

Conference Paper

Green Growth in the Baltic Sea Region, Riga 5-6 May 2011

**Green Growth Initiatives in the BSR**

by

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for the

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## Introduction

In Riga on 5-6 May 2011, the Nordic Council of Ministers, in co-operation with the European Commission, the Baltic Development Forum and the Interact Programme, is hosting the conference “Green Growth in the Baltic Sea Region”. The conference aims to identify opportunities and policy implications for accelerating green growth in the Baltic Sea Region – including contributions to the EU Strategy for the Baltic Sea Region and the Europe 2020 Strategy.

This paper is prepared ahead of the conference with the objective to provide examples of the vast number of green growth efforts that are on-going in the Baltic Sea Region – and catalysed from global, transnational, national and local/regional level.

The *various green growth efforts presented in this paper are not in any way exhaustive* – but serve as examples of different levels of co-operation and of different instruments and types of intervention.

Also, as this paper provides examples of green growth efforts, only some but not all of the green growth efforts that will be presented during the conference are summarized below.

Finally, the summary presentations of the various efforts are a result of desk research and do not represent the views of Nordic Council of Ministers that has sponsored the drafting of this conference paper. Also, the summary presentations are not validated by the numerous stakeholders involved on the ground.

### What is green business and green growth?

“Green businesses are enterprises which consider environmental protection as an essential component of their long-term business objectives, both by promoting eco-efficient production activities and by marketing sustainable products and services” (UN Green Growth Capacity Development Programme).

"Green growth is about maximising economic growth and development while avoiding unsustainable pressure on the quality and quantity of natural assets. It is also about harnessing the growth potential that arises from transiting towards a green economy" (OECD Green Growth Strategy).

“Green growth is the means by which the current economy can make the transition to a sustainable economy while reducing pollution and greenhouse gas emissions, minimising waste and inefficient use of natural resources, maintaining biodiversity, and strengthening energy security” (Wikiprogress.org).

## **1. Global green growth efforts**

### ***UN***

A number of United Nation branches focus on green growth. For example, the Green Economy Initiative under the United Nations Environment Programme (UNEP). Analyses made as part of this initiative suggest that “by investing in green economies, growth rates in global GDP will surpass those that would otherwise be achieved through ‘traditional’ means within 5-10 years”. It also suggests that “spending just two per cent of global GDP in 10 key green economy areas would generate a low carbon, resource efficient green economy.” The United Nations Framework Convention on Climate Change has also increasingly argued for the opportunities provided by climate resilient growth. For example, green business development played a significant role in the COP15 and COP16 negotiations in Copenhagen and Cancun respectively.

### ***OECD***

The Organisation for Economic Co-operation and Development (OECD) is also increasingly connecting green and growth. At the OECD Council meeting on 24-25 June 2009, for example, the Ministers concluded to “strengthen our efforts to pursue green growth strategies as part of our response to the current crisis and beyond, acknowledging that *green* and *growth* go hand-in-hand”. In May 2011 the OECD will come out with recommendations for tools to support countries' transition to greener economies. This will happen as part of the OECD Green Growth Strategy.

### ***WWF***

A number of global NGOs also encourage green growth activities – among these WWF with the initiative Climate Solver. Climate Solver is a climate innovations portal. The objective is to “strengthen the development and wide-spread use of transformative technologies with great potential to reduce global carbon dioxide emissions”. The portal is designed to raise awareness about technologies and to communicate the value of innovation as an attainable and practical solution to climate change – be it for city planners looking for green solutions to urban infrastructure; investors looking for cleantech opportunities and/or businesses looking for energy efficiency solutions in operations. Currently the portal showcases 20 innovations – all of them with high commercial / economic potential in addition to the benefits for climate change mitigation.

### ***Global Cleantech Cluster Association***

The Global Cleantech Cluster Association (GCCA) is a partnership currently comprising more than 20 leading cleantech clusters from around the world, though dominated by cleantech clusters in the Baltic Sea Region, British Isles and the US. GCCA seeks to “guide cleantech companies from a compelling technology or service idea to viable business models, sustainable jobs, and attractive Return on Investment (ROI) for founders, incubators, and investors”. GCCA is a recent effort aiming at rapidly expanding its partnership base. In 2011, a “Later stage Award” is scheduled, aiming at identifying most the promising later

stage/maturing cleantech companies and matching them with venture capital and management guidance.

## **2. Transnational green growth efforts**

### ***Europe 2020***

The Europe 2020 Strategy has three themes: Smart Growth, Sustainable (Green) Growth and Inclusive Growth. The strategy sets the 20-20-20 targets, namely – compared with 1990 levels – to reduce EU greenhouse gas emissions of at least 20 per cent; increase renewable energy consumption to 20 per cent; and reduce by 20 per cent the primary energy use compared with projected levels through improved energy efficiency. By setting these targets the Europe 2020 strategy provides additional momentum to regional, national and European efforts to accelerate green/sustainable growth. To enhance sustainable (green) growth the EU Commission will encourage *more investments* in Low-Carbon Economy, Ecosystem Services and Eco-innovation – and *better investments* by mainstreaming sustainable growth principles, by increasing climate resilience and resource efficiency, and by improving sustainable growth governance. All of these initiatives will have implications for business development and thereby for economic growth.

### ***Interreg Programmes***

A number of Interreg programmes, co-financed by the European Union, support regional co-operation – including sustainable/green growth. The so-called Interreg B programmes support transnational co-operation involving multiple countries. Also, some Interreg A programmes support transnational co-operation through cross-border activities involving more than two countries.

The Interreg IVB Baltic Sea Region Programme 2007-2013 supports co-operation in the Baltic Sea Region. The programme has supported a number of co-operation projects on green innovation and business development, including: i) The Longlife project that will develop practices, innovative technologies, guidelines and designs for sustainable, energy efficient and resource saving residential buildings in the Baltic Sea Region; ii) The REMOWE project that focuses on how waste can become a valuable resource in the Baltic Sea Region – the project will also propose strategies for technology transfer, identify good practices and propose support measures for how SMEs can benefit from new waste management technologies; and iii) the Project on Urban Reduction of Eutrophication (PURE) that includes activities to synthesize green growth business opportunities in the treatment of waste-water sludge.

The Interreg IV A Oresund-Kattegat-Skagerrak supports cross-border co-operation between regions in Denmark, Sweden and Norway. The co-operation programme has supported a number of projects related to the theme of green growth, including renewable energy and improved energy management. Lately the programme has provided support for a project that will demonstrate hydrogen-powered cars as a real alternative to common private cars. This will

happen by making hydrogen-powered cars available for testing by citizens throughout the region.

### ***The European Innovation Platform for Eco-innovation***

The programme is funded under the EU Competitiveness and Innovation Programme 2007-13. It builds on lessons from the 1st generation of Europe INNOVA projects aiming at raising the efficiency of the support measures to eco-innovation. The Eco-innovation Innovation Platform will facilitate public-private partnerships that develop, test and validate new or better tools and instruments to support of eco-innovation. The programme is implemented through an open call for proposals procedure. It targets, in particular, bio-based products, recycling and sustainable construction.

### ***The Environmental Technologies Action Plan***

In 2004, the European Commission adopted the Environmental Technologies Action Plan (ETAP). It aims to further environmental technologies with a view to benefiting both the environment and competitiveness and thereby contributing to growth and job creation. It sets out a number of actions to be taken, both on the side of the European Commission and on the side of industry and national and regional governments. An important tool of ETAP is to set national roadmaps and action plans that will help the European Commission, Member States and other stakeholders to focus their efforts. To explore strategic orientations and find solutions for eco-innovation and environmental technologies, ETAP also facilitates “The European Forum on Eco-Innovation” that is an initiative to bring together stakeholders at a number of events to discuss relevant topics which will contribute to enhancing green growth.

### ***The Lead Market Initiative for Europe***

The Lead Market Initiative for Europe is an effort to lower barriers for market entry of new products or services. It is a joint effort between the European Commission, Member States and industry unfolding through action plans for the six Lead Markets – four of them very directly related to sustainable/green growth: eHealth, Protective textiles, Sustainable construction, Recycling, Bio-based products and Renewable energies. On “Bio-based products”, for example, efforts include: Product performance standards; Inventory of legislation affecting the sector; Encourage Green Public Procurement; and an Advisory Group for Bio-based Products. On “Sustainable construction” efforts include: 2nd generation Eurocodes (standards); Screening of national building regulations; Network of Contracting Authorities; and Upgrading of skills of construction workers.

### ***European Union Research Framework Programmes***

Under the European Union Research Framework Programmes (FP7) a large number of co-operation projects unfold that directly or indirectly impact on sustainable/green growth opportunities. A great variety of projects are implemented such as, for example: Sustainable growth in the transport industry; Sustainable welfare and consumption patterns; Sustainable urban development; and Sustainable waste management. Also, there are, for example, programmes to facilitate that ICT contributes to sustainability and to attaining the EU climate and energy 20-20-20 targets. This happens under the programme “ICT for

Sustainable Growth”. Activities include areas such as: Energy Efficiency of the ICT Sector; Energy Efficient Buildings; Smart Cities; Smart Electricity Grids and Smart Metering; Climate Change Management; and Water Management.

### ***Nordic Globalisation Forum***

The Nordic Prime Ministers decided in May 2010, at the annual Globalisation Forum, to commission a task force to map specific Nordic strengths where Nordic co-operation can add value to green growth. The task force – due to report its findings in June 2011 – will also propose how green growth can become a benchmark for future Nordic co-operation on the issue of globalisation. These Nordic efforts come in addition to efforts under the Top Level Research Initiative that is an effort to pool funds and expertise in the Nordic region on climate, energy and environment issues. Currently more than 100 national experts are involved in activities with a total budget in excess of €50 million. Also, the Nordic countries are working together to promote the region as a green growth region at the global level. This happened, for example, at the World EXPO in Shanghai in 2010 where Nordic countries jointly exhibited green solutions such as renewable energy solutions and energy efficient housing.

### ***Nordic Energy Research***

Under the auspices of the Nordic Council of Ministers, Nordic Energy Research promotes research and innovation in new energy technologies and systems – with a particular emphasis on renewable energy; energy efficiency; the hydrogen economy; energy market integration; and the impact of climate change on the energy sector. For example, Nordic Energy Research has supported the project “Scandinavian Hydrogen Highway Partnership (SHHP)”. The initiative aims at accelerating the introduction of hydrogen as a vehicle fuel in particular, and as an energy carrier in general. The partnership has enabled Scandinavian entrepreneurs and enterprises to take advantage of this emerging green technology. In the wider context, SHHP aims to make the Scandinavian region one of the first regions in Europe where hydrogen is commercially available and used in a network of refuelling stations.

### ***Nordic Innovation Centre***

Also under the auspices of the Nordic Council of Ministers, the Nordic Innovation Centre implements a number of transnational co-operation activities between public and private partners. On green growth, the Nordic Innovation Centre has implemented the Clean, Clever and Competitive Programme. Under this programme, five Nordic triple helix projects were supported with the objective to enhance innovation and commercialisation of Nordic environmental technology. The Nordic Innovation Centre also contributes to the realisation of the Top Level Research Initiative (refer to section above on the Nordic Council of Ministers) through, for example, supporting the establishment of a Nordic User Driven Competence Centre for realisation of Carbon Capture and Storage (CCS). The objective of the Centre is to boost innovation, joint actions and processes in the Nordic countries and to increase industry-driven innovation in CCS.

### ***BSR business integration with Kaliningrad on energy efficiency***

In 2010, the Nordic Council of Ministers Information Office in Kaliningrad implemented a project to analyse the market for energy efficiency technologies and renewable energy solutions in Kaliningrad – and to raise awareness about market opportunities for Nordic companies in Kaliningrad. The project concluded that there are a number of green business opportunities available in Kaliningrad, including within: energy saving services to reduce energy costs among public and private partners; co-operation with electricity distributors to reduce network losses; co-operation with district heating companies to reduce transmission losses, as well as to convert boilers to be fuelled on biomass; and by accessing the Kaliningrad market by means of a demonstration house that would showcase energy efficiency and renewable energy products and services. As a follow-up to the project, efforts are underway to develop effective business modalities and matchmaking services that can facilitate deployment on the ground in Kaliningrad of energy efficiency and renewable energy solutions based on Nordic good practice.

### ***Nordic Investment Bank***

The Nordic Investment Bank is an international financial institution established by the five Nordic countries – and from the mid 1990s also owned by three Baltic countries. NIB's mission is to finance projects that strengthen competitiveness and enhance the environment. Loans/projects include investments in the energy, environmental, transport, logistics and communications, and innovation sectors. Recently, for example, NIB, together with Fortum (Finland), has agreed on a loan of €70 million for building a waste-to-energy heat and power plant in Klaipeda, Lithuania. The combined heat and power plant (CHP) will be the first waste-to-energy plant in the Baltic countries. It will be fuelled by municipal solid waste, non-hazardous industrial waste and biomass. The project is financed under the CLEERE (Climate Change, Energy Efficiency and Renewable Energy) lending facility. With a pool of funds of €2 billion CLEERE supports actions for combating and adapting to climate change. Another NIB lending facility dedicated the environmental sector is the BASE (The Baltic Sea Environment) lending facility. This facility totals €500 million and finances marine projects related to the HELCOM Baltic Sea Action Plan.

### ***Cleantech Scandinavia***

Established in 2007, Cleantech Scandinavia has grown to become a large Nordic network of investors active in cleantech. Recently, the network has expanded to include members from Estonia, Latvia and Lithuania. Cleantech Scandinavia focuses in particular on early-stage and growth companies. The members are mostly venture capital firms actively investing in Nordic start-up and growth cleantech companies but also include industrial companies, public agencies and funds, business incubators, and law firms. Cleantech Scandinavia offers its members mainly information services through conferences and events; business intelligence reports, statistical services; investment opportunities; and market visibility.

### **3. National green growth efforts**

#### ***Denmark***

In 2008, the government adopted a new energy strategy. It focuses on increasing the use of renewable energy and reducing energy consumption. In 2009, the government also adopted a strategy for green growth. It focuses on the reduction of eutrophication and more and better accessible nature – and on green growth in agriculture and industry through bioenergy, market-based ecology, investments in green technologies and “Denmark as a green growth laboratory”. Also in 2009, policies to support green transport and green business solutions were adopted.

In September 2010, the Danish Commission on Climate Change Policy delivered its final report. The Commission was appointed by the government and consisted of ten experts with special knowledge in the fields of climate, agriculture, transportation and economics. The report presents proposals to achieve the long-term vision, “that Denmark in the future will be completely independent of the use of fossil fuels”. The Commission concludes that – factoring in increasing fossil fuel prices – the cost of transformation will, in fact, be surprisingly low and generate a number of business and growth opportunities, in particular within energy efficiency, intelligent energy systems, renewable energy and transportation. A number of the proposals by the Commission will be pursued by the government with a view to attaining the declared long-term vision of Denmark becoming fully independent of fossil fuels.

#### ***Sweden***

In July 2010, the Swedish government came out with a new policy for green growth “Grön Drivkraft”. It lists 68 initiatives for sustainable development, including initiatives within green transportation, green taxation, a green public sector and green resource utilisation. Examples of concrete initiatives are: a green technology transfer programme between universities and enterprises; an initiative aimed at facilitating environmental technology enterprises accessing global markets; SymbioCity/city planning; Smart Grids; use of waste from forestry; tax incentives to motivate substitution to renewable fuels in transportation; and green public procurement.

#### ***Finland***

Finland is (probably – depending on the scope of “cleantech”) the country in the Baltic Sea Region that dedicates most resources per capita to promote the development of renewable energy and clean technologies. The cleantech sector is one of the fastest growing industry sectors in Finland. Competitive strongholds include energy efficiency, clean industrial processes and bioenergy – but also measuring, analysis and automation; renewable energy; waste management; and water and wastewater treatment.

Key policy directions towards 2020 are set out in the National Climate and Energy Strategy adopted in November 2008. Also, visions towards 2050 are included in the strategy, including reducing Finland’s greenhouse gas emissions by at least 80 per cent from the 1990 level by 2050. Governmental organisations



implement a number of programmes and projects to accelerate green growth. Tekes, the Finnish Funding Agency for Technology, for example, funds cleantech research on bioenergy, eco-construction and water. Sitra, an independent public foundation dedicated to promoting economic prosperity, supports energy activities as one of four focus areas, including clean energy and energy efficiency projects. At the governmental level support is also provided, in particular under the Competence Cluster programme – such as, for example, the Finnish Cleantech Cluster (refer section further down in this document).

### ***Germany***

Germany has positioned itself as the powerhouse of cleantech industries in Europe and the world with a 16 per cent share of global cleantech trade. The cleantech sector is developed on Germany's traditional strengths in engineering, chemistry and physics – and a generally high level of awareness of sustainability, resource scarcity, and energy security. It is worth noting that it is NOT the large German multinationals that drive cleantech sector. Three quarters of German cleantech companies employ less than 100 employees and two-thirds employ less than 50 people. Green Growth in Germany is powered by SMEs.

Government support is strong: “Whoever is first to conquer green tech markets will have an enduring export advantage and create jobs”, Chancellor Merkel declared in 2010. Green Growth is pursued through a number of policy directions and initiatives at the federal level, including the National Sustainability Strategy; the Energy and Climate Protection Programme; and the Renewable Energy Sources Act. The key driver for growth in the renewable energy sector has been attractive feed-in tariffs that provide financial sustainability to investments. Collaboration between government, research and business play an important role. For example, the strategy to promote the use of biofuels was developed in co-operation with vehicle manufacturers, the oil industry, and the agricultural and biofuel sectors. It set a fuel mix target of up to 20 per cent biofuel in diesel or petrol by 2020.

Also, support is strong at the regional government level (refer section further down in this document).

### ***Russia***

In November 2009, the law “On energy saving and increasing energy efficiency” was adopted as part of the Climate Doctrine of the Russian Federation. This has provided much momentum to efforts aimed at accelerating energy efficiency in Russia. The law sets clear targets on energy savings: 3 per cent per year until 2015. Also, the law sets Russian targets for increasing the production of renewable energy from 1.5 per cent to 4.5 per cent – although the framework for getting there is less well developed than for energy conservation. Russia is also taking part in the Copenhagen accord, which sets a target of reducing carbon emission by 25 per cent in 2020 compared to 1990.

In Russia in general and in the North West Russian regions bordering the Baltic Sea in particular, the new energy laws will provide a number of business opportunities for Nordic companies. However, the notion of “endless resources”

remains widespread and continues to slow adoption of energy efficiency and renewable energy solutions. Thus, if the recent ambitious energy saving targets are to be realized, Russia is likely to seek deepened collaboration with foreign partners. The interest in increased international co-operation is further accelerated by recent energy efficiency and renewable energy regulation at the regional level. In the Kaliningrad region, for example, it was decided in 2010 to go even further than the Federal requirements for energy saving and use of renewable energy.

#### **4. Local and regional green growth efforts**

##### ***Oslo Renewable Energy and Environment Cluster***

The Oslo Renewable Energy and Environment Cluster (OREEC) was formed in 2010. It unites R&D institutions and universities, more than 700 cleantech businesses in the Greater Oslo region, in a joint effort “to become one of Europe’s leading green tech clusters”. To achieve this vision, OREEC works to increase the speed of innovation among members and improve their opportunities for business development. Activities focus on innovation, international co-operation, building competences, networking and developing public relations with a view to identifying new energy solutions. In particular, OREEC emphasises sun and wind power solutions.

##### ***Finnish Cleantech Cluster – pooling regional competence clusters***

The Finnish Cleantech Cluster is a network of four centres of expertise specialised in clean technology: Lahti, Kuopio, Oulu and Uusimaa. The effort is one of 13 “Competence Clusters” under the Centre of Expertise (OSKE) Programme implemented by the Ministry of Employment and the Economy. The cleantech cluster network covers about 60 per cent of Finland’s environmental business and 80 per cent of environmental research in Finland. It reaches out to more than 300 Finnish cleantech companies. The objective of the Finnish Cleantech Cluster is to “increase Finnish environmental business, create new jobs and take advantage of global markets”. International projects are directed at the Chinese, Russian and Indian markets. The cluster network has so far implemented projects of a total value of €65 million resulting in the creation of more than 65 new cleantech companies and more than 500 new jobs.

##### ***Eastern Germany – a cleantech hotbed***

Together, the 6 East German regions that made up the former DDR have the highest density of photovoltaic (PV) companies in the world. They are therefore popularly referred to as the “Solar Valley”. It accounts for 75 per cent of German and 14 per cent of global solar cell production. Eastern Germany has also been successful in developing the wind energy sector and also pioneered development of sustainable second generation biofuel production processes. 8 of Germany’s 12 operating bioethanol plants and 24 of 42 biodiesel facilities are located in Eastern Germany. Comprehensive initiatives to facilitate co-operation between regional governments, research institutions and industry are implemented. Being the capital of “Cleantech Germany” and located in Eastern Germany, the City of Berlin offers many incentives to cleantech companies and investors.

Recently, for example, the Business Park Berlin-Marzahn was opened making available 90 hectares of land for companies active in the industrial production of solar cells and modules as well as other cleantech related products.

### ***Eco4Life – uniting German, Polish and Lithuania Regions in cleantech***

The project “Eco4Life-South Baltic Network for Environmental and Life Sciences to Boost Cross Border Cooperation” (in short Eco4Life) was recently granted EU support (under Interreg A). The project will bring together competencies in environmental and life sciences in the coastal regions of Mecklenburg-Vorpommern, the West Pomeranian Voivodeship and the Klaipeda County – through a network of contact points. The project will map competencies in the field of life sciences and environmental technologies – and it will bring together researchers, entrepreneurs and local authorities in an attempt to improve the competitive position of the South Baltic Region field of life sciences and environmental technologies. The project builds, in part, on the experiences of the Baltic Sea Region meta-cluster on life science, the ScanBalt BioRegion.

### ***The Stockholm Environmental Technology Centre***

The Stockholm Environmental Technology Centre (SMTC) positions itself as “a cleantech business network” but also places importance on co-operation between businesses, research bodies (in particular on the Swedish Environmental Research Institute and the Royal Academy of Technology), and public actors in the environmental technology area. SMTC could therefore also be considered as a cluster development effort. SMTC focuses on “new and promising concepts within green technology in the Greater Stockholm Region”, including: bio energy, waste management, biofuels, energy storage and efficiency, municipal and industrial water management system, and know-how for sustainable city development.

### ***Copenhagen Cleantech Cluster***

Established in 2010, Copenhagen Cleantech Cluster positions itself as a “one-stop entry to Danish cleantech. We facilitate partnerships, host events, carry out analyses and gather information across a number of focus areas.” It is a joint effort by Danish cleantech companies, research institutions and public organisations with a vision to develop a world leading and renowned cleantech cluster that creates “superior value for the cluster companies and research environments and ... differentiates ourselves by tying cleantech technologies and communities together across sectors, value chains and borders”. At the activity level, Copenhagen Cleantech Cluster focuses on: Test and Demonstration activities (connecting existing facilities and developing new); Matchmaking activities (business to business and with research environment); International Outreach activities (working with cleantech cluster in other countries); Innovation and Entrepreneurship activities (developing cleantech business and start-up models); and Facilitation activities (across activities and between partners).

### ***Kalundborg Industrial Symbiosis***

Kalundborg Industrial Symbiosis is a partner in Copenhagen Cleantech Cluster. The basic idea behind the Symbiosis is that companies utilise each others’

residual and by-products on commercial basis. In other words by-products from one company become a resource for other companies. The result is resource savings and positive environmental spin-offs. The Symbiosis has developed (mostly spontaneously and on commercial grounds) over three decades and is now an integrated partner in enterprise development in the region. The Symbiosis comprises 20 collaborations and partnerships. For example, a fish farm has increased its productivity by benefitting from excess steam/heat from the local power station. Also, excess steam from the power station is utilized as a cheap resource in enzyme production at the company Novozymes. Novozymes, in turn, transfers yeast slurry to pig farms as a feed component. In recent years, the Industrial Symbiosis has received national and international recognition as a model for accelerating competitiveness and sustainable growth.

### ***Sustainable Business Hub***

Sustainable Business Hub is a cluster-like, non-profit organisation supporting environmental technology based companies. Sustainable Business Hub aims "to create networks between businesses and organisations in order to successfully market sustainable products and ideas, and is a key player in environmental business development in southern Sweden". Businesses, universities and institutes, utilities, municipalities, embassies and the Swedish Trade Council all engage in the co-operative activities of Sustainable Business Hub. Sustainable Business Hub focuses on the following areas: Energy & CO<sub>2</sub>-reduction; Waste management; Sustainable building & urban development; Water treatment; Air quality control; Energy efficient transportation; and Communication. Member services include: cluster/joint action initiatives; export assistance; participation in business delegations; participation in trade fairs; seminars; business start-up activities; seminars; and facilitation of participation in national and international cooperation projects.

### ***Baltic Solar***

In 2009, the Association of Photovoltaic Technology and Business was founded. It unites 24 business entities and institutions of higher education in the Greater Vilnius region. Together they have set an aim to develop a new high-tech industry in Lithuania, namely the manufacture of solar energy technologies. In November 2010, the construction of a 10,000 m<sup>2</sup> area scientific research and experimental development centre of solar cells in Visoriai Information Technology Park (VITP) was commenced. The project is expected to be completed by 2012 with a total investment of more than €40 million. The cluster – under the name Baltic Solar Energy – has ambitions to become a global player: "Today centres at such a level are functioning in USA, Germany, Malaysia and China. The manufacturing of solar cells in our centre will be among the most modern in the world. The solar cells manufactured in Visoriai will be third generation; such cells are only produced by the most state-of-the-art plants in Norway, Germany and USA. There will be no analogues for our plant in Eastern and Central Europe", quotes Vidmantas Janulevičius, Director General of Baltic Solar Energy. According to the plans, in 2016-18 the turnover of solar cells manufactured at VITP is forecasted to reach more than €450 million and create 500 new jobs.

### ***Estonian Wind Power Cluster and other clustering efforts***

The mission of the Estonia Wind Power Cluster (EWPA) is to “create conditions for the development of wind energy and its technology that ensure the competitiveness of wind energy and its developers and, as renewable energy is adopted for use more widely, the preservation of a clean living environment”. The cluster effort was initiated in 2008 mainly by Estonian companies that wish to take advantage of the rapidly growing wind power sector. Today the cluster comprises 9 companies, two universities and has received support from the European Union Regional Development Fund and the City of Tallinn. The cluster focuses more on increasing the competitiveness of local enterprises in the wind power component industry rather than on large-scale production of the final mills themselves.

In the Tallinn region other cleantech clustering efforts are also unfolding. For example, the “Estonian ECO Cluster” that seeks to unite entrepreneurs and the Institute of Technology (with support from government and the European Union) in an effort to raise enterprises value addition through ecology/sustainability. The effort will focus on developing an energy passive house and document energy efficiency opportunities in buildings. Also in Tallinn, a clustering effort is unfolding on LED lightning technology. This is taking place as part of the Value-creating Electronic Initiative.

### **Some questions arising from this survey**

Although the short presentations above constitute only examples of green growth efforts and do not form an exhaustive list, some questions arise in connection with a discussion of synergies between, and value addition to, on-going efforts in BSR:

- Is the Baltic Sea Region taking sufficient advantage of available knowledge and expertise for fostering green growth through peer enabling policies? If not, what kind of instruments could improve policymaking and implementation?
- Is there an opportunity for greater (smarter) specialisation in the cleantech industry in the Baltic Sea Region? It seems numerous cleantech cluster initiatives target cleantech business development in a very wide sense – is this smart?
- Is there an opportunity for the Baltic Sea Region to improve the utilisation of complementary economic, geographic and environmental advantages – thereby reducing global out-sourcing/offshoring because the region can offer better business alternatives? Is it wishful thinking or are there practical steps to grow more green business “at home”?
- There seem to be quite a lot of efforts on-going to pool competences on a transnational level – but fewer efforts to pool investors and risk capital. If this is so, what practical steps could be taken to link more, and match better, risk capitalists and cleantech businesses/entrepreneurs?