



ROBERT FIGO

Priorities of the Slovak
Presidency of the Council
of the European Union



**KATRI PYNNÖNIEMI &
CHARLY SALONIUS-PASTERNAK**

Security in the Baltic Sea
Region: activation of risk
potential



**PETER
CHRISTENSEN**
Nordic defence
cooperation –
and beyond



BRE
REVIEW

BALTIC RIM ECONOMIES

The Pan-European Institute publishes the Baltic Rim Economies (BRE) review which deals with the development of the Baltic Sea region. In the BRE review, public and corporate decision makers, representatives of Academia, as well as several other experts contribute to the discussion.

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ROBERT FIGO

Priorities of the Slovak Presidency of the Council of the European Union

Expert article • 2017

Slovakia has assumed its Presidency role at a time when the European Union finds itself in an unprecedented situation. The negative outcome of the referendum on the UK's membership of the EU has presented us with a new challenge and for the first time, we have to deal with a Member State leaving the EU.

This comes after a number of other challenges that affect the EU's overall shape and we observe a certain sense of political fragmentation. This is of our concern because fragmentation makes us vulnerable – internally and externally. The Slovak Presidency is therefore set to approach current challenges from a positive angle. Our priorities will centre around four ambitions: to make European economy stronger; to modernise and broaden the single market in areas such as energy and digital economy; to work towards sustainable migration and asylum policy; and to be more engaged with our external environment, namely through strong trade and enlargement policy. There will be a clear common denominator for these priority areas. Firstly, it is our aim to overcome fragmentation – by being an engine of positive agenda and an advocate of long-term solutions that unite us and work on the ground. Secondly, we are determined to deliver tangible results for our citizens – something that could help strengthening their connection to the EU.

At this juncture, it is really vital that the EU engages in self-reflection. We have to work harder to strengthen people's confidence, even enthusiasm for the European project. Because whatever the critics say, there is no better alternative to mutual cooperation. That is precisely why we put a strong emphasis on positive projects that first, unite us, and second, deliver tangible results for citizens across the EU.

We want push the agenda on economic growth in order to boost investments by focusing on a triangle: the European Fund for Strategic Investment – the CMU – the EU budget. Investment in the EU is still well below its pre-crisis average. The investment gap is about 1.7% of GDP for the EU. The EFSI has surpassed expectations and therefore, when a mid-term review takes place, the Slovak Presidency will be ready to take up any proposal to further foster or reinforce the EFSI. Another flagship project is the capital markets union – a true

single market for capital. It would, among other things, unlock new sources of cross-border funding for business, including the SMEs – a backbone of our economies – that remain heavily dependent on the banking sector. In practice, it means that we are set to finish the job on the Prospectus regulation and we also aim at making progress in the field of European venture capital funds and Money Market Funds.

Europe is at a crossroad today and trust of citizens in the viability of European project is dented. We are clearly in need of a comprehensive positive agenda for our citizens and businesses. After years of economic stagnation and digital divide, they want to see improvements in their quality of life and in the work delivered by the EU. Therefore, the Slovak Presidency sees as a strategic choice what we are going to do or not going to do in the Digital Single Market agenda because it will have significant impacts on the developments in the years ahead.

The digital single market is built on data economy and its various applications. This is the new gold of the 21st century. To accommodate the skyrocketing data traffic, we need to ensure enough frequency spectrums being harmonised on the EU level and allocated to mobile internet services. The Slovak Presidency will work towards a deal on the 700MHz proposal which will enable harmonisation of this key spectrum frequency band for the purposes of wireless broadband and will pave the way for 5G services.

Furthermore, the Slovak Presidency will invite ministers to discuss ways to improve rules on spectrum assignment in general, under the review of telecommunications framework. To bring tangible benefits for consumers, we will work towards ensuring that as of 15 June 2017, EU citizens can roam without additional fees, including for mobile data services, in Europe.

Cross-border portability of movies or music is also one of the visible possible achievements. We will push for negotiations with the European Parliament. Measures to deal with the practice of unjustified geo-blocking constitute a top priority for us to unlock the benefits of a huge market for all. We will have to navigate through consumers' interests and traders' obligations. This will have to be coupled by strengthened market surveillance. The end result will be a balancing act and we aim at the Council position during our Presidency.

Europe is at a crossroad today and trust of citizens in the viability of European project is dented. We are clearly in need of a comprehensive positive agenda for our citizens and businesses.

The Energy Union offers an exceptional framework to unite the Member States in their diversity – be it regarding their energy mix, their industries or households. The most pressing challenge is shared by the whole EU – climate change. The Paris agreement is our cursor. Building of the Energy Union is offering various solutions but due account should be taken of their impacts on energy security, competitiveness of our industry and households. Our Presidency will aim at a balanced approach to make good use of our climate targets to spur employment, new technologies and to ensure secure and affordable supply of energy.

Concretely, we will work on several fronts. To achieve energy security, the Presidency will press for agreements with the Parliament on security of supply and intergovernmental gas agreements. A pragmatic compromise on these proposals would substantially contribute to compliance with EU law and increase transparency on the market. Energy efficiency is the other side of the same coin as energy security – well established framework helps savings and promotes competitiveness of our energy dependent economies, while contributing to energy security. Our Presidency is set to achieve an overall agreement with regard to labelling and will prepare grounds for discussions on energy efficiency overall and energy efficient buildings. To further cut greenhouse gases and to promote low carbon economy, we will strive to achieve the ratification of the Paris agreement at EU level. The Presidency will also discuss the reform of the emission trading scheme to achieve a position of the Council at the end of this year. Good and predictable functioning scheme is the best guarantee for our economy. But all sectors have to contribute and proposals to cut emissions in transport or construction will equally merit our full attention. In short, the Presidency is happy to breathe life into the Energy Union and bring number of its proposals forward until the end of 2016.

Everyone can be sure that the Slovak Presidency will be an honest broker, a credible and constructive manager, negotiator or mediator. However, let us avoid dangerous simplifications. The Presidency cannot be narrowed down to one single area, namely migration, and at the same time, this one single area cannot be narrowed down to one single file, the revision of the Dublin regulation.

There still is a great deal of unfinished business. Continuing controls at several internal border crossing are the biggest reminder – therefore, we must do what it takes to return to a proper functioning of the Schengen. The Netherlands Presidency has done a great job of creating the European Border Guards. However, it is one thing to have it on paper and another thing is to make it operational. This is our task. We are also set to put a lot of efforts into the smart borders package to modernize the Schengen's external borders. Moreover, we need to establish effective cooperation with third countries of origin and transit. The EU-Turkey agreement remains an important part of it.

Speaking of the Common European Asylum System, there will be altogether some seven legislative proposals on our table in July. Nothing is going to be shelved or frozen. But we believe a complex, thorough look is needed, with less divisive elements at first, perhaps.

The credible enlargement process is one of the Presidency priorities. Given our experience, we are convinced that enlargement should not be neglected as it remains a key instrument to stabilize our neighbourhood. We believe that this process should be credible on both sides which means that we also actively communicate that the path towards the EU leads via rigorous reforms. ■



ROBERT FICO
Prime Minister
Slovakia

KĘSTUTIS TREČIOKAS

Trends in the enhancement of energy performance of buildings in Lithuania

Expert article • 2018

Lithuania has a population of 3 million, and over 35,000 apartment buildings, most erected before 1993. These apartment buildings can usually be characterised by heat consumption that exceeds the consumption rate elsewhere in the EU several times over. It is clear the main way out is through cuts on energy consumption, and through dealing with issues of climate changes and other issues pressing to Lithuania and international community, which is improved energy performance of apartment buildings.

In 2004, Lithuania approved the National Housing Strategy by 2020, including a key target to secure apartment building renovation, simultaneously cutting on energy costs. Pursuant to the strategy, an Apartment Building Renovation (Modernisation) Programme was developed in 2005 (hereinafter the Programme), with key focus on improved energy performance of apartment building with lowest energy performance.

For a number of years, however, the Programme has met with a number of obstacles, and therefore in the period of 2005 to 2012, just over 400 apartments building were renovated nationwide. Economic crisis may have played a part here, yet national experts believe key reason behind was inadequate mechanism of apartment building renovation; not only were the apartment owners required to take action and arrange for renovation of their apartment buildings; they were further responsible for overseeing construction works, and securing credits on their own.

In 2013, the new Government, being aware of the importance of apartment building renovation programme, took on some key changes. It has examined the current situation (at the time, as little as a dozen apartment buildings were renovated nationwide, and sought ways to turn the policy on energy performance in a favourable direction.

In the early 2013, the Government, relying on the conclusions of the analyses conducted, and insights offered by national experts in energy, finance, and economy, presented to the public a new model of apartment building renovation programme primarily targeting improved energy performance of apartment building with lowest energy performance. **Essentially, under the new model, apartment owners are no longer required to take on any obligations (whether in terms of organisation, or credit), or other project implementation risks. The apartment owners are now essentially required to offer their general consent to the implementation of investment projects on improved energy performance, and, without any further costs, repay the investment granted to respective apartment building using funds saved in the form of municipal charges.**

The new model focuses on municipalities as a key to successful renovation. Every local municipality has been called to select apartment buildings with lowest energy performance, and then to arrange for drafting and presentation to the local residents of investment renovation projects. Subject to an approval by the apartment owners, the administrators appointed by municipalities are now in charge of funding and quality and renovation management. Besides, it is on the administrators appointed by municipalities, rather than on the local residents, that the responsibility for the performance is now placed.

Now that over 3 years have passed since the reform of the above Programme of renovation of apartment buildings, the new model has clearly brought an impetus to the renovation processes that have been stalling for a decade. Since 2013, over 1,100 apartment buildings have been renovated in Lithuania, while renovation of another 800 apartment buildings is still ongoing. Consequently, by late 2016, completion of over 1,500 apartment building renovation projects is expected, including 80% projects to be implemented based on the new Programme model, involving municipalities (with the remaining 20% of the projects to be completed based on initiative of residents, i.e. using the old model of renovation).

While the Government focuses on the long-term renovation of apartment buildings, it does not neglect quality of renovation (compared to increased scale of the Programme). Approval of the new renovation model was followed by a detail review and stricter quality monitoring and control system in the building sector.

To make sure the renovation runs smoothly and transparently, the procurement system of works was completely rearranged, and to-date, procurements are mainly conducted via the Central Contracting Authority.

The progress demonstrated by Lithuania implementing apartment building renovation programme is reflected by both an increased confidence of local residents in renovation processes, and by assessment by the institutions of the EU, as well as by the governments of other EU Member States, that expect to share our experience in the sector.

A successful apartment building renovation programme is but the first step in order to secure greater national energy performance. It is now clear that as long as renovation involves individual buildings, as long as renovation programmes exclude districts or groups of buildings, as long as integrated measures of improvement of energy performance are not chosen and implemented adequately, a marked energy performance remains out of reach on municipality and even more so, on the national level.

Expert article • 2018

The Government has therefore, in light of key advantages offered by the new model of renovation, drafted further trends on enhancement of energy performance; the proposals on the table concern moving from renovation of individual buildings to integrated measures of improvement of energy performance, including renovation of heat generation and supply sector, street lighting grids, engineering infrastructure etc.

To ensure improvement of an integrated district energy performance, the Lithuanian Government has, in cooperation with the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, launched a pilot project on enhancement of district energy performance across 3 municipalities here in Lithuania, intended to develop a platform to serve as a basis for an-going integrated district renovation. ■



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Pan-European Institute

BALTIC RIM ECONOMIES

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PETER CHRISTENSEN

Nordic defence cooperation – and beyond

Expert article • 2019

On 1 January 2016 Denmark assumed the chairmanship of the Nordic Defence Cooperation (NORDEFECO). As Danish Minister of Nordic Cooperation and Minister of Defence it is clear to me that Nordic defence cooperation has both great practical and political value for the Nordic countries (Finland, Iceland, Norway, Sweden and Denmark) – as well as beyond our Nordic borders.

NORDEFECO is an important regional forum for practical military cooperation between the Nordic countries but is also a forum in which the Nordic countries discuss the defence and security developments and challenges in the region. Furthermore, NORDEFECO is a framework for much valued cooperation with the Baltic States, Poland, UK, Germany, the Netherlands as well as the US.

The success of close cooperation in NORDEFECO is to a large extent due to the fact that the Nordic countries share many values and interests on issues of defence and security while maintaining different affiliations to NATO and the EU. These shared values and interests enable the Nordic countries to cooperate on a wide array of issues in several international organisations, as well as bilaterally. And I believe that the times we live in will foster even further cooperation between the Nordic countries in the future. Therefore, the Danish NORDEFECO chairmanship has had an ambitious – and realistic – agenda.

Current initiatives

NORDEFECO is first and foremost about finding common practical solutions to shared problems. Currently, the Nordic Armed Forces are cooperating on many different projects, such as joint Nordic combat uniforms and sharing of tactical air transport capacity – projects initiated under previous successful chairmanships. In the following I would like to highlight a few important initiatives under way in 2016.

In January 2016, Denmark and Sweden signed a military framework agreement which will enable our countries' armed forces to gain access to each other's air and sea territories in peacetime much more rapidly. Following this agreement, the Nordic countries are now collectively working on a similar agreement within the NORDEFECO-framework, which would include military access to the land, air and sea domains. This initiative from the Danish chairmanship has been dubbed "Easy Access" and it fulfils a shared need in the Nordic countries; the need to be able to move and operate in a more agile manner and more rapidly in our region – while doing so with fewer resources.

Another initiative is the ability to share information better – to ensure the best possible level of situational awareness. For this reason the Nordic countries are working on signing an agreement which enables the sharing of radar data in the Nordic region. Such an agreement would contribute greatly to ensure the best possible level of situational awareness for the Nordic countries.

Nordic defence cooperation, however, is not limited to the Nordic region and the Baltic Sea area. On the contrary. In the spring of 2016 Norway, Sweden, Denmark, Portugal and Belgium signed a rotational concept ensuring C-130 air transport capacity for the UN mission in Mali until the end of 2018. The purpose of the development of such a concept is to create a more consistent model for the much needed military contributions to UN missions. Such a concept – and the practical reasoning behind it – is a good example of Nordic defence cooperation and NORDEFECO projects that ensure operational efficiency and stability to missions outside of the Nordic region and that is open for participation to non-Nordic countries.

Nordic-Baltic cooperation

The Nordic-Baltic relationship rests on a bond which has been forged historically and strengthened by mutual interests and geography. Thus, within the framework of NORDEFECO, as well as bilaterally, efforts are being made to enable ever closer cooperation between the Nordic countries and the Baltic states. In accordance with the Nordic-Baltic declaration of 2015 on specific areas of cooperation, we have developed guidelines on how we engage and develop concrete areas of cooperation in a Nordic-Baltic context. Furthermore, the Nordic-Baltic countries are heavily involved in projects in Georgia and Ukraine, supporting important reforms in the military sector.

Closer cooperation

I have entitled my article "Nordic defence cooperation – and beyond". Heading into the second half of the Danish chairmanship of NORDEFECO, I can say unequivocally that I consider Nordic defence cooperation to be progressing well and being as strong as it has ever been.

Over a wide range of issues, the Nordic countries are intensifying practical and political cooperation.

In my opinion, this shows the pragmatic and practical approach that the Nordic countries have with regards to Nordic defence cooperation – an approach which further strengthens cooperation and security in the Nordic region and beyond. Thus, Nordic defence cooperation is not only beneficial for us in the region. It also projects stability and inspiration beyond our borders. ■



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YU QINGTAI

What does G20 Hangzhou Summit mean for Sino-Finnish cooperation

Expert article • 2020

On September 4 - 5, the 11th G20 Summit was held in Hangzhou, China under the theme of "Toward an Innovative, Invigorated, Interconnected and Inclusive World Economy". Leaders of G20 member states and 8 guest countries as well as heads of 7 international organizations attended the Summit. During the Summit, the G20 Leaders' Communiqué Hangzhou Summit and 28 specific outcome documents were issued, which includes G20 Action Plan on the 2030 Agenda for Sustainable Development, Presidency Statement on Climate Change at the G20 Sherpa Meeting, etc.

The G20 Hangzhou Summit is a meeting held in the most complex situation, facing the most diverse challenges and carrying high expectation of all parties since the international financial crisis. The outcomes demonstrate the partnership spirit of facing challenges together, and charted the course for world economic growth with a series of practical action plans. G20 member states jointly formulated the blueprint on innovative growth as well as three action plans for innovation, new industrial revolution and the digital economy. All sides have also drafted the joint document to improve mid-long term growth potential of the world economy through structural reform. These results are expected to restore the vigor of global economic growth.

In the Summit, China came up with the initiative of jointly building an innovative, open, interconnected and inclusive world economy, in light of prominent problems in current world economy. To maintain sustainable and steady growth and deliver more development opportunities to the world, China made five proposals that should be adhered to, echoing the five concepts of innovative, coordinated, green, open and shared development proposed in China's 13th Five-Year Plan. It has demonstrated the direction of China's future development, and responded to concerns of the international community over China's economic prospects.

While the five proposals lay out the blueprint for China's development, it also reveals new opportunities for Sino-Finnish cooperation:

First, new measures such as enhancing the quality of trade, opening wider to the world, providing more accessibility for foreign investments, will bring more opportunities for Finnish businesses. China will set up 7 new free trade zones, bringing the total to 11. Finnish companies will find a level playing field and a more transparent environment in China. Finnish quality products and services will enjoy even greater popularity in Chinese market.

Second, innovation can be a key area for bilateral cooperation. Finland is well known for its outstanding spirit of innovation, and is one of the innovation leaders in the EU in scientific, technological as well as cultural creativity. China is implementing the innovation-driven

development strategy so as to leverage the role of innovation as the primary growth driver and make growth quality based rather than quantity based. China is ready to further its cooperation with Finland on innovation.

The third area is urbanization. In the coming years, China will experience rapid regional integration and urbanization. And in the field of urban planning and social governance, China has a lot to learn from the Finland's comprehensive legal framework and its experience. There is unlimited potential for mutual exchanges and cooperation in coordinated regional development and urbanization.

Green economy is the fourth area. Finland is a pioneer in clean-tech, green economy and sustainable development. China will unwaveringly pursue a strategy of sustainable development and stay committed to green development. "Beautiful Beijing" project between China and Finland has been doing well so far. Cooperation is realized in R&D work, university cooperation and in business. Even stronger clean-tech demand is foreseen in Chinese market, as in the next five years, China's water and energy consumption as well as CO2 emission per unit of GDP will be cut down by 23%, 15% and 18% respectively.

Last, but not least, there will be new opportunities in the field of public service and social security. China and Finland are both facing challenges in reform of healthcare system and aging society. We have had effective exchanges and cooperation in medical service and public health. In the future, public service and social security will become a new area of cooperation between China and Finland. In turn this will contribute to our respective growth. ■

YU QINGTAI

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ANTTI RINNE

Time for a new direction

Expert article • 2021

The European Union is often described as a peace project – and for good reason. What started out as the European Coal and Steel Community between six Central European countries in 1951 was more than a first step towards European economic integration and an internal market. Europe had been divided by the two world wars and the scars were still fresh in the 1950s. European countries were slowly finding their feet in between the world's two superpowers during the Cold War era. Important yet often misunderstood or underappreciated factors helping in the stabilisation of Europe were the integration of the European metal and weapons industries within the common market, and cooperation with the Federal Republic of Germany, which was of course on the losing side in the Second World War.

European integration has been rapid over the last few decades. It has been an intentional but also inevitable consequence of various crises. The EU has become a tight union of 28 Member States that have a common trading policy and cooperate closely in foreign and security policy, among other areas. The European debt crisis has forced the eurozone countries to reform their economic policies, which has meant greater integration and compliance with common rules. The recent refugee crisis and the changing security environment in Europe and Ukraine, Turkey and the Middle East have, once again, required closer cooperation under exceptional circumstances.

The United Kingdom recently voted to leave the EU. The consequences of this remain to be seen. Some believe that Euroscepticism and populism will gain ground, while others hope that consensus will be easier to find on certain issues following Brexit. It is however clear that the EU will lose an important financial driver and the greatest military power in Europe. Brexit needn't – and shouldn't – mean no cooperation with the UK. We must now look for a mutually beneficial cooperation agreement that will guarantee close trading relationships in the future.

Brexit was perhaps a culmination of the criticism of the EU, which has faced one crisis after another in recent decades. Some of this criticism has been justified. Ordinary people's voices have not been heard enough when dealing with the financial crisis: many feel that resources are allocated to the stabilisation of the financial market and national economies. People living in countries that have received bailout packages have been forced to take responsibility for the fact that an effective taxation system is not in place everywhere. Brexit has also made the EU a scapegoat for the impacts of globalisation that are beyond the EU's control, such as industry moving to low-cost countries.

In order to justify its right to exist in the future, the EU must focus in particular on issues that Europeans feel are the core of the EU.

Unfortunately, the EU has failed to make people feel that it has a positive impact on their everyday lives. People feel the EU is too distant and bureaucratic. In order to justify its right to exist in the future, the EU must focus in particular on issues that Europeans feel are the core of the EU. Internal markets must be made more efficient. The development of digital internal markets may bring tangible advantages to Europeans by means of better cross-border trade in goods and digital services. Ordinary people must be placed more at the centre of EU politics. This means a greater focus on employment and investments. Both national

and EU-level measures are needed to improve participation and the fight against poverty. Free movement of people must be maintained. The EU has given millions of Europeans the opportunity to work and study in an EU country other than their home country. This development must be supported on all fronts, because it will also benefit the EU economy.

Member States bear a great responsibility in terms of EU policy-making. The European Commission proposes laws, but the heads of state define the general guidelines. Member States decide how the EU will develop. The Baltic States, for instance, are a good example of countries supporting the integration of the EU. Since their accession in 2004, Estonia, Latvia and Lithuania have wanted to be at the core of the Union and they all joined the eurozone since 2010. Finland also wants to actively participate in various forms of cooperation. This is not the case for all countries. The challenge is to find a common view on the future of the EU. The debate over its direction is ongoing in Paris, Berlin and Rome. The same debate must take place in Finland, other Nordic countries and the Baltic States. Although the forms of future cooperation remain to be seen, the fact is that the greatest challenges of our times – climate change, organised crime and terrorism, migration, financial crises, changes in industry or the fight against tax havens – demand answers that no one country alone can give. Problems do not stop at national borders. They can only be solved in cooperation with other countries. ■



ANTTI RINNE

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JUKKA-PEKKA UJULA

Attractive coastal and archipelago regions at the threshold of a new era

Expert article • 2022

Porvoo's archipelago is a unique entity as part of the north zone of the Gulf of Finland in the Baltic Sea region. The archipelago and coastal regions have always been significant throughout history among the international trading regions. These regions have been the source of many technical innovations and new ideas that spread widely to the surrounding areas. Today the archipelago is still unique in its nature as a residential and living environment, as well as a charming and potentially important network of tourism and adventure travel destinations.

Eastern Uusimaa's archipelago region is 2,946 square kilometers, almost 90 percent of which is water. Permanent archipelago residents number about 3,000, the majority of whom live in the area of the town of Porvoo.

The region's population multiplies during the summer season due to the expansive holiday home establishments, and a growing number of summer residents want to update their holiday homes to year-round residences. Kilpilahti, located in the vicinity of Porvoo's archipelago, is the Nordic region's largest integrated petrochemical and energy industry production complex, with Finland's largest port, exporting c. 8.7 million tons annually (2015).

The archipelago development program promotes the archipelago's opportunities for development

The opportunities for development of Porvoo and Eastern Uusimaa's archipelago and coastal area are being promoted by a special archipelago development program. The program recognizes both challenges and new future possibilities. The program will help to reconcile the needs of the sensitive natural environment, traditional industry, public services, protection of the Baltic Sea, growing maritime traffic and new, upcoming opportunities, such as telecommuting and tourism.

The goal of the archipelago development program is to secure a vibrant archipelago population and industrial and commercial activity in Eastern Uusimaa's coastal and archipelago regions for decades to come. Development entities are recognized by cooperation with private actors, residents and public administration.

The construction of a water supply and sewage network, energy production, roads, high-speed telecommunications and other infrastructure are the key challenges, especially in those areas where the population is relatively small. The sea, decentralization of the population and long distances form a challenging equation for a sustainable economy.

The goal of the archipelago development program is to find ways to ensure the preservation of the archipelago's permanent residential areas, but also to develop new businesses. New opportunities are found in the coordination of public and private services, improving the efficiency of planning and land use, new environmentally friendly and renewable energy solutions and the expansion and innovative use of electric services.

Vitality results from a merging of traditional and modern possibilities

One of the most crucial issues affecting the future of the archipelago areas is the development and strengthening of the region's culture and community. Traditional archipelago culture, a relaxed way of life that respects nature and the importance of local entrepreneurship, are strong values upon which new possibilities can be built. According to the program, the future of archipelago residents could be shaped out of an ecological way of life that is close to nature, in which work and living are combined using state-of-the-art communications and environmental technology.

The vision for Eastern Uusimaa's archipelago has been planned following principles of sustainable development. The archipelago's vitality is rooted in the successful merging of traditional and modern opportunities. The key is to see cooperation between the region's residents, entrepreneurs and authorities as an opportunity and as a new, creative process.

The vision is founded on the assumption that the population will grow in a controlled manner and that new young families and people of working age will also move to the archipelago. Basic services, public transportation and other regional infrastructure also support development. The program strives to take advantage of opportunities in the archipelago within new industries, such as tourism and recreational activity services and new possibilities for business are being combined with traditional archipelago trades. We can also take advantage of the digitalization of the world around us in new ways.

The Eastern Uusimaa and Porvoo archipelago is confronting the same challenges as other Baltic Sea regions. The state of the natural environment, change in the demographics of the population, challenges to the security environment, economic fluctuations and especially risks to the delicate archipelago nature posed by the increasing maritime traffic are present both in everyday life and when considering a new future era. Possibilities to build and maintain a unique and economically and ecologically sustainable coastal and archipelago region are nonetheless still good. ■



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ELINA RANTANEN

Southwest Finland aims to be a pioneer in climate politics

Expert article • 2023

Climate change is regarded as the most challenging environmental problem in the world by the majority of researchers. Although there still are some ignorant and skeptic attitudes towards the impacts of global warming in northern parts of the world, there luckily are cities and regions that have taken climate change seriously and set ambitious targets to tackle it. Despite the skeptics, global warming will affect the North as well: its nature and climate will change, and the amount of climate refugees from different parts of the world will concern all countries and regions. It is also just that the ones who are the biggest causers of global warming are the ones to fight the hardest to manage it.

Finland has committed to reduce its greenhouse gases 80 % by the year 2050. Since the decisions and their implementation are made locally, it is vitally important that cities and regions have committed to the goal as well. Two thirds of the population in Finland live in the cities. Thus, the good old rule still applies: think globally, act locally.

Southwest Finland is one of the regions where ambitious targets in climate politics have been set both regionally and in the cities. This work aims at resource wisdom that refers to the activities that do not produce climate emissions, but use available resources without wasting them. Resource wisdom is understood both by environmental activists and economists, and it has thereby become a popular concept. The climate program of Southwest Finland states that "Sooner or later we have to develop and apply resource wise solutions, but pioneers are the ones who get the biggest advantages". It goes without saying that Southwest Finland aims to be a pioneer by implementing carbon neutral solutions in the region.

There are several different actions listed in the climate program of Southwest Finland from ecological food production to protecting wastewater treatment plant from flood during heavy rains. Two biggest issues both in the region and in its cities are traffic and energy production.

In Southwest Finland, some major traffic projects that aim to increase sustainable ways to move and to reduce greenhouse gases are being planned. One of them is a one-hour-train from the city of Turku to the city of Helsinki that is regionally one of the most important goals from both environmental and economic perspectives. The fast train would combine these cities as one big working area reducing the use of private cars and thereby emissions. The government of Finland has already decided to fund the planning of the fast train. Another rail project planned in the region is a city tramway in Turku that would increase the use of public transport and reduce greenhouse gases

caused by the traffic in the city area. The use of buses is already in increase due to the investments in the most used lines, public transport benefits and cooperation in the area. The operation of first electric buses will start in Turku in autumn 2016 and there is a growing number of electric cars in the city region - not to mention electric bicycles that have recently become popular.

The biggest producer of climate emissions in Southwest Finland is the energy. There is a plan to replace nearly all fossil fuel with renewable energy sources by 2040, when for instance the city of Turku claims to become a carbon neutral city. New housing that uses solar energy is on its way. In heat generation, an important source of energy is wood which however is not widely available in Southwest Finland that is a region of fields rather than forests. Therefore, the answer of clean energy production is not totally clear yet and needs to be paid attention also in the future.

Southwest Finland has wanted to be a forerunner in climate politics, because, despite the global nature of climate change, its effects are extremely local everywhere in the world, also in the northern regions. Especially cities and regions have an enormous possibility to promote sustainable and climate friendly solutions in energy production and consumption, traffic and city planning to solve the challenges of global warming. The closer to people the choices are, the easier they are to make. Therefore, the role of cities and regions cannot be exaggerated. The targets have been set, the strategies written and the politics decided in Southwest Finland to manage climate change. Now it is time to act. ■



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II Vice-chairperson of the City Board
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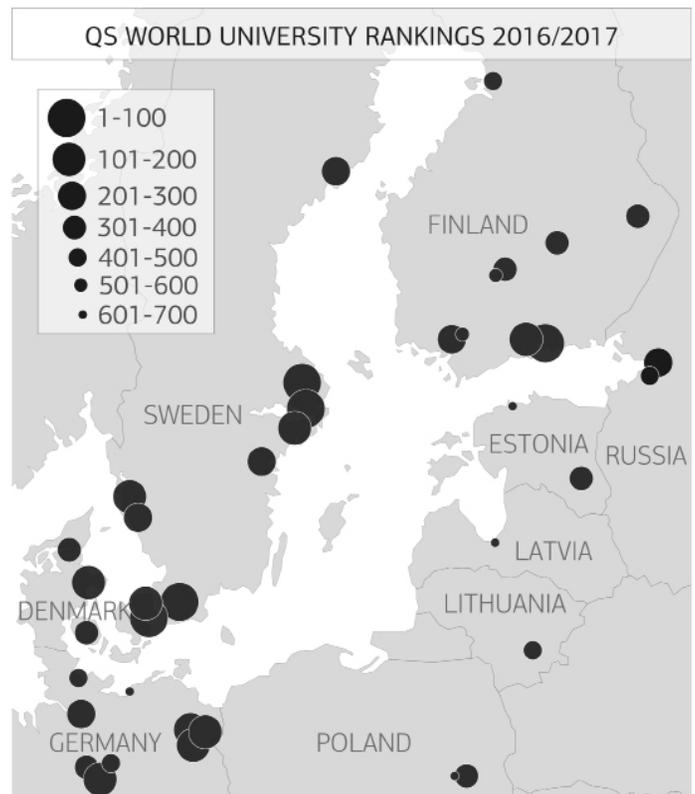
JAAK AAVIKSOO

Baltic Rim universities: excellence, economic growth and future challenges

Expert article • 2024

Universities reach the coasts of the Baltic Sea in the 15th century – Rostock in (1419), Greifswald (1456), Uppsala in (1477) and Copenhagen (1479). The eastern coast got its first academic settlements roughly a hundred years later – in Königsberg (1544) and Tartu (1632) respectively. Early days of universities saw them as places of religious, legal or medical professional training, gradually this mission was replaced by spreading political or ideological influence and further, starting from the 19th century, universities were increasingly seen also as institutions of nation building. Since the 80s of the last century, in addition to the growing public demand for higher education, there is a widespread belief that universities act as engines of economic growth and regional development and thus last decades saw a great number of smaller regional colleges emerge. As of today Baltic universities number in hundreds among global 20-25 thousand and the global numbers are still growing. Growth in quantity and increased (international) mobility of students has been accompanied by questions about academic quality and increasingly also excellence of our academic institutions and globalization has raised these issues in a truly global perspective. How do Baltic rim universities stand in these comparisons and where they are heading?

By large we may conclude that strong academic traditions together with national social and economic policies have resulted in extremely competitive universities. The most cited ranking, that of Quacquarelli-Symonds (topuniversities.com), has rated thousands of institutions and ranked 916 of them – that constitutes roughly 5% of all world universities. True, Baltic universities do not rank in top 10 or even top 50 since these places are taken mainly by US-UK institutions largely due to their global outreach and English being the post-second-world-war *lingua franca* of the *academe*. But further down the list we find altogether 30 Baltic universities in this “top 916 list” (we have not counted German and Polish institutions for they are more often related to the Central-European academic space rather than Nordic-Baltic, but we have involved Sankt-Petersburg University and SP Polytechnic University into this region (see Map). Most remarkably, and differently from most countries, these institutions cater for a large majority of the total student body in corresponding countries and therefore the overall academic standing of the Nordic-Baltic higher education is arguably most competitive, for in other regions top institutions represent a much smaller share of all institutions and therefore the average standing is more modest (remarkable exceptions being Switzerland, Israel and Singapore).



It is easy to see, that the ranked universities on the eastern coast of the Baltic Sea do not reach the best 300 but it is important to notice that less than ten years ago none of them were present in the global rankings. The academic progress after 50 years of forced separation from the global academic community has been nevertheless remarkable and some of them may well end up in the top 200 in the next decade.

It is noteworthy, that there is a clear correlation between academic standing of universities and level economic development. More interestingly, this correlation is evident not only on the national, but also on the regional(!) level. Following the trends over the last few decades,

we may observe the emergence of three regions of academic excellence – Öresund, Stockholm and Helsinki metropolitan areas. Differently from the European historic tradition of small university towns, away from business and trade, modern leading universities tend to grow in an economically thriving environment offering challenging partnerships and global outreach. In this context, it is understandable, that eastern coast institutions have to push for academic excellence together with their national economies and build local and regional partnerships for mutually beneficial advancement.

In this context, one may ask if universities first contribute to economic growth or, vice versa, economic growth contributes directly to academic advancement. Most probably, this relationship is a truly interrelated one and we have to take this into account in order to avoid unfounded expectations and related disappointments from misguided academic investments.

Furthermore, if the above said is true, the regional economic environment is so important that strategic planning of universities cannot avoid taking these realities into account. Basically, it brings to a conclusion, that academic ambitions of universities must be aligned to and coordinated with the neighboring outside world much more strongly than usually accepted.

This, in turn, means that global rankings lose relevance for universities outside of the global economic hotspot regions. This, however, does not reduce their importance on the regional scale provided they define and implement their academic mission in the corresponding way.

The world of universities develops in circles – national borders have disappeared in recent decades giving us a global pool of most diverse institutions, which we have tried to rank one way or the other. These rankings make sense in the case of global brands but for the large majority of universities we have to pay much more attention to the regional aspects and contexts developing also corresponding criteria for a sensible comparison of different institutions.

Going this way we may well find, that some university outside the established metropolitan areas, and not yet on the global ranking list, turns out to be a real powerhouse. ■

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LARS RYDÉN

University cooperation in the Baltic Sea region – after 25 years

Expert article • 2025

Today we can look back at 25 years of cooperation in the Baltic Sea region, made possible after the dramatic events 1989-91, with the end of the Cold War and dissolution of the Soviet Union. It spurred a very wide range of contacts and network building. An upsurge of voluntary associations formed by all kinds of groups. Gunnar Lassnanti estimated 2013 that there were between 200 and 300 networks in areas from finance to culture, most of them formed during the early 1990s. One kind was university cooperation.

One of the earliest university networks was the Conference of Baltic University Rectors, CBUR, an initiative by Lund University. Their first meeting was congregated in Visby Gotland in September 1991 in the presence of the Swedish King and Queen. At the same time the Baltic University Programme, BUP, created by Uppsala University, developed. The first meeting of BUP in Kalmar, Sweden, in February 1991, just weeks after the scaring attack on Vilnius on January 13, gathered no less than 34 universities hungry for contacts and uncertain how to act, not knowing much about each other. BUP started satellite TV broadcasts in October the same year. Before the time of Internet it was the best option for regional communication. In the following years several other university networks formed on the initiative from among others Turku, Finland, Tartu, Estonia and Berlin, Germany.

One may believe that today, 25 years later, when international contacts are normal for practically any university, the networks focussed on the region may be unnecessary and outdated. For some networks this is what happened. Thus the CBUR stopped working after 10 years. Several of the other networks turned into educational projects, offering Baltic Sea Region Studies.

However the Baltic University Programme is still very active and there are no signs of "closing the shop and going home". The programme is very much wanted by the participating universities. Up to now 230 universities and other institutes of higher education have participated over the years. On the contrary BUP is today becoming a permanent organisation with members, with secretariats in several countries and permanent activities, and a very wide range of educational materials. BUP focuses on sustainable development and education for sustainable development, but has also staged a number of research collaborations, and applied projects with other actors, such as authorities, cities, industry, etc.

Another sign that the value of regional university cooperation persists is the formation of the Baltic Sea Region University Network (BSRUN) in 2000 in Turku promoting collaboration in University Governance, Management and Administration. It is active and running. Regional cooperation is seen in many other arenas, not the least business, and universities play a role in many of them. The European

Union Strategy for the Baltic Sea Region (EUSBSR) was approved by the Union in 2009. It was the first macro-regional strategy in Europe, made possible by the enlargement of the Union in 2004. Here BUP is a so-called Flagship in the policy area education. Another Flagship in this Policy Area is the recently started Baltic Science Network, initiated by Hamburg, with many universities involved.

The strategy of regional cooperation is thus today rather getting stronger than the opposite, but partly for different reasons than at the end of the Cold War and the break-down of the Iron Curtain. The support of neighbours is a valuable asset in a world where competition is harsh and the local situation is priority. Many universities in Central and Eastern Europe is still not strong enough when competing with Western Europe or even less so globally. They need cooperation which does not build only on competence. The strongest universities typically are part of global networks with elite participation, and not always interested in regional networks.

A comment which is regretfully necessary to add here is the decreased participation of Russia in this network building. After 25 years of trustful dialogue Russian cities are not very active in e.g. the Union of Baltic Cities any longer. Its universities are also decreasing its participation in the Baltic University Programme. It remains a part of the Council of Baltic Sea States, but not always participating. The increasing tensions between Russia and the rest of the region is regretful and alarming. We can only hope it will not get worse. ■

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HENRIK HOLOLEI

Making transport deliver for the Baltic Rim

Expert article • 2026

Transport is a key driver of the European and the Baltic economy. In Europe, 1 out of 20 jobs is in the transport sector, providing direct employment for more than 11 million Europeans. We depend on the sector every day, be it for work or play, to ensure our shops are re-stocked, or that a patient can be brought to the hospital on time. When it works well, transport as a subject is largely in the background. However, when there is a failing in the system, such as traffic congestion, or a delayed flight, or an accident, questions are immediately asked about the functioning of the transport system.

The European Commission and more specifically DG MOVE is tasked with finding answers to that question – How could the transport system work better, especially on cross-border journeys? Transport is the backbone of our economy, so it is worth investing time, energy and money into the network, in order to make transport work better for all of us.

Close cooperation and collaboration on cross-border projects yields huge returns, allowing the free-flow of goods and people between countries. Going it alone can mean the return on infrastructure investment is severely diminished. For instance, there is little value in upgrading ferry port facilities in Helsinki to take bigger vessels if the port at Tallinn or Stockholm cannot handle the larger ship. Similarly there is little value in Latvia building a four-lane highway, only to meet a country lane in Estonia or Lithuania.

To address these issues, and to get the maximum return for each euro spent, the EU has developed the Trans-European Network. It aims to eliminate bottlenecks at borders across Europe, facilitating the free-flow of passengers, goods and services. Its main funding instrument is the Connecting Europe Facility or CEF, worth about €24.05 billion between 2014 and 2020.

We have also learned that once the borders are lifted and cross-border transport can operate freely, the benefits are quick and imminent for businesses and for people. Where cross-border obstacles still remain, the progress and benefits are limited. It is essential to make sure that cross-border transport is smooth and efficient, if we want to reap all benefits that transport can offer. Rail Baltic and the Fehrman Belt link are two major projects worth highlighting in more detail.

Rail Baltic

Rail Baltic is an excellent example in cross-border cooperation. This joint project between the Baltic States, Poland and Finland is being largely funded by the CEF. It is the largest infrastructure project ever undertaken in the history of the Baltic States, and under the CEF it has received around €750 million, of EU co-funding available under the respective national allocations of the Baltic States. The current Baltic railway network and train carriages cannot be used to connect

to the railway network of Poland and Germany. However Rail Baltic will see European width railway connect Latvia, Estonia and Lithuania but equally Finland and Poland to each other as well as to the other countries of the European Union.

The Fehrman Belt Link

Another major project which will have a positive impact in the Baltic Rim, is the construction of the The Fehrman Belt. This link will connect Denmark with Germany and will remove a cross-border bottleneck by the construction of the new immersed rail/road tunnel under the 19 km wide Fehmarn strait between Denmark and Germany, reducing travel time between Copenhagen and Hamburg for passengers by one hour and for rail freight transport by approximately two hours. The total construction cost of the Fehmarn Belt fixed link is expected to be approximately €5.4 billion. The EU provided €204 million for studies and works as part of the TEN-T programme, in the 2007-2013 funding period. In 2014, the CEF allocated a further €589 million.

Ports are a key part of our transport infrastructure. The EU is supporting Baltic ports in three corridors: Baltic-Adriatic, North Sea-Baltic and Scandinavian-Mediterranean, as well as under the Motorways of the Sea programme. Thanks to the CEF, we will have committed just over €1 billion in grants to ports and their connections by the end of 2016. €501 million of this will directly or indirectly benefit Baltic ports.

Although it is relatively easy to travel across Europe by road, there are outstanding issues to be tackled. In this regard, the Commission hopes to present a set of road initiatives in 2017. Its main aims will be to clarify and simplify the rules to reduce administrative burden for haulage services travelling across the continent, to ensure good enforceability of EU law in all states, to provide a level-playing field for operators. Cabotage rules, conditions for stable establishment, opening of passenger market, access to bus and coach terminals and road charging are other specific issues to be addressed. The road initiatives will ensure the Baltic region is better connected to a strengthened EU road system.

Given its nature, **aviation** is perhaps the sector most dependent on cross-border cooperation. The Aviation Strategy for Europe, launched less than 12 months ago is already delivering for Europe. Through it, the Commission will ensure that European Single Aviation Area continues to develop in order to be able to compete with fast-growing aviation markets such as the Middle East or Asia. Connectivity for the Baltic region with the rest of Europe and the world is essential. With air passenger numbers continuing to grow, issues around capacity and congestion will also need to be overcome. Enhanced connectivity would serve the economy, businesses and people better.

Expert article • 2026

Research and Innovation programmes are critical to make the transport network sustainable and safer. R&I will also help Europe to remain competitive in the face of tough global competition. Developing new and innovative solutions is an opportunity to be seized. In Air Traffic Management, innovative solutions through SESAR are helping to cut congestion, optimise the use of existing (and expensive) infrastructure, as well as cutting emissions. On the rail network, the ERTMS signalling system is making our rail network safer, but it is also fast becoming a gold standard across the world. There are other developments too, such as introducing fully interoperable e-tolling systems on our roads and developing standards for connected vehicles and connected infrastructure. All of this is in addition to the Horizon 2020 Research and Innovation programme ever with nearly €80 billion of funding available over 7 years (2014 to 2020).

Despite the clear benefits, cooperation and collaboration is not always easy. Different administrations have different ideas, budgets and political priorities, but things are improving. The bigger picture is important, and although alone we might move faster, together we go much further. That is a message that every policy maker should keep in their minds. ■



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BALTIC RIM ECONOMIES

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ANNE CHRISTINE BRUENDORFF

The Arctic – a strategic priority for ICES

Expert article • 2027

“Science recognises no boundaries, no class and no creed, all working to a common end, to increase knowledge and to uplift humanity” (Johannes Schmidt)

The Intergovernmental Panel on Climate Change (IPCC) has agreed to provide a special report in 2018 on climate change, oceans and the cryosphere, an acknowledgement of the major changes in the marine ecosystem as a consequence of Arctic warming and the pace at which it occurs.

Through the proposition of an international study of the Arctic Ocean, the region was a priority for the [International Council for the Exploration of the Sea \(ICES\)](#) in the years leading up to the formal creation of the organization in 1902. One hundred years later, a reinforcement of this commitment saw a decision to enhance scientific activities in Arctic waters. ICES, with the Arctic coastal states as five of its 20 members, has since outlined its approach for work in the area and the development of its science, advice, and data ([Strategic Plan 2014-2018](#)).

More widely our organization's goal is to advance scientific knowledge on the marine ecosystem and environment, fisheries and aquaculture, and using this knowledge to provide unbiased, non-political advice on the corresponding issues to Member Countries, and international governmental institutions like the EU Commission, Regional Fisheries Management Bodies, and Regional Seas Environmental Commissions. The work represents the endeavour and expertise of hundreds of scientists across tens of countries around the world.

This development and coordination of science and provision of advice to support governance extends to the Arctic, where aquatic resource use and the impact of human activity on the ecosystem are at the centre of efforts.

Arctic partners

ICES is working on Arctic issues, coordinating and developing science as well as providing advice on fish stocks. Strategically our organization seeks input from partners such as the Arctic Council on how to address research gaps and needs.

Bridges have been built with Arctic Council working groups the Arctic Monitoring and Assessment Programme (AMAP) and the Protection of the Arctic Marine Environment (PAME), as well as the International Arctic Science Committee (IASC), the Sustained Arctic Ocean Observation Network (SAON), and the North Pacific Marine Science Organization (PICES).

Action areas for scientific cooperation

The Central Arctic Ocean is one of eight ecoregions for which ICES is producing **integrated ecosystem assessments**. Based on these assessments, condensed **ecosystem overviews** for the Barents Sea, Celtic Sea, North Sea, Bay of Biscay and Iberian Sea, were delivered at the beginning of 2016. The Central Arctic Ocean is one of the remaining ecosystem overviews currently in development.

ICES data services provide the core evidence base for marine assessments; for example, the Contaminants and Biological Effects dataset is closely tied to AMAP. This includes potential further cooperation on a hazardous substances assessment tool, which would generate on-demand a dataset product from our databases.

For more than a decade the organization has produced a report from the ICES Area of the North Atlantic and Nordic seas describing **the state of and trends in ocean climate**. This report is also available [as an operational data tool on the ICES website](#).

ICES furthermore, provides **advice for a number of fish stocks**, including capelin, cod, northern shrimp, and harp and hooded seal.

The Arctic marine environment will undergo major changes in the coming decades due to on-going climate change and increases in human activities, and ICES has the capability to provide better understanding of ecological processes and human impacts on this ecosystem. ■



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BRITA SAXTON

Maritime policy at a global arena

Expert article • 2028

Maritime transport is fundamental for the global economy. It is argued that some 80 to 90 per cent of global trade is carried by sea. Maritime traffic has increased significantly over recent decades.

Not only the vessel fleet, but also maritime infrastructure continues to be developed. It is obviously true when it comes to ports. During the last few years, investments in fairway infrastructure are evident. New canals in Suez and Panama constitute global megaprojects. A Baltic aspect of the New Panama Canal that seldom is discussed is the fact that New Panamax (depth 15.2 m) more or less will dovetail with the Baltimax (depth 15.4 m). While many ports, particularly overseas, have invested heavily to dredged and "pave the (fair-)way" for New Panamax, the Baltic Sea can welcome those vessel, just as it is! In other words, during the coming years we will see a global vessel fleet better optimized for Baltic conditions than we ever have seen. Of course, it may imply considerable challenges for ports to adapt.

The EU Sulphur Directive, implemented in 2015, in areas such as the Baltic and the North Sea, but not globally, has been debated. Transport Analysis have followed the implementation and commissioned interviews with key stakeholders. The study demonstrates that, overall, respondents have made few adaptations. Most transport buyers indicate that they have not modified their transport arrangements, but some have switched to other modes. Uncertainties about fuel prices, the maturity of new technologies, and future regulations have led most shipping lines to postpone new investments. However, more ship-owners have begun to order scrubbers to clean the exhaust gas. The cost of sea transport in SECAs has risen 5 to 10 per cent, according to interviewees. The Swedish Government has also asked Transport Analysis to look into the likely introduction of a nitrogen emission control area, NECA, in the Baltic Sea and the North Sea.

While the global as well as the EU-fleet tends to grow, the Swedish-registered tonnage decreases somewhat. However, at the same time the fleet controlled by Swedish interests increases. In 2015 the Swedish Government Offices published a National Marine Strategy in order to clarify aims and set out future initiatives for maritime transport and the marine sector. Sweden is to strive to offer the best regulatory framework in Europe for shipping. The transfer of goods from land transport to sea transport can help to reduce the overall environmental impact of the transport sector.

Transport Analysis has a permanent commission to follow the competitiveness of maritime shipping. The overall impression is that the conditions for the Swedish merchant fleet has developed appropriately over the last few years. Currently, we see a number of improvements for the industry: The introduction of tonnage tax, a special

effort to simplify regulations for the shipping industry, an expansion of the Swedish Maritime Support Scheme and the introduction of delegated inspections. The Swedish development on rules and regulations is mirrored by other countries. Most nations strive for increasing tonnage in their registers and we are all pulled into the swirl of regulatory competition.

A progressive policy on Research and Innovation is an important element of the Maritime Strategy. R&I initiatives should also stimulate the maritime equipment industry. It covers a broad range of activities with close links to areas in which Sweden have, or strive for, a strong position. To this end, trade and export policy are also important, such as the development of platforms for marketing and communication.

At a time when the autonomous technology has been widely utilised across various fields, including transportation, the shipping industry may come to face a paradigm shift. A shift that can allow for improved safety, lower fuel consumption and better environmental performance, richer data provision and longer maintenance intervals.

Fair pricing is a fundamental principle of Swedish transport policy. Ideally, taxes and charges should reflect the social external marginal cost of transports. Transport Analysis annually report on this issue, involving a European perspective. On the one hand side we conclude that the limited taxes and charges levied on maritime traffic does not make up for its external costs, basically the environmental costs. On the other hand side, taxes and charges typically need to increase more for other modes of transport, to put them all at equal footing.

All in all, seen from a transport policy perspective we see great progress. Typically, maritime transport services are better than ever. Safety has improved from an already good standard and the pace of environmental improvements has probably never been higher. Obviously, future challenges relates to industry policy rather than to transport policy objectives. But, as we all know: Prediction is very difficult, especially when it is about the future... ■



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SAKARI KUIKKA

Oily risks of Gulf of Finland

Expert article • 2029

World lives on oil. This is especially the case with Russia, where, in 2012, oil- and gas sector accounted for 16 % of GDP and more than 70% of exports. For Russia, Gulf of Finland (GoF) is an important route of export, being peaceful option compared to southern options. Every day 20 tankers pass the Gulf of Finland, which is a narrow area with intensive traffic. The existing risk analyses suggest that large oil spills are matter of time.

For Finland, the development of Russian oil transportation created a risk that cannot be controlled. Finland needs to adapt to the risk. This is demanding as building a lot of human activities to a small area has created unforeseen risks. There are three nuclear power plants in the GoF, and after a ship accident the leaking oil can spread to cooling system, which can create severe problems. Especially such oil, which spreads below the surface, is impossible to keep outside the cooling system with oil booms. After discussions with FEM research group in University of Helsinki, STUK (Radiation and Nuclear Safety Authority) realized that this risk needs to be taken into account, and the nuclear power plant in Loviisa got a new construction to be able to take cooling water from the eastern side for periods of maintenance service, which are critical periods. FEM realized the risk when assessing what would happen for the bird islands if oil passes underneath the booms.

Compared to any other Baltic Sea country, Finland has invested a lot in oil combatting fleet. In GoF, the usual directions of wind are such that in an oil spill accident, the likely direction of the spreading oil is along Finnish coast. Moreover, the coastline is long and ragged with a lot of islands and bays, providing a variety of habitats for species. On the other hand, GoF is a difficult environment for the cleaning of shoreline.

It is challenging to estimate in advance, how big the ecological damages could be in different sizes of accidents. The environmental settings (wind strength and direction, ice conditions, etc.) vary a lot and they have an important effect on the impacts of oil accidents. For example the damages on sea birds are to some extent unpredictable: in France in 1978 the oil leakage from *Amoco Cadiz* -tanker was 230 000 tons, but the total number of dead birds was "only" 20 000. On the other hand, a relatively small oil leakage (10 tons) from a small vessels close to Gotland waters in Baltic Sea killed 60 000 birds.

The commercial values of e.g. Finnish species in GoF are low compared to the value of oil business. The value of the load of one tanker is easily tens of millions of euros. This is much more than the value of e.g. yearly herring catches in GoF. However, the costs of cleaning can be up to billion dollars. The Finnish citizens have a high willingness to pay for prevention of an oil accident. In a case of a large accident, insurance companies, Finnish Oil Pollution Compensation Fund and International Oil Pollution Compensation Funds do not cover all the costs. The taxpayers will pay the rest, i.e. we carry the risk of Russian oil export.

Due to the only partial possibility to directly control the risk, there is an obvious need to use scientific tools to create a maximum interest among shipping companies and insurance companies to avoid oil accidents. For example, the returning of a lost species back to GoF can be very costly. All such costs must be estimated in advance to make actors realizing what the total costs and biological damages can be.

The negative publicity seems to be the most important factor creating the interest to avoid accidents among the involved companies. However, this is likely the case with large international oil companies, and not necessarily with small shipping companies, which do not have similar PR value. In the oil damage databases (which species have a risk to be lost in a case of a spill) of Gulf of Finland there are also photos of the species to make it concrete what the potentially lost species look like. In order to estimate population losses, these databases are used together with spatially specific accident probabilities and models that describe the spread of oil in different weather settings.

The main part of the nature conservation in Finland is focusing on the safeguarding of rare and threatened species. In their genes, they have such information which is easily not possible to get back if once lost. There is no similar environment in the world as the brackish water of Baltic Sea is. In GoF, there are about 70 species, which live in such a microhabitat that oil spill can destroy many of the populations. There is a risk to loose permanently some genetically unique species in an accident, whereas e.g. rainbow trouts in aquaculture are easy to replace. Moreover, the insurance companies pay these damages.

International Maritime Organization has declared Baltic Sea to be particularly sensitive sea area (PSSA), except the Russian area. This demonstrates that the uniqueness of the nature of the area has been acknowledged. In GoF, several investments to safety have been made. These include: 1) International AIS (Automatic Identification System) system, which identifies the name of the vessel, type of the vessel and place and direction 2) VTS (Vessel Traffic Service) authority offers, for vessels, information about traffic of the area and other relevant information having impact on safety 3) International Mandatory Ship Reporting System that provides additional information about vessels entering GoF. As can be seen, quite a lot has been done, but if we compare the standards to those of aviation, it is obvious that a lot more could still be done. For example the learning from close by accidents is very poor in shipping.

Even though GoF is a well studied area where approximately 20 scientific papers have been published about oil spill risks and decision making, there is still a hard decision to be made: do we safeguard an aquaculture unit, beaches or beetles? Such decisions are difficult for those persons who are in charge of oil combatting activities after an accident and oil spill. It would be better to include the aims of decision making to legislation. Agreed aims and criteria would allow decision analysis to support the demanding decision making after a large scale oil spill. ■

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OTTO SORMUNEN & PENTTI KUJALA

Tanker spill risk in the Gulf of Finland: dire consequences, high uncertainty

Expert article • 2030

In the Gulf of Finland there are 6000 -7000 tanker calls every year. Of these around 1000 call at Finnish harbors. These tankers carry everything from crude oil to petroleum products to chemicals, with around a third of the tankers calling into Finnish harbors carrying chemicals. While the oil tanker spill risk is common knowledge, the risk posed by chemical tankers has been largely been ignored in the public discourse.

Luckily so far no tanker accident has led to a catastrophic environmental disaster due to a spill of oil or chemicals, but unfortunately this seems to be only a matter of time: The average period between tanker groundings is once roughly every 2 years according to statistics for the Finnish GoF only.

Tanker spills are potentially high consequence, low occurrence but high uncertainty events. The uncertainty here refers both to the high variance of historical accidents in the Gulf of Finland as well as the lack of understanding in the scientific community in modelling accident frequency and consequences.

There are several key issues when it comes to analyzing maritime risk: Accident underreporting is a serious issue - even in the Nordic countries. Roughly half of all accidents are estimated to go unreported (or alternatively be lost somewhere in the system). Thus any analysis based on accident statistics is incomplete. To which extent this affects only minor damages is uncertain.

When it comes to groundings, there are several methods available for estimating grounding damage. These, however suffer from the fact that the actual bottom shape is not very well known; only little research has been done so far and the rock models used in literature are too simplified to realistically correspond to actual sea bottom shapes, which is one of the most critical inputs required for grounding damage modelling.

For collisions ship bows are known to a higher level of detail but the exact "how often" and "where" are not as there are major simplifications being made the ship collision modelling: Utilizing different assumptions regarding how ships behave in the moments up to collision lead to different accident patterns and frequencies in the Gulf of Finland. These factors – just to name a few – mean that there is medium-to-high uncertainty of the risk estimates.

Despite this, uncertainty of maritime risk is rarely discussed in the scientific literature. This can lead to problems higher up in the decision-making chain: Researchers presenting numbers backed up by fancy-looking mathematical equations and references to scientific publications easily create an illusion of accuracy and reliability to people higher up in the decision-making chain. This leads to a false sense of trust in the numbers, which themselves in maritime risk analysis are usually subject to medium-to-high uncertainty

When you are presented with numbers regarding how often accidents are predicted to happen and what the spill sizes are, you should ask critical questions such as "how realistic are these numbers?", "how reasonable are the assumptions and simplifications made in the modelling process?" and most importantly "how do the aforementioned affect the results?".

As tanker accidents are high impact-high uncertainty events, risk mitigation measures should be more designed around a robust response thinking instead of being designed around expected values such as ones derived from a cost-benefit analysis as the expected accident frequencies and consequences are highly uncertain. Conducting a comprehensive cost-benefit analysis is also practically very difficult to do as exploring the effects of all potential risk mitigating measures is practically challenging or impossible.

Robust in this sense means having the capability of responding effectively to a wide range of spills in the Gulf of Finland utilizing various collection and containment methods. Such an approach is to some extent adopted in the HELCOM recommendations, where member states are obliged to certain oil spill recovery capacity and speed standards. The collection of spilled oils is much more expensive on the shores than at open sea, which should of course be kept in mind when planning the response capacity.

Preventive measures should, however, not be forgotten but authorities should have the attitude of "when, where and how much" instead of "if ever" when it comes to a major tanker spill in the Gulf of Finland. ■

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Confidence in the emissions trading scheme and in the functioning of the electricity market must be restored

Expert article • 2031

The price of electricity has stagnated at a low level for years. The situation is expected to last at least for the next few years. With the current price level, it is difficult to carry out market-based investments in new production. Investments can mainly be carried out on the basis of various political support schemes. Through the support schemes, more wind and solar power with intermittent production has entered the European markets. Subsidised production reduces the market price while its costs are collected from outside the market.

Some of otherwise still useable capacity has become unprofitable. A significant amount of flexible production, which could be used for meeting the fluctuations of production and energy use, has been taken out of use, even if the need for flexible production has increased.

Finland has been among the global forerunners in combined heat and power generation. That is a very energy-efficient way to produce energy. And it produces energy at a time when the demand for both heat and electricity is at its highest. Even cogeneration is now facing profitability concerns.

Our dependence on imported electricity has grown

In the past few years, we have had to cover about one-fifth of our electricity use with imports. During the peak last January, we had to import almost 30%. Even moderately serious issues in the import connections or in our own production could have resulted in major disturbances in the availability of electricity.

The problems in our electricity market are basically pan-European by nature. The energy and climate package for 2020 adopted by the European Union in 2007 was largely an unsuccessful set of measures in terms of market development.

The renewable energy and energy-efficiency targets that compete with the emissions trading scheme did not give enough room to manoeuvre for a market-based emissions trading scheme. A well-functioning energy market and emissions trading scheme would be excellent tools in the provision of low-emission, reasonably priced energy to society.

The EU's energy and climate package for 2030 now provides better opportunities for market recovery and the functioning of the emissions trading scheme. However, it will be difficult to remedy the problems that have already arisen. Distrust of the EU's decision-making and of the consistency of the climate policy is hampering the necessary corrective actions. At the same time, confidence in the functioning of the electricity market has suffered a blow. And the investments achieved through support schemes will have an impact on the market for a long time, for the duration of their lifetime.

Confidence must be restored

Confidence in the emissions trading scheme and the functioning of the electricity market must be restored. The emissions trading scheme must be strengthened, for example, by moving operations from outside the emissions trading scheme into the scheme. This can take place, e.g. through electrification of traffic and by including heating in the emissions trading scheme. After that, it will also be easier to implement the target of dismantling national support schemes for renewable energy.

We are heavily dependent on imported energy

Finland's high dependence on imported energy can also be regarded as an energy policy challenge. In the past few years, our energy trade balance has been negative by about EUR 4–7 billion. The greatest individual factor has been the imported fossil oil, which accounts in value for about 70% of the net imports of energy.

The negative energy trade balance burdens and shakes our entire trade balance and, consequently, our national economy.

Imported fossil oil is also the most significant individual factor in terms of our greenhouse gas emissions. Its emissions are as high as the emissions of all other fossil fuels put together.

The target of the Finnish government's programme is to halve the use of imported oil by year 2030. This target can be achieved by improving energy efficiency and by replacing imported oil with indigenous biofuels, electricity and district heat in traffic, building-specific heating and industrial processes.

Although our energy policy involves a number of challenges, many things are in fairly good shape here in Finland.

The Nordic electricity market is probably the most effective market area in the whole of Europe. Finland has the world's smartest electricity grid, which enables sensible and efficient use of electricity. In terms of electricity, we are already well on our path towards a carbon-neutral society. As much as 80% of our indigenous electricity generation and 90% of the Nordic production is carbon neutral.

Finland is a world leader in combined heat and power generation. We are also among the top countries in Europe in the utilisation of renewable energy.

All this, and our electric energy is still among the cheapest in Europe. ■



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Digitalization provides the Nordic and Baltic States with an opportunity to build on its leadership

Expert article • 2032

Digitalization is the single most important change in history since the harnessing of steam power or even the invention of the printing press. It is revolutionizing every facet of our lives.

Greater use of enhanced Digital services drives innovation, reduce costs for businesses and consumers; increases productivity, access and choice for consumers and generates efficiency improvements that reduce negative impacts on the environment from economic growth. Digital innovation is part of the solution of 15 of the 17 UN Sustainable Development Goals, providing a tremendous momentum to all countries, both developing and developed.

With the arrival of the digital age, the industrial revolution has entered a new phase and as the playing field changes new opportunities are created. The roll out of the 5G networks will accelerate this disruptive development even more. We all know how new technology has created new business opportunities, and, as result of that, also swept away many classic business models. Netflix, Uber and Airbnb are some well-known examples. While the positive implications of the digital economy are great, we must keep in mind the various ways in which it impacts our current businesses and jobs. Digitalization will, like all major changes in society, create winners as well as losers, and when the pace of change is fast, it is of utmost importance that we continue to develop and adapt. Unfortunately, this is not an easy change, and some will not be able to adjust in time. Business leaders and politicians might therefore be tempted to try to maintain the status quo. Holding back the tide is not possible.

State of the art infrastructure is key

There are many reasons why the Nordic countries have succeeded during the first decades of digitalization. New technology has been available for a big part of the population since day one, and individuals and organizations have had the interest and resources to try the new, be at the cutting edge and move things forward. Not least, we have benefited from the early roll out of modern communication networks, today reaching almost the entire region. In recent years the "fiber fever" has modernized homes, companies and public services in Sweden at a pace faster than is amongst the leading in the world. In many ways the Nordic and Baltic countries are leaders, but we cannot take our current position for granted. As competition rapidly increases, our region must embark on a change journey to remain on top.

Telia Company is ready to, once again, invest in cutting edge communications networks in our markets. In 2018, Stockholm, Tallinn, and hopefully a few more cities, will be some of the first to try out the new 5G network which, with its ultra-potent capacity will be the backbone on which the services of the future are developed. 5G will make it possible to send vast amounts of data at a much lower latency and higher speeds, enabling a whole range of new solutions that today are not even a spark of an idea. But if we are slow in the 5g build-out, the development of these inventions will happen elsewhere which in turn means that the new companies and the new job opportunities will emerge far away from us.

At Telia Company we aspire to make our contribution by to create one seamless, borderless, roaming free network that delivers one Gigabit per second across the entire Nordic and Baltic region. In parts of our geographies, major urban areas, we will aspire to create Terabit territories with speeds a thousand times faster than a Gigabit. This is a bold ambition but we think being the cradle of digitalization offers us an opportunity to become the world's 'digital sandbox'. Although, our aspiration to build a Gigabit society and Terabit territories is not going to happen if we stick with current ways of thinking about our business and how it is regulated and perceived. There is a need for shift of mind and policy.

A joint responsibility

Even if the 5G network will be crucial to our region, it will take a lot more for the Nordic and Baltic countries to remain front-runners. They will need to undergo a massive and all-encompassing change journey in which all part of society participate. Both the public and private sectors need far-reaching digitalization strategies, and while a fiber connection and a world leading mobile connectivity will continue to be important, today much more is needed. The change must go considerably deeper and all individual players -whether public or private- must break new ground within their respective fields in order for society to remain competitive in its entirety.

The right competences

Education plays possibly the most defining role in ensuring that the needs for specific competencies are met. When software engineers and other specific competencies can't be found locally, many companies are forced to go abroad or hold back on development. A lack of skilled, digitally led domestic labor is not sustainable for any company or society that aspires to lead the way for others. Institutions for higher education must educate students in the fields sought after by the digital economy and schooling during the earlier years must ensure that students are equipped with the skills that enable them to choose this path. All school leavers should step out into the world with advanced digital skills. Not only will these skills be necessary for many future professions, but also a prerequisite for living in a digitalized society.

The bigger society

The Nordic societies are all in need of extensive reform and there is a demand for political leadership to make it happen. The Nordic model for social services face major challenges when it comes to long term financing and staffing. The public has been promised high quality in areas including education, security and care, promises that society will eventually have difficulties living up to. Digitalization of the public sector will reduce costs and increase access and the quality of care.

A well-known example is the growing number of people reaching old age which is putting health- and geriatric care under pressure. Telehealth devices enable patients that do not need full time care to be monitored remotely, through being able to do simple tests, and helping them to live safely at home, such as through monitoring for falls and medication use. This can further reduce hospital admissions and potentially the length of stay by supporting earlier discharges. Our estimations shows that these devices alone, excluding the impact of increased health literacy and other ICT related health outcomes, could save €4.9bn and may potentially help reduce untimely deaths by 6,000 a year across the Nordics and Baltics in 2021.

It will take a whole lot of innovative thinking to create smart digital solutions for schools, healthcare and social services in order to increase efficiency and improve quality. To succeed with this we need to dismantle rigid regulation and limiting public procurement that bar out new inventions. Instead, the public sector needs to be a driving force in the digital shift and encourage more innovations. To accelerate this ambition, Telia Company suggest that by 2025: 50 percent of patients should be using an e-health or m-health solution as part of maintaining a healthy lifestyle. All authorities should aim to have a smart cities strategy, which includes the digitalization of public services, such as transport. Furthermore, all schools should be offered e-learning tools of high educational quality that meets the specific needs of each pupil, helping them to reach their full potential.

Everyone on-board

When an entire society changes in such a fundamental way as the Nordic and Baltic societies have, and will continue to, it is important that everyone is on-board and can interact with the rest of society. As health systems and social services become increasingly digitalized there is a potential to improve many senior citizens' lives by making crucial digital services more accessible and easy to understand. Together we should strive to ensure that all citizens get access to free digital training and skills if desired. The public as well as private sectors have a great responsibility to make sure everyone is able to access our services.

Opportunities through cooperation

Telia Company aspire to continue to be a leader in an ever changing market where change is made more rapid through digital solutions. Realizing the full potential of digitalization is not something a single company can achieve. Our role is at the core of the ecosystem of cooperation which will make an ever growing multitude of digital services possible. No single company, organization or government can achieve this on its own. Already today we cooperate with numerous companies of all shapes and forms to offer the best services to our customers. I am convinced that partnering is the way forward. It is my strong belief that all parts of society will benefit from reaching out to one another, this will make the next phase of digitalization even more successful. Through more constructive cooperation between private companies and public services, relevant regulation and common goals, we can achieve sustainable growth which benefit all society. We are happy to take a leading role in an ambitious plan to drive digital development for all society. ■

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Poland, an emerging European ICT hub?

Expert article • 2033

Information and communication technologies (ICT) are increasingly important for international competitiveness, as they are driving innovation in many fields, providing new solutions in different areas of economic and social life. The digitalization of the world economy results in steadily growing share of ICT sector in GDP and employment. As for many countries, this trend is followed also by Poland, which has experienced fast development of ICT industry in recent years. According to Central Statistical Office, the number of enterprises hiring 10 or more persons in the ICT sector amounted to 2146 in 2014, increasing by 24.5% since 2011. The number of employees in this industry was 196.4 thousand, and was higher by 10.7% in comparison with 2011. The value of net revenues from sales in the ICT sector amounted to over 132 billion PLN (about 30 billion EUR) in 2014 (with the biggest contribution of services, in particular telecommunications), increasing by 8.8% since 2011. These trends lead to ask a question if Poland is emerging as a significant European ICT hub, or maybe even has the potential to gain a reputation of European Silicon Valley in the future?

Together with examination of the trends related to the development of ICT industry at the national level, it is also interesting to focus the analysis on regional dimension. It is connected with the fact that economic activity in high-technology sectors, like ICT, tends to be more and more geographically concentrated. This process is driven by different types of agglomeration economies and spillover effects, facilitating the transfer of technology and diffusion of innovation, which are additionally strengthened by proximity to excellent scientific and research centers. These observations explain why ICT industry in the world economy develops most strongly in clusters, with the most notable example of Silicon Valley in California. There are many other ICT clusters in different regions, including Scandinavia, for instance: the Kista ICT cluster in Stockholm, the Etelä-Suomi (Helsinki) ICT cluster, the Oslo and Akershus ICT cluster or the Øresund Region ICT cluster. It is also true for Poland, where ICT sector demonstrates high spatial concentration around metropolitan areas. This finding is confirmed by statistical data showing geographical concentration of employment, firms' incomes, and the number of firms in ICT industry in Polish big cities, while the outermost regions remain mostly "information deserts".

Spatial polarization of ICT industry and its location mostly around Polish metropolitan areas have stimulated the creation of specialized regional cluster initiatives. The best examples are: Mazovia ICT Cluster in Warsaw, and Interizon in Gdańsk, appointed in 2015 by the Ministry of Economy as 2 out of 9 Key National Clusters (remaining 7 are from other industries). Emerging ICT cluster initiatives connect enterprises, even these competing with each other, in the cooperation processes based on the synergy effects. Moreover, significant parts

of ICT industry concentrated in 7 biggest agglomerations: Warsaw, Cracow, Łódź, Wrocław, Tricity (Gdańsk), Poznań, and Katowice, function as shared services centers (SSC), offering different types of ICT services to foreign clients, mostly from Western Europe, North America, and Central and Eastern Europe. It contributes positively to the profitability of Polish ICT sector, as net sales revenues from the export of ICT production and services amounted to 35 747.90 million PLN (around 8 500 million EUR) in 2014 (which means that there was more than 10% growth since 2011, with especially high increase of around 70% for ICT services). Poland's geographical location allowing to work with both Asia and America within the same business day, together with the favorable balance between costs and quality of products and services, are excellent factors increasing competitive advantages of Polish ICT sector.

Successful development of ICT industry in Poland is strengthened by widely available human resources, with about 15 thousand computer science graduates entering the market every year. At the same time this is a very perspective sector, as the demand for qualified IT specialists continues to grow, reflecting continuous expansion of Polish enterprises, and dynamic development of outsourcing and shared services centers. Nevertheless, the job market within the sector remains highly competitive, ensuring good quality of workforce, as the average salary is much higher than the national average. To conclude, ICT industry is one of the most dynamically growing sectors within the Polish economy, with decent fundamentals for further development. It is one of the most promising among emerging European ICT hubs, however, transformation into a European Silicon Valley will be still a long-term process. ■



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CBSS science, innovation and research agenda: a promising start for accelerated cooperation

Expert article • 2034

2016 is a special year for the Council of the Baltic Sea States (CBSS) for the following two reasons. First, under the [Icelandic Presidency](#) preparatory works are underway for the 25th anniversary of the Council which will be celebrated in March 2017. Secondly, on 16 June 2016 the first [CBSS Science Ministerial](#) took place in Kraków, Poland. It was a unique event, since for the first time CBSS Member States gathered in order to discuss in more detail cooperation in science, research and innovation across the Baltic Sea Region (BSR).

Although this was the first CBSS meeting in such a format, science, research and innovation as such are far from being new topics to the Council's work. Rather this meeting testifies to the long standing efforts of the CBSS to tailor its science, research and innovation agenda in accordance with the specific needs of the BSR. The agenda is also modelled to avoid duplicating structures or overlaps on the transnational level.

It should be noted that the BSR is a vibrant science and research area which hosts various internationally renowned research institutions and research infrastructures. Therefore, the CBSS Science Ministerial served as a timely occasion to take a panoramic view on the existing cooperation in order to translate the initial CBSS mandate set out in the 2007 Latvian Chair's Conclusions "Higher Education and Science for Sustainable Development and Competitiveness of the Baltic Sea Region" into specific actions. Consequently, the 2016 Polish Chair's Conclusions "Baltic Science: Renewing the Commitment to Science/Research Joint Actions in the Baltic Sea Region" elaborate on how two recently launched projects "[Baltic Science Network](#)" and "[Baltic TRAM](#)" (Baltic Transnational Research Access in the Macroregion) contribute towards achieving CBSS strategic goals in the domain of science, research and innovation.

Baltic Science Network is the leading transnational forum for higher education, science and research cooperation across the BSR. It is a platform which gathers relevant transnational, national and regional policy actors. Its embeddedness in the existing BSR governance structures is further strengthened by its flagship status of the EU Strategy for the Baltic Sea Region (EUSBSR) under the [Policy Area Education, Research, Employability](#). Further insights in the latest developments of the Baltic Science Network will be presented and discussed with relevant stakeholders during the upcoming EUSBSR Forum in Stockholm in November 2016.

Baltic TRAM supports industrial research with synchrotron radiation and neutrons at research facilities in northern Europe. The overall goal is to exploit the full potential of advanced research infrastructures available in the BSR according to the needs of the business sector. One university per country is tasked to coordinate the research and

measuring orders by the industrial users. Invited companies are offered consultations and access to research facilities to test their ideas. If measurements cannot be carried out locally, they are forwarded into the Baltic TRAM network. Baltic TRAM is embedded in the macroregional governance. It belongs to the EUSBSR flagship "[Baltic Science Link](#)" under the [Policy Area Innovation](#). The latest developments of the project will be discussed during the Baltic TRAM Opening Conference in October 2016 in Hamburg.

The CBSS role in leading the BSR-wide science, research and policy agenda is also relevant to the work of the leading international organisations. On the one hand, multilateral engagement led the CBSS is strengthening the external dimension of EU policies and links with the states belonging to the European Economic Area, as well as EU ties with Russia. Thus, the CBSS also helps to advance the vision set out in the recently announced EU Global Strategy. The multi-level collaborative relations established among the Baltic Science Network partners, as well as Network's engagement with Russian stakeholders should be named as one of the most telling examples in this regard.

On the other hand, CBSS science, research and innovation agenda feeds in the UN Sustainable Development Goals, supporting the Goal 9 "Industry, Innovation and Infrastructure". Further on, CBSS contribution is relevant to the work of the UN Commission on Science and Technology for Development. The UN recognises the importance of regional dimension of science, technology and innovation issues with specific focus on creation of policy environments that enable research institutions, businesses and industry to come up with innovative solutions which would translate in employment and economic growth. Consequently, benchmarking analysis on national roadmaps for research infrastructures and smart specialization strategies, as well as recommendations to policy makers currently being formulated under the leadership of the CBSS Secretariat within the Baltic TRAM network will serve as a valuable contribution to the assessment of national innovation systems and modelling of effective policy interventions to tackle regional, national and transnational level challenges. ■



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The transformational points of post-crisis development (innovations)

Expert article • 2035

Even in the post-crisis period after 2008-2009 defined four transformational development points of nation-states, activation of which is becoming a priority for national regulators, engaged in the search for an effective way out of the current situation in the global geo-economic configuration. Here they are:

1. The relevance of reckoning with fact that the speed of financial transactions has increased, but the time of financial operations has shrunk.
2. Under the circumstances, and taking into account the possibilities of cyber-penetrations, it is necessary to improve information security of transactions on financial markets.
3. As the crisis shows the further disparity between rich and poor social groups, is needed "the socialization" of society.
4. The uprising of a stage of transition to the cognitive economy, the knowledge economy, the economy of informational type.

Let us consider in more detail the period of post-crisis development of the society on the basis of objective conditions of transition to cognitive economics (4th transformational point).

In this regard, we will be of concern with current problem of the Russian intellectual property owners market, which is sensitive to the Russian segment of the innovative small business.

The trend toward globalization of the world economy affected largely the process of commercialization of intellectual property, converting into an active mechanism for promoting foreign trade, international technology transfer. At the same time, differences between national patent systems retard the formation of the intellectual property global and regional markets, focusing on territorial exclusivity of intellectual property rights protection forms. That's exactly why the problem of national patent systems harmonization, advocacy of intellectual property owners in the Eurasian region, special under conditions of Russia's accession to the WTO, - becomes extremely important.

The development of intellectual property market in the modern world proceeds in three main sectors: **high-tech products, information technology and law**. This process is accompanied by a certain shift of potential investors interests from the sphere of material production to the sphere of research, development and R&D.

The market of high technology products (technological equipment, pharmaceuticals, telecommunications devices, nanotechnology, etc.) is developing quite rapidly and brings considerable profits to leading manufacturers in various countries. Today already formed certain "niches" in this segment of intellectual property, where the main positions occupied by such countries as the US, Japan, Western Europe (mainly Germany, France and Great Britain). All kinds of international patent agencies state the most patent activity (proportion of patent applications in R & D costs in the industry) in Japan.

In the market of information technologies occurs an exchange the information contained on paper, audio and video cassettes, laser

disks, servers, etc. The competitive positions in this quick changing market segment have not yet formed finally. Basically, IT-technology and the Internet are beginning to displace other media.

In the segment of the intellectual property world market of ownership of the right occurs a redistribution of the rights of owners through delivery of patents and the sale-purchase of licenses. An increasing number of patent applications in various countries suggests that the protection of the owners of intellectual property rights has become one of the strategic aims both for companies and for individual states.

At the same time, **the following specific trait appears**: 1) the legal protection of the intellectual property rights owners 2) inspires the scientific innovations, and 3) the existence of a patent informs other researchers working in the field of new technologies, - about availability and elaboration level of the problem of interest to them. That is where the main contradiction objectively established between the liberalization of international exchange (**in fact, encourage intellectual "piracy"**) and the legal protection acts for the narrow circle of intellectual property rights owners. And Russia is nowise standing apart from this world process.

Beyond that, the importance of patent protection is different for various sectors of the economy. So in the pharmacy, investment required to develop, test and market a new drug is estimated at an average of 1 billion US dollars. In the electronics industry and in the production of telecommunications, it is much more efficient to classify information than get a patent on it, because the life cycle of the product in this sector is relatively short, and the use of intellectual ideas (developments) by third parties (competitors) is perfectly possible.

The commercialization of scientific and technical activity is still relevant for Russia. The current situation in Russia with the protection of intellectual property rights is similar in some ways to the situation with the United States after World War II. At that time, an active budgetary financing in the scientific world (universities) was not accompanied by the expanded development of innovations, protected by patents. This is largely responsible for change of the patent law in the United States, and the innovation developers received the right to choose the form of ownership for inventions, financed from the budget. The State acted as a defender of the rights to the results of scientific research and to the small businesses associated with science.

Western Europe with a delay, but also followed this suit. For example, in Germany in 2002 alone, the patent law was amended, which motivated closer cooperation between universities and industrial firms.¹

The relatively high patent activity in the sector of Russian industry (161 internal patent applications in a million inhabitants) puts Russia on a par with the most developed countries, but, unfortunately, does not lead to any major technological shifts (the demand for innovations in Russian industry is unreasonably small - only 1 percent of innovations being introduced). And it is not so much a problem of the recognition of rights for industrial property, but in the absence of conditions

¹ Y.A. Varfolomeyeva. Intellectual property in the context of innovative development. Moscow, "Os'-89", 2006

for the use of such rights. The difference between the situation in Russia and the post-war situation in the field of technology transfer in the US is that the task of the Russian legal system means, in our view, the technical acceleration of R & D results, taking into account the protection on business rights, but not the traditional control or pressure track applied to the owners of intellectual property rights.

In this regard, we can state the following messages, reflecting the protection problems of Russian intellectual property rights owners, and this permits the definition of state support actions in this area.

1. It has come to our attention that the unjustified desire of the State to secure for itself all rights to the results of creative activity, - not only does not encourage business innovations, but does not direct business owners to introduce results of intellectual activity for manufacturing applications - i.e. **intellectual property** becomes an attachment to the State (one of the types of technology transfer).
2. **The shady export of technology and development** is growing. The settlement of this problem will require the establishment of a reliable patent protection system and effective tool for the transfer of intellectual property rights.
3. Unfortunately, there is no clearly regulated mechanism of using previous and existing **Soviet trademarks**. In this regard, the transaction costs are increasing, due to the re-registration of trademark data on the domestic market, and the number of lawsuits is growing:

The recommendations to improve the conditions for effective protection of the intellectual property rights owners, taking into account Russia's accession to the WTO, may be as follows:

- timely registration and patent protectable objects, using international trademarks registration systems and scientific discoveries, functioning in the framework of WIPO;
- active cooperation of the intellectual property rights owners not only with international organizations securing property rights, but also with the Russian executive authorities regulating the protection of intellectual property rights;
- monitoring of legal acts of foreign countries in order to identify violations of rights or discrimination against property owners - for subsequent activation judicial mechanisms, WIPO and further WTO;
- overseas markets analysis to take measure of the possibility for promotion of Russian products containing objects of intellectual property. The analysis can be conducted, including resources of Russian economic and trade missions abroad and the expert community.

But this is not enough for effective protection of the intellectual property rights owners in Russia. The system of state regulation of the intellectual property commercialization sphere should include items such as:

- development assistance in establishment of technology parks at major universities and research institutions; development of regulatory mechanisms for transfer of intellectual property rights from universities or research institutions to technology parks, innovation and technology centers, business incubators;
- creation of regional centers for technology transfer (patents, search for investors, protection of intellectual property rights, etc.), decision of budget financing problems and choosing the optimal organizational and legal form for the independent centers for intellectual property

implementation in the foreign market;

- creation of innovative companies based on research centers and cutting-edge university centers, which should be one of the main instruments for transfer of intellectual activity results;
- improving the information and consultation to ensure the activities of the intellectual property rights owners (legal and natural persons);
- improving the regulatory environment for the state funds activities supporting the export activities of innovative enterprises using the results of intellectual activity.

In addition, for the transition to widespread use of export-oriented results of intellectual activity in the form of innovation, - the following items are needed: -further improvement of the regulatory, scientific and methodological supporting of intellectual property rights owners implementing the innovative business, including regulatory and legal fixing for performer: scientific technical projects carried out at the expense of the budgets of all levels; - intellectual property rights; - formation of mechanism for intellectual property rights transfer to business units for introduction of their into economic circulation and for use in foreign trade activities; - regulation of accounting, inventory, depreciation, valuation regulation and taxation of intellectual activity results, including intellectual property; - preparation of normative-legal acts regulating the supply orders and procurements, promoting the participation of intellectual property rights owners (legal and natural persons) in the export of new high-tech products and services throughout the territory of the Eurasian Economic Space.

Some work in this direction, of course, is underway. One of these laws is the Law "On Science and State Scientific and Technical Policy" with the subsequent changes and additions.

The Federal Law "On the transfer of technology", currently being developed by the Ministry of Education and Science, is aimed at legal regulation of the relations connected with the transfer of intellectual property and other useful information on the results of scientific and technological activities, received from the state budget. The bill defined the form of contractual relationships with the technology transfer, the procedure for registration of intellectual property rights, the procedure for regulation of relations in joint innovative research with the participation of the state. The adoption of the bill will contribute to the development of public-private partnerships in R & D, which is in line with in the WTO generally accepted standards, regulating the intellectual activity market sector. ■

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Ukraine and the not-so-successful reform process

Expert article • 2036

A recent public opinion poll carried out by the Sociological Group "Rating" in May-June 2016 demonstrates a dangerous trend in the Ukrainian society. Not only the support and trust in the state institutions has decreased dramatically, but a general apathy over the political process is evident. A clear reason for that is not-so-successful reform process, exemplified by resignation of Aivaras Abromavicius, Ukraine's Minister of Economic Development and Trade, due to the covert corruption of the state institutions, and Petro Poroshenko's involvement in Panama Papers scandal earlier this year. However, it is also important to keep in mind that the economic problems faced by the society dealing with a slow, painful and questionably successful reform process and on-going military conflict also heavily impact the attitudes of the Ukrainian society. Some might argue this could lead to yet another revolution.

There are several worrying outside factors that could impede the pro-European reform process in Ukraine. There is growing scepticism in Ukraine's ability to implement the Minsk peace agreements – an argument used by leaders of Hungary, Czech Republic and Slovakia that are pushing for removal of the sanctions imposed on Russia. Italy and Greece have traditionally been pro-Russian, further increasing the potential for sanction removal. For now there is still some balance due to the clear anti-Russia stance of Angela Merkel; however, with the upcoming election in Germany this position could be amended. It is extremely important to keep in mind, however, that negative signals and lack of support from the EU will lead to a further disappointment and stalemate if not reversibility of the reform process in Ukraine, although for now there is a very little risk that Ukraine will once again change its foreign policy orientation towards Russia.

An important question here is whether there is any real prospect of Ukraine's integration in the EU. The reluctance of the EU to enlarge, the growing populism and pro-Russian sentiments, along with the US Prime Minister Joe Biden's statement that unless Ukraine overcomes its problems with corruption soon, the US will reconsider its sanctions on Russia, essentially implies that the EU and the US could "push the reset button" in their relations with Russia again. In such case, Donbas like Abkhazia and Transnistria will remain a frozen conflict, impeding Ukraine's stability and denying its integration in the EU or NATO.

For now, Ukraine's heavy reliance on the foreign funds provided by IMF and the EU serves as the central motivation for the necessary political, legal and economic reforms that were demanded by the civil society during the Maidan protests. EU, despite some of its members' inconsistency towards Russia and general reluctance to offer a real membership prospect to Ukraine, has introduced a new measure aimed at promotion of the rule of law and eradication of corruption. The programme, led by Denmark aims to support: anti-corruption institutions, which have not been successful in prosecuting the corrupt members of political elite; the Parliament's anti-corruption committee, which is key to promoting legislative reforms; and the civil society, which must lose its tolerance to corruption.

Ukraine has been widely criticized for the high level of corruption and inability to introduce substantial reforms. To a large extent the society's tolerance to corruption is one of the reasons why the anti-corruption measures are so unsuccessful. However, although corruption is almost an intrinsic trait of post-Soviet societies, it would be fatalistic and wrong to claim that being corrupt is in the mentality of Ukrainians or post-Soviets, as many do. The inability to stand up against corruption has rather systemic causes and to a large extent is related to poverty, lack of democratic traditions, endemic embezzlement and mistrust in state institutions that do indeed stem from the Soviet experience. But there are examples, like the Baltic States, Georgia and elsewhere proving that corruption can be gradually contained and limited, although it is undeniably a slow and on-going process. The Danish initiative should engage specialists from the former Soviet countries who have undergone similar reform process, as they have much deeper understanding about the political and societal peculiarities in the post-Soviet countries. Finally, we should also give some credit to Ukraine for the progress that has been made on balancing the state budget and refinancing the debt, lessening dependence on Russia, re-building police and armed forces, and increasing transparency of state institutions. Indeed, high-level trials of corrupt state officials have not occurred yet, but nobody expected the reform process to be fast or easy. ■



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Ukraine, Russia & the energy sector: from one dependency to another

Expert article • 2037

Two and a half years after the so-called Revolution of Dignity and Russian military aggression in the Crimea and the Donbas, Ukraine managed to diversify sources of gas supplies. Meanwhile however, the country became short of the anthracite coal, which is used as a fuel in half of Ukrainian conventional power stations. Lack of sufficient steps in providing the adequate volume of coal on the eve of the heating season reflect both systemic and non-systemic challenges the country is facing.

Easing the dependence on import of gas from Russia has been one of the biggest successes Ukraine has achieved in last two years. Whereas in 2014 Russia's Gazprom supplied 14.5 bcm of gas, and 5.1 bcm came from the EU, in 2015 the proportions were reversed: the EU supplied 10.3 bcm, and Russia 6.1 bcm. This change is the result of effective action to increase the opportunities to import gas via reverse connections with EU member states, mainly Slovakia, as well as the favourable situation on the European gas market. Another reason is the decline in gas consumption in Ukraine, by about 22% last year, caused by the economic crisis and the loss of control over part of the Donbass. Kyiv has also benefited from warmer winters and the reduction in global gas prices. As a result, the winter of 2015/16 may be the first without any gas from Gazprom. On September 22 it's been already 300th day without supplies from Russia.

At the same time, Ukraine became more dependent on Russia in another energy sector - electricity generation. Already Autumn-Winter of 2014 showed that despite the current production capacity exceeding customer needs in Ukraine, the real capacities, their structure and transmission capabilities are inadequate to meet the demand. In November and December of that year, the authorities made an unprecedented decision to periodically switch the power off. The direct cause was an inability to fully coverage the peak demand. The electricity deficit occurred due to objective conditions - low temperatures which increased power consumption, and low water levels in the Dnieper and Dniester Rivers that limited generation on hydropower plants. Another reason was a long-lasting negligence that resulted in obsolete infrastructure facilities and transmission networks; shortsighted planning, and insufficient volume of raw material for the energy production accumulated ahead of the heating period. The key reason however, turned out to be a deficit of anthracite coal, mined solely on the part of the Donbass, which as a result of the war in the spring of 2014, came under the control of the pro-Russian so-called separatists. This variety of coal is fired in seven out of fourteen Ukrainian conventional power plants, including two belonging to state-owned company Centrenerho. Another five power plants remain in private hands.

In 2014 coal-based power generation had nearly half share of electricity production in Ukraine. Lost mines and coal motherlodes have brought about the deepest crisis of the Ukrainian power sector since 1991 and forced Ukraine for the first time in its history to import anthracite. Sources of such import outside the Donbas are however, limited. Only a few countries mine this type of coal: Russia, South Africa, Australia, Kazakhstan and the US. In 2014 Ukraine imported from abroad about 2.5 million tons of anthracite; in 2015 official import decreased to 1.6 million tonnes. Coal import covered the needs only partially. The price, quality and logistics of coal supplies from overseas territories are unfavorable compared to the supply from the Donbas and Russia. The main problems are higher cost (and exchange rate due to the volatility of Ukrainian national currency hryvna), the characteristics of the imported anthracite, and a long time wait for the finalization of the delivery.

Therefore to limit the risks of blackouts Ukraine has been forced to take politically uncomfortable decisions - to tolerate the illegal import of anthracite coal from the part of the Donbas controlled by Russian proxies and sign a one year contract with Russian RAO UES for electricity supply. First step however, according to few Ukrainian investigative journalists, was exploited by part of the ruling elite to create grey schemes of transporting coal into Ukraine and grow wealthy.

Aforementioned problems and challenges - both systemic and non-systemic ones, as well as corruption opportunities, did not contribute to better planning and more effective preparations by the government on the eve of the heating season 2016-2017. By the end of September, Ukraine managed to stock only 1.2 million tonnes compared to approx. 2.8 million necessary according to government's estimations. And probably the risk of blackout in the winter time will again depend on weather. ■

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Growth or war: familiar challenges in Russian governance

Expert article • 2038

Russia's annexation (or "absorption") of Crimea and sponsorship of anti-government insurgents fighting a civil war in the eastern parts of Ukraine have strategic, proximate causes — the fear that a post-Maidan Ukraine would not only not join the Eurasian Economic Union, which Russia sought as a base for building "Eurasia" into a pole of international affairs — but also reflect very old fears for Russian leadership: instability anywhere the country has external interests will eventually, but inexorably, lead to instability for the leadership at home. The war in Ukraine does not exist because Vladimir Putin is the leader of Russia, but because the Russian political system has remained fundamentally similar across various regime types (absolutist monarchy, socialism, weak democracy, electoral authoritarianism) wherein formal political institutions and hidden informal politics coexist on a contingent basis. That system impels Russian leaders to expand external influence to justify internal political consolidation, yet a formal policy challenge or defeat anywhere weakens the Russian leader's ability to justify personal political stewardship. The current crisis in Ukraine is dangerous not simply because of the existing fighting or regional instability, but because its settlement will determine the trajectory of the Russian economy, the strength of the Russian state, and the resolution of Putin's time in office.

The strategic cause of war in Ukraine is that Ukraine existing outside a Russia-led political and economic bloc would include a future of Ukraine succeeding in political and economic reforms sufficiently well to join a competitor bloc, the European Union. If a Maidan-oriented government cannot commit *not* to joining a rival bloc, and undergo painful reforms to do so, then the Eurasian Economic Union (EEU) would find its own abilities to expand quite limited. The demonstration effect of a country institutionally similar to Russia opening itself to political and economic competition would be similarly quite unwelcome. The war is meant to thwart that scenario and induce Ukraine to return to the EEU, so that Russia can build the EEU into a world-class bloc and itself a peer competitor to other regional hegemony such as Germany and the United States. This is effectively the world order negotiated by Mikhail Gorbachev and George H.W. Bush at the Malta Summit in 1989, which brought the Cold War to an end and retained the Soviet Union as a leading power in European and international security. The Soviet Union's collapse brought that vision to an end, and Putin's tenure has been marked by efforts to return to a post-Cold War world instead of remaining in a 1991 post-Soviet world.

Putin's sixteen years as the executive authority of Russia has been a success as marked by the traditional metrics of Russian leaders: his tenure is not seriously challenged, the borders have expanded, absolute income and consumption levels are up, and Russia's diplomatic centrality provides international status and prestige that justifies relative declines in income and consumption. The country he inherited was not in good shape, and Putin has tamed the elite, redistributed a serendipitous influx of energy revenues like manna from

heaven, and successfully expanded Russian interests and forces into the Middle East, the Caucasus, and Eastern Europe. Yet as economic growth has stalled and living standards of the non-elite begin to decline, the familiar challenge of Russian governance has returned: the president needs to demonstrate competence by delivering growth or by delivering foreign victory. The first requires yet another influx of energy revenues, but control of the oil market is beyond any individual, or by undoing the statist model, which threatens elite support, whether the elite class is called *boyare*, *dvoryanstvo*, *nomenklatura*, or *siloviki*. If that policy path is closed off, then foreign victory suffices, but expansion increases risk of great power conflict or exhausting the country's financial and human resources in preparation for the next war. To maintain the latter, Putin signed the 2012 May Decrees, which ordered spending raises in education, healthcare, utilities, housing, and other sectors. Yet those mandates are not funded at the federal level, but at the regional level, which has accordingly seen indebtedness rise accordingly and rapidly. Half the country's regions have debt more than 50% current revenues and in two of the most indebted regions — Astrakhan and Mordovia — debt is over 100%, raising the risk that default anywhere could lead to a "run on the bank" ending in the Finance Ministry itself losing market access.

Over the past three years, the questions of Russia's institutional congruity with Ukraine and the exact placement of their mutual border have defined revision of the international order. Vladimir Putin and his Ukrainian counterpart Petro Poroshenko are each betting that the other side will collapse first. Ukraine has the early head start and if it collapses first and sues for peace with Russia, the outcome will be manageable for international affairs: Ukraine will be poor and neutral indefinitely. If Putin is unable to deliver growth or victory, then the outcome will be dire indeed. ■

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Energy security challenges in Kaliningrad

Expert article • 2039

Geopolitics and energy security are often closely intertwined. Kaliningrad, a Russian exclave on the Baltic Sea Coast, provides a clear example of the heavy costs that geopolitics can impose on energy security. Kaliningrad's exclave location means that its energy security is highly dependent on the overall relations and the level of trust between Russia and Lithuania, and the European Union more generally. These relations worsened dramatically in 2014, but they had been steadily deteriorating for several years even before that.

Kaliningrad is almost totally dependent on the external supplies of all types of fuels – natural gas, coal and oil products (although Kaliningrad produces some crude oil it is 100% exported). Until 2005 Kaliningrad also produced less than 10% of electricity it consumed with the balance supplied by or through the Lithuanian grid. Although this situation worried Russian policy makers for many years the first unit of a large combined heat and power plant in Kaliningrad (known as CHPP-2) was brought online only in October 2005, which was followed by the second one in December 2010. It made Kaliningrad self-sufficient in electricity generation, and since 2011 Kaliningrad has been able to export excess electricity to Lithuania.

It is able to do so because currently the electric grids in Belarus, Russia, Estonia, Latvia and Lithuania operate at the synchronized frequency via the BRELL agreement making them one wide area synchronous grid (the BRELL ring). Large synchronous grids help to reduce electricity demand variability, to share reserve capacity and to facilitate cross-border electricity trading. Kaliningrad, being part of the BRELL ring, can balance its power system by selling excess electricity to Lithuania or by receiving electricity from the BRELL ring when it experiences shortages.

However, all three Baltic countries intend to exit the BRELL ring and to switch to the synchronous grid of Continental Europe by 2020 (the Lithuania's parliament adopted a bill to this end in 2012). This step is justified almost exclusively by geopolitical reasons since "no traditional technical or economic argument" has been found for the change of the grid according to the study conducted by a Swedish consulting company Gothia Power AB for the grid operators in the Baltic States.

Withdrawing of Lithuania from the BRELL ring will make Kaliningrad an energy island. Cross-border flows of electricity between Kaliningrad and Lithuania using existing transmission lines will become impossible. This immediately raises the issue of the security of electricity supply in Kaliningrad. Although Kaliningrad currently generates more electricity than it consumes, it is overwhelmingly depend-

ent on a single power source, CHPP-2, which accounts for 95% of the installed dispatchable capacity. The danger of such dependence was illustrated by a blackout in August of 2013, when the automatic protection system at the CHPP-2 shut it down after high-voltage power lines were hit by lightning. The blackout affected most of region's population and the supply of electricity was restored only with the help of power flows from Lithuania. In order to avoid a situation like this one of the main electricity reliability standards says that the system should be able to withstand the loss of its largest component (*N-1*). This implies that Kaliningrad needs the additional generation capacity similar to that of the CHPP-2 – 875 MW.

To address this problem the Russian government has devised a plan that involves Rosneftegaz, a state holding company that owns shares in Rosneft and Gazprom, investing in four new power plants in the Kaliningrad province with the total installed capacity of around 940 MW. Three of them will be gas-fired and one - coal-fired. Construction of the first plants started in summer of 2016. All four power plants are planned to be finished by 2019. The costs of new power plants and required expansion of the electric grid will be more than 70 billion roubles (approximately €1 billion) according to Inter RAO UES. Ultimately, these costs will be borne by electricity consumers in Russia via higher prices and tariffs.

A cheaper option for Kaliningrad to ensure the reliability of its electricity system would be to integrate into the synchronized power system of Continental Europe together with the Baltic States. Unsurprisingly, this option was rejected given the lack of trust in the recent EU-Russia relations.

The expansion of the installed generation capacity in the region creates the problem of additional fuel supply, in particular, of natural gas. Currently, all natural gas consumed in Kaliningrad is supplied by the pipeline Minsk-Vilnius-Kaliningrad, crossing Belarus and Lithuania. Its capacity was already expanded in 2009 to ensure that the CHPP-2 has enough natural gas. Increasing the capacity of this pipeline once more would be the most obvious and least expensive option to expand the supply of natural gas supply to the province. Historically, Lithuania has been a reliable transit country for the natural gas supplies to Kaliningrad. But again geopolitics trumps economics: in the current reality a 100% dependence on the natural gas transit via Lithuania is no longer considered acceptable by Russian policymakers.

One option avoiding the dependence on Lithuania was adding a branch to the Nord Stream pipeline that would allow Kaliningrad to receive natural gas directly from this pipeline. It did not gain traction,

however, and the current plan envisions the construction of a LNG regasification terminal in Kaliningrad. In April 2015 South Korea's Hyundai Heavy Industries has won a US\$ 295 million Gazprom's tender to build a FSRU (floating storage and regasification unit) that will serve as the Kaliningrad LNG terminal. Interestingly, it is the same company that built a FSRU for Klaipeda, Lithuania. The terminal will be connected by a pipeline to the gas distribution network and the underground gas storage facility.

Despite the collapse of international LNG prices in 2014-2016 they are still much higher than the wholesale gas tariff in Kaliningrad. This implies that either Gazprom or the Russian government will have to subsidize operations of the LNG terminal. This led some analysts to suggest that the FSRU is likely to be used mainly either as a conventional LNG tanker or for LNG bunkering but at the same time it will be able provide an insurance against possible supply interruptions.

This discussion shows how geopolitics can trump economic benefits of trade and integration, and imposes very large deadweight costs on the energy sector both in Kaliningrad and Lithuania: e.g. Kaliningrad has to double its generation capacity while it already produces more electricity than it consumes. Eventually, Kaliningrad will become a well-protected energy fortress but at great expense. ■

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STANISLAV TKACHENKO

Debates in Russia on closing of underperformed Special Economic ones

Expert article • 2040

Special Economic Zones – history of institution in Russia

Special economic zones (SEZ) play remarkable role in implementation of Russian Government's vision on how national economy should be reformed and modernized. This institution was inaugurated in Russian Federation in 2005 as a tool for speeding-up socio-economic development of rather limited territories inside Russian regions. Wide range of strategic tasks to be solved by Russian SEZs includes facilitation of growth of foreign trade, general economic development, and social, regional as well as scientific-and-technological development. Each SEZ has received special legal status, protected for 49 years. Since 2006 the Joint Stock Company 'Special Economic Zones' has become the operator of all the existing and developed special economic zones in Russia. Their specializations are in industrial production, technological innovation, tourism and recreation, and port logistics and transport hubs.

Government of Russian Federation provided several important incentives for investors. 1) free access to infrastructure for business, which had to be constructed by budget funds, operated by the Federal Government; 2) status of free customs zone for each SEZ; 3) a wide range of tax exemptions depending on type of a zone.

In 2005-2015 Russian Government channeled about RUR 186 billion for the SEZ project, but RUR 24 billion have never been spent by them. It costs RUR 10 million for the Federal Budget of Russia to create one 'working position', i.e. job, in a SEZ. This is equivalent of average salary for 25 years of employment in Russian Federation today!

Pretensions to Russian SEZ from the Government and Society

Skepticism on the efficiency of the 'SEZ model' for modernization of Russian economy and utilization of Russian federal funds let the Chamber of Audit of Russian Federation as well as the Office of the Prosecutor General of Russian Federation to start investigation of activities of SEZs in 2011. We may sum up results of the investigation by following: the whole project of SEZs faces serious structural and institutional problems. They include slow construction of infrastructure for SEZs by regional authorities, bureaucratic inefficiency, red-tape, lack of Russian managers with practical skills to run the project. The most problematic sector is nowadays the tourist and recreational SEZs. These zones are located mostly in areas with very poor transport infrastructure and are hardly accessible for both businesses to invest and tourists to travel: Irkutsk region, the Republic of Buryatia, Russky Island near Vladivostok, resorts of Northern Caucasus. Construction and development in such areas restricted by many environmental and bureaucratic regulations as well.

In August 2012, newly re-elected President Vladimir Putin has instructed Federal Government of Russia to evaluate efficiency of the project and money spent for its implementation. New eligibility criteria for evaluation of them was announced: efficiency of spending of public funds for construction of infrastructure; the volume of funds,

which have never been used by SEZs. Another tool for reforms was directed on increasing the role of regional shareholders, i.e. regional authorities in management of SEZs on their territory. The idea was to convert SEZs from branches of the JSC SEZ into subsidiary units, registered in Russian regions and run by their authorities.

Another wave of criticism on SEZs came in November 2015 from leaders of the All-Russian People Front, a coalition of pro-Governmental movements and non-governmental organization, which typically vocalize dissatisfaction of Kremlin towards authorities in Federal Government and regions. All-Russian People Front questioned the very idea of SEZs as symbols of inefficiency of public institutions in Russia.

Prospects for changes in the near future

Current economic crisis (since spring 2015) and economic sanctions, imposed on Russia (since spring 2014) should be mentioned as main reasons for change in Russian Government's strategy towards SEZs. Rigid monetary policy of Russia's Central Bank and attempts to put inflation under control made budget cuts unavoidable. SEZs as a project from 'Golden Era' of high oil prices (2005-2013) has become one of the first victims of new Governmental policy.

The Federal Government of Russia is planning to publish in autumn 2016 a Report, which evaluate current state of affairs regarding SEZs in Russia and to suggest policy measures to reshape the project. Neither federal budget of Russia, nor budgets of 'subject of Federation', i.e. Russian regions, are not able today to handle this ineffective project, which lacks strategic vision and clear results after 10 years of its implementation. The most likely candidates for closure in the very near future are port logistics SEZs in Murmansk and Khabarovsk Krai, as well as tourist SEZs in the North-Caucasus Federal District, as well as in Siberian and Far Eastern Federal Districts. Other SEZs follow them later.

Conclusion: Reasons of crisis for SEZs in Russia

Russian authorities will continue their search for appropriate organizational and institutional model for modernization of the country. However, it is almost impossible for them to get any long-lasting positive results from such efforts without lifting Western sanctions on financial and high-tech sectors of national economy, further reforms of state corporations, establishment competitive institutions in domestic economy and demonopolization of its leading economic sectors. Otherwise, all SEZs will become imminent victims of the budget cuts in Russia in 2017-2019. ■



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Putin's propaganda machine

Expert article • 2041

The last years the West has been confronted with an increasingly aggressive Russian propaganda offensive, which – and that is new – is extremely successful. This offensive started during Putin's second presidency. In May 2005 the Kremlin launched Russia Today, a cable TV which had the task to become a global competitor of CNN, BBC World, and Deutsche Welle. The channel went live on December 10, 2005. The Kremlin, prepared to invest large sums in the project, reserved a budget of \$70 million in the first year. This budget went up to \$80 million in 2007, \$120 million in 2008, and was tripled in 2011 to \$380 million. The organization grew at a fast pace, with a staff of two thousand employees worldwide, reporting from twenty bureaus. It had a bureau in Washington with about one hundred personnel. The new Russian cable TV was very successful. In 2013 two million Britons watched RT regularly. It offered programs in English, Arabic, and Spanish. After the annexation of the Crimea in 2014 and the invasion of eastern Ukraine, the Kremlin decided to start also a French-language and German-language channel. RT's success is undeniable. It has become a full-fledged propaganda tool of the Kremlin and has acquired free access to Western audiences without being bothered too much by media regulations, such as impartiality rules. This success led the Kremlin to revamp also *The Voice of Russia*, its international radio station. By decree of 9 December, 2013, it merged with the news agency RIA Novosti and became part of a new organization, called *Rossiia Segodnya* (which, in Russian, also means Russia Today). The new international radio station was rebaptized into *Radio Sputnik* and became part of a broader platform, *Sputnik News*, which has also an online presence. The new radio station began to broadcast on 10 November 2014.

The Russian propaganda offensive was not restricted to radio and TV. Already in 2007 the Kremlin had started another project, called *Russia Beyond The Headlines*. This project was initiated by the *Rossiyskaya Gazeta*, which is the official Kremlin paper. Also this project was very ambitious. Once a month, an eight-page supplement is added to a group of highly influential Western papers. These included the *Washington Post* (United States), the *New York Times* (United States), the *Daily Telegraph* (United Kingdom), *Le Figaro* (France), *Repubblica* (Italy), *El Pais* (Spain), *De Standaard* (Belgium), and the *Süddeutsche Zeitung* (Germany). The title of this paid supplement is *Russia Now* in the United States and the UK, *La Russie d'Aujourd'hui* in France, *Russland Heute* in Germany. The supplements have their own websites. The supplements have an attractive layout and they offer a mix of sport, culture, tourism, art, and *faits divers*. The supplements resemble Western newspapers. One does not find straightforward Kremlin propaganda in it. On the contrary, one can read sometimes open criticism of the Kremlin leaders. In one such a supplement, for instance, one could read an interview with the regime critic Lyudmila Ulitskaya, a Russian writer, who talks about her correspondence with the jailed oligarch Mikhail Khodorkovsky, praising him as "brilliant." These "critical" articles would never stand a chance of being published in the mother paper of these supplements, the *Rossiyskaya Gazeta*.

Also the Internet became a battlefield for the Kremlin's propaganda war. A new phenomenon became the so-called "Kremlin trolls." These trolls sell the Kremlin's policies to the internet community by writing blogs, attacking opposition websites, and posting comments on Facebook and Twitter. In times of increased tension with the West

these activities reached new heights. In May 2014, for instance, during the invasion of Ukraine, the British paper *The Guardian* received a massive number of pro-Russian comments, often written in a poor English. In June 2015 more information became available on the secret activities of these Russian "troll farms" when Lyudmila Savchuk, a former employee, sued her employer, a company based in Saint Petersburg, called "Internet Research," which would have failed to provide her a contract. This firm employed an estimated workforce of four hundred employees, who worked in two twelve-hour shifts. They were paid relative high salaries of about \$780 a month for posting comments on Facebook, Twitter, and other social media. Each employee would be in charge of a dozen or more fake Facebook and Twitter accounts.

Another innovation, used by the Kremlin to spread its message in the West was hiring Western communication firms. This was new. In the time of the Cold War this would have been impossible. But after the demise of the Soviet Union and Russia's re-integration in the capitalist world economy it became possible for the Kremlin to get access to prestigious Western lobbying and communication firms. These firms, from their side, were eager to work with the Kremlin. In 2006, when Russia was tasked to organize the G8 summit in Saint Petersburg, the Kremlin hired the prestigious New York-based firm Ketchum with its Brussels-based daughter GPlus Europe. The \$2 million contract included sending twenty-five people to Saint Petersburg, who established podcasts featuring Russian officials, and made a webcast of the summit with the BBC. The Kremlin was satisfied, because its reputation had received a boost. In January 2007 it signed a two-month contract for \$845,000 with Ketchum and its subsidiary, the Washington Group. The contract was worth its money. Ketchum lobbied successfully on behalf of Putin, who was elected in 2007 as *Time Magazine's* "Person of the Year." However, the political implications of the Kremlin's cooperation with Ketchum became more clear during the war in Georgia in 2008, when Ketchum was helpful in setting up a web platform, called ModernRussia, later changed into ThinkRussia, which disseminated the official Kremlin views. Even the annexation of the Crimea in March 2014 and the subsequent invasion of eastern Ukraine did not end the cooperation between the Kremlin and the American PR firm. ■

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The Arctic Route: a Russian ploy?

Expert article • 2042

In the fall of 2015, 5.500 asylum seekers travelling the so-called Arctic route were admitted to Norway at the border crossing point near Kirkenes. What caused this flow of migrants? Why did the Russian border authorities allow transits? Why did they all come to Norway and not to Finland?

Some Norwegian observers theorized that Russian authorities had manipulated migrants, and actively directed them towards the border. Allegedly, Norway was the victim of Russian hybrid warfare, designed to destabilize the country. But could there be other more plausible explanations?

The assumption in Norway, and probably also among prospective migrants, was that the border area was subject to a strict Russian control regime that would prevent most individuals not carrying a Norwegian visa from reaching the border. This was not an unreasonable assumption. It was, however, not sensitive to certain nuances. The border regime in Murmansk had gradually been liberalized, notably in 2012. Not only Russians, but also foreign citizens are free to transit through and to reside in the area, provided they are in possession of relevant permits for their stay in Russia. The Russian border guard (FSB) may control, but not detain travelers with valid documents.

Thus, despite liberalization, migratory traffic was minimal. That changed in the summer of 2015, when “the Arctic Route” was tested. To people wanting to flee Middle Eastern countries, it turned out it was both less risky and cheaper than alternative routes. And travelling into Russia, as tourists or for other purpose, was not a big problem. Once it became clear that the route to the border of a presumed refugee-friendly country was open, news spread quickly.

Already in August 2012 the regional FSB, in an attempt to compensate for its diminished powers, requested Norwegian border authorities to issue a restrictive statement to third-country citizens not holding a Norwegian visa. As the Russians saw it, this would give their border guards legal grounds for stopping migrants without a visa before they reached the border. Norwegian authorities declined. This, however, changed in late 2015, amidst increasing migratory pressure. On 25 November, Russian border guards were finally equipped with a letter from the Norwegian side that stated that travelers without visa to Norway would not be admitted across the border.

In other words, the Russian border regime remained unchanged after 2012. The change that did occur was the result of evolving Norwegian policies in late 2015.

It is widely known that a number of Russian officials in various ways exploited refugees for profit. Corrupt practices are, however, hardly evidence that Russian authorities orchestrated the flow of asylum seekers. When the migrants had arrived in the north-west, Russian border authorities were set on removing them as quickly as possible. But – the fact that they ushered them out does not imply that they initially welcomed them in – quite the contrary. Large groups of migrants in a sensitive border area must obviously be a problem for the security service. But why, then, were such a large number of migrants admitted to the border area in the first place?

In our opinion, Russian bureaucratic practices provide much of the answer. Russian officials are slavishly bound to rules and regulations, and the liberalized border regime was meticulously observed by the FSB. Moscow became seriously involved only in October, when the Norwegian Minister of foreign affairs raised the migration issue in talks with his Russian counterpart. The fact that Russia still remained passive has been construed as a willed punishment of Norway. We think it is more likely that the Russian side felt that Norway was in a better position to solve the problem, in accordance with FSB’s long-standing request to Norwegian border authorities. Pushing Norway to act on FSBs requests would also provide a small foreign policy prize for Russia.

What about Finland? Only after the Norwegian-Russian border in practice was sealed off in late November did the refugees approach the two border crossing points in Finnish Lapland. Also in Finland, there existed a general, but flawed assumption that the Russian border guards would detain migrants before they reached Raja-Jooseppi and Salla. And – like in Norway – Finnish authorities eventually engaged in talks with the Russian side to halt the flow of asylum seekers. The result was an agreement that temporarily stopped further migratory pressure.

Why did the migrants not try to use the larger border crossings further south in Finland? We can only hypothesize. It may be that from the outset Norway was regarded as more attractive, or liberal than Finland. When Norway closed its border many refugees were already in the region, turning their attention to the nearest Finnish border crossing points, thus creating a new route. Migration experts maintain that established routes will be followed, as long as they work.

As we see, both proofs of the “hybrid warfare-theory” – that the Russian border regime had changed to accommodate migrants and that the NATO-member Norway was “punished”, while Finland was not – are false assumptions.

The factor that most plausibly explains the sudden increase in asylum seekers at the northern border crossings is neither conspiratorial nor particularly exciting, but far more logical: Migrants from various countries became aware of a route to the Schengen area that was less expensive and exceedingly less risky than the established alternative further south in Europe. ■

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Inequality and the broken social contract in Russia

Expert article • 2043

Economic inequality in Russia is growing. The level is comparable to that of the United States (Russia's officially reported Gini coefficient is lower than America's, but the 90:10 ratio--ie the ratio of the 90th income percentile to the 10th--is higher). It rises with income growth. When real wages and incomes fall, so does inequality, but when they start rising again, income gains accrue first and most to those at the top. Russian inequality is partly a function of the country's dependence on natural resources (oil and gas generate half the government revenues and two thirds of the country's exports), which helps explain the very wide income differentials across regions. But Russian inequality also shows many of the same features observed in the United States, such as the capitalization of rents in the financial industry. The steady rise of average wages in Russia's financial industry has kept pace with those in the oil and gas extraction sector. Until very recently wage growth in the state administration also outpaced that in most other sectors of the economy.

Russia shares with the United States the "Hollywood" effect of granting outsized compensation packages to top-level managers. If the ratio of CEO pay to that of average workers in the US is now about 300, the ratio of CEO pay to the average pay in the Russian economy is about 500. Russian CEO's of comparably-sized companies make more than their American and British counterparts. Thus the concentration of income gains among the top 1% in Russia resembles equivalent trends in the West.

Moreover, the Credit Suisse World Wealth Report finds that inequality in the distribution of wealth in Russia is the highest in the world. The top 1% of wealth holders own over 70% of all wealth (almost double the share in the US).

Inequality begets inequality as advantage cumulates across generations and regions. High inequality in a society corrodes the sense of shared risk and shared opportunity and undermines the commitment to common purpose. Public goods become bifurcated between low-quality services for the poor, and high-quality privatized services for the rich. Increasingly, the well-off live in a world that is physically and emotionally remote from the world experienced by those in the middle and lower income brackets.

Like the US and China, Russia stands out among peer countries in its level of inequality: inequality in the US is highest among the advanced industrial democracies; Russia's among the post-communist world; and China in East Asia. What accounts for the similarity? Although there are reasons particular to each country, there are also some common factors. Among these are the weakness of organized labor as a counterweight to business, the large population of migrant labor often working outside the formal sector, and the intertwining of wealth and power that allows the wealthy to raise the value of rent-generating assets.

The old socialist social contract in the USSR provided social guarantees--employment, education, health care, recreation, pensions and so on--in return for political quiescence. That social contract has almost completely broken down but it has not been replaced by something else. The Russian government's refusal to consider moving from the flat 13% income tax to a progressive income tax scale is illustrative of how deep the resistance is to adopting a redistributive system of taxation, social spending, and social insurance. Russian taxes and social programs have hardly any redistributive effect: much as in the US, wage inequality is translated almost fully into income inequality.

Russia's political institutions do not permit the contestation and bargaining over the distribution of social risk and reward that shape policy in a democratic system of corporatism or partisan elections. Rather, disputes over marginal adjustments to tax rates and social insurance programs are confined to the federal bureaucracy, where a liberal wing from the Finance and Economic Ministries wrestles with a bloc of social ministries (Ministry of Labor, Pension Fund). Russia's tax and social policies are the outcome of compromises among these blocs and often veer back and forth as one or the other bloc is ascendant. However, Russia's stagnant and resource-cursed economy does not yield sustained economic growth that would drive down inequality through broadly shared prosperity, nor a fully redistributive social market economy. A reform of political and legal institutions that decoupled growth from inequality could encourage both entrepreneurship and a progressive social policy. So far, however, the regime has not seriously pursued such institutional reform. ■

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Reforming the minimum wage in Russia

Expert article • 2044

The minimum wage already existed during the Soviet times in the form of the lowest grade of the Unified wage grid, though it was not called the minimum wage at that time. The term “minimum wage” appeared in national legislation after the start of market reforms in the early 1990s. Despite the amendments in terminology, the minimum wage setting regime remained largely unchanged and inherited many features from the central planning era. The country had a single national minimum wage. The use of “regional” coefficients for areas with adverse climate conditions provided a certain degree of regional differentiation. The system was rigid because regional authorities had no influence on the value of the national rate and on the size of the coefficients. The minimum wage was applied universally to all workers regardless of age, occupation, industry, ownership, and firm size.

The government tended to change the national minimum wage irregularly, with changes depending largely on political reasons. Hyperinflation in the 1990s caused a dramatic erosion of the real minimum wage in Russia. As a result, in 2000 the minimum wage amounted to 4% of the average wage. Though a number of increases were introduced between 2000 and 2006, they maintained the ratio at about 10%.

Sharp decline of the real minimum wage was an unintended consequence of the link between minimum wages and social benefits. Additionally, majority of low-paid workers were concentrated in the Russian public sector. For a long time the minimum wage was tied to the lowest grade of the Unified wage grid and any upgrading in the minimum wage generated – via the wage grid coefficients – an gave rise to spillover effects on the entire wage distribution. Thus, the linkage of the minimum wage with social benefits and the wage-setting arrangements in the public sector increased the budgetary costs of the minimum wage increases.

In 2007, the Russian government initiated a reform of the minimum wage setting. The reform aimed to increase living standards and shift the financial burden of raising minimum wages to regional budgets. High oil prices and budget surpluses made it possible to increase the remuneration of the public sector workers. Upgradings of the minimum wage were eased by the reforms of social security and wage setting in the public sector. The government delinked the minimum wage setting from the social security and tax systems in 2000. The Unified wage grid was cancelled in 2008. The reform abandoned the use of regional coefficients in calculating the minimum wage. Instead, regions were given power to set minimum wages in excess of the national rate through regional tripartite agreements. Institutionally, the existing system is a mixture of the government-set minimum wage at the federal level and collective agreements at the regional level.

These changes reduced the risks of minimum wage increases and triggered a number of large increases. The real national minimum wage more than doubled over the period of less than 2 years after the start of the reform. In 2009, the national minimum wage jumped to the level of 25% of the average wage. In the low-wage regions, it rocketed to 40%–50% of the average wage, which was a shock change in the regulatory environment. However, the rise in the share of minimum wage earners was small and short-lived even in the depressed regions. By 2016, the ratio of minimum to average wage declined to 15–17%.

Many regions took the opportunity to introduce their own wage minima. By mid-2015, regional minima existed in 62 out of 83 Russian regions (another 9 regions set minimum wages at least once between 2007 and 2015), but the coverage was limited to the private sector in half of all regions that introduced the regional minima. Additionally, about 15% of regional agreements cover the public sector but still set higher rates for the private sector. Thus, the generosity of regional minima is largely populist as majority of low-paid employees work in municipal establishments.

The reform generally succeeded in improving the linkage of minimum wages with regional costs of living. Minimum wage increases led to substantial compression of the earnings distribution. The evaluation of institutional changes is more problematic. The system of minimum wage setting has become more flexible. The reform contributed to strengthening of social partnership at the regional level. However, peak trade union organizations have little confidence in collective bargaining in the regions and continue to campaign for further substantial increases in the national rate. Co-existence of different minimum wages reduces regulatory transparency and complicates enforcement. The major challenge in coming years is to introduce evidence-based evaluation and boost the capacities of government and trade union monitoring agencies. ■



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Fighting inequality: back to Policy Agenda in Russia

Expert article • 2045

The recently observed recession in Russia's economy has also been accompanied by a decline in real incomes for large groups of the country's population. Combined, they pose a threat, hypothetically so far, to social stability and long-term sustainability. As a consequence, the issue of inequality, including regional inequality, has been placed on the top of economic and political agendas. The recession, however, has narrowed the resource base for redistribution, thereby making this issue more challenging, and the search for solutions extremely difficult to say the least.

Inequality in Russia has remained high throughout the transition period, and even slightly increased in the 2000s; the Gini inequality index rose from 0.397 in 2001 to 0.416 in 2014. The ratio of the average incomes of the highest decile to those of the lowest decile also increased from 13.9 to 16 during this same period. This income gap is generated primarily from the gap between incomes of the top decile and all of the others: the top decile is estimated to get thirty percent of the total monetary income in the economy. Further, income inequality originates in earnings inequality: the top decile of wage earners gets thirty five percent of total wage earnings in the economy.

What is even more worrisome, there is a large share of wage earners with wages below subsistence level, thus boosting inequality measures further in addition to providing a significant indicator of hardship for those left behind during the past 15 years of so called economic progress. The estimate for 2015 is about 3mn people; or 11% of wage earners. This is a pronounced decline from more than twenty four percent in 2005, but is still very high. The existence of so many low-paid jobs is a part of the explanation of the large share of working poor in Russia and a rationale for attempts to reform the labor market in order to eliminate these jobs. The attempts so far have not been very successful as the key reforms, competition policy reforms, are falling far behind due for political economy reasons. In the public sector there is an attempt to increase the wages of education and healthcare professionals by demanding (via the May 2012 Presidential Decree) that the wages of this group are not less than the average wage in a given region. The Decree stimulated additional expenditures from regional budgets thus causing extra burdens in the period of the budgets' deficits rather than a reform of the public sector. The public sector is in need of structural reforms with the main problems being its being oversized and inefficient due to a strong negative selection of talents.

On top of this, there is a sizeable interregional variation in incomes summarized by huge variations in per capita gross regional products, in growth rates, in levels of wages and in unemployment rates. Yamalo-Nenetsky okrug, the main oil extracting region, has GRP per capita six times higher than national average and twenty six times higher than the poorest region of Ingushetia Republic, for example.

Inequality and poverty rates also vary significantly across regions: the Gini coefficient is 0.48 in Moscow, 0.44 in St. Petersburg, Tyumen and Samara, and 0.36 in Tver and Kostroma regions (the national average is 0.42). There is some indication that regions that are experiencing more rapid economic development are among the leaders in income inequality, while economically less advanced regions have a more equal income distribution.

Poverty rates (with respect to absolute poverty thresholds differentiated by regions) are even more diverse than inequality measures. Kalmikia Republic and Tyva Republic are the leaders in poverty, with rates of 35.4% and 33.4%, respectively. Another 56 regions have poverty rates in excess of the national average, which was 10.8% in 2013 (Murmansk is at the national average). The lowest poverty rates are in Yamal (6.6%) and Tatarstan (7.2%), while in Moscow it is 8.9% and is 8% in St. Petersburg.

Interregional inequality recently attracted the attention of top policy makers who called upon higher equalizing transfers from the rich regions to the poor. The suggested mechanism for achieving a more favorable balance is a temporary increase in the federal share of profit taxes (from 2% to 3% out of 20% rate) to finance increased federal interregional transfers. A significant portion of the transfers from the federal budget would be used to finance the increase in wages of public sector employees required by the Presidential Decree.

Ironically, while there is very limited information on the decision-making process by Russia's top policy shapers, they seem to be sensitive to the public demands. Indeed, though high inequality is viewed by economists as an important incentive for an individual's effort, the public may not be in complete agreement with this view. As measured by the EBRD and WB *Life in Transition Survey* of 2010, which asked respondents to indicate whether they prefer more income inequality or less and to score their answers from 1 to 10, Russians on average are close to Germans in their preferences for redistribution (both score 6.9 on average), while, for example, Estonians and Belarusians prefer less redistribution and are closer to the British (they score 5.9 on average). It seems that public attitudes toward inequality and the demand for redistribution play an important role in shaping social policy everywhere, including Russia. ■

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KAREN GRIGORYAN

Finland offers business opportunities for Russian companies

Expert article • 2046

In the changing business environment, attracting direct investments from Russia into Finland requires more time and clear focus.

New economic realities change investment patterns in Russia

The past years of global political and economic turbulence have greatly changed the foreign direct investment (FDI) landscape for Russia. New local legislation, coupled with new political and financial realities, have had effect on the dynamics of Russian investment into Finland as well.

Traditionally, Russian companies invested primarily in neighboring countries of the former CIS or in established large European markets like the Nordics.

This pattern has been driven by a common business culture and the relatively fewer financial and economic barriers to entry within the former CIS region for Russian investors. Outbound FDI flows have been dominated by natural resources and basic materials companies, unsurprisingly in light of their dominance in the Russian economy.

However, current global politics and domestic economics have created an atmosphere that has made Russian companies and investors to reconsider investment outside of Russia. Their plans are changing in reaction to the devaluation of the ruble, the increased cost of debt capital in Russia, and limited access to international finance.

Import substitution programs in Russia have also stimulated new plans for Russian companies.

Practical examples of the impact of these legislative changes and import substitution programs include healthcare sector. State owned hospitals are required to buy domestically produced pharma products and medical devices. Foreign imports are allowed only if such a product is not available from domestic suppliers. As a result, Russian pharmaceutical factories are focused on supplying the domestic market.

Heavy machinery companies are bound by the same procurement rules as pharma companies. Therefore, international expansion is not a priority at present neither for pharma nor machinery companies.

Also the changes in Russian data protection legislation have had an influence on expansion strategies. Transfer of personal data of Russian citizens out of Russia is now prohibited. This naturally eliminates the attractiveness to locate data centers abroad. Furthermore, software procurement for government or state owned organizations must prioritize domestic software companies.

Innovation creates bridges between East and West

Despite these complications and a more extended decision process, the good news is that Russian companies still view the EU market as a long-term strategic priority. They are open to discuss the possibilities and willing to entertain different options that would allow them to advance the EU strategy even within current constraints.

Innovative Russian companies with interesting product portfolios are looking for new markets and Finnish partners. Slush and Startup-sauna are great catalysts for Russian startup companies and entrepreneurs to consider future expansion into Finland.

It is clear that the investment decision making for Russian companies will take longer time, and the number of industries and companies ready to consider such a move will diminish compared to recent years.

Therefore, the focus should be in attracting mature and innovative Russian companies that are looking to expand their international sales together with Finnish partners. Of particular interest are 'born global' ICT and digital companies that already operate abroad. These companies could take advantage of the talent pool that Finland has to offer.

Due to the current changes in the Finnish ICT sector, there is now a unique opportunity to engage top talents. Nokia's lasting legacy ensures that Finnish engineers know how to mass manufacture even the most complex electronics. With access to a Silicon Valley inspired business culture, Finland is an R&D hotspot. Innovation driven and economically successful Finland has already brought to the world the SMS, the Wearable Heart Rate Monitor, the Linux operative system, Clash of Clans, and Angry Birds. ■



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Development of e-commerce in Russia: from crisis to bright future?

Expert article • 2047

The idea of online trade was first conceived in 1979, when an Englishman, Michael Aldrich, connected a modified television to a real-time transaction processing computer via domestic telephone line. To make his invention available worldwide, Aldrich lacked a number of essential systems and functions: infrastructure networks, security, payment systems, and a universal human interface to mention a few. These insufficiencies were later filled with the invention and proliferation of Internet, and today, online shopping has become an increasingly essential part of the global economy. According to eMarketer, the global B2C e-commerce sales are expected to reach 1.92 trillion U.S. dollars in 2016.

In the couple past decades, Russian online market has seen one of the fastest growths on the planet. In 2011, Russia surpassed Germany as the largest European online market in terms of Internet users. According to W3Techs, Russian language is the second most used language in the World Wide Web in 2016. According to various estimates, in 2015 Russia was home to 7th largest online market globally while the market is estimated to grow annually by high 11.9% in 2013–2018.

Quite naturally, the booming Russian online market has attracted a number of foreign e-commerce companies. According to DataInsight, cross-border e-commerce has been the fastest growing segment of Russian online market. This fact may have been aided by Russian legislation: Russian consumers can make purchases up to 1,000 euro per month per person duty-free in foreign web stores. However, evidence shows that a strong local presence – if not full market entry – may be required to tap the Russian market's true potential.

Attractiveness of the Russian online market suddenly plummeted as the country entered the ongoing economic and political crisis in 2014. Both local and foreign e-commerce companies have seen their sales volumes stagnate or decrease as economic downturn and inflation have eroded the purchasing power of Russian consumers. The Western companies have taken a big hit, as Ruble's depreciation has made their prices unattractive to Russian customers. At the same time, Chinese online retailers have grown their share of the Russian online market dramatically, and today, China is the main driver in cross-border e-commerce in Russia. According to DataInsight, the worsening economic conditions favor larger online businesses. Large online shops are expected to grow larger with universal selection, whereas smaller shops are forced to either shut down or change format to boutiques shops. Furthermore, a wave of bankruptcies and closures is projected to face the middle sized online shops that are not merged to larger online shops.

Contrary to the downcast ambience, however, Russian online market has not lost all of its appeal – perhaps even less so, than the current state of business would suggest. Even during the crisis, the Russian online market continues to mature and grow. The Internet infrastructure and customs procedures continue to develop, and both the Internet penetration rates and online sales figures continue to soar. While thus far Moscow and St. Petersburg have been considered the most lucrative e-commerce markets – in 2013, the two cities comprised 60% of Russian online sales – Russia's other cities are developing fast. Furthermore, mobile Internet connections are quickly connecting even the furthest Siberian regions to the global online market.

Russia is often coupled with the idiom 'sleeping bear' – the figure of speech holds some truth to it in regards to Russian e-commerce market as well. Substantial growth is likely to return as soon as the crisis ends, and as such, Russia still bears considerable potential for foreign e-commerce companies. Making a move towards the market during its hibernation can prove to be a winning long-term strategy: at this point in time competition is weaker, prices are lower, and due to the low value of Ruble, the Russian talent for e-commerce localization, web development, and online marketing services are available for significantly less than before. ■



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Security in the Baltic Sea Region: activation of risk potential

Expert article • 2048

Russian internal and external policies have been consolidated around the idea that the West is responsible for the conflict in Ukraine, the current international system is dysfunctional and, what is more, the current constellation of world politics should be changed to better serve Russia's national interests. Fundamentally, this reveals a deep yearning by Russia to be recognized as a great power that has an important role to play in global affairs. Regionally, it means that others should acknowledge Russia's dominant role in the post-Soviet space. Furthermore, both the EU's influence and NATO's presence must be kept in check, and preferably rolled back. Here, the Baltic Sea Region is an important component, if only to ensure that the current strategic geography is maintained.

To analytically approach evolving security situation in the Baltic Sea region two features of Russian strategy should be taken into account: preference for control, be it physical territory or economic and information flows; and the ability and will to use the full spectrum of tools to prevent and neutralize potential threats to Russia's vital interests. When these two features are combined, it appears that Russia can effectively cause harm to small states in its neighbourhood.

It can be argued that a change in the regional security situation has already taken place and this is having direct and indirect impacts on Finland and other countries in the region. More broadly, potential risks to stability in the Baltic Sea Region have been *activated*, although they are not yet, and hopefully never will be, *actualized* in the form of open military conflict.

These risks include first, a strategic deception of political elites and public opinion in the target country. Russian military analysts have long analysed and developed informational-psychological means to manage perceptions of reality among the general public and decision-makers, and thus, to manipulate reactions to ongoing processes.

Secondly, Russia has skilfully used strategic resources ranging from punitive measures such as trade sanctions and 'sanitary regulations' to indirect means of economic pressure, such as political use of energy resources, to its advantage. Furthermore, the fundamental incongruity between the Russian system and democratic governance produces long-term risks for Russian development and short-term opportunities that the system insiders may exploit to their advantage.

The use of surrogate actors and purposeful misuse of legal and institutional instruments is the third risk which has been activated. At the most basic level, this involves using a front organization or company to push for policies or decisions desired by the Kremlin, while providing deniability and obscuring the original source of policy ideas or even cash.

Although our focus is on possibility of Russia taking advantage of the three aforementioned elements, we should not overlook the fact that each of them has its limitations. The consolidation of state control over strategic resources provides Russia with considerable agility in a conflict situation, but does not insulate the country from the fluctuations of world commodity prices. Thus far, the manipulation of public opinion has provided a temporary replacement for real political and economic reforms, but it cannot compensate for economic growth and does not solve the underlying structural problems. Furthermore, the disruption of trade relations between the EU member states and Russia, as well as increasing awareness among Western politicians of Russia's 'game-plan', are factors that in themselves limit the Russian space for action.

To conclude, in the Western view, the Baltic Sea Region is formed primarily by the mosaic of institution-based and historically evolved relations that shape the respective countries' self-understanding of the region and their role in it. Russia, on the other hand, does not see a myriad of intra-regional interdependencies that tie the region's countries together but, rather, an array of strategic deficiencies – not least in NATO's deterrence capabilities – that facilitate its own risk-taking in a crisis situation. Russia's demonstrative show of force and negligence of commonly agreed-upon rules of engagement signal a break with a previous Russian policy that sought to enhance confidence-building between militaries in the Baltic Sea Region. What this implies is that should Russia start to cooperate rather than prolong the conflict in Ukraine, the means available for confidence-building are already in place. ■



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The case for increasing defence expenditures in the democratic Baltic Rim countries

Expert article • 2049

Since World War II, most of the Baltic Sea region has lived in relative stability. Crushing of the Hungarian citizens' popular uprising against Soviet occupation in 1956 and occupation of Czechoslovakia in 1968 by the Soviet Union, to suppress emerging more liberal thoughts and potential challenge to single party rule, were seen in the mainstream Western public opinion in the context of perceived permanence of the Iron Curtain. As a result of the economic collapse of the Soviet Union, the Baltic states of Estonia, Lithuania, and Latvia regained their independence in 1991.

The defence expenditures as a percentage of GDP of many of the democratic Baltic Rim states have been practically reduced by half from 1998 to 2013. In case of Germany, the percentage change in defence expenditures during this time period has been – 52 percent, and in case of Sweden, a whopping – 54.2 percent, as a percentage of GDP.

First, the 2008 Russo-Georgian war, and then, the recent Russian occupation of the Ukrainian Crimea in 2014, have now lead me to ask: how much is my political and personal freedom worth to myself?

I recalled my frequent visits to the Speakers' Corner at Hyde Park in Central London as a young student. As a standing proof of vitality of the British democracy, without state intimidation, these individuals at Speakers' Corner were allowed to express their views most visibly in a very prominent location in Central London. In my mind, this was in sharp contrast to Russian Interior Ministry troops beating old ladies in Moscow, expressing their anger and grief over their lost family members or missing relatives in the Russian military venture of the Soviet-Afghan War (1979-1989) of the time.

The current price of my freedom as a public good, measured by defence expenditures per capita in my country of origin, Finland, is currently 533 euros annually (2016). This is less than a half of the cost of my car insurance per year. However, should I be a citizen of Singapore, the expenditure on my freedom as a public good, measured by defence expenditures per capita, would be 1.732 euros per year (2016). The unequivocal political decision made by the Singaporean government is that my freedom would be three times more valuable in Singapore, if compared to the defence expenditures per capita, than my freedom in Finland as a public good.

These two questions, first, what is my freedom worth, and second, what is my fellow citizens' freedom worth, are two of the most fundamental questions that we, as participants in the decision making process in a democratic society, should be able to make.

These two questions may be also be the kind of questions that many people do not actively think about. We may perceive the geographic boundaries of states as static, and our democratic and judicial institutions as stable, thus requiring no additional effort on our part in guaranteeing their future. Unfortunately, in my opinion, this is a very short-sighted view.

The demonstrated select intraracial brutality by *Homo Sapiens* - species, under circumstances where democratic state institutions with their checks and balances have failed, seem to have no boundaries. To make this point, during the dictatorial rule of the recently deceased president of Uzbekistan, Mr. Islam Karimov, two opposition journalists, Muzafar Avazov and Khuzniddin Alimov, were reportedly boiled alive to death in 2002 by the state security services. Not a funny joke.

The defence expenditures of selected Baltic Rim Area democratic states as share of GDP have declined substantially, between the two selected reference years, from 1998 to 2015. Percentage change of this decline is shown in Table 1:

TABLE 1
DEFENCE EXPENDITURE AS % OF GDP

	1998	2015	Δ %
Denmark	2.0	1.2	- 40.0
Finland	1.6	1.3	- 18.5
Germany	2.5	1.2	- 52.0
Sweden	2.4	1.1	- 54.2

Source: SIPRI Yearbooks

Is the current level of defence expenditures by the Baltic Rim Area states adequate to guarantee your long-term personal freedoms in a politically independent state, in a changed and continuously changing European – Eurasian security environment? My short answer is no.

Clear choices have to be made in government expenditure priorities in the Baltic Rim Area states.

Personally, I would like to see all the democratic Baltic Rim states to increase their defence expenditures to meet the set NATO Wales 2015 Summit goal of two (2) percent of GDP.

Expert article • 2049

Russian government has set its own priorities very clearly: the share of military expenditures out of the Russian Federation's budget have more than doubled since 2009, and may be, in reality, now close to 25 percent of the Russian Federation's budget. This would be about five (5) percent of Russian GDP.

Expenditure on national, and in many cases, also on regional defence, does not reduce the GDP in the national accounts. To the contrary, investments in R&D intensive defence projects may have a higher employment multiplier effect than many other forms of government employment.

As with most issues, things are changed by changing them. I have already called my member of the Parliament and will meet him next week. And yes, I am willing to pay my car insurance's worth of national defence per year. Just to make sure that I, and my fellow citizens, will be welcome to the Speakers' Corner in the country of my residence also in the future. ■

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BALTIC RIM ECONOMIES

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JARI HAAPALA

Blue Growth – a facelift or a new model to utilize marine resources?

Expert article • 2050

Introduction

We, as mankind, need energy, food, jobs and wellbeing. Alongside the others, the marine sector makes an important contribution to the economical growth of Europe. According to the European Union (EU),¹ the marine sector provides 5.4 million jobs and generates a gross added value of €500 billion a year. Locally, in the Baltic Sea region, the marine sector provides a living for 900 000 persons.²

The EU has introduced a “Blue Growth” strategy that is aimed at boosting the utilization of marine space and its resources in a sustainable manner.

The Blue Growth strategy stems from the fact that coastal seas provide space for large infrastructures, like off-shore wind or fish farms, and also that terrestrial resources are becoming depleted. It is self-evident that we have first utilized the most easily accessible reserves of minerals, oil and gas. Consequently, the natural resources of the sea floor have mostly remained untouched. However, during the past few decades underwater technology has evolved significantly and, in addition to oil and gas production, sea floor mining has already commenced.

Healthy fish stocks, the development of aquaculture and tourism are also elementary parts of the Blue Growth strategy.

The SmartSea Project

A new Finnish research project, SmartSea,³ aims to support the growth of marine activities in the Gulf of Bothnia region. The Gulf of Bothnia is an essential resource – in terms of fish and wind farming for example – and it is also possible to make use of the geological natural resources of the gulf but, most importantly, it is the most pristine region of the Baltic Sea.

Furthermore, the Gulf of Bothnia is an area in which climate change impacts on the conditions (from the severity of the ice in winter to the abundance of the fish stock) to a notable extent. The rapid growth of commercial marine activities and the consequences of climate change may lead to conflicts between the different activities and harm the marine ecosystem of the Gulf of Bothnia. The project aims to identify these risks and find solutions for the sustainable use of the sea.

The sustainable use of marine resources

Blue Growth emphasizes the exploitation of marine resources in a sustainable manner. In the past, whaling was a flourishing business for oil production but, as we know, it nearly led to the extinction of whales. Today, whales are capitalized on in a sustainable manner, as an important tourist attraction in many coastal areas.

The exploitation and conservation of marine resources are often in conflict with each other. The protection of the marine environment emphasizes the integrity of the seas and, as on land, human activity is always changing the natural environment. The key objective of

SmartSea is to determine regions where natural values are considerably low and where industrial use can be allocated and, on the other hand, to detect key regions for the ecosystem, like the reproduction areas of fish or the occurrence areas of endangered species.

One of the global megatrends is the increase in fish farming. In Finland, fish consumption is also steadily increasing. However, we are dependent on imports of fish despite the broad sea area. Enhancing fish farming in Finland would create new jobs and could even make Finland a country of export fisheries.

However, an increase in fish farming cannot be made solely on economical grounds. Well-known problems of fish farming are the leakage of nutrients into the sea, the escape of farmed fishes and the threat to indigenous species, as well as the spread of fish diseases. Apparently, SmartSea examines new methods and innovations in order to increase fish farming without these risks.

Another global trend is the construction of wind farms outside the coastal zone. Wind farms are becoming giant infrastructures – the world’s largest one, a 1.2 GW wind farm, is the equivalent to a nuclear power plant and is under construction off the north-east coast of the UK. For comparison, the largest Finnish marine wind farm in Pori Tahkoluoto will produce 0.04 GW of energy.

Sustainable exploitation of the coastal seas requires that all marine activities are considered simultaneously. For example, the population of commercial fish stocks is affected by eutrophication, climate change, fishing pressure and changes in spawning areas. All these factors must be taken into account when assessing how fish stocks are kept strong in the future.

SmartSea also examines how marine activities could be integrated. This would significantly reduce the burden on the environment. One possibility is to develop a marine oasis, which could be a combined infrastructure for wind power production, fish farming and tourism.

An anthropogenic influence on the marine environment could be catalytic in a positive sense. Marine structures could enhance wild fish reproduction. With a good design, structures can be made multi-form in order that underwater groundworks could provide a reef-like environment for marine life.

A framework aimed at optimizing the use of marine space in a sustainable manner will take into account all of these above-mentioned demands, natural values and the long-term impacts of human activities in a holistic manner and constitute a maritime spatial plan covering the entire sea basin. To meet this challenge, SmartSea is providing open-access environmental data and an open-source toolbox to provide a platform upon which to conduct this work. ■



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¹ The Blue Growth strategy of the EU http://ec.europa.eu/maritimeaffairs/policy/blue_growth/

² Dahlgren, S., Mrozowski, T., Källström, N., Seppä, T., Lind, F., Wallin, M., Morin, M., 2015. Restoring waters in the Baltic Sea region. A strategy for municipalities and local governments to capture economic and environmental benefits. The Boston Consulting Group, Inc., p. 50.

³ The SmartSea project <http://smartsea.fmi.fi>

OUTI SETÄLÄ

Marine litter challenges stakeholders

Expert article • 2051

In an old Finnish magazine published in the 1930s there was a story of an accident which had taken place in a small town. It was about a local resident who decided to move his hut from one place to another. He thought it was convenient to wait until winter and the sea to freeze. Moving a whole small house as one object is very challenging, but that happened every now and then. Another option was to tear down the hut, take the logs, move them and rebuild it again. That is how my own great-grandfather had one old big wooden house successfully moved long time ago. That went well, there was strong ice and strong horses were used to drag the logs. The man in the news was unfortunately not that lucky. On the way the ice cover started to break and eventually the whole hut sank so that only the roof was above water. Luckily nobody drowned, not even horses. Part of the hut was recovered, the rest became marine litter.

Not that long ago what we now call marine litter (any persistent solid material that is manufactured or processed and directly or indirectly, intentionally or unintentionally, disposed of or abandoned into the marine environment) consisted mostly of organic and degradable material. Like in one of the books of the beloved Finnish writer Tove Jansson where the moomins with their friends went out on the beach to look for what had been cast ashore after a big storm. They found treasures, like a wooden figurehead from a ship. But what would Tove Jansson have written today? What kind of treasures the moomins would have found on the beach? Whatever items from land or from the sea, most likely they would be made of plastics.

Global plastic production has been continuously increasing after 1950s. Products made of plastic polymers have been replacing other materials because of their cost-effectiveness: plastic products are durable, easy to mold, and in general cheap to produce. In the year 2014 the world's plastic production added up to over 300 million tons, and is expected to increase further. Modern world is surrounded by plastics and very much dependent on these products. In Europe applications for packaging include clearly the greatest part of the plastic demand, building and construction being second. Also household products and medical applications demand a great deal of the yearly plastic production.

The amount of marine litter and the global production of plastics go hand in hand. Plastic products can escape to the environment during their production from raw materials, manufacture process, use and waste collecting system. The more plastic items are produced, the more will end up in the environment. The issue of plastic waste and the problems it is causing in the marine environment is huge. It is now regarded as an "emerging issue", although already 50 years ago leisure boaters in Sweden were advised to dump their garbage to the sea "the right way" (in a box with some rocks so it would for sure sink). Generally it was really OK and common to dump the garbage overboard. So this issue now emerging is actually already old and worn out. But the management is being planned now. According to some estimates only a fragment of the whole litter load is visible to human eye on the shore, and most of it is floating somewhere or has sunken on the seafloor, or is just so small that it cannot be seen with naked eye. Most of that litter we cannot collect anymore and a great deal of it is plastic, which is slowly fragmenting into smaller pieces.

Degradation takes time even in the case of organic materials, especially in the cold and dark waters of the Baltic Sea, where degradation is very slow (about which sea archeologists are very happy). It has been said that all the plastic that has been produced in the world still exist. Surely also all the plastic that has entered the deep waters of the Baltic Sea will continue to exist for an unpredictable very long time (hundreds of years or more).

In order to develop effective management methods the authorities, like local municipalities need as detailed information on the sources and pathways –or of how plastic waste turns to marine litter. For this, monitoring of litter in various environments should be launched and new methods developed, for example for microlitter. The already implemented beach litter surveys have shown that in some cases it is easy to see the connection between marine litter and their sources. In Finland, as well as in Sweden, Estonia and Latvia, that in a joint research project together monitored their beaches for visible litter, the connection between packaging and litter items was clear. A great deal of all litter was identified to be due the modern take-away life style. Whole packages of food and other products, or pieces of them, single use cutlery and often mostly unidentified pieces of plastic bags and wrappings. Plastic that has just been thrown away. For this kind of litter management options probably could include campaigns to increase awareness, additional trash cans, efficient cleaning of popular recreational areas, taxes of other fees to reduce the use of plastic bags and smart production.

On the other hand, allowing the production of cheap single use items to continue, we are generating increasing problems globally. Another way to deal with a part of this problem is banning. Not dealing with the end of the plastic items lifespan, but preventing its birth. For example plastic bags have been banned in several countries where they cause significant problems. Plastic microbeads that are used in personal care products and cosmetics will soon be removed in US markets, and quite recently France announced that it will ban plastic single use cutlery.

Maybe in Finland it is possible to manage a part of the intentional littering, like the packaging-related litter, if we really commit ourselves to that. But what about the input of new "unintentional litter" if the sources are not well known? Maybe the answer could be banning such products that are not at all necessary, especially cheap, bad quality/or single use items? Or replacing them with environmental-friendly materials? Plastic items are useful in so many ways, having thus an important role in the modern society. Consuming plastics should not be demonized, but the unnecessary and careless way of producing and consuming plastics, and creating piles of plastic waste should. Managing marine plastic litter needs a common approach, and commitment from all sectors. Otherwise this long-lasting material will continue to flow in the environment, creating severe environmental and societal problems that are difficult to solve afterwards. ■

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Ecotechnology as an approach for sustainability studies

Expert article • 2052

Despite of considerable financial and intellectual investments contemporary global crisis still represents itself a serious threat for survival of humankind. Working hard to solve approaching global catastrophe related problems both experts and decision-makers are gradually recognizing that crisis manifestations have been deeply rooted in human minds – accordingly, appropriate educational enhancements should be considered as an inevitable prerequisite to ensure our survival and health.

Conventional mechanistic approach which long dominated environmental / sustainable development education recently faces pragmatically promising paradigm shift with e.g. ecotechnological thinking entering the field. Traditionally ecotechnological designs mean “partnership with nature” based ecosystem management practices which emphasize cost-effective, subtle low-input interference in intimate ecological processes (e.g. through triggering ecosystem self-designing capacities) in order to ensure benefits both for nature and human society (applied in various environment related fields like wastewater treatment, nature protection, agricultural pest management, etc.). Such an approach contrasts with expensive, time-consuming and ecologically degradative environmental engineering activities and, thus, appeared to be attractive for environmental experts, government officials, NGO activists, green entrepreneurs.

More broadly, ecotechnological approach represents itself specific way of thinking which could be applied also beyond ecosystem management practice (e.g. in therapy, landscape architecture, indoor design, advertisement business) and has been rooted in such complementary methodological principles like interdisciplinarity, multifunctionality, frugal creativity, reverse thinking, postmodern relativism, biomimicry, etc. Set of such principles could be perceived as “just-for-impression” list however in a real life reasoning practice principles – figuratively speaking! – fuse together in a new intuitive gestalt enhanced, inter alia, by ethnobotanic, plant psychology, “traditional biodiversity knowledge”, etc. recognitions since ecotechnology could be traced back to relevant non-Western and ancient Western cultural experience. It should be emphasized that apart from professional education conventional target groups also general public could be involved since ecotechnological experience can offer creative ways to cover a wide spectrum of everyday problems.

Recognizing methodological advantages of ecotechnological approach and, at the same time, lack of appropriate ecotechnological education in Latvia different sustainable development issues related stakeholders (like Kurzeme Business Incubator, Green-tech Cluster, Liepāja City Council, Eco Baltia Ltd., etc.) supported an idea to develop Ecotechnological study program at Liepāja University.

Accordingly, Professional Master study program “Ecotechnologies” (henceforth – SP) has been designed by Environmental Research Center of Liepāja University in 2014. SP has been recognized by experts as being sustainably competitive and unique for Latvia;

it is interdisciplinary, creative thinking and innovation oriented, targeted to educate specialists capable to adapt themselves to changing labour market requirements (with potentials to ensure their self-employment), and meeting thus sustainability criteria. However, one can ask a question, how successfully these declared claims have been implemented? As it has been revealed by sociological survey performed within SP’s audience (in 2015) students agree with competitiveness of ecotechnological studies, recognize SP’s suitability for labour market, emphasize undoubtedly a new beneficial way of thinking being developed through implementation of study courses. Students surveyed stress interdisciplinary perspective, high competence of teachers, all the study courses relevance to program’s goals as SP’s strength.

Acquired flexible ecotechnological thinking and relevant competencies have been clearly demonstrated by thematic spectrum of Master thesis developed by SP` students – some examples: green walls for indoor health improvement, ecologically sound heat insulation of culture heritage buildings, eco-bijouterie entrepreneurship, hemp-fiber based electric guitar construction, etc. Importantly, besides creative ecotechnological design Master research involves also managerial dimension (with economic, legislative, communicative, etc. tools utilized) to implement this design in a real-life situation.

Summa summarum, SP’s implementation experience demonstrates that ecotechnological approach integration within professional education represents itself an useful, competitive sustainable advantage for any study program. ■

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Networks for networks, or the changing Baltic Sea

Expert article • 2053

Interaction networks describe how species in ecological communities interact with each other, in the same way that social webs show human social interactions over the internet, and human disease networks map disorders and diseases sharing associated genes. Marine food webs specifically describe feeding links between species in the sea, in short showing 'who eats whom'. The structure of the food web is tightly linked to the ecological functioning in species communities, how the flow of energy and nutrients through the system is maintained. From a human perspective, a functioning food web may, for example, be able to sustain production of fish biomass, *i.e.* food, in the face of a changing environment.

Humans are very much part of the Baltic Sea food web. Fishing for herring, sprat and cod, or plaice and flounder, positions us as significant consumers in the network. On the other hand, our flushing of nutrients into the Baltic changes the base of the food web. Through our activities, we create favourable conditions for harmful algal blooms and deplete oxygen levels in deeper waters. Eutrophication has resulted in vast seafloor areas, about 49 000 km² (roughly the size of Denmark!), that are characterized by conditions inhospitable for animal life. This means that large parts of the Baltic Sea have limited amounts, or are practically devoid of small invertebrate animals that function as a direct food source for fishes. In other words, human activities impact organisms big and small, and thereby influence the structure of the Baltic Sea food web in a top-down, as well as a bottom-up, manner.

The architecture of feeding linkages further influences how ecosystems respond to external stressors and whether they recover following perturbations. Ecosystems subject to enough pressure may undergo substantial change, and be kept from recovery by internal feedback mechanisms that can include feeding interactions. The Baltic Sea is believed to have undergone such a change in the late 1980's, when fishing pressure, following severe eutrophication, induced a shift in the ecosystem. The altered conditions resulted in a Baltic Sea dominated by herring and sprat, instead of one dominated by cod, as before. Food web interactions contribute to upholding this change, for example, herring and sprat eat cod eggs and cod larvae, and also compete with young cod for zooplankton. So, what is going to happen to the food web in the future? The fact is that the Baltic Sea is continuing to change. The Baltic is among the fastest warming regions on the globe, and apart from leading to warmer waters, climate change will also alter water balance, circulation and salinity in the area. These changes are expected to impact biological processes in the Baltic Sea by influencing species distributions and interactions.

How, then, do we move forward? Considering the complexity of marine interaction networks and the social systems that they are connected to, it is fitting that successful ecological research often is achieved through networks. I am part of an Innovative Training Network called MARmaED, which stands for "Marine management and ecosystem dynamics under climate change" and is funded by the European Union's Horizon 2020 programme. In MARmaED, we are training young researchers in investigating how cumulative stress from biodiversity loss, climate change and harvesting will affect, not only the Baltic Sea, but in fact a number of Europe's complex marine systems, as well as in assessing the consequences of these changes for optimal resource management. This ambitious task requires a broad approach, and our network comprises 8 universities and institutions from 6 different countries, and contains complementary expertise both within and among science fields, from physics and biology to economics and ecosystem-based management. In addition, the early career researchers collaborate with representatives from the non-academic sector, such as the International Council for Exploration of the Sea (ICES), members of industry, and other non-governmental organisations (WWF). The project is still in its first year, but I am very excited about the ongoing work and my team, studying in detail the food web and the functional diversity of the Baltic Sea in the face of environmental change. ■

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The enigma of Eurasianism

Expert article • 2054

Vladimir Putin began his campaign for a third presidential term in October 2011 by publishing a remarkable article in a mass-circulation newspaper: “A New Integration Project for Eurasia: The Future Starts Today.” In this propaganda piece, Putin argued for closer integration between Russia and several other post-Soviet countries – a process, he declared, that should ultimately lead to the formation of the “Eurasian Union.” From Moscow’s standpoint, the vision of the emerging Eurasian Union is strategically very important. According to the Kremlin’s geopolitical outlook, Russia can successfully compete globally with the United States, China or the European Union only if it acts as a leader of a regional bloc. Bringing Russia and its ex-Soviet neighbors into a closely integrated community of states, Russian strategists believe, would allow this Eurasian association to become a major global center of power that could participate on par with other such centers in global and regional governance. Eurasian integration could thus become the principal political agenda of Putin’s third presidency.

Yet there appears to be much more to Putin’s “Eurasian vision” than considerations of geopolitical rivalry in the vast territory that was occupied until December 1991 by what Putin and other Russian policymakers like to call “historic” Russia. From their perspective, today’s Russian Federation is just a pale copy of its former grander self – the Soviet Union and its predecessor, the Russian Empire. Notably, Putin bemoaned the Soviet implosion, famously calling it the “greatest geopolitical catastrophe of the 20th century.”

And Putin is not alone in linking Russia’s destiny to the evocative concept of Eurasia. Following the collapse of the Soviet Union, the notion of Eurasia came to be widely used in the West as well, in loose reference to the area which contains the post-imperial debris—the successor states to the defunct communist superpower. It would seem, however, that for Putin, the understanding of Eurasia extends beyond the term’s geographical connotations. For him and for other leading members of Russia’s governing elite, the vision of Eurasian integration led by Russia has to do not so much with geography as with historical continuity and Russia’s identity as a great power. As such, this vision has a lot in common with a very special understanding of Russia advanced in the group of doctrines collectively called *evraziistvo* or Eurasianism. And here is where the term Eurasia came from in the first place.

First formulated in the 1920s and 1930s by conservative-nationalist émigrés, Eurasianism reflected a deep rethinking of the meaning of Russia’s historical experience, and it offered a new future-oriented vision for a post-imperial Russia. Following in the tradition of Russian nationalist thinkers such as Nikolai Danilevskii or Fedor Dostoevskii, the Eurasianists formulated an entirely new vision of Russia as “Russia-Eurasia”: a distinct and autonomous historical world stretching across the trans-continental spaces from Russia’s western borderlands east to the Pacific, and south from the Arctic to Turkestan. From its earliest beginnings, they argued that Russia-Eurasia has been guided by the need to maintain the geopolitical unity of these Eurasian territories. Moreover, a deep and unbridgeable gulf separated Russia-Eurasia from the powerful but hostile civilizations that surrounded it, in particular Europe and the West in general. The Eurasianist movement flourished among Russian émigrés in the interwar period, but had largely died out by the onset of World War II.

In the 1980s, however, as Russians began to seek new, non-Marxist perspectives on Russia’s place in the world, the teachings of the Eurasianists began to attract new attention. By the moment of the Soviet Union’s collapse, support for it within the conservative Soviet establishment had grown quite considerably. The concerns of the original Eurasianists with maintaining the geopolitical unity of the Russian state and stiffening its resistance to Western encroachment seemed to be as timely as ever. Eurasianism offered a compelling ideological narrative that appealed to those who opposed the breakup of the Soviet Union and believed that Russia needed a strong state. Throughout the 1990s, the ideas of Eurasianism proliferated extensively, through books, newspapers, and political agitation.

Today, Eurasianism has become one of the most pervasive keywords in the lexicon of Soviet politics and public discourse. The most significant practical outcome of this new interest is the creation, in January 2015, of the “Eurasian Economic Union,” a customs union joining the Russian Republic, Kazakhstan, Belarus, Armenia and Kyrgyzstan. While the EEU represents a dramatic consummation of Putin’s bold 2012 appeal for Eurasian unity, it is far from clear what this new entity will actually amount to, not least because its various members do not necessarily share Russia’s great-power aspirations described above. And more generally, the popularity and proliferation of Eurasianism has meant that it has ceased to represent a single coherent perspective. It has great appeal beyond Moscow—e.g. Tatarstan, Yakutia, Tuva and Kalmykia—but for reasons very different than in the Russian center. Indeed, it has even spread beyond the former Soviet Union, and for example Turkey and Hungary have developed their own Eurasianist narratives. In a sense, Eurasianism has become a truly global concept, which can be adapted by a wide variety of differing and even contesting political and projects. ■



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Europe reloaded

Expert article • 2055

Europe is changing: 400 million Europeans are in competition with 1.4 billion Chinese, 1.2 billion Indians not to speak about USA, the Russian Federation and Japan.

Till now the EU was in expansion and we think that expanding the economic space is a way to confine an existing crisis due to the high dynamics of the whole World and the mentioned competition.

It seems that a point of saturation was reached and the geographical expansion has a draw back with the Brexit situation. This is changing the perspectives of the cooperation in Europe, obviously the U.K. will continue the economic cooperation with the other countries of Europe based on new principles but the participation in the common economic activities will be changed. Moreover, the political and commercial ties with other regions of the world will evolve independently from the EU. It is hard to tell as yet what this will induce in terms of economic impacts.

What are the ways and means to respond to this saturation that is likely to prolong the existing crisis situation? One historical solution is the introduction of military (should we call them governmental!) expenses. Replenishing arsenals and developing new technologies may relaunch the economies. In order to do that, though, one needs a threat that justifies the new type of economic efforts. On this line the new raise of the Russian Federation in military actions may provide a justification for the EU to exit its economic crisis, although, prolonging the build up of military might is increasing the probability to trigger its use that is definitely not advisable in any circumstances.

What is happening with the energy field? The new technologies that are penetrating these last years are just the beginning. Storage (from large storage parks to car or house batteries), electric cars, smart grids, new conversion technologies such as photosynthesis, small modular reactors, individual convertors of energy, the internet of things, sea gas hydrates, Lithium, etc. are slowly now penetrating our day to day life. They are coming together with the need for cyber security, economic vulnerability of the present consumers (in the future: prosumers), impact on the productivity of the present day economic operators, as well as a new type of finance based on innovative financial schemes that will select surviving financial institutions to the new dynamics.

Talking of dynamics one is lead to the concept of circular economics that must internalize the costs of environmental resources and impacts in the present days cost of capital. Else, as communism fell because it did not internalize the cost of capital, the capitalism may fall because it does not internalize the costs of environment. Circular economics is about this type of consideration of the use of resources and minimisation of impacts by changing the environmental liabilities into environmental assets through innovative technologies and system structures and modes of operation. New indicators are discussed these days that will show more clearly the concept of evolution as based not only on GDP but on more complex combinations of primary socio economic indicators showing nonlinear behavior. As an example pollution diseases increase the medical expenses in the GDP and large medical expenses in the GDP are regarded as progress. Is it really progress or just an indicator of how polluted that economy is?

Energy combined with emissions of CO₂ and with the number of persons in a given country as well as with the rate of waste recycling and GDP, may lead to complex indicators that would change the present day GDP associated with the syntagma of 'economic growth'. The succession of crises have shown that evolution is not only exponential but logistic (having a first increase phase followed by saturation). Energy systems penetration of technologies have shown to possess this type of behavior. May be the techniques used to describe their behavior are also useful to apply to financial systems as well as other socio-economic systems' evolution. This would create a predictive capability that leads to stable evolution and to the advent of crises in a controlled manner similar to a flying system on a lighter plane designed with inherent instability and stabilised by computers – when ever a sudden change of direction is needed the instability is let loose. May be we need the crises to have the sudden change of economic mentality and behavior that lead to progress.

The progress in the last hundred years was tremendous and, at the end, we hope that the present trend to colonize Mars and to implement exquisitely new technologies to Earth will not be disrupted by the periodic military folly of humanity. Else, in 65 million years from now, a civilisation of ants will wonder how have disappeared the 'dinosaurs' living the Earth once. ■

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Strategic storytelling in the public sector – not the same old story

Expert article • 2056

Once upon a time there was a boy who started from nothing in a damp cellar, and with loads of creativeness and persistence he gradually built up a whole, magical empire. We know versions of this story from a lot of companies – Apple, Toyota, Ben & Jerry's. In Sweden we have Ingvar Kamprad, the founder of Ikea, who stands out as the noble hero of a similar tale.

When Swedish public organizations, like municipalities and state agencies, tell stories about themselves in strategic projects, the stories turn out slightly different. Usually it is not in the interest of public organizations to promote and glorify specific individuals, especially not founders (and what is more, efforts are commonly made to bring out not only men but also women in these stories).

But to a large extent the strategic stories from the public sector serve similar purposes: they are used to market the organization internally and externally, to express specific values that the management wants to establish as linked to the organization, to create a corporate identity and image. In brief: they are branding tools, and they are used not least to influence the co-workers and to make them embrace the values promoted by the management. Strategic storytelling is part and parcel of a value-based leadership, a form of governance that is widely promoted these days.

In this article I do three things. First of all, I argue that the story as a form of communication is perfectly compatible with today's social order of things, which might explain its popularity in corporate communication. Secondly, I claim that strategic storytelling in public organizations to a certain degree needs to be different from strategic storytelling in companies. And thirdly, I point to the fact that stories as tools in organizational development come with both possibilities and limitations.

As a researcher I have observed a storytelling project targeted at and carried out among co-workers in the municipal organization of Malmö, Sweden's third largest city. Similar projects have been conducted at several other local and state authorities in all parts of Sweden. For instance, when the Swedish Transport Administration was established a few years ago, storytelling was used to create a common organizational culture founded on three core values (*sensitivity, innovation, comprehensive view*), which were established from the very start.

A common procedure in these projects is to collect stories among co-workers, who are encouraged to focus on moments when they have felt proud to work in the organization. In the next step representatives of the management select a number of stories, which are then disseminated throughout the organization, where they are meant to form the basis for discussions about corporate core values.

In Malmö a hundred stories were collected from meetings held with almost one thousand managers on all organizational levels. The project leader then selected fifteen stories that were spread in the organization, and all co-workers were instructed to select three particular values which they favoured in these stories. In the next step the project leader compiled and categorized the selected values, and out of this an official organizational core-value statement was formulated, once again in the form of three words (*respect, devotion and creativity*) and three accompanying sentences.

The storytelling project in Malmö could be described as an attempt to collectively create a core-value statement deeply-rooted in the organization. At the same time, a fair amount of governing was exercised, for instance through the selection of stories, which meant that some stories were promoted while others were discarded. In the case of the Swedish Transport Administration the situation was different, since the corporate values were already set by the management before the storytelling project took place. Therefore the aim of the storytelling was to implement and anchor the predetermined values among the co-workers.

So, what is it about stories that makes everyone embrace them? Why do not only companies but also municipalities and state agencies want to tell stories nowadays? My answer to this question is that the story as a form of communication fits perfectly well in the prevailing social order, where tributes are paid to the individual and to the informal. Stories have traditionally been used in informal contexts permeated with friendship and familiarity. Stories are about individuals, about persons, and they are told by persons to other persons. In other words, storytelling is a deeply human activity.

When the story as a form of communication is used in new contexts, it still conveys meanings of friendship, familiarity and individuality. Organizations that tell stories become personified; they appear to be more human. Furthermore, the story as a form of communication was used strategically in the business world before it was discovered by managers in the public sector, and therefore it conveys an air of enterprise and modernity, which seems to be attractive to today's public organizations.

But there are differences between the strategic storytelling of companies and that of public organizations. One difference could be traced to the fact that organizations in the public sector are in part more limited. They have to observe specific considerations (partly but not only because of secrecy rules and out of respect for personal integrity). As a result it could be more difficult for public organizations to produce spectacular and intriguing stories. Furthermore, as already touched upon, stories that make an impact are often about specific individuals, while the stories of public organizations tend to be populated by more anonymous representatives.

Expert article • 2056

Finally, what happens when this new, strategic storytelling enters municipalities and state agencies? It depends, of course, on how it is used and handled. One implication of the fact that storytelling nowadays has an acknowledged place within the “grey authority sphere” is that the communicative palette is augmented by another colour. It might imply that more people get an opportunity to make their voices heard. On the other hand, when the plurality of stories are narrowed down and transformed into three core-value words, it could imply that some persons are rendered invisible – a worst case scenario is that the polyphony expressed in and through the variety of stories is transformed into homophony.

Eventually, it comes down to what kind of stories we are allowed to tell in our workplaces. Are all stories allowed? And is it allowed not to tell stories – is it permitted to choose another, less emotive form of communication when you communicate with employers and colleagues?

In short: strategic storytelling in the public sector implies possibilities as well as limitations, and like all management tools it requires careful consideration. ■



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BALTIC RIM ECONOMIES

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Foreigners at the heart of Russian economic power

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There are more than four million companies in Russia but, despite the high number, the 25 largest corporations hold much of the nation's economic power. An example of this concentration of power is that these corporations account for more than half of Russian oil and gas production, the country's exports and investments abroad. The boards of these 25 companies comprise almost 270 people, approximately 60 of whom were born outside the former Soviet Union (see the table at the end of the article).

There are over 25 British or US citizens serving as board members. The third largest foreign group are Germans, who hold nearly 10 seats. Matthias Warnig – a former employer of the Stasi, the secret police of the GDR – holds half of the German seats. According to interviews given by Warnig, he never met Vladimir Putin in the 1980s when the incumbent President of Russia was stationed as an intelligence officer in East Germany. Warnig has stated that his first contact with Putin took place in the early 1990s when Putin worked for the Committee for External Relations of the City of Saint Petersburg.

It is more common for foreign nationals to sit on the boards of private companies than on those of state-owned companies. State-owned companies only account for 20% of the board seats held by foreign nationals. Of these 12 seats, Warnig holds three. The board seats grant this éminence grise power to influence national oil production, transportation and banking in Russia. Moreover, his position as the Managing Director of Nord Stream AG, the Russian state-controlled gas transmission company, provides him with a clear view of the EU gas supply. As Warnig works at the core of Russian foreign trade, he has, undoubtedly, taken on a significant, informal role in the co-operation between Germany and Russia.

Finnish citizens hold two seats in Russian boards. Esko Aho is a board member of Sberbank of Russia and Sakari Tamminen, former President and CEO of Rautaruukki, sits on the board of Severstal, a major Russian steel producer. The Russian corporations only have

one assumingly Chinese board member. However, the number of Chinese persons will already increase in the 2010s if the economic sanctions push Russia closer to China and, instead of lending money to Russian corporations, China begins to increase its ownership in them.

Board members of Russian corporations also include a former European Commissioner for Trade, a former President of Armenia, a former Prime Minister of Finland, ex-Finance Minister of the UK, a former Minister of the Economy of Luxembourg, the Deputy Chief of Staff of a former US President, ex-Assistant Secretary of State for Intelligence and Research of the USA, and former Principal Private Secretary of The Prince of Wales. Western companies own significant shares in Russian companies – even state-owned companies – and it is natural for them to send their own representatives to the Russian boards of directors to act in their best interest. But what is the justification for the board memberships of Western politicians in situations where there is no underlying foreign ownership?

Even though personal relationships play a significant role in Russia, friendships do not comprise sufficient grounds for appointing corporate board members – even in private companies. By including Western politicians on their boards of directors, Russian corporations are not seeking to attract strategic leadership skills or the latest expertise in international business. It is more likely that this is a way for Russian private companies to improve their international relations and even protection against unexpected developments in Russia or abroad. Accordingly, for Russian state-owned companies, the Western politicians are an informal communication channel and a means for furthering the company's or even the Russian government's agenda abroad. A Western politician may also become a possible source of information for Russian intelligence. ■

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Russia's 25 largest companies and foreigners in their board of directors

Company, ownership control	Industry	Turnover 2014, \$ million*	Foreign assets 2014, \$ million**	Share of foreign assets in total assets 2014**	Foreigners, excl. persons born in ex-Soviet republics / total number of seats in board of directors***	Foreign members (assumed citizenship), excl. persons born in ex-Soviet republics, in supervisory boards, as indicated by the company website on 2 August 2016***
Gazprom, state	Oil & gas	133,612	36,000	13%	0/11	No foreign board members born outside the ex-USSR.
Lukoil, private	Oil & gas	98,703	32,900	29%	5/11	Toby Gati (USA), Richard Matzke (USA), Guglielmo Moscato (ITA), Roger Munnings (UK), Ivan Pictet (SUI)
Rosneft, state	Oil & gas	82,472	9,400	6%	4/9	Robert Dudley (UK), Donald Humpreys (USA), Guillermo Quintero (USA), Matthias Warnig (GER)
Russian Railways, state	Transport	45,776	2,800	4%	1/12	Hartmut Medorn (GER)
Sberbank, state	Banking	44,752	no data	no data	3/14	Esko Aho (FIN), Martin Grant Gilman (USA), Alessandro Profumo (ITA), Nadia Wells (UK)
Sistema, private	Conglomerate	29,782	1,700	8%	4/11	Patrick Clanwilliam (UK), Jeannot Krecké (LUX), Peter Mandelson (UK), Roger Munnings (UK)
Surgutneftegas, private	Oil & gas	21,754	no data	no data	0/9	No foreign board members born outside the ex-USSR.
Rosseti (Russian Grids Holding), state	Transport (electricity)	19,729	no data	no data	0/15	No foreign board members born outside the ex-USSR.
VTB, state	Banking	19,647	no data	no data	2/11	Yves Thibault de Silguy (FRA), Matthias Warnig (GER)
Transneft, state	Transport	19,466	1,100	3%	1/8	Matthias Warnig (GER)
Inter RAO UES, state	Electricity	17,199	1,600	15%	1/11	Ronald James Pollet (USA)
Magnit, private	Metal	15,053	no data	no data	0/7	No foreign board members born outside the ex-USSR.
X5 Retail Group, private	Trade	13,908	no data	no data	4/8	Christian Couvreur (FRA), Stephan DuCharme (USA & GER; chairman), Geoffrey King (UK), Pawel Musial (POL)
Evraz, private	Metal	11,941	5,300	46%	3/8	Karl Gruber (AUT), Deborah Gudgeon (UK), Michael Peat (UK)
Tatneft, private	Oil & gas	11,815	no data	no data	2/15	Laszlo Gerech (HUN), René Steiner (SUI)
Severstal, private	Metal	11,030	400	5%	3/10	Alun Bowen (UK), Philip Dayer (UK), Sakari Tamminen (FIN)
Norilsk Nickel, private	Metal	9,501	700	5%	3/13	Robert Edwards (UK), Gareth Penny (RSA; chairman), Gerhardus Prinsloo (RSA)
Oboronprom, state	Military equipment	9,368	no data	no data	0/9	No foreign board members born outside the ex-USSR.
Vimpelcom, private	Telecommunications	9,110	30,400	74%	6/9	Gennady Gazin (USA), Gunnar Holt (NOR), Julian Horn-Smith (UK), Nils Katla (NOR), Morten Karlsen Sørby (NOR), Trond Ø. Westlie (NOR)
NLMK, private	Metal	9,040	1,300	12%	4/9	Benedict Sciorino (USA), Franz Struzl (AUT), Tomasz Veraszto (AUT), Helmut Wieser (AUT)
Rostelecom, state	Telecommunications	8,458	no data	no data	0/11	No foreign board members born outside the ex-USSR.
RusHydro, state	Electricity	8,144	no data	no data	0/13	No foreign board members born outside the ex-USSR.
Rusal, private	Metal	8,087	2,800	19%	8/18	Mark Garber, Ivan Glasenberg (RSA), Philip Lader (USA), Elsie Leung Oi-Sie (CHN), Matthias Warnig (GER; chairman), Siegfried Wolf (AUT), Daniel Lesin Wolfe (USA), Bernard Zonneveld (NL)
Novatek, private	Oil & gas	7,742	no data	no data	3/9	Burckhard Bergmann (GER), Michael Borrell (UK), Robert Castaigne (FRA)
Megafon, private	Telecommunications	7,718	no data	no data	4/7	Carl Peter Christian Luiga (SWE), Paul Myners (UK), Jan Rutberg (SWE), Ingrid Maria Stenmark (SWE)

The 2014 turnover figures were converted from RUR into USD with an annual average rate of 2014 i.e. USD 1 against RUR 38.51.

Sources: Expert (2015) Эксперт 400 - рейтинг ведущих российских компаний *; Kuznetsov (2016) Foreign Investments of Russian Companies: Competition with West European and East Asian Multinationals, Herald of the Russian Academy of Sciences **; and company websites ***.



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