



# Territorial resilience: EU experience for Russia

Spring semester, 2018-2019

Coordinator	<b>Olga Likhacheva</b>
Credits	2 ECTS (optional course), 28 in-class hours
Lecturers	<b>Viktar Kireyeu</b> (Erda RTE, The Netherlands / St.-Petersburg State University, Russia) <b>Olga Likhacheva</b> (Pskov State University, Russia) <b>Kalev Sepp</b> (Estonian University of Life Sciences, Estonia) <b>Anton Shkaruba</b> (Erda RTE, The Netherlands / Estonian University of Life Sciences, Estonia) <b>Tatiana Vasilieva</b> (Pskov State University, Russia)
Level	BSc
Host institution	<b>Pskov State University</b> , Faculty for Natural Sciences, Medical and Psychological Education
Course duration	December 10-17, 2018

## Summary

*This 2 ECTS course is a part of Jean Monnet module **European Agenda on Nature-Based Solutions and Re-Naturing Cities for Russia**. It focuses on non-urban areas – countryside, forests, wetlands, inland waters, and on management and governance aspects of their resilience through the development and maintenance of ecological networks, green infrastructure, cultural landscapes and nature conservation areas, though rehabilitation and restoration landscapes, ecosystems and their functions etc. The course refers to the EU policy framework and institutions created for the promotion of territorial resilience and nature-based solutions, and also policy, management and technical innovation developed in the EU countries and that can be considered for Russia. The course will specifically explore the legacies of an EU projects promoting biodiversity conservation in the Region of Pskov, and on good practices from neighbouring Estonia. In their final group course works the participants will develop scenarios and sustainability indicators for selected case study areas.*

## Target student audiences

Last year BSc students in geography and biology (majoring in environmental sciences)

## Prerequisites

Required courses (or equivalents):

- Governance of socio-ecological systems: EU policy framework and communication
- Economic Theory,
- Ecology,
- Spatial Analysis,
- Introduction to Computer Science or Information Technologies,
- Environmental Management,
- Environmental Law.





## Aims and objectives

The course on the territorial resilience addresses the following objectives of the EU Research and Innovation policy agenda for Nature-Based Solutions & Re-Naturing Cities (where they are not concerned with urban areas):

- Restoring degraded ecosystems
- Developing climate change adaptation and mitigation
- Improving risk management and resilience.

The course will cover EU policy and management aspects of these objectives, and discuss the opportunities for EU-Russia cooperation on the development of nature-based solutions, addressing them. The theme of the “territorial resilience” covers a broad range of EU policies and institutions, including its policies on biodiversity, climate, water management, food and energy security, green infrastructure, territorial planning, etc. Estonia demonstrates a great number of recognised best practices in the implementation of EU policies, and as long as it shares with the Pskov Region landscapes, watersheds and large lakes, it makes it an ideal model for replicating the best practices. The course will therefore discuss their replicability in Russia. Another aspect taken up by the course is related to transboundary cooperation opportunities with the EU under its cross-regional cooperation schemes and other funding mechanisms: quite a few funded activities related to territorial resilience in the Region of Pskov have been funded by the EU, and the course will discuss how to make most of their outcomes sustainable and how to boost further EU cooperation. Finally, in order to get an in-hand experience with EU NBS policies for territorial resilience, the students will be asked to develop a project application responding to a specific EU call. The explanations are based on the examples from the EU and, where applicable, reflect on options for Russia, in particular for Pskov Region in its transboundary context.

Recognising the progress many EU countries achieved in the development of green infrastructure and promotion of ecosystem services for more resilient cities, the course will discuss the replicability in of the best practices Russia. Another aspect taken up by the course is related to transboundary cooperation opportunities with the EU under its cross-regional cooperation schemes and other funding mechanisms: several funded activities related to promotion and development of urban green in the Region of Pskov have been funded by the EU, and the course will discuss how to make most of their outcomes and how to boost further EU cooperation. Finally, in order to get an in-hand experience with EU NBS policy and management context, the students will be asked to explore the legacies left by relevant EU projects in Pskov.

## General learning outcomes:

By the end of the course, successful students will:

- be aware of EU policies in relation to the territorial resilience
- understand the concepts of resilience, vulnerability & adaptation of socio-ecological systems, adaptive capacity and its determinants;
- be aware of EU climate policies and instruments of their implementation;
- be aware of EU biodiversity conservation policies, including the EU strategy on green infrastructure, and their implementation;
- understand the policy and management contexts of coastal resilience and relevant NBS (including the awareness of the specific issues in Estonia and Pskov Region);





- understand the policy and management contexts of multifunctional nature-based watershed management and ecosystem restoration, and relevant NBS (including the awareness of the specific issues in Estonia and Pskov Region);
- understand the policy and management contexts of NBS for increasing the sustainable use of matter and energy (including the awareness of the specific issues in Estonia and Pskov Region);
- understand the policy and management contexts of NBS for enhancing the insurance value of ecosystems (including the awareness of the specific issues in Estonia and Pskov Region);
- understand the policy and management contexts of carbon sequestration through nature-based solutions (including the awareness of the specific issues in Estonia and Pskov Region);
- be aware of assessment and modelling tools for the analysis of carbon sequestration by ecosystems;
- be able to understand the contents of calls for project proposals and to provide meaningful contribution to the development of a project application.

### Overview of sessions and teaching methods

The course will be using interactive and self-reflective methods of teaching and learning and, where possible, avoiding standing lectures and presentations. It will open with an extended introduction to relevant EU policies and issues, and introduction to vulnerability adaptation as a field of studies (lectures will be interrupted for quick group discussions aimed to put the specific EU issue or an example from the vulnerability of adaptation discussion into the Russian context). The second part of the course will discuss the specific policy and management issues with territorial resilience in Russia and the Region of Pskov, and analysing possible options using case studies in the EU. The students will also get in-hand analytical tools, such as Corine database, LPJ-Guess model, sustainability indicators and back-casting, which they will employ in order to propose territorial resilience scenarios for specific case-study locations in the Region of Pskov.

### Course workload

The table below summarizes course workload distribution:

Activities	Learning outcomes	Assessment	Estimated workload (hours)
<b>In-class activities</b>			
Lectures	Understanding theories, concepts, methodology and tools	Class participation	10
Moderated in-class discussions	Understanding various policy and management contexts and common problems in communication in environmental governance	Class participation and preparedness for discussions	10
In-class assignments	Understanding the principles of ecosystem modelling, data, interpretation of various policy and management contexts and common problems in communication in	Class participation and preparedness for assignments	8





environmental governance			
<b>Independent work</b>			
Group work: <ul style="list-style-type: none"> <li>- Contribution to the group case-study projects</li> <li>- Contribution to the preparation and delivery of individual presentation</li> <li>- Contribution to the web-application</li> </ul>	Ability to interpret NRM data, to analyze audience, and to use the concepts, tools, and methods for communicating information to NRM participants  Plan and develop a message to nature resource management (NRM) participants, be aware of information visualization tools and methods	Quality of group assignments and individual presentations	20
Course paper proposals	Ability to conceptualize and frame a environmental governance problem, find related literature and data, interpret data, use the concepts, tools and methods covered in the course, and draw policy/management relevant conclusions	Quality of paper proposals presentation and the paper proposals	20
Reading and discussion of assigned papers for seminars and preparation for lectures	Familiarity with and ability to critically and creatively discuss key concepts, tools and methods as presented in the literature	Class participation, creative and active contribution to discussion	4
<b>Total</b>			<b>72</b>

## Grading

The students' performance will be based on the following:

- Level of preparedness for participation in class discussions and seminars (10 %) (from 100 % for active participation and demonstrated familiarity with the course readings to 0 % for completely ignoring in-class discussions);
- Contribution to group assignments (10 %) (from 100% for clearly demonstrated input to 0 % for non-participation);
- Quality of group work outputs (50%)
  - +20% if done in readable English
  - -20% if done in unreadable Russian
- Quality of the individual presentations (30%)
  - +20% if done in comprehensible English
  - -20% if done in incomprehensible Russian

## Course schedule

Day	Time	Topic	Lecturer
March 18,	12:30-	- Guide to the course – purpose, objectives, learning	Anton Shkaruba,





Monday	14:00	outcomes, assignment and grading - Territorial resilience as an EU innovative agenda and policy toolset - Resilience: the concept and policy & management implications (video)	Olga Likhacheva, Tatiana Vasileva
	14:15-15:45	Resilience: a modelling perspective (video)	Anton Shkaruba
	16:00-17:30	Modelling of ecosystem vulnerability: LPJ-GUESS approach (lecture and a practical exercise)	Anton Shkaruba, Olga Likhacheva
March 19, Tuesday	12:30-14:00	European Landscape Convention – overview and implementation (video)	Kalev Sepp
	14:15-15:45	Sustainability indicators: the Bellagio Stamp approach	Anton Shkaruba, Olga Likhacheva
March 20, Wednesday	12:30-14:00	European Landscape Convention and spatial planning in Estonia: green network and designating valuable cultural landscapes (video)	Kalev Sepp
	14:15-15:45	Practical assignments: criteria for designating green network on base of the CORINE land-cover map. Defining criteria for designating cultural landscape in Russia	Kalev Sepp
March 22, Friday	12:30-14:00	Policy framework for the development of territorial resilience in Russia	Viktar Kireyeu, Olga Likhacheva, Nina Istomina, Tatiana Vasileva
March 23, Saturday	10:15-11:45	Modelling of ecosystem vulnerability: LPJ-GUESS approach (group consultations and preparations to reporting)	Olga Likhacheva
	12:30-14:00	Modelling of ecosystem vulnerability: LPJ-GUESS approach (reporting)	Olga Likhacheva
March 25, Monday	12:30-14:00	European technical assistance project addressing territorial resilience of Pskov Region – impact and sustainability	Olga Likhacheva, Viktar Kireyeu
	14:15-15:45	Territorial resilience case studies in the Region of Pskov – a back casting and scenario development exercise (introduction and supervised group work)	Viktar Kireyeu
March 26, Tuesday	14:15-15:45	Territorial resilience case studies in the Region of Pskov – a back casting and scenario development exercise (supervised in-class group work)	Viktar Kireyeu
March 27, Wednesday	14:15-15:45	Final seminar – reports on case studies	Viktar Kireyeu, Olga Likhacheva, Nina Istomina, Tatiana Vasileva

## Course assignment

*Led by Olga Likhacheva and Viktar Kireyeu*

The course assignment will be in a form of supervised group work, most of which will take place in-class. Research groups will analyse four case studies in region of Pskov, identify their current and future socio-ecological vulnerability, describe plausible futures, propose sustainability targets and indicators employing the Bellagio Stamp approach, and outline scenario pathways





using back-casting methodology. The plausible futures will be reflective of applicable cases in the EU, while the pathways will be aware of applicable policy and management tools.

The following case studies are proposed to explore (one per group):

1. Dachas / collective gardens in the Region: what is a resilient collective garden, and what are the plausible policy and management options?
2. Small islands of the Lake of Peipus in Russia and Estonia – options for sustainable future?
3. Sebez National Park as a transboundary protected area and a node of regional resilience
4. Transborder resilience of Setomaa

As a result of case study projects, research groups will prepare 20 min talks and submit paper proposals outlining paper context, objectives, methods, findings and key conclusions (up to 3000 characters).

**Applicable learning outcomes:**

- be aware of EU policies in relation to the territorial resilience
- understand the concepts of resilience, vulnerability & adaptation of socio-ecological systems, adaptive capacity and its determinants;
- be aware of EU climate policies and instruments of their implementation;
- be aware of EU biodiversity conservation policies, including the EU strategy on green infrastructure, and their implementation;
- understand the policy and management contexts of multifunctional nature-based watershed management and ecosystem restoration, and relevant NBS (including the awareness of the specific issues in Estonia and Pskov Region);
- understand the policy and management contexts of NBS for increasing the sustainable use of matter and energy (including the awareness of the specific issues in Estonia and Pskov Region);
- understand the policy and management contexts of NBS for enhancing the insurance value of ecosystems (including the awareness of the specific issues in Estonia and Pskov Region);
- understand the policy and management contexts of carbon sequestration through nature-based solutions (including the awareness of the specific issues in Estonia and Pskov Region).

## Literature

- Apitz, S.E., M. Elliott, M. Fountain, T.S. Galloway (2006). European environmental management: moving to an ecosystem approach. *Integr. Environ. Assess. Manag.*, 2 (2006), pp. 80–85
- CEEWEB (2013). *ECNC Enriching our Society through Natural Solutions: Why and How to Make Green Infrastructure Projects a Sustainable Answer for Ecological, Social and Economic Problems?* CEEWEB, Budapest.
- de Groot, R.S., R. Alkemade, L. Braat, L. Hein, L. Willemen (2010). Challenges in integrating the concept of ecosystem services and values in landscape planning, management and decision making. *Ecol. Complex.*, 7 (2010), pp. 260–272
- EEA. 2017. *Climate change, impacts and vulnerability in Europe 2016*, EEA Report 1/2017.
- European Commission (2013). *Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the*





- Regions: Green Infrastructure (GI) — Enhancing Europe's Natural Capital, COM (2013) 249 Final, European Commission, Brussels.
- Kikas, Tabet; Bunce, Robert Gerald Henry; Kull, Ain; Sepp, Kalev (2015). A review of the application of the high nature value concept in Estonia within the context of the European Union. *International Journal of Agricultural Resources, Governance and Ecology*, 11 (2), 143–157, 10.1504/IJARGE.2015.072902.
- Kopperoinen, L., P. Itkonen, J. Niemela (2014). Using expert knowledge in combining green infrastructure and ecosystem services in land use planning: an insight into a new place-based methodology. *Landsc. Ecol.*, 29, pp. 1361–1375
- Maes, J., S. Jacobs (2015). Nature-based solutions for Europe's sustainable development. *Conserv. Lett.* <http://dx.doi.org/10.1111/conl.12216>
- Naumann, S., M. Davis, T. Kaphengst, M. Pieterse, M. Rayment (2010). Design, implementation and cost elements of green infrastructure projects. Final Report to the European Commission, DG Environment, Contract: 577182.
- Palang, H.; Alumäe, H.; Printsman, A.; Rehema, M.; Sepp, K.; Sooväli-Sepping, H. (2011). Social landscape: ten years of planning valuable landscapes in Estonia. *Land Use Policy*, 28 (1), 19–25, 10.1016/j.landusepol.2010.04.004.
- Shkaruba, A., Likhacheva, O., Kireyeu, V., Vasileva, T. (2018). European environmental assistance to the region of Pskov in northwest Russia: sustainability, effectiveness and implications for environmental governance. *Journal of Environmental Policy & Planning*, 20:2, 236-251, DOI: 10.1080/1523908X.2017.1398639

