



NORDREGIO
Nordic Centre for Spatial Development

Nordic Green Growth Road Show – Final Report

Jukka Teräs and Linda Randall (eds)

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NORDREGIO
Nordic Centre for Spatial Development

Analyses and text: Jukka Teräs and Linda Randall (eds)
Cover photo: Port of Mariehamn: Road Show venue,
The Pommern, anchored in the western of Mariehamn's two
harbours, Västerhamn. Mariehamn, Åland, was the Road Show
venue on Aug 29, 2016 (Photo: Jukka Teräs)

Nordic co-operation

Nordic co-operation is one of the world's most extensive forms of regional collaboration, involving Denmark, Finland, Iceland, Norway, Sweden, and the Faroe Islands, Greenland, and Åland. *Nordic co-operation* has firm traditions in politics, the economy, and culture. It plays an important role in European and international collaboration, and aims at creating a strong Nordic community in a strong Europe.

Nordic co-operation seeks to safeguard Nordic and regional interests and principles in the global community. Common Nordic values help the region solidify its position as one of the world's most innovative and competitive.

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.

Nordregio – Nordic Centre for Spatial Development

conducts strategic research in the fields of planning and regional policy. Nordregio is active in research and dissemination and provides policy relevant knowledge, particularly with a Nordic and European comparative perspective. Nordregio was established in 1997 by the Nordic Council of Ministers, and is built on over 40 years of collaboration.

Stockholm, Sweden, 2016

Foreword

When we first started planning the Nordic Green Growth Road Show our motivation was simple – to share knowledge, bring people together and generate new ideas to pave the way forward for Nordic cooperation on green growth and green transition. The Road Show was one of the final activities of the Nordic Working Group for Green Growth – Innovation and Entrepreneurship under the Nordic Council of Ministers' Committee of Senior Officials for Regional Policy, and thus provided an excellent opportunity to share the findings of the group's work over the past four years.

Together with Nordregio as its secretariat, the Working Group has contributed to public policy development with a particular focus on the regional policy dimension of potentials for green growth, innovation and entrepreneurship in the Nordic regions. Three in-depth studies have been published including *Bioeconomy in the Nordic region: Regional case studies* (2014), *The potential of industrial symbiosis as a key driver of green growth in Nordic regions* (2015), and *Developing a greener economy in Nordic regions: interventions to overcome the challenges* (2016). The Working Group also commissioned *Green Growth in Nordic Regions – 50 ways to make it happen* (2016), a collection of 50 examples of green growth initiatives from across the Nordic Region. A final publication synthesising the findings of the work of the Working Group in 2013–2016 will be released at the end of 2016.

As we travelled across the Nordic Region, sharing this work, three things became abundantly clear. First, Nordic regions have made considerable advances in the green growth field over the past four years. The Nordic regions have awakened and are poised for the green transition! Second, there is both great variation and striking similarities between the Nordic regions. Regional actors are eager to work together towards a shared vision for Nordic green growth but it is clear that this vision must incorporate regional diversity as a key characteristic.

Finally, and perhaps most importantly, the Road Show highlighted the value of bringing a range of actors together around a common goal. The Working Group now has an excellent network of Nordic regional green growth actors, and we look forward to working together with you in the implementation of the coming Nordic cooperation programme in 2017-2020. Thank you to all of the regional actors who took part in the Road Show events. Particular thanks to our regional partners who helped out with organising each of the local events and without whom the program would not have been such a success.

Jukka Teräs
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Executive summary

This document reports on the Nordic Green Growth Road Show programme which was commissioned by the Nordic Working Group for Green Growth – Innovation and Entrepreneurship and coordinated by Nordregio in partnership with local actors. Over 200 green growth actors participated in the Road Show events, which were held in ten locations across the Nordic Region between May and October, 2016.

The Road Show was one of the final activities of the Nordic Working Group on Green Growth – Innovation and Entrepreneurship and was an excellent opportunity to reflect on the progress that has occurred since the group's inception in 2013. Each Road Show event provided insight into the current status of green growth in the Nordic Region as well as a platform through which to gather ideas to inform joint Nordic efforts going forward.

The feedback from the regional Road Show events suggests that there has been a rapid increase in awareness of green growth across all five Nordic countries and the Nordic islands and that green growth is now high on the agenda across the region. Despite the headway that has been made overall, differences are also apparent with respect to progress both in the adoption of green thinking and in the implementation of green strategies.

Specific topics that were high on the agenda at many (though not all) Road Show events included:

- Public-private partnerships
- Regional branding
- Playing to regional/local strengths
- Regulations and policy support
- Networks and collaboration at the local and regional level

Participants also provided valuable insights to pave the way forward for Nordic cooperation in the green growth field. Priorities included:

- Promoting opportunities for information sharing and networking at a range of levels
- Further development of the 'Nordic green identity'
- More opportunities to participate in joint (Nordic) projects
- Joint advocacy from Nordic countries

Overall, the most valuable component of the Nordic Green Growth Road Show programme was the opportunity to bring together a range of actors and, in doing so, initiate and support processes that may not have occurred otherwise. The enthusiasm with which the programme was received suggests that there is scope for Nordregio to do more of this type of work in the future. Both the Working Group and Nordregio are pleased to have had the opportunity to be a part of the green transformation that is underway across the Nordic Region and we look forward to more fruitful collaboration in the next Nordic Cooperation program.

Introduction

The Nordic Working Group for Green Growth – Innovation and Entrepreneurship will conclude its four year work programme at the end of 2016. As one of its final activities, it commissioned Nordregio to host a Green Growth Road Show programme, which visited 10 locations across the Nordic Region between May and October, 2016. The overall aims of the Road Show programme were as follows:

1. Communicate findings and policy implications based on the work of the Nordic Working Group for Green Growth – Innovation and Entrepreneurship, with a particular emphasis on addressing how green growth can contribute to sustainable growth in Nordic regions.
2. Bring together a range of green growth actors from the public, private and academic sectors to exchange experiences and to discuss opportunities for strengthened collaboration on green growth across the Nordic countries.
3. Receive feedback from regional actors on the most current green growth issues to inform final reporting for the period 2013–2016 and to shape the work programme for the Nordic Cooperation Programme 2017–2020.

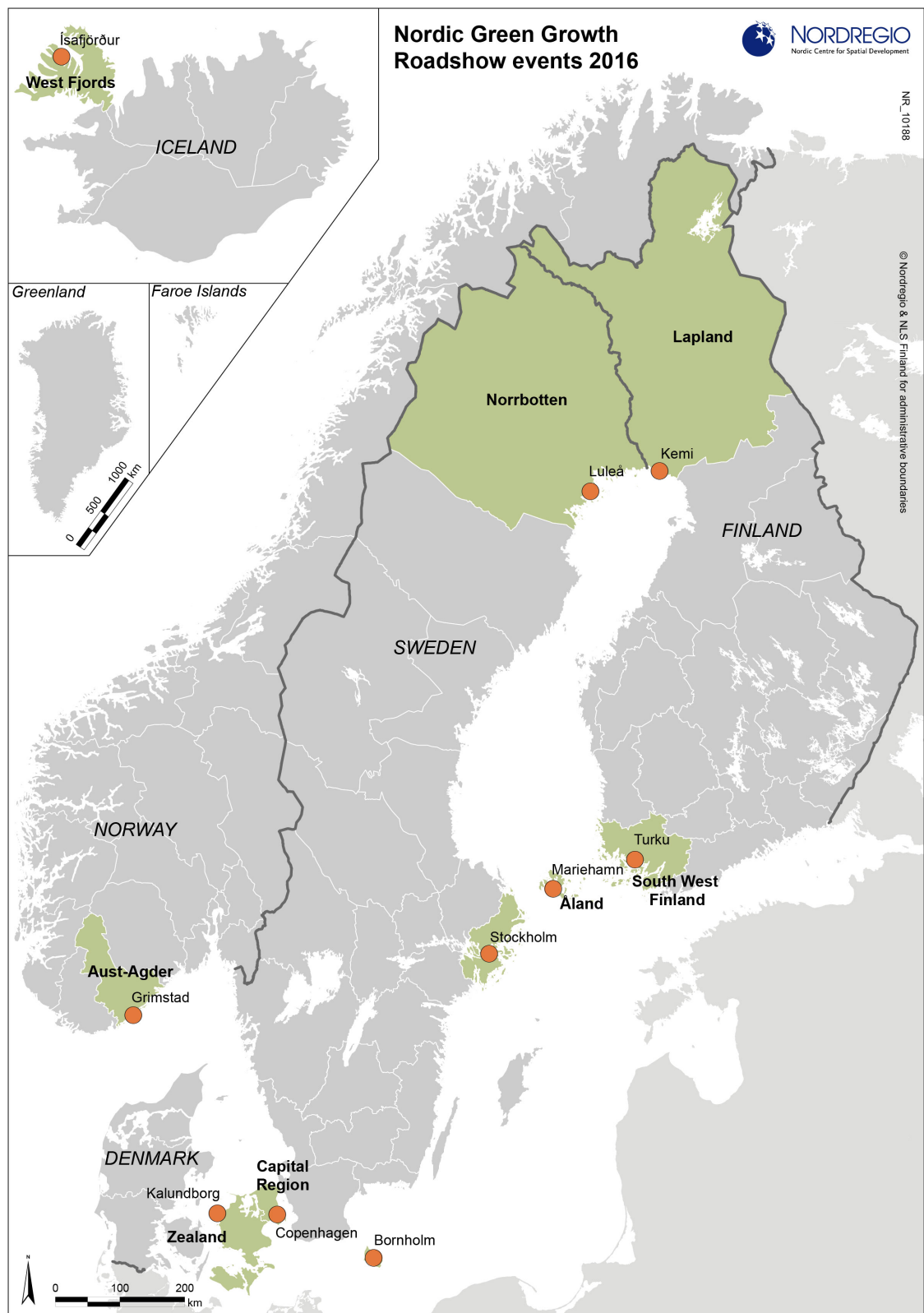
Each event was organised in partnership with a local stakeholder and included both local and Nordic level perspectives. Along with the broader aims stated above, each event also had locally/regionally specific aims which are outlined in the body of this report.

Sites for the events were chosen by seeking input from Working Group members, identifying pioneers, classic cases and strategically important regions, and taking care to cover all countries/themes/localities. More information about the participants, locations, dates and themes of the Road Show activities can be found in the table and map that follow and a full list of participants can be found in Appendix I.

This report presents a brief summary of each Road Show event including its aims, key points of discussion and suggestions for increased Nordic cooperation. It also synthesises these ideas to generate some broad findings about the status of green growth in Nordic regions based on the Road Show events. Please note that this report is based solely on the Road Show events. A complete account of the findings of the Nordic Working Group on Green Growth - Innovation and Entrepreneurship 2013–2016 can be found in the Synthesis Report, released in late 2016.

City (Country)	Date	Theme	Participants
Kalundborg (DK)	4 May	Symbiosis networks in the Nordic countries: Potentials for knowledge exchange and collaboration?	20
Luleå (SE)	18 May	Bioeconomy and Nordic/Baltic co-operation: Regional efforts and opportunities for inter-regional cooperation	20
Kemi (FI)	19 May	Bioeconomy and Nordic/Baltic co-operation: Regional efforts and opportunities for inter-regional cooperation	18
Copenhagen (DK)	20 May	Nordic Green Growth and Regional Development	20
Ísafjörður (IS)	20 May	Local/regional strategies to promote a sustainable blue bioeconomy	13
Turku (FI)	23 May	Innovation and entrepreneurship in the circular economy: Experiences from Southwest Finland and prospects for collaboration between Nordic regions	26
Stockholm (SE)	14 June	Bioeconomy: Nordic lessons and the role of regions	11
Bornholm (DK)	25 August	Bright Green Island and local strategies for the green transition of enterprises – Nordic knowledge sharing and collaboration	40

Åland Islands	29 August	Roundtable discussion on bioeconomy and green growth in Åland	18
Grimstad (NO)	24 October	Green transition from a Norwegian perspective	28
Total participants			214



Road Show events

Kalundborg (Denmark) Symbiosis networks in the Nordic countries: Potentials for knowledge exchange and collaboration

Date: 4 May, 2016

In collaboration with: Symbiosis Centre Denmark

Report by: Lise Smed Olsen and Jukka Teräs

Snapshot of green growth in the region

The Kalundborg Municipality on Zealand is widely regarded as the world's first working industrial symbiosis. The network includes several large energy and processing companies who engage in some 50 symbiotic exchanges. It is based on trust, transparency and ongoing dialogue between public and private actors, and was developed with the assistance of regional strategies supporting environmental and economic sustainability. The project's five decades of experience and knowledge are now being shared nation-wide as well as internationally.

Aim, focus and participants

The Kalundborg event aimed to bring together the Kalundborg Symbiosis partners, Symbiosis Center Denmark and other symbiosis network coordinators, companies, municipalities, and researchers to share experiences, exchange ideas and discuss opportunities to create symbiosis networks in the Nordic countries. The event included the presentations from Symbiosis Centre Denmark and symbiosis networks in Finland, Norway and Sweden, as well as a presentation of the Nordregio research project *The potential of industrial symbiosis as a key driver of green growth in Nordic regions*. This was followed by a roundtable discussion centred on the following questions:

- What are the key opportunities for industrial symbiosis development?
- What are the key challenges for industrial symbiosis development?
- What are the benefits of strengthened Nordic collaboration? And how can it be organised?

Twenty people attended the Kalundborg event including representatives from Symbiosis Centre Denmark

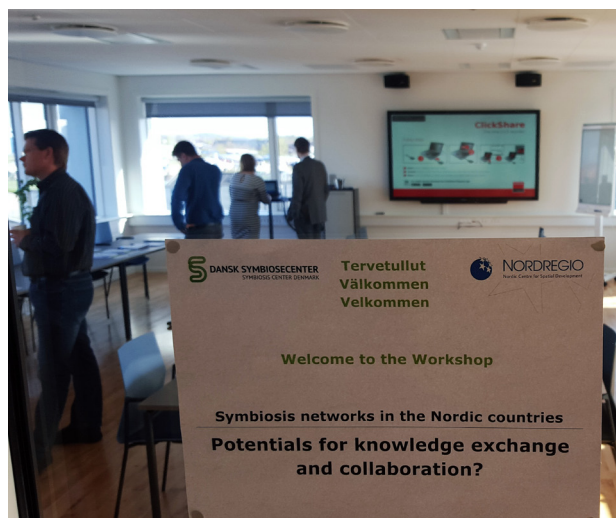
and from symbiosis networks in the other Nordic countries.

Challenges, opportunities and emerging issues

Industrial symbiosis (IS) can be distinguished from wider ambitions for circular economy based on its business-driven nature. It should involve green business models that support linkages between both 'black' companies and more cleantech-oriented businesses. Key points of discussion at the Kalundborg event included:

■ **Getting companies on board.** Two main strategies for getting companies involved in IS networks were discussed: 1) attracting local companies to join existing IS networks, and 2) relocation of companies to join an IS network. The first is more common though examples of the second can be found in Kalundborg. When it comes to getting more resistant companies on board, the competitive advantages of local collaboration and partnership, as well as the benefits of being seen as conscientious when it comes to the triple bottom line, can be useful motivators.

■ **Utility stations taking a leading role.** Proactive local utility stations have been key driving forces for symbiosis development. They can take a role in providing access for companies, garnering support from local politicians and mapping out roles for different actors in local networks.



Kalundborg Road Show event.



Kalundborg, Road Show event.

■ **Public-private partnership.** Systemic level changes are needed to support IS and circular economies, particularly with respect to public-private partnerships. At EU-level DG Environment has increasingly become focused on the role of local authorities as barriers to IS development often stem from opposition and lack of knowledge at the local level (e.g. prohibitive regulations, difficulties receiving permits).

Nordic added value

The event concluded with a discussion of potential ways forward – particularly with respect to increasing Nordic cooperation in industrial symbiosis and in green growth more broadly. Suggestions included:

- Developing an online platform that maps waste/side stream flows at the Nordic level.
- More systematic sharing of methodologies for IS development.
- Nordic symbiosis networks where participants can exchange ideas about getting the public sector involved. Joint advocacy from Nordic networks to national policymakers and the EU Commission.
- Expanding Linköping University's database of IS networks in Sweden (currently under development) to include other Nordic countries.
- In-depth mapping of utility stations ownership and research into how differences in ownership impact IS development in the Nordic countries.

The group also expressed a desire for future meetings between the group convened here with the view to developing joint projects (possibly involving the Nordic Council of Ministers in some way) and continuing to bridge the gap between researchers and practitioners.

Learn more about green growth in Kalundborg
Symbiosis Centre Denmark: <http://www.symbiosis.dk/>

Luleå (Sweden) Bioeconomy and Nordic/Baltic co-operation: Regional efforts and opportunities for inter-regional cooperation

Date: May 18, 2016

In collaboration with: Luleå University of Technology
Report by: Nelli Mikkola and Jukka Teräs

Snapshot of green growth in the region

Luleå is the capital city of the Norrbotten County in North Sweden, with 75,000 inhabitants. Major employers in the city include the municipality, the healthcare sector, Luleå University of Technology, air wing, steel and engineering industries. The traditional industries in the Luleå Region are increasingly engaging in the process of green transition and circular economy and Luleå University of Technology is one of the key actors

in green economy studies. Recently, a decision from Facebook to locate its data centres in Luleå, have further increased green economy discussion and activity in the region.

Aim, focus and participants

The Luleå Road Show event was the first leg of a two-day event in Northern Sweden and Northern Finland. The aim of the event was to draw a picture of the bioeconomy and circular economy in Northern Sweden and consider possibilities for realising the bioeconomy in the Baltic Sea Region. The event included several presentations related to these themes followed by a roundtable discussion guided by the following questions:

- What are the current and emerging best practices for accelerating the transition towards the circular economy and bioeconomy in Luleå and its surrounds?
- What are the opportunities for macro-regional cooperation between circular economy and bioeconomy initiatives?
- What are the opportunities for inter-regional cooperation? (e.g. sharing experiences and learning; business matchmaking and other activities to promote innovation; sharing of business development services and infrastructures; and collaboration between research and business).

A total of 20 green growth actors from across the region participated in the meeting.

Challenges, opportunities and emerging issues

Key points of discussion at the Luleå meeting included:

■ **Improve public policy support.** The public policy framework is not currently well optimised to support the bioeconomy. Regulations are restrictive, there is not enough funding available and the lack of coordination between ministries makes a holistic approach difficult. Even terminology still causes some problems (though important to note that this is not the key issue).

■ **Collaboration as a path to innovation.** There is a need for more – and more effective – collaboration between regions, countries and companies with respect to both policy and practice. In the sparsely-populated North, cross-border collaboration plays a key role. For example, North Calotte Council (a cross-border committee) will focus on bioeconomy and can provide financial and political support to regional actors in their efforts and collaborations. North Calotte Council has mapped the bioenergy actors (producers, developers, users, universities) along the Bothnian Arc. This type of collaboration can help to tackle the challenge of attracting human capital in the sparsely populated re-



Luleå Road Show event.

gions and help create the critical mass for bioeconomy innovation. Establishment of new companies in the Arctic through collaboration with students, incubators and expert advisors (to engage a wider set of actors). By working together to attract large investments (e.g. Facebook), opportunities can be created for local service companies in large-scale projects.

■ **Capitalise on the Arctic dimension.** Unique conditions in the Nordics present not only challenges but also opportunities (e.g. data centers in the Luleå region – cooling costs are low in the north). In the Arctic we have the expertise and technology to work in extreme environments. There is also scope to use the Arctic brand to promote value-added and as a label signalling quality.

Nordic added value

The participants at the Luleå event noted the divergent Nordic environment for bioeconomy (blue in the north vs. more yellow and green in south) and suggested that we should not discuss one Nordic bioeconomy, but should rather talk about bioeconomies. Other discussion about Nordic and Nordic/Baltic cooperation included:

- Inter-regional clusters for the Arctic and Baltic Sea Region.
- The option to develop a Nordic/Baltic bioeconomy project together, which could possibly include Nordic Council of Ministers input.
- Joint lobbying on national and EU-level for enhanced and coherent framework for bioeconomy advancement.
- Combining datacentres and big data to Nordic green growth initiatives.

Learn more about green growth in Luleå and in North Sweden

- Facebook and green energy in Luleå: <http://thebarntsobserver.com/en/industry/2016/01/facebook-and-green-energy-key-economic-boom>
- Lansstyrelsen Norrbotten: <http://www.lansstyrelsen.se/Norrbotten/En/miljo-och-klimat/Pages/default.aspx>

Kemi (FI) Bioeconomy and Nordic/Baltic co-operation: Regional efforts and opportunities for inter-regional cooperation

Date: 19 May, 2016

In collaboration with: Digipolis Technology Park

Report by: Nelli Mikkola and Jukka Teräs

Snapshot of green growth in the region

Kemi is situated in Northern Finland and is well known for the Kemi-Tornio industrial symbiosis. The collaboration includes actors from forestry, mining and steel industry companies, industrial service companies, research and educational organisations and intermediaries.

Aim, focus and participants

The Kemi Road Show event was the second leg of a two-day event in Northern Sweden and Northern Finland. The aim of the event was to draw a picture of the bioeconomy and circular economy in Northern Finland and consider possibilities for realising the bioeconomy in the Baltic Sea Region. The event included several presentations related to these themes followed by a round-table discussion guided by the following questions:

- What are the current and emerging best practices for accelerating the transition towards the circular economy and bioeconomy in Kemi and its surrounds?
- What are the opportunities for macro-regional cooperation between circular economy and bioeconomy initiatives?
- What are the opportunities for inter-regional cooperation? (e.g. sharing experiences and learning; business matchmaking and other activities to promote innovation; sharing of business development services and infrastructures; and collaboration between research and business).

A total of 18 green growth actors from across the region participated in the meeting.

Challenges, opportunities and emerging issues

Key points of discussion at the Kemi meeting included:

- **More collaboration.** As in Luleå, participants in the Kemi workshop noted a need for greater and more effective collaboration between regions, countries and companies with respect to both policy and practice. North Calotte Council (a cross-border committee) will focus on bioeconomy and can provide financial and political support to regional actors in their efforts and collaborations. Cities and municipalities could invest more in pilot and demonstration facilities to stimulate innovation in their region (e.g. City of Oulu), but this will not occur without regional and inter-regional collaboration.
- **Disseminate ideas and learn from good practices.** Learning from successful work is vital with respect to both attracting funding from international actors (e.g. Chinese company Kaidi's investment in the large-scale

biorefinery in Kemi, investment decision expected by the end of 2016) and at a more local level (e.g. the promotion of the Arctic bioeconomy by Regional Council of Lapland, Carbon neutral communities HINKU initiative and the municipality of Ii in North Finland).

■ **Need for facilitators and intermediaries.** Regional technology transfer companies and incubators are vital in taking ideas from the research and development stage and turning them into viable business opportunities. Without someone to oversee the whole picture and work as a facilitator, people are not involved where they should be and the flow of information and coordination not optimal. The Nordic Council of Ministers can facilitate but someone needs to generate/implement. There is a significant role for intermediaries in overcoming this structural issue.

Nordic added value

When it came to discussions about Nordic Cooperation, there were again great similarities between the Luleå and Kemi workshops. Participants similarly noted the divergent Nordic environment for bioeconomy (blue in the north vs. more yellow and green in south) in the Nordic Region. Despite this challenge, several opportunities for Nordic collaboration were discussed, including:

- Inter-regional clusters for the Arctic and Baltic Sea Region.
- The option to develop a Nordic/Baltic bioeconomy project together.
- Nordic cooperation in the field of biorefineries.

Learn more about green growth in Northern Finland

■ An ecosystem of Arctic industries: <http://www.nordregio.se/50cases>

■ Bioeconomy.fi: <http://www.bioeconomy.fi/ask-a-finn/organization/lapin-liitto-2/>

Copenhagen (Denmark) Nordic Green Growth and Regional Development

Date: 20 May, 2016

Report by: Iryna Kristensen

Aim, focus and participants

The Copenhagen event aimed to generate a discussion about green growth in a Danish regional development context. It included presentations covering a broad range of topics including examples of Nordregio's green growth research with commentary from Danish regions, analysis of Nordic and Baltic bioeconomy strategies, and strategic design interventions as a tool for development of areas of rural shrinkage. The presentations were followed by a roundtable discussion focused on the following questions:

- What are the major opportunities and barriers to green growth in Denmark?
- What are the opportunities/ideas for Nordic added value activities of green growth?

Twenty people attended the Copenhagen meeting in-



Copenhagen Road Show event.



Copenhagen Road Show event.

cluding representatives from the universities, regional and municipal authorities in Denmark.

Challenges, opportunities and emerging issues

The broad mix of participants meant that the discussion was fairly general. Key discussion points included:

■ **Innovation arenas.** Industrial symbiosis was seen as having great potential as a catalyst for innovation as it takes companies beyond marginal improvements in individual competitiveness and opens the door to sharing of knowledge and best practice. There is scope to create better linkages between local and regional initiatives in order to align and simplify the process for knowledge exchange delivery. There is also room to extend the existing network by involving independent actors and researchers (side-in approach) to provide knowledge and build platforms. Both industrial symbiosis and bio-based economy will rely on extending bio-refinery networks rather than building new plants.

■ **Speeding up on industrial symbiosis (IS).** Three main ways for accelerating the path to IS were discussed: 1) involvement of local actors (municipalities have valuable contextual knowledge); 2) multi-disciplinary and inter-sectoral knowledge sharing; 3) multi-level governance to support industrial symbiosis. One participant cited the over-implementation of EU environmental regulations as a challenge to IS development in Denmark (e.g. in the agricultural sector). Participants also emphasised the importance of establishing a

strategic framework and clear goals for industrial symbiosis.

■ **Challenges facing small and peripheral regions.** It was suggested that the challenges facing small and peripheral regions could be addressed through regional restructuring where, for example, smaller municipalities (e.g. *Bornholm*) might supply major cities/regions (e.g. *Hovedstaden*) with resources like energy and agriculture.

■ **Radical change required.** Industrial symbiosis and bio-business requires a solid framework that calls for radical changes not simply incremental improvements. The shift of an economy to bio-based materials should begin with a total restructuring - transformation and functioning of the overall socio-economic structure including education, legislation and other social structures.

Nordic added value

The event concluded with a discussion of potential ways forward – particularly with respect to increasing Nordic cooperation. Participants felt that the Nordic countries have a strong foundation on which to build a Nordic bioeconomy including both the governance and business context and the region's strong mix of resources such as agriculture, forest and marine. Key opportunities to build on this that were identified included:

■ Establishment of a cross-national platform for knowledge and practice exchange between all Nordic

countries. The Nordic countries share similarities in terms of enabling conditions and the establishment of a common platform for knowledge exchange will intensify green growth cooperation.

■ ‘Sustainability as opportunity’. Biofuels have rather negative image in a global context, due in part to a rather complex set of support schemes and concerns over sustainable use of natural resources. The Nordic approach of going beyond the fuels themselves and instead focusing on competence building and technology development has allowed for the upgrading of biomass to higher value products (e.g. food ingredients). This means that Nordic countries have a large potential to share ‘green practices’ with other countries: How do we do things? What tools do we use to make the right decisions?

Learn more about green growth in Denmark

State of Green: www.stateofgreen.dk

Ísafjörður (Iceland) Local/regional strategies to promote a sustainable blue bioeconomy

Date: 20 May, 2016

In collaboration with: Innovation Centre Iceland

Report by: Anna Berlina and Lise Smed Olsen

Snapshot of green growth in the region

Ísafjörður is located in the North-West corner of Iceland and is the principal town of the Westfjords Peninsula. The town itself has some 3,000 inhabitants, and the larger Ísafjörður municipality has around 4,000 inhabitants. Traditionally, the fishing industry has been the mainstay of all the towns and villages. In the 1980s and 1990s however, the Westfjords experienced a severe decline in the industry. This was addressed in part by shifting the focus to manufacturing high-tech

machinery and equipment for fisheries and various research projects on fish and fish production.

Aim, focus and participants

The aim of the Ísafjörður event was to share knowledge and generate discussion about local and regional opportunities to promote a sustainable blue bioeconomy in Iceland, and in the Nordic Region as a whole. The event included presentations on topics such as the regional economic impact and potential of the Nordic bioeconomy, cooperation between local authorities and the state and a snapshot of the Westfjords Seafood Cluster. This was followed by a roundtable discussion centred on the following questions:

- What are the key opportunities for blue bioeconomy development?
- What are the key challenges for blue bioeconomy development?
- What are the benefits of strengthened Nordic collaboration? And how can it be organised?

Thirteen stakeholders working with blue bioeconomy in the Westfjords Region attended the event.

Challenges, opportunities and emerging issues

Key points of discussion at the event included:

- **Framework conditions.** Although potential for development and company interest in blue bioeconomy exists in Iceland, the top-down efforts are limited. A lack of soft and seed capital along with inexperience dealing with the legal elements of new industries makes it challenging to get entrepreneurs to take the risk and run the development. This view was reinforced by two local entrepreneurs at the meeting who have started up businesses related to seaweed and insect breeding respectively.



Ísafjörður Road Show event.

■ **Food production.** The combination of local food production and tourism already shows promise in some areas and presents substantial opportunity for further development. There is also scope to grow the blue bioeconomy in Westfjords beyond its current focus on food production. The Swedish Algae factory was highlighted as an inspirational example highly relevant to the Westfjords.

■ **Growing aquaculture.** Aquaculture is a growing industry in the Westfjords and it is expected to become the leading industry in the future. A strategic approach to growth, particularly with respect to land-use planning, will ensure that it does not interfere with other economic activities such as tourism. This is already underway through local cluster cooperation including all of the largest seafood companies and Matis, feasibility studies and mapping of aquaculture development in the region.

■ **Competence matching.** In the future, 20 percent of all jobs in the region are expected to be in the aquaculture field. Greater collaboration between industry and educational institutes was suggested as a strategy to ensure that there are enough qualified people to take on these jobs and support blue growth in the region. Making these courses more attractive would also be useful in supporting young people to stay in the region by ensuring that their course of study is aligned with local employment opportunities.

■ **Local business start-ups and business development.** Representatives from two local start-ups participated in the meeting. The first was working with macro algae biomass. This work has applications in several parts of the value chain however it is currently difficult to find funding to allow harvesting of macro algae on an industrial scale. The second entrepreneur is breeding insects (black soldier flies), and raising them on organic local waste streams, for use as feed and food. The work has shown promising results however the legal framework presents a major obstacle as using animal protein as feed is currently prohibited under EU law.

Nordic added value

The event concluded with a discussion of potential ways forward – particularly with respect to increasing Nordic cooperation in developing the blue bioeconomy. Suggestions included:

■ Making it easier for small communities like Ísafjörður to participate in Nordic and EU projects.

■ Creating more opportunities for knowledge exchange – especially on aquaculture. This might include study trips, researcher exchange programmes and sharing particular learnings (e.g. experiences in dealing with negative environmental impact of aquaculture).

Learn more about green growth in Ísafjörður

■ Innovation Centre Iceland: <http://www.nmi.is/english>

■ Ísafjörður Municipality: <http://www.isafjordur.is/>

■ Matis: www.matis.is

Turku (Finland)

Innovation and entrepreneurship in the circular economy: Experiences from Southwest Finland and prospects for collaboration between Nordic regions

Date: 23 May, 2016

In collaboration with: Turku University of Applied Sciences (TUAS)

Report by: Nelli Mikkola and Jukka Teräs

Snapshot of green growth in the region

Turku is located in the South West Finland Region and is home to 180,000 people. The city is highly committed to sustainable development and aims to be carbon neutral by 2040. Circular economy initiatives are of particular note in Turku and in South West Finland as a whole. Examples include a state of the art water circulation system and a large scale textiles recycling project.

Aim, focus and participants

The aim of the Turku event was to discuss Innovation in the circular economy, incorporating topics such as industrial symbiosis and textile circulation, and to explore prospects for future inter-regional collaboration in the Nordic and Baltic Sea Regions. The basis for the event was a series of research publications by Nordregio, including *Bioeconomy in the Nordic region: Regional case studies*, *The potential of industrial symbiosis as a key driver of green growth in Nordic regions*, and *Green Growth in Nordic Regions – 50 ways to make it happen*, which includes contributions from TUAS students. Local perspectives on the circular economy were also presented followed by a roundtable discussion based on the following questions:

■ What are the best and next practices for accelerating green growth and the transition towards the circular economy locally in Southwest Finland?

■ What are the opportunities for Nordic inter-regional cooperation in green growth, for example experience sharing and learning, accelerated innovation and business cooperation; and research-to-business cooperation?

■ How can we generate more exports in the field of Nordic green growth?

Twenty-six circular economy actors from across the region participated in the meeting.

Challenges, opportunities and emerging issues

Key points of discussion at the Turku meeting included:

■ **Challenges to advancing green growth in the region.** Participants discussed a range of challenges including a lack of readiness to share info between regional actors (public and private), diverse interests and agendas, lack of public awareness of green growth and circular economy, and weak regional branding that copycats successful examples rather than creating a green profile based on specific characteristics of the region.

■ **Opportunities for advancing green growth in the region.** Green growth is becoming increasingly visible in the region. Several opportunities to capitalise on this were raised, including: developing a side-stream inventory in Turku (inspired by the Kemi-Tornio example), a full scale demonstration factory for textile recycling that is open to the public and growing the relationship between Turku and its sister city in China.

■ **Working together.** Networks collaboration and learning from others were seen as important, as was sharing experiences – even the negative ones! Innovation is of course important but don't forget the simple solutions.

Nordic added value

The event concluded with a discussion of potential ways forward – particularly with respect to increasing Nordic cooperation in the circular economy and in green growth more broadly. Suggestions included:

■ Promoting collaboration between Nordic countries, regions and municipalities wbased on shared characteristics, opportunities, challenges and focus areas.

■ Creating more opportunities for knowledge exchange between regional circular economy and green growth actors at the Nordic level.

Learn more about green growth in Turku

■ An ambitious approach to textile recycling in Southern Finland: <http://www.nordregio.se/50cases>

■ The water circulation system in Southwest Finland: <http://www.nordregio.se/50cases>

■ City of Turku: <https://www.turku.fi/en/housing-and-environment/environment/sustainable-development>

■ Visit Turku: http://www.visitturku.fi/en/sustainable-city-of-turku_en

Stockholm (Sweden)

Bioeconomy: Nordic lessons and the role of regions

Date: 14 June, 2016

In collaboration with: Näringsdepartementet

Report by: Åsa Ström Hildestrand, Linda Randall and Jukka Teräs

Aim, focus and participants

The aim of the Stockholm event was to consider relevant learnings from other Nordic examples of national bioeconomy strategies (with a particular focus on the work that has occurred in Finland) and to explore the role of regions when implementing national level bioeconomy goals. The event was timely, as the Swedish Government are currently in the process of developing a national agenda for the development of the Swedish bioeconomy. The event was made up of several presentations covering topics such as national bioeconomy strategies in the Nordic and Baltic Sea Region, the role of the regions and the growth potential of the bioeconomy and a practical example of regional bioeconomy development from Värmland. Each presentation was followed by questions and discussion which provided insight into the current status of bioeconomy development at both the national and regional level in Sweden. Eleven people participated in the event, with attendees including members of the interdepartmental working group on bioeconomy and representatives of the official national agency for growth and development, Tillväxtverket.

Challenges, opportunities and emerging issues

Consistent with the agenda, the discussion at the Stockholm event was largely focused on national and regional policy and the interaction between the two. Specific points of discussion included:

■ **Implementation of strategic goals.** How do we move from a national level 'strategy', 'plan' or 'agenda' to concrete outcomes? Smart Specialisation Strategies were raised as an effective tool for taking the national strategies to the regional (or at least more practical) level (e.g. Värmland's smart specialisation strategy makes development of the bioeconomy its number one priority and includes close collaboration with local clusters (Paper Province), business organisations and Karlstad University (development of a Centre for Bioeconomy).



Stockholm Road Show event.

■ **No one “bioeconomy”.** There is a need to understand the barriers, enablers and potential in the different sectors within the bioeconomy (e.g. building, transport, fuels, and chemicals). This does not negate the need for an overall view, but rather highlights the need to ensure these different experiences are carefully synthesised to make up the broader picture and advance the bioeconomy at the national level.

■ **Playing to regional strengths.** It is important that any national objectives are flexible enough to allow regional actors to capitalise on their existing strengths and assets. In the Värmland example, the focus is on doing what they are already good at and redefining what it can be good for (adding value) for the creation of a sustainable society.

■ **Taking an integrated gender perspective.** Development of the bioeconomy also presents an opportunity to address gender imbalances in the regions, both in numbers and in opportunity. In line with this, Värmland is working to make the region more attractive for female academics. There was limited opportunity to address this issue in any depth though the meeting but it could be an interesting area for further discussion and/or research.

■ **State support.** Was seen as vital if the regions are to continue developing bioeconomy initiatives at this pace. This could include stronger market support for biofuels (or at least less subsidies for fossil fuels), clear quotas on the percentage of biofuel necessary to label something biofuel, more investments in Swedish innovations, more invest in evaluation of bioeconomy pilots and a pro-active role for the new government agency responsible for overseeing green public procurement.

Nordic added value

The event concluded with a brief discussion of potential ways forward – particularly with respect to future work for the Nordic Cooperation Programme. Suggestions included:

■ Creating more opportunities for regional actors to feed into the work of the Nordic Working Groups and Nordregio’s work in general. The new network of Swedish regions focused on the bioeconomy could be an opportunity for collaboration.

■ Research into green public procurement as a project in the new work program. How do the Nordic countries use public procurement to support the transition to a greener economy? How can regions, and even countries, collaborate to reduce the cost of developing green public procurement tools?

■ Examining the implementation process for national bioeconomy strategies (similar to the Finnish example. How are tasks divided between ministries? Who is in charge? Given the stage they are currently at, the Swedish case might make a nice action research project.

Learn more about green growth in Sweden

Bio-based economy and circular economy Sweden: Status report 2016 (in Swedish) http://www.regeringen.se/contentassets/176bcc16ab8d4169a39a7122683eaa7a/20161025_faktablad_liggande_svp_cirkular-och-biobaserad-ekonomi.pdf

Bornholm (Denmark)

Bright Green Island and local strategies for the green transition of enterprises – Nordic knowledge sharing and collaboration

Date: 25 August, 2016

In collaboration with: Regional Municipality of Bornholm

Report by: Lise Smed Olsen, Jukka Teräs and Mads Randbøll Wolff

Snapshot of green growth in the region

The Bright Green Island (BGI) vision, formulated nine years ago by local people representing different parts of the society, sees Bornholm becoming a 100 percent sustainable and CO₂ neutral society by 2025. Today several examples of local businesses working towards more sustainable practices can be identified. For example, enterprises are concerned with strategic energy planning, sustainable food production, climate-friendly fashion production, circular waste management and green construction. Today there is a common understanding that the BGI vision needs to be revitalised, and an effort needs to be made to encourage more businesses to work towards green transition. An important step in this direction is to identify the needs of businesses and to determine how the municipality and the business support system can facilitate and catalyse the process from vision to reality.

Aim, focus and participants

The aim of the Bornholm event was to discuss the implementation of the local sustainability strategy Bright Green Island. In order to facilitate learning and collaboration between islands in the Baltic Sea Region, a representative from the local government of Åland participated and presented their local strategy for sustainable development. Several local examples were also presented followed by a workshop discussion centred on the following questions:

- From your perspective, what are the key opportunities for the Bright Green Island strategy?
- From your perspective, what are the key challenges?
- What expectations do you have of the revitalisation of the Bright Green Island strategy and strengthened Baltic Sea Region/Nordic collaboration?

A total of 40 people participated in the event including municipal representatives, businesses, researchers and business support organisations.

Challenges, opportunities and emerging issues

Consistent with its aims, the event had a distinctly local focus. Key points covered in the discussion included:

- **Renewable energy and energy efficiency.** Important steps have been made to utilise renewable energy sources on the island meaning that in 2017 electricity production on Bornholm will be derived 100 percent



Bornholm Road Show event.



Bornholm Road Show event.

from solar, wind and biomass and in 2018 50 percent of households on Bornholm will be provided with CO₂ neutral district heating. This development has attracted international attention and awards but scope remains for better utilisation of Bornholm's potential as a test island for renewable energy production and other CO₂ reduction initiatives.

■ **Green business start-ups and re-location.** There is scope to use BGI more actively as a tool through which to encourage business start-ups and relocation of businesses with a green/sustainable development profile. For example, Nord+Nord, an organic fashion house, relocated to Bornholm after visiting for a weekend, discovering the BGI vision and finding it well in line with their business strategy.

■ **The green transition of enterprises.** A local pig farmer provided an example of how initiatives can be made at enterprise-level to reduce CO₂ emissions in agriculture by presenting a number of measures he has introduced to reduce energy consumption. Based on his experiences, the farmer proposed that development funds might be better spent on employing specialised consultants that are able to help directly with hands-on resource and energy efficiency measures (as opposed to the time consuming and bureaucratic process of applying for grants).

■ **Promoting a sustainable experience economy.** There was general agreement that BGI could be used more actively in destination marketing and in involving Bornholm's tourism related actors more actively in

green business development. "Green accreditation" was thought only to be valuable at an international level and even then has not been found to have an effect on tourists' decisions-making. Other tourism possibilities discussed included a tourism demonstration project in the form of a sustainable, mobile cottage that could be moved to different places on the island, re-branding of the annual People's Meeting "Folkemødet" to "The Green People's Meeting", a greater focus on outdoor tourism and a better developed bike path system.

■ **Green construction.** Participants suggested that the Municipality could have a stronger focus on green approaches to construction by requiring sustainable solutions and materials to be used in public procurement processes. Related to this BGI could to a higher extent guide how town centres on the island are developed. Local work going forward. The BGI vision should be followed up by a development strategy that includes clear targets, sub-targets, milestones, and an action plan. It is significant to include a long-term perspective also in the local budgeting. More focus should also be placed on how to attract risk capital. The relevance of more cross-sectoral collaboration and development of partnerships was highlighted. In the development and implementation of the strategy citizen awareness and 'ownership' should be ensured.

Nordic added value

Although this event had a distinctly local focus, participants were positive towards increasing Nordic co-

operation especially between the Baltic Sea islands. The presentation from the representative of the local government of Åland about their local strategy for sustainable development was very well received. The success factors raised resonated with participants and further opportunities to share learnings were seen as beneficial in the ongoing development and implementation of the Bright Green Island strategy.

Learn more about green growth in Bornholm

Bright Green Island: <http://brightgreenisland.com/>

Åland

Roundtable discussion on bio economy and green growth in Åland

Date: 29 August, 2016

In collaboration with: Åland Region/Landskapsregeringen

Report by: Jukka Teräs, Åsa Ström Hildestrand and Mads Randbøll Wolff

Snapshot of green growth in the region

Shipping, agriculture, and fishing are the traditionally strong industrial sectors in Åland. Currently, tourism is also an important part of the Åland economy. Åland has a large number of businesses and a long entrepreneurial tradition. There are currently about 2,100 businesses, of which about 600 are agricultural enterprises. About 20 companies in Åland have more than 50 employees – mainly shipping firms, banks and insurance companies. More than 90 per cent of companies have less than 10 employees, and many are one-person businesses. The primary industries (e.g. agriculture and fishing) play a vital role as providers of raw produce for the food industry in the archipelago and in other sparsely populated areas.

Aim, focus and participants

The main aim of the meeting was to discuss green growth development and the bioeconomy in a local context – particularly in light of the current work on the Åland strategy for sustainable development, to be adopted in September 2016 – and be closely linked to the global Agenda 2030. The strategy was developed through an open and inclusive process that has created a strong ownership both within the government and in civil society. The next crucial step is the implementation process led by *Hållbarhetsrådet*.

Five presentations were given at the event, with topics including the value of Nordic cooperation (i.e. what can Åland learn from other Nordic islands and countries – and Nordregio's research?); examples of national and local green growth and bioeconomy strategies, policies and indicators; and examples of green growth practices and support activities within similar local contexts (Bornholm was of particular interest). The presentations were followed by an interactive workshop session. Eighteen local stakeholders participated.

Challenges, opportunities and emerging issues

Overall the meeting promoted an open-minded discussion and resulted in a better understanding of the challenges and opportunities for green growth in the Åland Islands – and ways forward. Specific points of discussion included:

■ **Defining local strengths.** Åland has a strong local identity and well-functioning local networks and institutions (good governance). Commercial know-how is also high thanks to a number of big, export oriented companies within banking, shipping and logistics, and numerous small, local companies, (e.g. in food production and tourism). Åland has a strong tradition for building in wood however this has gradually been replaced by the use of concrete and steel.



Mariehamn Road Show event.

■ **Building a 'greener local identity'.** Participants expressed a desire to capitalise on Åland's strong local identity to find the island's 'green growth niche'. Putting locally produced materials, products, food etc. higher on the agenda was thought to play an important role in this, for example through increased use of green public procurement, like in Bornholm. Learning from Iceland's (Matis) work on food innovation, adding value to local food production was also seen as relevant here.

Circular economy thinking was also seen as very relevant and already happening as part of the island culture when resources are scarce – but not always labelled circular economy. A lack of young green entrepreneurs was cited as a potential barrier to more circular business development so competence building and financial incentives would be needed to encourage more towards greener or resilient business models.

The oil dependence and the persistent car culture were raised as another challenges to overcome in the pursuit of a greener, more sustainable Åland. Again, Bornholm's work on clean, bio-based energy production and a smart grid was seen as a source of inspiration. The grid already in the making.

■ **Marketing green solutions – highlighting success.** More effective marketing was considered to be vital in making green solutions more attractive and viable. Here Bornholm's work on the Bright Green Island strategy was seen as something to learn from. Coming together to celebrate progress was also seen as a great way to open up cross-sectoral dialogue around com-

mon challenges. 'Hållbara Åland' was suggested as a key actor in facilitating this cooperation.

■ **Innovation and competence development.** Finally, we discussed that innovation and competence development is key to making progress, as well as public-private partnerships.

Nordic added value

Examples of Nordic added-value of the Åland meeting were:

■ It became clear to all that there is great learning potential between the Nordic islands, primarily between Åland and Bornholm, but also Samsö and Iceland, when it comes to strategies and concrete measures to promote a more circular and green economy at the local level.

■ Participants got a new perspective on Åland's strengths and challenges when discussing the issues with other Nordic counterparts – both on the need to be able to define these and the need to market or highlight strengths and progress.

■ The Kemi-Tornio online platform that maps the waste/side stream flows of industries to enable industrial symbiosis was seen as a great inspiration for Åland.

■ Another learning point was the need to think beyond bio-based solutions and focus on circular business models as well. And understanding that innovation and competence development is key to making progress.



Grimstad Road Show event.

■ We also discussed Nordic collaboration in the process of implementing the global Agenda 2030.

Learn more about green growth in Åland

Åland Islands' regional development strategy: <http://barkraft.ax/>

Grimstad Green transition from a Norwegian perspective

Date: 24 October, 2016

In collaboration with: University of Agder

Report by: Ingrid Johnsen and Jukka Teräs

Snapshot of green growth in the region

The Agder region is the southernmost region in Norway and is composed of the two counties East-Agder and West-Agder with a total population of 272,074 inhabitants in 2008 (5.74% of the total population in Norway). Each county is divided into 15 municipalities, most of them rather small. The main part of the population is concentrated on the coastline, in the two urban areas around Kristiansand and Arendal/Grimstad.

Aim, focus and participants

The aim of the Grimstad event was to exchange experiences and discuss opportunities and challenges to green transition in Agder, Norway and the Nordic Region as a whole. The event included presentations from the Norwegian Ministry of Local Government and Regional Development and Nordregio, along with three practical examples of green transition from participants. This was followed by small group discussions which were guided by the following questions:

- What specific challenges and opportunities are related to a green transition in Norway? (based on examples from Agder)
- How can Nordic co-operation promote green growth? (considering the local, regional, national level).

Twenty-eight people participated in the event including local, regional and national actors in public administration, research and the private sector.

Challenges, opportunities and emerging issues

Key points of discussion at the Grimstad meeting included:

- **Challenges to advancing green growth in the region.** Challenges discussed at the meeting included, difficulty changing consumer behaviour, low oil prices hin-



Grimstad Road Show event.

dering investment in greener solutions such as biofuels, and a lack of innovation in the public sector (e.g. e-health, public procurement policies).

- **Opportunities for advancing green growth in the region.** Opportunities at the regional level included access to cheap renewable energy making it attractive for energy-intensive industries, a strong record as a front-runner in cross-regional and cross-sectorial collaboration and green growth focused regional/local strategies, good framework conditions through support schemes at regional level, strong support from national policies to promote green growth in, for example, the processing industry (compared to other European countries), and high competence level in the region – possibility to increase entrepreneurship.

Nordic added value

The event also included discussion about the role of Nordic cooperation in promoting green growth. Suggestions included:

- A specific Nordic initiative aimed at promoting Nordic green growth. This initiative should be developed in collaboration with regional actors to ensure it captures the unique character of green growth in the different regions.
- International collaboration between politicians to increase the visibility of Nordic green growth within the EU and in a global context.
- Nordic countries could act as “early adapters” and collaborate on creating ethical markets for Nordic products.

Learn more about green growth in Agder Region

EYDE Cluster: <http://www.eydecluster.com/english/>
GCE NODE: <http://gcenode.no/>

Nordic Green Growth Road Show 2016: Overall conclusions

The Nordic Green Growth Road Show was an excellent opportunity to reflect on the work of the Nordic Working Group on Green Growth - Innovation and Entrepreneurship from 2013 to 2016. It provided a platform through which to evaluate the current status of green growth in the Nordic Region and to gather ideas to inform joint Nordic efforts going forward. This was a timely exercise, as the Working Group in its current form will conclude its activities at the end of 2016, with a new four year Nordic Cooperation Program set for launch in January, 2017.

The preceding section of this report presented a range of ideas based on specific regional experiences. This final section synthesises these ideas to generate some broad findings about the status of green growth in Nordic regions based on the Road Show events. It presents both an overview of the journey so far and a brief insight into the road ahead for Nordic green growth. Please note that the insights provided here are based solely on the Road Show events. A complete account of the findings of the Nordic Working Group on Green Growth – Innovation and Entrepreneurship 2013-2016 can be found in the Synthesis Report, released in late 2016.

Green Growth in Nordic regions: 2013–2016

When the Nordic Working Group on Green Growth - Innovation and Entrepreneurship began its work in 2013, the term ‘green growth’ was already being used as an overarching concept. Many of the related key concepts, however, were yet to come into frequent use (e.g. bioeconomy; industrial symbiosis) and were not always well understood outside of a core, heavily engaged, group. Moreover, there were differences to be identified with respect to willingness to embrace green growth and promote green transition between the Nordic regions

The feedback from the Road Show events suggests that this situation has changed significantly. There has been a rapid increase in awareness of green growth, the green economy, and green transition in regions across all five Nordic countries and in the Nordic islands.

Concepts like bioeconomy, circular economy and industrial symbiosis are now more commonplace in both policy and practice settings. Most importantly, green growth is now high on the agenda in regions across the Nordic Region. There is no longer any question of whether green growth is a good idea, rather questions now focus on how it can be achieved and what roles different actors should play. In other words, the Nordic regions have awakened and are poised for the green transition!

With respect to the situation in the respective countries, the Road Show events in 2016 revealed similarities, but also differences, regarding green growth and green transition. This is partly due to the characteristics of economies and industrial structure in the respective Nordic countries (SE, FI forestry; NO oil and gas; DK agriculture; IS blue bioeconomy). Participants at some Road Show events suggested that it can be misleading to discuss one Nordic bioeconomy and we should instead talk about bioeconomies in the Nordic Region. Others suggested a shared vision for Nordic green growth that incorporates regional variation as a key characteristic.

The discussions at the Road Show events were also shaped by the typology of the regions themselves. In the capital city regions, the focus was largely on strategy/policy issues. Outside these areas concerns were much more pragmatic and focused on specific projects, activities and the role of green growth in regional/local job creation.

Despite the headway that has been made overall, differences are also apparent with respect to progress both in the adoption of green thinking and the implementation of green strategies. Broadly speaking, we can identify Nordic regions that are early adopters, those which follow once the trends are set and a final group that are still working through the discovery phase.

More specific topics that were raised at many (though not all) Road Show events included:

■ **Public-private partnerships.** Partnerships between public and private actors were consistently raised as highly important in supporting concrete green growth activities in Nordic regions. Intermediary organisa-

tions (e.g. clusters, regional/local development companies, private matchmaking companies) are vital in this sense – there is a strong correlation between regions with a good intermediary organisation and the development of effective public-private partnerships in the region (e.g. Digipolis, Kemi, Finland in promoting regional/local industrial symbiosis activities). Lack of innovation and knowledge in the public sector was often cited as a barrier to public-private partnerships (e.g. prohibitive regulations, difficulties receiving permits, arduous public procurement policies).

■ **Regional branding.** Building a ‘green identity’ at a local and/or regional level was seen as a good way to advance green growth efforts. There were examples of this as a strategy to encourage local business and also as a way of attracting new businesses to the area (e.g. Kalundborg, Bornholm). This appears to be more effective when it is tailor made based on unique local characteristics.

■ **Playing to regional/local strengths.** As noted above, Nordic countries and regions are diverse. National objectives must be flexible enough to allow regional actors to capitalise on their existing strengths and assets. Similarly, broader understandings of ‘Nordic green growth’ should be underpinned by a solid understanding of the diverse range of contexts that make up the whole.

■ **Regulations and policy support.** Favourable framework conditions and appropriate financial support/incentives were obviously seen as quite important – though the details of the challenges and opportunities relating to these varied from place to place. Interaction between levels of government was also raised as a means of ensuring that national strategies translate to action at the regional/local level. EU legislation was cited by several participants as a barrier to innovation.

■ **Networks and collaboration at the local and regional level.** Where strong networks existed at the regional/local level these were seen as key enablers in both past and future work. Where they were missing this was an obvious barrier to success. Coming together to celebrate progress was raised as a great way to open up cross-sectoral dialogue around common challenges.

Next steps: 2017 and beyond

Nordregio’s experience conducting the Road Show program suggests that, despite the great diversity in individual experiences described above, the Nordic regions are on board and poised for the green transition. The Road Show participants also provided valuable insights to pave the way forward for Nordic cooperation in the green growth field.

Based on the outcomes of the Road Show, the following recommendations are made for promoting Nordic cooperation in the green growth field and may be of particular relevance for the Nordic Cooperation Programme 2017-2020.

■ **Promote opportunities for information sharing and networking at a range of levels.** By far the most common response to the question of “what’s next?” was a desire for more opportunities like the Nordic Green Growth Road Show. Importantly, rather than the ‘know-how’ or ‘know-why’ that Nordregio could provide, it was the ‘know who’ – the awareness raising and the matchmaking that occurred at the events – that was considered the most valuable. In this respect, the collaboration with local actors to organise the events was vital. It created a unique environment from which to discuss Nordic green growth from the perspective of a particular regional/local context. Participants also expressed a desire for more systematic Nordic level information sharing around specific topics. Examples included: methodologies for industrial symbiosis development; inter-regional clusters for the Arctic and Baltic Sea Region; study visits (e.g. aquaculture); and match making between regions/municipalities with similar circumstances (e.g. Åland and Bornholm).

■ **Further develop the ‘Nordic green’ identity.** Road Show participants were keen to see Nordic examples of green growth promoted on a global scale. Increased cohesion between the countries with respect to both collaboration on concrete initiatives and messaging were seen as an important part of this work. Several participants also suggested a role for regional actors in this work to ensure it captures the unique character of green growth in the different regions – presenting a cohesive yet diverse picture.

■ **More (and more inclusive) joint projects.** Several participants had ideas for joint projects and ventures, both within the groups convened through the Road Show events, and at the Nordic level (e.g. international cooperation on bio-refinery plants, Nordic level mapping of side-streams for potential international level industrial symbiosis). These types of initiatives would rely heavily on improved match making beyond national boundaries – a task for which Nordregio is well placed. It was also suggested that measures could be taken to make participation in Nordic and EU projects easier for small communities. Again, the new thematic group along with the Nordregio secretariat are well placed to facilitate this inclusion.

■ **Joint advocacy from Nordic countries.** Participants suggested more cohesive Nordic positions on issues related to green growth could be used for lobbying at

the EU level. This work would both strengthen and be strengthened by increased international visibility of Nordic green growth initiatives.

■ **Research ideas.** Examples of specific research project that may be undertaken in the future included:

- In-depth mapping of utility stations ownership and research into how differences in ownership impact industrial symbiosis development in the Nordic countries.

- Green public procurement. How do the Nordic countries use public procurement to support the transition to a greener economy? How can regions, and even countries, collaborate to reduce the cost of developing green public procurement tools?

- Examining the implementation process for national bioeconomy strategies. How are tasks divided between ministries? Who is in charge? What are the learnings from country specific examples and for the Nordic Region as a whole?

Overall, the most valuable component of the Nordic Green Growth Road Show programme was the way it brought together a range of actors and, in doing so, initiated and supported different processes that may not have occurred otherwise. *The enthusiasm with which the programme was received suggests that there is scope for Nordregio to do more of this type of work in the future.* The Road Show also highlighted the progress that has been made in the green growth field across the Nordic Region since the Nordic Working Group on Green Growth – Innovation and Entrepreneurship began its work in 2013. Both the Working Group and Nordregio are pleased to have had the opportunity to be a part of this transformation and we look forward to more fruitful collaboration in the next Nordic Cooperation program.

Appendix I: List of participants

Name	Organisation/Company	Road Show
Aðalsteinn Óskarsson	Westfjords Association of Municipalities	Ísafjörður
Alf Johansen	Hillerød Forsyning	Kalundborg
Allan Westh	Bornholms Regionskommune/Erhverv, Udd. Og Beskæftigelse	Bornholm
Amani Siddik	Masterstudiet innovasjon- og kunnskapsutvikling	Grimstad
Anders Christiansen	Local Government Denmark	Copenhagen
Anders Lundkvist	Centre for Distance-spanning Technology (CDT)	Luleå
Anna Berlina	Nordregio	Ísafjörður
Anna Rantasuo	Orbis ry	Kemi
Anna Sofie Poulsen	Bornholms Energi & Forsyning	Bornholm
Anne Tietjen	University of Copenhagen	Copenhagen
Anni Eorola	Valonia	Kemi
Annika Kunnasvirta	Turku University of Applied Sciences	Kemi
Anu Laurila	Turku AMK	Kemi
Ari Alatossava	Municipality of Ii	Kemi
Arna Lára Jónsdóttir	Innovation Center Iceland	Ísafjörður
Arne Isaksen	Universitetet i Agder	Grimstad
Arto Tahvanainen	Turku AMK	Kemi
Azma Mohammed	Turku AMK	Kemi
Bjarne Lindeløv	Nordland Research Institute	Kalundborg
Bjarne Lindström	konsult	Åland
Camilla Gunell	Ålands landskapsregering	Åland
Camilla Lehorst	Näringsdepartementet	Stockholm
Caroline Hop	Masterstudiet innovasjon- og kunnskapsutvikling	Grimstad
Cecilia Tollefeldt	Näringsdepartementet	Stockholm
Cecilie Brunes	Masterstudiet innovasjon- og kunnskapsutvikling	Grimstad
Emma Gunnarsson	IPOS	Kalundborg
Endre Helgeland Karlsen		Kalundborg
Erik Harrison	Turun AMK	Kemi
Erik Vieth Pedersen	Nordregio Board of Directors	Copenhagen
Ester Miros	Central Baltic 2014-2020	Åland
Eva Lie Johannessen	Masterstudiet innovasjon- og kunnskapsutvikling	Grimstad
Geir Jenssen	Masterstudiet innovasjon- og kunnskapsutvikling	Grimstad
Geir Oddsson	Nordic Council of Ministers	Kemi and Luleå
Gertrud Jørgensen	Nordregio Board of Directors	Copenhagen
Gitte Trondheim	Nordregio Board of Directors	Copenhagen
Guðbjörg Ásta Ólafsdóttir	University of Iceland	Ísafjörður
Gunnar Lindberg	Nordregio	Copenhagen and Stockholm
Gunnar Þórðarson	Matis	Ísafjörður
Hanna Autio	Emmy Clothing Company Oy	Kemi
Hannu Panttila	Geological Survey of Finland	Kemi
Hans Hansen	Lehnsgaard Bornholm	Bornholm
Harry Ekestam	Nordregio Board of Directors	Copenhagen
HC Holmstrand	Aalborg Universitet, Institut for planlægning	Bornholm
Helene Falch Fladmark		Kalundborg
Helge Paulsen	Nordisk Ministerråd Danmarks Tekniske Universitet, DTU-Aqua	Copenhagen
Henning Klarlund	Roskilde University	Copenhagen
Henrik Torneus	SMA Mineral AB	Kemi
Håkan Ylinenpää	Luleå Technical University (LTU)	Luleå

Ida Sandum	Masterstudiet innovasjon- og kunnskapsutvikling	Grimstad
Ilari Havukainen	Regional Council of Lapland	Luleå
Ingeborg Griegel	Nord+Nord	Bornholm
Ingrid Johnsen	Nordregio	Grimstad
Iryna Kristensen	Nordregio	Copenhagen
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