

# Bioeconomy in the Nordic countries

## Overview, regional insights and national policies

Jukka Teräs

Senior Research Fellow, Nordregio

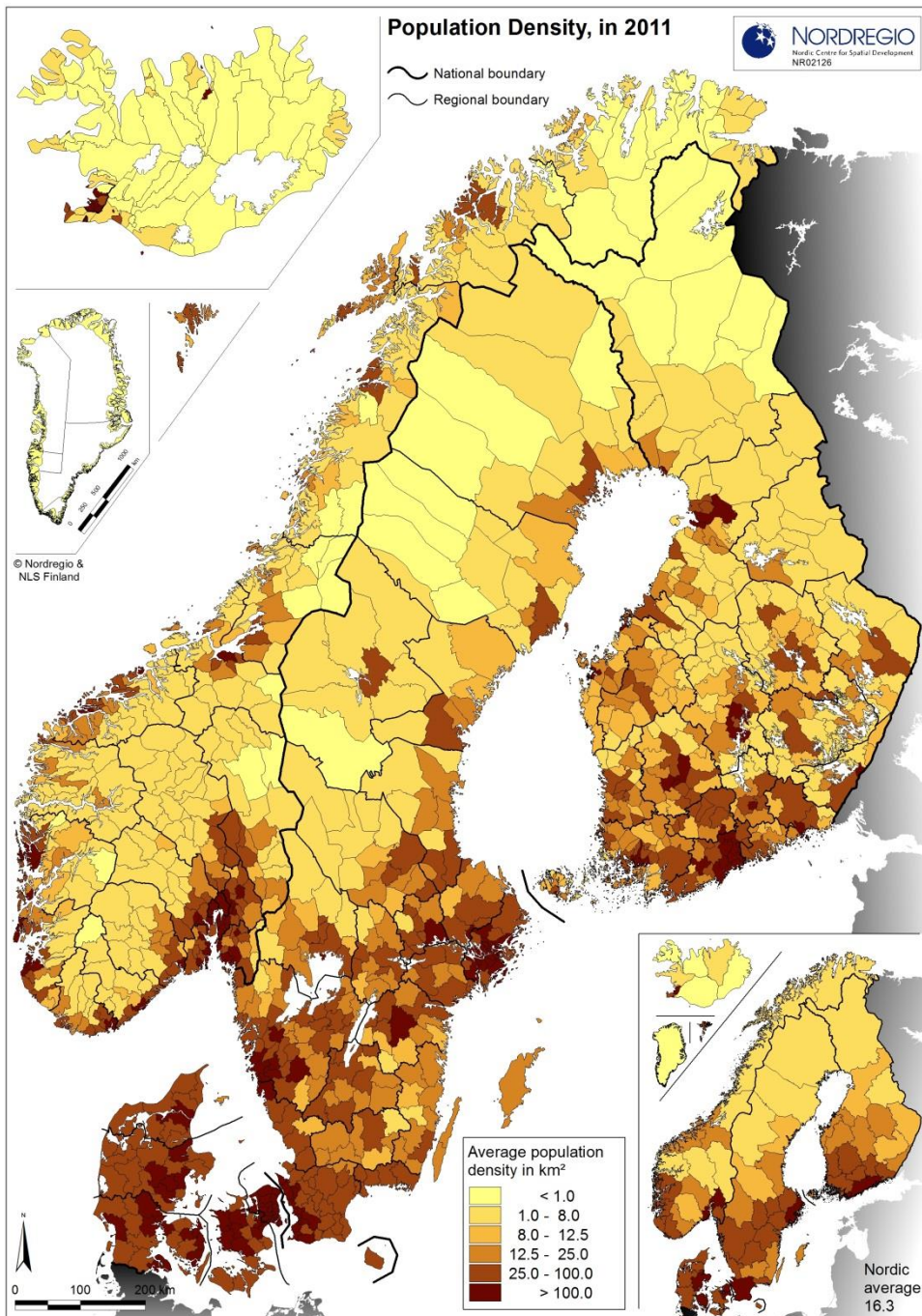
Presentation in Riga, Latvia

April 26, 2016

# Defining bioeconomy

(Nordregio Policy Brief 2015)

- International actors and governments have different ways of defining bioeconomy. The aim is clear though: to develop an economy that is based on the sustainable utilization of renewable resources.
- In its “Communication on Innovation for Sustainable Growth: A Bioeconomy in Europe”, the EU considers the bioeconomy to consist of food, agriculture, paper and pulp, forestry and wood industry, fisheries and aquaculture, bio-based industries, biochemicals and plastics, enzymes and biofuel sectors.
- In policy-making, a bioeconomy is in many cases also seen as requiring a cross-sectoral approach that calls for a broad range of system-level changes and innovation.



**Nordregio** ( established in 1997) is a leading international Nordic research institute in the broad field of regional studies.

Nordregio is acting as the secretariat for Working Groups of the Nordic Council of Ministers in 2013-2016:

- Demography and welfare
- Sustainable regional development in the Arctic
- **Green growth – innovation and entrepreneurship**
- Green growth - sustainable urban regions

# Nordic Green Growth Working Group 2013-2016

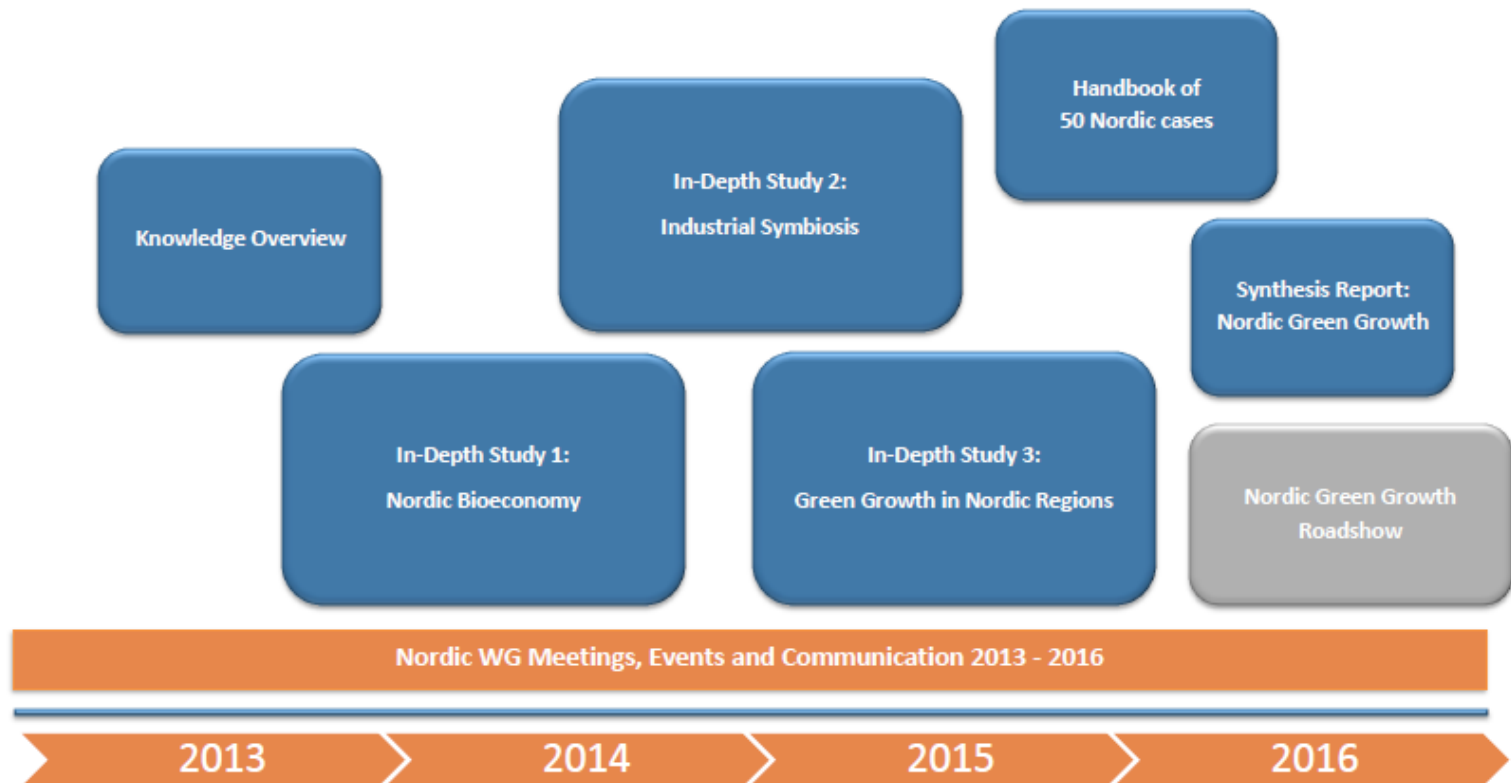
## The Mandate

*“The Working Group, set by the Nordic Council of Ministers, will focus on the regional policy dimension of Green Growth – innovation and entrepreneurship”*

# Nordic Green Growth Working Group 2013-2016



## Nordic Working Group for Green Growth Innovation & Entrepreneurship ACTIVITIES



# NORDIC WORKING GROUP ON GREEN GROWTH – INNOVATION AND ENTREPRENEURSHIP 2013-2016



# The Working Group Green Growth – Innovation and Entrepreneurship

**Finland:** Kaisu Annala (Chair), Ministry of Employment and the Economy ; Liisa Saarenmaa, Ministry of Agriculture and Forestry

**Denmark:** (*Ministry of Environment*)

**Faroe Islands:** Oyvindur av Skarði, Ministry of Trade and Industry

**Norway:** Vincent Fleischer , Ministry of Local Government and Regional Development

**Sweden:** Örjan Hag, Ministry of Enterprise, Energy and Communications

**Iceland:** Sigrídur Kristjansdóttir, Innovation Centre Iceland

**Åland:** Robert Mansén, Åland Technology Centre

**Nordregio secretariat:** Jukka Teräs, Lise Smed Olsen

# Bioeconomy, blind men, and the elephant

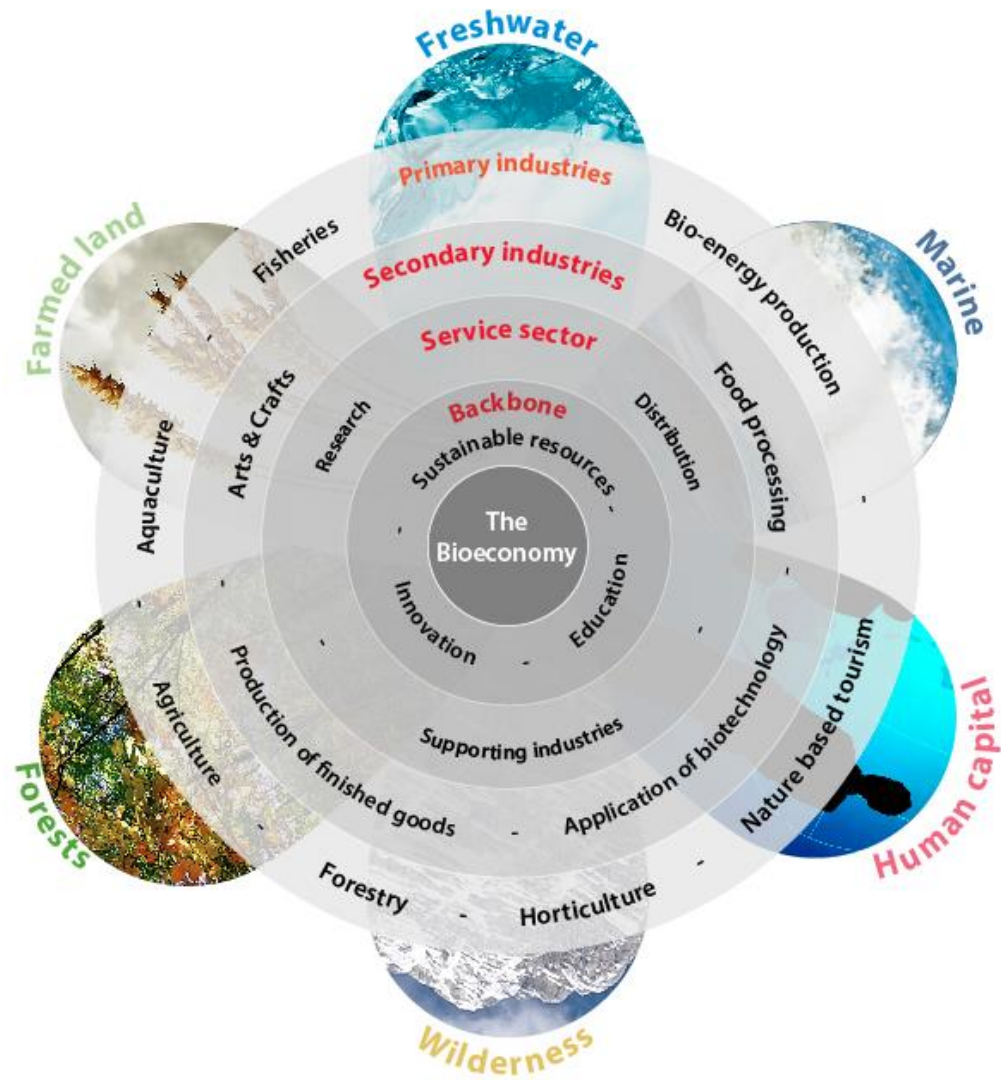
(adapted from Mintzberg & Jain stories)

- “All of you are right. The reason every one of you is telling it differently is because each one of you touched the different part of the elephant. So, actually the elephant has all the features you mentioned” (*Jain Stories*)



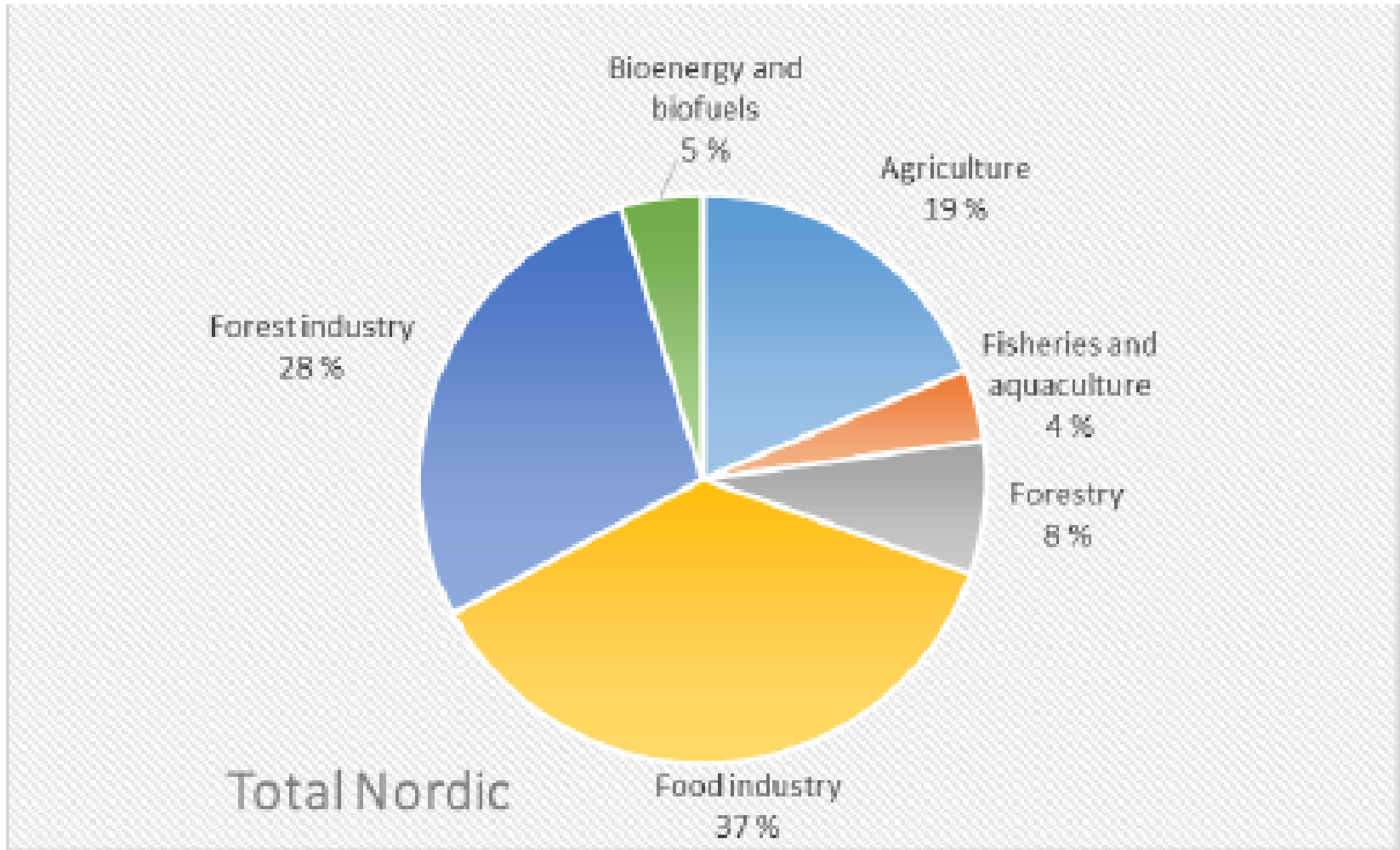


# Bioeconomy (Matis 2015)



# Bioeconomy in the Nordic countries 2011-2012

(Nordic Innovation 2014)



# Studies on Nordic Bioeconomy

- Nordic Innovation /Gaia: *Creating value from bioresources* (“numbers, innovation ecosystems”)
- NCM/Innogate: *A bioeconomy for the Baltic Sea region* (“actors, Nordic & Baltic”)
- NCM/Matis: *Future opportunities for Bioeconomy in the West Nordic region* (“Arctic”)
- Nordic Working Group for Green Growth / Nordregio: *Bioeconomy in the Nordic region* (“regions, regional development”)

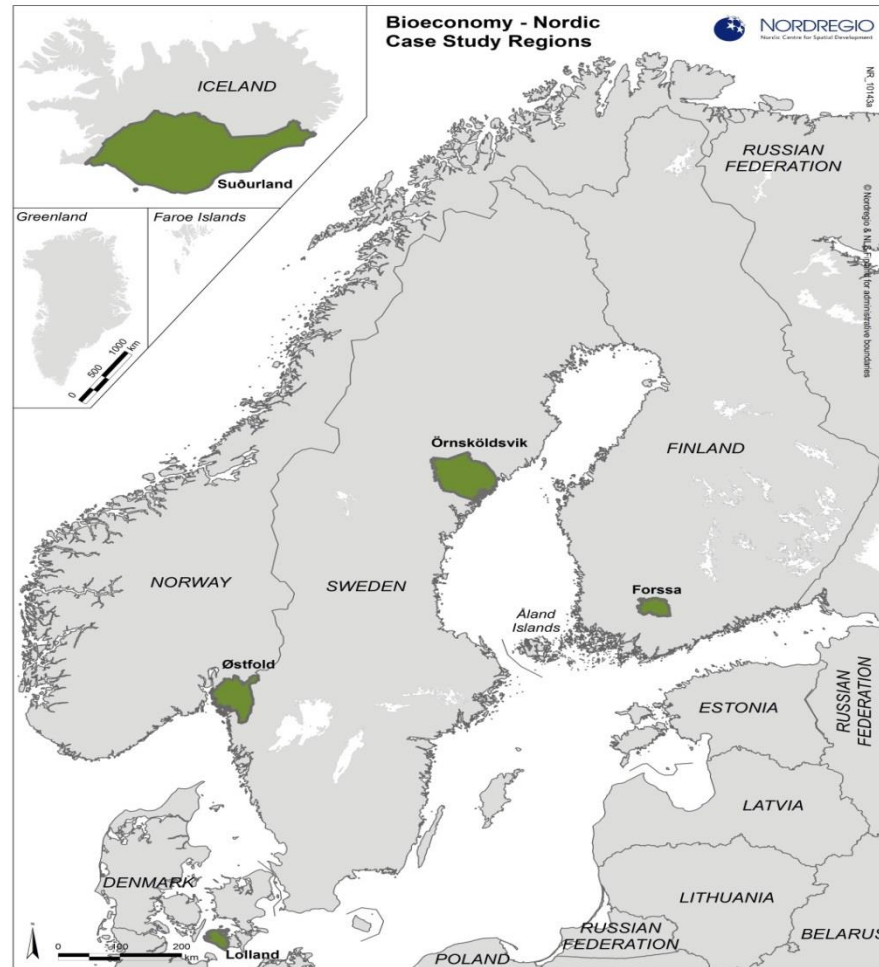
# Nordregio study on Nordic Bioeconomy 2014

- Case studies on regional bioeconomy in five Nordic countries
- Regional good practice on Nordic bioeconomy
- The role of regions, enabling conditions, impeding factors, findings & suggestions



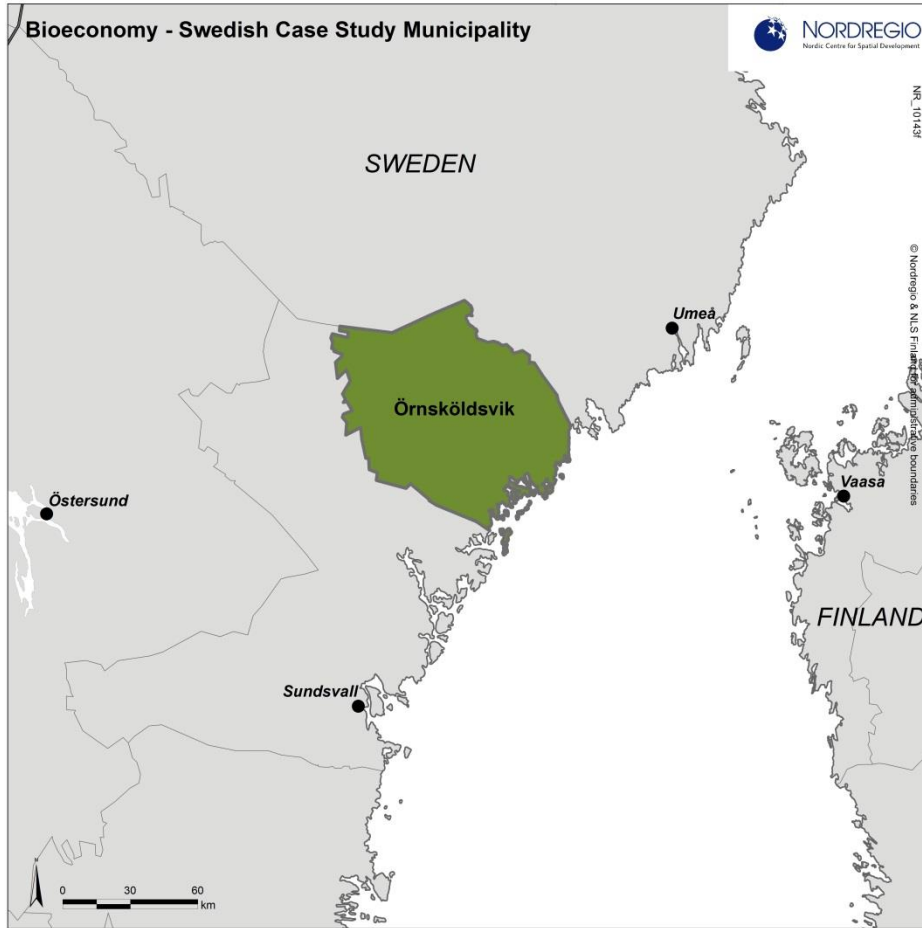
# Case study regions: bioeconomy

(Nordregio 2014)



# Sweden

## Case Study: Örnsköldsvik



## Basic Facts

- 550 km to Stockholm
- 55,000 inhabitants
- Mainly rural communities

## Key Sectors

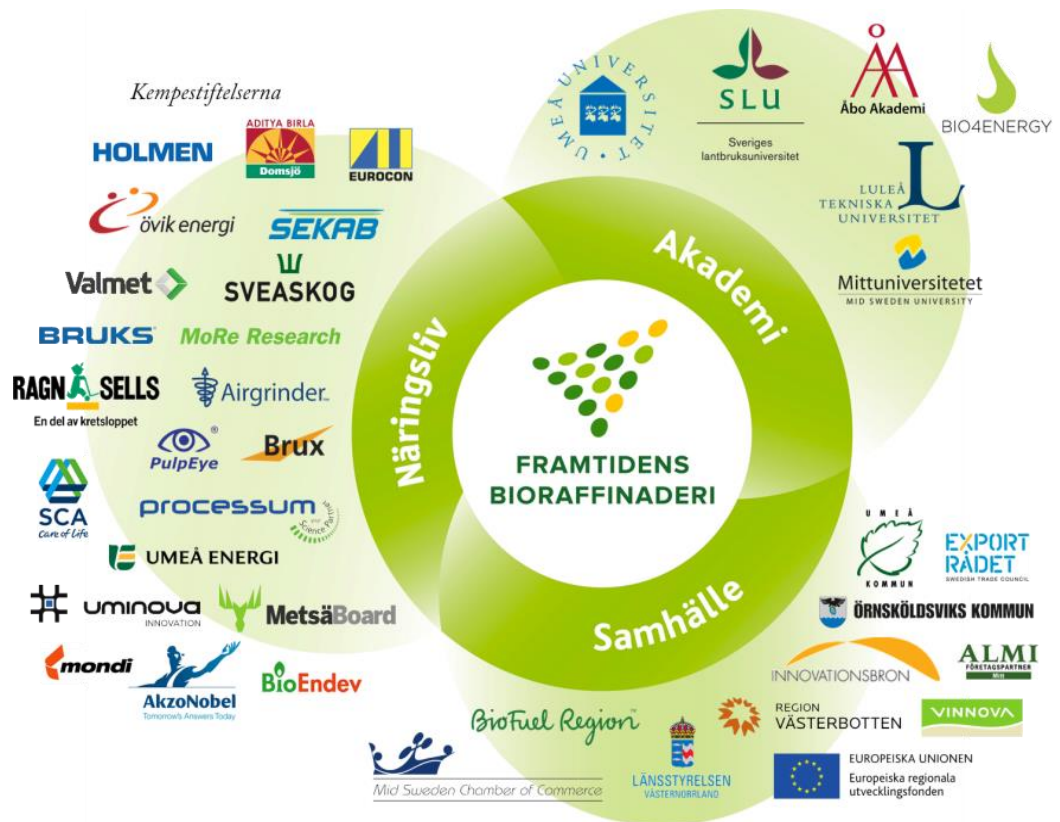
- Trade and heavy industry e.g. pulp & paper, logging
- By-products of forest supply: Chemicals, chlorine and ethanol

## Key Actors

- Companies: Aditya Birla, Domsjö Fabriker, Akzo Nobel, Holmen, SEKAB
- R&D/Education: Umeå University, Mid Sweden University
- Municipality of Örnsköldsvik & regional institutions
- Clustering initiatives: Processum

# Bioeconomy in Örnsköldsvik, Sweden

- Biorefinery activities emerged after a regional economic downturn in the 1990s
- Bioeconomy cluster built around the pulp mill in Domsjö.
- Processum cluster in 2003. Vinnväxt funding from 2005 for the “Biorefinery of the Future”.
- Currently, bioeconomy has a strong position in the regional development program



Source: Processum

# Conclusions: Örnsköldsvik

- Good accessibility to natural resources clearly an asset
- Processum cluster provides a regional development tool and systematic, long-term approach - definitively needed in bioeconomy initiatives. Processum connects state actors, private companies, academics and local communities (Triple Helix)
- The municipality has limited financial possibilities to support the development of the local bioeconomy
- A major challenge: how to scale up the biorefinery development in the Örnsköldsvik region? The following concrete steps?



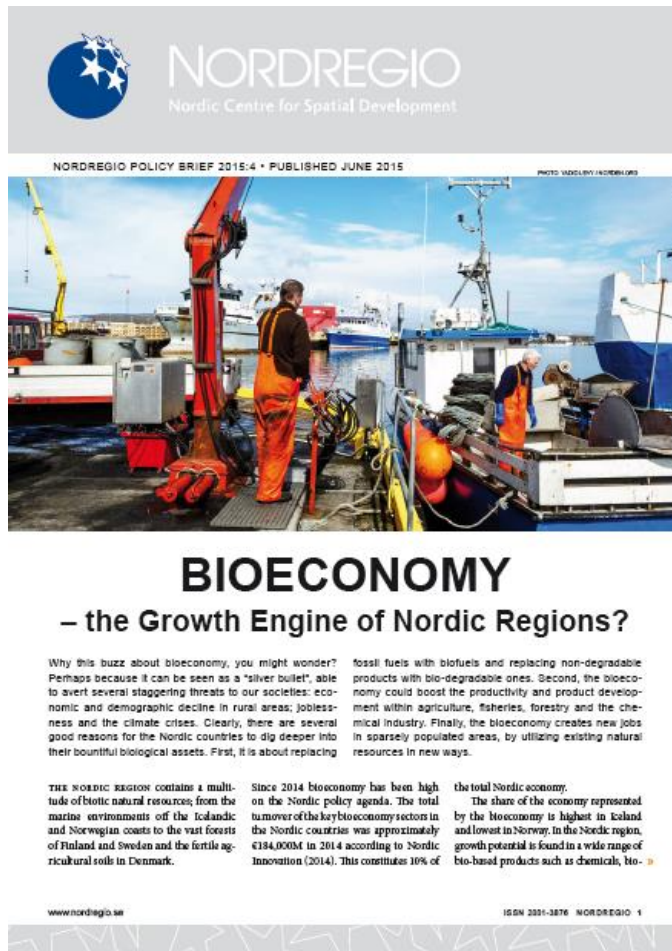
# Nordic bioeconomy case study: Conclusions (1)

- The adoption of the bioeconomy concept varies significantly— among and within the Nordic regions. Some Nordic regions have largely adopted the term “bioeconomy”, whereas some other regions are only just becoming familiar with the term.
- The intensity of regional co-operation between actors varies among the Nordic case-study regions, e.g.
  - intensive public–private co-operation and a cluster management organization (Örnsköldsvik)
  - locomotive company but without intensive regional co-operation (Østfold)
  - fragmented actor structure with numerous smaller bioeconomy organizations (South Iceland)

## Nordic bioeconomy case study: Conclusions (2)

- The Nordic cases illustrate the importance of the long-term commitment in developing a regional bioeconomy (e.g. VINNVÄXT in Örnsköldsvik)
- National approaches e.g. Finnish national bioeconomy strategy in 2014 and national bioeconomy policy by Danish Bioeconomy Panel in 2014.
- A common Nordic desire: focus on true implementation on the bioeconomy including scaling up of pilot plants to larger-scale facilities
- A genuine interest among the bioeconomy actors in learning from other Nordic actors, and also in building co-operative Nordic relationships.
- The increased international visibility of Nordic bioeconomy welcomed.
- The Nordic bioeconomy has the potential to create and sustain jobs both in urban and in rural regions, while also being beneficial for the environment.

# Bioeconomy Policy Brief (Nordregio 2015)



## Recommendations:

- Create a common understanding of Bioeconomy
- Financial incentives needed
- Export promotion needed
- Pooling of resources public-private
- Long-term commitment
- Dig deeper to find the regional economic potential and impact of bioeconomy

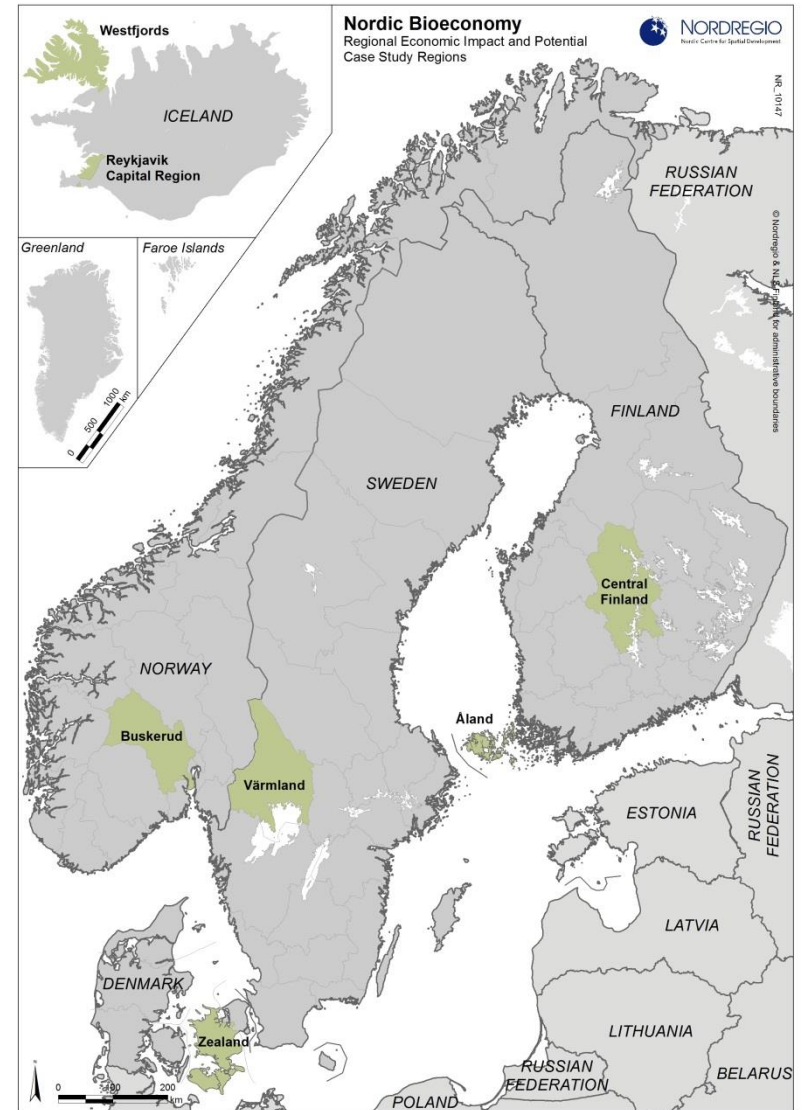
### Regional Economic Impact and Potential of Nordic Bioeconomy

Gunnar Lindberg, Jukka Teräs, Anna Berlina and Nelli Mikkola, Nordregio

Sigríður Kristjánsdóttir, Innovation Center Iceland



# Nordregio & Innovation Center Iceland: Nordic study 2014-2015



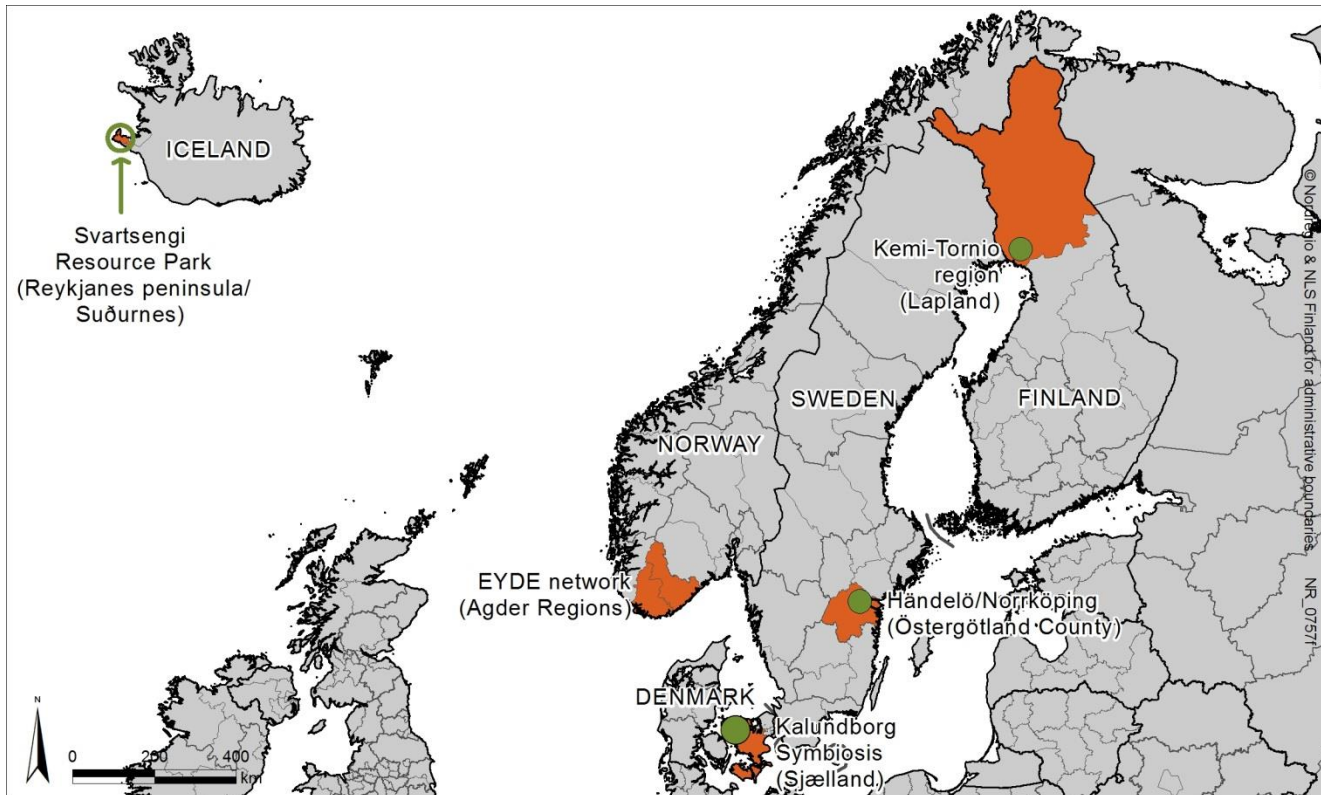
# Study on Nordic Industrial symbiosis (Nordregio 2015)

## In-depth Study on Industrial Symbiosis (Nordregio 2015)

- Industrial symbiosis: Waste for one actor is resource for another actor. By-product reuse, utility/infrastructure sharing, joint provision of services
- The study analyses the Industrial Symbiosis activities and potential in Nordic countries and regions, including an in-depth analysis of Nordic regional Industrial Symbiosis cases



# Regional Nordic case studies



- Kalundborg, Denmark
- Kemi-Tornio region, Finland
- Händelö Industrial Symbiosis, Sweden
- EYDE network, Agder Region, Norway
- Svartsengi Resource Park, Reykjanes peninsula, Iceland

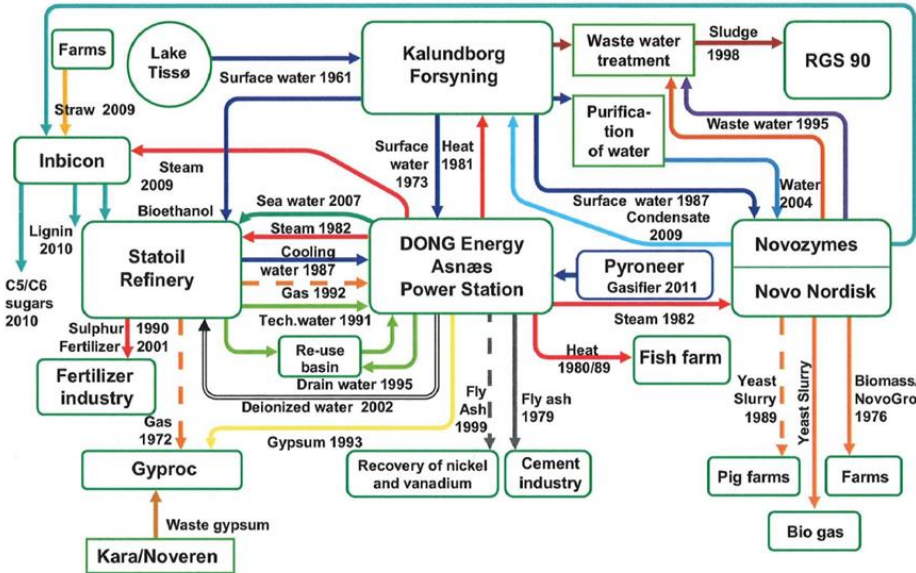
## Nordic industrial symbiosis case study regions



- ~ National boundary
- - - Regional boundary (NUTS 2)
- ~ Regional boundary (NUTS 3)



# Kalundborg, Denmark



**Kalundborg Industrial Symbiosis Overview**  
 Source: [www.symbiosis.dk](http://www.symbiosis.dk)

# Bioeconomy strategies and policies in the Baltic Sea countries (NCM 2016)



This document is funded by the European Union (ERDF, Interreg/Baltic Sea Region-PL009) and Nordic Council of Ministers

## State of Play

### Bioeconomy strategies and policies in the Baltic Sea Region countries



Working Paper no. 1 – The Baltic Sea Region Bioeconomy Council

Paper drafted by Thomas Winther, Innogate ApS, for  
Nordic Council of Ministers, February 2016

- A comparison of national bioeconomy strategies and policies in the Baltic Sea Region
- Countries: Denmark, Estonia, Finland, Germany, Iceland, Norway, Latvia, Lithuania, Poland, Sweden



# National Bioeconomy strategies in the Baltic Sea Region

## Overview (NCM 2016)

- Finland and Germany: recently published national bioeconomy strategies
- Norway, Sweden, Iceland: currently drafting national bioeconomy strategies
- Denmark: "Growth Plan for Water, Bio and Environmental Solutions" and "Growth Plan for Food" – but no dedicated national bioeconomy strategy
- Estonia and Latvia: planning to start the strategy work
- Lithuania and Poland: no national bioeconomy strategy

# The Finnish bioeconomy strategy (2014)



“The objective of the Finnish Bioeconomy Strategy is to generate new economic growth and new jobs from an increase in the bioeconomy business and from high added value products and services while securing the operating conditions for the nature’s ecosystems.”

## The strategic goals :

1. A competitive operating environment for the bioeconomy
2. New business from the bioeconomy
3. A strong bioeconomy competence base
4. Accessibility and sustainability of biomasses.

# Nordic Bioeconomy Panel

## Baltic Sea Region Bioeconomy Council

- The Nordic Bioeconomy Panel (NBP) is a platform to support and advice on the development of common Nordic bioeconomy policies and strategies. The Panel, established by the Nordic Ministers of Cooperation, had its first meeting in March 2016.
- The Baltic Sea Region Bioeconomy Council (2016) has members from local, regional, national, macro-regional and international governmental organisations, knowledge institutions and non-governmental organisations. The Council shares information on bioeconomy policies and strategies, key drivers, enablers and bottlenecks for accelerating the transition towards the bioeconomy in the Baltic Sea Region.

# Baltic Sea Region Bioeconomy Council

The Nordic Council of Ministers (NCM), as Coordinator for Priority Area Bioeconomy in EU's Strategy for the Baltic Sea Region, has established the Baltic Sea Region Bioeconomy Council.

The Council is composed of 15-20 leaders in development and implementation of enabling bioeconomy policies and initiatives in the Baltic Sea Region.

The 1<sup>st</sup> meeting took place on March 1, 2016.

# Nordic Blue Bioeconomy - Priority area of the Finnish Chairmanship Programme 2016

- Nordic kickoff meeting in February, 2016
- Survey on Nordic Blue Bioeconomy (by LUKE, Finland)
- Nordic Roadmap Workshop on Blue Bioeconomy in Turku (April 27, 2016)
- Blue Bioeconomy conference, May 31- June 1, 2016 Helsinki



**NORDREGIO**  
Nordic Centre for Spatial Development



Photo: Kjell Nilsson

**Thank you!**

**[www.nordregio.se](http://www.nordregio.se)**



**norden**

Nordic Council of Ministers