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Б А Р Е Н Т С Ц Е Н Т Р

“The economic outlook in the European High North and Arctic,
challenges and opportunities to ICT”.

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I. The European High North and European Arctic, a few key facts

1. The Nordic Countries have a combined population of 26 million, of which 400.000 in the Arctic.
2. This constitutes the 10th biggest economy in the world, with a GDP of 1400 billion euros
3. The biggest drivers for the economy are the Norwegian, Swedish, Finnish and Russian Arctic, where the combined investment plans amount to roughly 200 billion euros until 2025.
4. In Norway the investments are led by Statoil, Norwegian state controlled oil & gas industry giant. In Northern Norway there is one field in operation, one more will come on stream this fall. By 2020 there will be five fields in operation and by 2030 9 fields. Each field represents an investment of minimum 7 billion euros.
5. In Sweden the investments are led by LKAB, Swedish State controlled global iron mining actor. Two complete cities will be moved to new locations starting now, completed by 2023. LKAB pays the bill.
6. Sweden has decided to invest in logistics infra structure, roads, railroads, harbors, tunnels, airports etc., 60,2 billion euros until 2025, Norway is following close with 56 billion euros.
7. Sweden, Norway and Finland are planning to invest 13-16 billion euros each to Wind Power development in High North. The planned wind power investments, in order to succeed need sufficient regulating power in low/volatile production conditions. To even out this hydro power is exemplary. The potential is needed and available in Northern Sweden and Northern Finland, but this renewable, no emission energy resource is facing opposition due to nature conservation concerns.
8. North-West Russia is heavily relying in mining in Kola peninsula. Oil & gas investments are amounting close to 30 billion euros due to the three LNG plants and required logistics infra structure in Yamal.
9. Northern Sea Route and the Belkomur railroad, projected and financed by China, from South Urals to Archangelsk are the other major drivers on Russian side. Russian Federation is heavily involved in the mentioned projects.
10. In all of these countries there is an abundance of energy resources oil & gas, hydro and windpower topped by nuclear energy. To utilise these resources the logistics and electricity transmission lines need to be developed.

II. Why is it of interest ?

1. 17% of world's mineral deposits are in the European High North. EU uses 20 per cent of world's ore and minerals, but produces only 3-4 per cent of them. By investing in mining and logistics in the High North the EU could bridge the gap and become self sufficient.
2. Over 25% of global oil & gas reserves are in the European High North.
3. The forest area of Barents region equals to 70% of the EU forest area.
4. Fish production in the Norwegian High North is growing rapidly to satisfy Asian and EU markets, making up to 50 per cent of fish consumed within EU.
5. Growing food, extracting oil & gas and mining on the seabed in the Arctic is the trend.
6. Functioning logistics to customers in Europe and Asia are still missing.
7. To utilize the above potential we need functioning logistics and ICT.



III. The role of ICT in the High North and Arctic?

1. The common nominators for the European High North and Arctic are:
 - Coldness, darkness in the winter and light in the summer, harsh climate, long distances, rough terrain, long travel times, hazardous conditions for humans on ground, under ground, on sea bed and on sea.

2. In order to combat the challenges of the Arctic we need functioning ICT. The needs are, to name a few:
 - Secure communication/data with no zero signal zones on sea, on seabed, underground and in faraway locations.
 - Weather prediction, vessel/rig adapted sea and ice condition monitoring, ice management need ICT and big data.
 - SAR (Safety and Rescue) real time communication and monitoring of humans and machines in cold and faraway places.
 - Intelligent clothing with personal monitoring and communication capability.
 - Accident prevention, real time analysis and monitoring
 - Damage limitation and fighting applications
 - Rescue management
 - Remote operation/management of vessels and rigs.
 - Remote operation of open pits and underground mines
 - Remote operation of sub sea installations
 - Real time analysis and monitoring of bio environment on sea i.e. fish farms.
 - Communication networks along NSR
 - Wireless monitoring and management of electricity transmission lines and intelligent grids
 - Communication with satellites
 - Secure GPS in all conditions
 - Individual GPS mapping with 3D capability on ground enabling autonomous vehicle operations.



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