What Does Bioeconomy Offer For Long-Term Strategic Cooperation Between Europe And Russia?

OPEN LECTURE AND EXPERT DISCUSSION

MOSCOW, RUSSIA

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Executive Summary

Bioeconomy is a concept that relates to the use of renewable biological resources to produce food, medications, materials and energy. It is relatively new concept for Russia as well as for some European countries which at the same time has a great future potential globally.

Moscow School of Management SOLKOVO together

with the European Forest Institute held an open lecture with the Former Prime-Minister of Finland Mr. Esko Aho and expert discussion on the topic "What Does Bioeconomy Offer For Long-Term Strategic Cooperation Between Europe And Russia". The event took place at the campus of the Moscow School of Management SKOLKOVO on December 15. The man idea of the event was to raise the awareness on bioeconomy in Russia and contribute to multilateral public debate of all issue. The event gathered more than 70 participants from international business community, public authorities, academia, universities, NGOs, associations and students.

Andrei Sharonov

President, Moscow School of Management SKOLKOVO

The event started with the opening speech from the president of the Moscow School of Management SKOLKOVO, Andrei Sharonov, who welcomed all the guests, experts and the keynote speaker Mr. Esko Aho. He mentioned the long-standing friendship with the Former Prime Minister and the importance of bioeconomy for Russia as well as an opportunity for cooperation with Europe.

Mr. Esko Aho's lecture was dedicated to the bioeconomy concept and opportunities for cooperation between Europe and Russia.

The lecture was followed by a panel discussion with participation of high profile experts from different fields related to the bioeconomy i.e.:

- European Forest Institute;
- SKOLKOVO Institute for Emerging Market Studies;
- Huhtamaki Molded Fiber Russia;
- Forest Program of the World Wide Fund for Nature Russia;
- Technology Platform «Bioindustry and Bioresources» (TP "BioTech2030");
- Scientific Council on Forests of the Russian Academy of Sciences;
- Institute for Genetics and Selection of Industrial Microorganisms;

The event was moderated by Elena Kulikova who is a senior expert from the European Forest Institute.

The discussion was focused on the following questions:

- How the concept of bioeconomy is interpreted in Russia and in Europe? Is it of strategic importance?
- What are the new opportunities for Russian sustainable business in the bioeconomy?
- Who are the key players and what are the most effective mechanisms in building a long-term cooperation between Russia and Europe in the area of bioeconomy?
- What are the key barriers for implementation of bioeconomy in Russia?

The key points have been identified as the most important for building a long-term strategic cooperation between Europe and Russia:

- The **context** of the changing world requires the right **concepts** for companies, government, etc. to be built around key trends – **technological revolution**, **globalization**, **demography** and **sustainability** – should be considered to build the right concept.
- There is a strong need for **leadership** in government that would help to consolidate action for the development of bioeconomy in Russia and cooperation with Europe in this regard.
- The development of young **talents** that could be able to face global problems which include climate change and scarcity of resources. Bioeconomy should become a part of a future leader mindset.
- Ability to **take risk** is crucial for business and government. Implementation of innovation promises high profits, but also implies high risks. At the same time there is always another option: use international experience and best practices in order to adapt them to local conditions.

Open Lecture

Started from Winston Churchill's quote "Gentlemen, we have run out of money, we have to start thinking" Mr. Esko Aho presented a vision on how to build the future in the context of current global economic crisis.

It has been identified that in hard times when the economy is changing dramatically it is crucially important to be "**on the right side of the history**". Two important things should always be considered in this case: context and concept. Context is changing rapidly and in order to understand where you are, stay relevant and be able to navigate into the new circumstances you have to build a relevant concept.

Esko Aho

Executive Chairman of the Board, East Office of Finnish Industries

These are 4 major trends that form the future context and therefore define the concept:

1) Technological revolution

New materials, technologies including biotechnologies are the most dominant trends that already provide a lot of opportunities.

2) Globalization

Environmental challennges are global, not regional. In this regard the solution should also be identified and implemented globally.

3) Demography

It is well-known that Western countries

including Russia are aging rapidly but there should also be solutions to create favorable conditions for this aging population.

4) Sustainability

With a strong dependence on the fossil fuels Russia will not be able to face environmental challenges in a long run. In Russia the question on how technologies can ensure sustainability and prosperity of the country should be raised.

European Union has the same problems as Russia: there is a strong need for jobs, growth and opportunities. That is why Europe and Russia are in the same boat and have a potential to build long-term strategic cooperation within the concept like bioeconomy.

It was identified that to succeed in changing environment 5 factors should be taken into account:

1) Right time

In terms of bioeconomy it is the right time to make investments in bioeconomy and for collaboration between Europe and Russia.

2) Revolutionary technologies

These technologies already exist but there is still a lack of capacity. Waste management in Russia is a good example. Internationally waste is already recognized as the resource but not in Russia. There is a lack of **R&D investments** in the country that could help to move the process forward. Meanwhile Finland's funding of R&D accounts 3.5 – 4% of GDP, in Russia - a third of Finnish spending.

3) Right skills and talents

A a good example: Finland pays a great attention to the higher education which is very important for county's future. It is important to have multidiscipline talents.

4) Risk taking capacity

There is no innovation without risk taking. It is easier for business to understand that the higher risk the higher return. But it is different for the government.

5) Right kind of ecosystem

Innovation-friendly ecosystem should be created to enable development of new concepts.

Bioeconomy concept includes many industries that use renewable resources. Forest sector as one of included industries has a great potential for Russia covered by forests on 47%. In Finland forest sector is changing rapidly and the new types of factories are being created. Thus, for example, one of the biggest forest companies is the owner of the mill known as bio-factory mill instead of pulp & paper mill.

Elena Kulikova

Senior Expert, European Forest Institute

These changes were made possible due to introduction of innovative model in the country. Finland has it nowadays as a result of the process which has been started by the government more than 20-30 years ago. Russia has an

opportunity to follow this model, learn from best practices, use similar solutions and avoid many complexities caused by the creation of own model.

Key points for Russia

- For Russia using the experience of best practices and imitation of already existing innovative models could be one of the most effective ways to move forward towards sustainable future. Although it might provide not as much high profits as innovative model, but due to already existing experience, it can significantly reduce the risks. That is how Japan developed itself after the World War II, not by innovating but imitating.
- To let the new concept be developed in Russia the government has to bring incentives for that and create a favorable regulatory environment. Year of Ecology in 2017 means that the government has a will to go this way and start thinking what could be done and what is needed to help companies to go in a sustainable way.
- It is crucial to provide the ecosystem with regulations, standards and taxations as well. In Finland, for example, incentives to return the waste back to the process have been created by putting a price on waste. In such a way the process of returning waste back became reasonable.

Discussion

The second part of the event was dedicated to the expert discussion. Following the open lecture presented by Mr. Aho the expert panel gave short comments in the context of bioeconomy topic.

The list of participated experts:

Alexey Kalinin – Director, SKOLKOVO Institute For Emerging Market Studies;

Marc Palahi – Director, European Forest Institute;

Natalia Lukina – Director, Centre for Forest Ecology and Productivity, Russian Academy of Sciences;

Gala Mansurova – General Manager, Huhtamaki Molded Fiber Russia;

Nikolay Shmatkov – Director of the Forest Program, World Wide Fund for Nature Russia;

Mikhail Beburov – Director, Research Institute for Genetics and Selection of Industrial Microorganisms;

The discussion panel started with **Alexey Kalinin's** comment focused on the importance of private initiative as well as transforming power of consumers. Entrepreneurship is the key of business: no matter what drives the change it is the business that really makes the change happen. Technological advancement and policy measures are two necessary components that drive change but the third component is crucial – it is a business action. SKOLKOVO Business School aims at helping business in understanding context, identifying opportunities, developing bold concepts and eventually getting to the right side of the history.

Sustainable development in general and bioeconomy in particular are clearly the business opportunities that pay back. As it was perfectly noted by Mr. Esko Aho – bioeconomy is not only for large business but also for small and medium size companies as well as for social entrepreneurs.

Echoing the ideas of

the recent research by SKOLKOVO on how small and medium size companies benefit from international markets – i.e. by getting involved into global supply chains and adopting international standards – bioeconomy is a perfect example of a sector that can be beneficial and vitalizing for businesses of all sizes.

What is Russia's current position in bioeconomy and what is the potential of cooperation with Europe? We know that Russian companies stand on top positions in all global oil and gas rankings which is believed so natural given Russia's world's largest deposits of carbohydrates. At the same time despite Russia being a home for world's largest forest reserves there are no Russian forest companies in global rankings.

Alexey Kalinin

Director, SKOLKOVO Institute for Emerging Market Studies

What are the major barriers? Russia is still lagging behind in terms of responsible forest practices. This is a complex issue which is a combination of policy and business practices. There are a lot of things that have already been done on policy front. Thanks to the World Wide Fund for Nature (WWF) a huge change has taken place in Russian forest sector regulation. The European Forest Institute is a big partner here, too.

But where SKOLKOVO sees slower progress is the business practices that still remain below the world standard, including use of obsolete technologies resulting in low productivity. That is why SKOLKOVO absolutely convinced that innovative technologies should be the number one priority of the cooperation between Russia with the EU and the rest of the world. Russia can definitely source technologies. But what is even more important is that the technologies come with processes so it is not only technology Russia would be sourcing but also the whole way of doing business differently.

Secondly – forest industry does not attract talent as it should have attracted to ensure sustainable development and growth. What have been seen from the curriculum of some of the Russian forest universities is that they concentrate mainly on the technical knowledge and skills but they rarely teach modern concepts and practices that is probably why young generation does not see forestry as an attractive as diverse, dynamic and innovative industry. Perhaps cooperation with European educational institutions could help increase awareness of Russia's top talent about the opportunities in forestry and bioeconomy.

Finally, SKOLKOVO believes that no matter how hard some businesses try to adopt sustainable business practices it is not going to work unless clients start to differentiate products, brands and producers one from another based on how environmentally correct and ethical this or that business is. Consumer social responsibility – when consumers care what

environmental impact makes the product they buy and the company they bought it from – is a critical component of the whole. This does not come on its own – business has a responsibility of increasing awareness and educating consumers and there are a lot of practices that Russian business could learn from European colleagues.

So positive change and shift towards bioeconomy in Russia is a function of innovative technologies and business practices, talent development and consumer responsibility and all three could be done in cooperation between Russia and Europe.

Marc Palahi added that as an example of possible cooperation between Europe and

Russia the international business Master's program on the bioeconomy could be jointly launched in the future between the Moscow School of Management SKOLKOVO and the European Forest Institute.

Looking at the global context everyone is entering the storm in many faces. In the next 20 years, people will have to produce roughly 50% more food, water, energy and raw materials to meet the demands of the increasing population. At the same time, people will need to address environmental challenges – climate change is the best example. In the report published in 2016 year by the World Economic Forum climate change has been identified as the risk number one for the global economy for the first time eve which means that at the end it will harm the business globally. Basically, in the next 10 years everyone will not have any other choice than push for other pragmatic transformation of the economy.

One hundred years ago, people in Western Europe were facing very similar problems that everyone facing now globally: economic crisis, social unrest, even larger migration than Europe has these days (many people were moving from Western Europe to the United States and other continents). Industrial revolution and technology were the catalyzer that allowed transforming the society and cope with increasing population.

Now countries are facing a similar challenge and need to rethink the economy. Basically, they cannot produce all 50% and at the same time address climate change. In this regard there is no other option than to move from the linear fossil-based economy that has been a base for existing economy for the last 100 years to a circular bio-based society. There is a strong need to address existing challenges and make renewable resources as the growth engine of the economy. And this is what the bioeconomy counts.

Marc Palahi

Director, European Forest Institute

The bioeconomy is not only yet another industrial sector it is an opportunity. It is a new circular thinking. It gives the possibility to transform biological resources into a new range of innovative bio-based solutions

that can substitute fossil-based products and other raw materials from different industrial sectors: chemicals, pharmaceuticals, materials, building construction. Europe already has technologies to do it.

Talking about forests it is time to think-forest because basically forests are the main biological infrastructure existing on the planet. Forest is the main source of renewable non-food biological resources. Forests provide the basis to make the bioeconomy happen: cellulose, which is one of the components of wood, is produced at largest quantities and at a faster rate than anything on the planet. It is the most abundant molecule on the planet and a renewable one. Nowadays with the current technologies, people can transform cellulose into materials as soft as cotton and as resistant as steel.

In the EU, for example, construction sector is very paradigmatic because of the scale. The building sector, which includes at only the construction part at the use of the buildings accounts 40% of CO_2 emission, 40% of the energy use, 40% of the raw materials and 40% of the waste - an amazing sector and environmental impacts are amazing. It also accounts 10% of the GDP and 30 million jobs. Producing one tone of a steal releases two tons of CO_2: producing one tone of cement releases one tone of CO_2. But if you use wood you restore one tone of CO_2. Therefore, basically, by replacing cement and steel with wood you avoid emission of two tons of CO_2 and have a real multiple effect.

In the last 30 years, there has been a big revolution in terms of wood construction in Switzerland, for example, new technologies called cross-laminated timber give no limitations in building. This revolution will have environmental impact. It also makes construction sector more circular by avoiding waste while demolition because it is possible to deconstruct building and use materials for other buildings or purposes.

The textile sector is also important: now there is an amount of 80 million tons of textile globally. It is expected that in 3 decades there will be about 250 million tons. But it will not be able to increase the production of cotton because its production requires a lot of water. Polyester is not an alternative too. So, there is a market niche for a wood-based fiber. Now technologies allow producing the textile similar to cotton and in more environmentally friendly way.

Therefore, it can be seen from different perspectives that bioeconomy has a great potential to answer current and future global challenges.

Natalia Lukina mentioned that there is no a big difference between the concept of forest-based bioeconomy in members of European Union and Russia as well as in its interpretations.

In Russia the concept of forest-based bioeconomy includes following directions:

- Biodiversity and eco-system services;
- Non-wood products;
- Forest-based industry: bio-based products from wood, harvesting residues, wastes, cellulose, hemicellulose, lignin, extractives;
- Smart packaging: wood and fiber-based against plastics and other packaging materials, hygienic and healthcare products;
- Renewable energy solutions, bio-energy products.

For Russia development of bioeconomy means creation of new job opportunities in rural and industrial areas.

Preconditions for successful development of forest-based bioeconomy are forest resources abundance, smart technologies, sustainable management of forests, provision of ecosystem services, comprehensive value assessments of forest ecosystem services and trade-offs between them, objective analysis between the sustainability performance of biomass-based vs. fossil/mineral-based value chains, awareness in society of the limits and benefits of bioeconomy, vision and strategic actions, national strategies for bioeconomy development .

Natalia Lukina

Director, Centre for Forest Ecology and Productivity, Russian Academy of Sciences; Director, Scientific Council on Forests, Russian Academy of Sciences; TP "BioTech2030"

Russia has a great forest-based bioeconomy potential: it has huge forest resources which offer a multitude of ecosystem services. But there is no reliable assessment of dynamics of forests resources, services and trade-offs between them. There is no sustainable forest management in Russia, and an existing concept for intensification of forestry is not based on comprehensive analysis.

For successful forest-based bioeconomy development Russia needs: national strategy for bioeconomy development (taking into account the State Programme BIO-2020), structural reforms for development of bio-based industry, bioscience and biotechnologies, forest management based on knowledges and innovations, and international partnership.

Gala Mansurova as business community representative gave an illustration of business opportunities from experience that Huhtamaki has. It has been stated from the point that Russia nowadays uses maximum 20% all the resources that country has. But there is a space for action. Huhtamaki company is a good illustration for that.

The company produces ecological packaging, egg cartons, to pack and carry eggs. After the beginning 14 year ago as a start-up molded fiber company Huhtamaki now produces hundreds of millions molded fiber egg cartons a year. The Molded Fiber site started to work in Russian in 2002 from scratch next to a sister unit producing Food Service tableware and packs since 1994. So now the Molded Fiber business shows the result. The material is self-dissolvable in soil and gets composted in 12 weeks.

Now in Russia about 42 billion eggs used in the country but only 7 billion are packed into egg cartons made of different materials. Only 60% is molded fiber packs. Huhtamaki nowadays is already a leading player at the Russian and Finnish markets which is really important because the company exports value-added product, not the raw material.

The company spends a lot of efforts and funds in R&D and thinks about the future when the resources are limited. So the package made from grass has been created to broader the list of materials used for production. And this is something that everyone has to face. It is already a right time to thinking alternative materials.

Gala Mansurova

Executive Director, Huhtamaki Molded Fiber Russia

Talking about barriers **Nikolay Shmatkov** stressed that there is a difference between Russian and Finnish forests. A lot of (about 20%) forests in Russia are still in their wild state and could be referred as intact forest landscapes (IFLs). In Finland, forests are very much transformed to produce timber. Russia does not need to transform all forest area into a producing factory. The country should be proud that it has 255 million hectares of IFLs which are home of Amur tiger, immense biodiversity and native indigenous people. IFLs also preserve a lot of CO_2 if they are not logged. On fire they bring a lot of CO_2 back to the atmosphere.

Bioeconomy has an important role in protecting IFLs. An alternative approach to forest management should be used instead of doing business as usual in Russia which is timber mining nowadays in IFLs, not timber growing.

Russia does not invest a lot into growing timber in secondary, already developed forests which is a real problem. The key forest sector's players (mostly big pulp & paper companies) till now used to be more focused on using the natural forests instead of growing timber in secondary ones.

WWF made economical calculations on how much money have to be invested (in Russian conditions) in pre-commercial thinning in the young stands – about 500 EUR should be invested per hectare. If you invest 500 euros into intense thinning in young forest stands, you will see the returns only after ~40-50 years or more. But you will have a lot of small diameter wood from this intermediate logging and that is a huge potential for biochemistry, biofuels and for producing boards, etc. and may help to bring the costs of thinning down to make thinning much more appealing for companies.

Now there is a window of political opportunities at least on the level of the Ministry of the Natural Resources and Environment of Russia and at the level of the Federal Forestry Agency. There is a will to introduce intensive forest management model in Russia that has a different definition from which Europe has.

In addition, **Marc Palahi** commented on the key players and started from the numbers: in the Europe the bioeconomy turnover estimated to be 2 trillion per year and employment about 20 million. This includes the food sector, which is very important. If you remove food sector it will be a half. Making some rough calculations, considering the

potential of it in Russia it has only 10% equivalent.

Regarding the cooperation: research is very important. It will be number one priority, considering current complicated political context, while research is very neutral. It is important to build cooperation for a long term not only at the technological level but also with a view on the economic understanding of the market's potential which adds up to the global understanding of the bioeconomy.

The role of China plays in bioeconomy is also very important. It is going to be a major producer of almost everything on the major consumer market. China is planning more than a 100 of cities where the wood will be the main construction material and has a huge implication for the amount of biomass.

Skills are also a crucial factor due to the fact that basically nobody has the right skills to realize bioeconomy as an economic reality. Europe has technological base as the scheme hence it already exists. But the issue is that the understanding of the market. Business should understand the potential, impact and especially the role of the bioeconomy as a catalyzer and transformation of the economy to take action.

Looking to the future, in the next ten years people that are now 20-30 year will need to lead the business and consolidate this transition from the fossil-based economy to the circular bio-based economy. Therefore it is important to prepare these people to take the lead in the coming years through education and research.

Mikhail Beburov added that for many years foreign companies have been interested in biotechnologies but not Russian. Due to significant overproduction of grain over the past 3-4 years the situation has started to change and Russian companies started to demonstrate the interest in these technologies.

So far in Russia the effective mechanisms for biotechnologies implementation have not been formed. There is a strong need to organize a structured process for cooperation between key players.

Mikhail Beburov

Director, Research Institute for Genetics and Selection of Industrial Microorganisms; TP "BioTech2030"

The existing governmental program for developing industrial biotechnology was formed about 3 years ago. The idea was to create proposals that will help to identify key components and steps of the program. However the program cannot be implemented yet due to the requirement of established financial procedure and mechanisms, which are not created too.

Russian governmental authorities and business are working in parallel paths these days. The government mostly focused of creation of plans, foresights and roadmaps. Business, at the same time, creates plans that can be practically applied. For instance, the lysine production plant was constructed

without governmental support, which is important to note.

It is against this background that there is a need to create an organization which could coordinate all the efforts to implement bioeconomy in Russia and concentrate on feasible project. Joining efforts within an international council could contribute to the development of bioeconomy projects that can be implemented in Russia.

Gala Mansurova also added some points about the barriers. For business prospective, non-competitive prices of the raw materials is the first barrier. The second one is a lack of federal/tax support to business engaged in ecological goods production, tax support might play essential role. The third barrier is the limited access to natural recourses, gas.

Collection of fiber - the recovered paper - that company uses as a key raw material is a significant part of business. In recent two years Russia had a major devaluation of the ruble. Prevalent situation has provoked the collectors to earn money on fiber price. In this connection the export has increased heavily. The paper print houses have been closing due to the economy constrains. As a result, the price for raw material was 50% higher than the costs existing two years ago.

On the other hand, industrial collection is moving forward, albeit in a very slow way. House hold collection at the same time is missing totally – probably 80% of the produced waste, in the best way, is burned and brings some energy, but in the majority cases it is just buried somewhere.

From federal level point of view Russia is not moving towards ecology business support. Today the difference between utilization tax of paper packaging and plastic packaging per unit utilization tax is roughly 20% higher than for the same product made from plastic. That is because the tax is fixed per tonnage of finished goods. Plastic packs are half the weight of paper and molded fiber products, therefore from one ton of plastic you can make practically double more packages. This is a serious barrier to develop ecological mindset on a country level.

Richard Burger

Research & Innovation Counsellor; Head of Science & Technology and Other EU Policies Section, Delegation of the European Union to the Russian Federation

The problem of lacking gas as a resource seems to be not a typical for Russia but still exists in some places. Not every region and district has enough Gas Distribution Stations. For companies like Huhtamaki there is serious constrain to arrange more working places and new production to substitute plastic, much effort spent together with Moscow Region government, supporting the company to get the gas required for new lines . The company has to use all the possible ways to get this natural resource. This is a kind of barrier which should not stop business development in a country like Russia.

Nikolay Shmatkov also mentioned that for the country which is 47% covered by the forests it is ambitious to limit governmental influence on the forest management. It is very risky to delegate all the responsibilities for forest management to businesses.

The government should provide incentives for creative business people who want to move bioeconomy forward. There are flexible and no-cost mechanisms, for example, improvement of procurement policies. WWF Russia together with FSC are working to persuade the government to include some sustainability requirements into the public procurement policies.

Nikolay Shmatkov

Director, Forest Program, World Wide Fund for Nature Russia

Bureaucracy is also a barrier. Together with the Federal Forestry Agency, WWF discussed the forests which are growing in the abandoned agricultural lands. According to the satellite's images that about 30 - 70 million ha of the abandoned fields now are covered by the forests. But current law prevents any forestry and using wood which has been grown on agricultural land. That is why nobody can propose to buy these lands to the interested companies to grow timber on them.

There is also a problem with the absence of leadership on the governmental level. It is really important to have someone who is responsible to move biodiversity forward especially in the context that Russia is very top-down country.

Conclusion

As a result of the discussion, **Elena Kulikova** summarized and concluded that in the context of bioeconomy development, it is important to think from the very beginning on ensuring its sustainability and using specific measurement for that. Particular criteria and indicators are to be developed. They are existing and developing in the areas like forest management. But when the discussion goes to the broader sense everybody has to think in parallel about ensuring sustainability in regard to bioeconomy itself.

Bioeconomy is not a branch of economy it is a way of new thinking, including way of business thinking. Talking about mechanisms, it is very important to take into account governmental initiatives and role of authorities. Bioeconomy development is not only about political will, which is very important, but also about business initiatives, which help to develop the concept nowadays. There is a need of developing further the way of thinking and doing business. Europe and Russia that have a lot in common need to work closely on research and education in this area, Thus, for example, Masters' programs in bioeconomy could be jointly developed as well as mutual work with future leaders which is crucially important.

The debates raised very important

questions for European countries and Russia which are crucial for building strategic circular bio-based economy cooperation. It was the first mutual event between the European Forest Institute and the Moscow School of Management SKOLKOVO as well as the initial step towards the development of bioeconomy agenda and cooperation between the organizations. The event has laid basis for further mutual work and will be developed through international partnership.