

Renewable Energy and Clean Technology – Tools for Regional Development

Renewable Energy and Clean Technology – Tools for Regional Development

Main messages from the Mid Sweden
conference 20-21 July 2009

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Nordregio 2009

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Nordic co-operation

takes place among the countries of Denmark, Finland, Iceland, Norway and Sweden, as well as the autonomous territories of the Faroe Islands, Greenland and Åland.

The Nordic Council

is a forum for co-operation between the Nordic parliaments and governments. The Council consists of 87 parliamentarians from the Nordic countries. The Nordic Council takes policy initiatives and monitors Nordic co-operation. Founded in 1952.

The Nordic Council of Ministers

is a forum of co-operation between the Nordic governments. The Nordic Council of Ministers implements Nordic co-operation. The prime ministers have the overall responsibility. Its activities are co-ordinated by the Nordic ministers for co-operation, the Nordic Committee for co-operation and portfolio ministers. Founded in 1971.

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2009

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Preface

Climate and environmental affairs are now among the top priorities for Europe, the United States and others around the world. These topics are also on the agenda during the Swedish EU-presidency during the second half of 2009.

In connection with the Swedish EU presidency, the county administrative boards and county councils of Jämtland and Västernorrland in Sweden organised a conference on the theme of “Renewable energy and clean-tech - Tools for Regional Development” in Östersund on 20-21 July.

The ambition of the conference was to bring together decision-makers, officials, entrepreneurs, leading eco-regions and SMEs in the field of regional development, renewable energy and clean-tech. More than 250 delegates, politicians, officials and businesses, from all over Europe attended the conference. The purpose of bringing together these important stakeholders was to elaborate on this new direction in the EU regional- and climate change policy. Another purpose was to agree on a position document containing concrete proposals for boosting local, regional, national and European sustainable regional development through innovation in renewable energies and clean technology. This document was communicated to the informal EU Council meeting in Åre, Sweden on the 23-24 July. The position document is attached to this report as an annex.

Keynote speakers at the conference included EU-Commissioner Mr. Pawel Samecki, State Secretary Mr. Jöran Hägglund, Mr. Andreas Gyllenhammar, SWECO, Mr. Siegfried Heise, Bavarian State Ministry of the Environment,, Ms. Soo-Jin Kim, OECD and Göran Carstedt, who is involved with the Clinton Climate Initiative. Speakers from different European eco-regions and representatives from SMEs also contributed to the conference. The conference was moderated by Mr. Tomas Kåberger, Director General of The Swedish Energy Agency.

The Mid-Sweden region contributes to the nation's energy supply through the provision of hydro power, wind power and biofuels. Current activity indicates that this contribution would be even greater if wind power and biofuels, for example, were used in a more efficient manner. Ambitious measures have also been initiated in order to save energy and find alternatives to fossil fuels. Many EU regions are discussing similar energy undertakings, thus amplifying the importance of providing a platform for benchmarking, knowledge exchange, the promotion of new ideas and policy development. This report brings together some of the main messages from the presentations made in the context of the meeting and the discussions that followed. The report was drafted and commended by Ole Damsgaard and Mitchell Reardon at Nordregio.

Main Messages and Conclusions

The regional level is imperative in the conception and delivery of future climate policy

Urgent need to act

Throughout the conference a number of speakers underlined that global climate change is a reality and well proven by scientific data. The potential impacts of climate change are however variable across the different parts of Europe and its regions.

The IPCC forecasts, moreover, may have underestimated the potential impact of climate change. The risk posed to fragile ecosystems has recently been illustrated by the dramatic loss of Arctic ice, an event that has been cogently forwarded as a major climate change tipping point.

Action therefore has to be taken immediately!

Climate policy and cohesion policy are interrelated

Increased use of renewable energy and clean technology will help the shift from our recent development model to a future low carbon economy and decouple economic growth from energy consumption. Investment in these sectors will at the same time be vital for the future competitiveness of Europe.

Climate policy, the development of renewable energy and cleantech enterprises and the European cohesion policy are in this context closely interrelated.

In order to successfully implement this strategy, the inclusion of the regional level in the implementation process is imperative because regions and municipalities are well placed to translate the EU- and national policy into practice and also to foster innovative practices and influence consumer behaviour as well.

The regional level is also becoming more important as we shift to renewable sources because of the local nature of many of these renewable energy sources. Renewable energy must be produced and sometimes also consumed where the resources are located.

To ensure that the EU-cohesion policy really can be used to deliver the needed actions, an amendment has been made to the so called ERDF-measures so that investments in energy efficiency and renewable energy are now eligible. Different sectors are addressed by the cohesion policy but with a strong focus on the SMEs.

The role of SMEs

SMEs and micro firms will play a key role in the shift towards a sustainable society because the solutions to the eco-challenges demand a myriad of ideas and numerous actors to carry them out. As it was noted during the discussions, while many of the SMEs in this field are likely to fail, numerous others will prove to be successful.

The SMEs however have to cope with various kinds of obstacles. Indeed, it has recently been highlighted that in many regions the financial sector has simply not provided the necessary level of development capital during the current financial crises. Therefore public actors – at the EU, national and regional level – should help SMEs to overcome such obstacles through regulations and by the use of policy programmes including various kinds of funding.

The successful firms will play a role in reducing the impact of climate change, while also driving the so called “green revolution”.

Comments concerning SMEs

Here it is important to underline the fact that it is not only new technical solutions that are necessary but also new ways of using well known technology. In addition to this new kinds of services may emerge. SMEs here again often play an important role as pioneers and forerunners

Another important point here is that this transition process where new and old technologies are used in different combinations demands a total shift in people's minds including a shift in their attitudes to how specific tasks should be solved. Besides the SMEs, non-governmental organisations (NGOs) also play an important role in this process.

The role of regions

The regional and local levels are important for climate change mitigation and for the development of clean technology and renewable energy. Regional development programmes and strategies can provide the right framework for renewable energy and cleantech development and at the same time support the development of new SMEs with funding and by facilitating the start up of the new small firms.

Local authorities are close to individual citizens and firms. They are thus in a good position to influence local

attitudes and behaviour concerning energy savings and the use of clean technology.

Comments concerning the regions

The emergence of the so-called 'green industry' can on the one hand provide a region with the initial competitive advantage it needs to gain the benefits of the expected cleantech explosion, particularly in response to the demands of the bigger markets. But on the other hand, a world wide clean technology race is to be expected so the competition will be hard and the individual region will have to rely on its own specific potentials and strengths.

The unique nature of every region demands that strategy and innovation must be developed at the regional and local levels. While regions can cooperate and learn a great deal from one another, it is unlikely that a strategy that was successful in one region could be implemented with a similar degree of success in another, without modifications and integration into the specific regional context.

This can be illustrated by the experiences of a number of regions, present at the conference, that have sought to become leaders in clean technology and renewable energy. In each of these cases they took advantage of their specific situations.

In the Spanish region Navarra, exploitation of wind and solar energy beginning in the 1980s has provided the region with a competitive edge in these sectors, which in turn has led to greater employment opportunities in the area. This has been an important factor in helping to stimulate the region's economy. However huge natural resources, large scale investments from outside and regional and private leadership at the right time were the preconditions for the success here.

The Danish island of Lolland demonstrates how limited access to oil and natural gas can be turned into a new opportunity. Lolland now uses renewable resources to produce an energy surplus of 50%. Further, the region has used its status as a leader in clean technology to develop a green tourism industry. A high unemployment rate among skilled workers during the 1970s and 1980s and the decision by the wind turbine company Vesta to use this potential in the new production of wind turbines in the region represent additional important preconditions for the success of the region.

Both cases, Navarra and Lolland, demonstrate that the development of renewable energy to a leading level takes time, often decades and that the development has to be rooted in specific regional potentials, combined with the right timing and sufficient leadership at both the regional level and among investors.

Bioenergy is often mentioned as having potential

in terms of developing more jobs especially for low densely populated regions. However a study carried out by Nordregio in 2008¹ showed that the most important employment potential in connection with the production of bioenergy is linked in the main to the transport and transference of biomass into e.g. bio fuels which often takes place in large and centralised plants while the production of the biomass itself hardly will not likely create more jobs compared for instance to traditional agriculture and forestry productions. An exception to this is the production of bio gas, which is, in addition, also more suited to decentralised solutions.

Bioenergy offer a good opportunity for the production of renewable energy in both a small decentralized and a large centralized scale. The specific regional potential however depends on the individual regional context.

Another issue concerning the role of regions is that it is important that growth strategies are multidirectional rather than isolated sectoral responses.

Multidirectional policy goes beyond traditional modes of policy; first of all it involves several sectors at different scales. Secondly different actors, public and private, have to be involved in an interactive process. Multidirectional policy makes use of many different means and many different actors are needed to make it work.

Multidirectional policy in this way takes greater account of the variety of factors that can influence growth, while also ensuring that central factors such as the development of human capital, infrastructure and a good business environment are integrated into the strategy resulting in a process where all important local and regional stakeholders are involved.

The role of leadership

The role of leadership is crucial because periods of significant change require leadership that is capable of creating a future rather than predicting or conducting it. In doing so, it is important that change can be initiated at all levels rather than merely by the political and business elite.

Comments concerning leadership

The regions are here playing a key role because they are often better able compared to national bodies to coordinate different public interventions and because regions are often better placed to take the specific local and regional conditions into consideration. Well known instruments such as the Structural Funds, the Interreg Programmes, regional strategies, programmes and plans can be suited to this task but are not always sufficient because each

¹ Patrick Galera Lindblom and Rasmus Ole Rasmussen (2008): Bioenergy and Regional Development in the Nordic Countries. Nordregio WP 2008:5

instrument often has to follow its own rules and 'logic'.

Therefore a common shared vision can be used to provide a clear picture of the future and of the direction in which to go. The visions should provide guiding ideas and keep things together across different sectors and policy levels. The regions often have here the opportunity to be the key player in the development of such a vision. Interactive processes involving all relevant stakeholders will be needed together with the right regional leadership so small, medium and large enterprises, NGOs and citizens are involved in the efforts to foster a new green revolution.

The city of Lahti exemplifies how a medium-sized city in some cases can become more successful than its larger counterparts by building on local strengths and developing forward thinking policies. The Lahti Science and Business Park focused during its development solely on cleantech firms and has managed to use this specialization to create a cluster with a competitive advantage in specialized areas. The case demonstrates how regional potentials combined with the right timing and clear leadership are linked closely together.

The role of R&D and innovation

New knowledge in the fields of clean technology and renewable energy is needed specifically at the local and regional levels. In addition there is an urgent need to strengthen our innovative capacities not only concerning new technical solutions but also concerning social and organisational solutions.

Comments concerning innovation

Innovation is here understood as the process where new knowledge in an interactive process between knowledge producers and business is transformed into new products delivered to the market.

Another kind of innovation is that of social and organisational innovation where new ways of carrying out specific services or solving specific tasks and well known problems are developed. This often takes place within the context of a broader interactive process between the users and producers of new knowledge. One example here is the promotion of more energy efficient behaviour. This kind of innovation can take place in the public sector but can also take place in e.g. private services, energy companies etc.

In both cases the production of new knowledge and the transference of new ideas into practice are crucial elements. The production of new knowledge can take place at research institutes or universities or in private firms and in the public sector in general.

Here again the regional context is important. From case studies carried out by Nordregio² it is clear that universities

and higher education institutions have in many ways an important role to play in respect of regional development and innovation. By, for instance, offering education to the workforce that matches the needs of enterprises in the region their competitiveness may be enhanced. Secondly, universities can provide the public and private sector in the region with research which contributes to the development of new innovations. Finally, universities and higher education institutions can also be used to promote entrepreneurship, by offering entrepreneurship programmes.

Science parks, including incubators, where new enterprises can be developed often play an important role as a mediators between universities and individual enterprises. Such facilities are often established in cooperation between the private sector, universities and the public sector.

Science parks and incubators are not at least important for the development of SMEs, because SMEs often are anchored in a basic new idea, but are dependent on the transfer of knowledge from outside and basic business skills to transform the idea into a new product.

Another important issue concerning innovation is that it is often dependent on funding from public sources. Here the access for SMEs and regional universities to EU-programmes e.g. the ERDF and the Eco-Innovation programme together with national innovation programmes is crucial.

Conclusions

- Action has to be taken now at all levels to mitigate further climate change
- Development of clean technology and increased use of renewable energy will be important drivers in this mitigation process
- The development will at the same time be vital for the future competitiveness of Europe
- SMEs are anticipated to play a key role in the shift as eco-innovation drivers
- The regions will be key players and regional leadership and the use of multidirectional policies will be crucial
- The rise in green industry can provide regions with the initial competitive advantage but has to be rooted in the regions specific potentials
- Further research and innovation is needed to foster the sufficient development of new cleantech products and new energy solutions
- Research and innovation is also needed to change the use of well known technologies and behaviours in a more energy efficient and green direction

² Hedin, Sigrid (2009): Higher education as drivers of regional development in the Nordic Countries. Nordregio WP 2009:3

Recommendations

- Regional leadership is not a desk top task, but has to be conducted in an interactive process where all relevant stakeholders and regional resources are involved
- Regional visions have to be rooted in the regional reality – the real strengths, weakness, threats and opportunities of the region – but have to also go beyond that framework and draw a clear picture of where to go in a long term perspective
- The means – strategies, programmes, plans, funds – have to be used in a multidirectional way where the vision is the guiding principle
- Natural resources can provide the basis for production of renewable energy, e.g. wind power or bio energy. These resources can be exploited at different scales depending on the character and structure of the region.
- Large scale production demands large centralised investments and access to distribution systems that go beyond the borders of the region. Such development can imply many new jobs
- Small scale renewable energy development is suited for decentralised solutions and implies few if any new jobs, - but can sustain existing local jobs in the primary sector and in small labour markets.
- Regions should facilitate and enable the growth of new SMEs e.g. by facilitating the access to funding and new knowledge
- Here prioritising specific clusters rooted in specific regional potentials and competencies could be a way to optimise the efforts undertaken.
- The role of regional universities can be crucial for the development of SMEs, as providers of new knowledge, specific competencies and skilled labour force.
- In the opposite direction, SMEs can facilitate universities in the development of a more entrepreneurial profile
- Regions can play an important role by facilitating the interaction between universities and SMEs
- The public sector is an important field of innovation in itself in specifically in relation according to organisational questions and to the change of attitudes and behaviour of citizens and private enterprises in a more energy efficient and climate friendly direction

The overall Policy Framework

EU-commissioner Mr. Pawel Samecki and State Secretary Mr. Jöran Håggglund

EU-commissioner Mr. Pawel Samecki underlined that EU-cohesion policy plays an important role in the field of renewable energy and clean technologies. Increased use of renewable energy and cleantech will help the shift from our recent development model to a future low carbon economy and decouple economic growth from energy consumption. These investments will at the same time be vital for the future competitiveness of Europe.

Renewable energy and cleantech will also support regional development by creating new jobs. According to a recent EU-study the so called 20-20-20 targets could lead to 2.8 million new jobs.

In order to successfully implement this strategy, the inclusion of the regional level in the implementation process is imperative because regions and municipalities are well placed to translate the EU- and national policy into practice and also to foster innovative practices and influence consumer behavior

To ensure that the cohesion policy really can be used to deliver the needed actions an amendment has been made to the so called ERDF-measures so that investments in e.g. energy efficiency and renewable energy in the housing sector are now eligible. Different sectors are addressed by the cohesion policy but with a strong focus on SMEs.

The commissioner ended his welcome address by making references to the many best practice examples of regions that have already demonstrated that sustainable development, cleantech and economic development can be integrated at the regional level.

State Secretary Mr. Jöran Håggglund, Ministry of Enterprise, Energy and Communications representing the Swedish EU-Presidency, stressed that the main theme regarding industrial policy during the Swedish presidency will be the transition into an eco efficient economy and how Europe can better facilitate this transition.

It will also be central to the Swedish Presidency to send a strong message on the eco-efficient economy from the Competitiveness Council to the European Council. In addition it is important to ensure that the next Lisbon cycle will include the development of the eco-economy.

The COP15 in Copenhagen will be a key to local and international intervention. Here, Sweden is finding new ways to provide clean and sustainable energy including wind power, solar cells and biogas. New support schemes

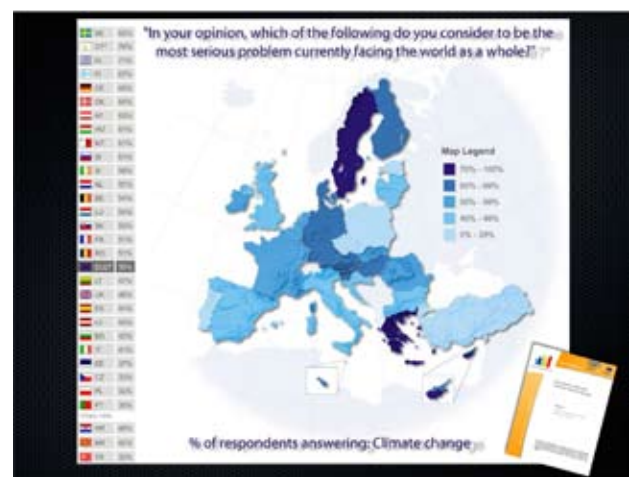
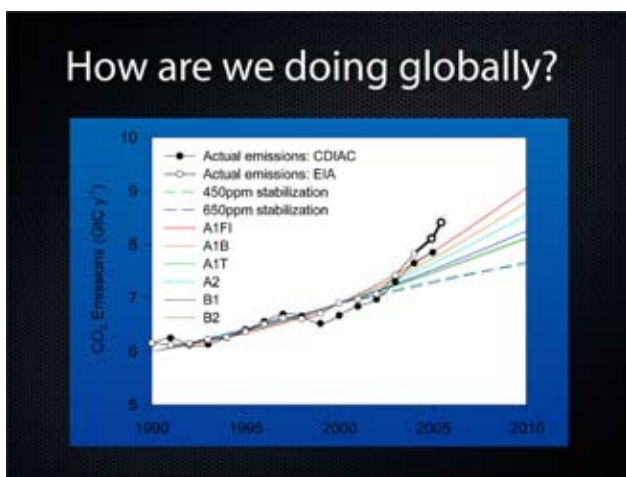
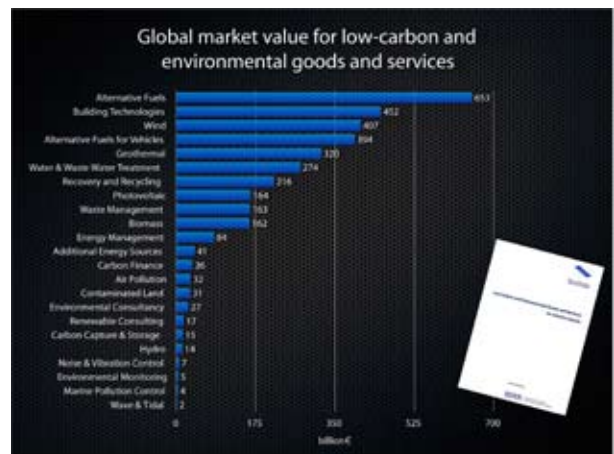
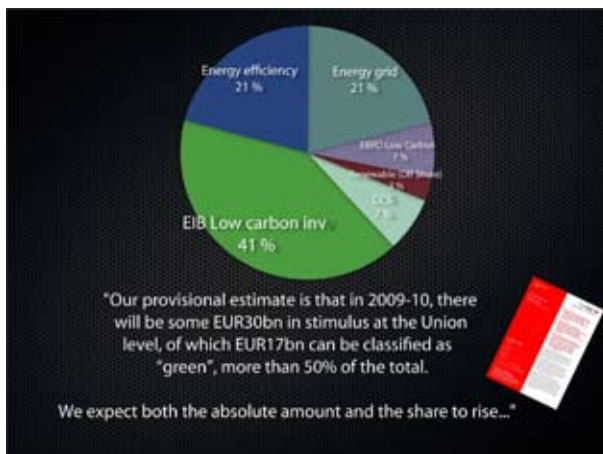
that will subsidise solar installation for public, private and household installation are already under way.

Urban areas are responsible for a large part of the eco footprint and Sweden is working on the Symbio city concept which promotes holistic and sustainable urban development by exploiting potential synergies in urban technology systems that save natural resources and reduce costs.

The role of the regional and local levels in reaching sustainable growth must be stressed and these levels are becoming more important as we shift to renewables because of the local nature of many renewable energy sources. Regional development programmes can be closely linked to renewable energy, while planning also remains an important tool.

Europe's knowledge-based economy has every possibility to increase its competitiveness through the use of new ideas and solutions to promote new businesses and services. It still needs however to strengthen its innovative capacities with a special focus on R&D and the use of economic instruments.

The State Secretary ended his speech by emphasizing that now it is time for leadership at all levels to turn policy and ideas into action!



Climate Change, What to Expect for Europe

Andreas Gyllenhammar, SWECO

Expect a lot of focus on climate change

Expect a global cleantech race

Demand regional assessments

If you haven't, start planning for climate change!

The current and potential future impact of climate change on numerous aspects of life on Earth is a central motivating factor for the development of clean technology and renewable energy businesses. Andreas Gyllenhammar illustrated this at length with a detailed presentation highlighting the potential consequences of climate change on numerous scales.

Climate change was demonstrated to be a complex issue that transcends all scales, causing problems, and to a lesser extent, providing opportunities, that range from the international to the local level. At the global level, humanitarian crises resulting from an increasing number of natural disasters including more powerful typhoons and intense droughts, amongst others, often require an international response, while at the regional level, climate change can, for example, affect tourism and natural resource dependent industries. Further, it is important to note that while it is a complicated and multifaceted issue, it is indisputable that anthropogenic climate change is affecting the Earth and those living on it, something acknowledged by the Nobel Foundation in their recognition of the Intergovernmental Panel on Climate Change (IPCC) in 2007.

The reality of climate change is further illustrated by scientific data demonstrating, amongst other things, that the global temperature has increased by 0.74°C since 1900, that it will increase by between 1.2 and 6.4°C over the next eighty years while in addition sea levels could rise between 0.2 and 0.6 metres over the next century. There is also evidence that the IPCC forecasts may have underestimated the potential impact of climate change and that the setting of short term goals for the reduction of CO₂ emissions is necessary to protect fragile ecosystems. The risk posed to fragile ecosystems was recently illustrated by the dramatic loss of Arctic ice in 2007-2008, an event that has been seen as a major climate change tipping point.

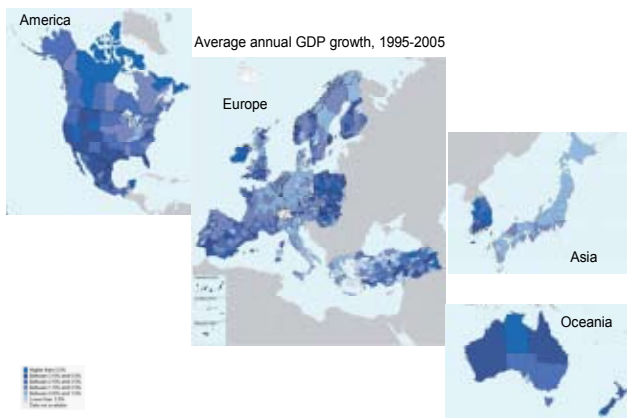
Gyllenhammar also demonstrated what the potential impacts of climate change could be on Europe. He noted that southern Europe was more likely to be exposed to greater droughts and heat waves in the summer, while lower snowfall in the Alps could hurt tourism. Northern Europe could be faced with an influx of invasive species, but could also see more rapid growth of vegetation and could experience an increase in tourism.

Such changes pose serious challenges, but also provide opportunities for growth in the clean technology sector, particularly as a global economic recovery takes place. In response to the dual challenges of reinvigorating the global economy and mitigating the affects of climate change, the need for smart and green growth is pressing. A report by HSBC Global Research notes that US\$430bn has been allocated for climate change investment themes and that of an estimated €30bn available for stimulus in the European Union (EU), €17bn will be slated for "green" development; an absolute amount and share that are expected to grow as more stimulus money becomes available. This coupled with a rapidly growing market for low-carbon and environmental goods, as illustrated by an estimated market value of €653 million for alternative fuels indicates that firms in the clean tech sector are well situated for large-scale growth in the coming years.

Concern in respect of climate change issues amongst the general population varies considerably across the EU, but correlates strongly with how well informed individuals are. Furthermore there is a strong link between a willingness to take personal action and the level of information individuals feel they have received. This indicates that greater awareness of climate change issues is necessary across the EU, but particularly in regions where such information has not proliferated to a great degree.

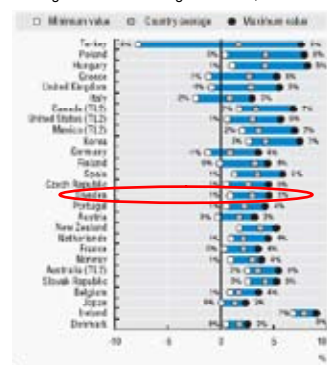
Serious preparation is required to mitigate and alleviate the impact of climate change. On a more positive note however, preparation for the expected rise in green industry can provide a region with the initial competitive advantage to harness the benefits of the expected clean tech explosion, particularly in response to the demands of the United States and China.

While regions grow differently across countries...



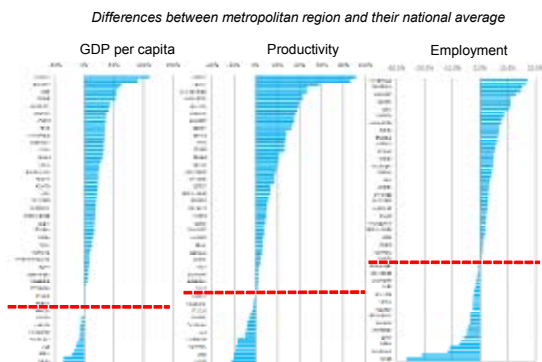
... they grow even more differently within countries

TL3 regional annual GDP growth rates, 1995-2005

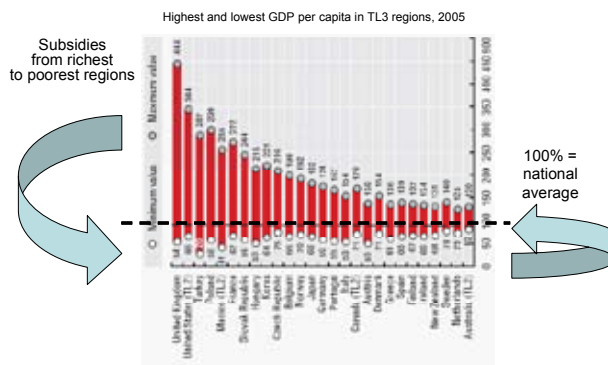


The difference between GDP growth rates over the period 1995-2005 is almost three times larger **within** countries (17 percentage points) than the difference **across** countries (6 percentage points).

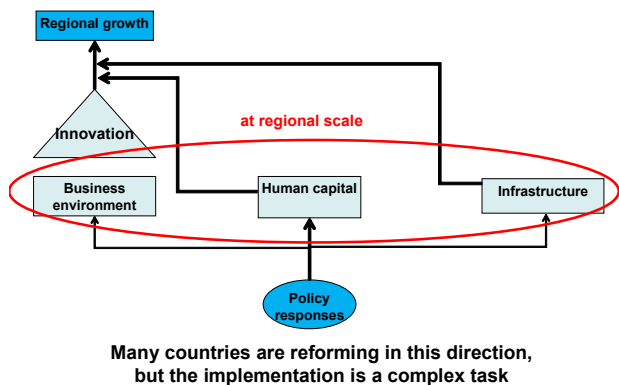
Does concentration always make regions grow?



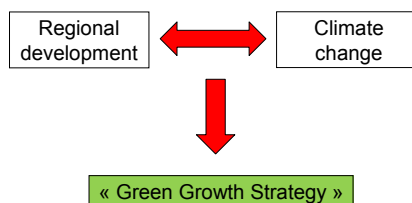
Moving away from a redistributive policy



Towards a multidimensional policy



Conclusion



What Can Regions Do to Create Growth

Soo-Jin Kim, OECD

Every region is distinct

Climate change offers different potentials for different regions

Cities are not necessarily more successful

Multidirectional policy is key to growth

The current global financial crisis has ensured that the already well recognized issue of regional economic development continues to remain a top priority for policy makers. OECD Policy Analyst Soo-Jin Kim detailed a number of important factors pertaining to regional growth. She illustrated how regional growth varies across nations, but also how even greater variation exists within nations. This was most evident in Turkey, where annual GDP growth rates in TL3 regions varied from -8% to 8%. Such wide variations across, and particularly within, nations exemplifies the important notion that every region is distinct. The unique nature of every region demands that strategies and innovation must be developed locally. While regions can cooperate and learn a great deal from one another, it is unlikely that a strategy that was successful in one region could be implemented with a similar degree of success in another, without modification.

This can be illustrated by the unique nature of the various regions that have sought to become leaders in clean technology who presented their cases at the Regional Development Conference 2009 in Östersund, including Navarra, Spain, Lolland, Denmark and Manchester, England. In each of these cases, regions took advantage of their specific situations to become global leaders in their respective fields. In Navarra, exploitation of wind and solar energy beginning in the 1980s has provided the region with a competitive edge in these sectors, which in turn has led to greater employment opportunities in the area. This has been an important factor in helping to stimulate the region's economy. By turning limited access to oil and natural gas from a problem into an opportunity, Lolland now uses renewable resources to produce an energy surplus of 50%. Further, the region has used its status as a leader in clean technology to develop a green tourism industry. Finally, by responding to the Stern report indicating that not adapting to climate change issues could potentially cost Manchester €20bn over the next 12 years, the city has subsequently positioned itself to become a global leader in the fight against climate change.

Manchester not only represents a unique regional example of economic growth stemming from clean technology, but also illustrates how the impact of climate change poses different challenges and opportunities to different regions. In many cases, the impact of climate change offers a region both challenges and opportunities simultaneously. It is thus important that policy makers are aware of the possibilities the future holds in store for their respective communities.

Kim also made light of the fact that cities are not necessarily more successful than more sparsely populated regions. By building on local strengths and developing forward thinking policies, less populated regions can become more successful than their larger counterparts. This was exemplified in Lahti, Finland, whose representative detailed their success during the Regional Development Conference 2009. The Lahti Science and Business Park focused solely on cleantech firms and has used this specialization to create a competitive advantage in specific areas. Moreover even regions that are currently facing significant obstacles can develop existing, though not always obvious, opportunities, as was the case in Navarra twenty years ago.

Finally, Kim highlighted the importance of pursuing a multidirectional strategy and illustrated the dangers of isolated sectoral responses. Multidirectional policy takes greater account of the variety of factors that can influence growth, while also ensuring that central factors such as the development of human capital, infrastructure and a good business environment are not considered in isolation.

Regional growth can take many forms. It is important that strategies to encourage growth are contextually dependent and harness the strengths of the region regardless of whether it has a high population density or not. Finally, it is important for regional economic growth strategies to consider a variety of factors to reduce the likelihood of unexpected outcomes.

The real social revolution is from a life that is largely organised for us...



... to a world in which we are in charge of our own destiny.

GC 1992



What if we don't have an environmental problem, school, health care, or a business problem...

...but an institutional problem?

GC 2001

The future

To be created...

... not to be predicted

GC 2000

The new thinking is about

- Creating desired futures
- Back casting from sustainability principles
- Cross border collaborations
- Changing the rules of the game
- Shifting attention and measurements to
 - Optimizing wholes – not parts
 - What is important – not what is measurable
 - Long term consequences – not only short term results

GC 2005

What if change is less about reorganising, restructuring and reengineering and more about reconceiving?

(GC 1997)

The Industrial Revolution - transformed our society

- no master plan
- no starting/end point
- not led by anyone
- not an initiative of any political, governmental or religious body

GC 2000

A million small beginnings...

- Take own initiatives
 - do not wait for somebody else
- Create new forms of collaborations
 - within/between
- Set ambitious/stretched goals
 - Necessary vs. Possible
- Take action
 - build prototypes/experiment
- Dare to make mistakes
 - to be learned from

Leadership For a Desired Future

Göran Carstedt, Clinton Climate Initiative

Create the future, rather than predict it.

The real social revolution is from a world that is largely organised for us, to a world where we are in charge of our destiny.

It is time to move from intentions to actions with climate change.

Major change has a million small beginnings.

Periods of significant change require leadership that is capable of creating a future rather than predicting it. In doing so, it is important that change can be initiated at all levels rather than merely by the political and business elite. Göran Carstedt underlined the importance of not only accepting grassroots ideas, but also enabling and empowering those beyond the halls of power to initiate transformation.

He spoke at length about the risks associated with climate change and urged that action be taken immediately to mitigate its effects, before examining the role of people in fomenting change. He questioned whether current societal problems were independent of one another, or rather if such problems had a deeper institutional basis. In challenging the institutional status quo, Carstedt suggests that a re-conception of the role of these institutions may be necessary, whereby institutions function more like living communities than machines. Rather than focusing on top-down strategies, it is important that mobilisation against this global threat takes place among concerned citizens. As was the case during the industrial revolution, a societal paradigm shift on climate change requires action from the bottom-up in addition to strong leadership examples. Remarkably, some of the best private sector leadership on climate change has come from Wal-Mart, where lofty targets for reducing greenhouse gas emissions, improving fuel efficiency and providing access to affordable organic food have been set.

Leadership that enables small and medium enterprises (SMEs) to realise their goals is also necessary in the green technology sector. In this case, SMEs must be given the opportunity to develop ideas and prototypes. As was pointed out during a discussion of the topic, while many of them are likely to fail, numerous others will prove to be successful. The successful firms will play a role in reducing the impact of climate change, while also driving the so called "green revolution". In addition to SMEs, non-governmental organizations (NGOs) it was argued will play an important role in the fight against climate change.

It is of great importance that these SMEs and NGOs have the ability to connect with potential investors, clients and partners. While a certain degree of initiative is required from these organizations, private and public leadership can take a number of steps to facilitate encounters and the exchange of ideas between concerned parties. Such initiatives can take a number of forms including access to development funding, conferences such as the Regional Development Conference 2009, and marketing and trade fairs amongst others. These and other initiatives can help improve the flow of knowledge and funding between SMEs, NGOs and other concerned parties which may not have otherwise occurred.

Carstedt also detailed the risks associated with failing to recognise the importance of climate change issues. He noted that firms who do not take action on such issues will have great difficulty maintaining relevance in the green economy. As Charles Territo at the Alliance of Automobile Manufacturers put it, "If you are not at the negotiating table, you will be on the menu."

The presentation concluded by arguing that given the widespread availability of information pertaining to the risks of climate change, there is no excuse not to act. He also noted that it is during the darkest periods that the most innovative solutions are often conceived. In addition Carstedt underlined the importance of the many small steps that can be taken by individuals, SMEs and NGOs and the importance such movements can have within a larger context. Finally, he argued that a willingness to go beyond the status quo and challenge established notions is essential for solving the pressing challenges that face contemporary society.



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GREEN PLANNING AND BUILD



Engy



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S O L A R C O N C E N T R A T O R

Regional Development Conference 2009 Exhibitors

Small & Medium-Sized Enterprises

The importance of small and medium-sized enterprises (SMEs) in providing solutions to mitigate climate change was a central theme of the RDC 2009 and in keeping with this idea, a number of SMEs were invited to present themselves and their products. The firms were primarily Swedish and a majority of them were based in the Mid Swedish region that includes Jämtland and Västernorrland. Many of the firms have also received funding from the EU European Regional Development Fund. A brief summary of each firm is provided in the following section.

Absolicon: The firm seeks to provide cost effective and energy efficient solar products. They have developed a solar collector that produces energy and thermal heat at a low cost. <http://www.absolicon.com/>

Air Star AB: Has developed a ventilation system that recovers approximately 85% of the heat from exhaust air. The system reduces energy costs and makes efficient use of existing heat. <http://www.airstar.se/>

Business Centre Bornholm: Provides an excellent location for renewable energy product testing and development. The centre seeks to attract new businesses and promote firms that use the area. <http://www.brk.dk/Bornholm/site.aspx?p=531>

CleanTech Demonstration Area: Is a group that aims to find and develop locations that can be used by cleantech firms to demonstrate prototypes of their products to prospective customers. <http://www.cleantechdemo.com/>

Core Source: Is a service company focusing on outsourcing within operation, support, maintenance and further development of business critical IT-based information systems. www.incheck.eu

Cradle to Cradle: Is a firm that seeks to ensure sustainable use of resources from the beginning of a products lifecycle to its completion with the goal of turning all waste into useful products. www.vaggatillvagg.se

EcoCycle Design: Focuses on developing new ideas, analysis for decision-making, planning, design, project management and mentorship. The company seeks to improve cost efficiency, sustainability, energy saving, use of recyclable material, high quality environments and health. <http://www.ecocycledesign.com/1/1.0.1.0/1/2/>

Efokus: Is a forum in the Mid-Swedish region for information, knowledge and research about energy efficiency and renewable energy. <http://www.efokus.se/>

El-Forest: Has developed the first electric-hybrid forestry machine. It reduces fuel consumption and carbon dioxide emissions and thus provides a more environmentally friendly method for log hauling. <http://www.el-forest.se/system/visa.asp?HID=799&FID=781&HSID=13271>

Engy: Provides efficient energy solutions for major energy consumers. The firm provides environmentally certified energy while working to identify actual energy requirements and works to make energy consumption more efficient. <http://www.engy.com/content/index.php>

Flexiwaggon: Has developed a patented wagon solution which enables faster and more cost-efficient combined transports for lorries, semi-trailers and other similar vehicles. <http://www.flexiwaggon.se/>



MOVING FLOOR CONCEPT

peas
on earth

JENZ



RECTUS
GRUPPEN



NORDIC TRAFFIC AB



snowpower

Jegrelius

Solljus

FVB: Provides consulting services within heating, cooling, combined heat and power processes. The firm has offices in Europe, North America and the Middle East. www.fvb.se
Jämtkraft: Produces, distributes and sells electric power and district heating. The firm supplies high quality green energy and services. <http://www.jamtkraft.se/>

Jegrelius: Is a non-profit institute for Applied Green Chemistry that works with companies, consumers and the public sector to stimulate demand and production of non-toxic products. <http://www.jegrelius.se/>

Jenz: Is a manufacturing firm that makes machinery for the production and supply of biomass. The company specialises in designing machines to meet the custom specifications of their clientele. <http://www.jenz.de/>

PeasOnEarth: Has developed a concept for extracting ethanol, fibre, protein, and green manure from legumes. <http://peasonearth.se/about/>

Milko: Is one of Sweden's largest dairy producers and uses ecologically sustainable practices in the production of its products. <http://www.milko.se/>

Mitsubishi Motors: The large automotive firm is developing a series of environmentally friendly products, including the iMiEV (Mitsubishi Innovative Electric Vehicle). <http://www.mitsubishicars.com/>

Moving Floor Concept: Has created a self-cleaning floor that can be used for livestock and other animals. The firm has developed the moving floor to improve animal welfare, the working environment and to reduce the negative environmental impact of farming. <http://www.movingfloor.se/>

MRD Sälj & Bygg AB: Constructs, renovates and converts environmentally friendly and energy efficient buildings. <http://www.koljern.se/>

Nordic Traffic AB: Deals with LED technology specifically for traffic signals and warning lights. The firm aims to develop more energy efficient and longer lasting lighting that will benefit the environment. Anders.engstrom@nordictraffic.se
Rectus Gruppen: The group is made up of five firms and offers consulting services in a number of green sectors. <http://www.rectus.se/>

Snowpower: Is an energy company based in Luleå, Sweden. The firm uses insulated snow deposits as a source for air conditioning. It offers a sustainable alternative to traditional electric air conditioners. http://www.snowpower.se/index_en.asp

Solander Science Park: Is a centre for research and development in pulpmill-based biorefineries with the world's first industrial scale production facility for renewable diesel from forest based feedstock and the world's first BioDME project. <http://www.solandersciencepark.se/>

Solljus: Supplies companies with highly efficient lighting fixtures ideal for industrial and storage warehouses, mines, arenas and building sites. <http://www.solljus.se/en/>

Sustainable Business Mälardalen: Seeks to attract and promote cleantech firms in the Mälardalen region. <http://www.susbiz.se/>

Syre: Is an environmentally focused advertising agency that seeks to promote firms that are working to create a greener future. <http://www.syre.se>

Termoträ AB: Specialises in producing fibre-wood insulation. The insulation is renewable, energy efficient and biodegradable and thus is very environmentally friendly. <http://www.termotra.se/>

Regional Leaders in Green Technology

Best Practices examples in Europe

Aragon, Spain

Located in north-eastern Spain, Aragon is characterized by its diverse topography and challenging climate. The relatively sparsely populated region faces the threats of moderate or high levels of erosion in 20% of the territory and the high risk of desertification across 28% of its territory. In the face of these challenges, Aragon has sought to harness its abundant supply of wind, solar and hydro-electric energy to become a regional leader in green energy in Europe.

As a result of the large-scale exploitation of wind and sun energy, as well as the efficient use of water resources, Aragon generates 3 400 megawatts (MW) of renewable energy, or 14% of its total energy supply, and uses 22% less oil products per capita than the national average. Thus, while Spain imports 85% of its energy, Aragon exports 47% of the energy it generates.

In the coming years, Aragon seeks to continue developing its renewable resources by increasing the number of wind and solar farms, while also improving hydro-electric production efficiency through technological innovation. The continued development of renewable energy will have increasing significance in the region, something that is expected to create new jobs, promote population settlement and reduce the ecological impact on the environment.

Bavaria, Germany

Germany has taken a number of ambitious steps to limit its impact on the environment over the past several decades. However despite numerous policy instruments that were successfully employed to reduce pollution, the overall goal of sustainable development as promoted by Agenda 21 was not being met. Furthermore, with more than 4000 laws and regulations in place, a limit to public acceptance was being reached.

In response to this, the Environmental Pact of Bavaria was enacted, whereby a public-private partnership was formed. The partnership promotes greater self-responsibility, voluntary action, cooperation and pro-active environmental care and it has been successful in fostering greater cooperation between private companies and the state. Currently, over 200 measures have been implemented, including 61 joint projects, while over 4000 companies have committed themselves to the further development of environmental protection and greater individual responsibility in Bavaria. Finally, the region's commitment to the environment is set to continue, with ambitious goals set in the Bavarian Climate Programme 2020.

Lahti, Finland

Home of the Lahti Science and Business Park, Lahti plays a significant role in the national cleantech clustering strategy pursued by the Finnish government. Developed in 2004 to promote competitiveness in green industries as part of the

Center of Expertise Programme, the Lahti Region Business Strategy 2005-2008 seeks to use clusters of firms to build on the region's strengths in cleantech. The park is designed to be a centre for cutting edge environmental technology and as a meeting place for environmental research, education and technology.

As a home to around 300 cleantech companies, or more than 60% of Finland's cleantech firms, and a number of research institutes and universities, as well as having an estimated 2008 profit of €7.4 M and a 2008 portfolio of €30M, the park is seen to be a success. By promoting enterprise driven projects, the park aims to develop business operations, increase employment and create new business ventures. Additionally, growth is forecast to result from competitive circles of innovation that result from specialisation, a factor that will also enhance the region's attractiveness for investment. Finally, given the rising global importance of cleantech, firms in the cluster are encouraged to engage the global, as well as local, market to take advantage of international networks and markets.

Lolland, Denmark

A systemic lack of access to oil and natural gas combined with chronic unemployment and a low rate of entrepreneurship posed great obstacles to growth in Lolland, a Danish island located in the Baltic Sea, southwest of Copenhagen. In response to this long term problem, a cooperative effort involving the municipality of Lolland, the Lolland Energy Holding Company and Baltic Sea Solutions (BASS) was established in 2005 to develop renewable sources of energy on the island. In the subsequent years, Lolland has increased its wind energy capabilities and established itself as an ecotest region that is seeking to develop algae-based biogas, proliferate hydrogen fuel cells and develop an integrated wind power and hydrogen cell platform.

The region's commitment to renewable energy has helped reduce its demand for oil and natural gas, while also producing an energy surplus of 50%. Furthermore, the region now generates 16% of Denmark's total wind energy, a number that is likely to increase given the island's commitment to heat 90% of the houses located there with renewable energy sources by 2015.

The region's commitment to renewable energy has also attracted international attention, something that Lolland has sought to capitalize on through energy tours. In 2008 more than 75 delegations from beyond Europe visited the island and Lolland is poised to see further ecotourism as the sector continues to grow.

Navarra, Spain

Having taken the first steps towards generating renewable energy in the 1980's, Navarra has become a worldwide

pioneer in generating green energy. Focusing primarily on large scale renewable energy projects, the region now exports green energy across Spain, while reducing its dependence on imported oil, coal and natural gas. Since installing Spain's first wind farm in 1994, the region has come to produce 957 MW, or 47% of Navarra's electricity. Additionally, the region has taken advantage of its sunny climate by installing a series of solar photovoltaic farms that supply 163 MW, or 12% of Navarra's electricity. Finally, the region generates another 26.9% of its electricity using small hydro, biomass, large hydro and co-generation plants.

Navarra's longterm commitment to green energy has made the region a centre for renewable energy development. It is home to over a hundred companies working in this field and has providing employment for approximately 6000 people. Additionally, the region has begun to promote its R&D capabilities and has recently constructed a windmill test laboratory, the National Centre for Training on Renewable Energies (CENIFER) and the National Centre for Renewable Energies (CENER). Steps such as these, along with the continued support of the regional government suggest that Navarra is well placed to continue as a leader in the field of renewable energy.

Västernorrland, Sweden

The forestry industry has long played a central role in Västernorrland's economy. Traditionally, wood has been used for heating, lumber, pulp and paper, however in looking towards the future, the region is seeking to develop its biofuel potential. With nearly 50 000 km² of forest in the region and an annual forest growth rate of 100 million m³ in Sweden, Västernorrland is well positioned to develop its biofuel industry.

Growth in the green energy sector in Västernorrland is being over seen by BioFuel Region, a development organisation made up of industry representatives, community groups and academic institutions. The organisation is motivated by the need for solutions to mitigate climate change that can be rapidly implemented and is primarily focused on reducing oil dependence within the transportation sector through cooperative efforts with the forestry industry. In continuing with the holistic approach to which they subscribe, the organisation also plans to find solutions to other environmental challenges, including the development of environmentally friendly chemicals and less wasteful packaging.

BioFuel Region is looking to secure a sustainable economic future for Västernorrland by diversifying its green portfolio as well. Plans include the development of a bio refinery whereby biofuel is produced alongside green chemicals and pulp. This is part of a strategy that seeks to use natural resources as efficiently as possible. The continued development of BioFuel Region offers Västernorrland the opportunity for an economically and environmentally sustainable future.

Appendix

Declaration from the conference:

Renewable Energy and Clean Tech; Tools for Regional Development:

Climate change is a fact and requires rapid action. It brings along many questions, many threats and many concerns. It also brings forward a great opportunity for companies to develop clean and renewable technologies.

Secure, sustainable and competitive energy represents one of society's main challenges. Limited supply, increased global demand and the imperative to cut emissions have led to a new realisation of the need to move towards a low carbon economy in Europe. The impact of climate change on Europe's environment and its society has become central to the European agenda, challenging policymakers to reflect on how best to respond with the policy instruments at the EU's disposal. This applies both to efforts to mitigate climate change by tackling the growth in greenhouse gas emissions and the need for measures to adapt to the consequences of climate change.

Regional initiatives throughout Europe contribute to the conversion of their nation's energy situation. In particular, SME's within this field are apt to contribute and they are developing even in small municipalities. Funding is directed to R&D and many SMEs have the unique state of the art products and solutions to increase energy efficiency, produce renewable energy, reduce excessive energy consumption and hamper water and air pollution. In this respect, local and regional governments, as the closest public administrations to citizens, are essential in the additional contributions made to mitigation commitments and especially to climate change adaptation.

Energy, climate change, regional development and job creation are topics that are high on the agendas, may it be European, national, regional or local. These topics should, not least, be seen towards the background of the rapid global population increase and the need of new housing.

In Östersund, 250 delegates, politicians, officials and businesses, from all over Europe assembled and discussed how renewable energy and clean tech may boost regional development. The following has been agreed upon as a message from the conference:

(1) It is time to bring renewable energy, clean tech and regional development together in order to both effectively hamper climate change's causes and effects, while at the same time achieve an economic ecological and social sustainable development. Furthermore, this is essential in order to elaborate new and efficient renewable energy sources and clean technology whilst exploring all potentials for regional growth and public health. It is fundamental that the business and job opportunities that may be revealed from these

developments will be utilized to their full potential – and thus, create an eco-efficient economy.

(2) To do that there is a clear need for increased co-ordination within and between different sectors (private, public and NGOs) and different administrative levels – not least a need for exchange of experiences, sharing of ideas and policy development between and among all concerned stakeholders.

(3) Territorial cohesion aims at guaranteeing a harmonious development of all territories and at the same time enable inhabitants to make use of their original characteristics. A more balanced and sustainable development is part of the concept of territorial cohesion. Competition and prosperity depend more and more of the capacity of people and enterprises to take the advantage of their territorial resources and values. For this purpose, the different administrative levels must guarantee that all territories have the same development opportunities. This can only be done by providing people the necessary resources to explore efficiently those territorial values.

(4) Cohesion Policy is an important policy for the EU and the Structural Funds are imperative to support efforts in all EU regions – not least in less prosperous regions and in regions with specific geographical and social features. This policy has to take on an even more demanding responsibility in the field of energy and climate change, especially when it comes to realising the potential of developments in SMEs.

(5) Cohesion Policy is more than funding through the Structural Funds. What has become clear is that the policymaking per se, cooperation and the structures set up to administrate the funds are almost equally important. It would be a waste of resources not to make use of these structures, spanning Europe as a whole and at the same time targeting regional and local potentials for growth and jobs, when dealing with the new opportunities within renewable energy and clean tech sectors, i.e. multilevel governance in practice.

(6) In addition to cohesion policy, research policy, agricultural policy and policies targeting enterprises etc, should also support co-operation in the field of R&D. These resources should be focused on energy efficiency and renewables and on the development of fossil free systems

(7) The creation of networks between research institutions and industry with the support of EU, national and regional funding is vital. Especially, more resources are needed to bring research results from SME's into commercialised products, including demonstration sites and opportunities for experiments and testing.

(8) Support entrepreneurship within the field of clean-tech. This could be done with subsidies, loans and other financial engineering instruments.

- (9) Support public authorities (local, regional and national) to engage in green public procurement for the benefit of sustainable jobs and real regional growth.
- (10) A sustainable approach is the only way forward to reach long term economic growth. This must be made evident to all.
- (11) Enhancing opportunities for efficient innovation systems to develop by encouraging regional institutions to co-operate in order to create arenas for innovations – arenas that are open to all.
- (12) Promote cross-border, transnational and interregional cooperation which entails people to meet and ideas to be exchanged. This cooperation should also enable the development and execution of specific projects that could bring an effective reduction of green house gases and eventually help to establish efficient and sustainable European transport networks.
- (13) Improve regulations and directives at both national and EU level with the intention of reaching further development in these fields. This is, not least, important concerning state aid rules in relation to R&D within private companies.
- (14) That political decisions have to be set up on a long term and transparent basis as the industry need to know which regulations and other changes are under way in order to be able to have a long term perspective on e.g. investments. In addition, new regulations must not compromise fair competition within the internal market.
- (15) Allocating more resources for R&D and improve accessibility of these resources to SME's, and thereby encourage small-scale solutions that help secure energy supply and energy savings also in rural and peripheral areas.
- (16) Rural and peripheral areas have an advantage in producing renewable energy, developing small scale technical and social solutions and involving local inhabitants in local projects. These advantages for regional and sustainable development can be increased by providing locally adapted resources and regulations for research and development.
- (17) Further research and analysis of territorial challenges and potentials according to mitigation and adaptation to climate change and the need for more energy efficient solutions is essential.
- (18) Every citizen of the EU should have equal access to these efforts. One objective should be to enhance the labour market participation of women and to promote women in entrepreneurship, innovation and technology.
- (19) Solutions to the issues of climate change and regional development can only be achieved by the involvement of local and regional governments and by the cooperation and coordination with SMEs.