Baltic Sea Region
Programme 2007-2013

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Development project North East Cargo Link II

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The Butterfly Effect

The Butterfly Effect

In chaos theory, the butterfly effect is the sensitive dependence on initial conditions, where a small change at one place in a deterministic nonlinear system can result in large differences to a later state.

The name of the effect, coined by Edward Lorenz, is derived from the theoretical example of a hurricane's formation being contingent on whether or not a distant butterfly had flapped its wings several weeks before.

Although the butterfly effect may appear to be an esoteric and unlikely behavior, it is exhibited by very simple systems: for example, a ball placed at the crest of a hill may roll into any of several valleys depending on, among other things, slight differences in initial position.

More information here: http://www.stsci.edu/~lbradley/seminar/butterfly.html

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Why do we need to change our way of transportation?

Why do we need to develop our railway and sea transports?
Why do we need to cut down long truck transports?

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SULPHUR REGULATION IN BALTIC SEA REGION – SCENARIOS FOR THE MID NORDIC REGION, THREATS AND OPPORTUNITIES

- NECL II –project has produced a study on how the future sulphur directive on the Baltic Sea might affect the Mid Nordic region for Sweden, Finland and Norway.
- The study is based on known facts but also on analyses and estimates from academy, industry and authorities.
- The report covers three perspectives, Maritime, Industry and Logistics.
- The consequences, threats, and opportunities are elaborated with the time scenarios 2020 and 2030, but starting in the current situation 2012 and what most likely will happen in 2015.

The report

- The IMO agreement regarding SOx emissions will get into force that's not any longer a matter of debate.
- What on the other hand needs to be a matter of debate is what action's need, will and can be taken and by whom…
- This will lead to the undisputable conclusion that the agreement and its impact now need to be transferred from being a **political environmental issue** to be turned into a transport policy issue.

The possibilities and consequences now need to be transferred and become an issue for the Ministry of Enterprise, Energy and Communications to handle.

Why?

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Conclusion from the report

Simply said…

It's all about business…

We have de facto an infarct along all of our main routes. We have a lack of capacity that can't be built away. The higher capacity we manage to get the more vehicles we get. It's an impossible equation to solve…

At the same time EU white book is quite clear about future transports.

No transports with trucks above 300 km!

Every minute goods is stuck in a queue real money is wasted…

So what's it all about?
(IMO; MARPOL Annex VI)

- From 1.5 % to 1 % as of 1 July 2010 within the SECA in Baltic Sea and North Sea
- From 4.5 % to 3.5 % globally from 1 January 2012
- 1 % also in the North American SECA from 1 August 2012
- **0.1 % in SECA from 1 January 2015**
- 0.5% in European waters outside SECA from 2020 (by EU decision 11 Sept. 2012)
- 0.5 % globally either in 2020 or 2025

EU have adopted the same limits but with restriction 0.5 % within EU waters from 2020.

The main idea with the Sulphur directive is to lower emissions and by that improve peoples health.

Sulphur Emission Control Areas (SECA)

The issue…

- The issue with the IMO agreement regarding SOx emissions is that it has politically so far been treated as a *political environmental issue*, which it was from the start, since the very reason for the agreement was to lower the emissions in order to improve people's health.
- However when the consequences hit the transport sector via the adaptation of the new regulations, e.g. change of fuels, ship technology, the need for new infrastructure, (possible) modal back-shift, etc., there is a major risk that the consequences for the transport sector will back-fire having a huge impact on the industries' possibilities to be competitive on a global market.
- There is a need for active support to industry sectors most affected by the directive, i.e. forest, chemical and steel industry, keeping in mind that Norway, Finland and Sweden are countries where domestic important companies have long transport routes to their main markets.
- These industries are already today exposed to harsh competition from other countries and the IMO agreement will regardless what increase the transport costs on general basis.

The situation after 2015-01-01

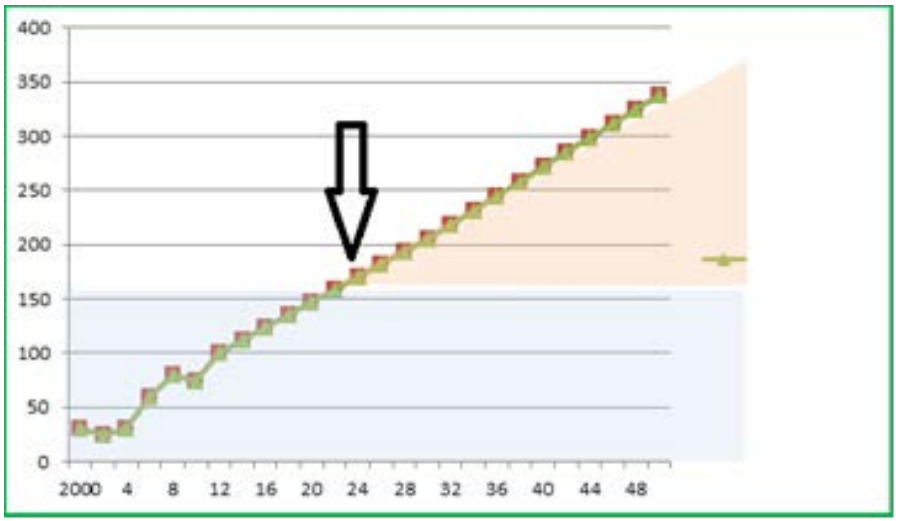
Estimated oilprice year 2050

based on

http://inflationdata.com/inflation/inflation_rate/historical_oil_prices_table.asp

The calculation is based on the theory that the oil price will continue to rise the way it has done between late 1990 'till todays level.

The situation after 2015-01-01



This picture is based on the curves in the earlier picture, showing that new technology must replace increased oil price from around 2025. Accepting it for a fact that there is a risk that oil prize will go up, you all realize we have not the time to 2050 to solve the challenges ahead.

There are no easy solutions, there are no shortcuts ...
There is only hard work and bold decisions.

Possible hands on actions…

We need to start with stating basic ground rules

1. We adapt to new situations. Things will change and in this case the market will adapt to the new situation.
2. Things might not change the way we want or the way we anticipated.
3. Change will most likely cause side effects and/or collateral damage.
4. Change is needed. It's the foundation of survival.

Survival is not only about the destination, a result, it's also about the journey. The ability to understand, adapt, learn and move on…

It's not only about *getting there*, it's not only about how quickly one can arrive. It's also about what you take with you from your experiences on the way there. Growth and learning has no limit. It's about the journey, not the destination.

Generally it's not the change in it self causing problems...
It's how we handle change that causes problems!

What can be done?

- What can be done on political level is to implement mitigating measures for eliminating the negative consequences and stimulate the needed change. These measures need to be coordinated between the countries in the Baltic Sea region in order to avoid problem transfer between countries.
- There is a need for both investment grants and innovation support as well as for a time period other measures e.g. lower fairway charges, investment grants for LNG infrastructure, transport subsidies to ports in e.g. Bothnian Sea and Gulf of Bothnia, increased funding for R&D and innovation, etc. Without active support, for some of the industries, the alternative might be to close down or invest somewhere else and this would be a domestic worst case scenario in many ways.
- EIB, European Investment Bank http://www.eib.org/
- NIB, Nordic Investment Bank http://www.nib.int/
- The Toolbox from the commission http://ec.europa.eu/environment/air/transport/pdf/ships/sec_2011_1052.pdf

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What do governments do?

- **Finland** studies the posssibilitites to adjust the fareway fees – to be finished by the end of 2013
- On 23 January 2013 the EU commission approved Finnish investment support to investments in scrubbers and adaptation of ships to use other fuels.
- **Norway** have the NOx fond. Up to 80 % of increased costs for LNG. Both conversion and new ships.
- **Sweden** On 21 January, an Action plan for improved competitiveness of Maritim sector was presented.
  - Possibilities to adjust fareway fees will be investigated to 2014
  - Tonnage tax will be investigated (for the third time)
  - Encourage the maritime sector and port to apply for EU funding
  - No investment support scheme

The same waters but different approach between Finland, Norway and Sweden…

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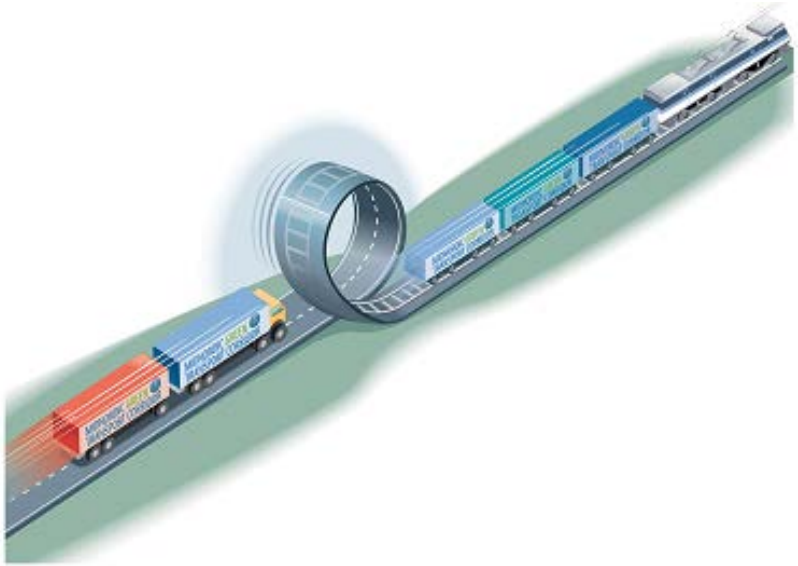
Sulphur directive in a nutshell

What you need to know to take wise decisions



- One train wagon approx. 20 m and can load two 20 foot container
- Approx. 35-40 wagons on a 750 m train
- One (1) train is equivalent to 70-80 single trucks today
- Longer trains = More trucks
- Truck = One 20 foot container
- Truck + Trailer= Two 20 foot containers
- Truck + Semi Trailer = One 40 foot container or two 20 foot container

TEU: Twenty-foot Equivalent Unit. A 20 foot container is used to compare volume but common today are containers from 20 foot up 45 foot.

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Sulphur directive in a nutshell

What you need to know to take wise decisions

MAERSK

- **TEU:** 18 000

Standard vessel to Sundsvall today

- Length: 150 m
- Width: 23,1 m
- Depth: 8,6 m
- **TEU**: 1100

Standard vessel to Sundsvall tomorrow

- Length: 225 m
- Width: 32,2 m
- Depth: 12 m
- **TEU:** 2800-3400

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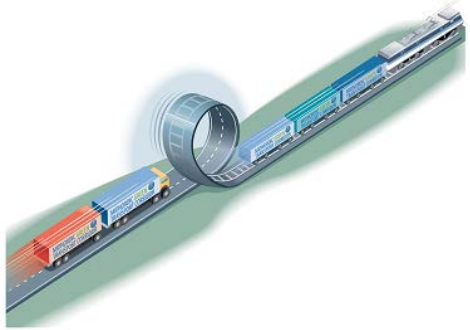
Sulphur directive in a nutshell

What you need to know to take wise decisions



Modal back-shift

From ship back to truck

From train back to truck

Impact

- One Train = 70-80 more trucks on the roads
- One Ship (TEU: 2800-3400) = 2800-3400 single trucks or…1400-1700 trucks with trailer on the roads

The philosophical question needed to be evaluated and answered…

Are we still thinking it's just about changing the fuel?

Or do we accept to face the consequences from the Butterfly Effect?

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Thank You!

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Some extra info…

Scenarios for 2020

- Diesel prices has normalized (at a higher level) due to increased production and more alternatives
- LNG is gaining market with some new LNG terminals in Sweden and Finland
- Finland is active in converting ships to alternative fuels while Sweden has an even smaller ship fleet
- There are fewer but bigger ships in the Baltic Sea
- Port of Gothenburg gain market as out shipping port both for Sweden and Finland.
- Severe congestion at some Swedish railways, increasing the interest for Port of Trondheim
- Some more saw mills have closed down both in Sweden and Finland

Scenarios for 2030

- Even though general price level of oil has increased, the cost of fuel for shipping is bearable of use of LNG and Scrubbers and some other fuels
- Incentives for innovation in the transport sector has been strong and new technical solutions have been implemented.
- Consolidation had taken place in shipping, as well as in land transports and load factors are generally high in both directions on optimized routes for shipping as well as for other modes of transport.
- Trondheim is gaining market as an important port for both Sweden and Finland, with a new intermodal terminal integrated with a new port area.

The above scenario for 2030 is quite optimitistic – the future will tell, but the future is shaped now

Possible Consequences…

- Consequences for the maritime sector
  - Change of fuel or exhaust gas cleaning (scrubbers)
  - Increased costs and/or investments
  - Consolidation (less shippers and larger ports)
- Consequences for logistics flows and routes
  - Risk for modal back-shift (sea to road or rail)
  - Risk for congestion and overload on railways
  - Chance for increased load factors and smarter routes
- Consequences for industry
  - Increased cost of transports
  - Unequal competition with countries outside SECA
  - Lack of investments in industry (insecurity about the future)
  - Risk for closing of factories (forest industry)

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Midnordic Green Transport Corridor

The domestic export industry is the locomotive pulling the national economy train. This is a well known fact.

It also pulls the development in the right direction

- Locally
- Regionally
- Nationally and…
- Internationally

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Midnordic Green Transport Corridor

However…
In order to be strong on the global arena our companies need to have the right prerequisites.

In that sense good infrastructure is the single most important condition for success.

Efficient Infrastructure

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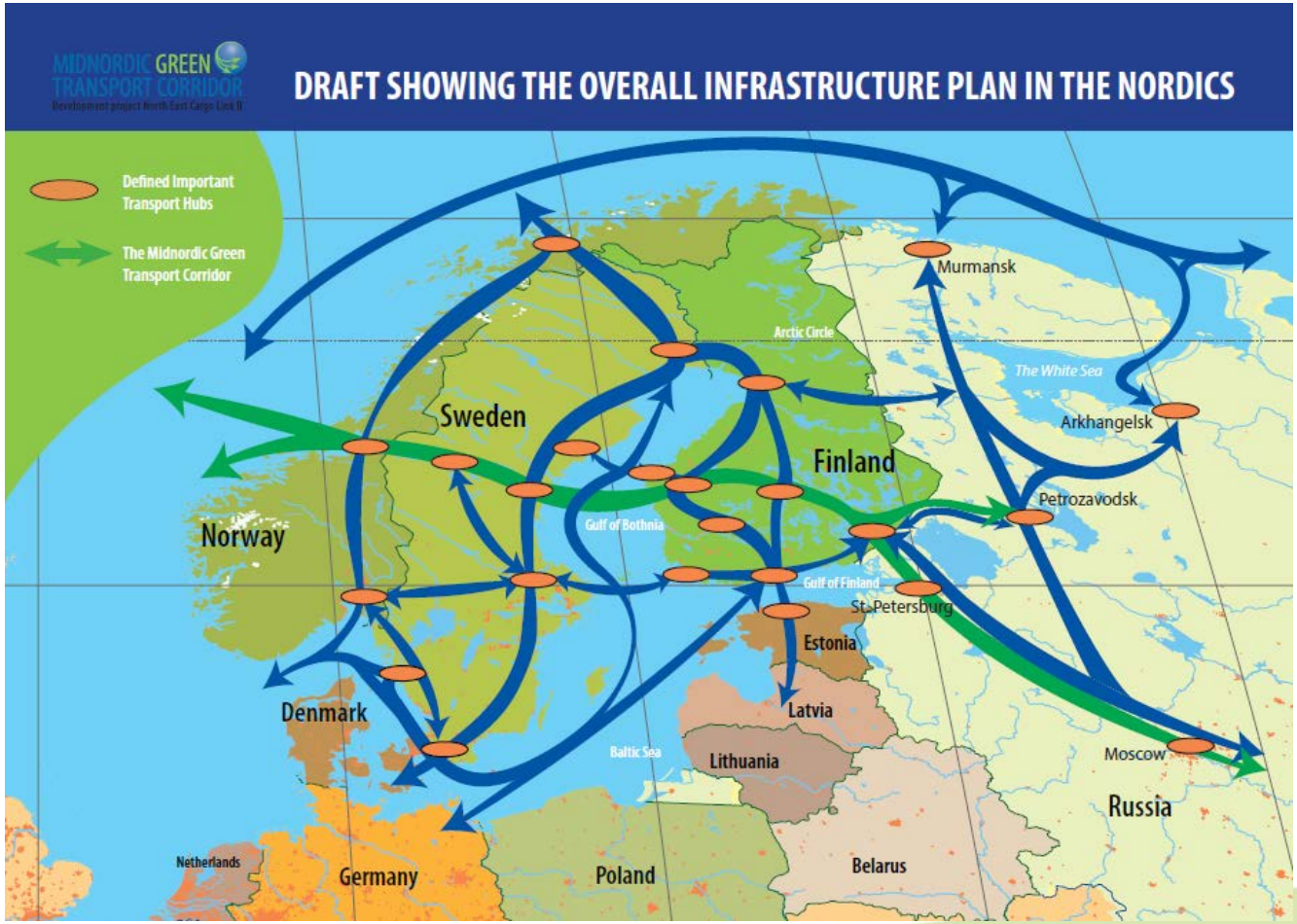
The Nordic Global Transport Map



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Potential for increase in trade between Russia/Asia and the Nordic Countries

- Number of border crossings between Russia and Finland 2012 was over 10 milj.
- After building increased capacity the border crossings will be able to handle about 13 milj.
- The need in the near future will be 20 milj. It's a difference of about 7 milj.
- Calculating that each person spends more than 100 euro it gives some perspective of the issue.
- This is no longer a just a domestic issue for Finland to handle. It affects all the Nordic countries and businesses will be adversely affected. This leads to real trade barriers to the export industry in many countries.

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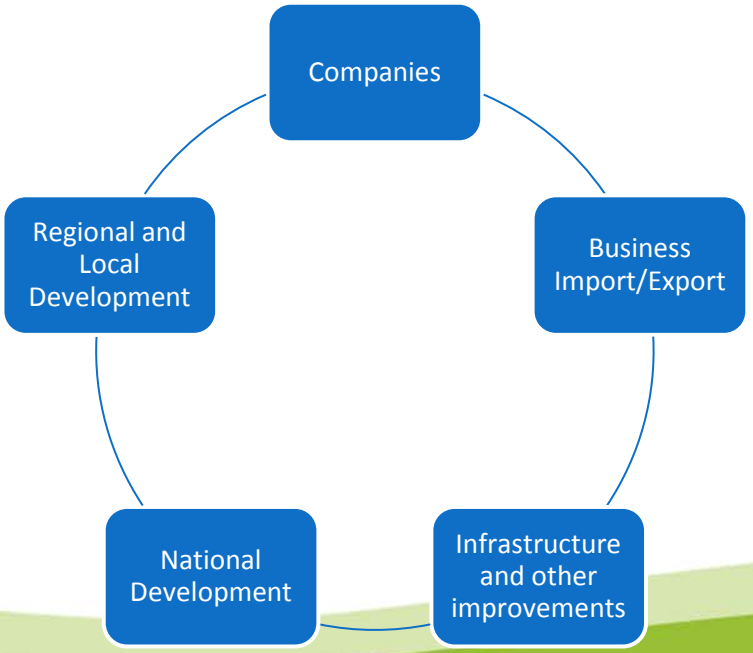
Things goes hand in hand creating a positive loop…



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Parikkala – Syväoro border crossing 5th of November 2012

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Meeting in Petrozavodsk, Russia, with the president of the Republic of Karelia regarding Parikkala – Syväoro border crossing 6th of November 2012

Russians tourism in Finland and Sweden

- More than half the adult population in S:t Petersburg have visited Finland in the last two years. 20% have been to Finland four times or more.
- They come to Finland for shopping – clothes, food, beverages, consumer goods, interior design and cosmetics
- Almost 30 000 Russians went to Swedish ski resort Åre 2011
  - Russian tourists important customers

Source: www.etableringutomlands.se

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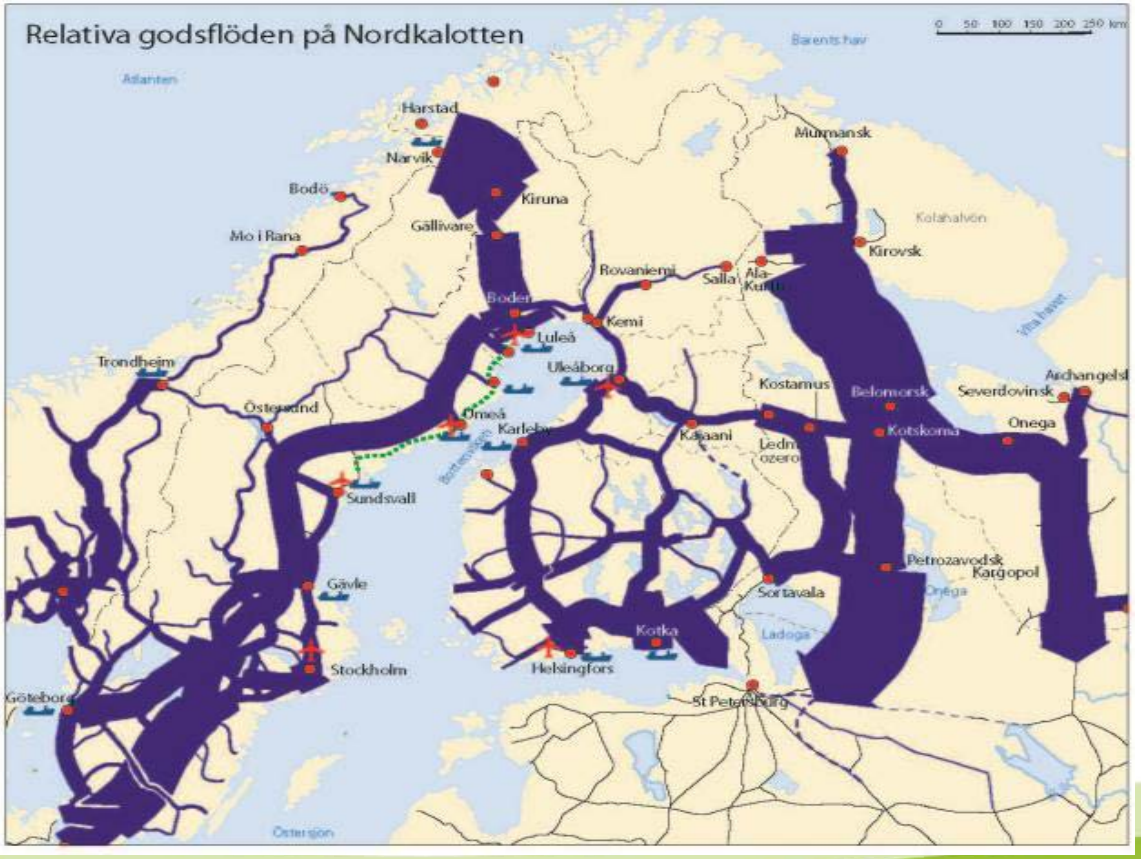
Gods volumes in the near by area



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Parikkala – Syväoro border crossing New business area 2014

(Picture 20th of November 2012)

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16th of November 2012.
Contract between the Norwegian Railway authorization and Municipality regarding physical planning of the Meråker line is signed.

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NECL II in a nutshell

- EU- project (Interreg. BSR)
- Budget: approx. 2,7 M€
- Duration: 2010-2013 (September)
- Partnership: 22 partners from Sweden, Norway and Finland
- Leadpartner: County Administrative Board of Västernorrland

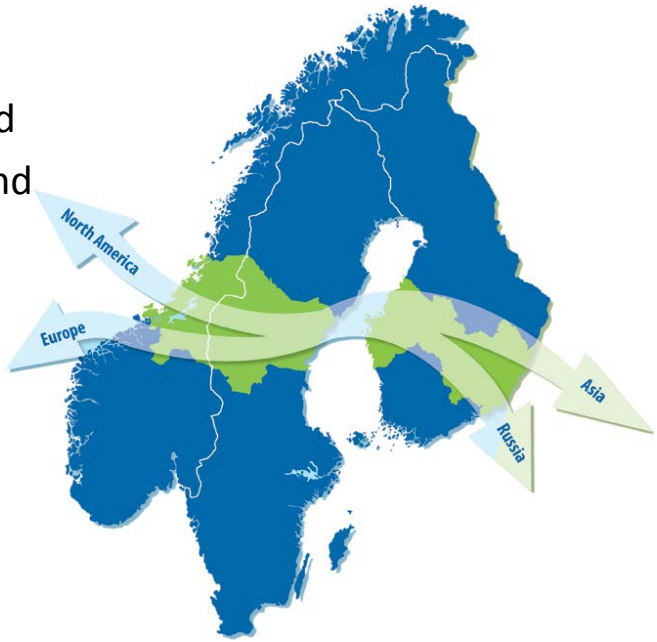
- WP3 Improvements of transport infrastructure

- WP4 Transportation and Logistics

- WP5 Logistic ICT solution for transport matching

www.midnordictc.net

We Need Good Green Connections Now!



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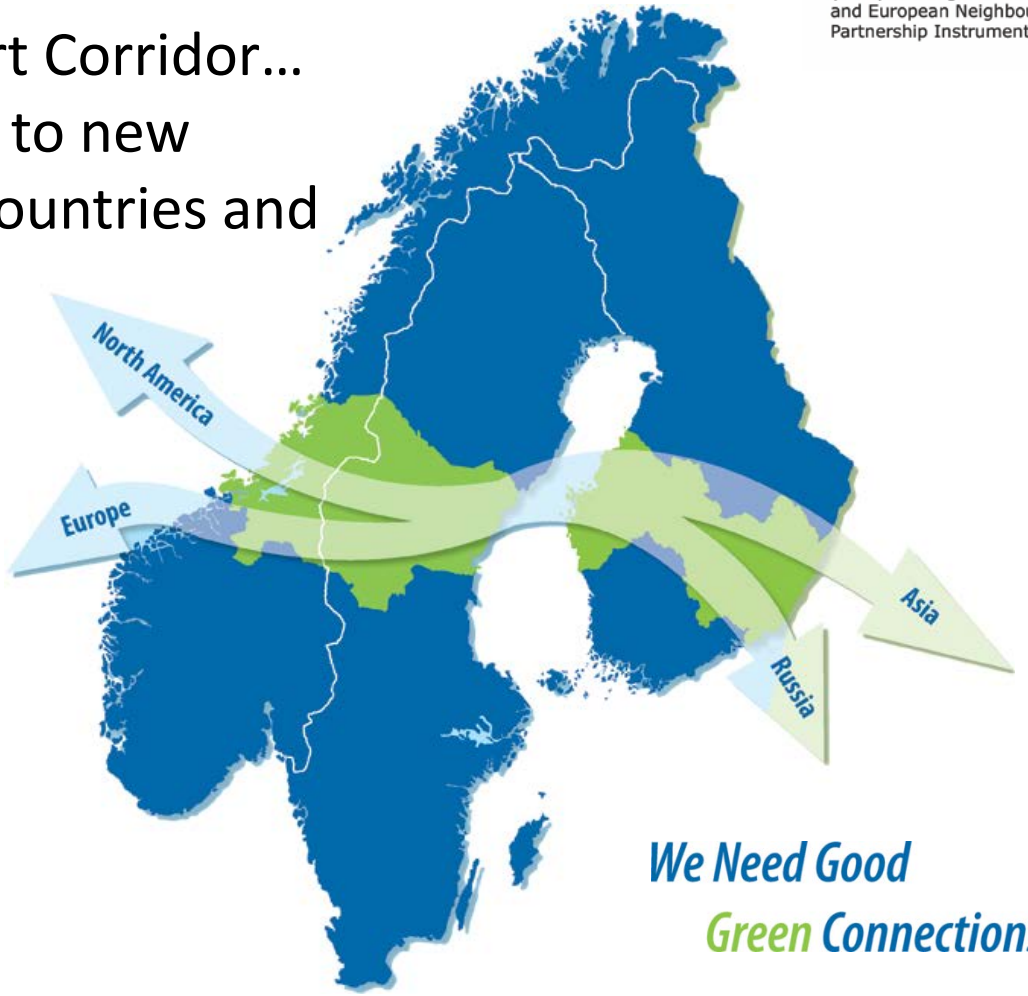
Midnordic Green Transport Corridor…
An efficient logistics chain to new customers in the Nordic Countries and a other global markerts.



Thank You!