

## EXTENDING THE USE OF RENEWABLE ENERGIES: SURVEY AMONGST SELECTED WEC MEMBER COMPANIES

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### KEY RESULTS

**In summary the survey amongst six global companies from the US, Germany and France identifies the following key messages to those who want to extend the use of renewable energies:**

- a) Geographical distribution of investments widespread, with emphasis on Germany and the US**
- b) Economic considerations predominate investments in renewable energies**
- c) Companies do not follow a strategy or structured approach to especially invest in renewable energies; similarly they do not provide incentives to invest in renewables**
- d) Overall, no single type of renewable energy is preferred to other types. This includes future scenarios.**
- e) Finding suitable renewable energy projects for company investment is a major difficulty**

Although the survey amongst the six global companies cannot be representative, the general trends as outlined above are overwhelmingly clear. Companies are only starting to follow a structured approach to extend their use of renewable energies. Although they see signs of economic benefits from renewables they generally do not promote their use internally. This is surprising as scientific research reveals the fundamental investments in renewables being made in all geographic regions. Economic incentives to invest in renewables can be found in the majority of countries.

Besides the absence of a structured approach to investing in renewables the second major finding of this evaluation is a confirmation of the fact that the geographic location of a site determines the type of renewable energy most suitable for an investment. The economic benefits are subject to either the physical conditions in the region or governmental incentives available.

### (1) INTRODUCTION

Extending the use of renewable energies is an option for global companies to reduce their business risk as a carbon restricted world is becoming more foreseeable. Companies are beginning to set ambitious targets for the near and mid-term future and are currently deciding where and how to invest.

AstraZeneca asked WEC to do a survey amongst selected WEC member companies to better understand existing strategies to extending the use of renewable energy on a global scale.

Six WEC member companies were asked to answer a questionnaire. 100% filled out the questionnaire.

- Bristol-Myers Squibb (US)
- Dow Chemical (US)
- Dupont (US)
- IBM (US)
- Merck KGaA (D)
- Sanofi-aventis (F)

In addition to these interviews WEC consulted the current state of scientific research to provide the basis for a legitimate interpretation of the survey.

#### Further References:

- German Wind Energy Association (BWE) (2011): New energy. Magazine for renewable energy (No.1/2011)
- German Wind Energy Association (BWE) (2011): Wind in power: 2010 European statistics.
- REN 21 (Renewable Energy Policy Network for the 21<sup>st</sup> Century) (2010): Renewables 2010. Global Status Report.
- Website Bloomberg New Energy Finance: [www.renewableenergyfocus.com/view/7166/global-clean-energy-investment-us145bn](http://www.renewableenergyfocus.com/view/7166/global-clean-energy-investment-us145bn) (February 9, 2010)
- Website Consumer Energy Report: [www.consumerenergyreport.com/2010/07/01/investing-in-todays-world-of-renewable-energy-competition](http://www.consumerenergyreport.com/2010/07/01/investing-in-todays-world-of-renewable-energy-competition) (July 1st, 2010)
- Website Jury group: [http://www.juwi.com/energy\\_mix/businesses.html](http://www.juwi.com/energy_mix/businesses.html) (April 19, 2011)

## **(2) METHODOLOGY OF THE SURVEY**

WEC created a survey of 10 questions in close collaboration with AstraZeneca and sent it to senior officials in the sustainability function of six selected WEC member companies in the period of March 21 – April 08, 2011. These companies were selected for fulfilling at least three of the following criteria:

- (a) pharmaceutical industry (value: AstraZeneca's industry)
- (b) global geographical distribution (value: information on different country approaches)
- (c) public image as a leader in renewable energy use (value: best practice learnings)
- (d) WEC member company (value: high rate of participation in survey)

WEC supplemented the survey results with recent scientific work on the topic, thereby putting the findings into a broader context.

All six companies approached completed the questionnaire. While the limited amount of companies involved in the survey does not allow for representative results, the goal of the survey was actually limited to identifying practical business approaches to extending the use of renewable energy in global companies.

## **(3) SCIENTIFIC RESEARCH: EXISTING MARKETS FOR RENEWABLE ENERGIES**

The overall picture that the scientific community has identified concludes that several significant factors are driving the growth potential for renewable energy. Amongst these are factors such as an understanding that (a) the cost of today's leading sources of energy will be rising; (b) fossil fuel sources are declining at an increasing rate; (c) environmental costs are on the verge of being accurately calculated when determining total cost; (d) fossil energy sources are increasingly being demanded from developing countries; (e) public awareness for climate change issues and causes are growing; (f) extraordinary investments in renewable energy is being made by governments, large corporations and the venture capital industry, and (g) investments are fueling the creation and development of a variety of very promising technologies.

The underlining message of these trends is the fact that independently from negotiations in the political arena nations, companies and investors are increasingly making use of the opportunities that renewable energies provide. The latest data from the renewables 2010 Global Status Report shows that for the second year in a row, more money was invested in new renewable energy capacity than in new fossil fuel capacity. Many renewables markets are growing at rapid rates in countries such as Argentina, Costa Rica, Egypt, Indonesia, Kenya, Tanzania, Thailand, Tunisia, and Uruguay, to name a few. Furthermore, developing countries now make up over half of all countries with policy targets (45 out of 85 countries) and also make up half of all countries with some type of renewable energy promotion policy (42 out of 83 countries).

We can also see that leadership is shifting decisively from Europe to Asia, with China, India, and South Korea among the countries that have stepped up their commitments to renewable energy. This shift is also reflected by the fact that industry is investing heavily in green energy. In 2009, China's industry produced 40 percent of the world's solar PV supply, 30 percent of the world's wind turbines (up from 10 percent in 2007), and 77 percent of the world's solar hot water collectors. Although the US and Brazil dominate global ethanol production (together they currently account for almost 90 percent), many new biofuels producers are especially coming up in Latin American countries like Argentina, Brazil, Colombia, Ecuador, and Peru.

And with at least 20 countries in the Middle East, North Africa, and sub-Saharan Africa more world regions have active renewable energy markets.

*But what does this mean for companies that want to invest in renewables?*

It means that they need to have a close look which countries are most attractive depending on the type of renewables. Or the other way around – companies that are located in a certain country and don't know yet in which type of renewable energy they want to invest should first look at country specific programs for certain types of energy. Furthermore, specialist consultancies and investors will be able to suggest the best type of renewable energy for specific sites.

The table below shows which top five countries attracted investments in different types of renewable energies such as wind, solar and biofuels in 2009.

<b>TOP FIVE COUNTRIES with investments into renewable energy</b>					
<b>Annual amounts for 2009</b>					
	No. 1	No. 2	No. 3	No. 4	No. 5
<b>New capacity investment</b>	Germany	China	United States	Italy	Spain
<b>Wind power added</b>	China	United States	Spain	Germany	India
<b>Solar PV added (grid-connected)</b>	Germany	Italy	Japan	United States	Czech Republic
<b>Solar hot water/heat added</b>	China	Germany	Turkey	Brazil	India
<b>Ethanol production</b>	United States	Brazil	China	Canada	France
<b>Biodiesel production</b>	France/Germany		United States	Brazil	Argentina

Source: REN 21 (2010)

#### (4) EVALUATION OF COMPANY RESPONSES

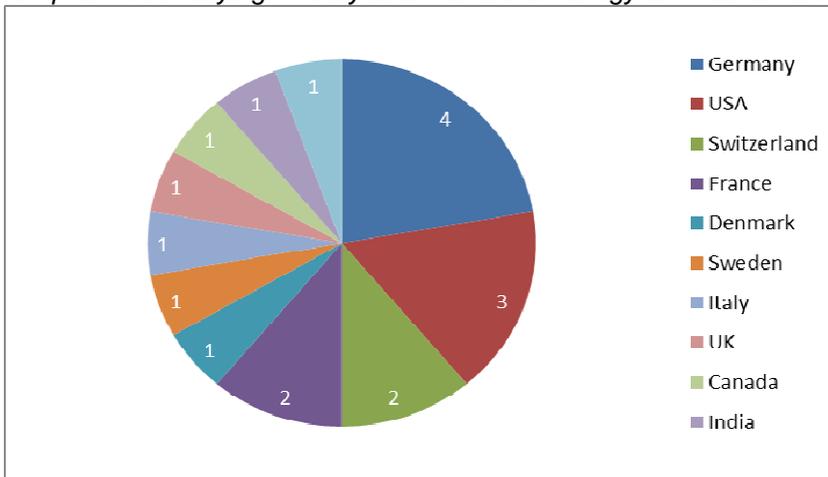
##### Types of renewables being used

All different types: Green electricity from the grid as well as company's own generation through wind, solar, geothermal, biomass, and water. Although not on the questionnaire, landfill gas was also mentioned by one company. Each of these types represents at least 1-10% of the total energy consumed by a company, verifying the value of analyzing the potential of each of them for each company. Biomass and wind energy are the only types that, according to one US-based company interviewed contribute already as much as 31-40% and 11-20% respectively to the total energy consumed.

##### Geographical distribution of renewables

Widespread: The geographical distribution of investments in renewables is widespread from several countries in Europe to the US and Canada as well as Brazil and India. Surprisingly, China is not amongst these yet. 66% of the companies interviewed source renewables in Germany, followed by 50% with renewables from the US. Asked for the reasons for this geographic distribution companies mentioned availability and costs.

*Responses identifying country with renewable energy investments from companies surveyed*



##### Structure of renewable energy investments

Mix of financial instruments: All companies use some mix of financial instruments such as buying green power from the grid, investments with one or multiple external generators or investments in own energy generation capacity.

##### Intention to increase the use of renewables

Lack of structured approach: Although all companies estimate that the use of renewables will play a greater role in the future there is a lack of a structured approach. To some extent this is due to a lack of clarification about how "green energy" shall ultimately be defined and the overall greenhouse gas emissions / emission factors related to them. Only one company has a target for the share of renewables to be used (in this case by 2050), which follows the strategic national plan of its country of origin. Four companies state that they continuously look at opportunities to increase the use of renewable energy but that they do not have formal targets in place. One company is currently not planning to increase the use of renewables – it rather puts all efforts in meeting a 2020 target to increase its energy efficiency.

##### The business drivers for use of renewable energies

Financial drivers predominate: Several business drivers have been identified by the survey. Interestingly, economic benefits have been stated by 2/3 of the companies and in addition half the companies also mentioned that securing their company's energy supply is a reason to invest in renewables. Marketing reasons have been mentioned by one company. 2/3 of the companies also mentioned environmental goals as an equivalent important incentive to use renewables – something less relevant since substantial targets hardly exist.

### **Approach to financing new renewable energy projects**

No favourable conditions: "Same as with all other investments" is the predominant response of the survey (80%). Not surprisingly, investments in renewables do not receive favourable conditions. This matches two observations from earlier questions in this survey: (a) There are hardly any targets to increase the use of renewables and (b) on a case by case approach economic benefits should speak for themselves. It has to be evaluated if this rather passive approach to extending the use of renewable energies is a risky business strategy (e.g. in the absence of aggressive energy efficiency targets) given the general observation that governments, financial markets and society in general are planning to build a carbon restricted world.

### **Technology to be used to increase use of renewable energy**

Business as usual: All companies expect to source their renewable energy from the many different kinds of technologies that they currently do. Further to the use of wind, solar, biomass, geothermal, water and green electricity purchase companies also mentioned waste to power and once also next generation nuclear power energy. Clearly there is no renewable energy that receives special attention.

### **Lessons learned from investments in renewable energy**

The difficulties of finding suitable projects: Half of the companies stated that it's a challenge to find projects that provide a satisfying return on investments or that make sense both economically and environmentally. The other half stated that they have hardly any experience with renewable energy investments so it's too early to provide an answer to the question.

## Annex: Renewable Energy Promotion Policies

Country	Feed-in tariff	Renewable Portfolio Standard/quota	Capital subsidies, grants, rebates	Investment or other tax credits	Sales tax, energy tax, excise tax, or VAT reduction	Tradable RE certificates	Energy production payments or tax credits	Net metering	Public investment, loans, or financing	Public competitive bidding
<b>EU-27</b>										
Austria	X		X	X		X			X	
Belgium		(*)	X	X	X	X		X		
Bulgaria	X		X						X	
Cyprus	X		X							
Czech Republic	X		X	X	X	X		X		
Denmark	X		X	X	X	X		X	X	X
Estonia	X		X		X		X			
Finland	X		X		X	X	X			
France	X		X	X	X	X			X	X
Germany	X		X	X	X			X	X	
Greece	X		X	X				X	X	
Hungary	X		X	X	X				X	X
Ireland	X		X	X		X				X
Italy	X	X	X	X	X	X		X	X	
Latvia	X				X				X	X
Lithuania	X		X	X	X				X	
Luxembourg	X		X	X	X					
Malta			X		X			X		
Netherlands			X	X	X	X	X			
Poland		X	X		X	X			X	X
Portugal	X		X	X	X				X	X
Romania		X			X	X			X	
Slovakia	X			X	X				X	
Slovenia	X		X	X	X	X			X	X
Spain	X		X	X	X	X			X	
Sweden		X	X	X	X	X	X		X	
United Kingdom	X	X	X		X	X			X	
<b>Other Developed/Transition Countries</b>										
Australia	(*)	X	X			X			X	
Belarus									X	
Canada	(*)	(*)	X	X	X			X	X	X
Israel	X				X					X
Japan	X	X	X	X		X		X	X	
Macedonia	X									
New Zealand			X						X	
Norway			X		X	X			X	
Russia			X			X				
Serbia	X									
South Korea	X		X	X	X				X	
Switzerland	X		X		X					
Ukraine	X									
United States	(*)	(*)	X	X	(*)	(*)	X	(*)	(*)	(*)

(For Renewable Energy Promotion Policies developing countries please see next page)

Source: REN 21 (2010): Renewables 2010. Global Status Report.

## Renewable Energy Promotion Policies (continued)

Country	Feed-in tariff	Renewable Portfolio Standard/quota	Capital subsidies, grants, rebates	Investment or other tax credits	Sales tax, energy tax, excise tax, or VAT reduction	Tradable RE certificates	Energy production payments or tax credits	Net metering	Public investment, loans, or financing	Public competitive bidding
<b>Developing Countries</b>										
Algeria	X			X	X					
Argentina	X		X	(*)	X		X		X	X
Bolivia					X					
Brazil				X					X	X
Chile		X	X	X	X				X	X
China	X	X	X	X	X		X		X	X
Costa Rica							X			
Dominican Republic	X		X	X	X					
Ecuador	X			X						
Egypt					X					X
El Salvador				X	X				X	
Ethiopia					X					
Ghana			X		X				X	
Guatemala				X	X					
India	(*)	(*)	X	X	X	X	X		X	
Indonesia	X			X	X					
Iran				X			X			
Jordan					X			X	X	
Kenya	X			X						
Malaysia									X	
Mauritius			X							
Mexico				X				X	X	X
Mongolia	X									X
Morocco				X	X				X	
Nicaragua	X			X	X					
Pakistan	X							X		
Palestinian Territories					X					
Panama							X			
Peru				X	X		X			X
Philippines	X	X	X	X	X		X	X	X	X
Rwanda									X	
South Africa	X		X		X				X	X
Sri Lanka	X									
Tanzania	X		X		X					
Thailand	X				X				X	
Tunisia			X		X				X	
Turkey	X		X							
Uganda	X		X		X				X	
Uruguay		X								X
Zambia					X					

Notes: Entries with an asterisk (\*) mean that some states/provinces within these countries have state/province-level policies but there is no national-level policy. Only enacted policies are included in table; however, for some policies shown, implementing regulations may not yet be developed or effective, leading to lack of implementation or impacts. Policies known to be discontinued have been omitted. Many feed-in policies are limited in scope or technology. Some policies shown may apply to other markets beside power generation, for example solar hot water and biofuels. Sources: See Endnote 235.

Source: REN 21 (2010): Renewables 2010. Global Status Report.