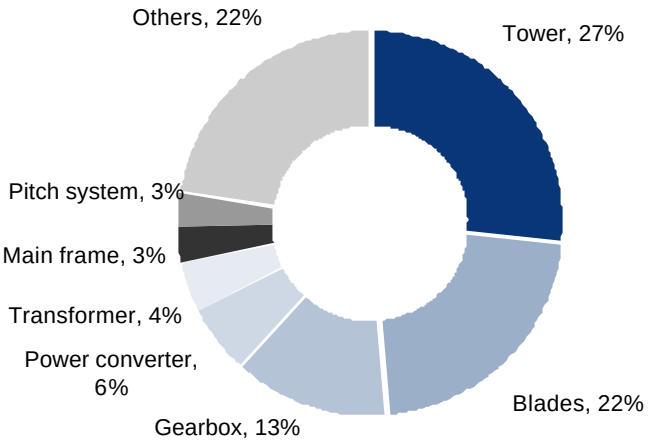
India, which had more than 7 GW of installed wind capacity in 2007, is also likely to grow rapidly over the next five years. By 2012, the GWEC estimates wind energy installations to total more than 20GW. The government (as well as local governments) provides strong incentives for wind energy growth, including a tax holiday for up to ten years, favorable loan terms and accelerated depreciation allowances. Unlike in Europe, where the main drivers of wind energy investment have been the utilities and power providers, the market in India is driven by industrial customers in the manufacturing sector. These companies are keen to cut their dependence on utilities and fossil fuels to ensure greater reliability of power supply.

Key cost factors of the wind industry

Steel most important raw material used

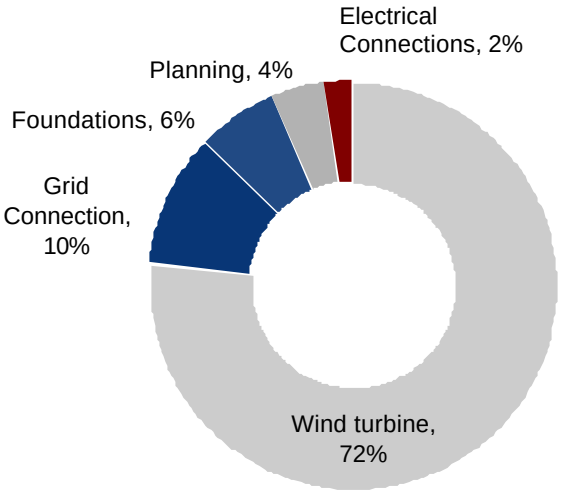
The chart below shows the breakdown of costs in the manufacture of a wind turbine based on an REpower MM92 with a 45m blade and a 100m tower. Steel is the most important raw material used in the manufacture of wind turbines and its steep increase in the last year before the current crash led to a sharp increase in the prices of wind power installation. Furthermore, the prices of grid connection, foundations and planning costs have to be added to the turbine list price. The EWEA estimates that the high steel price and increasing demand for wind turbines have caused the price to increase from EUR 1.0mn/MW until 2004 to the current average price of EUR 1.4mn/MW. However, due to the reduction of bottlenecks in production and increases in production capacity from the main manufacturers, the price is expected to return to below 2004 levels by 2010.

Turbine costs – split by parts



Source: Repower, Erste Group Research

Total construction costs



Source: Repower, Erste Group Research

O&M costs differ substantially

The wind farms installed currently have a capacity of 50-200 MW. At this size, operators can benefit from economies of scale in civil engineering and electric connection costs. However, the wind farms require a large area, as turbines typically need 3-5 rotor diameters between them. After completion of the construction and after the loss of warranty provisions, operators are faced with an average of EUR 40,000/MW in annual maintenance costs. However, due to the different development stages of the local wind energy market and the accessibility of the turbines, there is a wide spread between the O&M costs in different areas. One of the world's biggest operators, Iberdrola Renovables, estimates that the costs are EUR 25,000/MW in Spain, while in the "young" wind market in the UK, up to 87,000EUR/MW have to be expected.

In total, the cost of generating electricity from wind energy currently can be as low as EUR 40-60/MWh in good wind sites with high loads (>30%). For that reason, we believe wind farms have already come close to "grid parity". Given the addition of a mixture of regulatory regimes, returns can end up being quite generous.

Wind turbine manufacturer market

70% of turbine manufacturing in Europe

The turbines necessary for this global expansion have thus far been mainly produced in Europe (approx. 70%), as European firms enjoy a technological edge in the sector. With the expansion of overseas markets, all major turbine manufacturers from Europe have started to set up local production facilities in Asia and North America. In terms of market share of installed MW worldwide, the companies Vestas (23%) from Denmark, GE Wind (17%), Spain's Gamesa (15%) and Enercon (14%) from Germany have the largest market shares (BTM Consult, 2008).

Dynamic growth rates lured new entrants

The long order books, rising prices and good profitability of the sector evident in recent years have encouraged new entrants into the market. There have also been a number of acquisitions by producers from Asia of European wind turbine manufacturers to gain access to better technology. These have included Suzlon's acquisition of a 71% stake in Hansen Transmissions and effective 90% ownership of REpower. In China, at least 40 new competitors entered the wind turbine sector over the last two years, while the domestic market leader, Goldwind, continues to show strong growth, having increased revenues by more than 100% in 2007 and with similar growth expected for 2008 based on consensus data.

Joint development programs are booming

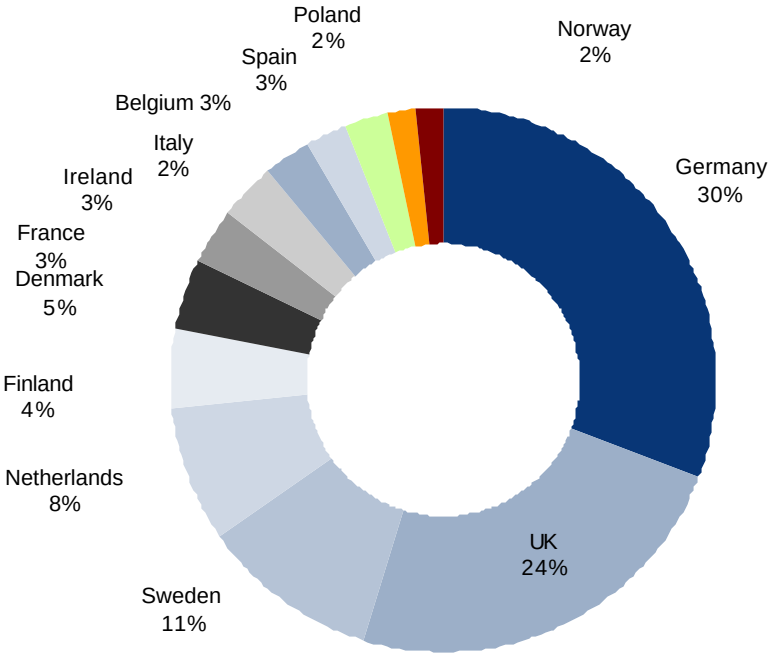
A recent trend to have emerged in the sector is the formation of joint development programs between larger wind farm developers and wind turbine manufacturers. In particular, Gamesa, which is 24% owned by Spanish utility Iberdrola, injected its development projects into a joint venture with Iberdrola Renovables. Prior to this deal, Clipper Windpower announced a joint venture with BP Alternative Energy in the US to develop one of the largest wind farms globally (5GW). These joint ventures reduce the financing needs of wind farm development for the turbine manufacturers and ensure that their turbines are on order with financially stable, long-term operators in the wind farm sector. Further, these agreements give WTG manufacturers access to service income based around long-term maintenance and operating contracts.

Offshore market – driving turbine size increases

Offshore market promises higher load factors (+10%)

One of the main growth markets in the future will be the offshore development, as load factors can be 10% points higher than onshore. Further offshore wind farms tend to be bigger (>200MW are common), allowing for economies of scale and there is no visual pollution if the offshore farms are sufficiently far out at sea. The EWEA estimates that developing less than 5% of the North Sea surface area would enable offshore wind to supply roughly 25% of the EU's current electricity needs.

Offshore wind power planned for 2015 - 30.9 GW



Source. EWEA

EU - 31 GW offshore capacity planned by 2012

The latest offshore statistics gathered by EWEA give a total of 1.5 GW now installed worldwide, all of it in the EU, led by the UK with 0.6 GW. There are plans for 30,882 MW to be operating in the seas around 12 EU member states and Norway by 2015. However, the deliverability of the projects remains strongly conditioned by wind turbine availability. Projects relying on 3–3.6 MW machines will not be able to get their wind turbines before 2009-10, and the ones planning to use 5 MW wind turbines will have to await the serial production of today's prototypes. To combat these obstacles, attractive support systems have been put in place in many countries. Other large markets for wind power, including the US and China, are likely to plan offshore wind farms as population centers in both countries are mainly along the coastlines.

7.5 MW turbines?

Wind turbines have also grown larger and taller. The generators in the largest modern turbines are 100 times the size of those in 1980. Over the same period, their rotor diameters have increased eight-fold. The average capacity of turbines installed around the world during 2007 was 1.5 MW at an average height of 80m. The largest turbine currently in operation has a rotor diameter of 126 meters and a power capacity of 6 MW. Clipper Wind Power is currently working on an offshore prototype of 7.5 MW.

Infrastructure investments – a major issue

In many parts of the world, substantial upgrades of grid infrastructure will be required to allow for the levels of grid integration proposed in this report. Significant improvements can be achieved by network optimization and other 'soft' measures, but an increase in transmission capacity and construction of new transmission lines will also be needed. At the same time, adequate and fair procedures for grid access for wind power need to be developed and implemented, even in areas where grid capacity is limited.

Big utilities better positioned to weather financial crisis

The financial crisis is noticeably impacting the global wind industry in the short term. With sales lower, turbine manufacturers have been forced to cut prices to offload unsold inventory and to shut down costly plants built to accommodate now-reduced global demand. Profit margins have fallen in tandem. The private research firm Make Consulting already lowered global guidance of added wind capacity in 2009 by 7% and turbine producers have reduced their outlook for the year. Repower for example cut its sales growth expectations by 10% to 30-35% for 2009 and Vestas December order intakes significantly slowed down by 35%. In the UK the prestigious offshore project "London Array" with 1GW capacity might be put on hold as Eon raises concern on financing. Further, many independent, often highly leveraged, energy producers have already been pushed out of the market. That could cause demand for wind turbines to fall by as much as one-third in 2009, as only cash-rich utilities have the means to continue investing. Shares in the ISE Global Wind Energy Index fell by 58% in 2008 after some stocks had increased 10-fold the five years before.

Solar power

Global overview – current capacity (0.06% of global energy supply)

as of 2006	in Mtoe		in TWh
Global energy supply	11,730	Global electricity generation	18,921
thereof Solar power	7.5	thereof Solar power	87
Solar power in %	*0.06%*	*Solar power in %*	*0.46%*

Source: IEA, Erste Group calculations

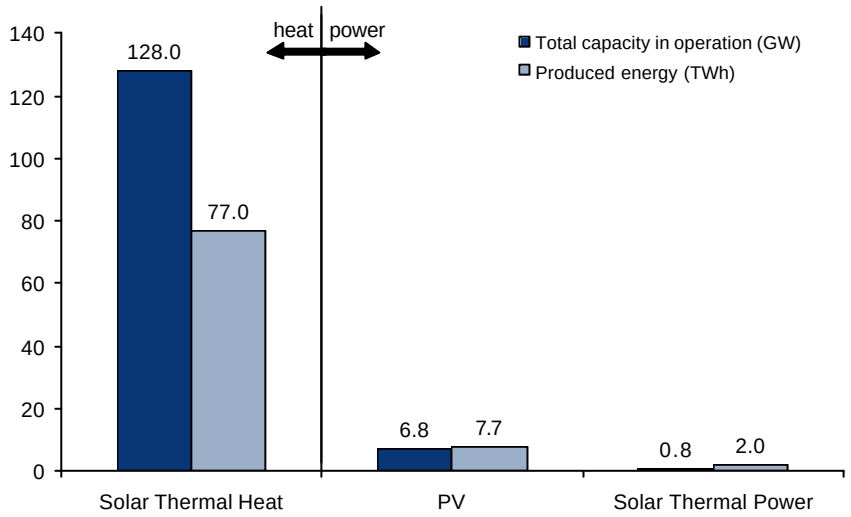
Solar power – biggest natural source of energy

Generally speaking, solar power comprises both radian light and heat. It is the biggest natural source of energy, as the supply exceeds global energy demand by 8-10,000 times. To put it differently, the solar energy supply of one hour exceeds global annual demand. Given current practical and economic considerations regarding direct power generation, solar energy is mainly transformed with the help of photovoltaics (PV) and solar thermal energy (STE). Another use is the generation of heat, which is solely done via solar thermal heat (STH). Indirectly, solar energy conversion into chemical energy via photosynthesis produces food, wood and the biomass, from which fossil fuels are derived. Wind is also a manifestation of atmospheric circulation induced by solar energy.

Currently solar power supplies just 0.06% of global energy demand

Installed capacities for STE, PV and STH can be seen in the table below. The market for STH is the biggest by far, given its longer tradition, as this technology is used to prepare hot water and provide space heating and cooling to the largest extent. STE is the least developed, with an installed capacity of only 2 GW in 2006. In total solar power supplies just 0.06% (around 7.5 Mtoe = 87 TWh) of global energy demand as of 2006.

Total capacity in operation (GW) and produced energy (TWh), 2006



Source: Solar heat worldwide 2006 version 2008

Technology-wise, STE and STH are equal in the following respect: STH is produced with low-, medium- and high temperature collectors, whereas STE is an output of only large sized collectors.

Solar Thermal Energy

Just at its very beginning

As can be seen from the market size of STE, this technology is just at its very beginnings. Currently, there are a few test power stations in Spain and California. Unlike in PV, where solar energy is directly transformed into electricity, with STE energy is produced via thermal energy (heat). From the current point of view one can emphasize one major advantage of STE over PV – thermal energy is easier to be stored and therefore electricity could also be produced at nights. Even if there are plans to further grow the capacity of STE in the future, there is still a long way

to go as there is currently not even a standard test environment for the efficiency factor. This makes it difficult to accept the quality or state of a newly build power station. As reference power plants we could name Nevada Solar One (capacity: 64MW) and Andasol 1 in Spain (50MW).

Solar Thermal Heat

Mainly driven by private investments

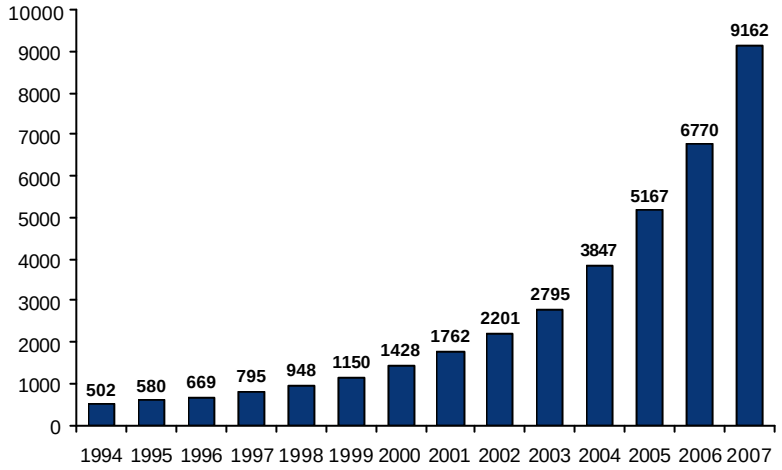
The market for STH is biggest with regards to the use of solar energy today. Similar to the PV market, it has experienced strong growth in the last few years. The market is mainly driven by private investments into solar heating for water heating, air-conditioning, and industrial applications. As this market does not really offer investment possibilities for investors, we have just slightly touched this subject at the end of this section. Our main focus in this section is dedicated to the PV market.

Photovoltaics

PV production doubles every two years

Photovoltaics (PV) is a technology that converts light directly into electricity. Due to the growing demand for solar energy, the manufacture of solar cells and solar photovoltaic arrays has expanded dramatically in recent years. Photovoltaic production has been doubling every two years, increasing by an average of 35% each year since 2002, making it the world's fastest growing energy technology. At the end of 2007, according to preliminary data, cumulative global production was 9.2 GW. Roughly 90% of this generating capacity consists of grid-tied electrical systems. Such installations may be ground-mounted (and sometimes integrated with farming and grazing) or building-integrated. Financial incentives, such as preferential feed-in tariffs for solar-generated electricity, have supported solar PV installations (e.g. Germany, Spain), as the production costs for PV power are still way above those of fossil fuels.

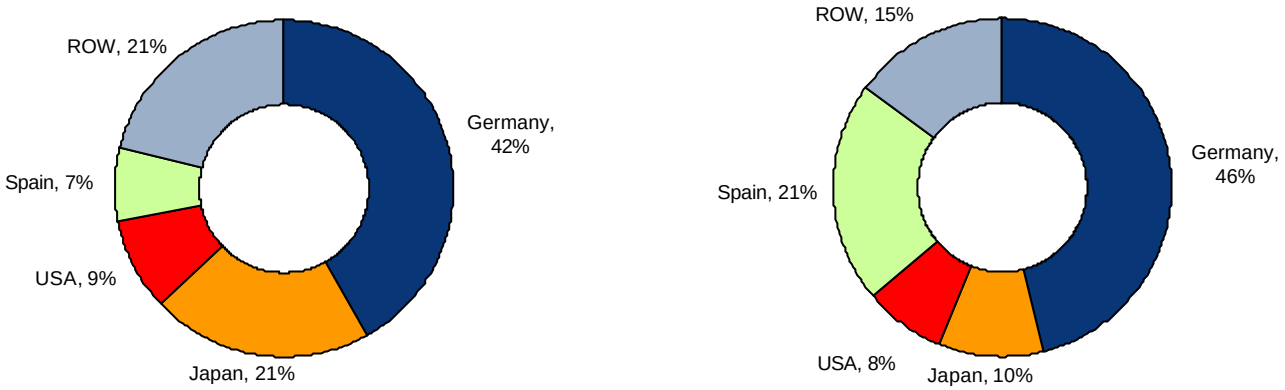
Global cumulative PV capacity (MV)



Source: EPIA – Solar generation V – 2008

The four leading countries (Germany, Spain, Japan and the US) represent about 89% of the total worldwide PV installed capacity. Again, about 90% of the installed capacity is on-grid.

Top 5 PV country markets 2007 (left: by total capacity, right: by newly installed capacity)



Source: EPIA – Solar generation V – 2008

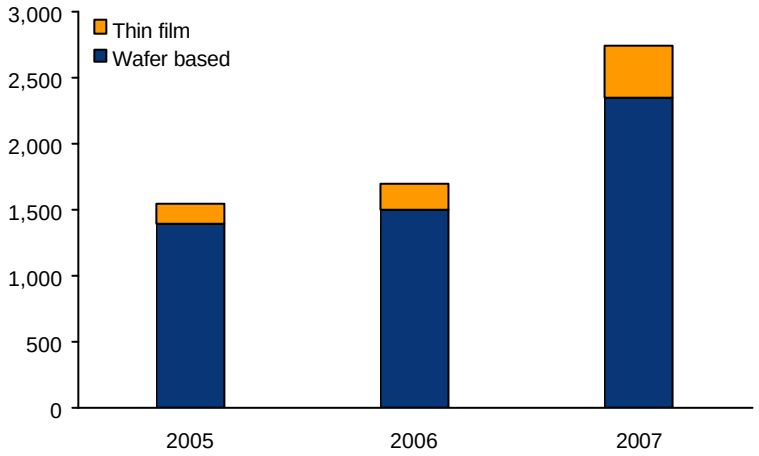
Capacity factor

The above-depicted PV capacities reflect the theoretical value of all installed PV panels (i.e. GWpeak) in the case that the PV system was online for 24 hours/365 days of the year (i.e. 8,760 hours/year). This is rarely the case for on-grid PV systems. Germany, for example, has installed capacity of about 3.8 GWpeak; the duty-hours were 919 in 2007, generating 3500 GWh (i.e. 919h*3.8 GW). Consequently, the capacity factor is 10.5% (i.e. 919/8,760). Currently, PV systems have capacity factors of below 30%, dependent on the location.

Solar cells

Conventional solar cells consist of crystalline silicon (about 90% in 2007), while future plans have a strong focus on thin film, which makes use of other materials in addition to silicon. Thin film cells have several advantages, such as low material consumption, low weight and a smooth appearance. Together with the efficiency, the thickness of the cells is another important cost factor, as thinner cells are cheaper to produce (less silicon). Currently, though, they still have a lower efficiency factor than crystalline cells (see chart below).

Trends in PV module technology 2005-07 (MW)



Source: EPIA – Solar generation V – 2008

Efficiency factor

Efficiencies of more than 20% have already been reached with silicon cells in mass production. This means that 20% of the incoming solar radiation can be transmitted into electricity. Given this rather low efficiency, the area needed to generate a meaningful means of electricity is still rather large. The reason why the table below reports lower efficiencies is found in the standardized testing conditions for comparison reasons.

Module and cell efficiency 2007

Technology	Thin Film				Crystalline wafer based	
	Amorphous silicon (a-si)	*Cadmium telluride (CdTe)*	*CI(G)S*	*a-Si/m-Si*	*Monocrystalline*	*Multicrystalline*
Cell Efficiency at STC*	5-7%	8-11%	7-11%	8%	16 –19%	14 – 15%
Module Efficiency					13 – 15%	12 – 14%
Area needed per kW (for modules)**	15 m^2	11 m^2	10 m^2	12 m^2	app. 7 m^2	app. 8 m^2

* Standard Testing Conditions: 25°C, light intensity of 1,000W/m^2, air mass = 1.5
** kW = kilowatt. Solar PV products and arrays are rated by the power they generate at Standard Testing Conditions

Source: EPIA – Solar generation V – 2008

Solar cell and module production

The total PV cell production volume for 2007 in the IEA PVPS countries was reported at about 2,400 MW, up from 1,900 MW in 2006, an increase of 26%. The largest increase in production took place in Germany (an additional 330 MW), while Japan's production remained at the same level as in 2006.

Japan remained the leading producer of photovoltaic cells (923 MW) during 2007. Production of cells and modules in this country accounted for 39% and 22%, respectively, of the IEA PVPS countries' production, with Germany in second place for cell production (with 35%) and first place for module production (with a 36% share). The relative German market share in 2007 continued to increase, at the expense of the Japanese market share. In the US, the third largest PV cell producing country, production increased by 32% from 2006. Spain's module production increased to overtake the US for the third position during 2007. However, US output of thin film technologies almost doubled to 177 MW, representing nearly one half of world thin film production.

Inverters

For grid-connected PV systems, it is essential to use a converter that transforms the generated electricity from direct current (DC) to alternating current (AC). In measuring the efficiency factor of a whole PV system, one also has to take into account an additional loss of about 1-2% due to the inverter.

Off-grid systems

Stand-alone PV systems make use of a battery to store the energy for later use. These systems are used for small electric appliances (e.g. parkometers), in rural areas, or in undeveloped countries that do not have a national power grid.

Electricity storage

Solar power – unpredictable

A characteristic of solar energy is the unpredictability of incoming and hence produced energy. Consequently, it is rarely the case that a solar power system generates as much energy as currently needed. For excess energy production, it is on the grid operator to decide if these capacities are currently needed or if they can be absorbed by the grid. If not, the electricity is discharged. If yes, the operator can use it for pump storage hydro power plants, where the excess electricity can be stored for future needs. Once the technology that aims to store excess energy in a fuel cell becomes market-ready, solar energy will even increase in importance and economic effectiveness. Currently, large PV power stations hardly operate at high efficiencies, due to a lack of storage.

Economics of PV systems

PV technology has the highest investment cost of all commercially deployed renewable energy sources. Investment costs for a system (including solar collection modules and the other components of the plant) currently range from around EUR 3,900 per kWp (3.9 per W) to above EUR 13,000 per Wp (13.0 per kW; at current efficiency factors). The price depends on the type of solar cell, scale of installation, connection to an electricity grid and local labor costs. In spite of big falls in module costs in recent years and increases in the efficiency of commercial cells, PV generation remains relatively costly. Further technological advances and ultimately achieving economies of scale will depend on government subsidies. However, new semi-automated PV manufacturing plants, with high annual production capacities of around 300 MW, are bringing down module costs per unit.

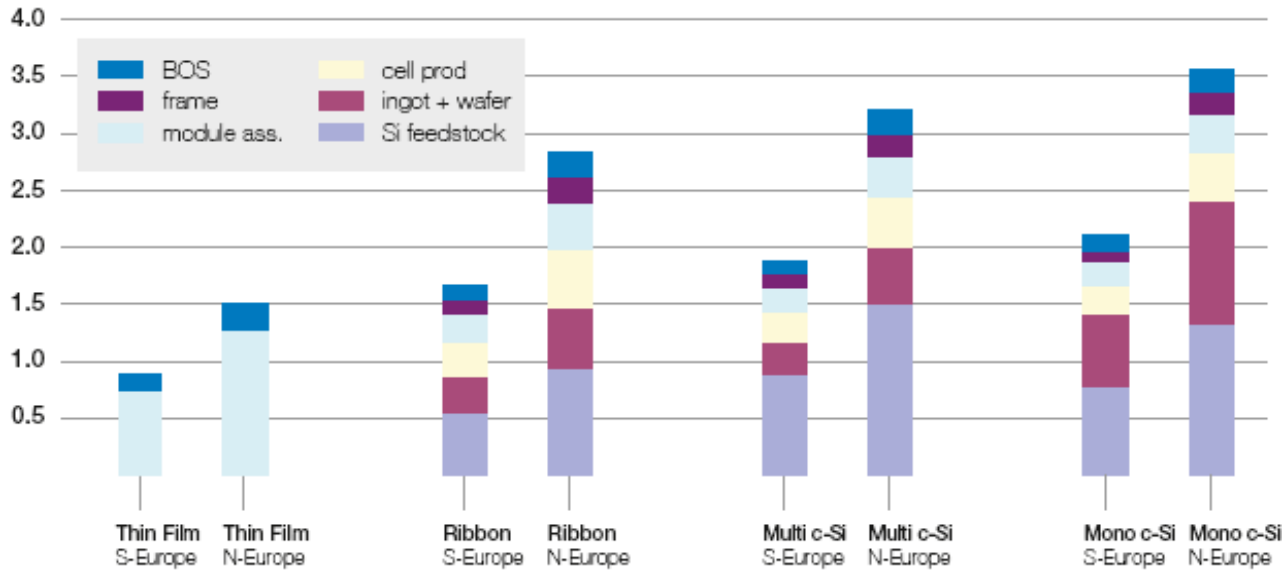
Indicative installed system prices in reporting countries 2007

Country	Off-grid (EUR or USD per W)				Grid-connected (EUR or USD per W)			
	<1 kW		>1 kW		<10 kW		>10 kW	
	EUR	USD	EUR	USD	EUR	USD	EUR	USD
AUS	12,2–15,2	16,7–20,8	11–14	15–19,2	6,1–7,3	8,3–10	4,9–6,1	6,7–8,3
AUT	8–15	11–20,5	8–15	11–20,5	4,8–6	6,6–8,2	4,8–5,5	6,6–7,5
CAN	10,2	14	5,3	7,2	5,8	7,9	6,8	9,3
CHE	10,4–13,4	14,2–18,3	9,1–10,4	12,5–14,2	5,7–5,9	7,8–8	4,6–5,5	6,3–7,6
DEU					4,4–5,2	6–7,1	4,3	5,9
DNK	9,4–12	12,9–16,5	20,1–26,9	27,6–36,8	4,7–11,4	6,4–15,6	6,7–13,4	9,2–18,4
ESP	15–20	20,5–27,4	15–20	20,5–27,4	7–9	9,6–12,3	5,5–7	7,5–9,6
FRA	11–19	15–26	13–15	18–21	5,5–6,5	7,5–9	5,5	7,5
GBR	7,3–11	10–15	7,3–16,1	10–22	5–13,6	6,8–18,6	6,7–13	9,2–17,8
ISR	6–9	8,2–12,3						
ITA	10–14	13,7–19,2			6–7	8,2–9,6	5–6	6,8–8,2
JPN					4,3	5,9	3,9	5,4
KOR					6,6–7,2	9–9,8	6,4	8,7–8,8
MEX	10,8	14,8			5,8	7,9		
NOR	15,5–22,4	21,3–30,7			11,2–15	15,4–20,5		
PRT	8–10	11–13,7	8–10	11–13,7	5–6	6,8–8,2	4,2–5,5	5,8–7,5
SWE	10,3	14,1			5,2–6,5	7,1–8,9	6,5	8,9
USA	7,3–14,6	10–20	7,3–14,6	10–20	5,1–6,6	7–9	4–5,5	5,5–7,5

Source: Trends in PV applications 2008

One of the main economic advantages of PV systems is the very low operating costs. Whereas other power systems need constant maintenance, a PV system has, due to the lack of moving parts, fixed operating costs of about 0.5-1.0% of investment costs and no additional fuel costs. Conventional PV modules have a lifespan of about 25-30 years. In Germany, under the current feed-in policy, the average return on investment of a PV system is about 10 years. The following table shows the payback time in terms of energy that was used to produce the respective PV system (2007).

Energy payback timesfor range of PV systems



Source: EPIA – Solar generation V

Future potential

Bright future for solar power

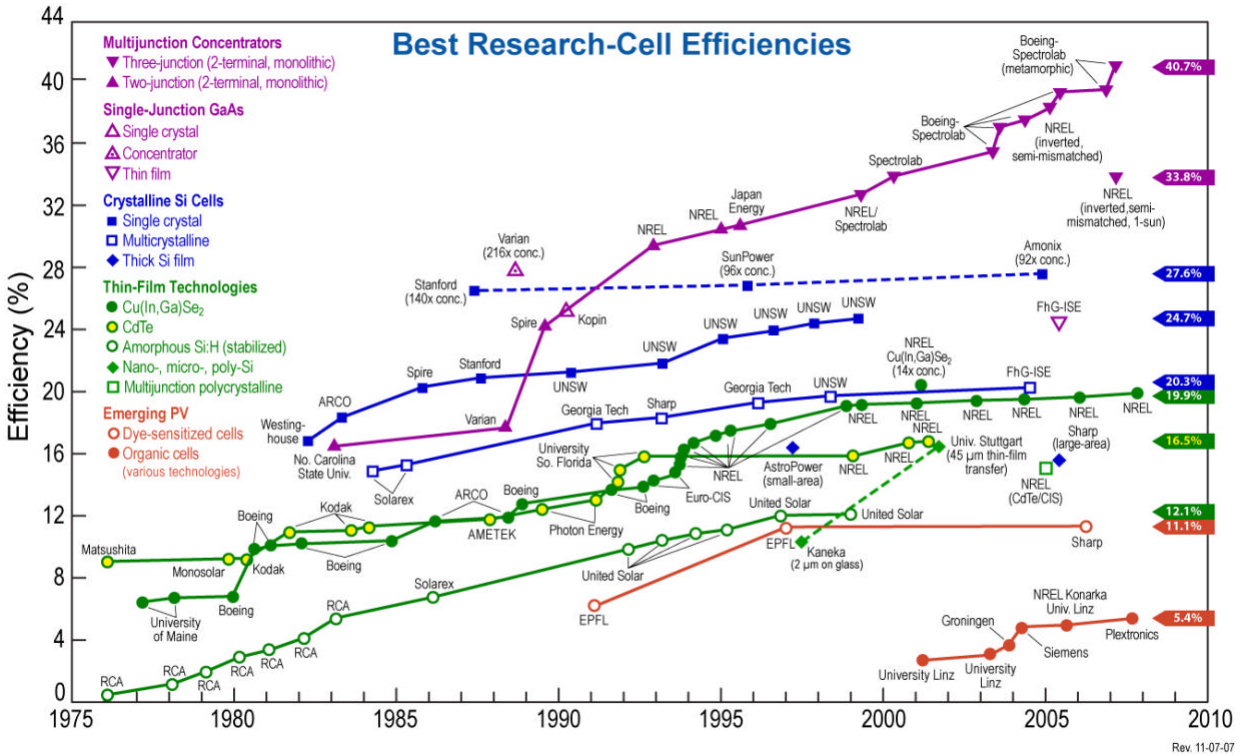
There are several arguments leading us to believe that solar energy should have a bright future. On one hand, PV provides an effective power supply for communities in developing countries which do not have access to electricity. There are 1.7bn people around the world without basic energy services. In this case, off-grid PV systems would already offer an economic way to provide means of electricity. Regarding competitiveness, PV generally competes with diesel generators or the potential extension of the public electricity grid. The fuel costs for diesel generators are high, while solar energy's 'fuel' is both free and inexhaustible.

Research to drive efficiency

Current research is targeting conversion efficiencies of solar cells of 30-60% while retaining low-cost materials and manufacturing techniques. These third generation technologies aim to improve the poor electrical performance of second generation (thin film technologies), while maintaining very low production costs.

High-efficiency solar cells are a class of solar cells that can generate electricity at higher efficiencies than conventional solar cells. While high-efficiency solar cells are more efficient in terms of electrical output per incident energy (watt/watt), much of the industry is focused on the most cost-efficient technologies (cost-per-watt or EUR/watt). Still, many businesses and academics are focused on increasing the electrical efficiency of cells and much development is focused on high-efficiency solar cells. It should be noted, however, that the results are achieved in an optimal test environment. Some cell attributes are not suitable for mass production.

Cell efficiencies



Source: www.energy.gov

Policy to drive demand

Feed-in tariffs as well as other incentives (see the regulatory framework chapter) that aim to increase the share of renewable energies will continue to drive demand for PV systems. As these incentives are guaranteed for some 15 years (sometimes even 20), we expect that the PV sector will continue its growth path.

Silicon production for PV only

This growth path goes hand in hand with extending the capacities for solar cells and modules as well as with the need to set up additional production capacities for silicon. Up to now, the PV industry has been receiving silicon from suppliers for electronics. This caused a shortage of silicon that has burdened the growth of the PV production capacities in some countries. This

development will be further supported by the fact that PV wafers will be thinner, hence using less silicon.

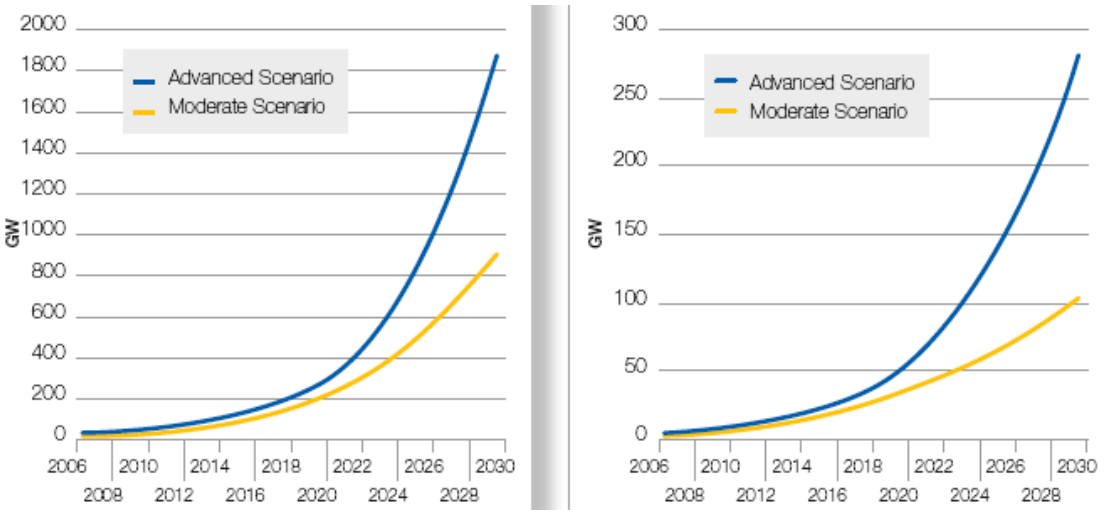
Negative aspect from feed-in tariffs

There is also a negative aspect connected with the high feed-in tariffs used especially in Europe. Due to the high subsidy, the supply of PV cells and modules hardly meets the local demand (e.g. Germany). In fact, PV cells and modules are still net imported. Given this fact, the price for cells and modules is still too high for many undeveloped countries, as the price is not competitive enough. This market imbalance has to be wiped out in the course of time. Once prices fall below the level at which undeveloped countries would consider investments in PV, demand would get an additional boost.

Outlook until 2030

In the following section, we describe the expected development for the PV sector established by EPIA (European Photovoltaic Industry Association). This outlook covers various economic statistical aspects of the expected development of the PV industry. EPIA has calculated two different scenarios – an advanced scenario and a moderate scenario. The following table depicts the differences between these scenarios regarding installed capacity expectations.

Global PV cumulative capacity (left), Global PV installed capacity p.a. (right)



Source: EPIA - Solar generation V

EUR 170bn market by 2030

We have decided to describe the moderate scenario in the following analysis, as it is the more realistic one, given the preconditions of meeting the ambitious climate targets. The extent to which these assumptions come true (or are even exceeded) depends heavily on worldwide cooperation and incentives. The total PV market value under the advanced scenario would amount to EUR 454bn in 2030 (CAGR 2007-30: 16.6%). Both scenarios assume that China will gradually take a strong position in production, once the technology becomes competitive (sometime after 2020). The biggest share in the ROW category is expected to go to Africa (EUR 20bn) and South and East Asia (EUR 26bn, EUR 13bn, respectively).

Value of PV market (p.a.) up to 2030 under the moderate scenario (EURmn)

year	Europe	North America	OECD Pacific	China	ROW	Total	*CAGR 2007-*
2007	9,655	1,115	1,661	112	641	13,184	
2010e	12,355	4,924	3,640	344	2,460	23,723	*21.6%*
2015e	20,721	11,941	8,496	2,361	10,178	53,697	*19.2%*
2020e	27,189	17,936	11,744	8,380	28,106	93,355	*16.2%*
2025e	28,424	23,426	13,504	19,652	60,256	145,262	*14.3%*
2030e	17,008	22,111	10,205	30,615	90,142	170,081	*11.8%*

Source: EPIA - Solar generation V

In order to meet the growth in demand projected in the scenarios, companies along the PV value chain will need to scale up their production capacities. A large part of the turnover achieved will have to be reinvested in extending production capacities.

Investment in new production capacities - Moderate Scenario (EURmn)

	2008e	2009e	2010e	Total	*CAGR 2008-2010*
Silicon	869	1,097	1,402	3,368	27.0%
Wafers	604	708	1,104	2,416	35.2%
Cells	345	404	631	1,380	35.2%
Modules	345	404	631	1,380	35.2%
Thin Film	606	1,011	788	2,406	14.0%
Total	**2,769**	**3,624**	**4,556**	**10,950**	**28.3%**

Source: EPIA - Solar generation V

Following the investments in capacities and R&D and with the help of economies of scale, installation costs per kW/h should gradually decrease. The more sunshine hours, the higher the capacity factor and the lower the generation costs.

Expected PV generation costs for roof-top systems at different locations (EURct / kWh)

	Sunshine hours	2007	2010e	2020e	*2030e*
Berlin	900	0.44	0.35	0.2	0.13
Paris	1000	0.39	0.31	0.18	0.12
Washington	1200	0.33	0.26	0.15	0.1
Hong Kong	1300	0.3	0.24	0.14	0.09
Sydney/Buenos Aires/Bombay/Madrid	1400	0.28	0.22	0.13	0.08
Bankok	1600	0.25	0.2	0.11	0.07
Los Angeles/Dubai	1800	0.22	0.17	0.1	0.07

Source: EPIA - Solar generation V

The cost per kWh is calculated as the price of the PV system divided by the number of kWh the system will generate over its lifetime. However, other variables, such as financing costs, may have to be taken into consideration. Figures for the cost per kWh of grid-connected systems frequently differ, depending on the assumptions regarding system costs, sunlight availability, system lifetime and the type of financing. In the table above, financing costs of 5% and a lifetime of 25 years are assumed. This lifetime is the performance warranty period of many module producers.

Apart from a positive effect on GHG emissions, the growth of the PV industry would also have a good impact on the labor market. Following the advanced scenario, the total number of jobs in the PV industry is estimated at about 10mn.

Worldwide employment in PV-related jobs under Solar Generation Scenarios

year	Installation	Production	Wholesaler	Research	Supply	Total	*CAGR 2007-*
2007	77,688	22,968	6,890	2,986	8,613	119,145	
2010e	166,518	47,306	14,192	6,150	17,740	251,906	*28.3%*
2015e	486,219	128,121	38,436	16,656	48,045	717,477	*25.2%*
2020e	1,018,552	245,519	73,656	31,917	92,070	1,461,714	*21.3%*
2025e	1,806,321	390,978	117,294	50,827	146,617	2,512,037	*18.5%*
2030e	2,770,569	524,729	157,419	68,218	196,773	3,717,708	*16.1%*

Source: EPIA - Solar generation V

All in all, we believe that the PV industry should further benefit from efforts to reduce GHG. There is still vast potential both in the technology as well as in the scope of application. Just as a reminder, there are still 1.7bn people around the world without a basic energy supply.

Solar Thermal (ST)

Solar thermal (STH+STE) is a technology for harnessing solar energy for thermal energy (heat). Solar thermal collectors are defined by the USA Energy Information Administration as low-, medium-, or high-temperature collectors. Low temperature collectors are flat plates generally used to heat swimming pools. Medium-temperature collectors are also usually flat plates but are used for creating hot water for residential and commercial use. High temperature collectors concentrate sunlight using mirrors or lenses and are generally used for electric power production. This is different from solar photovoltaics, which convert solar energy directly into electricity (STE).

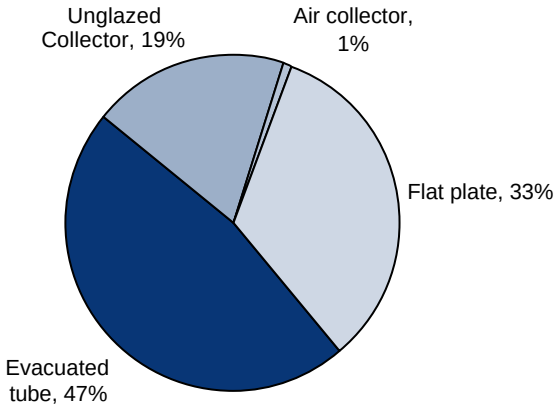
Since the beginning of the 1990s, the solar thermal market has undergone a favorable development. At the end of 2006, a total of 182.5 million square meters of collector area, corresponding to an installed capacity 127.8 GW_{th} were in operation in the 48 countries. These 48 countries represent 3.87bn people, which is about 60% of the world's population. The installed capacity in these countries represents approximately 85 - 90% of the solar thermal market worldwide.

The use of ST greatly varies in the different countries. In China and Taiwan (65.9 GW_{th}), Europe (14.2 GW_{th}) and Japan (4.7 GW_{th}), plants with flat-plate and evacuated tube collectors are mainly used to prepare hot water and to provide space heating, while in North America (USA and Canada) swimming pool heating is the dominant application with an installed capacity of 19.6 GW_{th} of unglazed plastic collectors.

Europe has the most sophisticated market for different solar thermal applications. It includes systems for hot water preparation, plants for space heating of single- and multi-family houses and hotels, large-scale plants for district heating as well as a growing number of systems for air conditioning, cooling and industrial applications.

In Austria, Germany and Switzerland the share of applications other than hot water preparation in single-family houses is 20% and higher. At the end of 2007, there are 120 large-scale plants (=300 m²; 350 kW_{th}) in operation in Europe with a total installed capacity of 137 MW_{th}. The biggest plants are located in Denmark with 13 MW_{th} (18,300 m²) and Sweden with 7 MW_{th} (10,000 m²).

Distribution of the world wide capacity in operation 2006 by collector type



Source: Solar heat worldwide 2006 v. 2008

Out of the 127.8 GW_{th} installed capacity, 102.1 GW_{th} were accounted for by flat-plate and evacuated tube collectors and 24.5 GW_{th} for unglazed plastic collectors. Air collector capacity was installed to an extent of 1.2 GW_{th}.

Geothermal power

Global overview - current situation (0.05% of global energy supply)

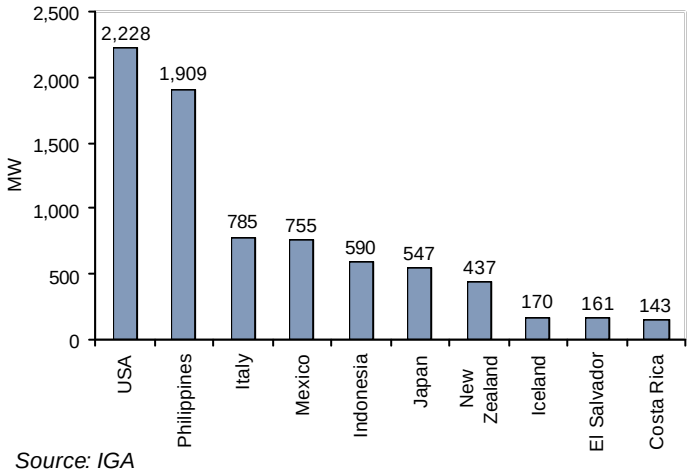
as of 2006	in Mtoe		in TWh
Global energy supply	11,730	Global electricity generation	18,921
thereof Geothermal power	6.2	thereof Geothermal power	72
Geothermal power in %	*0.05%*	*Geothermal power in %*	*0.4%*

Source: IEA, Erste Group calculations

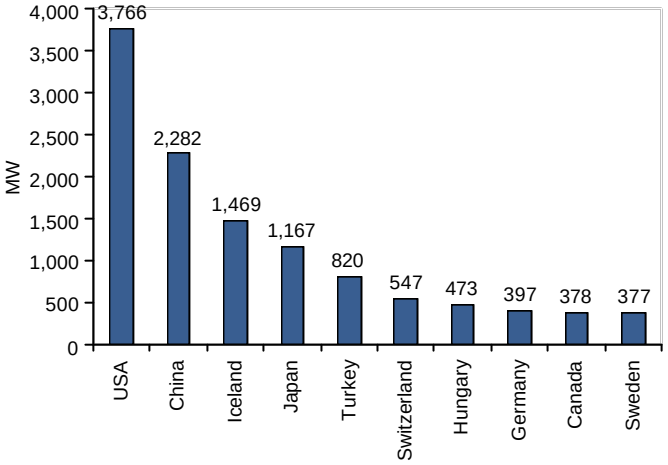
Geothermal energy provides 0.4% of global electricity generation

Geothermal energy provides only around 0.4% of world global electricity generation, with a stable long-term growth rate of 3%. Due to the lack of technologies and limitations on proper geographical areas, the use of geothermal energy is focused in certain locations, such as the US, Philippines, Mexico, Indonesia, Italy and Iceland. These are the biggest markets, while there are 40-50 countries that have started or plan to start geothermal projects. In 2007, the total installed geothermal electricity capacity was 9 GW, which is expected to increase to 11 GW by 2010. Depending on the quality of the resource (steam, water, etc.), the investment cost is usually EUR 2-4.5mn per MW, while the generating cost varies from EUR 40 to EUR 100 per MWh.

Geothermal electricity capacity - 2000



Geothermal direct usage capacity – 2000



Source: IGA

The installation of new electric and thermal capacities has had respective growth rates over the last 5-15 years of 3% and 10%. We think that this activity will accelerate, as, in the last three years, energy prices have hit new peaks many times and we are certain that the relatively high crude oil prices will remain intact. On the other hand, it must be considered that establishing a geothermal power plant (GPP) takes 1-3 years, including testing potential land sites (over a long period), working out drillings and, finally, building the plant. This last part could be the shortest one, as, for a small plant, the installation (in extreme cases) could take less than one week (for example, in the town of Bad Blumau, Austria).

What will happen in CEE?

In the CEE region, most countries have focused on the direct use of geothermal energy, as mainly low and medium temperature resources are available in the region. As technical developments have made it possible to use lower temperature resources for electricity production, activity in this kind of project has increased in the last couple of years in the region. For example, in Hungary, 40-50 companies have launched or plan to launch operations in alternative energy (solar, wind, biomass, geothermal). Out of these, around 10 intend to be involved in geothermal projects.

10% CAGR 1995 - 2005

In CEE, between 1995 and 2005, the annual growth of geothermal energy for direct use was around 10%, in line with the world average. In electricity production, the first step was taken in Bad Blumau (250kW$_e$) and Altheim (500 kW$_e$). The first works for a hotel and the plant/well provides heating and thermal water. The second is also a CHP (combined heat & power) plant and provides energy for the town, feeding electricity into the grid. As this first step has been taken in geothermal electricity production (via relatively new technologies of binary plants), we think that this kind of electricity production will increase at a higher rate than the world average of 3% measured between 1995 and 2005.

Geothermal's geographical availability

Alpine Molasse basins and Pannonian basin well suited

Thanks to the implementation of medium temperature power plants (binary cycle), some new locations have engaged in geothermal power plant development (especially CHP plants, due to the more economical usage). Such areas are found in the following regions:

- The Alpine Molasse basins (north and south of the Alps);
- The Pannonian basin of Hungary and border areas of Slovakia, Slovenia, Serbia and Romania;
- To a lesser extent, in areas stretching from the Paris basin (including southern England), throughout Benelux, northern Germany, Denmark and the southern-most parts of Sweden, ending in Poland and Lithuania.

While the average temperature gradient throughout the world is around 3C^o per every 100m of depth (e.g. in the Pannonian basin), this value varies between 5 and 7 C^o per 100m, which allows for cost-efficient binary plants. This is due to the fact that amortization (around 20 years) is the highest cost in the operational expenses; in other words, the initial investment is the highest cost, while the gross operating margin is very high (~90%). In terms of investment cost, drilling is very high-cost - around 30% for an HCP plant, while for a heating plant it is even higher, around 50-70% of the total investment. The drilling cost increases almost exponentially with the depth of the well. In the above-mentioned regions, at 2-3km depths, a proper (110-220 C^o) temperature exists.

Estimated geothermal electricity potential

Although the utilization of geothermal energy can be considered broadly cost-competitive, it has a relatively high investment cost as one disadvantage. However, its availability is high and it has stable production. These are significant advantages compared to wind or solar power production. The lack of geological availability can be solved by the Enhanced Geothermal System (EGS), which allows for low-to-medium temperature applications via binary cycles and cascading usage.

Current technology could cover 8.3% of global electricity demand

In the literature, we can find different estimates for geothermal electricity potential around the world. One of the most conservative estimates comes from the EGEC (European Geothermal Energy Council). Without EGS, the potential for installing geothermal power plants is in a range of 35 to 70 GW. Using enhanced technologies, it could be extended to 140 GW, which would be able to produce 1mn GWh, or 8.3% of total world electricity production, serving 17% of the total world population in around 40 countries, mainly in Africa, Central/South America and the Pacific. These countries can practically be fully powered by geothermal energy. On the other hand, the US Geological Survey (USGS) estimates geothermal capacity for electricity production of 95-150 GW for the US alone. Of course, the estimates vary hugely, as they depend not only on geographical data, but also on the technology available at the actual time of development.

Quality of geothermal potential

Geothermal energy used for electricity and heating

Typically, the use of geothermal potential is divided into two categories: (i) electricity production and (ii) direct use. The second category includes all applications other than electricity production, such as heating, supplying baths with thermal water, snow melting, agriculture applications, etc.

Usually, the main measurement factors for a geothermal well are (i) the temperature of the fluid and (ii) the water yield. Of course, these factors largely determine the carried energy and the availability of the well for usage. There are three temperature categories, but there is no common definition for them: (i) low enthalpy or temperature resources (T=temperature < 90-125 C^o); (ii) intermediate enthalpy or temperature resources (90-125 C^o < T < 150-225 C^o); (iii) high enthalpy or temperature resources (T > 150-225 C^o). Usually, to produce electricity, at least intermediate enthalpy resources are needed (temperature should be over 110-120 C^o), while the yield should exceed flow of 20 liters per second.

Type of plant

Depending on the geothermal resources available, different types of plant can be built. To achieve higher EROIE, power generation is usually coupled with cascade usage beyond electricity production (i.e. district heating, bath or hot water production, agricultural, etc.)

- **Flash Power Plant**: Geothermal steam is separated in a surface vessel (steam separator) and steam is delivered to the turbine; the turbine powers a generator.
- **Dry Steam Power Plant:** The steam directly runs from the geothermal reservoir to the turbines that power the generator; no separation is necessary because wells only produce steam.
- **Binary Power Plant (PP):** The developments in geothermal technology have made possible the economic production of electricity from lower-temperature geothermal resources, under 170 C^o, but over around 100 C^o. These are the binary geothermal plants. These facilities reduce geothermal energy's already low emission rate (the dissolved materials in the water like CO_2, etc.) to near zero, as they use a heat exchanger and the low-mid-temperature water boils a fluid with a lower evaporation temperature and the vapor fluid runs turbine. Depending on the secondary fluid, there are two kinds of binary PP:
  - **Organic Rankine Cycle (ORC):** The most widely used for mid-low-temperature geothermal resources. In the working cycle, some organic complex (like isobutene) is used as a working fluid; in this system, a compressor/motor module is converted into a turbo-generator by simply reversing the flow direction.
  - **Kalyna System (Rankine Cycle as well):** The Kalina cycle uses a water-ammonia mixture as the working fluid, as it claims higher efficiency. PannErgy intends to build this kind of power plant in Hungary with its partner Mannvit (from Iceland).
- **Hot Dry Rock technology:** This is an EGS technology. Producing electricity from hot dry rock requires fracturing hot rocks, pumping water into and out of the hot rock, and generating electricity. Research applications of this technology are being pursued in the US, France and Australia. For example, MOL's partner in Hungary, Australia-based GreenRock, uses Hot Dry Rock technology in Olympic Dam, Australia. They want to use Hot Rock type technology in Hungary (sedimentary) as well, aiming to build 100MW_e+ electricity production capacity utilizing 140-200 C^o temperature potential.

Future development – until 2020 and beyond

40 GW EU capacity targeted by 2020

The European Geothermal Energy Council (EGEC) has worked out a strategic research plan for the period 2008-30. Their targets for geothermal energy production are:

- For heating & cooling in the EU-27, from the 15 GW_t in 2007, capacity should increase to 20 GW_t by 2010, 40 GW_t by 2020 and 80 GW_t by 2030
- In the EU-27, the present geothermal electricity capacity is 1 GW_e, around 10% of world geothermal installation. Other European countries have around 0.5 GW_e capacity. For the EU 27, the plan is to reach 1.4 GW_e by 2010, 6-10 GW_e to be installed by 2020 and 15-30 GW_e should be installed by 2030

HEATING & COOLING		Costs 2005 Range (EUR/MWh)	Average (EUR/MWh)	Cost reduction by 2030 (% 2005 costs)
Deep geothermal		2 to 40	7.2	11
District heating		40 to 80	50	-5
Shallow	Heat only	10.8 to 320	19	-9
	H&C: heating	7.2 to 270	61	-8
	H&C: cooling	7.2 to 350	16	-8

NB: The figures for deep and shallow geothermal are from IEA report 2007: *Renewables for heating & cooling.*

The data on district heating are EGEC projections for geothermal DH in Eurpe

ELECTRICITY	Costs 2007 Range (EUR/MWh)	Average (EUR/MWh)	Cost 2030 (EUR/MWh)
Conventional Geothermal Power	50 to 90	70	20
Low Enthalpy Production	80 to 150	115	Target: 50
EGS	200 to 300	250	Target: 50 Projection: 90

Source: EGEC

Decreasing drilling costs of major importance

The main research priority is to decrease drilling costs, while the main objective overall is to reduce total costs (investment, operation and maintenance costs) to achieve electric power at a cost of EUR 20-90 MWh_e. While the cost reduction is the main priority, some countries have fixed (direct subsidized) feed-in tariff prices (like Hungary, with HUF 25 per kWh_e, or EUR 0.09 kWh_e at the moment), while others use a green certificate system (like Romania).

Biofuels

Global overview – current capacity (0.6%of global transport fuel)

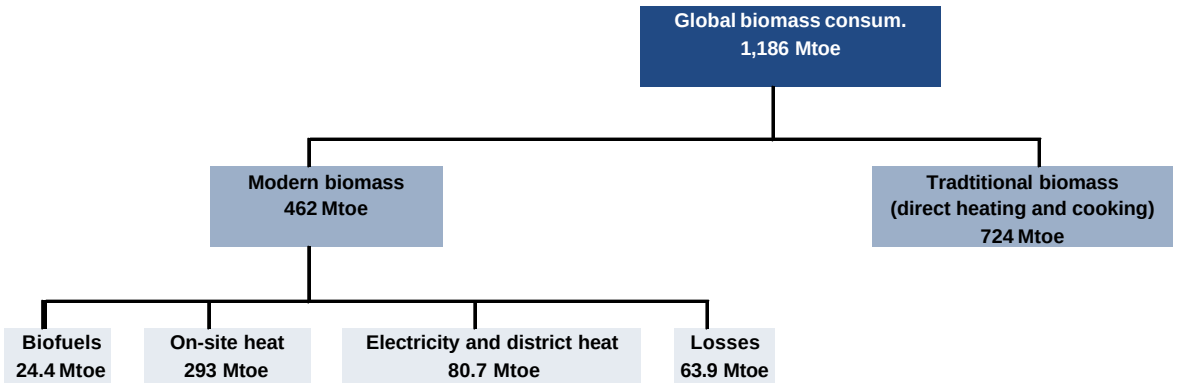
as of 2006	in Mtoe
Global energy demand transport	3,765
thereof bio fuels	24.4
Bio fuels in %	*0.6%*

Source: IEA, Erste Group calculations

Small but quickly growing

The graph below shows that biofuels are part of the global biomass market; however, they are a rather small part (making up around 2%), but a quickly growing segment.

Overview of global biomass energy market

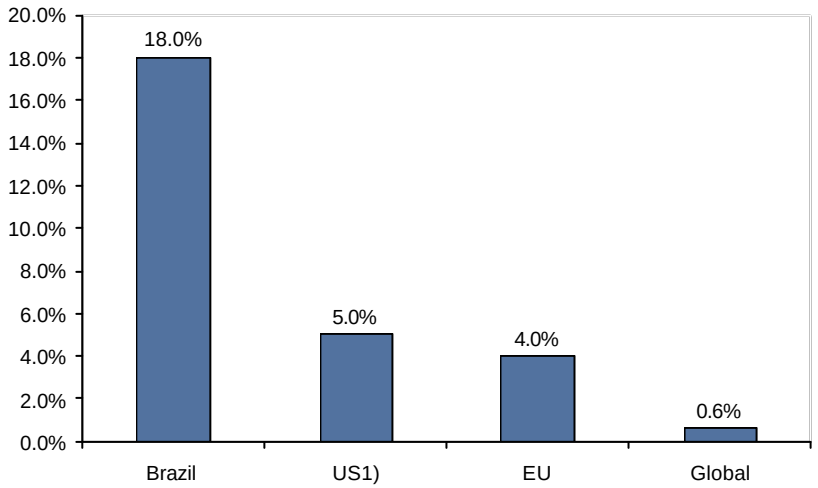


Source: IEA, WEO 2008

Biofuels accounted for 20% of renewables investment in 2007

With global annual investments of around USD 17bn, investments in biofuel capacity accounted for around 20% of global investments in renewable energy capacity. However, due to rising concerns, the investment volume in 2007 remained flat compared to 2006. By 2007, biofuel had become an important contributor to transport fuel in the US, the EU and especially Brazil. Biofuel can be produced in the form of bioethanol or biodiesel, depending on the crops used. Especially in the US and the EU, the recently rising supply of biofuels was pushed by government support systems (quotas, tax incentives). Thanks to the favorable climate for growing sugar cane, bioethanol has always been a cost-competitive alternative to fossil fuel in Brazil.

Biofuel contribution to transport fuel for major markets



Source: JBC energy, Ministério de Minas e Energia do Brasil, IEA, Erste Group Research
1) US calculation based on bioethanol contribution to gasoline demand

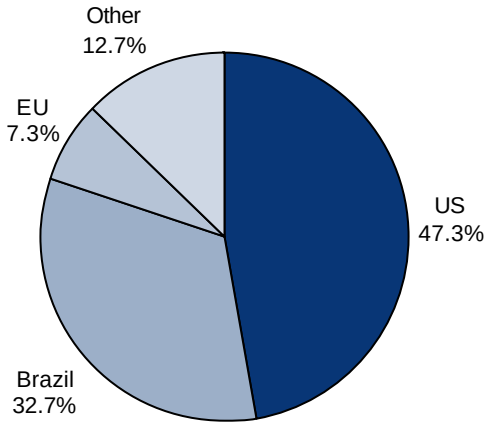
The currently available so-called first generation biofuels have recently been criticized, due to their supposed rising impact on food prices and questionable ability to reduce C02 emissions. To solve this problem, the industry is at the moment working on so-called second generation biofuels that should reduce the industry's impact on food prices and improve the CO_2 balance.

First generation biofuels

US and Brazil major bioethanol producers

Biofuels in the form of bioethanol and biodiesel are already widely in use. Depending on the geographic area, they are of varying importance. In Brazil, bioethanol has for several decades been a very widely used alternative to petroleum-based fuel (the main reason is the favorable climate for growing sugar cane). In 2006, Brazilian ethanol provided 18% of the country's road transport sector fuel consumption needs. In the last few years, the US has also become a major manufacturer of bioethanol, mainly from corn. By late 2007, the US had around 130 ethanol plants operating with a total production capacity of over 26bn l/yr. With an annual production volume of 40bn liters, bioethanol has already reached a quite significant size, with the US (46%) and Brazil (42%) as major producers.

Global bioethanol production (50bn liters) by region in 2007

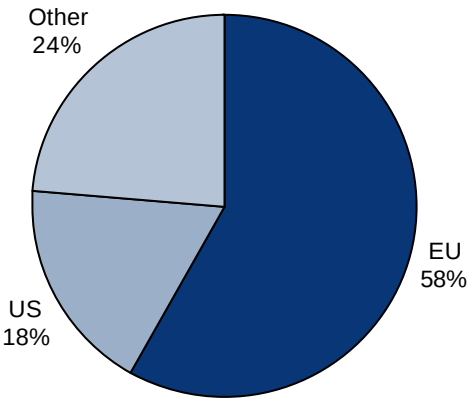


Source: IEA

Biodiesel of major importance in EU (15mn tons p.a.)

In Europe, biodiesel is more popular as an alternative to petroleum-based diesel. In total market size (with estimated annual production of 6.5bn liters), it is far smaller than the market for bioethanol. The main production region is Europe, accounting for 75% of the overall production volume.

Global biodiesel production (6.5bn liters) by region in 2007



Source: IEA

Changed EU legislation harms European biofuel industry

Currently, the European biofuel industry has over 15mn tons of capacities, already meeting the volumes indicated by the EU Parliament (for 2015). However, recently, the EU Parliament, influenced by recent concerns regarding the link between rising food prices and biofuel production, created a 5% interim target for biofuels in the EU by 2015. 20% of this 5% should be met by technologies other than biofuels. This is clearly a major set-back for the European biofuel industry. However, it also reflects the ongoing concerns regarding the current structure of the biofuel industry.

Recent concerns regarding biofuels

The public's view of biofuels has been mixed over the last couple of quarters, due mainly to the following:

- The current first generation biofuels (e.g. made from sugar cane, corn or sugar beet) are in direct competition with food resources because they use food parts of crops;
- The contribution of biofuels from crops using food parts to cut C02 emissions is questionable;
- Some first generation biofuels have a negative EROEI (energy return on invested energy), meaning that outcome of the equation of energy output / energy input is < 1. Thus, via this process, we do not gain additional net energy; to the contrary, the system invests energy.

In general, these are the main barriers to growth for first generation biofuels.

Second generation biofuels

Less competition with food resources and reduced CO2 emissions

Currently, the focus is on second generation biofuels. These can be produced sustainably by using biomass comprised of the residual non-food parts of current crops (e.g. stems, leaves = lingo-cellulosic) that are left behind. Compared to first generation biofuels, they have the following major advantages:

- They are in less competition with food resources; furthermore, since the whole plant is used, less land area is required per unit of energy produced;
- Industry experts estimate that second generation biofuels could reduce well-to-wheels CO_2 production by 90-95%;
- Based on current data, second generation biofuels should gain net energy (meaning their EROEI is > 1).

Currently, there are two technological pathways to convert lingo-cellulosic feedstock into biofuels:

- **Biochemical** – in which enzymes and other micro-organisms are used to convert cellulose and hemicellulose components of the feedstock to sugars prior to their fermentation to produce ethanol;
- **Thermo-chemical** – where pyrolysis/gasification technologies produce a synthesis gas (CO + H2) from which a wide range of long carbon chain biofuels, such as synthetic diesel or aviation fuel, can be reformed.

Currently, thermo-chemical conversion ahead

For the time being, it is not clear which conversion route will be the preferred technology route. However, there are fewer technical hurdles to the thermo-chemical route, since much of the technology is already proven. Another advantage of the thermo-chemical route is the fact that this process also produces a range of longer-chain hydrocarbons from the synthesis gas. These produce biofuels better suited for aviation and marine purposes. In contrast, the biochemical route is only suitable for the production of bioethanol.

First plants to be launched in 2010

For the time being, high costs of production are the major barriers for second generation biofuels. Therefore, further reductions in the costs of biomass feedstock, transport logistics and the conversion process itself are necessary. Additionally, a global system that incentivizes the reduction of GHG by placing a value on carbon emissions would certainly help. However, some players, like Andritz and UPM, are about to launch the first thermo-chemical wood gasification plant in 2010.

Forest and pulp & paper industry well positioned

The pulp & paper industry is in our view well positioned to benefit from the opportunities that second generation biofuels offer, given their access to the raw material and infrastructure in place. This aspect helps to minimize the logistics and supply chain challenges. Some industry experts are already talking about the conversion of pulp & paper mills into so-called bio-refineries that take advantage of an existing biomass collection and manufacturing infrastructure. These bio-refineries should extract hemicelluloses and use them to manufacture chemicals and polymers as well as supply biofuels and pulp. In short, these bio-refineries should supply the market on a sustainable basis with products currently delivered from petro refineries.

Beyond second generation

Algae fuel – higher-yielding alternative

Looking further into the future, the development of biofuels from algae (algae fuel) is on the way. Algae are the fastest growers in the plant kingdom. Compared with second generation biofuels, algae are high-yield (30 times more energy per acre than terrestrial crops) feedstock to produce biofuels. The main reason is that the whole organism uses sunlight to produce lipids or oil. Algae are currently even being tested as direct absorbers of CO_2 from carbon-fired power plants. Smokestack emissions can be diverted directly into the ponds, feeding the algae while keeping greenhouse gases out of the atmosphere. The big advantages of algae fuel are as follows:

- There is no need for arable land + no fresh water needs (algae grows in salt water);
- A favorable energy balance of 8 : 1 (energy output : fossil fuel input);
- Some producers claim that, in the process, they even convert seawater into freshwater.

The graph below shows the tremendous difference in terms of potential for oil yield per acre between conventional land-grown crops like corn or soybean and algae.

Oil yield comparison of crops

Crop	Oil yield in liters / acre
Corn	68
Cotton	133
Soybean	182
Sunflower	386.6
Rapeseed	481.3
Oil palm	2,407
Algae	18,950 - 65,850

Source: Algaefuel, Erste Group calculations

At the Algae Biomass Summit in October 2008 in Seattle, keynote speaker Vinod Khosla stated that he believes that algae can play a significant role in the replacement of petroleum oil. The opinions are varied, but it seems as though algae fuel has the potential to cover a significant part (15%+) of our current petroleum oil consumption in the longer term.

Future development

By 2020, the EU and US will have to continue to invest heavily in all types of bio-refineries to fulfill their targets. As a consequence of the recent concerns regarding the biofuel industry, the new legislation is more cautious and tries to ensure that future biofuels stem from the second generation.

- **US** - The US renewable fuels standard (RFS) requires the use of 2.2bn liters of advanced biofuels by 2009; this requirement increases steadily up to 79.6bn liters by 2022. Advanced biofuels are defined as anything other than corn-starch-based ethanol that achieves a 50% greenhouse gas emission reduction when compared with fossil fuels. This should ensure that the US biofuel industry evolves from first to second generation biofuels.
- **EU** – In December 2008, the European Parliament, the Council and the European Commission agreed on the Renewable Energy Directive. With regards to biofuel, it confirmed the 10% figure for renewable energy in transport. Current EU capacities meet around 4% of demand. The greenhouse gas emission savings from the use of biofuels shall be at least 35%. However, the difficulty will be to develop a new and transparent EU scientific reference for assessing the greenhouse gas savings of the different biofuels. However, in general, the EU directive also paves the way for second generation biofuels.

The Grid

Current grid technology outdated

Europe's electricity networks are facing more and more challenges in the ever-changing business environment. Originally, these networks were designed to meet the needs of large and predominantly thermal generation technologies. Generation capacities were usually built rather close to the demand centers.

Renewables require new grid strategies

The strong commitment of the European Union to the Kyoto Protocol targets and the resulting propensity to support renewable energy sources led to a rethinking of the future requirements of the European grid network. The drive for renewable energy resources requires new strategies for the operation and management of the grid network in the future. The difficulty lies in the fact that many kinds of renewable energy sources are region-specific. Hydropower requires rivers and/or mountains, solar power is dependent on an as high as possible number of days of sun, while wind energy is most efficient in costal areas. As a result, many generation capacities cannot be installed close to demand centers. This requires improved long-distance transport of electricity.

Grid networks need improved flexibility

Many of these new energy sources are highly dependent on climatic (and therefore external) circumstances (e.g. wind for wind parks). Thus, most of the renewables are not appropriate for exclusive base load production. Thus, other generation capacities have to be operated as backup facilities, which means that grid networks need improved flexibility.

Another big issue is the fact that the growth of electricity demand is still unbroken. According to the International Energy Agency, European electricity consumption is going to increase at an average annual rate of 1.4% until 2030, whereas the share of renewables will double to 26% during the same time.

There are several other reasons to modernize the current electricity networks. The main focus is on:

- Increased reliability;
- The prevention of outages;
- And improving efficiency in order to reduce CO_2 output.

'Smart grid' represents a modernization of electricity networks

This vision for modern grid networks is pursued by the European platform "SmartGrids". The term "smart grid" represents a modernization of the electricity networks, which not only includes the above-mentioned characteristics, but also a digital upgrade of the long distance transmissions, enabling all stakeholders to make use of new features. End-customers could be able to sell the surplus of in-house generation easily back to the grid, which is another important step to decentralize power generation. Other advantages will be real time tariffs and the freedom to choose the supplier.

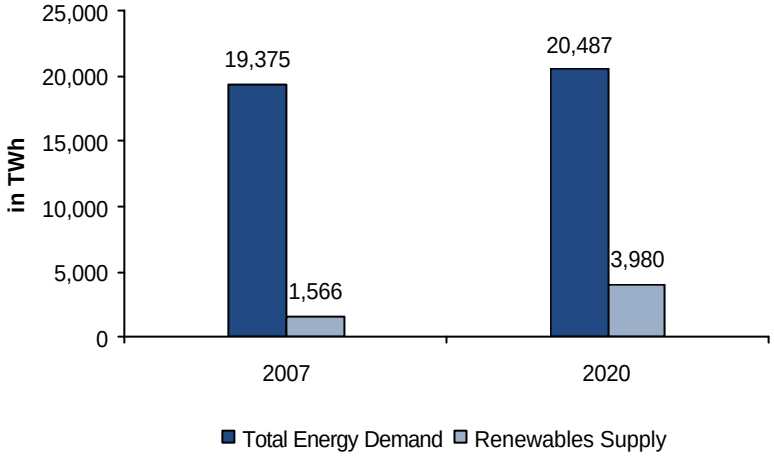
Although it is not likely that a modernization of the above-mentioned extent will take place very soon, the improvement of the grid network is a precondition for the extended use of renewable energy resources.

Appendix I – EU 20% renewables target 2020

In December 2008, the European Parliament and Council reached an agreement on the package that will help transform Europe into a low-carbon economy and increase its energy security. The EU is committed to reducing its overall emissions to at least 20% below 1990 levels by 2020 and increasing the share of renewables in energy in use to 20% by 2020. This compares to a current share of renewables of around 8.5%. As of 2007, the EU member states consumed around 19,735 TWh; thus, the EU accounts for around 14% of global energy demand.

The following graph shows that, if we assume an average annual growth rate of energy for EU-15 countries of 0.3% and for EU-10 countries of 1.0%, the EU's energy demand will rise to 20,487 TWh. Thus, by 2020, the energy output of renewables will have to increase by around 154% to 3,980 TWh.

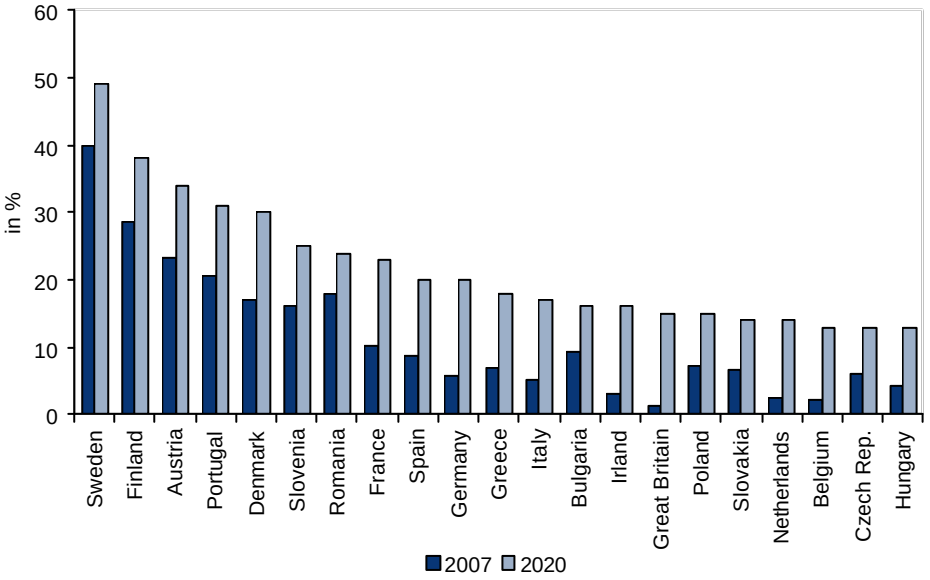
EU primary energy demand 2007 vs. 2020



Source: Eurostat, Erste Group estimates

Currently, the EU member states are at different stages with regards to renewables penetration. The graph below shows the current share of renewable energy compared with the agreed upon targets for 2020.

EU regional renewables contribution 2007 vs. 2020 target



Source: Austrian Biomass federation, EU

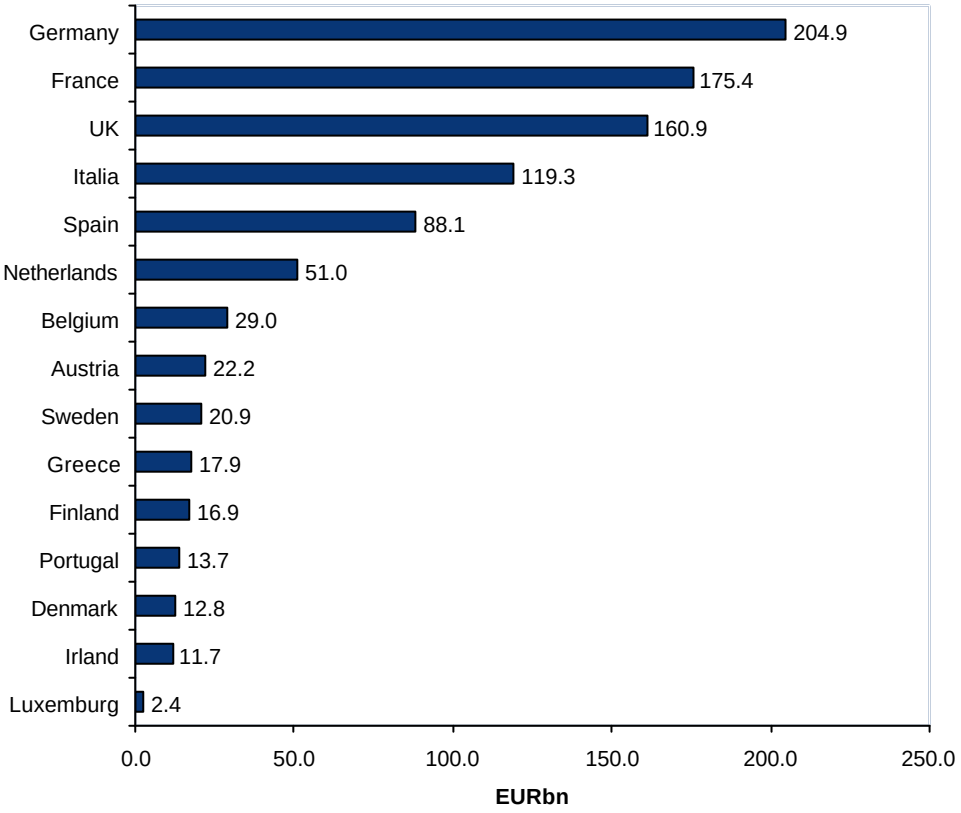
+ 600 GW in renewables capacity required

In order to deliver an additional 2,414 TWh of energy from renewables by 2020, we estimate that around 615 GW of new renewables capacity has to be installed. We furthermore estimate that, denominated in EUR 2008 terms, this would cost around EUR 1,100bn. This is based on the following major assumptions:

- 1 GW of renewables capacity installed has an average output of 3,800 - 4,500 GWh per year;
- 1 GW of average renewables capacity (mix of hydro, solar, wind, biomass and geothermal power) cost around EUR 2.0mn as of 2008 and, due to technological progress, this amount should steadily decline by 35% to around EUR 1.3mn in 2020 (denominated in EUR 2008 terms).

Applying the agreed upon renewables targets to the individual member states, we have calculated that, among the EU-15 states, Germany (EUR 205bn), France (EUR 175bn) and the UK (EUR 161bn) will have to invest the most in renewables capacity by 2020.

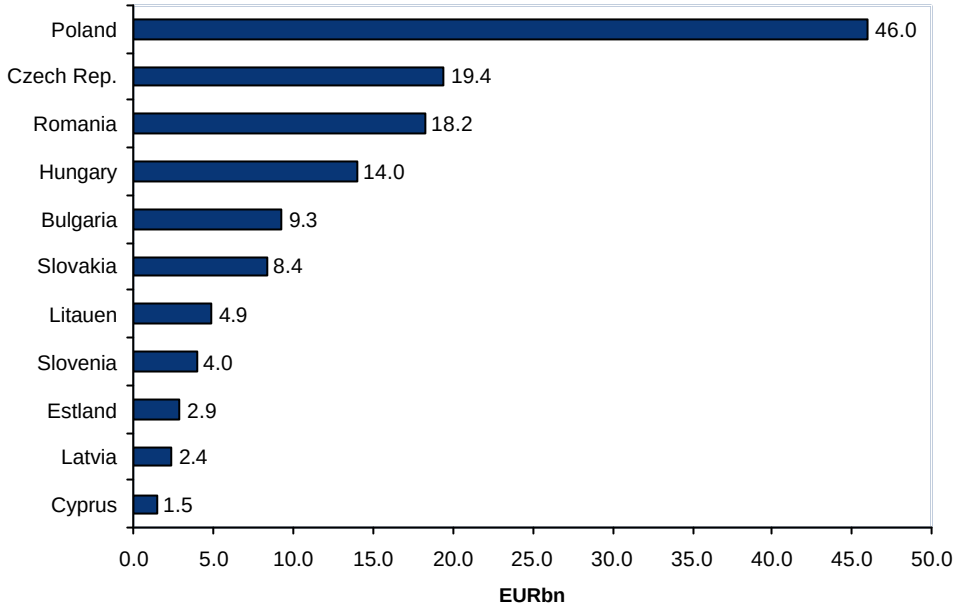
EU – 15 estimated renewables investments till 2020 – EUR 950bn



Source: Erste Group estimates

Applying the agreed upon renewables targets to the individual CEE member states of the EU, we derive at an estimated investment volume of around EUR 131bn. The graph shows that Poland (EUR 46.0bn), the Czech Republic (EUR 19.4bn) and Romania (EUR 18.2bn) will be the major markets.

CEE / EU - estimated renewables investments till 2020 – EUR 131bn



Source: Erste Group estimates

Appendix II – Regulatory framework CEE

Bulgaria

In 2007, Bulgaria introduced a new feed-in tariff for renewable electricity. The State Energy and Water Regulatory Commission has assumed the commitment to purchase alternative energy at a higher tariff and for the duration of 12 years. Suppliers refusing to accept renewably-produced electricity would be fined up to EUR 0.5mn in response to renewable power producers' reports of difficulty in grid connection.

Fixed feed-in prices for Electricity from Renewable Energy Sources (2006-2010) for 12 years

Technology	EURct / kWh
Small Hydropower (<10 MW)	0,04
Wind Power (< 2250 full load hours)	0,09
Wind Power (> 2250 full load hours)	0,08
Photovoltaic (< 5 kW)	0,40
Photovoltaic (> 5 kW)	0,37
Cogeneration Biomass (< 5 MW)	0,09
Cogeneration Biomass (agricultural residues, loppings etc.) (< 5 MW)	0,11
Cogeneration Biomass (energy crops, e.g. miscanthus, etc.) (< 5 MW)	0,08
Cogeneration (Gas)	0,04
Sales price of the national utility to public energy suppliers	0,03

Source: Austrian Energy Agency

Croatia

The Croatian government has started to reform the energy sector, in order to push the share of renewable energy sources from the present 1% to 5.8% by 2010. The present Croatian energy law has been supplemented by five regulations, which are defined for the coming 12 years. They entered into force as of July 1, 2007. The feed-in tariffs for electricity from RE are set according to the energy source it is generated from. Green electricity producers, which have signed a contract with the market regulator, are eligible for these tariffs.

Croatia – tariff overview

Tariffs for power plants < 1 MW	EURct / kWh	Tariffs for power plants > 1 MW	EURct / kWh
Solar Energy		**Water Power Plants** - output up to 10 MW	
Solar Energy - output up to 10 kW	0,47	- up to 5000 MWh annually	0,09
Solar Energy – output from 10 kW to 30 kW	0,41	- from 5000 MWh to 15 000 MWh annually	0,08
Solar Energy – output larger than 30 kW	0,29	- larger than 15 000 MWh annually	0,06
Water Power	0,09	**Wind Power**	0,09
Wind Power	0,09	**Biomass**	
Biomass		Energy from wood, agricultural biomass	0,14
Energy from wood, agricultural biomass	0,16	Energy from residual biomass of the wood working industry	0,11
Energy from residual biomass of the wood working industry	0,13	**Geothermal Power Plants**	0,17
Geothermal Power	0,17	**Biogas**	0,14
Biogas	0,16	**Energy from Liquid Biofuels**	0,05
Energy from Liquid Biofuels	0,05	**Energy from Landfill Gas and Sewage Gas**	0,05
Energy from Landfill Gas and Sewage Gas	0,05	**other RES** (e.g. tidal power)	0,07
other RES (e.g. tidal power)	0,08		

Source: Austrian Energy Agency

Czech Republic

On August 1, 2005, the new law on electricity from RE entered into force and implemented the EU Directive 2001/77/EC in Czech national legislation. Operators of regional grid systems and the transmission system are obliged to purchase all electricity from RE that is subject to promotion. Producers of electricity can choose from two support schemes - fixed feed-in tariffs or the green bonus.

Fixed feed-in tariffs: In the case of fixed prices, the electricity has to be purchased by the operator of the distribution system for regulated fixed prices. The price is valorized through a price index of the industrial producers. There is little risk in this option. The feed-in tariffs are fixed each year for one year ahead for each type of RE. They are fixed in a way that the conditions for meeting the indicative target of 8% by 2010 and that the 15-year payback period of the investments are ensured.

Green bonus: In the case of the Green bonus, the producer sells electricity on the market for the wholesale price – as is the case in the green certificates trading introduced by the Kyoto protocol. Green bonuses are fixed one year ahead for individual types of RE in a way that the total of revenues for the average purchase price is higher than that for the fixed purchase prices. The payback period for investments is shorter.

2007 renewables feed-in prices and prices of the Green Bonus

	Feed-in tarif EURct/kWh	Green Boni in EURct/kWh
Hydro Power Plants <10 MW	0.04-0.12	0.01-0.09
Biomass	0.08-0.12	0.01-0.08
Landfill Gas	0.08	0.04
Sewage Gas	0.08	0.04
Biogas	0.09-0.11	0.05-0.07
Coal Mine Gas from closed mines	0.08	0.04
Wind Power	0.09-0.11	0.07-0.1
Geothermal Energy	0.16	0.13
Solar Energy	0.23-0.48	0.2-0.46

Source: Austrian Energy Agency

Hungary

Feed-in tariffs were introduced through the Electricity Act, which entered into force on January 1, 2003. The electricity suppliers are obliged to purchase electricity from producers utilizing RE if their capacity is over 100 kW. However, in the case of smaller plants, individual arrangements are possible.

Purchase Prices for Electricity Under Obligatory Purchase in 2006

[EURct/kWh]	Peak	high off-peak	low off-peak
Renewable Energy Sources (Solar, Thermal, Wind, Biomass, Hydropower) < 5 MW, energy from waste	0,11	0,09	0,04
Hydropower > 5 MW, local natural gas firing, CHP[1] withouth District Heat production 6-50 MW, CHP[1] with District Heat production > 50 MW	0,08	0,04	0,04
CHP[1] < 6 MW, CHP[1] 6-50 MW with not second price category natural gas with District Heat production	0,14	0,08	0,03
CHP[1] < 6 MW, CHP[1] 6-50 MW wiht other fuel than natural gas with District Heat production	0,10	0,06	0,03

[1]Combined Heat and Power

Source: Austrian Energy Agency

Poland

In Poland, the instrument to promote electricity from renewable energy sources is a quota obligation and a system of tradable green certificates. In past years, Poland's government has launched several programs and strategies to promote and develop the utilization of RE and improve energy efficiency.

To promote the utilization of RE for energy production, the Quota Obligation Ordinance was introduced in December 2000 and amended in May 2003. Its key idea is to gradually stimulate demand for RE electricity and facilitate competitiveness among RE energy producers to satisfy demand. Distribution companies are obliged to provide a certain minimum share of energy produced from RE in their total yearly sales. The compensation for not fulfilling the quota is set at max. 240 PLN per MWh. The table below shows the stipulated share for each year until 2010 (the Ordinance does not differentiate among RE):

Year	2003	2004	2005	2006	2007	2008	2009	2010
Quota (%)	2,65	2,85	3,1	3,6	4,5	4,0	6,0	7,5

Source: Austrian Energy Agency

Romania

For the promotion of the production of electricity from renewable energy sources, a system of Green Certificates is in place, including a purchase obligation for distribution companies and the obligation to fulfill an annual quota of purchased green electricity. At the end of each year, distribution companies have to deliver a certain amount of "Green Certificates" corresponding with the annual quota. Since October 2005, the certificates have been traded at the newly created electricity market administrator OPCOM. According to the Energy Law, all producers of electricity have equal access to the network. The tariffs are regularly adapted to the actual production costs by the Romanian Regulator.

For the period 2005-12, the annual minimum and maximum values for Green Certificates trading is 24 and 42 euro/certificate, respectively, calculated at the exchange rate established by the Romanian National Bank for the last working day of the December of the previous year.

Year	2005	2006	2007	2008	2009	2010
Quota (%)	0,7	2,22	3,74	5,26	6,78	8,3

Source: Austrian Energy Agency

Slovak Republic

The feed-in prices paid to independent producers by the net operators are set annually by the Regulatory Office for Network Industries.

The law does not provide for a purchasing obligation. However, according to a governmental decree, operators of transmission and distribution networks are obliged to preferentially purchase electricity from RE, CHP and domestic coal for covering their transmission and distribution losses. The fixed purchase prices are set by a decree of the regulatory office. These tariffs are reduced if the producer has been granted an investment subsidy from the state (by 8% for subsidies of up to 40%, by 15% in the case of subsidies above 15%).

Fixed feed-in prices for Electricity from Renewable Energy Sources for 2008

	EURct/kWh
Hydropower with installed power up to 5 MW	0.06-0.09
Solar Power	0,26
Wind Power	0.05-0.09
Geothermal	0,11
Combustion of Biomass	0.07-0.11
Co-Firing of Biomass or Waste with fossil fuels	0.07-0.08
Combustion of Biogas	0.08-0.13

Source: Austrian Energy Agency

Ukraine

The Ukrainian energy policy features several programs and laws that aim to stimulate the utilization and development of RE. In 1997, "the program of state support for the development of non-traditional and renewable energy and small hydro- and heat-power engineering as a component part of national energy program of Ukraine" was agreed to. Consequently, non-traditional and renewable energy shall cover 10% of the total Ukrainian energy demand by 2010. The program consists of three stages, with the main objective to start production of the equipment for the use of non-traditional and renewable energy and its implementation in Ukrainian regions:

stage 1 – 1998-2000
stage 2 – 2001-2005
stage 3 – 2006-2010

The "Energy Strategy of Ukraine until 2030" is supposed to feature a section on RES. According to the draft version, the targeted utilization of RE is 4.7% of Primary Energy Consumption in 2010 and 17% in 2030.

Appendix III – Energy unit conversion table

Conversion factors

Terawatthour:	1 TWh = 1 Mrd. kWh
Gigawatthour:	1 GWh = 1 Mio. kWh
Megawatthour:	1 MWh = 1.000 kWh

Units for energy and power

Joule	J	for energy
Watt	W	for power, current

1 Joule (J) = 1 Newtonmeter (Nm) = 1 Wattsecond (Ws)

Cross rates		PJ	TWh	Mio.t SKE	Mio.t ROE
1 Petajoule	PJ	1	0.2778	0.0341	0.0239
1 Terawattstunde	TWh	3.6	1	0.123	0.0861
1 Mio.t black coal (unit)	Mio. t SKE	29.308	8.14	1	0.7
1 Mio.t crude oil (unit)	Mio. t ROE	41.869	11.63	1,429	1

Sector Report – Renewable energy

Fact Sheet – Agrana – Food & Beverage – Austria – February 4, 2009

Last price (EUR)	Market capitalisation	Enterprise value	Shares outstanding	Exchange rate
42.75	EUR mn 607	EUR mn 1,137	(mn) 14.20	
Hold				

Target price	Prem/Disc	52 Week	Free float	Free float cap.	Ex-dividend date
44.00	2.9%	High 73.50	14.5%	EUR mn 88	July 15, 2009
		Low 36.50			

Web: www.agrana.com	Reuters: AGRV.VI	Bloomberg: AGR AV	End of FY: 29/02

Key figures overview

EUR mn	2007	2008e	2009e	2010e
Net sales	1,892.3	2,104.8	2,089.7	2,121.9
EBITDA	190.7	107.6	167.3	184.7
EBIT	101.5	28.6	89.9	106.6
EBT	73.1	-9.2	61.5	79.6
Net profit	64.3	-9.2	45.7	59.1
EPS (EUR)	4.53	-0.65	3.22	4.16
CEPS (EUR)	9.30	4.94	8.66	9.65
BVPS (EUR)	62.93	60.33	62.55	64.76
Dividend\Share (EUR)	1.95	1.00	1.95	2.00
EV/EBITDA (x)	8.74	11.50	6.80	6.04
P/E (x)	15.92	-65.76	13.28	10.28
P/CE (x)	7.75	8.66	4.93	4.43
Dividend yield (%)	2.71	2.34	4.55	4.67
EBITDA margin (%)	9.46	5.29	7.95	8.64
Operating margin (%)	5.04	1.40	4.27	4.99
Net profit margin (%)	3.17	-0.54	2.19	2.79

Financial strength

	2007	2008e	2009e	2010e
ROE (%)	7.29	-1.05	5.24	6.53
ROCE (%)	5.93	2.18	4.41	5.34
Equity ratio (%)	41.84	41.60	43.39	44.65
Net debt (EUR mn)	613.90	603.54	503.25	479.89
Gearing (%)	66.58	68.33	54.99	50.66

Trading data & Statistics

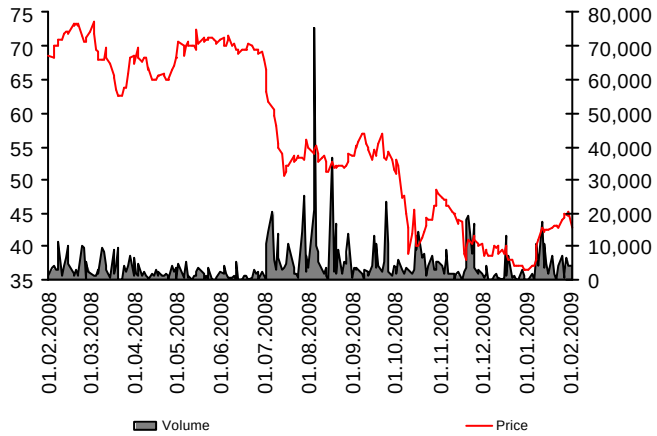
Daily averages	5 days	30 days	last year
Volume	4,905	5,132	4,537
Trading value (EUR mn)	0.2	0.2	0.2

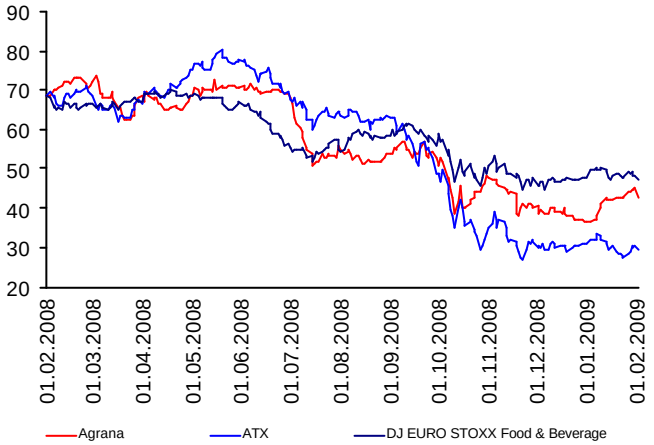
Shareholders

Z&S Zucker und Staerke Holding AG	75.5%
Prudential group	10.0%

Company description

Agrana is one of the leading sugar and starch producers in CEE and the world leader in fruit preparations for the dairy industry, as well as one of the world's largest producers of concentrated fruit juice. It is majority-owned by German sugar group Südzucker and ZBG (a subholding majority-owned by Raiffeise Bank Lower Austria). The company transformed itself from a sugar and starch producer into a a diversified processor of agricultural products over the last couple of years, driven by the EU reform of the European sugar market.





Price performance:	1M	3M	6M	12M	Ytd
in EUR	17.1%	-10.9%	-21.9%	-37.6%	17.1%

Strengths/Opportunities

- Leading market positions in its three segments sugar, starch and fruit
- CEE share in revenues of around 40%
- Restructuring in the sugar segment finished with almost all necessary quota returned
- Strong growth opportunities in the fruit division
- Margin upside potential in the starch segment through focus on higher refined specialized products

Weaknesses/Threats

- Swings in raw material prices on bad crops and speculation on commodity markets
- No hedging against commodity price fluctuations
- Time lags in passing on rising raw material prices can hurt margins
- Sugar segment affected by falling world sugar prices, oversupply and EU sugar market reform
- Low free float of 24.5% and low liquidity of the stock

Agrana's share of bioethanol is still limited with our estimate of EUR 150mn for fiscal year 2008/09 compared to revenue estimate of EUR 2.1bn.

The company built the first industrial-scale bioethanol production facility in Austria with a capacity of up to 240,000m³ a year at a total investment volume of EUR 125mn. Full operation started in May 2008 to meet Austria's targeted substitution level of 5.75% which from October 1, 2008 on two years earlier than the EU target.

Agrana can operate the plant with different raw materials (corn, wheat and beet thick juice). The plant is also compliant with the planned quality criteria by the EU for biofuels. The criteria call for a minimum 35% reduction in CO_2 over the whole life cycle of the biofuel, from production to consumption. Agrana even reaches a 50% reduction.

Revenues should reach at least EUR 100mn from the bioethanol sales this fiscal year. Main off-taker is Austrian oil company OMV with around two thirds of total output. The remainder is marketed via a distribution agreement with CropEnergies AG, a subsidiary of Südzucker also active in the production and marketing of bioethanol.

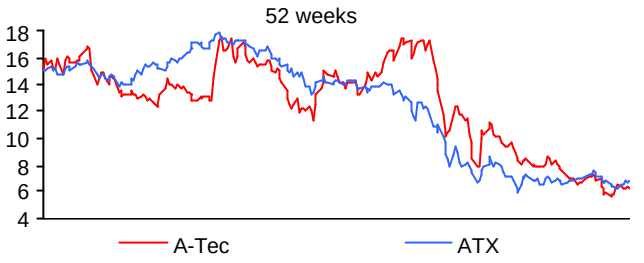
Additional revenue of around EUR 25mn is generated from the sale of protein-rich animal feed, which is a by-product in the production process. This product can be used to partially substitute imports of soy-based animal feed from overseas in Austria.

Agrana also has a 50% stake in a bioethanol plant in Hungary through its share in the Hungrana JV (remaining 50% belong to Eaststarch, a JV of Tate & Lyle and ADM). Hungary has had a mandatory substitution level of 4.4% since January 2008. The bioethanol plant, with a maximum capacity of 187,000 m³, runs on maize and forms part of the starch production, enabling a sharing of overheads. The plant processes maize that can be obtained at good prices in Hungary, which produces surpluses of this crop. Production capacity was increased last fiscal year.

A-Tec Hold

Gerald Walek, CFA +43 (0)5 0100 - 16360 gerald.walek@erstegroup.com

EUR mn	2007	2008e	2009e	2010e
Net sales	2,361.0	3,120.4	2,935.7	2,928.9
EBITDA	166.3	133.5	106.7	118.0
EBIT	93.3	79.7	53.2	65.0
Net result after min.	40.4	30.3	16.6	29.9
EPS (EUR)	1.53	1.15	0.63	1.13
CEPS (EUR)	6.45	3.26	2.55	3.19
BVPS (EUR)	14.72	15.87	16.50	17.54
Div./share (EUR)	0.00	0.00	0.00	0.00
EV/EBITDA (x)	7.6	3.7	3.6	3.3
P/E (x)	14.9	5.4	9.8	5.4
P/CE (x)	3.5	1.9	2.4	1.9
Dividend Yield	0.0%	0.0%	0.0%	0.0%



Performance	12M	6M	3M	1M
in EUR	-59.2%	-59.3%	-41.6%	-7.2%

Share price (EUR)	6.15	Reuters	ATEC.VI	Free float		27.8%
Number of shares (mn)	26.4	Bloomberg	ATEC AV	Shareholders		M.U.S.T PF (55.2%)
Market capitalization (EUR mn)	162.4	Div. Ex-date				Loidold PF (6.8%)
Enterprise value (EUR mn)	493.3	**Target price**	**6.2**	Homepage:		www.a-tecindustries.com

Global market leader in waste to energy technology

- **In anticipation of a very tough market environment for 2009 and 2010, we have further cut our EPS estimates. We consequently cut our target price to EUR 6.2 (previously EUR 11.6) per share and confirm our Hold recommendation.**

- **A-TEC is an industrial conglomerate. Via its plant construction division, it is a leading supplier of waste to energy plants (EUR 300-500mn sales); furthermore, the machine tools division is a supplier of machinery to the wind power industry (EUR 30-35mn sales).**

- **We have a mixed view on A-TEC. There are parts such as the plant construction division, project motors and machine tools for the wind power industry that look promising. On the other side, A-TEC is a major copper recycler (a business model of which we are skeptical) and the serial motors business is permanently in trouble.**

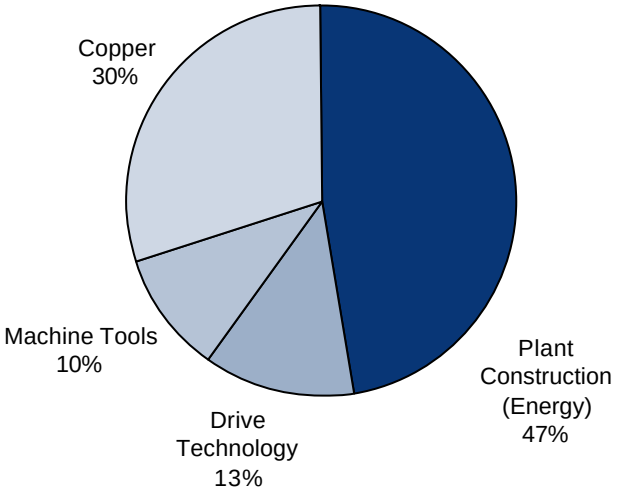
- **We consider the waste treatment market highly attractive, given the fact that the amount of waste continues to rise and space for land fills is running out across Europe and the US. Apart from recycling, thermal treatment is a very attractive option. We believe that, with regards to waste to energy technology, A-TEC is the global market leader.**

- **We expect that A-TEC's plant construction division, with its focus on energy and a large order book (EUR 3.0bn after 3Q08), will weather the recession; however, we are skeptical regarding A-TEC's other businesses. Some businesses, like the drive technology division, were still struggling in 2008, so 2009 and 2010 will be a real challenge for them.**

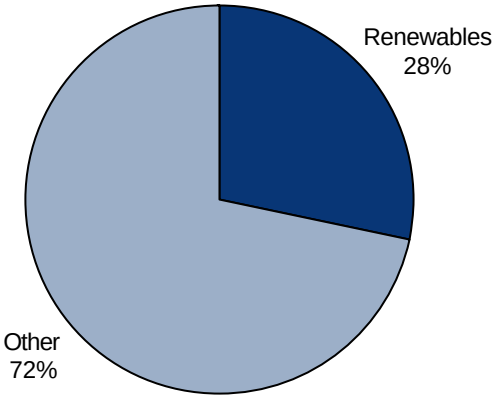
A-TEC is a business conglomerate that offers investors access to the market for renewables via its plant construction division (waste to energy) and mechanical engineering division (supplier of machinery to the wind power industry). The development of its copper recycling division is also closely tied to the expansion of the global power sector. Copper is the best conductor of electricity (apart from gold) and heat; thus, 60% of total copper is used for energy purposes.

A-TEC sales split by division and exposure to renewables

A-TEC sales split 1-3Q08



A-TEC renewables sales exposure 2009e



Source: A-TEC, Erste Group estimates

According to our estimates, A-TEC's 2009e sales exposure to renewables is around EUR 840mn, which boils down to around 28% of group sales.

Plant construction division (AE&E) – global leader in waste to energy

Via its plant construction division, A-TEC delivers the following renewable technologies:

- Design and construction of complete waste to energy and biomass plants (35% of AE&E sales)
- Biomass boilers (7% of AE&E sales)

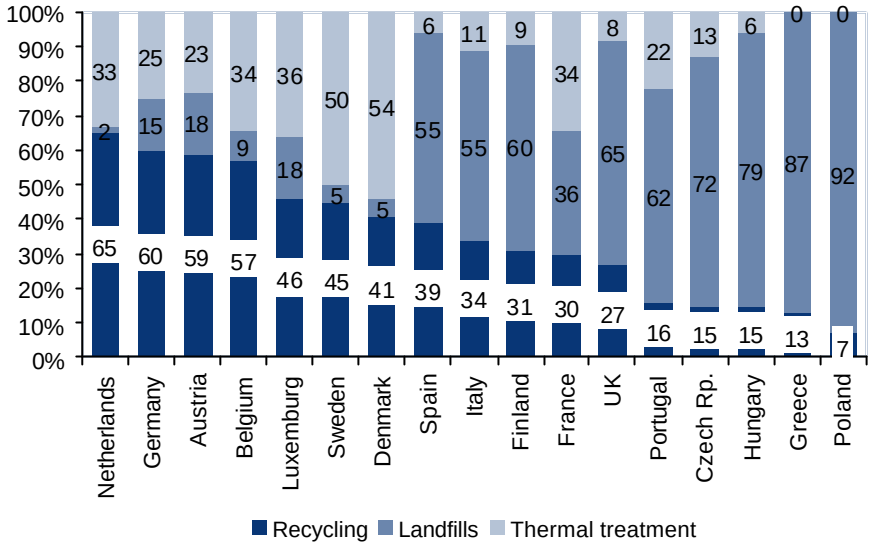
Waste treatment market on the rise

We believe that waste (in particular) will be an increasingly important economic energy source, due to the following reasons:

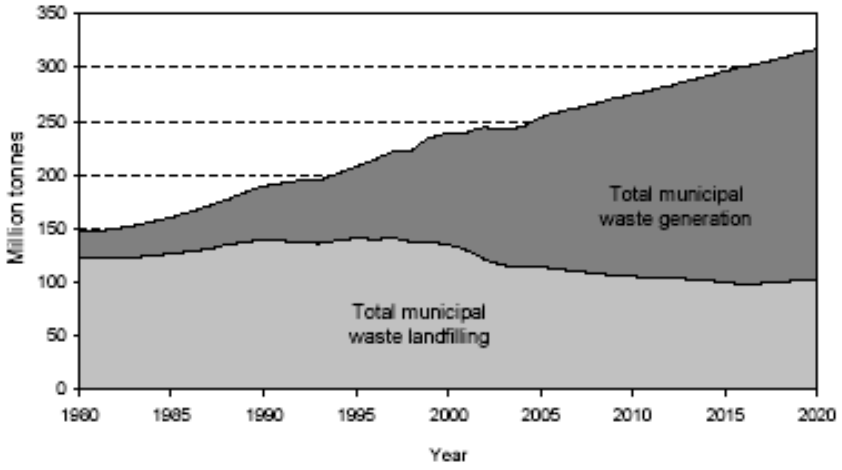
- Cities are the largest consumers of power (around 60-80% of the US and Europe's total energy is consumed by cities[9]), but are also the largest producers of waste; thus, the major competitive advantage of waste as a source of energy is the simple fact that it is produced exactly where energy is in high demand;
- The amount of waste produced is rising. Due to the fact that laws are becoming stricter in Europe and the US, the market for waste treatment will rise even faster;

[9] IEA, WEO 2008

EU – waste market split 2004



EU – waste market development 1980 – 2020e



Source: CNIM, RTC/RWM

The graph above shows that the RTC/RWM expects that, by 2020, EU 25 municipal waste generation will rise from around 250mn tons as of today to more than 300mn tons. The graph also shows that the share of waste treatment is continuously rising; thus, this market segment outpaces total market growth. The right-hand graph points to the significant potential in CEE markets for waste to energy technology, given the current rather low level of waste treatment.

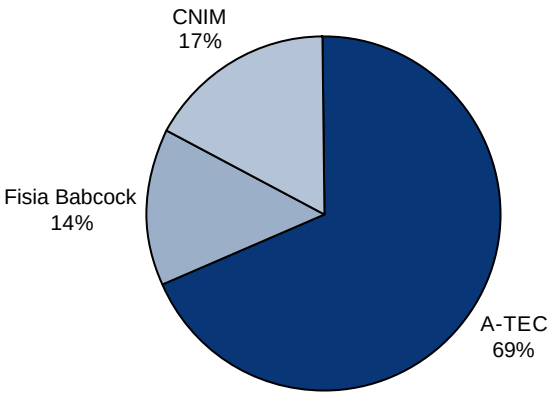
The Solid Waste Association of North America estimates that the US has around 89 waste to energy plants. With around 400 waste to energy plants, Europe is clearly more developed. Thus, the US market provides substantial potential as well for suppliers of waste to energy technology.

A-TEC leading market player in waste to energy

According to our estimates, via its subsidiary Von-Roll, A-TEC is the leading market player (69% market share) in the market for waste to energy plants in Europe (order intake of EUR 1,160mn since January 2007). Other major players are Fisia Babcock (order intake 2007- Q208: EUR 243mn) and CNIM (order intake 2007 – Q308: EUR 294mn).

Estimated market shares of major waste to energy equipment suppliers

Order intake 2007 + 1-3Q08 - total EUR 1,137mn



Source: A-TEC, CNIM, Impregilo SA, Erste Group Research

Plant construction key figures 2006 – 2012e

in EURmn	2007 [1)]	2008e	2009e	2010e	2011e	2012e
Order Book	1,977.9	2,951.6	2,744.0	2,546.8	2,543.7	2,866.4
Order Intake	1,319.3	2,506.7	1,754.7	1,666.9	1,917.0	2,300.4
y/y growth %	*7.4*	*90.0*	*-30.0*	*-5.0*	*15.0*	*20.0*
Sales	1,046.4	1,533.0	1,962.2	1,864.1	1,920.1	1,977.7
y/y growth %	*70.7*	*46.5*	*28.0*	*-5.0*	*3.0*	*3.0*
EBITDA	50.3	70.5	78.5	80.2	86.4	89.0
Margin in %	*4.8*	*4.6*	*4.0*	*4.3*	*4.5*	*4.5*
EBIT	43.9	61.8	69.8	71.6	77.8	80.3
Margin in %	*4.2*	*4.0*	*3.6*	*3.8*	*4.1*	*4.1*
CAPEX	10.3	18.4	19.6	18.6	19.2	19.8
in % of sales	*1.0*	*1.2*	*1.0*	*1.0*	*1.0*	*1.0*
Av. Capital Employed	-74.7	n.a.	n.a.	n.a.	n.a.	n.a.
ROCE in %	*neg.*					

Source: A-TEC, Erste Group estimates 2008e-2012e

1) FY07 EBITDA and EBIT adjusted for negative goodwill (EUR 29.5mn) arising from Lentjes acqu.

Due to its very comfortable order book level (around EUR 3.0bn as of September 30, 2008), as well as its sound exposure to renewable energy (around 30-35% of sales in 2009e), we expect A-TEC's plant construction division to deliver sound figures for 2009 and 2010.

Machine tools division (EMCO) – promising exposure to wind power industry

A-TEC has a very interesting subsidiary in Dörries Scharmann Technology (DST). DST provides the wind power industry with machinery to produce wind turbine components (e.g. gearboxes, bearings, planet carriers). We estimate that this segment already accounts for 10-12% (EUR 30-35mn) of EMCO's annual group sales. We expect that the demand for wind power machinery will grow at double-digit rates, despite the global recession in 2009 and 2010.

Machine tools division key figures 2006 – 2012e

in EURmn	2007	2008e	2009e	2010e	2011e	2012e
Sales	211.8	322.4	226.2	232.4	245.0	300.8
y/y growth %	*24.0*	*52.2*	*-29.8*	*2.7*	*5.4*	*22.8*
EBITDA	24.9	41.9	15.8	17.4	30.6	36.1
Margin in %	*11.8*	*13.0*	*7.0*	*7.5*	*12.5*	*12.0*
EBIT	15.6	26.5	0.5	2.2	15.4	20.6
Margin in %	*7.4*	*8.2*	*0.2*	*1.0*	*6.3*	*6.9*
CAPEX	7.5	13.9	7.9	7.0	10.5	12.9
in % of sales	*3.5*	*4.3*	*3.5*	*3.0*	*4.3*	*4.3*
Av. Capital Employed	187.8	n.a.	n.a.	n.a.	n.a.	n.a.
ROCE in % [2)]	*6.2%*					

Source: A-TEC, Erste Group estimates 2008e-2012e

2) with an assumed Austrian corporate tax-rate of 25%

Due to the likely very unfavorable business climate in 2009 and 2010, we expect that the machine tools division will be just break-even during this and the next year. We expect a slight easing of the situation for 2011 and 2012.

Drive technology – difficult story

A-TEC's drive technology division is a difficult story. On one side, the project motors segment is healthy and delivers 8-10% EBIT margins on annual sales of around EUR 130-140mn. However, the serial motors business (annual sales of around EUR 210mn, just break-even) is a different story. In 1H08, management decided to dispose of the home appliances business (FY07 sales of EUR 67mn), due to the lack of prospects for this division.

Drive technology division key figures 2006 – 2012e

in EURmn	2007[1)]	2008e[2)]	2009e	2010e	2011e	2012e
Sales	417.3	357.3	250.1	250.1	287.6	330.8
y/y growth %	*37.0*	*0.0*	*-30.0*	*0.0*	*15.0*	*15.0*
EBITDA	29.4	23.2	12.5	15.0	23.0	33.1
Margin in %	*7.0*	*6.5*	*5.0*	*6.0*	*8.0*	*10.0*
EBIT	8.1	3.2	-7.5	-4.8	3.2	12.9
Margin in %	*1.9*	*0.9*	*-3.0*	*-1.9*	*1.1*	*3.9*
CAPEX	15.7	13.4	9.4	9.4	10.8	12.4
in % of sales	*3.8*	*3.8*	*3.8*	*3.8*	*3.8*	*3.8*
Av. Capital Employed	276.4	n.a.	n.a.	n.a.	n.a.	n.a.
ROCE in % [2)]	*2.2%*					

Source: A-TEC, Erste Group estimates 2008e-2012e

1) FY07 EBIT adjusted for goodwill amortization (EUR 29.0mn) in connection with production site in Tamel and Sever and income from cancelled debt (EUR 6mn)

2) FY08 sales adjusted for EUR 60mn from classification of ATB Selni as discontinued operations

We anticipate a tough time for this division in 2009 and 2010. We expect a rebound in 2011 and 2012.

Minerals & metals (copper) division

Collapsing copper price hits FY08 results

The top line development of A-TEC's copper division (a copper recycling business) is closely tied to the copper price development. The division's profitability depends on smelting margins, which in turn are a function of copper scrap supply and demand on the market. A very volatile copper price development is also not favorable for this division, in our view. Significantly rising copper prices have the positive effect that they result in copper inventory revaluations via the P&L; however, the disadvantage is that more and more capital is tied up in this business if copper prices go up. Declining copper prices on the other hand lead to copper inventory write-downs and have a negative P&L effect, while declining copper prices free up cash from the working capital.

Minerals & mining division key figures 2006 – 2012e

in EURmn	2007	2008e	2009e	2010e	2011e	2012e
Sales	686.5	907.7	497.1	582.3	798.8	902.4
y/y growth %	*35.6*	*32.2*	*-45.2*	*17.1*	*37.2*	*13.0*
EBITDA	13.1	11.8	14.9	20.4	42.3	47.8
Margin in %	*1.9*	*1.3*	*3.0*	*3.5*	*5.3*	*5.3*
EBIT	6.3	2.2	5.4	11.0	32.9	38.2
Margin in %	*0.9*	*0.2*	*1.1*	*1.9*	*4.1*	*4.2*
CAPEX	29.5	27.2	8.0	9.3	12.8	14.4
in % of sales	*4.3*	*3.0*	*1.6*	*1.6*	*1.6*	*1.6*
Avg. Copper Price in USD		4,900	3,000	3,300	4,000	4,500

Source: A-TEC, Erste Group estimates 2008e-2012e
1) FY07 EBITDA and EBIT adjusted for negative goodwill (EUR 13.3mn) arising from Gindre acqu.
2) with an assumed austrian corporate tax-rate of 25%

Low copper price for 2009 and 2010 expected

Our FY08 EBIT forecasts include an expected copper inventory write-down of EUR 17.5mn, due to the declining copper price in 2H08 (down from around USD 8,000/t to USD 3,300/t). The main reason for our collapsing sales assumption for 2009 is the declining copper price and, to a certain extent, declining volumes (-23%). We expect that, for 2009 and 2010, copper prices will remain at the level of USD 3,000 – 3,500 per ton, on average. On the basis of a low but rather stable copper price development, we do not expect any further inventory write-downs for 2009 and 2010.

Group financials – improving situation

For the period 1-3Q08 A-TEC delivered a positive operating cash-flow of EUR 89mn. As of September 30, 2008 financial net-debt stood at EUR 223mn; including pension obligations of EUR 89mn A-TEC's debt stood at EUR 312mn. Since A-TEC has no major funding issues in 2009 we expect no risks arising here. By the end of 2010 a bond with a volume of EUR 90.8mn is due and by the end of 2014 a convertible bond with a volume of EUR 180mn will be due.

DCF valuation

Our group forecast for A-TEC reflects a weak environment for 2009 and 2010. We anticipate an improved environment for 2011 and 2012.

Estimate changes 2008e – 2010e

in EURmn	2008e			2009e			2010e		
	Old	New	% chg.	Old	New	% chg.	Old	New	% chg.
Sales	3,171.3	3,120.4	*-1.6%*	3,204.5	2,935.7	*-8.4%*	3,300.7	2,928.9	*-11.3%*
EBITDA	138.4	133.5	*-3.6%*	155.9	106.7	*-31.5%*	181.0	118.0	*-34.8%*
Margin	*4.4%*	*4.3%*		*4.9%*	*3.6%*		*5.5%*	*4.0%*	
EBIT	84.4	79.7	*-5.6%*	101.2	53.2	*-47.4%*	125.7	65.0	*-48.3%*
Margin in %	*2.7%*	*2.6%*		*3.2%*	*1.8%*		*3.8%*	*2.2%*	
EPS (in EUR)	1.28	1.15	*-10.2%*	1.97	0.63	*-68.2%*	2.75	1.13	*-58.8%*

Source: Erste Group estimates

The main reason for our substantially reduced EBIT estimates for 2009 and 2010 stem from expected operational losses in the Drive Technology Division as well as a just break-even Machine Tools Division. The only Division that will contribute to A-TEC's results in 2009 and 2010 will be in our view the Plant Construction Division with an estimated EBIT of EUR 68.9mn in 2009 and EUR 71.6mn in 2010.

A-TEC key figures overview 2007-2012e

A-TEC	2007	2008e	2009e	2010e	2011e	2012e	2013e
Plant Construction	1,046.4	1,533.0	1,962.2	1,864.1	1,920.1	1,977.7	2,056.8
Drive Technology	417.3	357.3	250.1	250.1	287.6	330.8	353.9
Machine Tools	211.8	322.4	226.2	232.4	245.0	300.8	369.8
Minerals & Metals	685.5	907.7	497.1	582.3	798.8	902.4	903.4
Consolidation	0.0						
Group Sales	**2,361.0**	**3,120.4**	**2,935.7**	**2,928.9**	**3,251.4**	**3,511.6**	**3,683.9**
Group Sales growth	*48.1%*	*32.2%*	*-5.9%*	*-0.2%*	*11.0%*	*8.0%*	*4.9%*
Sales growth							
Plant Construction	*70.7%*	*46.5%*	*28.0%*	*-5.0%*	*3.0%*	*3.0%*	*4.0%*
Drive Technology	*37.0%*	*-14.4%*	*-30.0%*	*0.0%*	*15.0%*	*15.0%*	*7.0%*
Machine Tools	*24.1%*	*52.2%*	*-29.8%*	*2.7%*	*5.4%*	*22.8%*	*22.9%*
Minerals & Metals	*35.4%*	*32.4%*	*-45.2%*	*17.1%*	*37.2%*	*13.0%*	*0.1%*
EBIT							
Plant Construction	43.9	61.8	69.8	71.6	77.8	80.3	83.4
Drive Technology	8.1	3.2	-7.5	-4.8	3.2	12.9	17.9
Machine Tools	15.6	26.5	0.5	2.2	15.4	20.6	31.9
Minerals & Metals	6.3	2.2	5.4	11.0	32.9	38.2	46.9
Consolidation		-14.0	-15.0	-15.0	-15.0	-15.0	-15.0
Group EBIT	**73.9**	**79.7**	**53.2**	**65.0**	**114.2**	**137.0**	**165.2**
Group EBIT margin	*3.1%*	*2.6%*	*1.8%*	*2.2%*	*3.5%*	*3.9%*	*4.5%*
EBIT-margin							
Plant Construction	*4.2%*	*4.0%*	*3.6%*	*3.8%*	*4.1%*	*4.1%*	*90.2%*
Drive Technology	*1.9%*	*0.9%*	*-3.0%*	*-1.9%*	*1.1%*	*3.9%*	*46.1%*
Machine Tools	*7.4%*	*8.2%*	*0.2%*	*1.0%*	*6.3%*	*6.9%*	*66.4%*
Minerals & Metals	*0.9%*	*0.2%*	*1.1%*	*1.9%*	*4.1%*	*4.2%*	*82.4%*

Source: A-TEC, Erste Group estimates

EUR 6.2 target equity price

Applying a 25% discount, on our DCF derived target equity price of EUR 8.3 for A-TEC's conglomerate structure, we derive a 12-month target equity price of EUR 6.2 (previously EUR 11.6). The main reasons for our reduced target price are the further reduction of our 2008-10 estimates and a further increased cost of capital.

DCF valuation

EUR mn	2006	2007	2008e	2009e	2010e	2011e	2012e	2013e
Sales		2,361.0	3,120.4	2,935.7	2,928.9	3,251.4	3,511.6	3,683.9
growth(in %)			*32.2%*	*-5.9%*	*-0.2%*	*11.0%*	*8.0%*	*4.9%*
EBIT		93.3	79.7	53.2	65.0	114.2	137.0	136.3
EBIT-margin (in %)			*2.6%*	*1.8%*	*2.2%*	*3.5%*	*3.9%*	*3.7%*
- Taxes on EBIT			-19.9	-13.3	-16.3	-28.6	-34.3	-34.1
+ Depreciation/amortisation			53.8	53.6	53.0	53.1	54.0	56.3
+/- Change in working capital			-21.7	89.9	-30.7	-24.6	-15.3	-14.5
- Capital expenditures			-77.9	-49.9	-49.3	-58.3	-64.6	-65.0
Free cash flow			13.9	133.4	21.6	55.8	76.8	79.0
Terminal value								573.0
Total free cash flow			13.9	133.4	21.6	55.8	76.8	573.0

DCF Valuation (EUR mn)		2008e	2009e	2010e	2011e	2012e	2013e
Discounted free cash flow			119	17	39	48	318
Enterprise value	540						
Net debt	323.2	as of 31/12/2008e					
Equity value of convertible bond	-25.5	as of 31/12/2008e					
Equity value	191.6						
Number of shares in million	26.4						
Net present value per share (EUR)	7.3	at 31/12/08e					
Net present value per share (EUR)	8.2	at February/10e					
Conglomerate Disount	**25%**						
Target equity price	**6.2**	**at February/10e**					

WACC calculation		WACC - perpetuity	
		TV Growth	1.0%
Risk-free rate	4.0%	Risk-free rate	5.0%
Premium to equity	5.5%	Premium to equity	5.5%
Beta	2.00	Beta	2.00
Cost of equity	15.0%	Cost of equity	16.0%
Cost of debt	9.0%	Cost of debt	7.0%
Effective tax rate (%)	25.0%	Effective tax rate (%)	25.0%
After-tax cost of debt (%)	6.8%	After-tax cost of debt (%)	5.3%
Equity weight (%)	70.0%	Equity weight (%)	90%
Debt weight (%)	30.0%	Debt weight (%)	10%
WACC	**12.53%**	**WACC**	**14.93%**

Source: Erste Group estimates

DCF sensitivity analysis as of February 2010e (after 25% conglom. discount)

TV EBIT margin	WACC	Per Share equity value in EUR				
	13.9%	**14.4%**	**14.9%**	**15.4%**	**15.9%**
2.7%	3.1	2.8	2.6	2.4	2.2
3.2%	5.0	4.7	4.4	4.1	3.8
3.7%	7.0	6.6	**6.2**	5.8	5.5
4.2%	8.9	8.4	8.0	7.6	7.2
4.7%	10.8	10.3	9.8	9.3	8.8

TV growth	WACC	Per Share equity value in EUR				
	13.9%	**14.4%**	**14.9%**	**15.4%**	**15.9%**
0.0%	6.1	5.7	5.4	5.1	4.8
0.5%	6.5	6.1	5.8	5.4	5.1
1.0%	7.0	6.6	**6.2**	5.8	5.5
1.5%	7.5	7.0	6.6	6.2	5.9
2.0%	8.0	7.5	7.1	6.7	6.3

Source: Erste Group estimates

Peer group comparison

Applying a 25% conglomerate discount, our peer group comparison indicates limited upside potential for A-TEC stock.

Valuation comparison

AE&E Peers	EV/Sales			EV/EBITDA			EV/EBIT			P/E		
	2008e	2009e	2010e	2008e	2009e	2010e	2008e	2009e	2010e	2008e	2009e	2010e
Alstom SA	0.5 x	0.4 x	0.4 x	5.4 x	4.2 x	4.2 x	6.7 x	5.1 x	5.3 x	9.7 x	8.6 x	9.4 x
Siemens AG	0.8 x	0.7 x	0.6 x	9.1 x	5.5 x	5.3 x	17.4 x	8.0 x	7.9 x	11.7 x	8.7 x	8.7 x
Andritz Ag	0.2 x	0.3 x	0.3 x	2.3 x	3.5 x	3.7 x	2.8 x	4.5 x	4.9 x	7.2 x	8.2 x	9.5 x
Rafako (Fabryka Kotlow)	0.2 x	0.2 x	0.2 x	4.6 x	4.1 x	4.4 x	6.3 x	5.8 x	6.2 x	12.3 x	6.7 x	10.1 x
Median	**0.4 x**	**0.3 x**	**0.4 x**	**5.0 x**	**4.2 x**	**4.3 x**	**6.5 x**	**5.4 x**	**5.8 x**	**10.7 x**	**8.4 x**	**9.5 x**
EMCO Peers	**EV/Sales**			**EV/EBITDA**			**EV/EBIT**			**P/E**		
	2008e	2009e	2010e	2008e	2009e	2010e	2008e	2009e	2010e	2008e	2009e	2010e
Gildemeister AG	0.3 x	0.2 x	0.2 x	2.6 x	2.7 x	3.0 x	3.1 x	3.5 x	4.5 x	3.0 x	4.7 x	7.1 x
Lincoln Electric Hldg CS	0.8 x			5.5 x			6.5 x			7.6 x	11.8 x	11.4 x
Median	**0.6 x**	**0.2 x**	**0.2 x**	**4.0 x**	**2.7 x**	**3.0 x**	**4.8 x**	**3.5 x**	**4.5 x**	**5.3 x**	**8.2 x**	**9.2 x**
Brixlegg Peers	**EV/Sales**			**EV/EBITDA**			**EV/EBIT**			**P/E**		
	2008e	2009e	2010e	2008e	2009e	2010e	2008e	2009e	2010e	2008e	2009e	2010e
Norddeutsche Affinerie AG	0.3 x	0.5 x	0.4 x	0.9 x	2.3 x	2.6 x	1.0 x	4.0 x	4.3 x	2.1 x	5.1 x	5.9 x
KGHM Polska Miedz SA												
Median	**0.3 x**	**0.5 x**	**0.4 x**	**0.9 x**	**2.3 x**	**2.6 x**	**1.0 x**	**4.0 x**	**4.3 x**	**2.1 x**	**5.1 x**	**5.9 x**
ATB Peers	**EV/Sales**			**EV/EBITDA**			**EV/EBIT**			**P/E**		
	2008e	2009e	2010e	2008e	2009e	2010e	2008e	2009e	2010e	2008e	2009e	2010e
Emerson Electric Co.	1.2 x	1.2 x	1.2 x	4.6 x	4.7 x	4.7 x	5.2 x	5.4 x	5.8 x	8.7 x	9.7 x	10.9 x
Schneider Electric SA	1.0 x	0.9 x	0.9 x	5.6 x	6.3 x	6.4 x	6.7 x	7.9 x	8.0 x	7.0 x	9.3 x	9.5 x
ABB Ltd	0.8 x	0.7 x	0.7 x	4.6 x	4.7 x	4.7 x	5.2 x	5.4 x	5.8 x	8.7 x	9.7 x	10.9 x
Siemens AG	0.8 x	0.7 x	0.6 x	9.1 x	5.5 x	5.3 x	17.4 x	8.0 x	7.9 x	11.7 x	8.7 x	8.7 x
Median	**0.9 x**	**0.8 x**	**0.8 x**	**5.1 x**	**5.1 x**	**5.0 x**	**5.9 x**	**6.7 x**	**6.8 x**	**8.7 x**	**9.5 x**	**10.2 x**
Weighted Median	**0.4 x**	**0.4 x**	**0.4 x**	**4.4 x**	**3.8 x**	**3.9 x**	**5.9 x**	**5.2 x**	**5.5 x**	**8.9 x**	**8.0 x**	**8.9 x**
A-TEC	**0.2 x**	**0.1 x**	**0.1 x**	**3.7 x**	**3.6 x**	**3.3 x**	**6.2 x**	**7.3 x**	**6.0 x**	**5.4 x**	**9.8 x**	**5.4 x**
Premium/Discount	**-63%**	**-67%**	**-67%**	**-16%**	**-6%**	**-16%**	**6%**	**40%**	**10%**	**-40%**	**22%**	**-39%**

Source: Factset, Erste Group estimates

Income Statement (IAS, EUR mn, 31/12)	2005 31/12/2005	2006 31/12/2006	2007 31/12/2007	2008e 31/12/2008	2009e 31/12/2009	2010e 31/12/2010
Net sales	**1,083.97**	**1,594.37**	**2,360.98**	**3,120.39**	**2,935.71**	**2,928.90**
Invent. changes + capitalized costs	26.47	32.54	29.38	15.63	14.71	14.67
Total revenues	**1,110.44**	**1,626.91**	**2,390.37**	**3,136.02**	**2,950.42**	**2,943.58**
Other operating revenues	23.73	27.33	72.02	53.05	49.91	49.79
Material costs	-724.72	-1,095.21	-1,727.45	-2,298.87	-2,176.96	-2,163.28
Personnel costs	-220.59	-286.58	-364.61	-485.21	-459.48	-456.60
Other operating expenses	-109.47	-147.27	-204.04	-271.53	-257.13	-255.52
EBITDA	**79.39**	**125.17**	**166.29**	**133.45**	**106.75**	**117.97**
Depreciation/amortization	-24.35	-33.16	-72.98	-53.77	-53.55	-52.97
EBIT	**55.04**	**92.02**	**93.31**	**79.68**	**53.19**	**65.00**
Financial result	-12.09	-13.45	-44.09	-35.55	-31.11	-22.89
Extraordinary result	-1.52	-7.28	-17.41	-2.00	0.00	0.00
EBT	**41.43**	**71.29**	**31.81**	**42.14**	**22.08**	**42.11**
Income taxes	-4.92	8.23	-4.13	-11.80	-5.52	-10.53
Result from discontinued operations	0.00	0.00	0.00	0.00	0.00	0.00
Minorities and cost of hybrid capital	-3.11	-2.34	12.70	0.00	0.00	-1.68
Net result after minorities	**33.41**	**77.19**	**40.38**	**30.34**	**16.56**	**29.90**

Balance Sheet (IAS, EUR mn, 31/12)	2005	2006	2007	2008e	2009e	2010e
Intangible assets	105.28	255.08	290.62	290.87	293.45	295.96
Tangible assets	162.42	281.16	468.08	491.99	485.76	479.62
Financial assets	27.25	15.64	18.18	18.18	18.18	18.18
Total fixed assets	**294.94**	**551.89**	**776.88**	**801.04**	**797.39**	**793.76**
Inventories	151.28	210.55	334.04	405.65	381.64	380.76
Receivables and other current assets	372.67	439.05	1,334.61	1,236.05	1,318.89	1,287.76
Other assets	29.89	53.44	55.10	57.86	60.75	63.79
Cash and cash equivalents	153.53	310.95	399.74	370.96	478.11	481.34
Total current assets	**707.36**	**1,013.98**	**2,123.49**	**2,070.52**	**2,239.39**	**2,213.64**
TOTAL ASSETS	**1,002.30**	**1,565.87**	**2,900.37**	**2,871.56**	**3,036.78**	**3,007.40**
Shareholders'equity	**112.86**	**298.64**	**388.65**	**418.98**	**435.54**	**462.96**
Minorities	**39.66**	**19.38**	**7.68**	**7.68**	**7.68**	**9.36**
Hybrid capital and other reserves	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Pension and other LT personnel accruals	57.48	66.31	88.21	92.95	92.95	97.27
Other LT provisions	0.00	0.00	0.00	0.00	0.00	0.00
Interest-bearing LT debts	160.32	268.57	586.16	586.11	586.06	586.01
Other LT liabilities	62.17	87.78	111.58	111.58	111.58	111.58
Total long-term liabilities	**222.50**	**356.34**	**697.75**	**697.70**	**697.65**	**697.60**
Interest-bearing ST debts	170.93	109.31	377.22	15.12	15.12	15.12
Other ST liabilities	398.88	715.89	1,340.88	1,639.14	1,787.85	1,725.11
Total short-term liabilities	**569.81**	**825.20**	**1,718.10**	**1,654.26**	**1,802.97**	**1,740.22**
TOTAL LIAB. , EQUITY	**1,002.30**	**1,565.87**	**2,900.37**	**2,871.56**	**3,036.78**	**3,007.40**

Cash Flow Statement (IAS,EUR mn, 31/12)	2005	2006	2007	2008e	2009e	2010e
Cash flow from operating activities	-18.65	135.80	67.62	411.31	157.10	55.10
Cash flow from investing activities	-73.35	-51.39	-385.79	-77.93	-49.90	-49.34
Cash flow from financing activities	109.55	74.77	291.06	-362.15	-0.05	-2.53
CHANGE IN CASH , CASH EQU.	**17.59**	**157.42**	**-32.60**	**-28.78**	**107.15**	**3.23**

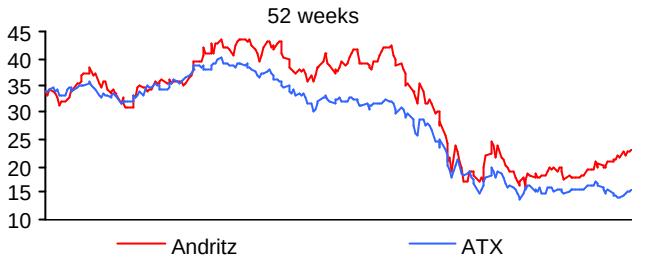
Margins & Ratios	2005	2006	2007	2008e	2009e	2010e
Sales growth		47.1%	48.1%	32.2%	-5.9%	-0.2%
EBITDA margin	7.1%	7.7%	7.0%	4.3%	3.6%	4.0%
EBIT margin	5.0%	5.7%	3.9%	2.5%	1.8%	2.2%
Net profit margin	3.3%	4.9%	1.2%	1.0%	0.6%	1.1%
ROE	59.2%	37.5%	11.7%	7.5%	3.9%	6.7%
ROCE		19.1%	7.2%	7.2%	4.9%	6.2%
Equity ratio	15.2%	20.3%	13.7%	14.9%	14.6%	15.7%
Net debt	235.2	133.2	651.8	323.2	216.0	217.1
Working capital	107.7	135.3	350.3	358.4	375.7	409.6
Capital employed	449.9	539.0	1,159.7	861.5	770.8	801.0
Inventory turnover						

Source: Company data, Erste Group estimates

Andritz Buy

Gerald Walek, CFA +43 (0)5 0100 - 16360 gerald.walek@erstegroup.com

EUR mn	2007	2008e	2009e	2010e
Net sales	3,282.5	3,538.2	3,336.3	3,212.2
EBITDA	242.3	276.4	245.9	235.4
EBIT	192.6	218.7	190.2	179.9
Net result after min.	132.7	151.4	131.7	125.5
EPS (EUR)	2.57	2.95	2.56	2.44
CEPS (EUR)	4.00	4.95	3.78	3.64
BVPS (EUR)	8.99	10.90	12.23	13.45
Div./share (EUR)	1.00	1.20	1.20	1.20
EV/EBITDA (x)	8.7	3.4	4.1	3.9
P/E (x)	16.1	7.9	9.1	9.5
P/CE (x)	10.4	4.7	6.2	6.4
Dividend Yield	2.4%	5.2%	5.2%	5.2%



Performance	12M	6M	3M	1M
in EUR	-31.7%	-38.4%	18.3%	28.3%

Share price (EUR)	23.30	Reuters	ANDR.VI	Free float		69.0%
Number of shares (mn)	51.4	Bloomberg	ANDR AV	Shareholders		Certus PF (29.3%)
Market capitalization (EUR mn)	1,197.6	Div. Ex-date	03/04/09			
Enterprise value (EUR mn)	926.2	**Target price**	**37.0**	Homepage:		www.andritz.com

World's leading supplier of hydro power technology

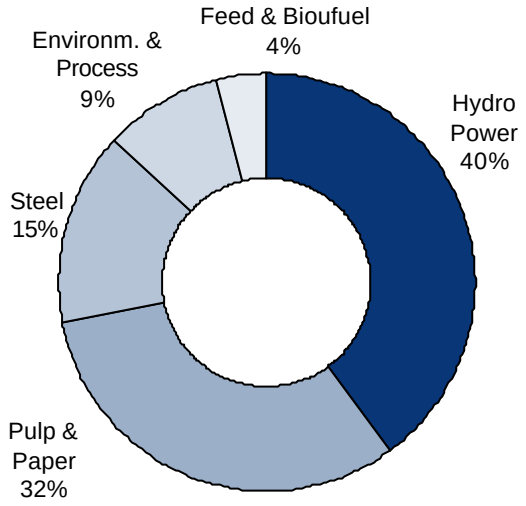
- **Due to Andritz's very favorable business portfolio (2009e renewable exposure: 47%) and rather low valuation, we stick to our Buy recommendation. We slightly cut our target price to EUR 37 (previously EUR 40.0).**
- **Via its subsidiary Andritz VA TECH Hydro, Andritz is no. 2 on the world market (19% market share) for hydro power equipment and technology. Including biomass power boilers and technology for wood pelleting, we estimate that Andritz will generate around 47% of 2009 group sales with renewables technology.**
- **We believe that rising costs for fossil fuels (due to rising complexity in discovery of new resources) and lack of cost competiveness of other types of renewables (e.g. wind or solar power) will improve the competitive position of hydro power technology in the mid term.**
- **The market for hydro power technology will be a growth market for the coming decades, since just 34% of the realistic global hydro potential has been developed so far.**
- **Due to the following reasons, we believe that the very favorable metrics of the hydro power market will translate into excess returns for Andritz shareholders:**
    - **The market for hydro power technology is mature and is dominated by three global players;**
    - **Due to the complexity and size of projects, barriers to entry are quite substantial;**
    - **Andritz has a very strong track record in operating the plant construction business in a manner highly rewarding o shareholders – delivering significant excess return on capital employed, paying out 40% of net income (50% payout ratio targeted by 2010) and growing net income at a double-digit clip since its IPO.**

Andritz – brief overview

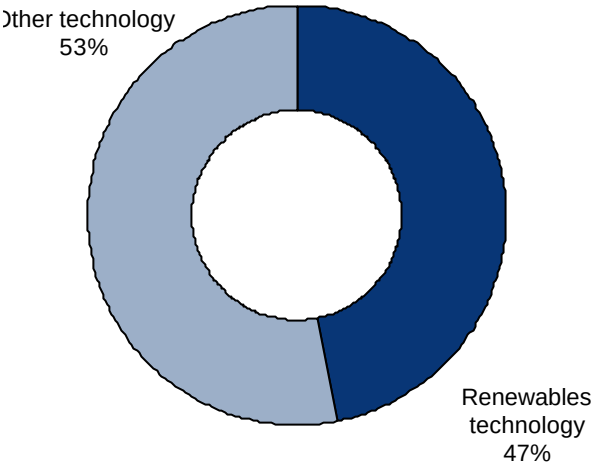
Andritz is a plant construction company that supplies leading technology to different types of industries. The expected sales split for 2009 by industry looks as follows:

Andritz 2009e divisional sales split (EUR 3.3bn) and total renewables exposure

Andritz 2009e - divisional sales split



Andritz 2009e - renewables exposure



Source: Erste Group estimates

47% expected sales exposure to renewables in 2009

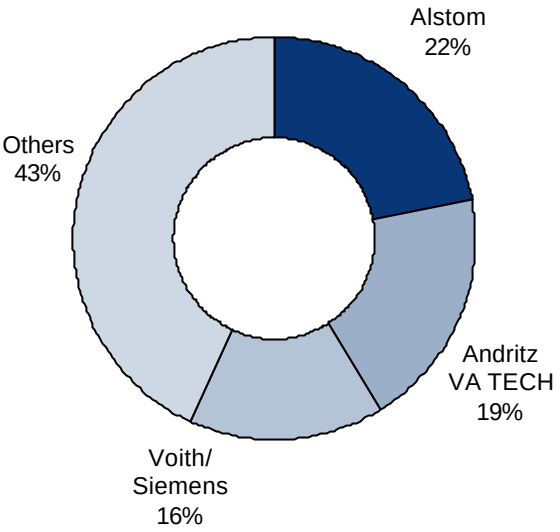
With an estimated 2009 sales volume of EUR 1.4bn, Hydro Power is Andritz's obvious exposure to the renewable energy sector. However, via the Pulp & Paper division, Andritz is one of the two top global technology suppliers to an industry that has access to the world's largest global source of bioenergy, wood. Via the sale of biomass power boilers, Andritz already generates around EUR +100mn in annual sales within the Pulp & Paper division and is currently developing a biomass to liquid (BtL) technology together with UPM. In addition, Andritz generates around EUR 50mn in annual sales with technology for wood and waste pelleting. So, if we split Andritz group sales for 2009e into renewables technology and other industries, the split looks as shown above.

Hydro power – 2009e sales EUR 1,410mn

Andritz global no. 2 in hydro power market

Alongside Alstom, Andritz VA TECH Hydro (market share of around 19%) is the world's leading supplier of hydro power technology. The world market for hydro power technology looks as follows:

Hydro Power equipment world market shares (EUR 7.4bn)



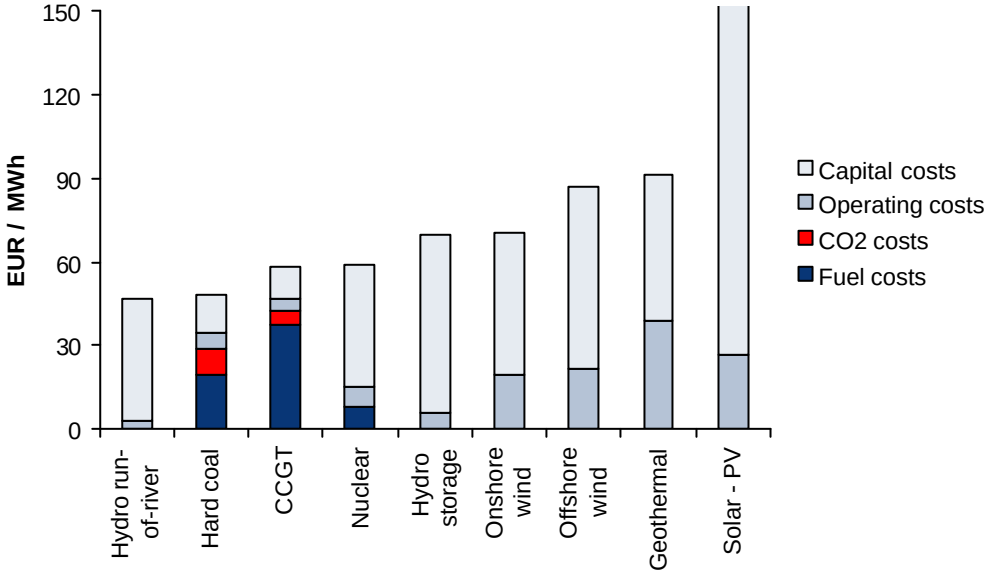
Source: Andritz estimates, Erste Group estimates

Including the recent acquisition of GE's hydro business (2Q08), Andritz has increased its global market share from around 16% to 19%. This acquisition complements the existing product portfolio of Andritz in the field of large Francis-type turbines and generators with an output capacity of 400 MW and more. In addition, this acquisition gave Andritz (via the GEHI joint venture in Brazil) a strong manufacturing base in this very important hydro power market.

Excellent competiveness of hydro power

Electricity generated with hydro power has very favorable metrics with regards to quality (short-term availability) and CO2 emissions and is cost-competitive with fossil fuels. The table below lists the estimated costs to produce one MWh of electricity with different types of energy sources. It shows the very favorable cost structure of hydro power compared to caloric alternatives, as well as wind power.

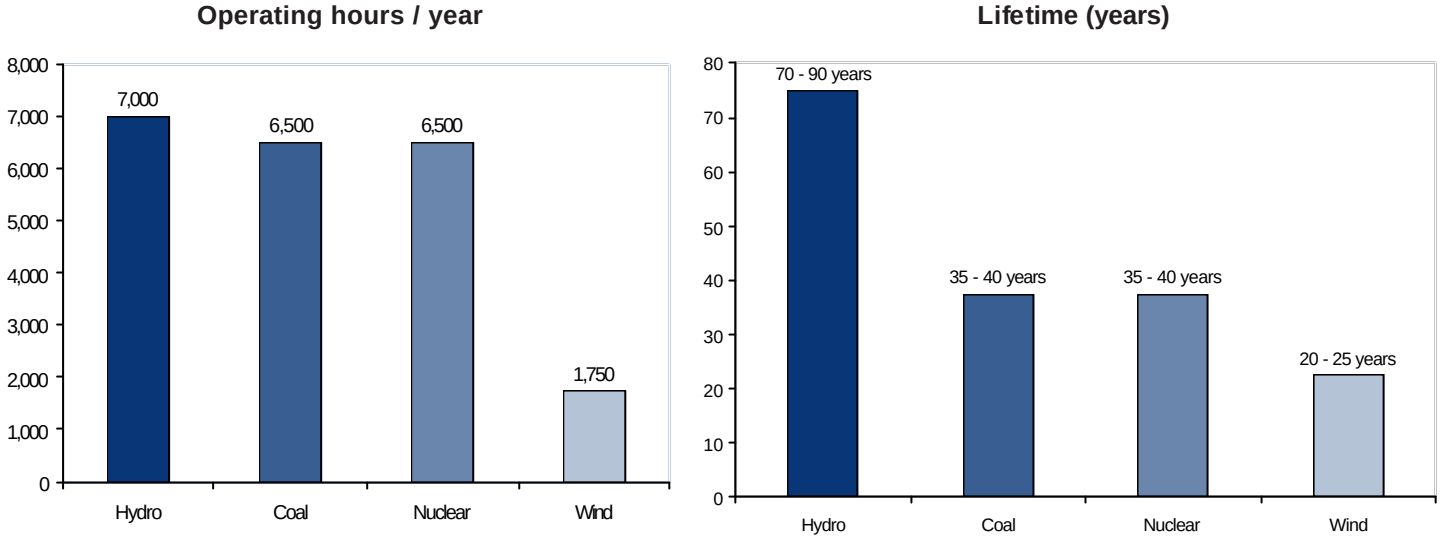
Total estimated production costs for one MWh electricity



Source: Reuters, Erste Group estimates, EVN, Andritz
CO2 costs: EUR 12.1 / t
Hard coal costs: EUR 65 / t
Gas costs: EUR 21.7 / MWh

The graph below shows that the long average operating hours per year and the very long operating time (measured in years) support hydro power and give it an excellent EROIE (energy return on invested energy).

Comparison of annual operating hours (h/a) and lifetime of power plants



Source: Andritz, Erste Group estimates

In order to stabilize the electricity supply of a grid, the ability of an energy source to supply the net predictably with energy in a relatively short period of time is highly valued. The table below shows that hydro power is by far the most flexible energy source:

Short-term power availability

Nuclear:	one day
Coal:	several hours
Gas and oil:	20 – 30 minutes
Wind:	Unpredictable
Hydro/pump storage:	Seconds (e.g. Kops II Austria, regulation of +/- 5 within 20 seconds)

Source: Andritz, Erste Group estimates

We believe that the following aspects will further increase the relative competitiveness of hydro power in the mid term:

- **Rising costs to develop new fossil fuel reservoirs** - rising complexity of discovery of new oil-, gas- and coalfields will lead to further rising production costs, which in turn will lead to further rising costs of fossil fuels as input factors;
- **Other renewable technologies still not cost-competitive** - Other renewable energy sources (wind and solar) are still not cost-competitive and some major quality issues remain. For example, experts estimate that wind power could supply at a maximum 20% of a grid's electricity, due to the variety of wind; with regards to solar power, the issue with the storage of power to have energy available at night also needs to be solved.

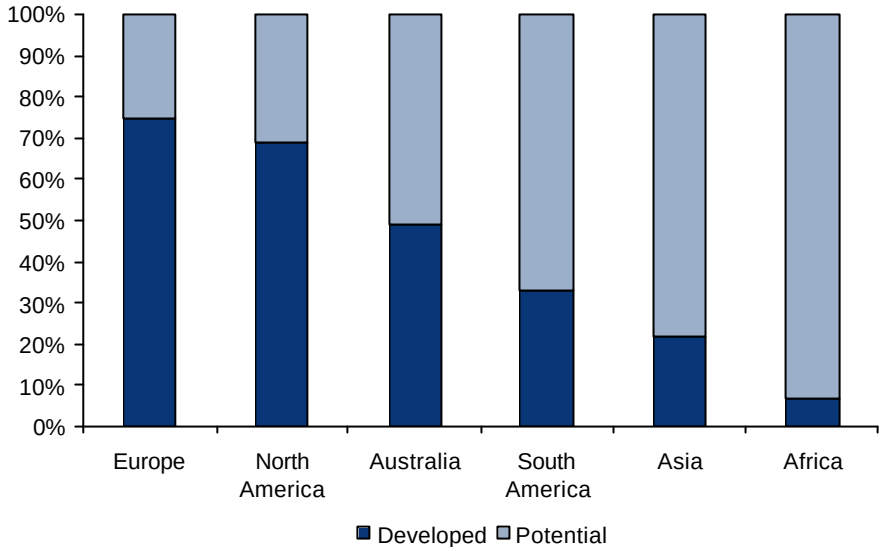
Just 34% of global hydro potential developed

This development will lead to increased pricing power for suppliers of hydro power technology in the coming years.

The International Hydro Power Association (IHA) estimates that the total realistic global hydro potential amounts to around 8,600 TWh/y. As of 2006, the global installed hydro power capacity amounted to around 3,000 TWh/y (according to IEA WEO 2008); thus, currently around 34.8% of the global hydro potential is developed. This in turn means that there is plenty of opportunity for new projects - especially in Asia, where just 21% of the hydro potential has been developed, and in South America, where 32% of the hydro potential has been developed. With a

development rate of around 66-67%, Europe and North America are mature markets. However, since the installed base in North America and Europe is rather old (+30 years), these regional markets provide substantial potential for refurbishments and renewals.

Realistic hydro potential vs. developed output



Source: IHA

Andritz has dense global network to harvest expected growth

Andritz VA-TECH Hydro has a dense global set-up to benefit from these global trends, given the new large projects expected in South America and Asia, as well as the expected refurbishments in Europe and North America. Due to the expansion of its Pulp & Paper business, Andritz has a strong footing in China (Beijing, Hangzhou and Foshan) and India (Bhopal and Faridabad). Via the GEHI joint venture, Andritz has a very strong regional presence in the very important Brazilian market.

Hydro power sales and EBITA forecast 2008e – 2013e

Hydro Power (in EURmn)	2007	2008e	2009e	2010e	2011e	2012e	2013e
Order Intake	1,216.1	1,459.3	1,473.9	1,621.3	1,783.4	1,926.1	2,022.4
Order intake growth	*107.7%*	*20.0%*	*1.0%*	*10.0%*	*10.0%*	*8.0%*	*5.0%*
Order Book	1,954.9	2,450.0	2,513.7	2,654.4	2,809.1	2,943.5	2,995.2
Book to Bill	*1.34*	*1.24*	*1.05*	*1.09*	*1.09*	*1.08*	*1.03*
Sales [1)]	**910.0**	**1,174.7**	**1,410.2**	**1,480.7**	**1,628.7**	**1,791.6**	**1,970.8**
Sales growth	***94.5%***	***17.0%***	***20.0%***	***5.0%***	***10.0%***	***10.0%***	***10.0%***
EBITA	**49.5**	**72.8**	**84.6**	**93.3**	**109.1**	**125.4**	**141.9**
EBITA-margin	***5.4%***	***6.2%***	***6.0%***	***6.3%***	***6.7%***	***7.0%***	***7.2%***

Source: Andritz, Erste Group estimates

1) 2009e sales include EUR 118mn acquired sales from GE

Improved pricing power drives EBITA margin

We expect that, due to the improved competitive position of hydro power compared to other energy sources, Andritz will gain pricing power. We thus anticipate that the EBITA margins of the Hydro Power division will rise from around 6.2% in 2008e to 7.2% in 2013e.

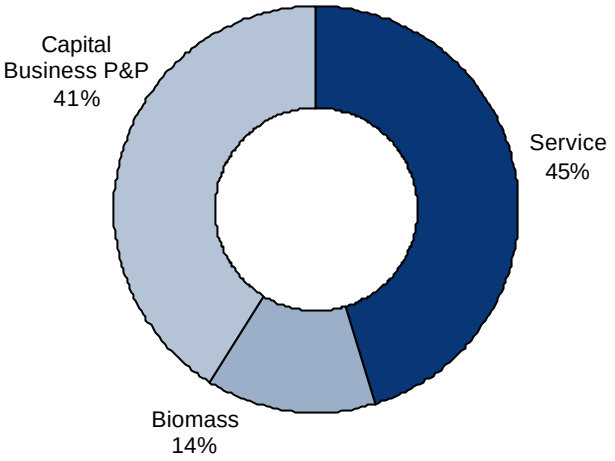
Pulp & Paper – 2009e sales EUR 997mn

45% of Pulp & Paper business rather unaffected by downturn

Recently, Andritz's Pulp & Paper division has been the major concern for investors approaching this company. We estimate that, for FY08e, Andritz will generate around EUR 1,316mn in sales, of which around 30% (EUR 395mn) stems from service sales and around EUR 200mn from the sale of biomass power boilers. This division has a rather stable revenue base of around EUR 600mn. Keep in mind that, as clients invest less in new equipment, the existing base needs more service and that the service business is a high-margin business, delivering double-digit EBIT margins. Thus, even if the real capital business with Pulp & Paper clients were to drop by 50%, this division would still turn in around EUR 1bn in sales. Moreover, the flexible cost

structure, in combination with the rising proportion of higher-margin service sales, would help to stabilize the division's margin level.

Pulp & Paper division sales split 2009e (EUR 1bn)



Source: Erste Group estimates

Biomass as increasingly important energy source

Due to the further rising energy demand and diminishing returns on fossil fuels, we expect that Europe and North America will increasingly activate biomass as an energy source. Two aspects lead us to believe that forests in the northern hemisphere are an interesting underutilized energy source:

- Currently, parts of the tree (e.g. stumps and bark) are unused waste; these will be increasingly activated and used as an energy source;
- Due to faster growing woods, the global pulp (pulp is the raw material in making paper) industry is gradually moving from the northern to the southern hemisphere; this however leaves forests in the northern hemisphere underutilized.

Potential EUR 20bn biomass market until 2030 just in Europe

The EU anticipates that, by 2030, the European power capacity from biomass power plants will have risen substantially, from 10.3 GW to around 38.2 GW. Assuming an average investment volume of around EUR 0.7mn per MW installed, this would translate into total investments of EUR 20bn for the next 20 years.

Pulp & paper industry has best access to global wood supplies

The industry with the best access to wood and forests is the pulp & paper industry. Large players like UPM and Stora Enso are developing extensive bioenergy and biorefinery concepts. There are only two global suppliers of wood processing technology to the pulp & paper industry, Andritz and Metso, which share the market for pulp roughly equally. It is thus quite likely that Andritz and Metso will be key suppliers of technological equipment for the conversion of biomass into energy.

Top technology supplier for conversion of biomass into energy

Andritz has become increasingly active in the promising market for biomass conversion into energy. Andritz covers the full range of technology in order to activate the biomass energy potential: front-end wood processing equipment, drying systems for biomass, pelletizing machinery, centrifuges for bioethanol production, gasifiers and biomass power boilers. Thus far, Andritz has an annual sales volume of around EUR 150–200mn for biomass boilers. These are very popular in the context of a combined heat and power (CHP) system.

Pulp & Paper sales and EBITA forecast 2008e – 2013e

Pulp&Paper (in EURmn)	2007	2008e	2009e	2010e	2011e	2012e	2013e
Order Intake	1,406.4	1,195.4	1,016.1	1,066.9	1,333.7	1,667.1	1,750.4
Order intake growth	*-1.8%*	*-15.0%*	*-15.0%*	*5.0%*	*25.0%*	*25.0%*	*5.0%*
Order Book	1,060.4	939.9	958.8	997.5	1,101.4	1,288.3	1,356.6
Book to Bill	*0.96*	*0.91*	*1.02*	*1.04*	*1.08*	*1.13*	*1.04*
Sales Service Business	394.8	434.3	456.0	501.6	551.7	606.9	667.6
growth p.a.		*10.0%*	*5.0%*	*10.0%*	*10.0%*	*10.0%*	*10.0%*
Sales Biomass Technology	0.0	125.0	125.0	131.3	164.1	205.1	246.1
growth p.a.		*n.a.*	*0%*	*5%*	*25%*	*25%*	*20%*
Sales Capital Business P & P	1,067.4	756.7	416.2	395.4	514.0	668.2	768.4
growth p.a.		*-29.1%*	*-45%*	*-5%*	*30%*	*30%*	*15%*
Sales Total	**1,462.2**	**1,316.0**	**997.2**	**1,028.2**	**1,229.8**	**1,480.2**	**1,682.1**
Sales growth	***4.0%***	***-10.0%***	***-24.2%***	***3.1%***	***19.6%***	***20.4%***	***13.6%***
EBITA	**83.5**	**82.9**	**53.8**	**53.5**	**73.8**	**91.8**	**104.3**
EBITA-margin	***5.7%***	***6.3%***	***5.4%***	***5.2%***	***6.0%***	***6.2%***	***6.2%***

Source: Andritz, Erste Group estimates

Service and biomass business to stabilize 2009e and 2010e

For the short term (2009e – 2010e), Andritz's Pulp & Paper capital business is likely to collapse by 40%. The service and biomass businesses should stabilize the division's profitability in 2009e and 2010e. We expect that Andritz will generate sales of around EUR 246mn with biomass technology by 2013e.

Steel division – 2009e sales EUR 531mn

The Steel division of Andritz is the world's leading supplier of specialized equipment for cold rolling and strip processing, as well as heat treatment to the steel industry. Regarding its key products, Andritz has very dominant market shares and leading positions:

No. 1 in stainless steel processing lines: + 70% market share

No. 1 in electrolytic galvanizing lines: + 80% market share

No. 1 in acid regeneration lines: + 50% market share

No. 2 in heat treatment furnaces: + 25% market share

Andritz's Steel division is focused on the steel industry's downstream (mainly stainless steel) sector, which is closer to the market and the business is rather continuous (depending on technology changes).

Steel sales and EBITA forecast 2008e – 2013e

Steel (in EURmn)	2007	2008e	2009e	2010e	2011e	2012e	2013e
Order Intake	636.4	591.9	355.1	372.9	447.4	536.9	644.3
Order intake growth	*58.3%*	*-7.0%*	*-40.0%*	*5.0%*	*20.0%*	*20.0%*	*20.0%*
Order Book	631.6	764.5	588.6	616.3	701.3	803.4	904.0
Book to Bill	*1.56*	*1.06*	*0.67*	*1.08*	*1.23*	*1.23*	*1.19*
Sales	**408.0**	**559.0**	**531.0**	**345.2**	**362.4**	**434.9**	**543.6**
Sales growth	***-9.4%***	***37.0%***	***-5.0%***	***-35.0%***	***5.0%***	***20.0%***	***25.0%***
EBITA	**29.7**	**40.2**	**37.2**	**17.3**	**19.9**	**26.1**	**35.3**
EBITA-margin	***7.3%***	***7.2%***	***7.0%***	***5.0%***	***5.5%***	***6.0%***	***6.5%***

Source: Andritz, Erste Group estimates

We expect that Andritz's Steel division will suffer significantly during the downturn in 2009e and 2010e, with orders collapsing by 40% in 2009.

Environment & Process – 2009e sales EUR 277.3mn

In this segment, Andritz is a global market leader for dewatering and drying systems for municipal sludge (55% of sales) and special industrial applications (45% of sales).

Environment & Process sales and EBITA forecast 2008e – 2013e

Env.. & Proc. (in EURmn)	2007	2008e	2009e	2010e	2011e	2012e	2013e
Order Intake	410.0	381.3	247.8	260.2	286.3	343.5	360.7
Order intake growth	*11.9%*	*-7.0%*	*-35.0%*	*5.0%*	*10.0%*	*20.0%*	*5.0%*
Order Book	170.3	205.0	175.5	186.1	197.9	211.9	226.7
Book to Bill	*0.49*	*1.10*	*0.89*	*1.04*	*1.04*	*1.04*	*1.04*
Sales	**364.9**	**346.7**	**277.3**	**249.6**	**274.6**	**329.5**	**345.9**
Sales growth	***5.0%***	***-5.0%***	***-20.0%***	***-10.0%***	***10.0%***	***20.0%***	***5.0%***
EBITA	**25.3**	**20.1**	**12.5**	**12.5**	**17.8**	**21.4**	**22.5**
EBITA-margin	***6.9%***	***5.8%***	***4.5%***	***5.0%***	***6.5%***	***6.5%***	***6.5%***

Source: Andritz, Erste Group estimates

Feed & Biofuel – 2009e sales EUR 120.6mn

Andritz's Feed & Biofuel division is a key process technology supplier of conventional (57% of FY07 sales), specialized feed (11% of FY07 sales) and biofuel (32% of FY07 sales) equipment.

Feed & Biofuel sales and EBITA forecast 2008e – 2013e

Feed & Biofuel (in EURmn)	2007	2008e	2009e	2010e	2011e	2012e	2013e
Order Intake	143.7	147.3	103.1	108.3	119.1	148.9	156.3
Order intake growth	*13.1%*	*2.5%*	*-30.0%*	*5.0%*	*10.0%*	*25.0%*	*5.0%*
Order Book	31.1	26.4	23.8	26.2	32.7	32.7	32.7
Book to Bill	*0.22*	*0.22*	*0.22*	*0.22*	*0.22*	*0.22*	*0.22*
Sales	**137.8**	**141.9**	**120.6**	**108.6**	**119.4**	**149.3**	**156.8**
Sales growth	***14.3%***	***3.0%***	***-15.0%***	***-10.0%***	***10.0%***	***25.0%***	***5.0%***
EBITA	**13.3**	**11.4**	**8.4**	**9.2**	**10.7**	**13.4**	**14.1**
EBITA-margin	***9.7%***	***8.0%***	***7.0%***	***8.5%***	***9.0%***	***9.0%***	***9.0%***

Source: Andritz, Erste Group estimates

Since 50% of this division's business stems from service and spare parts, we anticipate only a slightly declining EBITA level in 2009, followed by an improvement already in 2010.

DCF valuation

Due to the expected very weak market environment in 2009 and 2010, we anticipate a flat operating performance for Andritz. The Pulp & Paper and Steel divisions should experience a significantly declining capital business of around 40%. A strongly performing hydro power business and the service business (around 24% of group sales) will support the group's operating performance in 2009 and 2010. As of 2011, we anticipate rising earnings.

Andritz estimate changes 2008e – 2010e

in EURmn	2008e			2009e			2010e		
	Old	New	% chg.	Old	New	% chg.	Old	New	% chg.
Sales	3,538.2	3,538.2	*0.0%*	3,510.1	3,336.3	*-5.0%*	3,598.5	3,212.2	*-10.7%*
EBITDA	276.4	276.4	*0.0%*	257.5	245.9	*-4.5%*	259.7	235.4	*-9.4%*
Margin	*7.8%*	*7.8%*		*7.3%*	*7.4%*		*7.2%*	*7.3%*	
EBIT	218.7	218.7	*0.0%*	201.8	190.2	*-5.7%*	204.3	179.9	*-11.9%*
Margin in %	*6.2%*	*6.2%*		*5.7%*	*5.7%*		*5.7%*	*5.6%*	
EPS (in EUR)	2.94	2.94	*0.0%*	2.71	2.56	*-5.6%*	2.76	2.44	*-11.7%*

Source: Erste Group estimates

EUR 37.0 target price

Based on our slightly reduced earnings estimates we derive a new 12-month target equity price of EUR 37.0 per share (after EUR 40.0).

DCF valuation

EUR mn	2008e	2009e	2010e	2011e	2012e	2013e
Sales	3,538.2	3,336.3	3,212.2	3,615.0	4,185.5	4,699.2
growth(in %)		*-5.7%*	*-3.7%*	*12.5%*	*15.8%*	*12.3%*
EBITA	227.4	196.6	185.7	231.4	278.1	267.9
EBITA-margin	*6.4%*	*5.9%*	*5.8%*	*6.4%*	*6.6%*	*5.7%*
- Taxes on EBIT		-53.8	-50.7	-63.5	-76.6	-75.0
+ Depreciation		49.0	49.3	49.6	49.9	50.2
+/- Change in working capital		-147.6	29.8	21.2	54.9	-15.0
- Capital expenditures		-55.0	-55.0	-55.0	-55.0	-55.0
Free cash flow		-10.8	159.1	183.8	251.4	173.0
Terminal value						1,685.9
Total free cash flow		-10.8	159.1	183.8	251.4	1,685.9

DCF Valuation (EUR mn)		2009e	2010e	2011e	2012e	2013e
Discounted free cash flow		-10	129	134	165	997
Enterprise value	1,416					
Net debt	-307.6	as of 31/12/2008e				
Participations	8.5	as of 31/12/2008e				
Minorities	36.0	as of 31/12/2008e				
Equity value	1,695.9					
Number of shares in million	51.4					
Net present value per share (EUR)	**33.0**	**as of December 2008e**				
Net present value per share (EUR)	**37.0**	**as of February 2010e**				

WACC Calculation		WACC - perpetuity	
		TV Growth	1.0%
Risk-free rate	4.0%	Risk-free rate	5.0%
Premium to equity	5.5%	Premium to equity	5.5%
Beta	1.40	Beta	1.30
Cost of equity	11.7%	Cost of equity	12.2%
Cost of debt	7.5%	Cost of debt	6.0%
Effective tax rate (%)	28.0%	Effective tax rate (%)	28.0%
After-tax cost of debt (%)	5.4%	After-tax cost of debt (%)	4.3%
Equity weight (%)	90.0%	Equity weight (%)	90.0%
Debt weight (%)	10.0%	Debt weight (%)	10.0%
WACC	**11.1%**	**WACC**	**11.4%**

Value drivers analysis	2008e	2009e	2010e	2011e	2012e	2013e
Capital Employed in % of sales	8.0%	4.2%	11.1%	11.6%	9.5%	7.7%
Net WC in % of sales	-7.4%	-3.9%	-5.9%	-3.6%	-3.7%	-4.1%
ROCE	34.0%	29.2%	24.3%	31.9%	41.3%	41.3%

Source: Erste Group estimates

DCF sensitivity as of February 2010e:

TV EBIT margin	WACC	Per Share equity value in EUR			
	10.4%	10.9%	11.4%	11.9%	12.4%
4.0%	31.5	30.7	29.9	29.3	28.7
5.0%	36.1	35.0	34.1	33.3	32.5
5.7%	39.3	38.1	**37.0**	36.0	35.1
6.0%	40.7	39.4	38.3	37.2	36.3
7.0%	45.3	43.8	42.4	41.2	40.1

TV growth	WACC	Per Share equity value in EUR			
	10.4%	10.9%	11.4%	11.9%	12.4%
0.0%	36.8	35.8	35.0	34.1	33.4
0.5%	38.0	36.9	35.9	35.0	34.2
1.0%	39.3	38.1	**37.0**	36.0	35.1
1.5%	40.7	39.4	38.2	37.1	36.1
2.0%	42.4	40.9	39.5	38.3	37.2

Source: Erste Group estimates

Peer group comparison

Discounts in place on EV/EBITDA and EV/EBIT levels

The peer group comparison shows that, based on the EV/EBITDA and EV/EBIT levels, Andritz trades with a discount of 1–30% compared to its peers. The P/E picture is mixed. However, we would like to point out that certain analysts still expect rising earnings for 2009 and 2010 for the peer companies. For our part, we anticipate a declining earnings level for Andritz.

Valuation comparison

Company	EV/EBITDA			EV/EBIT			P/E		
	2008e	2009e	2010e	2008e	2009e	2010e	2008e	2009e	2010e
Alstom	5.4x	4.2x	4.2x	6.7x	5.1x	5.3x	9.7x	8.6x	9.4x
Siemens AG	9.1x	5.5x	5.3x	17.4x	8.0x	7.9x	11.7x	8.7x	8.7x
Metso OYJ	2.8x	3.7x	4.6x	3.4x	5.2x	7.1x	2.6x	4.8x	7.4x
Alfa Laval	4.8x	4.7x	5.4x	5.2x	5.4x	5.9x	6.2x	8.0x	9.2x
Danieli&Co	-0.4x	-0.8x	0.0x	-0.5x	-1.2x	0.1x	4.8x	4.8x	5.4x
Median	**4.8x**	**4.2x**	**4.6x**	**5.2x**	**5.2x**	**5.9x**	**6.2x**	**8.0x**	**8.7x**
Andritz	**3.4x**	**4.1x**	**3.9x**	**4.2x**	**5.3x**	**5.1x**	**7.9x**	**9.1x**	**9.5x**
Discount / Premium	*-30%*	*-1%*	*-16%*	*-18%*	*1%*	*-13%*	*28%*	*14%*	*10%*

Source: Factset, Erste Group estimates

Sector Report – Renewable energy

Income Statement (IAS, EUR mn, 31/12)	**2005** 31/12/2005	**2006** 31/12/2006	**2007** 31/12/2007	**2008e** 31/12/2008	**2009e** 31/12/2009	**2010e** 31/12/2010
Net sales	**1,744.30**	**2,709.69**	**3,282.49**	**3,538.23**	**3,336.33**	**3,212.22**
Invent. changes + capitalized costs	45.45	-44.96	1.60	2.19	2.07	1.99
Total revenues	**1,789.74**	**2,664.73**	**3,284.08**	**3,540.42**	**3,338.39**	**3,214.21**
Other operating revenues	26.36	41.23	66.66	71.85	67.75	65.23
Material costs	-1,084.28	-1,644.92	-1,985.96	-2,131.27	-2,019.08	-1,944.86
Personnel costs	-363.56	-516.93	-676.60	-726.11	-687.89	-662.60
Other operating expenses	-237.36	-349.88	-445.86	-478.48	-453.30	-436.63
EBITDA	**130.90**	**194.22**	**242.32**	**276.42**	**245.88**	**235.36**
Depreciation/amortization	-24.25	-34.38	-49.76	-57.69	-55.65	-55.41
EBIT	**106.65**	**159.84**	**192.56**	**218.73**	**190.23**	**179.95**
Financial result	3.37	-18.55	5.46	5.74	9.32	10.16
Extraordinary result	0.00	0.00	0.00	0.00	0.00	0.00
EBT	**110.02**	**141.29**	**198.02**	**224.47**	**199.55**	**190.11**
Income taxes	-29.79	-44.57	-61.92	-65.10	-57.87	-55.13
Result from discontinued operations	0.00	0.00	0.00	0.00	0.00	0.00
Minorities and cost of hybrid capital	-1.56	-2.87	-3.37	-7.97	-9.98	-9.51
Net result after minorities	**78.68**	**93.86**	**132.74**	**151.40**	**131.70**	**125.47**

Balance Sheet (IAS, EUR mn, 31/12)	**2005**	**2006**	**2007**	**2008e**	**2009e**	**2010e**
Intangible assets	129.43	258.38	273.46	276.73	272.69	269.45
Tangible assets	140.54	237.09	260.15	265.19	269.48	273.14
Financial assets	22.12	45.09	50.04	50.04	50.04	50.04
Total fixed assets	**292.09**	**540.56**	**583.65**	**591.96**	**592.22**	**592.63**
Inventories	198.79	213.73	250.63	371.51	350.31	337.28
Receivables and other current assets	384.53	849.15	1,017.45	1,026.09	967.53	931.54
Other assets	21.85	58.97	56.98	59.83	62.82	65.96
Cash and cash equivalents	494.04	710.18	598.81	931.13	869.75	977.80
Total current assets	**1,099.20**	**1,832.03**	**1,923.88**	**2,388.56**	**2,250.42**	**2,312.59**
TOTAL ASSETS	**1,391.29**	**2,372.59**	**2,507.53**	**2,980.52**	**2,842.64**	**2,905.22**
Shareholders'equity	**320.42**	**402.83**	**467.41**	**566.81**	**636.12**	**699.19**
Minorities	**8.34**	**11.71**	**14.17**	**22.13**	**32.11**	**41.62**
Hybrid capital and other reserves	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Pension and other LT personnel accruals	92.11	182.00	184.21	232.47	242.65	251.90
Other LT provisions	0.00	0.00	0.00	0.00	0.00	0.00
Interest-bearing LT debts	106.40	318.96	221.07	361.07	361.07	361.07
Other LT liabilities	45.04	88.24	107.13	107.13	107.13	107.13
Total long-term liabilities	**151.43**	**407.20**	**328.20**	**468.20**	**468.20**	**468.20**
Interest-bearing ST debts	3.75	25.50	130.73	30.00	30.00	30.00
Other ST liabilities	815.26	1,343.35	1,382.81	1,660.90	1,433.56	1,414.32
Total short-term liabilities	**819.00**	**1,368.85**	**1,513.54**	**1,690.90**	**1,463.56**	**1,444.32**
TOTAL LIAB. , EQUITY	**1,391.29**	**2,372.59**	**2,507.53**	**2,980.52**	**2,842.64**	**2,905.22**

Cash Flow Statement (IAS,EUR mn, 31/12)	**2005**	**2006**	**2007**	**2008e**	**2009e**	**2010e**
Cash flow from operating activities	237.27	143.13	33.11	410.04	56.02	225.45
Cash flow from investing activities	-54.77	-73.29	-148.15	-65.00	-55.00	-55.00
Cash flow from financing activities	-45.94	191.08	-53.43	-12.73	-62.40	-62.40
CHANGE IN CASH , CASH EQU.	**136.57**	**260.93**	**-168.47**	**332.31**	**-61.38**	**108.05**

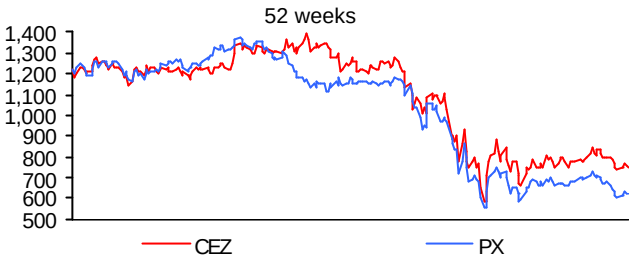
Margins & Ratios	**2005**	**2006**	**2007**	**2008e**	**2009e**	**2010e**
Sales growth		55.3%	21.1%	7.8%	-5.7%	-3.7%
EBITDA margin	7.3%	7.3%	7.4%	7.8%	7.4%	7.3%
EBIT margin	6.0%	6.0%	5.9%	6.2%	5.7%	5.6%
Net profit margin	4.5%	3.6%	4.1%	4.5%	4.2%	4.2%
ROE	49.1%	26.0%	30.5%	29.3%	21.9%	18.8%
ROCE		54.8%	31.5%	34.0%	29.2%	24.3%
Equity ratio	23.6%	17.5%	19.2%	19.8%	23.5%	25.5%
Net debt	-291.8	-183.7	-62.8	-307.6	-236.0	-334.8
Working capital	258.4	404.2	353.4	637.8	724.0	802.3
Capital employed	82.0	319.1	525.9	388.5	539.3	513.1
Inventory turnover	10.9	8.0	8.6	6.9	5.6	5.7

Source: Company data, Erste Group estimates

CEZ from Hold to Buy

Jakub Zidon, +420 224 995-340 jzidon@csas.cz

CZK mn	2007	2008e	2009e	2010e
Net sales	174,563.0	188,836.0	204,158.3	198,787.5
EBITDA	75,326.0	87,129.8	95,603.6	88,893.6
EBIT	53,203.0	65,844.9	71,834.7	62,721.3
Net result after min.	41,555.0	49,080.5	53,585.4	46,882.8
EPS (CZK)	72.91	92.09	100.54	87.96
CEPS (CZK)	111.58	132.17	145.13	137.07
BVPS (CZK)	316.24	544.52	558.90	550.00
Div./share (CZK)	37.01	49.04	59.64	49.95
EV/EBITDA (x)	10.6	5.0	4.8	5.4
P/E (x)	18.7	8.2	7.5	8.6
P/CE (x)	12.2	5.7	5.2	5.5
Dividend Yield	2.7%	6.5%	7.9%	6.6%



Performance	12M	6M	3M	1M
in CZK	-38.1%	-39.7%	-3.9%	-4.0%
in EUR	-42.6%	-48.4%	-16.3%	-9.0%

Share price (CZK)	753.50	Reuters	CEZPsp.PR	Free float		27.0%
Number of shares (mn)	541.8	Bloomberg	CEZ CP	Shareholders	Ministry of finance (63.0%)	
Market capitalization (CZK mn / EUR mn)	408,277 / 14,573	Div. Ex-date	13/05/08			
Enterprise value (CZK mn / EUR mn)	437,841 / 15,684	**Target price**	**1,230.0**	Homepage:		www.cez.cz

Net profit to again rise significantly in 2009!

– The ongoing financial crisis is also significantly affecting commodity markets, including electricity prices – from the record level of EUR 80-90/MWh in June/July, the price has dropped to below EUR 50 per MWh. Given the fact that CEZ already sold 75% of its installed capacity for 2009 for an average price of EUR 63-64/MWh (some 17% above the level seen in 2008), the negative impact of the current situation will be visible only as of 2010, as contracts will mainly be traded and sold during this year. However, our long-term sustainable electricity price remains at EUR 75-80/MWh.

– On the other hand, the EU Council decided before Christmas that electricity generators in the Czech Republic (and other CEE countries) should get up to 70% of free CO2 allocations in 2013, decreasing gradually to 0% by 2020; we originally expected full auctioning already as of 2013. This is definitely positive news for CEZ, with its 50% exposure to lignite and black coal power plants. The cumulative impact of this new plan is +CZK 49.2bn during the third allocation period (2013-20).

– Despite the decreasing CO2 permit price (which is, however, not favorable for any "green projects"), CEZ is also now considering a move into the renewable generation segment; mainly wind power could gain some 3% in its product portfolio. Further plans to lower CO2 emissions include mainly gas-fired power plants, which should totally lead to a decrease in the emissions factor from the current 0.65 t CO2/MWh to 0.3 in 2020, according to CEZ.

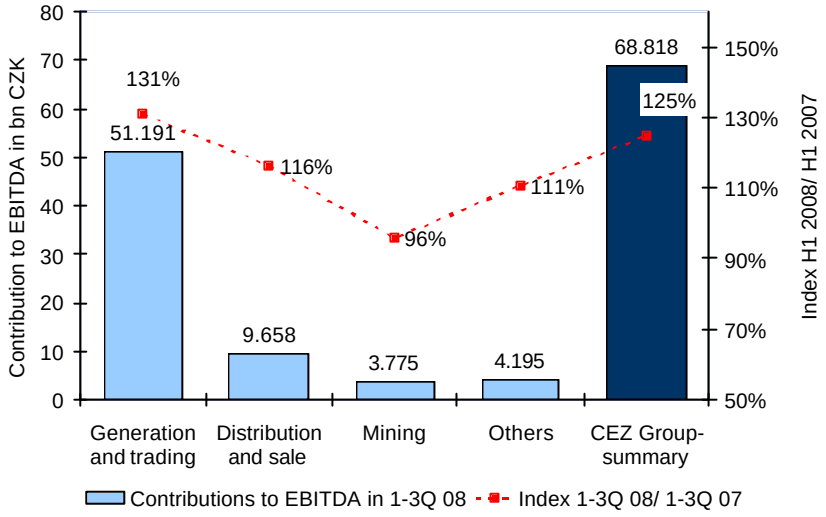
– To reflect the above factors (the negative impact of the lower electricity price forecast in the mid-term is slightly counterbalanced by the positive effect of auctioning "only 30% of CO2 permits" as of 2013), we have lowered our target price to CZK 1,230 (down from CZK 1,316), but nonetheless upgrade our recommendation to Buy. The stock currently trades at discounts of 23% and 21%, respectively to its peers on 2008 and 2009 EV/EBITDA levels.

Investment case

Strong exposure to electricity generation

In light of the financial crisis, we are hearing more and more often about cuts in production or significantly lower demand, as electricity is not an excuse (our forecast for electricity consumption was decreased from +2% to -1.5% in the Czech Republic in 2009). However, CEZ's operating performance is not driven by the distribution segment (where the decrease in electricity consumption will be recorded), as it creates "just" 15% of its total EBITDA; the main contributor is the generation segment, with its 75% share in CEZ's total EBITDA. The question is therefore not about the amount of electricity sold, but the price at which the electricity is sold (either on the domestic market or abroad). Looking at CEZ's segment, we again see a significant y/y EBITDA increase of 31% to CZK 50.96bn in the generation segment, which was (as usual) driven by an increase in wholesale electricity prices in the Czech Republic and higher volume of electricity generation from nuclear power plants (at the expense of coal plants). Distribution and sales EBITDA also increased by 31% (thanks to higher electricity consumption and higher distribution fees) in 1-3Q08. **All in all, about 75% of the company's EBITDA is created in the generation segment, which justifies our special focus on the expected development of electricity prices.**

Contribution to EBITDA in 1-3Q 2008, index y/y



Source: CEZ

Short-term forecasts downgraded on lower energy prices…

As shown in the table below, we have decreased our 2009 and (especially) 2010 forecasts on the EBITDA and EBIT levels, based on the significant drop in energy prices, which follows the decrease in all commodity prices (oil, gas, coal, etc.). CEZ already stated that it hedged some 75% of its installed capacity for 2008 last autumn for prices around EUR 63-64/MWh, which means (compared to the average price of EUR 53.5/MWh, according to our calculation) a further significant y/y increase. However, the lower price paid for as-yet unhedged electricity and the whole distribution segment are the main reasons for our slightly lower earnings forecast for 2009. As for 2010, this year will fully reflect the significant decrease in the power price. However, the average price paid by CEZ's customers will likely be higher than the weighted average of market prices, as CEZ already pre-sold some 25% of its installed capacity for 2010 at an average price of EUR 67/MWh. New profit guidance for 2009 will be officially announced with the publication of the FY08 results. CEZ officials have only said that 2009 net profit will not reach the Bloomberg median forecast of CZK 59.1bn.

Change in our forecast - 2009e - 2010e

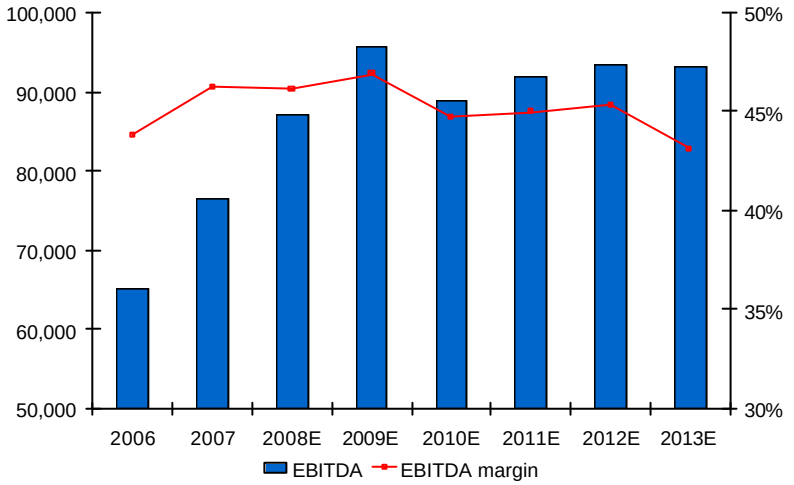
CZK bn	2009e - old	2009e - new	change	2010e - old	2010e - new	change
Revenues	210.16	201.16	-4.3%	219.29	198.79	-9.3%
Operating costs	-111.07	-108.56	-2.3%	-118.97	-109.89	-7.6%
EBITDA	99.09	95.60	-3.5%	100.32	88.89	-11.4%
EBIT	75.73	71.84	-5.1%	75.43	62.72	-16.9%
net profit	56.79	53.59	-5.6%	57.45	46.88	-18.4%
EBITDA margin	47.1%	47.5%		45.7%	44.7%	
net margin	27.0%	26.6%		26.2%	23.6%	

Source: Erste Group estimates

...with long-term prospects also highly dependent on electricity prices

On the other hand, the long-term development of two variables is crucial for our valuation – electricity and emission allowance prices. The recent volatile nature of energy prices has changed our price forecasts and should have a negative impact on the valuation, while the only partial auctioning of CO2 permits for CEE electricity generators as of 2013 (but with a gradual increase from 30% in 2013) undoubtedly has a positive effect on CEZ valuations (of some CZK 49.2bn in total). It is unlikely, in our opinion, that CEZ and other CEE electricity producers will be able to decrease electricity price levels below western prices to costs "only" of the respective parts of the CO2 permit price in their price setting mechanism. **The long-term sustainable electricity price remains the same (EUR 75-80/MWh), but the gradual convergence to this price will come from below (current electricity prices of EUR 50/MWh), and not from above (EUR 80-85/ per MWh), as was expected at the beginning of last year.**

EBITDA margins projections



Source: CEZ, Erste Group estimation

We lower our target price to CZK 1,230

With the negative impact of a lower electricity price in the short and mid term and the positive effect of "only" 30% CO2 permit auctioning as of 2013 taken into consideration, we have decreased our target price to CZK 1,230 (down from CZK 1,316), but upgraded our recommendation to Buy. **Given the significant decrease in the share price, we see some 65% upside potential (compared to Friday, 30th January close price), mainly given the earnings momentum (expected 18% y/y increase in EBITDA) and likely start of its second buyback program. The stock currently trades at discounts of 23% and 21% to its peers on 2008 and 2009 EV/EBITDA levels.**

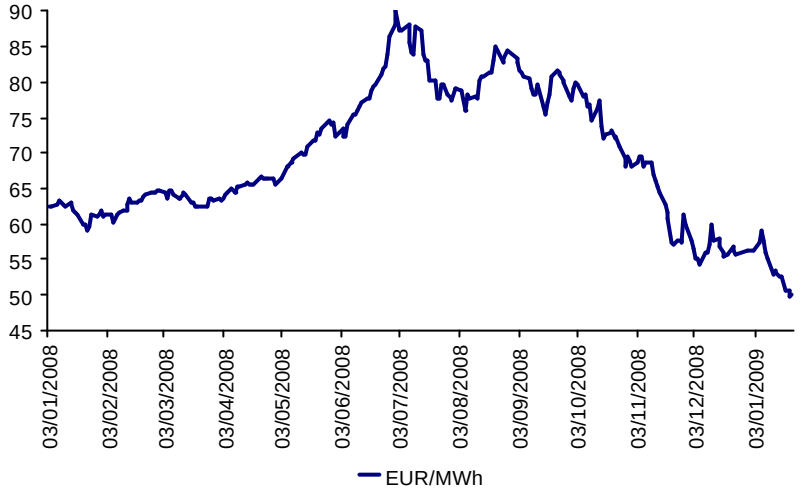
Electricity prices

1) Short term – 2009-10 prices

Drop in commodity prices driving power rates

Comparing electricity prices on the EEX (German energy exchange) and PXE (Czech exchange), we can see that the Czech price level has already converged towards Germany's. Therefore, there should be no further convergence pressure on prices in the Czech Republic, which now oscillate around the prices seen on the Leipzig Energy Exchange, influenced purely by supply and demand interaction. As can be seen in the graph below, the electricity price has decreased strongly from its record level in June/July in 2008.

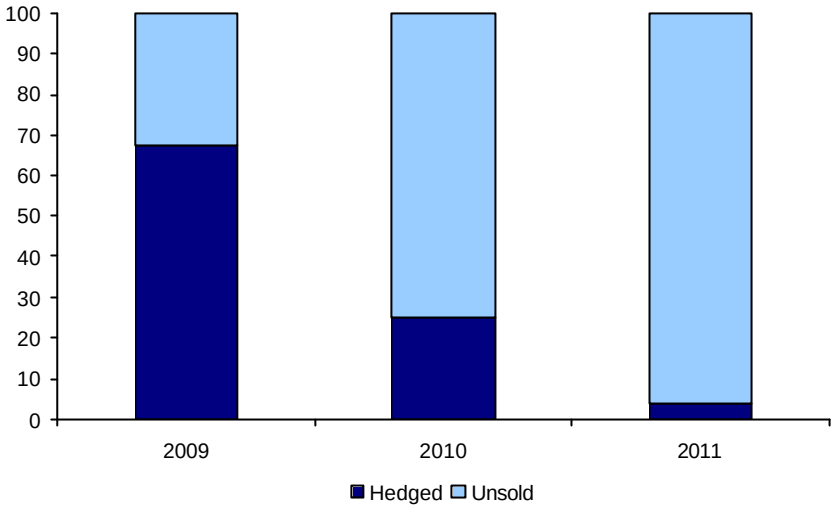
Electricity price development within last 12M



Source: Bloomberg

Has this drop in power rates from 2H08 had an effect on CEZ? Not too badly. CEZ sold some 70% of its installed capacity for an average price of around EUR 63-65/MWh (keep in mind that the generation segment creates 75% of the company's total EBITDA), which is well above the average price of EUR 53.5/MWh in 2008, according to our calculation. The current relatively low electricity prices could therefore primarily influence CEZ's earnings in the generation segment only as of 2010, because we expect some 17% y/y increase in EBITDA for this year. On the other hand, the expected net profit figure will not likely reach the current 2009 Bloomberg consensus of around CZK 58bn.

Hedging of prices (100%=40-45TWh)



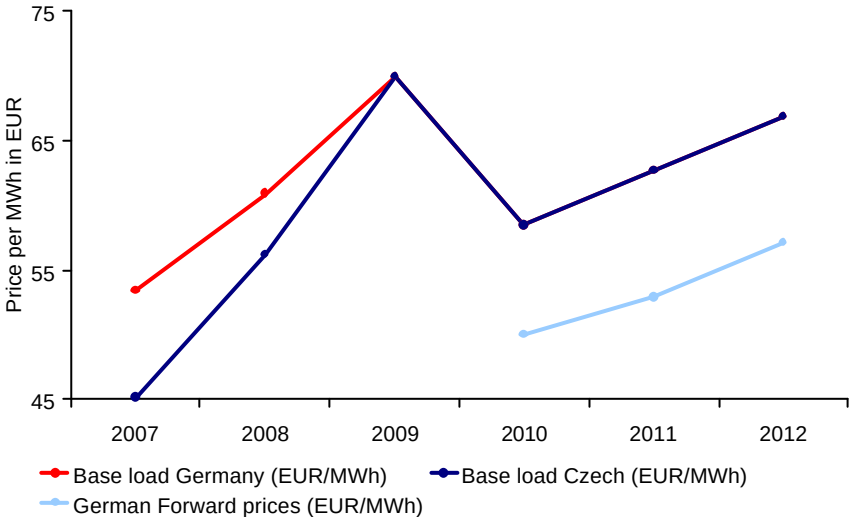
Achieved baseload price including currency hedging in EUR per MWh:

63	67	77

Source: CEZ

Given the existence of the Prague Energy Exchange, entities in the Czech Republic can buy electricity (via traders) “immediately” for a market price and take advantage of the current environment of low energy prices by hedging electricity for a longer time. We expect a recovery in commodity prices in 2H09, but the average price for 2010 is expected to stay below this year’s level in any case. We forecast the price level to reach on average some EUR 58/MWh in 2010, which would imply a 7% decrease to CZK 88.9bn for CEZ’s EBITDA level compared to this year.

Short and mid-term electricity development



Source: Bloomberg, PXE, Erste Group Estimation

As mentioned above, CEZ will enjoy a further quite significant y/y earnings increase, but one should also recognize how steep the drop in profitability will be in 2010. Weak macro conditions, tight credit markets and regulatory issues suggest that this could bring mainly negative surprises for the utility sector, as we expect input prices (crude oil, gas, coal, CO2 permits) to remain under pressure, supported by weak demand for electricity.

Favorable generation structure

Moreover, companies with a nuclear or water generation structure may be hit more strongly, as the decrease in electricity prices will fully influence their earnings, while "dirty" electricity generators (coal, gas, etc.) could partially profit from the decreasing input prices. CEZ currently profits from a favorable generation mix, in which about 50% of the electricity is produced from the coal-fired power plant, 46% from the nuclear power plant and the remainder from the water power plant. As the company does not have to pay for CO2 permits and has long-term fuel contracts, profits from high electricity prices are supported by high operating leverage – 55% of operating costs are fixed. The table below shows a breakdown of the historical and expected generation mix.

in TWh	2006	2007	2008e	2009e	2010e	2011e	2012e	2013e
Coal fired PP	34.1	35.2	34.6	34.1	33.3	32.8	31.2	31.0
Nuclear power PP	25.8	26.6	27.6	28.6	29.9	30.6	31.6	31.9
Water power PP	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9
Total production	**62.2**	**63.8**	**64.2**	**64.6**	**65.1**	**65.3**	**64.6**	**64.8**

Source: CEZ, Erste Group Estimation

2) Long-term price expectations

Convergence story over, but Germany remains crucial

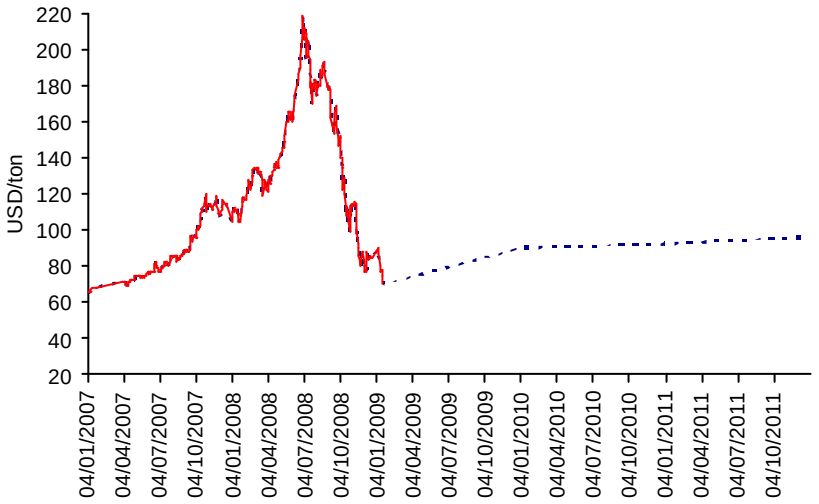
However, the prediction of electricity price development going forward is much more crucial for our valuation. Electricity prices on the Prague Energy Exchange will closely correlate with German prices, in our view. The only difference is likely to come from the existence of cross-border profile costs (currently traded at about EUR 1MWh), although the relevance of this is becoming less and less significant. The cross-border profile cost should imply a lower electricity price for net exporting countries (like the Czech Republic). In other words, the price setting mechanism in Germany will play a crucial role for the price in neighboring countries. As black coal power plants are marginal for the price mechanism of baseload electricity (while gas-fired power plants are marginal for peak load), we focus on the price of coal and CO2 permits. These prices are needed for our projections of future electricity prices.

1) Coal prices

Coal market swings back to balance

As the growth in demand for coal softened hand in hand with the recession in the developed world, the screen traded prices of steam coal tumbled from the peak of above USD 200/ton in early 2008 to USD 70/ton at present. The second reason for the coal price drop (in our view more important) is the recovery of the coal supply in 2H08, after the disastrous 1H08. Forward prices for 2010 and 2011 point to a nice recovery to above USD 90/ton, with gradual long-term growth.

1YR FWD API2 Coal



Source: Bloomberg

Demand should remain healthy

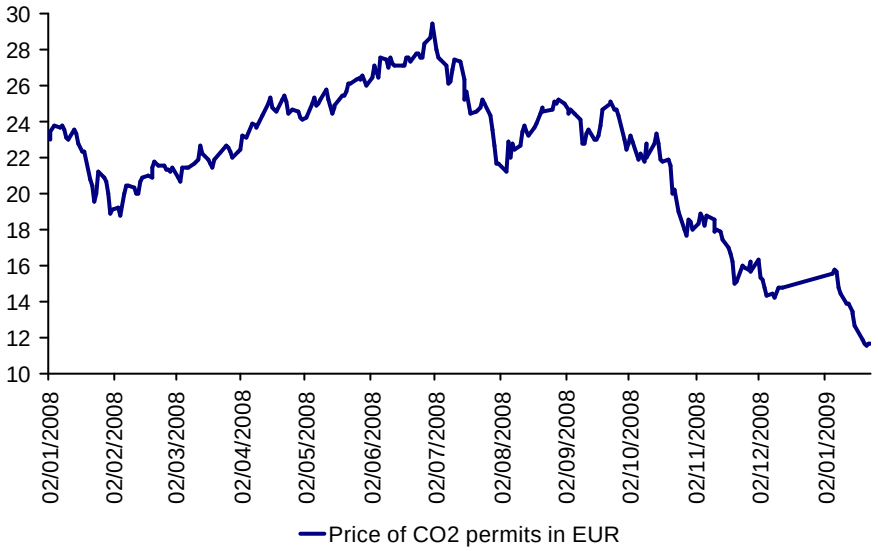
This confirms our view that steam coal prices should remain healthy, after the recent drop from the short-term elevated levels. While the GDP energy intensity is quite low in the troubled developed world (around 0.5), energy intensity in still nicely growing emerging Asia is high (1.5 to 1.8). Most additional energy is to be supplied from coal-fired power plants. The main driver for steam coal prices is China, which has about a 41% share in global consumption. We now estimate the marginal cost of production (including the profit margin) in the region of USD 70/t for the seaborne market. Forward prices suggest that transportation costs from South Africa to Europe will be stable at around USD 12/t. We thus see long-term steam coal prices (ARA) at about USD 80-85/t and higher at constant 2008 price levels.

2) CO2 permit prices

CO2 permit price to increase

Our long-term CO2 permit price forecast of EUR 30/t remains unchanged, although the current spot price has dropped to well below EUR 15/t. This price forecast is due to two reasons – the switch between coal and gas is done for a permit price of roughly EUR 30/t (and beyond) and the price of new technology CCS (Carbon Capture Storage), via which the "liquidation" of one ton of CO2 (one emission allowance) will also cost around EUR 30/ton.

Development of price of CO2 permits in last 12M



Source: Bloomberg

Current very low level of CO2 permit price

However, the current CO2 permit price reflects the negative sentiment on all commodity markets, as it decreased to well below EUR 15/t for 2009. At these price levels, most CDM/JI projects (which involve CER/ERU allowances, tradable via the emission trading scheme) have been stopped or have not yet been launched. The reason for the expected recovery in prices of CO2 permits are as follows – the lower supply from CDM/JI projects, higher emissions of coal-fired power plants and a further expected cut in allocated carbon dioxide permits by the EC.

What should new EC proposal bring?

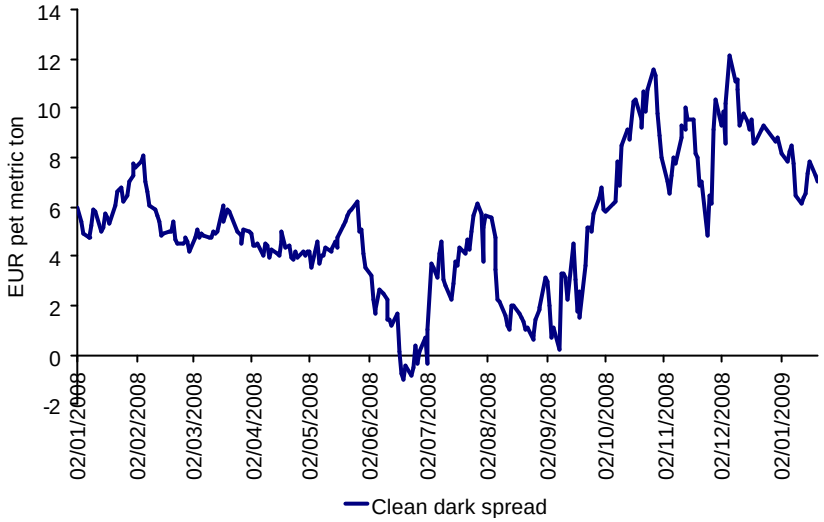
In response to the EC's original proposal of full CO2 auctioning as of 2013, CEZ said it aims to adjust its generation plant portfolio ahead of 2013, when emissions credits will make production more expensive. As gas-fired power is expected to then take a 20% share of its production mix (the current mix is 50% coal-fired PPs, 45% nuclear PPs and 5% water and other renewable sources). It is worth keeping in mind that gas-fired power plants have higher production costs (without CO2 permits) – with an almost neutral impact on total operating costs. However, the updated and finally approved plans assume a gradual increase of CO2 auctioning for CEE power generators from 30% in 2013 to 100% in 2020. In our previous reports, we calculated with full CO2 auctioning already as of 2013; the approved version should therefore have a positive impact on CEZ of CZK 45bn during 2013-20, as we do not expect any difference between the electricity price in Germany (where power generation companies will have to pay for 100% of their emission allowances) and the Czech Republic.

3) Clean dark spreads and other variable costs

Strong increase in dark spreads as of 2005

The final two visible factors that make up the electricity price are dark spreads and variable costs, which are estimated to be relatively stable in the coming years. Dark or clean dark spreads were already described in more detail in our previous reports; we should only highlight that their development has been distorted since the start of trading with emission allowances in 2005. The substantial increase in dark spread values from the 2002-2004/5 average of EUR 5.45/MWh to EUR 25/MWh in the rest of 2005 and beyond (a four-month transition period is included, as the start of CO2 trading was gradual) is clear proof that producers already increased the electricity prices due to the inclusion of CO2 prices in their calculation.

Development of Clean dark spread within last 12M



Source: EEX, Erste Group calculation

We expect constant clean dark spreads

As we calculate with CO2 costs on a stand-alone basis, we need to adjust the dark spread to the price of CO2 permits (this variable is called a **clean dark spread**) and use the stable long-term average of EUR 10/MWh for our forecasts. As you can see below, we have also included transportation costs (EUR 4.2 per MWh) and variable costs (EUR 3.5 per MWh) to show the 'real' profit from generating electricity at coal power plants. These two additional costs are also taken as stable for the next few years.

Electricity price calculation

The table below illustrates that, based on our analysis, the electricity price is created from four parts – fuel costs (calculated hard coal costs in EUR/MWh), CO2 permit costs, other marginal costs (transportation and variable costs) and the dark spread (we use a normal level of clean dark spreads at about EUR 10/MWh to avoid double calculating with the CO2 permit price). The expected values have already been described earlier in this report.

Electricity price calculation

	2009	2012	2015	2020
Coal prices (USD/ton)	85.0	90.0	96.0	100.0
Efficiency of fuel (%)	35%	35%	35%	35%
Caloric value (MWh/t)	7.1	7.1	7.1	7.1
Fuel costs (EUR/MWh)	**24.5**	**30.0**	**32.0**	**33.3**
Permit price forecast (EUR/ton)	17	20	25	30
Emission intensity factor (tCO2/MWh)	0.96	0.96	0.96	0.96
CO2 permit (EUR/MWh)	**16.3**	**19.2**	**24.0**	**28.8**
Other costs (EUR/MWh)	**7.7**	**7.7**	**7.7**	**7.7**
Transportation costs (EUR/MWh)	4.2	4.2	4.2	4.2
Other variable costs (EUR/MWh)	3.5	3.5	3.5	3.5
Clean dark spreads (EUR/MWh)	**10.0**	**10.0**	**10.0**	**10.0**
Electricity price (EUR/MWh)	**58.5**	**66.9**	**73.7**	**79.8**

Source: Erste Group estimation

Our long-term prognosis, therefore, is based on the long-term coal price of USD 95-100/ton and CO2 permit price of EUR 25-30/ton as of 2013. These assumptions imply an expected electricity price of EUR 80/MWh in 2020, which should be sustainable in the long term, in our view. The EUR/CZK forecast is included in the table, as any stronger-than-expected appreciation would have a negative impact on our valuation.

Macro forecasts	2006	2007	2008e	2009e	2010e	2011e	2012e	2013e
GDP growth (%)	6.80	5.96	3.49	1.33	2.29	3.87	4.11	3.65
CZK/EUR avg	28.33	27.76	24.89	26.90	24.60	22.89	21.05	20.66
CPI (%)	2.53	2.83	6.34	2.14	1.82	2.50	2.25	2.21
Wage growth - nominal (%)	6.40	7.40	7.80	3.77	4.74	5.96	4.01	3.39

Source: Erste Group estimation

Further issues

Potential investment abroad...

According to Polish daily Parkiet, CEZ may purchase a stake in Poland's Tauron, as the government prepares the sale of new shares in the energy group on the WSE. CEZ is waiting for the ministry's offer for potential bidders, the newspaper said, citing Petr Ivanek, the head of CEZ's Polish unit. State-owned Tauron may offer new shares on the bourse in 2009, after which the government will sell its remaining stake to a strategic investor, added Parkiet. From a strategic point of view, the Polish market is crucial for the Czech company; however, the project is in a very early phase. Moreover, Reuters reported that, at the beginning of this year, Montenegro will invite potential investors to send offers for a 22% stake in electricity distributor Elektroprivreda Crne Gore (EPCG), in which the government has a 70% stake**.**

More strategically, CEZ was chosen as a partner to build two new units at Slovakia's Jaslovske Bohunice nuclear power plant. CEZ would gain a 49% stake in the venture, with the Slovak state holding the rest. The project will cost EUR 4-6bn, according to government estimates. The government expects construction to start in 2014, with electricity production scheduled to begin six years later. The two old blocks at Bohunice NPP were closed by the end of 2008, but the two newer ones will remain operational. Separately, Romania announced recently that a consortium, including CEZ, was picked to build new blocks at the Cernavoda NPP. CEZ's share in the planned CAPEX for Cernavoda is unlikely to exceed EUR 1bn. However, Bohunice will require a much higher contribution. All of the above-mentioned projects could significantly increase the company's CAPEX in the coming years and therefore have a negative impact on the size of the second buyback.

...while second buyback is crucial for domestic market

The start of CEZ's second buyback program has not yet been possible, as, due to a complaint from a CEZ creditor, the cancellation of 10% of shares has not happened yet. However, by the end of February, CEZ will inform the public about this issue. CEO Martin Roman said that the second buyback program will not be as regular as the first one. AGM approval for the second buyback program happened in May 2008 and lasts until November 2009. A local daily speculates that the dividend could be around CZK 50 per share, representing a payout ratio of 55%, which is line with our estimation.

Energy from renewable resources – outlook for CEZ

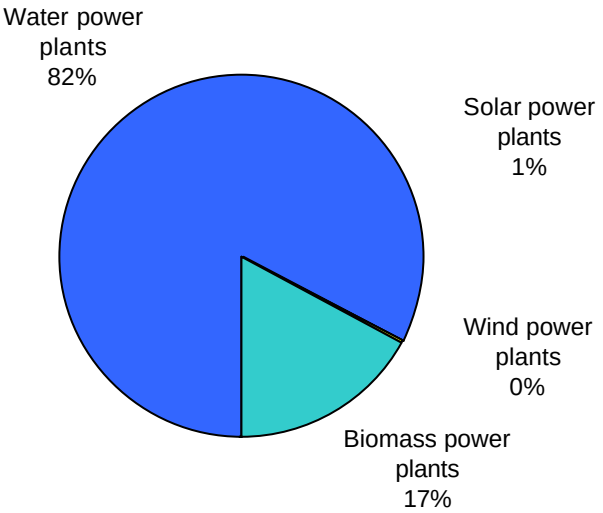
In 2008, CEZ produced around 3% of its energy from renewable resources at its own power plants, with "old" water power plants producing the highest share of the renewable energy portfolio. In light of the current situation in Europe (auctioning CO2 permits as of 2013), CEZ has to invest in renewable sources of energy. Recently, the company purchased a new project, the 600 MW wind park in Dobrogea, Romania. This investment will help the company to increase the share of its "green" production mix. The project will be executed in two phases until 2010 and will offset (in coal equivalent) almost one million emission allowances.

Investment in Czech Republic

Current situation in CR

CEZ's portfolio of renewable energy is mainly comprised of water power (82%). Almost all of the remainder is created by energy realized from the combustion of biomass and coal. Renewable energy from water is quite good, due to the very low operating cost, but increasing the installed capacity in the Czech Republic is almost impossible. All that can be done in this area is some small projects and increasing efficiency by replacing old technologies.

Shares of renewable sources in CEZ portfolio in 2007 in CR



Source: CEZ

Planned new wind parks in CR

CEZ announced that it wants to increase the share of renewable energy mainly by constructing new wind parks. The Czech Republic has relatively good opportunities to build almost 900 MW of installed capacity. CEZ would like to invest CZK 20bn (EUR 0.77bn) in new wind parks in the Czech Republic by 2020. CEZ wants to have installed capacity of around 100 MW by 2012. In 2020, the installed capacity should be around 500 MW. This should stem mainly from the wind park project in Dukovany (78 MW) and the wind park project in Dlouhé Pole near the coal power plant Tušimice (98 MW). Due to the protests by local inhabitants, the company is unlikely to be able to install the full planned capacity. Thus, in our model, we calculated with 100 MW installed capacity in these two wind parks. Other planned projects are Rešice (around 10 MW) and Stríbro (around 15 MW). These two projects should be completed by 2012. CEZ also wants to build wind parks at Ceskomoravská vrchovina (between Prague and Brno) with installed capacity of 100-200 MW. The company is planning further additions to its installed capacity (up to 500 MW by 2020) via the purchase of existing or planned projects.

State support to building new capacity

The building of new wind power plants is supported by the state with a guaranteed price of around 90-130 EUR/MWh. The price depends on the year when the power plant is joined to the grid and on the exchange rate of the CZK. For the new projects now under construction, there is a guaranteed redemption price at CZK 2,340/MWh (EUR 92/MWh). We assume that the development of the guaranteed redemption price will be in the range of EUR 80-90/MWh.

CO2 permits has positive effect on "green" projects

Another positive effect on profitability comes from the spared/not purchased emission allowances. The current price development of CO2 permits is negative, due to the situation on the global market and the ongoing weaker economic development in the CEE region. However, in the long-term horizon (until 2020), we expect the price of emission allowances to move toward the price of the new technology CCS (Carbon Capture Storage), where the "liquidation" of one ton of CO2 (one emission allowance) will cost around EUR 30/ton.

Biomass potential and company projects in this area

The Czech Republic also has quite good potential in energy produced from biomass. The estimated potential for the Czech Republic is about 2,300 GWh. In 2007, CEZ produced from the combustion of biomass and coal 249 GWh, mainly at the Hodonin power plant (116 GWh). In 2006, the company acquired the Skawina power plant in Poland, which produced 102 GWh in 2007 from the combustion of biomass and coal. We expect the company to add at least 500 GWh produced energy from biomass by 2020. CEZ plans to launch a few small sources (up to 20 MW) and produce around 170 GWh/year by 2012. These projects do not count combined combustion with coal (or lignite) - they are constructed for clean burning.

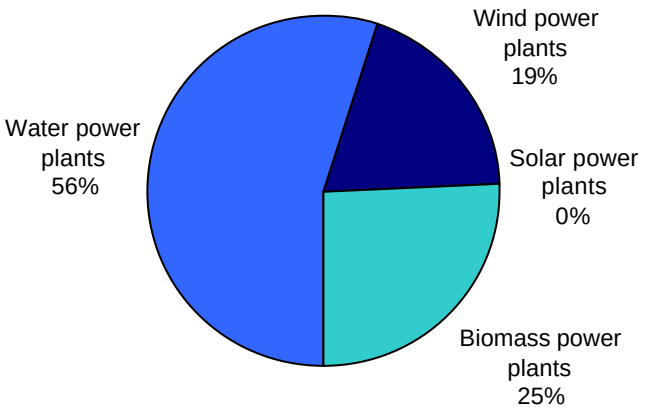
Reasons against combined combustion

There are two main reasons that speak against combined combustion. The first is the fact that the clean burning of wood and wood waste, energy-rich plants or straw has a higher redemption price than energy produced from combined combustion with coal (e.g. energy-rich plants at EUR175/MWh, wood waste at EUR 135/MWh, sawdust and similar at EUR 100/MWh; presented prices are for new sources built after 1.1.2008). The emission allowances also have a positive influence on profitability. The second reason is the necessity to build the power plants close to the point of production, due to freight expenses and the higher profitability of smaller sources (small coal power plants do not reach the required profitability).

Expected shares in production mix of CEZ in CR till 2020

Overall we expect, that water in portfolio mix decrease from current 82% to 56%, due to above mentioned reasons and energy from wind will take 19% portion in CR.

Expected shares of renewable sources in CEZ portfolio in 2020 in CR



Source: CEZ, Erste Group estimates

Expected energy production from renewable resources in CR by 2020

	2005	2006	2007	2008F	2009F	2010F	2011F	2012F	2013F	...	2018F	2019F	2020F
Total prod. of CEZ (GWh) in CR	59,470	62,224	63,798	64,185	64,609	65,116	65,258	64,637	64,784		66,517	67,262	68,019
Production from not renewable	57,814	60,272	62,317	62,241	62,605	63,046	63,114	62,279	62,309		63,386	63,976	64,635
water power plants	1,541	1,752	1,224	1,650	1,667	1,683	1,700	1,717	1,734		1,823	1,841	1,859
wind power plants	0.47	0.16	0	0	0	0	0	131	197		550	632	657
solar power plants			8	8	8	8	8	8	8		8	8	8
biomass power plants	115	200	249	286.35	329.3025	378.6979	435.5026	500.8279	535.8859		751.6077	804.2202	860.5156
total renewable in CR by CEZ	1,656	1,952	1,481	1,944	2,004	2,070	2,143	2,357	2,475		3,132	3,285	3,385

Source: CEZ, Erste Group estimates

CEZ should be able to produce around 5% of its energy from renewable resources in the Czech Republic by 2020, which means an increase of about 2%. We expect CAPEX of around CZK 23bn to reach this additional capacity (mainly wind projects at CZK 20bn, new installed capacity for biomass at CZK 2.4bn).

Investment abroad

Hopeful project in Romania...

CEZ purchased the new 600 MW wind park project in Dobrogea, Romania, which will help the company increase the share of renewable energy in its portfolio. The investment of CEZ Group in this project will amount to EUR 1.1bn. The project will be executed in two phases by 2010 and will offset almost one million CO2 permits. Romania has relatively good conditions for building wind power plants. The expected potential of installed capacity in Romania is about 2,500 MW (which indicates possible production of almost 4 TWh/year). Romania has relatively good wind conditions, with a higher average wind speed than in the continental environment of the Czech Republic. This has a positive influence on the effectiveness of these power plants (higher utilization of installed capacity). The SEE region has good potential for wind energy projects. Bulgaria, where CEZ owns three distribution companies and runs a coal power plant, also has unused potential for about 3,400 MW installed capacity. For the Dobrogea wind park, we expect the company to produce about 950 GWh/year from 2011; the effectiveness will be higher in comparison with the project in the Czech Republic, due to better wind conditions (annual wind speed at hub height [100m] is expected at 7.1 m/s).

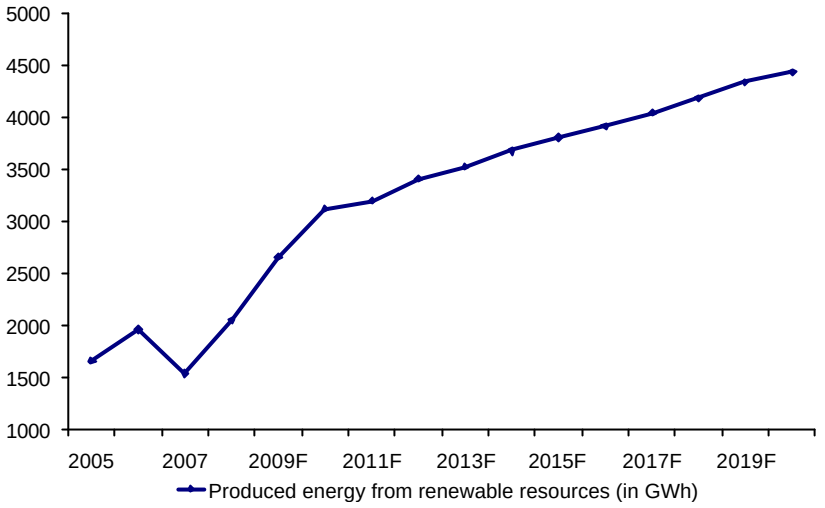
...focused on biomass in Poland

The company also produces renewable energy from biomass at the Skawina in Poland. CEZ acquired the Skawina power plant in 2006 and in 2007 produced 102 GWh from renewable resources through combined combustion with coal.

Expected energy production from renewable resources by CEZ Group until 2020

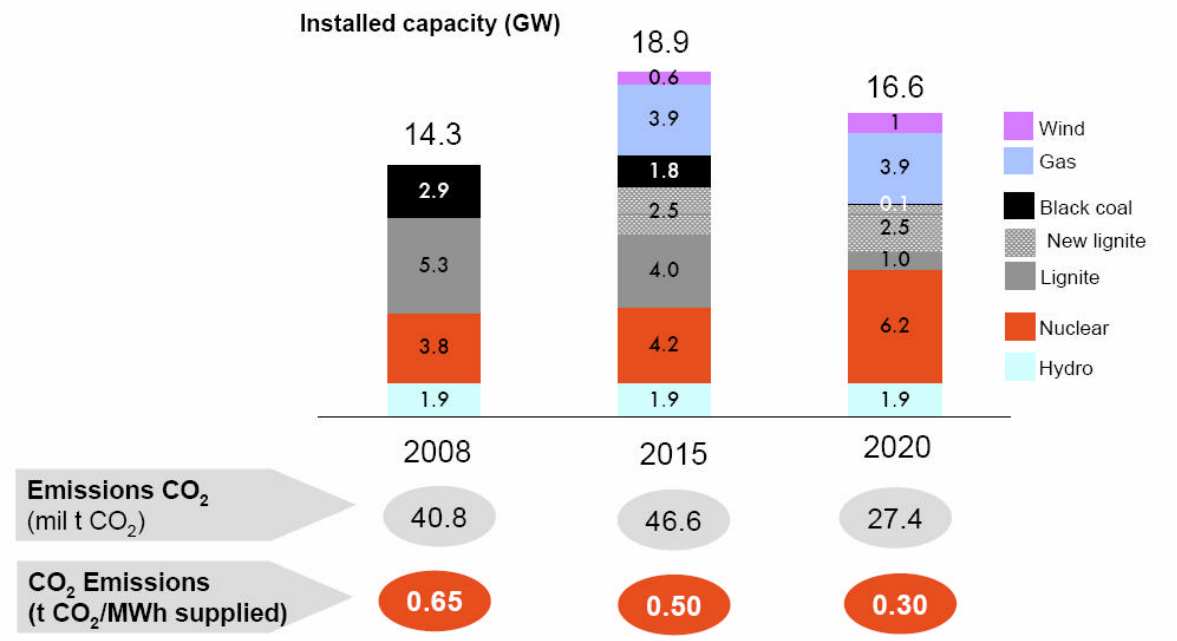
We expect the company to achieve production from renewable resources of around 4.4 TWh/ year as of 2020. The indicated target of 5.1 TWh (about 7% of production) from renewable resources by 2020 is in our view somewhat over-ambitious, but could conceivably come to pass, given the right circumstances.

Energy from renewable resources by CEZ



Source: Erste Group estimates

Installed capacity (GW)



Source: CEZ

Influence of CO2 allowances on company profitability

The positive effect on energy produces from renewable resources is the fact that companies do not have to purchase (and currently can sell the excess) emission allowances. The current price development of CO2 permits is negative, due to the situation on the global market and the ongoing weaker economic development in the CEE region. However, in the long-term horizon (until 2020), we expect the price of emission allowances to move toward the price of the new technology CCS (Carbon Capture Storage), where the "liquidation" of one ton of CO2 (one emission allowance) will cost around EUR 30/ton.

In our view, the production of energy from renewable resources has growth potential, but will not exceed the company's current production mix. The current support for renewable resources enables the building of new capacity, but is increasing the electricity price on the other hand. The profitability of these projects also depends on the price of emission permits, which is now relatively low, but should in the long term move toward the marginal cost of new technology CCS (Carbon Capture Storage).

Valuation

Two-stage DCF model...

We have valued CEZ using a discounted free cash flow model. Our free cash flow forecast (2009-20) is based on our model estimates for CEZ, as 2020 is crucial for the terminal value and the result is at the same level as 2020 earnings on the EBIT level. We forecast EBITDA less taxes (by subtracting income taxes on EBIT) for 2009 to 2020 based on our earnings model. We forecast CAPEX, working capital increases and depreciation in parallel. EBITDA profitability could be reduced, as mentioned earlier, due to the gradual increase in CO2 permit auctioning as of 2013. In contrast with CEZ, almost all other western European utilities will have to pay for all of their CO2 emissions.

...implies 12M target price of CZK 1,230

The model is in two stages, as the terminal value estimate is based on our forecast for 2020 free cash flow and assumptions for long-term growth. We wanted to be conservative in estimating the nominal long-term growth rate, which we set at 2%. Our long-term tax rate is 19%. In order to incorporate expansion in the SEE region and the various risks to CEZ's outlook mentioned in this report, we keep the premium to equity at 5.5 and beta at 1.0, while debt costs were increased from 4.9% to 5.9, due to the ongoing credit crisis. However, the impact on CEZ's WACC is relatively marginal because of the company's very low indebtedness. Due to FCF adjusting by nuclear decommissioning costs, we also include the nuclear reserve's interest in our WACC calculation. To arrive at CEZ's equity fair value, we then subtract nuclear reserves, net debt and minority stakes. Finally, we calculate with the lower number of shares, as we expect the company to cancel its entire 10% stake of own shares bought within the buyback program. Our model implies a 12-month target price of CZK 1,230. We therefore upgrade our recommendation to Buy.

WACC

WACC calculation	2009E
Risk-free rate (%)	4.5
Premium to equity (%)	5.5
Beta	1.0
Cost of Equity (%)	**10.0**
Cost of Debt (%)	5.9
Tax rate (%)	20.0
Effective cost of debt (%)	**4.7**
Nuclear reserves interest (%)	4.0
Tax rate (%)	20.0
Eff. interest on NR (%)	**3.2**
Debt/(D+NR+E) (%)	20.9
Nuclear res./(D+NR+E) (%)	11.7
WACC (%)	**8.1**

Source: Erste Group estimates

DCF valuation

	2009E	2010E	2011E	2012E	2013E	2014E	2015E	2016E	2017E	2018E	2019E	2020E
EBIT	71,936	62,721	63,936	62,821	59,847	59,404	56,766	56,027	55,161	55,882	56,248	57,979
Tax	(14,387)	(11,917)	(12,148)	(11,936)	(11,371)	(11,287)	(10,785)	(10,645)	(10,481)	(10,618)	(10,687)	(11,016)
Depreciation	23,769	26,172	27,905	30,663	33,204	33,645	34,272	35,218	36,083	35,316	34,534	33,278
Other non-cash	3,460	3,669	3,549	3,735	3,853	3,973	6,078	6,200	6,324	6,450	6,579	6,711
Change in WC	(637)	592	(242)	(84)	(493)	(76)	(78)	(149)	(154)	(176)	(181)	(223)
CAPEX	(49,100)	(45,854)	(39,809)	(36,392)	(34,260)	(35,226)	(29,353)	(28,870)	(31,346)	(36,111)	(32,706)	(32,776)
FCF	**35,041**	**35,384**	**43,191**	**48,807**	**50,780**	**50,433**	**56,899**	**57,781**	**55,586**	**50,744**	**53,788**	**53,953**
FCF - Terminal	**49,425**	**50,668**	**52,196**	**53,197**	**53,745**	**54,169**	**54,792**	**54,370**	**53,518**	**52,828**	**53,870**	**53,953**

Sum of PVs of FCF in 2009-20 period	388,069
Terminal value growth	2
Terminal value	826,195
PV of terminal value	352,183
Net present value	740,252
Net debt	(46,161)
Nuclear provisions	(43,954)
Minority stakes	(45,058)
Value of equity	606,266
Value per share	1,137
12M target price	**1,230**

Source: Erste Group estimation

Sensitivity table

		Terminal FCF growth rate				
		1.0%	**1.5%**	**2.0%**	**2.5%**	**3.0%**
Market risk premium	**5.0%**	1,198	1,254	1,306	1,398	1,492
	5.5%	1,149	1,198	**1,230**	1,323	1,404
	6.0%	1,105	1,149	1,191	1,258	1,327

Peer comparison

The peer group comparison further supports our positive view on CEZ, as the stock trades with discounts of 23% and 21%, respectively, to its peers on 2008 and 2009 EV/EBITDA, while with some 14% discount for 2008 and 2009 P/E multiples. The discount can be explained by the higher expected profit growth in 2008 and the fact that some 75% of CEZ's generation capacity was hedged with prices at around EUR 64/MWh. This will secure a further y/y increase in the company's profitability, despite the significant drop in electricity prices during the recent weeks. Moreover, unlike its western peers, CEZ will not have to buy 100% of CO2 allowances already as of 2013 and this should give a relative support its strong earnings in the third allocation period (2013-20). Also, the overall decrease in CO2 permit price forecasts for upcoming years supports all "dirty" electricity generation companies, including CEZ. Therefore, the discount compared to its peers could be explained only by the company's CEE exposure.

Peer group table

	Price	MCAP	EV/Sales			EV/EBITDA			EV/EBIT			P/E		
	1/30/09	(€ mil.)	2007	2008e	2009e	2007	2008e	2009e	2007	2008e	2009e	2007	2008e	2009e
CEZ AS	**738.0**	**15,598**	**3.3**	**3.1**	**2.8**	**10.6**	**5.0**	**4.8**	**11.1**	**8.8**	**8.1**	**18.7**	**8.2**	**7.5**
A2A SPA	1.3	4,176	1.2	1.3	1.3	5.7	6.4	5.9	10.3	10.7	10.0	8.1	9.7	9.7
E.ON AG	24.7	49,365	1.3	1.1	1.0	6.4	6.6	5.9	8.3	8.9	7.8	7.0	8.5	7.5
ENDESA SA	23.9	25,389	1.9	2.1	2.1	5.7	6.1	6.1	7.6	8.1	8.1	9.5	10.2	10.3
ENEL SPA	4.3	26,741	2.0	1.5	1.5	8.5	6.2	6.1	12.3	8.9	8.8	7.0	6.1	6.7
FORTUM OYJ	15.1	13,397	4.6	3.6	3.4	10.0	8.2	7.7	12.8	10.3	9.7	10.3	9.7	9.3
IBERDROLA SA	5.9	29,664	3.7	2.9	2.6	12.3	8.3	7.2	17.6	12.0	10.5	11.3	9.4	9.1
INTERNATIONAL POWER PLC	264.8	4,556	3.3	2.8	2.5	7.4	7.2	6.5	10.0	9.8	8.8	9.8	9.1	8.1
RWE AG	59.7	33,235	0.9	0.8	0.8	4.8	4.6	4.2	6.6	5.8	5.3	11.4	9.8	8.3
OEST ELEKTRIZITATSWIRTS-A	28.7	8,830	3.8	3.2	2.9	10.6	8.6	7.6	12.7	9.9	8.6	15.2	11.7	10.2
Average WE			**2.6**	**2.2**	**2.1**	**8.2**	**6.7**	**6.2**	**10.9**	**9.3**	**8.6**	**10.8**	**9.2**	**8.7**
Median WE			**2.6**	**2.4**	**2.3**	**8.0**	**6.5**	**6.1**	**10.7**	**9.4**	**8.7**	**10.0**	**9.5**	**8.7**
CEZ to WE (Average)			**126%**	**137%**	**136%**	**129%**	**75%**	**78%**	**101%**	**94%**	**94%**	**173%**	**89%**	**87%**
CEZ to WE (Median)			**124%**	**126%**	**124%**	**133%**	**77%**	**79%**	**104%**	**94%**	**92%**	**186%**	**86%**	**86%**

Source: Company data, Erste Group estimates

Income Statement	2005	2006	2007	2008e	2009e	2010e
(IAS, CZK mn, 31/12)	31/12/2005	31/12/2006	31/12/2007	31/12/2008	31/12/2009	31/12/2010
Net sales	**125,083.00**	**160,139.41**	**174,563.00**	**188,836.00**	**204,158.29**	**198,787.50**
Invent. changes + capitalized costs	0.00	0.00	0.00	0.00	0.00	0.00
Total revenues	**125,083.00**	**160,139.41**	**174,563.00**	**188,836.00**	**204,158.29**	**198,787.50**
Other operating revenues	1,053.00	2,871.28	1,058.00	-1,763.69	-119.60	-661.83
Material costs	-54,733.00	-74,951.59	-74,158.00	-78,148.44	-85,309.20	-85,570.34
Personnel costs	-13,426.00	-15,077.73	-16,900.00	-14,665.43	-15,296.12	-15,567.31
Other operating expenses	-7,820.00	-7,747.71	-9,237.00	-7,128.63	-7,829.74	-8,094.46
EBITDA	**50,157.00**	**65,233.65**	**75,326.00**	**87,129.80**	**95,603.62**	**88,893.57**
Depreciation/amortization	-20,737.00	-24,471.45	-22,123.00	-21,284.91	-23,768.97	-26,172.31
EBIT	**29,420.00**	**40,762.20**	**53,203.00**	**65,844.89**	**71,834.65**	**62,721.25**
Financial result	-1,356.35	-3,340.02	-2,052.00	-1,654.53	-1,059.08	-577.61
Extraordinary result	0.00	0.00	0.00	0.00	0.00	0.00
EBT	**28,063.65**	**37,422.18**	**51,151.00**	**64,190.35**	**70,775.58**	**62,143.64**
Income taxes	-5,025.00	-9,128.78	-8,387.00	-14,248.70	-16,230.78	-14,371.86
Result from discontinued operations	0.00	0.00	0.00	0.00	0.00	0.00
Minorities and cost of hybrid capital	-846.00	-260.06	-1,209.00	-861.18	-959.36	-889.00
Net result after minorities	**22,192.65**	**28,033.34**	**41,555.00**	**49,080.47**	**53,585.44**	**46,882.78**

Balance Sheet	2005	2006	2007	2008e	2009e	2010e
(IAS, CZK mn, 31/12)						
Intangible assets	6,191.00	6,057.00	19,542.00	6,057.00	6,057.00	6,057.00
Tangible assets	259,420.00	287,995.89	277,165.00	330,210.86	355,542.04	375,223.29
Financial assets	14,740.00	14,740.00	16,374.00	14,740.00	14,740.00	14,740.00
Total fixed assets	**280,351.00**	**308,792.89**	**313,081.00**	**351,007.86**	**376,339.04**	**396,020.29**
Inventories	12,287.00	13,983.59	5,696.00	15,127.41	15,932.43	15,281.17
Receivables and other current assets	14,792.00	18,427.00	29,072.00	21,729.07	23,492.19	22,874.18
Other assets	0.00	0.00	79.00	0.00	0.00	0.00
Cash and cash equivalents	16,791.00	27,825.87	23,014.00	50,951.71	32,551.44	8,524.64
Total current assets	**43,870.00**	**60,236.46**	**57,861.00**	**87,808.19**	**71,976.05**	**46,679.98**
TOTAL ASSETS	**324,221.00**	**369,029.35**	**370,942.00**	**438,816.06**	**448,315.09**	**442,700.27**
Shareholders'equity	**212,551.00**	**249,917.71**	**171,352.00**	**290,224.97**	**297,888.43**	**293,143.14**
Minorities	**14,618.00**	**7,629.56**	**12,874.00**	**7,875.34**	**8,162.02**	**8,474.21**
Hybrid capital and other reserves	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Pension and other LT personnel accruals	0.00	0.00	0.00	0.00	0.00	0.00
Other LT provisions	0.00	0.00	0.00	0.00	0.00	0.00
Interest-bearing LT debts	30,586.00	48,692.49	51,984.00	74,309.61	73,927.48	73,422.63
Other LT liabilities	0.00	0.00	55,560.00	0.00	0.00	0.00
Total long-term liabilities	**30,586.00**	**48,692.49**	**107,544.00**	**74,309.61**	**73,927.48**	**73,422.63**
Interest-bearing ST debts	8,153.00	5,000.00	21,274.00	5,000.00	5,000.00	5,000.00
Other ST liabilities	58,313.00	57,789.58	57,898.00	61,406.13	63,337.16	62,660.30
Total short-term liabilities	**66,466.00**	**62,789.58**	**79,172.00**	**66,406.13**	**68,337.16**	**67,660.30**
TOTAL LIAB. , EQUITY	**324,221.00**	**369,029.35**	**370,942.00**	**438,816.06**	**448,315.09**	**442,700.27**

Cash Flow Statement	2005	2006	2007	2008e	2009e	2010e
(IAS,CZK mn, 31/12)						
Cash flow from operating activities	57,404.00	41,224.01	61,321.42	69,923.74	77,220.37	74,119.15
Cash flow from investing activities	-29,613.00	-52,825.13	-39,135.42	-41,677.26	-49,100.14	-45,853.57
Cash flow from financing activities	-19,942.00	11,135.99	-40,120.00	-22,796.15	-46,520.50	-52,292.39
CHANGE IN CASH , CASH EQU.	**7,849.00**	**-465.13**	**-18,503.00**	**5,450.32**	**-18,400.27**	**-24,026.80**

Margins & Ratios	2005	2006	2007	2008e	2009e	2010e
Sales growth	21.8%	28.0%	9.0%	8.2%	8.1%	-2.6%
EBITDA margin	40.1%	40.7%	43.2%	46.1%	46.8%	44.7%
EBIT margin	23.5%	25.5%	30.5%	34.9%	35.2%	31.6%
Net profit margin	18.4%	17.7%	24.5%	26.4%	26.7%	24.0%
ROE	20.9%	12.1%	19.7%	21.3%	18.2%	15.9%
ROCE		11.2%	15.1%	16.2%	16.0%	13.0%
Equity ratio	70.1%	69.8%	49.7%	67.9%	68.3%	68.1%
Net debt	21,948.0	25,866.6	50,244.0	28,357.9	46,376.0	69,898.0
Working capital	-22,596.0	-2,553.1	-21,390.0	21,402.1	3,638.9	-20,980.3
Capital employed	249,117.0	283,413.9	290,030.0	326,458.2	352,426.5	371,515.3
Inventory turnover	2.8	1.7	2.8	2.1	1.5	1.5

Source: Company data, Erste Group estimates

Sector Report – Renewable energy

Fact Sheet – EVN – Utility – Austria – February 4, 2009

Last price (EUR)	Market capitalisation	Enterprise value	Shares outstanding	Exchange rate
12.12	EUR mn 1,982	EUR mn 3,341	(mn) 163.53	
Buy				

Target price	Prem/Disc	52 Week	Free float	Free float cap.	Ex-dividend date
18.90	55.9%	High 22.54	14.0%	EUR mn 277	January 22, 2008
		Low 10.11			

Web: www.evn.at	Reuters: EVNV.VI	Bloomberg: EVN AV	End of FY: 30/09

Key figures overview

EUR mn	2008	2009e	2010e	2011e
Net sales	2,397.0	2,673.5	2,829.5	2,931.0
EBITDA	362.3	382.2	430.6	443.2
EBIT	166.6	183.2	220.1	225.9
EBT	235.5	276.0	335.6	339.2
Net profit	186.9	199.8	243.5	245.4
EPS (EUR)	1.14	1.23	1.50	1.51
CEPS (EUR)	2.46	1.97	3.15	3.20
BVPS (EUR)	18.23	17.66	19.64	21.54
Dividend\Share (EUR)	0.37	0.40	0.50	0.50
EV/EBITDA (x)	10.47	8.74	7.76	7.39
P/E (x)	13.11	9.88	8.10	8.03
P/CE (x)	6.09	6.14	3.85	3.79
Dividend yield (%)	2.47	3.29	4.10	4.11
EBITDA margin (%)	15.04	14.23	15.15	15.06
Operating margin (%)	6.92	6.82	7.74	7.67
Net profit margin (%)	9.54	8.98	10.34	10.07

Financial strength

	2008	2009e	2010e	2011e
ROE (%)	6.49	6.83	8.03	7.33
ROCE (%)	5.42	5.46	6.07	5.66
Equity ratio (%)	48.35	49.58	52.69	55.41
Net debt (EUR mn)	1,115.24	1,095.45	1,045.21	928.82
Gearing (%)	34.76	34.82	29.70	23.94

Trading data & Statistics

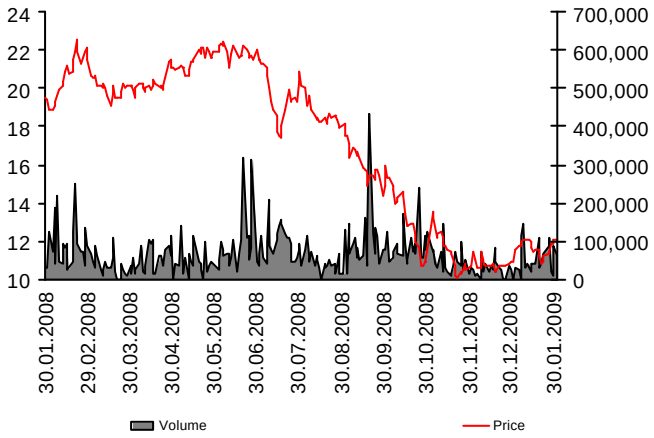
Daily averages	5 days	30 days	last year
Volume	63,950	59,104	68,807
Trading value (EUR mn)	0.7	0.7	1.2

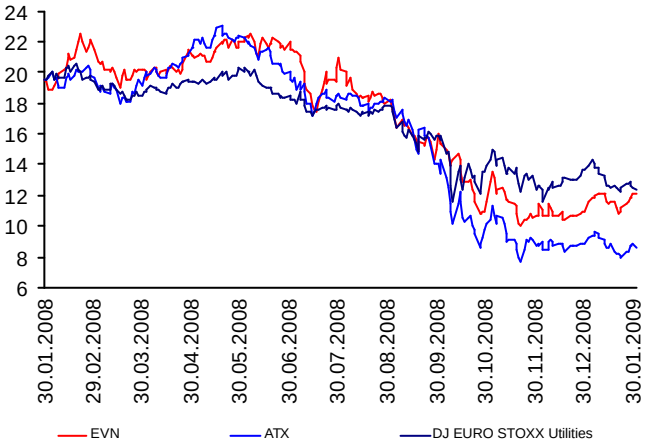
Shareholders

Lower Austria	51.0%
EnBW	35.0%

Company description

EVN is a regional provider of energy and infrastructure services based in the federal province of Lower Austria. The company's core business is the distribution of power, natural gas and heating. EVN has a total generating capacity of some 1,600 MW. In recent years, EVN has successfully extended its core business by entering the water and waste incineration segments. In January 2005 and 2006, EVN successfully expanded in the CEE/SEE region. EVN's main asset is a 12.5% participation in Verbund.





Price performance:	1M	3M	6M	12M	Ytd
in EUR	10.2%	10.2%	-40.5%	-37.8%	10.0%

Strengths/Opportunities

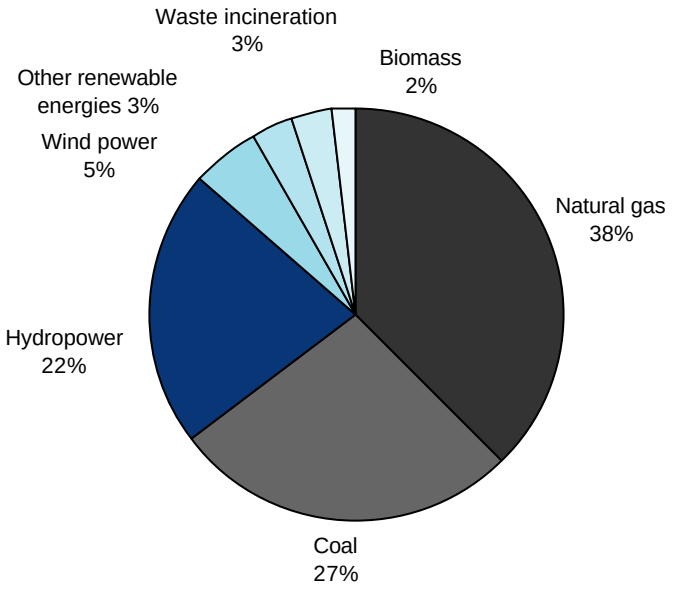
- Successful expansion in the SEE region
- EVN successfully diversified its product portfolio by entering the water and waste incineration segments
- EVN holds a 12.5% stake in Verbund which can be seen as hedge against higher electricity prices (as Verbund benefits from rising electricity prices)
- Strong development of associates and other investments drives financial result

Weaknesses/Threats

- Obligatory 51% stake (fixed by constitutional law) held by Lower Austria fails to provide short- or mid-term takeover fantasy
- Low free float of less than 14%
- EVN is short on CO2 emission certificates
- Possible pressure on margins due to mandatory tariffs fixed by the regulatory authorities

Through its subsidiary naturkraft, EVN currently operates 68 hydropower plants (including five storage plants) and 63 windmills. In addition, EVN has electricity sourcing rights for the Melk, Greifenstein and Freudenau power stations on the Danube. With 44 heating plants, EVN is Austria's largest supplier of heating generated by using biomass. By 2009, the company will complete the refurbishing of 11 small-scale hydropower plants in Macedonia. In addition, the company is currently screening the potential for wind and photovoltaic projects in Southeastern Europe. EVN envisages the raising of its share of renewable energy in overall production to one third by 2010.

EVN's production mix



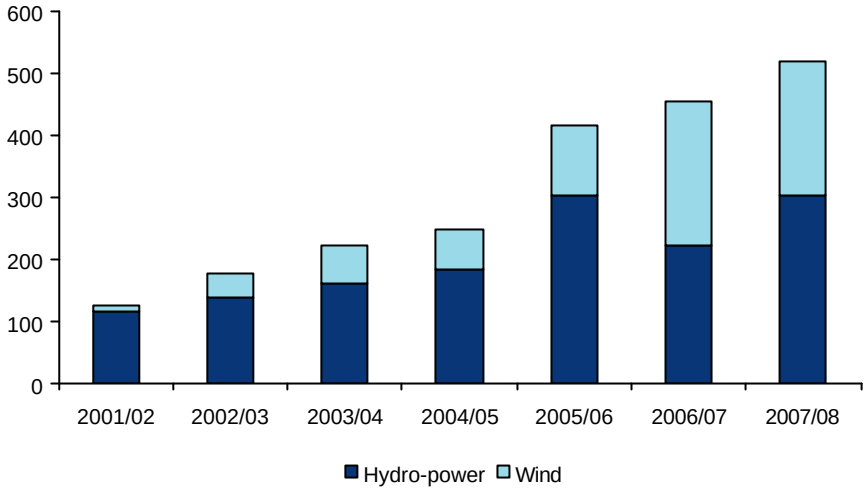
Source: EVN

In December 2008, EVN announced that it had formed a joint venture partnership with Norway's Statkraft to build a hydropower project on the Devoll River in Albania, which includes the construction of three peak-load hydropower storage plants with a total capacity of 340 MW. The average yearly production was said to be 1,000 GWh. The overall investment would amount to EUR 950mn and the plans should be realized within eight years.

Another project in Albania was already announced in September 2008. EVN has formed a joint venture with Verbund to build the run-of-river plant Ashta south from Shkoder. The project includes the construction of the 48 MW plant as well as the concession to run the plant for 25 years. The average annual generation should amount to 230 GWh; the planned investment volume amounts to EUR 160mn. The plant will start its operations in 2012. Over a minimum 15-year term, the electricity generated in Ashta will be collected by KESH, the state-run Albanian energy provider.

EVN naturkraft is a 100% subsidiary of EVN, responsible for the electricity generation from hydro and wind power, as well as photovoltaics. With the current output of 226 MW and production of almost 520 GWh (2007/08), it can already furnish some 146,000 households with electricity from renewable energy sources. EVN naturkraft operates 68 hydropower plants (60 in Lower Austria and eight in Styria). In addition, the company has a one-third participation in the Nussdorf power plant in Vienna. 66 out of the 68 hydropower plants are small-scale with a capacity of 10 MW as maximum. EVN naturkraft also operates 63 windmills in seven wind farms.

EVN naturkraft generation (GWh)



Source: EVN

PannErgy Hold

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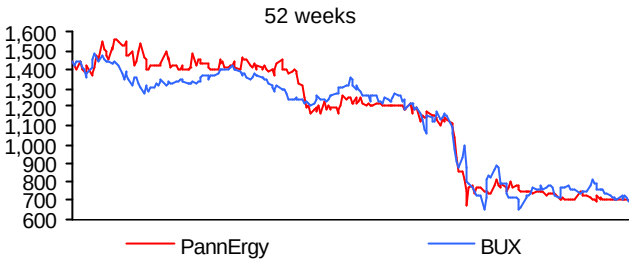
HUF mn	2007	2008e	2009e	2010e
Net sales	13,458.0	13,687.4	12,699.4	12,744.1
EBITDA	762.9	1,905.2	1,439.3	1,434.6
EBIT	-365.7	852.6	438.6	480.8
Net result after min.	281.6	-2,678.3	115.7	143.2
EPS (HUF)	13.37	-127.20	5.49	6.80
CEPS (HUF)	66.97	-77.21	53.02	52.10
BVPS (HUF)	640.94	499.63	505.73	513.29
Div./share (HUF)	0.00	0.00	0.00	0.00
EV/EBITDA (x)	45.5	8.8	11.6	11.1
P/E (x)	127.1	-5.5	127.4	102.9
P/CE (x)	25.4	-9.1	13.2	13.4
Dividend Yield	0.0%	0.0%	0.0%	0.0%



Performance	12M	6M	3M	1M
in HUF	-51.4%	-43.9%	-5.3%	-6.0%
in EUR	-57.9%	-56.5%	-16.9%	-15.7%

Share price (HUF)	700.00	Reuters	PANP.BU	Free float		53.0%
Number of shares (mn)	21.1	Bloomberg	NNERGY HB	Shareholders		Benji Invest (12.9%)
Market capitalization (HUF mn / EUR mn)	14,738 / 49	Div. Ex-date				Treasury (9.9896%)
Enterprise value (HUF mn / EUR mn)	16,846 / 58	**Target price**	**793.0**	Homepage:		www.pannergy.hu

Halfway to becoming geothermal company

- **The company has successfully engaged in two heating plant development projects. Although further steps still bear uncertainties, the company has now contracted with 30 towns for geothermal energy cooperation. Therefore, we put together three detailed models for different scenarios: (i) the company remains a plastics producer; (ii) it builds heating plants without grants; and (iii) it builds heating plants with subsidies. Establishing the fair values of these cases via DCF valuation and taking a linear combination of them with different, very conservative, weightings, we set our 12M target price at HUF 793 per share. Consequently, we have a Hold recommendation on the share.**

- **The company's present valuation reflects the negative effect of increased Hungarian bond yields, the reduced operating profit in the plastics business, the increased debt premium and the risk of drillings. After the first drillings, a rebalancing of weightings will be needed. This should hopefully increase the fair value.**

- **For our estimates, we did not consider any sale of assets, such as Synergon shares, part of the real estate portfolio or even own shares. However, if PannErgy were to sell any of these assets, the greater amount of cash on hand would accelerate the geothermal developments, which would increase the fair value of the company.**

Valuation summary

District heating now in focus

While the company still intends to build power plants, due to the crisis on the market, it has delayed this activity and is concentrating on district heating investments that need significantly lower CAPEX. Although PannErgy would be able to finance the first two planned plants from own cash, it intends to use loans from international development institutions like the EBRD. On the other hand, for geothermal developments, a significant amount of subsidy is available from the EU in Hungary; these sources were not really in use in the last couple of years. PannErgy should be in a position to receive a significant amount of this cash.

Three models worked out

We have worked out three detailed models for the period until 2019. In the first model, we did not assume any geothermal development, as - at the moment - the building of the first two heating plants is at the beginning (in the drilling phase). In this model, only the recent operations were incorporated and the DCF model led to a fair value of HUF 309 per share. Although we assigned an 80% weight in the valuation to this scenario, we think that the probability of the company remaining a simple plastics company (with a 90.78% stake in its plastics subsidiary, Pannunion, which was listed last autumn) is significantly lower. We used this high weight to remain very conservative; in practice this scenario may even have a probability of less than 50%.

In the second model, we assumed that the company will not be able to utilize state and EU subsidy resources at all, but will build not only the two heating plants that have been launched so far, but as many as cash flow allows until 2015, supported with loans. (PannErgy has contracts with 30 municipalities right now.) Although we applied a 10% weight to the DCF-derived value, we think that the probability of this scenario actually exceeds 25%.

In the third model, we assumed that PannErgy will manage to utilize the entire subsidy available and that the entire project is 50% financed by non-refundable, EU- and state-provided grants. Although the probability of this scenario is likely over 25% as well, we assigned it only 10%, to remain on the conservative side.

Twelve-month target price HUF 793, Hold

Making a linear combination of the DCF values derived from the three above-mentioned models, we found that the equity of the company is worth some HUF 13.4bn, which leads us to a twelve-month target price of HUF 793 per share, applying the cost of equity of 11.9% to the fair value of a share. The three applied models clearly show that, at the present market price of HUF 700 per share, the downside risk is around HUF 400 per share, while the upside potential is significantly higher, estimated at around HUF 1,300+ per share, without considering that the currently high risk-free rate in Hungary will likely decline in the coming years, pushing the fair value higher. After the successful drillings expected to be achieved by the end of March, the weighting structure should be changed, which will likely mean an increase of the fair value. We did not do a peer group comparison, due to the fact that PannErgy is in a transition period. Therefore, the comparison would have given misleading figures.

Summary of valuation

Scenario	Fair value (HUF)	*weight*	HUF/share	Equity value (HUFbn)
PannErgy wo geothermal projects	309	80%	248	4.7
PannErgy w Hetaing plants wo subsidy	2,028	10%	203	3.8
PannErgy w Hetaing plants w subsidy	2,587	10%	259	4.9
Fair value of the stock as of 30.1.2009			**709**	**13.4**
Cost of the equity			**11.9%**	
Target price as of Feb. 2010			**793**	

Source: Erste Group Research

DCF valuation and assumptions in models

Yields and debt premium are up

In all three models, we applied the same "boundary" conditions:

- The risk-free rate is the yield on the 10Y Hungarian bond, as the model is explicitly worked out until 2019. For the perpetuity rate, we applied the 5Y forward yield calculated from the yield of 10Y and 15Y generic yields. These yields are at high levels at the moment, 8.8% and 8.1%, respectively.

- The equity risk premium is 5%.

- Using two-year weekly prices for beta calculation, 0.62 was calculated for the effective period; for the perpetuity part, a conservative value of 1 was selected.

- For the explicit period, we applied a debt premium of 450bps, as Hungary's premium is between 300bps and 400bps. For the terminal part, 100bps was applied, as was usual before the crisis.

- The corporate tax rate in Hungary is 20% at the moment; therefore, we applied this level, although the effective tax rate for the company was a bit lower in the last couple of years, due to the foreign subsidiaries and lower corporate tax rates in neighboring countries. It also has some deferred tax assets that lower its taxation.

- For the perpetuity growth rate, 6% was extended, as we still believe in the long-term 3% growth rate of GDP in Hungary, while the CPI target from the National Bank of Hungary (NBH) is 3%. The plastics business usually grows at double the rate of GDP, while district heating could be extended via cascade usage of geothermal energy, which might help keep the growth rate at around GDP+CPI (swimming pool, agriculture usage, etc.).

WACC Calculation	
Risk-free rate	8.8%
Premium to equity	5.0%
Beta	0.62
Cost of equity	11.9%
Debt premium	4.5%
Cost of debt	13.3%
Effective tax rate (%)	20.0%
Effective cost of debt (%)	10.6%
Interest bearing debt to equity	25.8%
WACC	**11.6%**
WACC Calculation - perpetuity	
Risk-free rate	8.1%
Premium to equity	5.0%
Beta	1.00
Cost of equity	13.1%
Debt premium	1.0%
Cost of debt	9.1%
Effective tax rate (%)	20.0%
Effective cost of debt (%)	7.3%
Interest bearing debt to equity	35.0%
WACC	**11.1%**
Calculation of perpetuity growth	
Long-term real GDP growth	3.0%
Long-term inflation rate	3.0%
Nominal GDP growth to infinity	6.0%
GDP growth adjustment factor	1.00
FCF growth rate to infinity	**6.0%**

Source: Erste Group Research, Bloomberg

Base scenario

Base scenario DCF derives fair value of HUF 309 per share

For this case, we simply readjusted our model for the plastics division and did not consider any geothermal development. Although the greenfield investment in Serbia, Unionplast, is expected to come into full operation this year, the expected product price decrease will probably push sales down this year, although sales in 2008 were in better shape than we predicted earlier. This is valid for margins and operating profit as well. While the company had huge losses on its financial assets (Synergon shares, contracts for own shares, FX losses) in 2008, we do not expect the same negative movement this year. The lower operating profit from 2009 and higher yields decreased the fair value to HUF 309 (from HUF 847) per share.

DCF valuation (HUF mn)

Base scenario	2009e	2010e	2011e	2012e	2013e	2014e	2015e	2016e	2017e	2018e	2019e
EBITDA	1,439	1,435	1,443	1,535	1,619	1,654	1,739	1,823	1,904	2,003	2,182
Taxes on EBIT	79	96	100	117	136	143	158	173	187	203	234
EBITDA tax adjusted	1,360	1,338	1,343	1,418	1,482	1,512	1,581	1,650	1,718	1,801	1,948
Capital expenditures	-934	-844	-867	-903	-942	-982	-1,025	-1,071	-1,119	-1,170	-1,245
Change in working capital	-38	471	-110	148	68	97	107	126	131	155	151
Terminal value											17,868
Free cash flow	389	966	366	663	609	626	662	705	730	785	18,721
Discounted free cash flow	352	784	267	432	356	328	311	297	275	266	5,674
Net present value	9,340										
Net debt	3,291										
Equity value	6,049										
Minorities	-184										
Shareholder's Equity Value	5,865										
Equity value per share as of 30.1.2009 (HUF)	**309**										
Twelve-month target value (HUF)	**346**										

Source: Erste Group Research

Sensitivity analysis of base case (as of Jan. 30, 2009)

Equity value per share (HUF)	Discount rate (TV)				
	9.1%	10.1%	11.1%	12.1%	13.1%
4.0%	304	258	225	200	180
5.0%	376	307	260	227	201
Perpetuity cash flow growth rate 6.0%	496	380	**309**	262	229
7.0%	732	500	383	312	265
8.0%	1,410	738	505	387	315

Source: Erste Group Research

Heating plant development without subsidy

Developments without grants lead to fair value of HUF 2,028 per share

As market conditions have changed and more data has become available about the projects, we reevaluated our unit heating plant model and consolidated it into the PannErgy holding. As the company has undergone negotiations with development banks (i.e. EBRD), it is very likely that these banks will finance the company's state-of-the-art developments. As market conditions have become tighter, we anticipate a ratio of only 40:60 for equity to loans, compared to the earlier 20:80. Details on the unit heating plant can be found below.

DCF valuation (HUF mn)

Heating plant scenario without subsidy	2009e	2010e	2011e	2012e	2013e	2014e	2015e	2016e	2017e	2018e	2019e
EBITDA	1,617	1,872	2,427	3,311	4,159	5,287	6,725	8,691	8,978	9,146	9,539
Taxes on EBIT	106	169	255	416	552	756	981	1,334	1,388	1,419	1,493
EBITDA tax adjusted	1,511	1,702	2,172	2,895	3,606	4,531	5,744	7,357	7,589	7,728	8,046
Capital expenditures	-2,353	-900	-5,180	-1,130	-6,844	-1,436	-11,412	-1,922	-1,971	-2,022	-2,096
Change in working capital	-79	470	-235	144	-102	88	-194	108	111	134	130
Terminal value											127,280
Free cash flow	-921	1,272	-3,244	1,909	-3,340	3,183	-5,862	5,543	5,730	5,841	133,360
Discounted free cash flow	-833	1,032	-2,359	1,244	-1,952	1,667	-2,752	2,332	2,161	1,975	40,419
Net present value	42,933										
Net debt	3,291										
Equity value	39,642										
Minorities	-1,208										
Shareholder's Equity Value	38,435										
Equity value/share as of 30.01.2009 (HUF)	**2,028**										
Twelve-month target value (HUF)	**2,269**										

Source: Erste Group Research

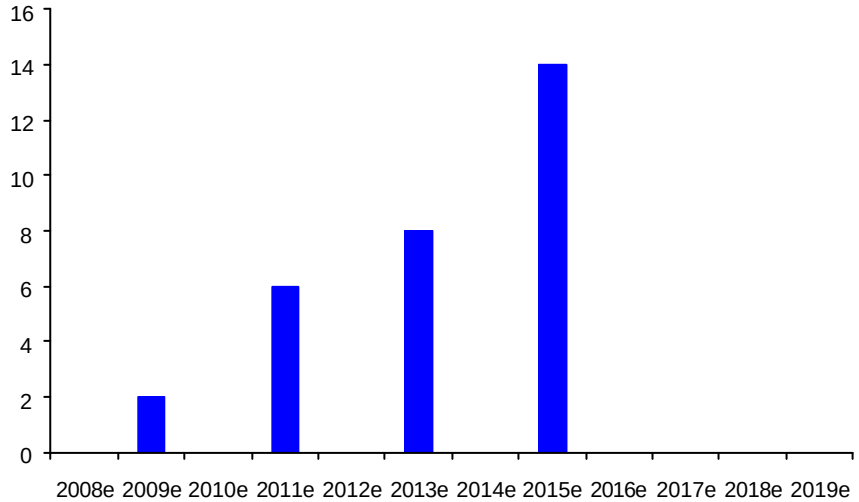
Sensitivity analysis of heating wo subsidy case

Equity value per share (HUF) - Jan. 30, 2009	Discount rate				
	9.06%	10.06%	11.06%	12.06%	13.06%
4.0%	1,990	1,660	1,424	1,247	1,108
5.0%	2,505	2,009	1,676	1,438	1,259
Perpetuity cash flow growth rate 6.0%	3,357	2,529	**2,028**	1,692	1,452
7.0%	5,035	3,389	2,553	2,047	1,708
8.0%	9,870	5,082	3,420	2,577	2,066

Source: Erste Group Research

In the companies that own heating plants, PannErgy has a 90% stake, while the municipality usually has a 10% stake. For 2009, we expect the company to launch operations at two plants; for every year thereafter, we anticipate the launch of as many plants as would be allowed by the company's cash flow.

Number of launched "unit" plants



Source: Erste Group estimates

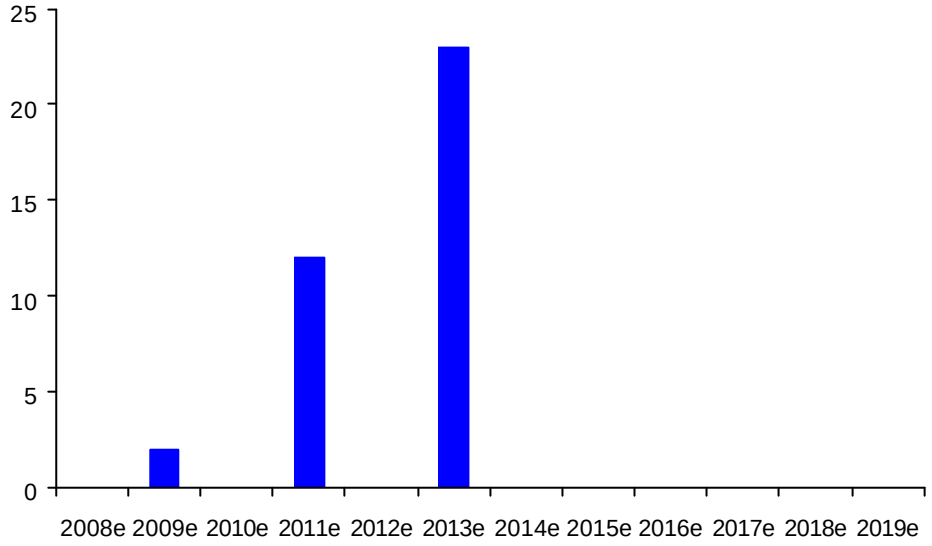
Heating plant development with subsidy

Developments with grants lead to fair value of HUF 2,587 per share

PannErgy has applied for subsidies for its projects with the help of KPMG. They intend to use resources made available by The Environmental and Energetic Operative Program. The program has EUR 253mn for the 2007-13 financing period. In the first period (2007-08), the program had HUF 13.26bn for the subsidy of environmental energetic projects, but just HUF 500mn was distributed. The remainder will be added to the 2009-10 period.

As grants from the above-mentioned fund could finance half of the initial capital requirement and we see a good chance for PannErgy to receive a significant amount for its projects, we created a unit plant model with the following initial capital conditions: (i) 20% own capital; (ii) 50% grant; (iii) 30% loan. As cash flow allows, the unit plants were incorporated into the model. Of course, in this situation, the development is significantly faster. Although PannErgy has agreements with only 30 municipalities, we have 37 unit plant investments, as we used the “smallest” 6 MW heating plant, while the company intends to build significantly bigger ones as well. Two heating plants are likely to come on-stream by the end of this year and a sizable combined plant (heat + electricity) might be built next year or in 2011.

Number of launched "unit" plants



Source: Erste Group estimates

We found the most bullish fair value with these conditions:

DCF valuation (HUF mn)

Heating plant scenario with subsidy	2009e	2010e	2011e	2012e	2013e	2014e	2015e	2016e	2017e	2018e	2019e
EBITDA	1.617	1.872	2.960	4.623	6.843	9.958	10.292	10.586	10.930	11.014	11.462
Taxes on EBIT	106	169	334	636	980	1.541	1.606	1.663	1.729	1.742	1.828
EBITDA tax adjusted	1.511	1.702	2.626	3.987	5.863	8.417	8.686	8.922	9.200	9.271	9.635
Capital expenditures	-2.353	-900	-9.437	-1.300	-17.657	-2.032	-2.075	-2.121	-2.169	-2.220	-2.295
Change in working capital	-79	470	-360	141	-416	76	82	101	106	129	124
Terminal value											156.255
Free cash flow	-921	1.272	-7.170	2.827	-12.210	6.461	6.693	6.903	7.137	7.180	163.719
Discounted free cash flow	-833	1.032	-5.216	1.843	-7.134	3.384	3.142	2.904	2.692	2.428	49.620
Net present value	53.862										
Net debt	3.291										
Equity value	50.571										
Minorities	-1.541										
Shareholder's Equity Value	49.031										
Equity value/share as of 30.01.2009 (HUF)	**2.587**										
Twelve-month target value (HUF)	**2.894**										

Source: Erste Group Research

Sensitivity analysis of heating with subsidy case

Equity value per share (HUF) - Jan. 30, 2009		Discount rate				
		9.06%	10.06%	11.06%	12.06%	13.06%
Perpetuity cash flow growth rate	4.0%	2,540	2,135	1,846	1,628	1,458
	5.0%	3,173	2,563	2,155	1,863	1,642
	6.0%	4,219	3,202	**2,587**	2,175	1,879
	7.0%	6,278	4,258	3,231	2,611	2,195
	8.0%	12,214	6,336	4,296	3,261	2,634

Source: Erste Group Research

Applied heating plant as "unit plant" in model

Smallest heating plant selected as unit plant for modeling

As it would take a lot of time to incorporate different geothermal projects (different heating, power and combined plants) in to the model, and as we only have detailed information on the first two developments, we created a small heating plant model with a capacity of 6 MW. This heating plant model exists in two forms: (i) CAPEX financed only with own capital and bank loans or (ii) with initial capital financed 50% via grants, 30% loans and 20% own capital. The assumptions for both cases are as follows:

- HUF 700mn or EUR 2.6mn CAPEX requirement
- Supplied heat is 1,800 home equivalents or 6 MW
- Without VAT, the cost of 1 MJ of energy for a home in the first year is HUF 2.36, or 0.9 euro cents, after which it increases gradually with CPI. This is a very competitive price, as, at the moment, for central heating the price of 1 MJ is around HUF 4, while in the case of hating with natural gas the cost is HUF 3.8. The high crude prices would imply higher prices (HUF 4.5/MJ), but the government has not allowed increases of these prices this year. Therefore, the crude price decline, which caused a fall in natural gas prices, will have only a limited effect on retail gas prices. The expected 30-40% decline in USD terms on forint-denominated gas prices will be partially eliminated, due to the above-mentioned facts. Therefore, only a 20% decline is expected, meaning that the conventional central heating or natural gas heating prices would still be over the estimated geothermal price by 25-30%. PannErgy intends to give a 20% discount on energy prices compares to natural gas prices.
- FX rate of EUR/HUF 270 for the whole period
- 8% cost of loans (in EUR)
- Depreciation period of 20 years, although these plants are able to work for up to 30 years
- 6-month effective working year, but household payments are in equal monthly installments

HEATING unit												
000 HUF	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
SALES	103,445	254,474	262,108	269,972	278,071	286,413	295,005	303,855	312,971	322,360	332,031	341,992
COGS	7,241	17,813	18,348	18,898	19,465	20,049	20,650	37,385	38,506	39,661	40,851	42,077
Personnel Costs	3,879	9,543	9,829	10,124	10,428	10,741	11,063	11,395	11,737	12,089	12,451	18,033
Depreciation	14,780	35,473	35,473	35,473	35,473	35,473	35,473	35,473	35,473	35,473	35,473	35,473
Other Income	0	0	0	0	0	0	0	0	0	0	0	0
Other Expenses	3,448	8,482	8,737	8,999	9,269	9,547	9,833	17,802	18,336	18,886	19,453	20,036
Operating Profit (EBIT)	**74,096**	**183,163**	**189,722**	**196,478**	**203,436**	**210,604**	**217,986**	**201,801**	**208,919**	**216,251**	**223,803**	**226,373**
EBITDA	***88,876***	***218,636***	***225,195***	***231,951***	***238,909***	***246,076***	***253,459***	***237,274***	***244,392***	***251,724***	***259,276***	***261,846***
Financial Income	2,355	5,010	5,491	5,740	5,765	5,567	5,298	5,836	6,250	6,682	7,178	7,694
Financial expenses	17,027	33,514	32,326	30,922	29,302	27,466	25,522	23,578	21,634	19,690	17,746	21,600
Profit on Ordinary activity	**59,424**	**154,659**	**162,887**	**171,296**	**179,899**	**188,705**	**197,762**	**184,060**	**193,535**	**203,243**	**213,235**	**212,467**
Extraordinary Result	0	0	0	0	0	0	0	0	0	0	0	0
Profit bef. tax (PBT)	**59,424**	**154,659**	**162,887**	**171,296**	**179,899**	**188,705**	**197,762**	**184,060**	**193,535**	**203,243**	**213,235**	**212,467**
Corporate tax	10,696	30,932	32,577	34,259	35,980	37,741	39,552	36,812	38,707	40,649	42,647	42,493
Profit after tax	**48,728**	**123,727**	**130,309**	**137,037**	**143,919**	**150,964**	**158,209**	**147,248**	**154,828**	**162,595**	**170,588**	**169,973**
Minorities	4,873	12,373	13,031	13,704	14,392	15,096	15,821	14,725	15,483	16,259	17,059	16,997
NET PROFIT (BS)	**43,855**	**111,354**	**117,278**	**123,333**	**129,528**	**135,868**	**142,388**	**132,523**	**139,345**	**146,335**	**153,529**	**152,976**

Net profit	48,728	123,727	130,309	137,037	143,919	150,964	158,209	147,248	154,828	162,595	170,588	169,973
Change in Working Capital	-20,689	-517	-636	-655	-675	-695	-716	-738	-760	-782	-806	-830
Depreciation	14,780	35,473	35,473	35,473	35,473	35,473	35,473	35,473	35,473	35,473	35,473	35,473
CAPEX	709,458	28,378	28,378	28,378	28,378	28,378	28,378	28,378	28,378	28,378	28,378	28,378
Change of Fixed Assets (-)	694,678	-7,095	-7,095	-7,095	-7,095	-7,095	-7,095	-7,095	-7,095	-7,095	-7,095	-7,095
Change in LT debt	425,675	-13,500	-16,200	-18,900	-21,600	-24,300	-24,300	-24,300	-24,300	-24,300	-24,300	-24,300
capital increase	283,783	0	0	0	0	0	0	0	0	0	0	0
Dividend		-111,354	-117,278	-123,333	-129,528	-135,868	-142,388	-132,523	-139,345	-146,335	-153,529	-152,976
CASH FLOW OF YEAR	**42,819**	**5,450**	**3,289**	**1,243**	**-788**	**-2,804**	**-2,101**	**-3,218**	**-2,482**	**-1,728**	**-953**	**-1,038**
cash at the beginning of the year	0	42,819	48,269	51,559	52,802	52,013	49,209	47,108	43,890	41,408	39,680	38,727
cash at the end of the year	42,819	48,269	51,559	52,802	52,013	49,209	47,108	43,890	41,408	39,680	38,727	37,689
Fixed Assets	694,678	687,583	680,488	673,394	666,299	659,205	652,110	645,016	637,921	630,826	623,732	616,637
Current Assets	63,508	69,475	73,401	75,299	75,186	73,077	71,692	69,212	67,489	66,543	66,396	66,188
Account receivables	20,689	21,206	21,842	22,498	23,173	23,868	24,584	25,321	26,081	26,863	27,669	28,499
Cash&Cash equivalents	42,819	48,269	51,559	52,802	52,013	49,209	47,108	43,890	41,408	39,680	38,727	37,689
Accrued and deferred assets	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL ASSETS	**758,186**	**757,058**	**753,889**	**748,693**	**741,485**	**732,281**	**723,802**	**714,227**	**705,410**	**697,369**	**690,128**	**682,825**
EQUITY	**327,638**	**338,774**	**350,501**	**362,835**	**375,787**	**389,374**	**403,613**	**416,865**	**430,800**	**445,433**	**460,786**	**476,084**
Registered Capital	*283,783*	*283,783*	*283,783*	*283,783*	*283,783*	*283,783*	*283,783*	*283,783*	*283,783*	*283,783*	*283,783*	*283,783*
Reserves	0	43,855	54,990	66,718	79,052	92,004	105,591	119,830	133,082	147,017	161,650	177,003
Net Profit of the year	43,855	11,135	11,728	12,333	12,953	13,587	14,239	13,252	13,935	14,634	15,353	15,298
Minority	4,873	6,110	7,413	8,784	10,223	11,732	13,314	14,787	16,335	17,961	19,667	21,367
Provisions	0	0	0	0	0	0	0	0	0	0	0	0
Liabilities	425,675	412,175	395,975	377,075	355,475	331,175	306,875	282,575	258,275	233,975	209,675	185,375
Accrued and deferred liabilities	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL LIABILITIES	**758,186**	**757,058**	**753,889**	**748,693**	**741,485**	**732,281**	**723,802**	**714,227**	**705,410**	**697,369**	**690,128**	**682,825**

Source: Erste Group Research

Status of geothermal projects

Well-prepared projects

PannErgy has spent plenty of time preparing for the physical kick-off of its projects. It selected proper partners with lots of experience in their fields. The company has taken care of all of the paper work (i.e. permissions). To secure the market, PannErgy has come to agreements with 30 municipalities in the countryside.

Major partners are:

- **Mannvit** is an Iceland-based company that is expert in analyzing seismic lines and engineering geothermal electricity power plants. The crisis has left the company largely unaffected, due to the fact that it is an engineering advisory firm. The company has the right to Kalina technology. It finds proper locations via seismic line analysis, engineers and builds plants and in some special cases runs the facilities.

- **Aquaplus** is a major local player in cold water and geothermal drillings in Hungary. It runs a geothermal heating plant in Kistelek (7,318 inhabitants) and is planning another plant in Morahalom. The first is a 2,095m well with 1,520 l/min water yield, while the latter well is 1,271m deep with a water yield of 760l/min. The firm has also drilled cold water wells for big players like Coca-Cola and meat processing company Pick. Aquaplus and PannErgy have an agreement that, for the first two drillings of less than 2,000m deep, PannErgy must pay only 10% of the original drilling fee in the case that the drilling fails. This agreement substitutes for the special insurance that was originally planned with unnamed German insurance firms.

- **KPMG** is working for PannErgy to help it obtain as much subsidy as possible. The team working in this area is headed by former Hungarian Finance Minister Laszlo.

- **Local municipalities**: Subject of interest agreement with 28 towns and common entity established with two towns (Tamasi and Szentlorinc).

- **Terra Verde**, the Dutch greenhouse player, intends to build 1.2mn sqm greenhouses in CEE. At each location, at least 60,000 sqm greenhouses would be built. The agricultural development would help PannErgy in cascade usage of direct heat.

- For electricity production, the law provides guaranteed feed-in tariffs of green electricity; at the moment, the price is HUF 25.4 per kWh or EUR 0.09 per kWh.

After a long wait, PannErgy presented the details of the first two (and other potential sites) projects in November:

The company forms separate entities with municipalities for all potential towns when the projects enter into the proper phase. Details of the contracts are as follows:

- They usually form a company 90% owned by PannErgy, with the municipality taking 10%.

- PannErgy has a call option for the 10%, while the municipality has a put option for the same stake.

- At least 10-year agreements with the municipalities.

- Guarantee for the entity to be the sole heat provider for the town.

The first two heating plants are expected to come on-stream by the end of 2009, thus starting to generate cash flow.

- Tamasi (8,665 inhabitants)
  - Drillings start at the beginning of February; the first well costs HUF 140mn, while the depth of the well is expected to be 2,000-2,100m.
  - Total investment will be HUF 1bn via building an 8 MW heating plant, based on the expected 80-100C° water with expected yield of 600-1,200 liters/min.
  - Return on investment is around 6-7 years, without subsidy
  - Possibility to improve business to electricity power plant later on
  - Potential subsidy is up to HUF 500mn
  - Aquaplus agreed with the municipality to build a hotel (to be the client of the entity as well)
- Szentlorinc (7,060 inhabitants)
  - Drillings started between January 9 and 20 and the first well cost HUF 90mn, while the depth of the well is expected to be 1,500-1,700m.
  - Total investment will be HUF 700mn, building a 6 MW heating plant based on the expected 80-90C° water with expected yield of 1,200-1,800 liters/min.
  - Return on investment is around 6-7 years, without subsidy
  - Potential subsidy is up to HUF 500mn
- Other sites at towns of Csurgo, Kaposvar, Dombovar
  - Combined plants (heating and electricity)
- Nagybakonak and other two sites (near Nagyaknizsa, one of the major cities in Hungary)
  - 2-3 areas, no time schedule yet
  - 13-15 MW PP would be built
  - Drilling cost is HUF 320mn and expected depth of a well is 3km
  - Temperature 120-150 C° with yield 3,600 l/min.
  - Total investment 3xHUF 5bn
  - Expected return on investment is 8-9 years, without subsidy
  - Subsidy of HUF 500mn per site is also expected
- Other sites are at towns Pecs, Bonyhad
- The analysis of other seismic lines is being carried out by Mannvit (400 seismic lines)

Sector Report – Renewable energy

Income Statement	**2005**	**2006**	**2007**	**2008e**	**2009e**	**2010e**
(IAS, HUF mn, 31/12)	31/12/2005	31/12/2006	31/12/2007	31/12/2008	31/12/2009	31/12/2010
Net sales	**26,022.77**	**16,172.30**	**13,458.04**	**13,687.38**	**12,699.42**	**12,744.06**
Cost of goods sold	-20,122.14	-12,021.03	-10,465.04	-10,372.93	-9,689.65	-9,712.85
Gross profit	**5,900.64**	**4,151.27**	**2,993.00**	**3,314.45**	**3,009.78**	**3,031.20**
SG&A	-5,418.88	-3,929.05	-3,328.00	-2,681.79	-2,629.82	-2,636.72
Other operating revenues	870.59	524.03	291.20	623.37	283.31	280.86
Other operating expenses	-1,112.35	-406.26	-321.88	-403.47	-224.69	-194.59
EBITDA	**2,386.22**	**1,554.19**	**762.88**	**1,905.21**	**1,439.25**	**1,434.58**
Depreciation/amortization	-2,146.23	-1,214.21	-1,128.57	-1,052.65	-1,000.68	-953.82
EBIT	**240.00**	**339.98**	**-365.69**	**852.57**	**438.57**	**480.76**
Financial result	-309.85	711.57	775.01	-3,485.55	-264.07	-212.66
Extraordinary result	0.00	0.00	0.00	0.00	0.00	0.00
EBT	**-69.86**	**1,051.55**	**409.32**	**-2,632.98**	**174.50**	**268.10**
Income taxes	-65.00	-125.25	-120.33	-78.67	-31.41	-53.62
Result from discontinued operations	0.00	0.00	0.00	0.00	0.00	0.00
Minorities and cost of hybrid capital	-118.24	-33.28	-7.41	33.33	-27.43	-71.29
Net result after minorities	**-253.10**	**893.02**	**281.58**	**-2,678.31**	**115.66**	**143.18**

Balance Sheet	**2005**	**2006**	**2007**	**2008e**	**2009e**	**2010e**
(IAS, HUF mn, 31/12)						
Intangible assets	744.41	756.96	903.85	903.85	903.85	903.85
Tangible assets	10,337.08	9,288.85	9,813.79	8,799.61	8,733.04	8,622.87
Financial assets	1,398.61	1,795.66	3,153.88	619.89	607.41	594.93
Total fixed assets	**12,480.10**	**11,841.48**	**13,871.51**	**10,323.35**	**10,244.29**	**10,121.65**
Inventories	2,386.46	2,171.25	2,329.35	2,103.34	2,074.78	2,020.22
Receivables and other current assets	5,985.23	5,468.55	4,986.78	4,274.05	4,321.75	4,098.42
Other assets	0.00	0.00	0.00	0.00	0.00	0.00
Cash and cash equivalents	2,248.00	-361.00	1,071.53	1,302.01	1,486.54	2,294.65
Total current assets	**10,619.69**	**7,278.79**	**8,387.65**	**7,679.39**	**7,883.07**	**8,413.29**
TOTAL ASSETS	**23,099.79**	**19,120.27**	**22,259.17**	**18,002.74**	**18,127.37**	**18,534.93**
Shareholders'equity	**12,413.49**	**11,956.94**	**12,147.65**	**9,469.34**	**9,585.00**	**9,728.18**
Minorities	**756.03**	**400.52**	**321.80**	**288.46**	**315.89**	**387.19**
Hybrid capital and other reserves	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Pension and other LT personnel accruals	0.00	0.00	0.00	0.00	0.00	0.00
Other LT provisions	0.00	0.00	0.00	0.00	0.00	0.00
Interest-bearing LT debts	537.47	1,020.90	3,212.38	3,212.38	3,212.38	3,212.38
Other LT liabilities	0.00	0.00	0.00	0.00	0.00	0.00
Total long-term liabilities	**537.47**	**1,020.90**	**3,212.38**	**3,212.38**	**3,212.38**	**3,212.38**
Interest-bearing ST debts	5,171.54	3,097.60	3,026.83	1,888.18	1,888.18	1,888.18
Other ST liabilities	4,221.27	2,644.31	3,550.51	3,144.38	3,125.92	3,319.01
Total short-term liabilities	**9,311.42**	**5,706.57**	**6,556.86**	**5,012.07**	**4,993.61**	**5,186.70**
TOTAL LIAB. , EQUITY	**23,099.79**	**19,120.27**	**22,259.17**	**18,002.74**	**18,127.37**	**18,534.93**

Cash Flow Statement	**2005**	**2006**	**2007**	**2008e**	**2009e**	**2010e**
(IAS,HUF mn, 31/12)						
Cash flow from operating activities	927.36	-613.00	240.37	-1,126.39	1,106.16	1,639.28
Cash flow from investing activities	691.30	3,622.00	-1,692.85	2,495.52	-921.63	-831.17
Cash flow from financing activities	-441.21	-4,108.00	2,885.01	-1,138.65	0.00	0.00
CHANGE IN CASH , CASH EQU.	**1,131.45**	**-2,609.00**	**1,432.53**	**230.47**	**184.53**	**808.11**

Margins & Ratios	**2005**	**2006**	**2007**	**2008e**	**2009e**	**2010e**
Sales growth	-2.0%	-37.9%	-16.8%	1.7%	-7.2%	0.4%
EBITDA margin	9.2%	9.6%	5.7%	13.9%	11.3%	11.3%
EBIT margin	0.9%	2.1%	-2.7%	6.2%	3.5%	3.8%
Net profit margin	-0.5%	5.7%	2.1%	-19.8%	1.1%	1.7%
ROE	-2.0%	7.3%	2.3%	-24.8%	1.2%	1.5%
ROCE	2.5%	1.9%	-1.7%	6.3%	2.8%	3.0%
Equity ratio	57.0%	64.6%	56.0%	54.2%	54.6%	54.6%
Net debt	3,309.1	2,807.5	2,138.6	3,291.0	3,106.4	2,298.3
Working capital	1,308.3	1,572.2	1,830.8	2,667.3	2,889.5	3,226.6
Capital employed	16,478.7	15,165.0	14,608.0	13,048.8	13,007.3	12,413.7
Inventory turnover	6.8	5.3	4.7	4.7	4.6	4.7

Source: Company data, Erste Group estimates

Sector Report – Renewable energy

Fact Sheet – Polish Energy Partners – Ind. GOODS & SERVICES – Poland – February 4, 2009

Last price (PLN)		Market capitalisation		Enterprise value		Shares outstanding		Exchange rate	
	21.47	EUR mn	90	EUR mn	142	(mn)	18.76	PLN/EUR	4.46
Not rated		PLN mn	403	PLN mn	925				
Target price	**Prem/Disc**	**52 Week**		**Free float**		**Free float cap.**		**Ex-dividend date**	
		High	31.20		57.4%	EUR mn	52		
		Low	18.85			PLN mn	230		
Web: www.pepsa.com.pl				**Reuters:**	PEPP.WA	**Bloomberg:**	PEP PW	**End of FY:**	31/12

Key figures overview

PLN mn	2004	2005	2006	2007
Net sales	49.9	61.1	62.7	92.8
EBITDA	8.9	10.0	13.8	25.9
EBIT	6.0	12.9	16.9	35.1
EBT	8.8	12.5	1.8	41.7
Net profit	6.7	9.3	0.5	33.2
EPS (PLN)	0.36	0.51	0.03	1.79
CEPS (PLN)	0.52	0.45	-0.16	1.40
BVPS (PLN)	5.54	6.11	5.80	7.72
Dividend\Share (PLN)	0.00	0.00	0.00	0.00
EV/EBITDA (x)		37.67	39.34	35.73
P/E (x)		18.37	507.08	20.66
P/CE (x)		20.74	-94.92	26.46
Dividend yield (%)		0.00	0.00	0.00
EBITDA margin (%)	17.90	16.44	21.97	27.89
Operating margin (%)	12.12	21.12	26.89	37.85
Net profit margin (%)	13.33	15.29	0.83	35.66

Financial strength

	2004	2005	2006	2007
ROE (%)	6.71	8.78	0.51	26.67
ROCE (%)	3.67	3.17	0.02	7.37
Equity ratio (%)	29.72	29.41	25.05	29.84
Net debt (PLN mn)	189.92	206.75	262.69	238.65
Gearing (%)	187.81	185.22	246.10	165.73

Trading data & Statistics

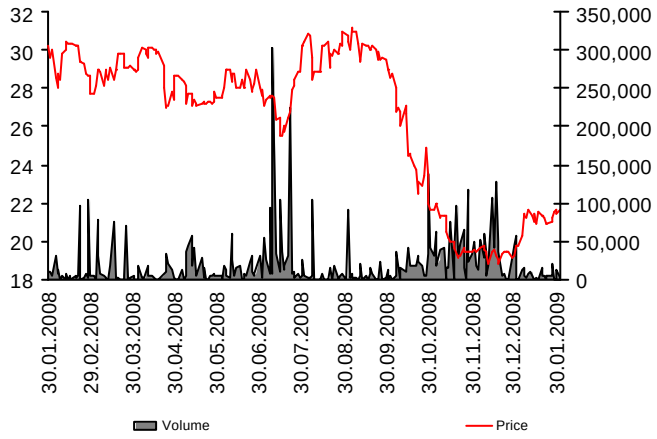
Daily averages	5 days	30 days	last year
Volume	8,255	6,106	19,520
Trading value (PLN mn)	0.2	0.1	0.0

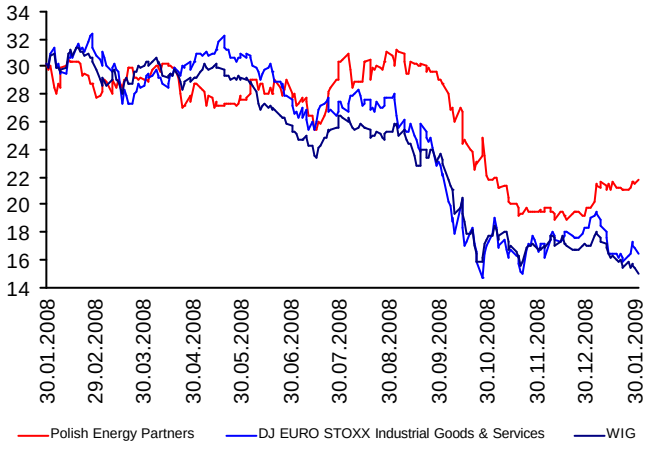
Shareholders

PZU Asset Management	13.3%
Generali OFE	12.3%
Pioneer Pekao Investment Management	12.0%
Millennium TFI	5.0%

Company description

PEP is a company specializing in the development, implementation and management of electricity and heat generation projects. The company builds thermal power plants for industry as greenfield projects, takes under management existing facilities and provides electricity and heat to industry. In the segment of green energy, the company develops wind farm projects for sale during their first stage of development, including the plot, grid connection and all essential permissions. It also builds ready-to-use wind farms in order to provide electricity or for sale.





Price performance:	1M	3M	6M	12M	Ytd
in EUR	4.6%	-20.9%	-49.0%	-42.5%	0.7%
in PLN	11.7%	-2.5%	-29.1%	-29.1%	9.7%

Strengths/Opportunities

- EU regulations mean Poland is obligated to reach minimum green energy share in total energy usage of 14-15% in 2020 - minimum for 2008 is 7%, 10.4% in 2010.
- Raising of Polish government subsidies for green energy projects from 20-30% to 50% of total project costs in December 2008 (subsidies may amount to max. PLN 30-40mn).
- Change in method of excise refund for electricity in 2009 will contribute to growth of green certificate prices and increase incomes.
- Polish energy sector plans significant investments in wind farms- according to Energy Regulatory Office polls, 20% of electricity in Poland will be produced by wind farms by 2015.

Weaknesses/Threats

- Economic slowdown may cause suspensions and delays in investments in energy sector.
- Drop of production in Poland leads to visible decreasing trend of electricity usage in Poland.
- Problems in Polish financial sector make it more difficult to take investment loans and visibly increase debt costs.
- Uncertain outcome of CO2 legislation discussion is risk for company's heat and power plants.

Activities of Polish Energy Partners in renewable energy market

The first PEP project in renewable energy was the Puck Wind Farm, with capacity of 22 MW, located on the Baltic coast in Puck. The wind farm was started in December 2006 and in 2007 produced 50,125 MWh of electric energy. The company, as the owner of a 100% stake in the Puck Wind Farm, derives income from the sale of electricity generated in Puck.

Puck Wind Farm

Source: Polish Energy Partners

The company's next ventures were two development projects involving wind farms in Suwalki (a city in northeastern Poland), with capacity of 38 MW, and Tychowo (northwestern Poland), with capacity of 32 MW. The company sold a 70% stake in the Special Purpose Vehicle (SPV) that is to build the Suwalki wind farm for a total net price of PLN 19.6mn in August 2007. A year after that, PEP sold a 70% stake in the SPV that is to build the Tychowo wind farm for PLN 15.3mn. The company intends to retain a 30% stake in both projects and will be responsible for the operation of the wind farms. The installation of the wind farm in Suwalki is planned for the second and third quarters of 2009, with the beginning of electricity production planned for 4Q09. The start of operations at the Tychowo wind farm is expected at the beginning of 2010.

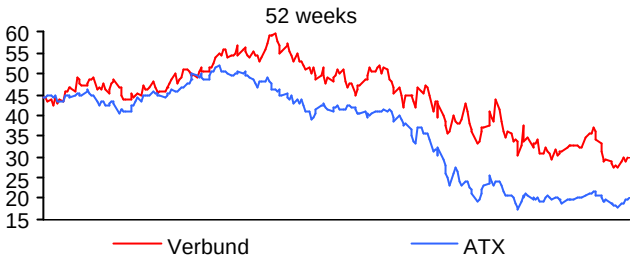
The company is currently finishing the development stage of its next three projects, wind farms with total capacity of 109 MW. Their construction is expected to begin in 2009/2010, with operations getting underway in 2010/2011. The capacity of the wind farms is going to be extended by 132 MW in 2011/2012 and by another 400 MW in the following years. PEP is going to sell stakes in certain projects and keep 100% ownership in others.

Polish Energy Partners, via its subsidiary Grupa PEP – Biomasa Energetyczna, has also entered the segment of biomass and delivers straw to EC Saturn (a heat and power station). For the project, the company purchased devices to prepare many kinds of biomass that will be used in another two projects. The first one includes the supply of pellets made of straw in the amount of at least 20k tons annually to Dalkia in 2009-19. The value of the contract for the whole 10-year term is estimated at PLN 81mn. The second project concerns the delivery of straw pellets amounting to at least 40k tons annually to EDF in 2009-16. The total value of this contract should arrive at PLN 88mn. The company is currently investing in new straw pellet facilities and has already secured the supply of straw.

Verbund Buy

Christoph Schultes, CIIA +43 (0)5 0100 - 16314 christoph.schultes@erstegroup.com

EUR mn	2007	2008e	2009e	2010e
Net sales	3,038.3	3,509.6	3,697.5	3,157.9
EBITDA	1,099.1	1,304.9	1,418.5	1,120.2
EBIT	916.1	1,123.6	1,223.7	912.4
Net result after min.	579.2	706.0	766.6	602.0
EPS (EUR)	1.88	2.29	2.49	1.95
CEPS (EUR)	2.46	2.86	3.21	2.72
BVPS (EUR)	7.81	9.20	10.59	11.34
Div./share (EUR)	0.90	1.10	1.20	1.20
EV/EBITDA (x)	15.4	9.0	8.7	11.5
P/E (x)	25.5	13.1	12.0	15.3
P/CE (x)	19.5	10.5	9.3	11.0
Dividend Yield	1.9%	3.7%	4.0%	4.0%



Performance	12M	6M	3M	1M
in EUR	-31.9%	-39.9%	-18.6%	-8.0%

Share price (EUR)	29.97	Reuters	VERB.VI	Free float		24.0%
Number of shares (mn)	308.2	Bloomberg	VER AV	Shareholders	Republic of Austria (51.0%)	
Market capitalization (EUR mn)	9,236.8	Div. Ex-date	15/04/08		EVN (12.5%)	
Enterprise value (EUR mn)	11,713.6	**Target price**	**43.0**	Homepage:	www.verbund.at	

Potholes on the road to success

– **We derive a new target price of EUR 43 and therefore reiterate our Buy recommendation. Due to the weak economy, we have significantly lowered our assumptions regarding electricity prices. This applies also for our terminal value assumptions, which now include electricity prices for baseload and peakload of EUR 65 and EUR 90/MWh, respectively, instead of EUR 75 and EUR 110/MWh, respectively. We have also reduced the terminal value growth rate to 2.0% (from 2.5%). However, this growth rate should still reflect the enormous investment program of Verbund (EUR 6.7bn until 2015), which will fully pay off beyond 2015.**

– **New Verbund CEO Wolfgang Anzengruber reiterated that he expects 2008 operating profit of EUR 1.1bn, which is basically still in line with our estimates. The operating business of Verbund should be very strong and the decline in electricity prices should not be relevant for 2008. However, Verbund already reported in its 1-3Q08 figures some negative one-offs coming from the impairment of securities in the amount of EUR 25mn. We think that 4Q08 could bring additional impairments, due to the turmoil on the financial markets. Consequently, we lower our EPS estimate for 2008 to EUR 2.29 (instead of EUR 2.43).**

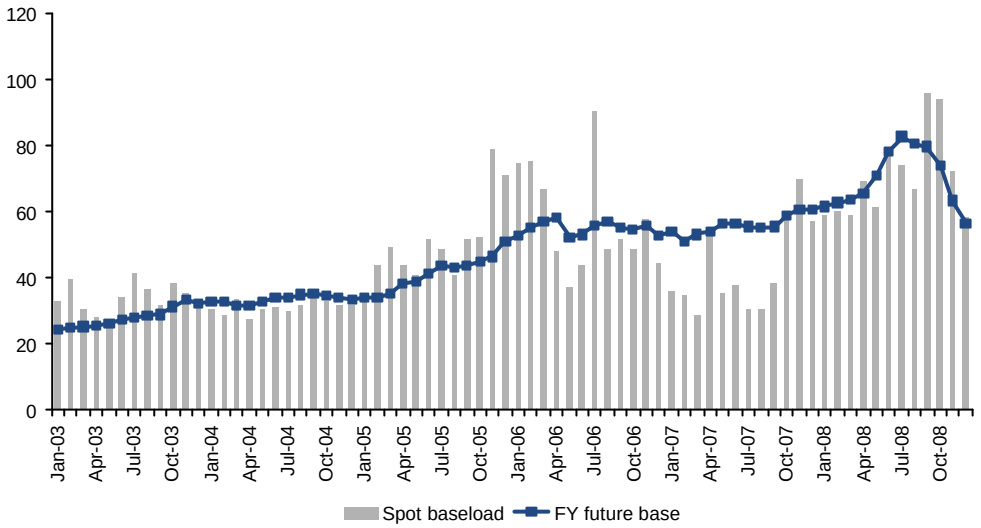
– **We are still confident that Verbund will be able to present another set of record figures for 2009. Looking at the high average achieved contract prices for 2009 capacities (already sold in 2008), Verbund has an excellent base for EBIT surpassing EUR 1.2bn. The lower spot prices will – of course – have a negative impact on the company's EBIT line, which results also in slightly lower estimates from our side. For 2009, we assume EPS of EUR 2.49 (instead of EUR 2.86). We expect fiscal year 2010 to be difficult for Verbund. Given the current electricity price levels (which we do not expect to change until 2010), we do not think that Verbund has a chance to present another record result. We expect the operating result in 2010 to reach the level of 2007. Thus, the bottom line will come in significantly below those of 2008 and 2009. We therefore significantly cut our EPS estimate from EUR 3.19 to EUR 1.95 for 2010. For 2011, we estimate EPS at EUR 2.49, meaning a return to the level of 2009.**

New business environment

Economic environment has changed

Since our last update, the economic environment for Verbund has changed significantly. Electricity wholesale prices have come down substantially, following the declining prices for oil and coal. On the EEX, the average prices FY futures for baseload amounted to between EUR 78.2 and EUR 82.8/MWh between June and September last year. However, the average price dropped to EUR 56.3 in December 2008 and to EUR 53.3 in the first four weeks of 2009.

Electricity wholesale prices for baseload – FY future vs. spot market

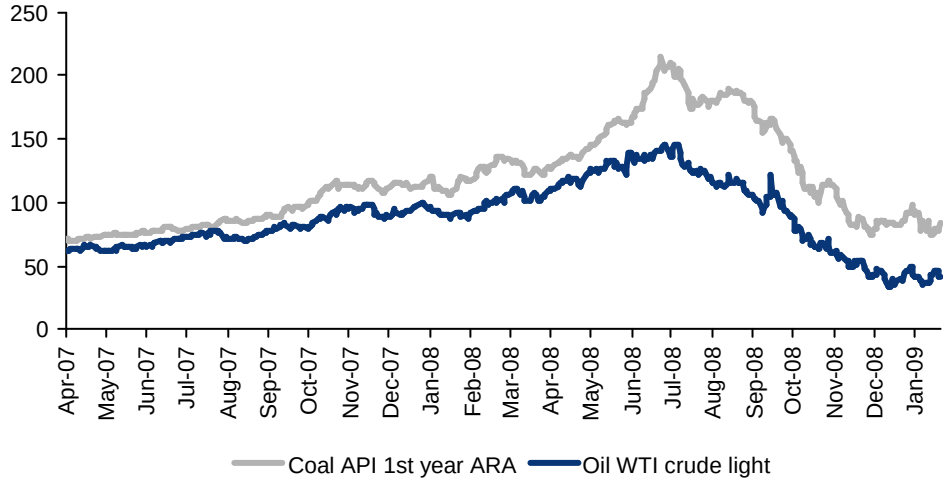


Source: Datastream

Dropping prices for oil and coal as well as for CO2 certificates…

The reason for the dropping prices is the declining electricity demand on one side and decreasing prices of oil, natural gas, coal and CO2 certificates on the other. At the beginning of July, the price for oil (WTI crude light) exceeded USD 145, while at the end of last year, the oil price fell below the USD 40 mark. The development of coal prices shows a similar picture. In July, the price for API 1st year surpassed the USD 200 mark. In January 2009, coal prices dropped below USD 80. In addition, prices of CO2 certificates (for the second allocation period) declined significantly (to below EUR 12), due to falling industrial production in Europe.

Oil and coal price development



Source: Reuters

…leading to lower entrant costs

As a consequence, electricity prices can be determined by the entrant costs of building new generation capacities (or replacing old capacities). The calculation of the current entrant costs shows clearly that the actual electricity prices are justified.

Entrant costs of thermal plants

Hard Coal		CCGT	
Standard size (MW)	750	Standard size (MW)	425
Load hours new plants	7,500	Load hours new plants	5,000
Efficiency of power plant (%)	46.2	Efficiency of power plant (%)	58.6
Caloric value (MWh/t)	7.5	Gas price per MWh	21.7
Price/t (USD)	85.0		
USD/EUR	1.32		
Fuel costs (EUR/MWh)	**18.6**	**Fuel costs (EUR/MWh)**	**37.0**
CO2 costs (EUR/t)	12.1	CO2 costs (EUR/t)	12.1
CO2 emissions (t/MWh)	0.8	CO2 emissions (t/MWh)	0.4
CO2 costs (EUR/MWh)	**9.7**	**CO2 costs (EUR/MWh)**	**4.8**
Other variable costs (EUR/MWh)	**0.5**	**Other variable costs (EUR/MWh)**	**0.2**
Total fuel costs	**28.8**	**Total fuel costs**	**42.1**
Maintenance cost (EUR/MW)	26,000	Maintenance cost (EUR/MW)	14,000
Staff cost (EUR/MW)	7,600	Staff cost (EUR/MW)	5,000
Overheads	20%	Overheads	20%
Operating costs (EUR/MW)	40,320	Operating costs (EUR/MW)	22,800
Operating costs (EUR/MWh)	**5.4**	**Operating costs (EUR/MWh)**	**4.6**
Costruction costs	1,000,000,000	Costruction costs	300,000,000
WACC	8.0%	WACC	8.0%
Capital costs	80,000,000	Capital costs	24,000,000
Capital costs (EUR/MWh)	**14.2**	**Capital costs (EUR/MWh)**	**11.3**
Total costs	**48.4**	**Total costs**	**57.9**

Source: Erste Group estimates

New assumptions

We assume low electricity prices until 2010

Against the background of electricity prices at their lowest level since 2005, we have to revise our estimates for electricity prices for the coming years. We assume that electricity prices will remain at a very low level until 2010 (baseload EUR 55/MWh and peakload EUR 75/MWh). For 2011, we estimate that both prices for baseload and peakload will increase by some EUR 5/MWh (to EUR 60 for baseload and EUR 80 for peakload). For 2012, we estimate another increase in electricity prices to EUR 65 for baseload and EUR 90 for peakload.

Electricity price assumptions

	2004	2005	2006	2007	2008	2009e	2010e	2011e	2012e
FY Base	28.1	33.5	41.2	55.0	55.9	69.9	55.0	60.0	65.0
FY Peak	43.6	49.1	56.3	81.0	79.5	98.9	75.0	80.0	90.0
FQ Base	32.6	39.6	55.2	46.9	70.7	55.0	55.0	60.0	65.0
FQ Peak	47.6	53.7	77.8	71.8	97.5	75.0	75.0	80.0	90.0
Spot Base	31.2	50.6	57.0	40.9	70.6	55.0	55.0	60.0	65.0
Spot Peak	37.7	63.1	73.3	52.7	86.0	75.0	75.0	80.0	90.0
Average price relevant for Verbund	**31.9**	**40.5**	**49.0**	**56.0**	**64.8**	**70.7**	**59.0**	**64.0**	**70.0**

Historical prices
Erste Bank estimates

Source: Erste Group estimates

Earnings forecast FY08

EBIT 08 forecast of EUR 1.1bn

In an interview, new Verbund CEO Wolfgang Anzengruber reiterated that he expects 2008 operating profit of EUR 1.1bn, which is basically still in line with our estimates. The operating business of Verbund should be very strong and the decline in electricity prices should not be relevant for 2008. However, Verbund already reported in its 1-3Q08 figures some negative one-offs coming from the impairment of securities in the amount of EUR 25mn. We think that 4Q08 could bring additional impairments, due to the turmoil on the financial markets. Consequently, we lower our EPS estimate for 2008 to EUR 2.29 (instead of EUR 2.43).

Full impact of lower electricity prices in 2010

Declining EBIT for 2010 expected

Anzengruber said that, for 2009, the company's goal is to reach the same level of earnings quality as in 2008. However, we think that this is a conservative approach and are still confident that Verbund will be able to present another set of record figures for 2009. Looking at the high average achieved contract prices for 2009 capacities (already sold in 2008), Verbund has an excellent base for EBIT surpassing EUR 1.2bn. The lower spot prices will – of course – have a negative impact on the company's EBIT line, which results also in slightly lower estimates from our side. For 2009, we assume EPS of EUR 2.49 (instead of EUR 2.86). We expect fiscal year 2010 to be difficult for Verbund. Given the current electricity price levels (which we do not expect to change until 2010), we do not think that Verbund has a chance to present another record result. We expect the operating result in 2010 to reach the level of 2007. Thus, the bottom line will come in significantly below those of 2008 and 2009. We therefore significantly cut our EPS estimate from EUR 3.19 to EUR 1.95 for 2010. For 2011, we estimate EPS at EUR 2.49, meaning a return to the level of 2009.

Valuation

New target price: EUR 43, Buy recommendation reiterated

We have extended the period under consideration for our model until 2013. As already mentioned, we have significantly lowered our assumptions regarding electricity prices. This applies also for our terminal value assumptions, which now include electricity prices for baseload and peakload of EUR 65 and EUR 90/MWh, respectively, instead of EUR 75 and EUR 110/MWh, respectively. We have also reduced the terminal value growth rate to 2.0% (from 2.5%). However, this growth rate should still reflect the enormous investment program of Verbund (EUR 6.7bn until 2015), which will fully pay off beyond 2015. We derive a new target price of EUR 43 and therefore reiterate our Buy recommendation.

DCF Valuation (EUR mn)	2009e	2010e	2011e	2012e	2013e
EBIT	1,223.7	912.4	1,145.4	1,441.4	1,428.9
- Taxes on EBIT	-305.9	-228.1	-286.4	-360.3	-357.2
+ Depeciation/amortization	194.8	207.8	216.9	225.2	226.0
+/- Changes in provisions and deferred taxes	32.9	34.1	35.3	36.5	37.8
+/- Change in working capital	-5.3	-38.1	-4.0	-4.8	-5.4
Operating cash flow	1,140.2	888.1	1,107.3	1,338.1	1,330.2
- Capital expenditures	-1,141.9	-982.6	-823.6	-365.9	-233.7
Free cash flow	-1.7	-94.6	283.7	972.2	1,096.4
Terminal value					17,198.8
Total free cash flow	-1.7	-94.6	283.7	972.2	18,295.3
Discounted free cash flow	-1.6	-81.3	226.1	718.3	751.0
Discounted terminal value cash flow					11,436.7
Enterprise value					13,049.2
Net debt incl. social capital (Dec. 2008)					2,112.1
Equity value (Dec. 2008)					10,937.2
Book value of at-equity consolidated companies (Dec. 2008)					1,569.1
Minorities (Dec. 2008)					-364.8
Net present value (Dec. 2008)					12,141.5
Number of shares (mn)					308.2
Net present value per share (Dec. 2008)					39.4
DCF value per share as of February 2010 (EUR)					**43.0**

Source: Erste Group estimates

WACC Calculation		WACC - perpetuity	
		TV Growth	2.0%
Risk-free rate	4.2%	Risk-free rate	5.0%
Premium to equity	4.5%	Premium to equity	4.5%
Beta	0.95	Beta	0.95
Cost of equity	8.5%	Cost of equity	9.3%
Cost of debt	5.0%	Cost of debt	5.5%
Effective tax rate (%)	25.0%	Effective tax rate (%)	25.0%
After-tax cost of debt (%)	3.8%	After-tax cost of debt (%)	4.1%
Equity weight (%)	87.0%	Equity weight (%)	85.0%
Debt weight (%)	13.0%	Debt weight (%)	15.0%
WACC	**7.9%**	**WACC**	**8.5%**

Source: Erste Group estimates

Sensitivity analysis (as of Feb. 2010)

Net present value per share					
TV growth \ WACC	7.5%	8.0%	8.5%	9.0%	9.5%
1.0%	44.5	40.7	37.3	34.4	31.8
1.5%	48.3	43.8	40.0	36.7	33.8
2.0%	52.7	47.4	43.0	39.3	36.1
2.5%	58.0	51.8	46.6	42.3	38.6
3.0%	64.4	57.0	50.9	45.8	41.6

Source: Erste Group estimates

Peer group comparison

	Coun-try	Price	No of shares (mn)	Market cap.	EV/EBITDA				EV/EBIT			
					08e	09e	10e	11e	08e	09e	10e	11e
E.ON AG	Germany	25.2	2,001	50,505	6.3 x	5.5 x	5.4 x	5.0 x	8.5 x	7.4 x	7.1 x	6.4 x
RWE AG	Germany	60.9	557	33,886	4.4 x	4.4 x	4.2 x	4.6 x	5.5 x	5.4 x	5.4 x	5.9 x
Iberdrola SA	Spain	6.1	5,002	30,414	8.6 x	7.5 x	7.4 x	7.1 x	12.4 x	10.7 x	10.6 x	9.9 x
ENEL SPA	Italy	4.4	6,186	27,189	5.5 x	5.3 x	5.1 x	5.1 x	7.8 x	7.6 x	7.5 x	7.4 x
Electricite de France	France	38.3	1,822	69,707	6.3 x	5.1 x	4.9 x		10.4 x	7.9 x	7.4 x	
Fortum Corporation	Finland	15.3	888	13,565	8.0 x	7.7 x	8.0 x	7.2 x	10.0 x	9.7 x	10.0 x	8.4 x
Union Fenosa SA	Spain	17.6	914	16,105	9.8 x	9.1 x	8.4 x	8.0 x	13.4 x	12.7 x	11.5 x	11.1 x
zMedian Peer					6.3 x	5.5 x	5.4 x	6.1 x	10.0 x	7.9 x	7.5 x	7.9 x
zMedian Stoxx Utilities					8.7 x	7.4 x	7.1 x	7.1 x	11.6 x	10.2 x	9.9 x	9.4 x
Verbund (Osterr Elek)	Austria	30.0	308	9,237	9.0 x	8.7 x	11.5 x	9.7 x	10.4 x	10.0 x	14.1 x	11.5 x

	P/E				ROE				EBIT margin			
	08e	09e	10e	11e	08e	09e	10e	11e	08e	09e	10e	11e
E.ON AG	8.7 x	7.8 x	7.0 x	6.6 x	11.2%	12.0%	12.5%	10.8%	12.3%	12.8%	13.6%	12.3%
RWE AG	9.6 x	8.5 x	7.5 x	7.2 x	26.7%	26.6%	26.3%	22.4%	14.4%	14.9%	15.2%	15.3%
Iberdrola SA	10.7 x	10.5 x	10.5 x	9.5 x	10.3%	10.1%	9.7%	10.4%	20.7%	21.7%	20.2%	22.5%
ENEL SPA	6.2 x	6.8 x	6.9 x	6.5 x	19.9%	17.7%	16.5%	16.5%	17.7%	17.2%	17.2%	17.1%
Electricite de France	14.9 x	13.0 x	11.2 x	8.0 x	16.3%	17.2%	18.2%	22.7%	14.6%	17.0%	17.9%	19.3%
Fortum Corporation	9.9 x	9.7 x	10.2 x	9.1 x	16.1%	15.7%	14.0%	14.4%	34.9%	35.1%	33.6%	34.7%
Union Fenosa SA	17.4 x	17.9 x	16.1 x	14.9 x	16.6%	14.7%	16.1%	16.2%	22.9%	24.2%	24.7%	24.1%
zMedian Peer	9.9 x	9.7 x	10.2 x	8.0 x	16.3%	15.7%	16.1%	16.2%	14.4%	14.9%	15.2%	15.3%
zMedian Stoxx Utilities	12.4 x	10.8 x	10.3 x	9.5 x	16.2%	15.7%	15.1%	13.5%	17.1%	20.1%	19.4%	20.8%
Verbund (Osterr Elek)	13.1 x	12.0 x	15.3 x	12.0 x	25.9%	26.9%	25.1%	17.8%	30.2%	32.0%	33.1%	28.9%

Source: FactSet, Erste Group estimates, prices as of Jan. 30, 2009

The power of Verbund

Leading hydropower player in Europe

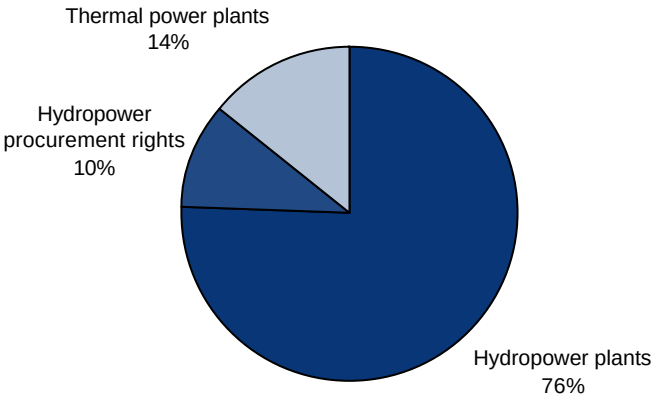
Verbund is Austria's largest electricity producer and one of the leading hydropower players in Europe. Verbund (Österreichische Elektrizitätswirtschafts-AG) is the operative management holding of the group, which is fully vertically integrated. The company's main asset is the production unit **AHP (Austrian Hydro Power)** with 90 hydropower plants generating a total bottleneck capacity of 6,158 megawatts and an average annual standard output of 22.785bn KWh. The second production unit is **ATP (Austrian Thermal Power)** which owns eight power plants. At the moment, ATP is running three plants, Dürnrohr (hard coal), Mellach (hard coal) and Neudorf-Werndorf 2 (Gas/Oil) with a total capacity of 815 megawatts and an annual output of around 4bn KWh electricity and 900mn KWh thermal energy, while four plants are currently conserved and one plant is leased. In 2007, the company formed its third generation unit, **ARP (Austrian Renewable Power)**. ARP is responsible for the group's renewable energies activities including wind power, biomass, photovoltaics and geothermal power. ARP currently operates three wind parks in Lower Austria and two photovoltaic power plants in Spain.

Verbund also – via its subsidiary **APG (Austrian Power Grid)** – operates Austria's largest supra-regional high-voltage grid network with voltage levels of 380 KV, 220 KV and 110 KV. In 2007, the total grid length was 6,521 km. The transmission capacity amounted to 36,977 GWh. Another subsidiary, **APT (Austrian Power Trading)**, is responsible for marketing the group's generation and the supply of Verbund's customers. APT is trading on the European electricity exchanges as well as OTC. Since 2005, Verbund has also directly sold electricity to end customers. Therefore, **APS (Austrian Power Sales)** was founded. Since 2006, APS has been responsible for the electricity supply to industrial customers.

Highly attractive production mix: 86% hydropower

Verbund has a highly attractive production mix. In 2007, Verbund's hydropower plants generated 21,406 GWh while additional procurement rights for 20 run-of-river plants (including the hydropower plants of Ennskraftwerke AG, the Österreichisch-Bayrische Kraftwerke AG, the Donaukraftwerke Jochenstein AG and E.ON Wasserkraft GmbH) contributed another 2,915 GWh. Supplemented by 3,986 GWh thermal power, Verbund produced 28,307 GWh in 2007, out of which 86% was hydropower-based. Thus, Verbund is one of the purest hydropower players in Europe.

Verbund's generation mix



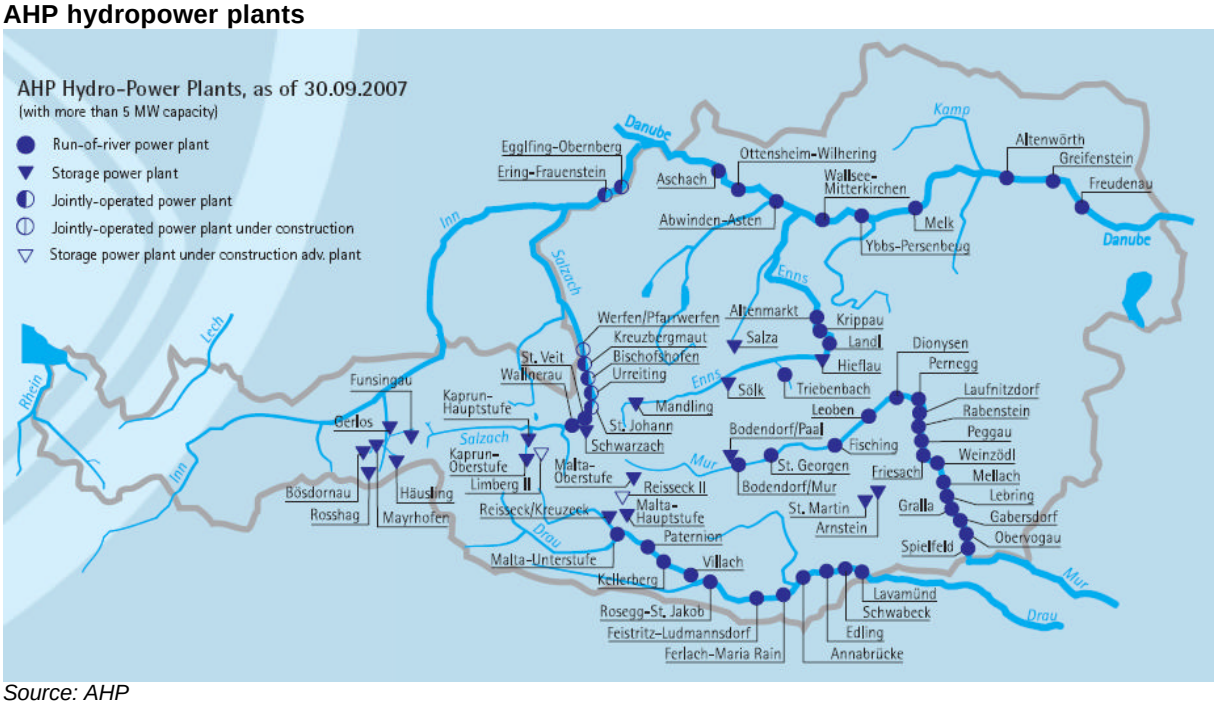
Source: Verbund

Austrian Hydro Power – Verbund's heart

AHP – Verbund's valuable asset

AHP is the competence center for hydropower in the Verbund group, setting up, operating and maintaining Verbund's hydropower plants. With its 90 hydropower plants in seven provinces of Austria and a bottleneck capacity of 6,156 MW, AHP has a pro-rata standard capacity of 21,686 GWh.

AHP hydropower plants



Source: AHP

AHP is operating 62 100% owned run-of-river plants, while six 50% owned plants are operated externally and one (non-owned) plant is just operated. The nine big plants along the Danube represent the backbone of Austria's baseload supply and contribute half of AHP's generation output. Electricity production depends on the water level of the rivers. Usually, run-of-river plants produce more electricity in summer than in winter. AHP's run-of-river plants' utilization rate amounts to 63.0%

Run-of-river plants overview

Facility	River area	BC (MW)	SC (GWh)	Utilization
Altenwörth	Danube	328	1,968	68.5%
Greifenstein	Danube	293	1,717	66.9%
Aschach	Danube	287	1,617	64.2%
Ybbs-Persenbeug	Danube	237	1,336	64.5%
Wallsee-Mitterkirchen	Danube	210	1,319	71.7%
Melk	Danube	187	1,222	74.6%
Ottensheim-Wilhering	Danube	179	1,135	72.4%
Freudenau	Danube	172	1,052	69.8%
Abwinden-Asten	Danube	168	996	67.7%
Annabrücke	Drau	90	390	49.5%
Feistritz-Ludmannsdorf	Drau	88	354	45.9%
Edling	Drau	87	407	53.4%
Obernberg-Egglfing	Inn	81	485	68.6%
Rosegg-St. Jakob	Drau	80	338	48.2%
Schwabeck	Drau	79	378	54.6%
Ferlach-Maria Rain	Drau	75	318	48.4%
Ering-Frauenstein	Inn	73	438	68.5%
28 run-of-river plants between 10 MW and 50 MW		536	2,530	53.9%
24 run-of-river plants less than 10 MW		58	269	53.0%
Total		**3,308**	**18,269**	**63.0%**

Source: AHP

AHP also runs 21 storage power plants with a total capacity of 1,229 MW and an output of annually 2,993 GWh as well as six annual reservoirs with storage pumps with a bottleneck capacity of 1,621 MW and an annual standard capacity of 1,523 GWh. The storage generation capacities are Verbund's very valuable peakload assets. The average utilization is 27.8% for storage power plants and 10.7% for the pumping facilities.

Storage power plants

Facility	River area	BC (MW)	SC (GWh)	Utilization
Malta-main stage*	Drau	730	715	11.2%
Häusling*	Ziller	360	179	5.7%
Mayrhofen	Ziller	345	671	22.2%
Kaprun-main stage	Salzach	240	505	24.0%
Roßhag*	Ziller	231	313	15.5%
Gerlos	Ziller	200	320	18.3%
Schwarzach	Salzach	120	482	45.9%
Malta-upper stage*	Drau	120	76	7.2%
Kaprun-upper stage*	Salzach	113	166	16.8%
Reißeck annual reservoir*	Drau	68	73	12.3%
Hieflau	Enns	63	284	51.5%
Sölk	Enns	61	206	38.6%
Kreuzeck daily reservoir	Drau	45	163	41.3%
Arnstein	Mur	30	50	19.0%
Bodendorf-Paal	Mur	27	86	36.4%
Bösdornau	Ziller	25	69	31.1%
Funsingau	Ziller	25	27	12.3%
Reißeck daily reservoir	Drau	23	62	30.5%
3 storage plants less than 10 MW		24	68	31.6%
Total		**2,850**	**4,516**	**18.1%**

* Annual reservoirs with storage pumps

Source: AHP

Verbund is still expanding its hydro capacities. By 2015, the company is going to install 900 MW storage capacity as well as 150 MW run-of-river in Austria. In CEE/SEE (excl. Verbund's joint venture in Turkey), the company plans to build hydropower plants with a capacity of 1,200 MW.

Focus on renewable energies

First investments into wind power and photovoltaic

Verbund is also focusing on other renewable energy sources. Therefore, the company founded its subsidiary ARP (Austrian Renewable Power). ARP plans (partly in cooperation with partners) to purchase, construct and operate 400 MW of additional generation capacities by 2015.

At the moment, ARP operates three wind parks in Austria and two photovoltaic power plants in Spain. The three wind parks are located in the district of Bruck an der Leitha in Lower Austria. Altogether, 25 power plants with a total installed capacity of 49 MW are generating annually 105 GWh and are therefore able to supply some 29,000 average Austrian households with wind power.

In Spain, ARP acquired two photovoltaic power plants in 2008. Mercadillio is located in the province of Jaén near Granada and has a capacity of 2 MW. 11,000 photovoltaic modules produce an annual output of 3.7 GWh. Macael with 5,000 modules is situated near Mercadillo and has a capacity of 1 MW and an annual output of some 1.5 GWh. The photovoltaic modules are produced by the Austrian company KIOTO Clear Energy.

Activities in Italy, France and Turkey

Focus also on renewables in Italy,…

In Italy, Verbund's joint venture **Sorgenia** has ambitious plans to reach a target of 1,100 MW wind capacities and 50 MW solar capacities by 2015. In Italy, several wind farms are under construction or under development. Sorgenia is optimistic to reach a capacity of 450 MW in Italy by 2012. The overall CAPEX is planned to be EUR 663mn, which translates into 1.5 EURmn/MW. In December 2007, Sorgenia acquired Societe Francaise d'Eoliennes (SFE). SFE has an installed capacity of 100 MW and additional 39 MW authorized.

Sorgenia already has two CCGTs operating with installed capacities of 770 MW (Termoli) and 800 MW (Modugno) as well as a 39% stake in Tirreno Power with an installed capacity of 2,900 MW. Two additional CCGTs (Bertonico-Turano Lodigiano and Aprilia with each 770 MW)

are under construction/development. In addition the company has – partly via its Tirreno Power stake – hydro capacities of 70 MW.

…Turkey… Verbund's joint venture in Turkey, **Enerjisa,** has an installed capacity of 450 MW. Verbund and Sabanci aim to become the market leader in Turkey and therefore are planning to build up at least 5,000 MW by 2015. The construction of the first two of a potential nine hydropower plants will be commenced soon. In the Adana region in the south of Turkey on the Seyhan River, Enerjisa will build a 180 MW storage plant. Also in the south of Turkey, in the Kahramanmara region, a 142 MW run-of-river plant will be built. Enerjisa is also going to build a 920 MW gas power plant in Bandirma on the south coast of Lake Marmara in northwest Turkey. It will be erected by a consortium of Mitsubishi Heavy Industries and Austria's A-TEC Power Plant System.

…and France In France, Verbund's joint venture **Poweo** already has six wind farms in operation with a total capacity of 65 MW. Another 12 MW are in construction, while in total 476 MW are under development (out of which 56 MW authorized or in permitting phase and 264 in advanced development). In addition, Poweo has several other projects in the pipeline including photovoltaic installations (some 100 MW), small hydro (20 MW) and biomass (80 MW) as well as offshore wind power (500 MW).

Poweo is currently building one CCGT plant in Pont-sur-Sambre (412 MW). Two other CCGTs are categorized as mature projects (in total 1,260 MW). Several other thermal projects totaling 2,160 MW are in the pipeline.

Sector Report – Renewable energy

Income Statement	**2005**	**2006**	**2007**	**2008e**	**2009e**	**2010e**
(IAS, EUR mn, 31/12)	31/12/2005	31/12/2006	31/12/2007	31/12/2008	31/12/2009	31/12/2010
Net sales	**2,134.35**	**2,878.19**	**3,038.34**	**3,509.64**	**3,697.50**	**3,157.88**
Invent. changes + capitalized costs	0.00	0.00	0.00	0.00	0.00	0.00
Total revenues	**2,134.35**	**2,878.19**	**3,038.34**	**3,509.64**	**3,697.50**	**3,157.88**
Other operating revenues	108.14	66.12	52.56	54.14	55.76	57.43
Material costs	-1,024.72	-1,501.51	-1,556.65	-1,803.64	-1,861.32	-1,602.78
Personnel costs	-343.48	-276.38	-262.01	-275.11	-286.11	-297.56
Other operating expenses	-167.07	-182.55	-173.17	-180.10	-187.30	-194.80
EBITDA	**707.21**	**983.86**	**1,099.07**	**1,304.93**	**1,418.52**	**1,120.19**
Depreciation/amortization	-180.16	-177.41	-182.94	-181.32	-194.77	-207.79
EBIT	**527.05**	**806.45**	**916.13**	**1,123.61**	**1,223.75**	**912.40**
Financial result	-19.52	-20.12	-33.74	-74.21	-85.99	-39.43
Extraordinary result	0.00	0.00	0.00	0.00	0.00	0.00
EBT	**507.53**	**786.33**	**882.40**	**1,049.39**	**1,137.76**	**872.96**
Income taxes	-105.44	-177.59	-217.25	-245.77	-267.65	-183.68
Result from discontinued operations	0.00	0.00	0.00	0.00	0.00	0.00
Minorities and cost of hybrid capital	-41.96	-107.69	-85.97	-97.59	-103.54	-87.30
Net result after minorities	**360.13**	**501.06**	**579.18**	**706.03**	**766.58**	**601.99**

Balance Sheet	**2005**	**2006**	**2007**	**2008e**	**2009e**	**2010e**
(IAS, EUR mn, 31/12)						
Intangible assets	8.60	7.99	11.02	11.69	12.25	12.08
Tangible assets	4,044.49	4,068.91	4,131.97	4,366.07	4,938.14	5,550.33
Financial assets	1,954.87	1,797.52	2,180.30	2,757.91	3,205.47	3,464.10
Total fixed assets	**6,007.96**	**5,874.42**	**6,323.29**	**7,135.67**	**8,155.86**	**9,026.51**
Inventories	26.85	52.21	48.81	47.35	48.77	82.91
Receivables and other current assets	532.18	425.59	637.56	796.95	812.88	829.14
Other assets	0.00	0.00	0.00	0.00	0.00	0.00
Cash and cash equivalents	29.70	87.97	330.12	150.00	150.00	150.00
Total current assets	**588.72**	**565.77**	**1,016.49**	**994.29**	**1,011.65**	**1,062.05**
TOTAL ASSETS	**6,596.68**	**6,440.19**	**7,339.78**	**8,129.96**	**9,167.51**	**10,088.56**
Shareholders'equity	**1,723.24**	**2,071.08**	**2,407.46**	**2,836.11**	**3,263.66**	**3,495.81**
Minorities	**242.28**	**329.23**	**267.17**	**364.76**	**468.30**	**555.60**
Hybrid capital and other reserves	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Pension and other LT personnel accruals	637.65	624.75	619.98	644.78	670.57	697.39
Other LT provisions	0.00	0.00	0.00	0.00	0.00	0.00
Interest-bearing LT debts	2,094.20	1,448.95	2,209.73	1,885.39	1,636.09	1,684.31
Other LT liabilities	853.03	857.78	850.29	798.44	787.53	776.94
Total long-term liabilities	**2,947.23**	**2,306.73**	**3,060.01**	**2,683.83**	**2,423.62**	**2,461.25**
Interest-bearing ST debts	300.11	438.85	376.77	760.99	1,485.07	2,005.09
Other ST liabilities	746.17	669.55	608.40	839.50	856.29	873.42
Total short-term liabilities	**1,046.28**	**1,108.40**	**985.17**	**1,600.49**	**2,341.36**	**2,878.51**
TOTAL LIAB. , EQUITY	**6,596.68**	**6,440.19**	**7,339.78**	**8,129.96**	**9,167.51**	**10,088.56**

Cash Flow Statement	**2005**	**2006**	**2007**	**2008e**	**2009e**	**2010e**
(IAS,EUR mn, 31/12)						
Cash flow from operating activities	680.54	753.86	807.63	1,013.96	1,047.64	826.88
Cash flow from investing activities	-83.20	-514.04	-646.57	-927.56	-1,141.88	-982.62
Cash flow from financing activities	-579.91	-181.55	81.09	-266.52	94.24	155.74
CHANGE IN CASH , CASH EQU.	**17.43**	**58.27**	**242.15**	**-180.12**	**0.00**	**0.00**

Margins & Ratios	**2005**	**2006**	**2007**	**2008e**	**2009e**	**2010e**
Sales growth	5.6%	34.9%	5.6%	15.5%	5.4%	-14.6%
EBITDA margin	33.1%	34.2%	36.2%	37.2%	38.4%	35.5%
EBIT margin	24.7%	28.0%	30.2%	32.0%	33.1%	28.9%
Net profit margin	18.8%	21.2%	21.9%	22.9%	23.5%	21.8%
ROE	22.6%	26.4%	25.9%	26.9%	25.1%	17.8%
ROCE	10.1%	14.2%	14.7%	15.8%	15.0%	11.0%
Equity ratio	29.8%	37.3%	36.4%	39.4%	40.7%	40.2%
Net debt	1,682.7	1,448.9	1,892.0	2,112.1	2,565.8	3,111.9
Working capital	-457.6	-542.6	31.3	-606.2	-1,329.7	-1,816.5
Capital employed	4,501.2	4,707.0	5,416.9	6,111.4	7,085.3	7,940.3
Inventory turnover						

Source: Company data, Erste Group estimates

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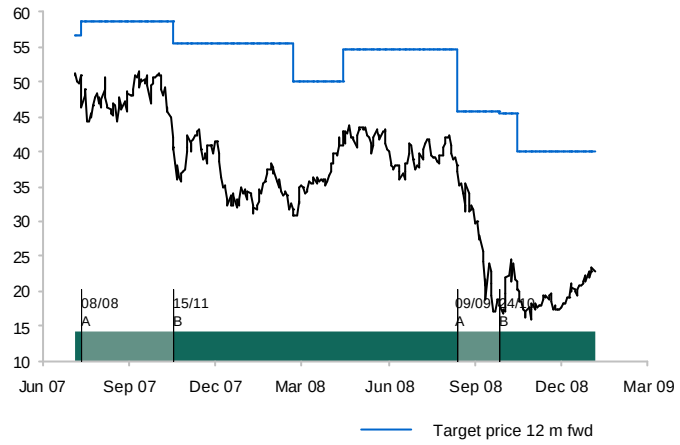
Andritz

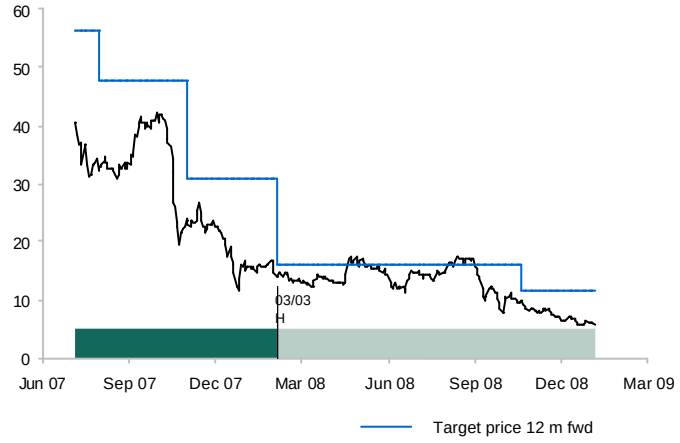


Rating history

Date	Rating	Price	Target Price
24. Oct 08	Buy	18.00	45.40
09. Sep 08	Accumulate	38.09	45.80
15. Nov 07	Buy	40.65	55.50
08. Aug 07	Accumulate	50.75	58.50
09. Nov 06	Buy	35.87	42.50
08. Aug 06	Accumulate	31.50	38.00
10. May 06	Hold	37.40	42.00
26. Apr 06	Accumulate	34.09	37.15
14. Nov 05	Buy	20.91	25.00
10. Aug 05	Accumulate	19.39	21.50
12. Mar 03	Buy	5.38	7.00

Company	Disclosure
Andritz	2

A-Tec

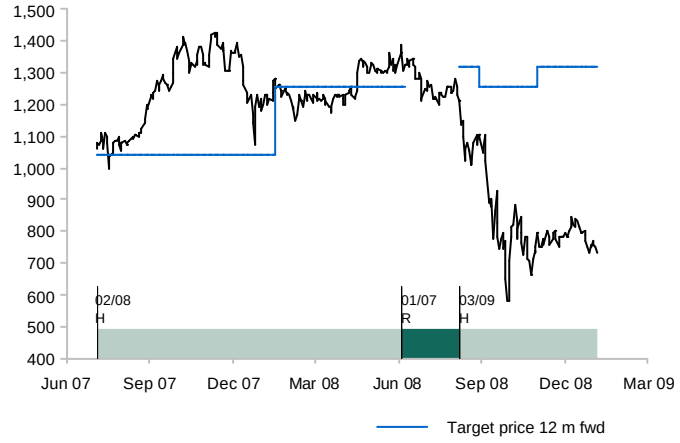


Rating history

Date	Rating	Price	Target Price
03. Mar 08	Hold	14.01	16.25
24. Mar 07	Buy	38.70	48.75
22. Feb 07	Hold	37.50	37.25
17. Jan 07	Accumulate	29.25	31.25

Company	Disclosure
A-Tec	2

CEZ

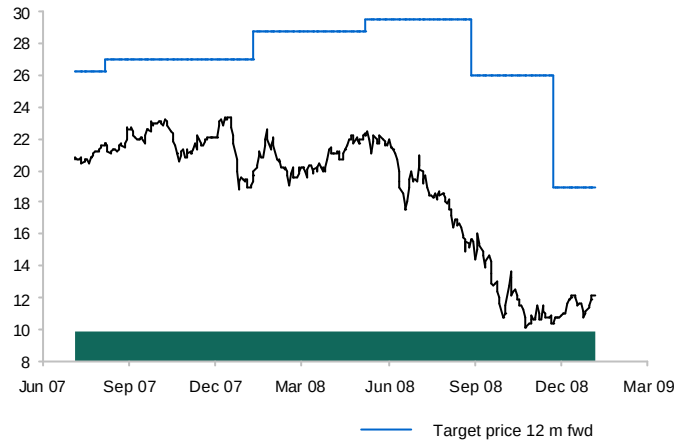


Rating history

Date	Rating	Price	Target Price
03. Sep 08	Hold	1214.00	1316.00
01. Jul 08	Restricted	1365.00	1255.00
22. Nov 06	Hold	935.20	873.00
07. Dec 05	Buy	698.20	873.00
06. Sep 05	Accumulate	644.20	754.00
21. Mar 05	Buy	380.60	490.00
09. Nov 04	Accumulate	284.10	328.00
18. Oct 04	Hold	258.70	237.00
02. Jun 04	Accumulate	188.10	212.00
03. Sep 03	Hold	135.64	
14. Jul 03	Buy	113.80	131.00

Company	Disclosure
CEZ	2, 3, 4

EVN

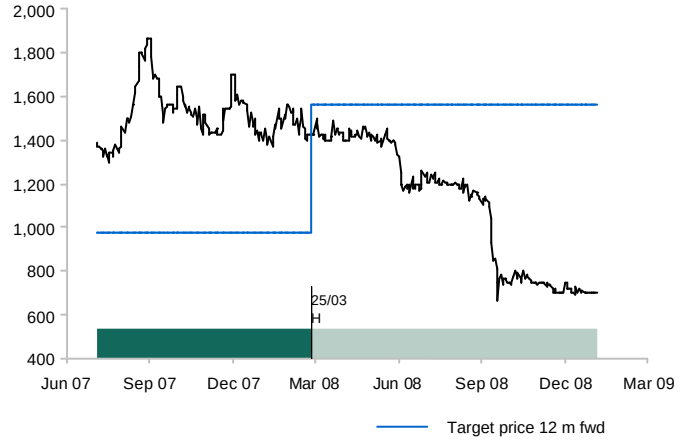


Rating history

Date	Rating	Price	Target Price
09. Jan 06	Buy	19.70	22.50
27. Sep 05	Hold	18.94	19.25
01. Feb 05	Buy	12.59	16.00
12. Sep 03	Hold	8.92	
13. Jun 03	Reduce	9.78	

Company	Disclosure
EVN	2

PannErgy



Rating history

Date	Rating	Price	Target Price
25. Mar 08	Hold	1420.00	1559.00
10. Oct 05	Buy	320.00	405.20
16. Feb 05	Hold	255.00	266.80
17. Sep 04	Accumulate	245.00	276.40
29. Mar 03	Hold	324.00	336.60

Company	Disclosure
PannErgy	

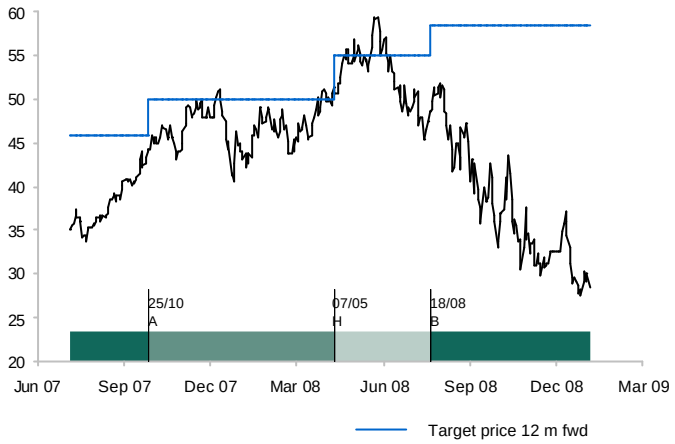
Polish Energy Partners

Rating history

Date	Rating	Price	Target Price

Company	Disclosure
Polish Energy Partners	

Verbund



Rating history

Date	Rating	Price	Target Price
18. Aug 08	Buy	48.55	58.50
07. May 08	Hold	51.43	55.00
25. Oct 07	Accumulate	44.27	50.00
19. Jun 06	Buy	34.66	42.00
02. Mar 06	Accumulate	37.94	42.00
24. Oct 05	Buy	25.30	30.00
05. Oct 05	Hold	29.01	30.00
18. Mar 05	Buy	17.50	21.50
27. Feb 04	Accumulate	12.00	13.20
29. Jul 03	Hold	8.30	

Company	Disclosure
Verbund	2

Important Disclosures

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Erste Group rating definitions

Buy	> +20% to target price
Accumulate	+10% < target price < +20%
Hold	0% < target price < +10%
Reduce	-10% < target price < 0%
Sell	< -10% to target price

Our target prices are established by determining the fair value of stocks, taking into account additional fundamental factors and news of relevance for the stock price (such as M&A activities, major forthcoming share deals, positive/negative share/sector sentiment, news) and refer to 12 months from now. All recommendations are to be understood relative to our current fundamental valuation of the stock. The recommendation does not indicate any relative performance of the stock vs. a regional or sector benchmark.

Distribution of ratings

	Coverage universe		Inv. banking-relationship	
Recommendation	**No.**	**in %**	**No.**	**in %**
Buy	32	26.4	4	33.3
Accumulate	18	14.9	1	8.3
Hold	40	33.1	4	33.3
Reduce	8	6.6	1	8.3
Sell	2	1.7	0	0.0
N.R./UND.REV./RESTR.	21	17.4	2	16.7
Total	**121**	**100.0**	**12**	**100.0**

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