NOVIA
UNIVERSITY OF APPLIED SCIENCES

RESEARCH & DEVELOPMENT REPORT 2024

FACULTY OF BIOECONOMY

Heidi Barman-Geust (edit), Novia University of Applied Sciences, Research & Development Report 2024. Faculty of Bioeconomy

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HOW TO MAKE THE FUN AT WORK SEVENFOLD AND FIND TREASURE!

The year 2024 at the faculty of Bioeconomy has been a year of new beginnings for RDI. We started the year with teams and team leaders! During the pandemic all of Novia's RDI worked on missions for each faculty's RDI activities. Formulating the missions and synthesizing the key competences within each RDI-group was a journey for most of 2021 and 2022. As a result of this work, each faculty had been able to identify their core strengths. Moreover, these core strengths were all results from externally funded projects which meant there was an interest in what we were doing within society. In 2023 the Novias steering group decided the core areas of strengths would form teams and have designated team leaders. For the faculty of bioeconomy it meant we had no less than seven teams and in the beginning of 2024 seven team leaders embarked on a new journey. In this research report you can read about the start of the journey from the team leaders' perspective.

Restructuring in the workplace is a recurring phenomenon. Often it is seen as something of a bother by those who must adjust to the new order. The forming of core competence teams and appointing team leaders was probably greeted by the same feeling by many, and it is understandable. I think that at first glance the new structure was seen as yet another level added and maybe also as a primarily superficial one. But I dare say, a year into the experience we have everyone on board! Some reflections from the first year of team leadership from my perspective;

By getting responsibility we grow. I have enjoyed following the team leadership development from something with very little formal guidelines into a process that each team leader has made their own. The teams and team leadership reflect the competence and personality of each leader and together they form a superorganism.

Diversity is capital. Each team leader brings something unique to the group, and as studies on working life and productivity show, diversity is a game changer. The team leaders at Bioeconomy are seven and they are of five different nationalities. In terms of academic background, we have a biologist, a geographer, a few engineers turned social/environmental scientists, a few social scientists and an art historian. This is true wealth!

The journey might be different, but the goal is the same. All team leaders are brought together by a strong will to make the world a better place, to make a difference. This might sound like a cliché, but I think we need to allow ourselves to be idealistic and perhaps even naïve. When we feel something deeply, when we have a true commitment then we also stand firmly rooted. This is something I see in all our teams, competence and commitment and with it the joy of discovery and the openness to others.

Writing this at my desk at home, glancing at the February evening light I feel fortunate to have been at this place in this time. To experience hope through the work we all do together and to see something unexpected grow out of a small decision for change, is something that has made me grow personally and professionally. I have learned many things from the team leaders, they have all unknowingly given me small gems that I treasure. So, without further ado enjoy this year's research report and have a look at our team leaders! You just might run into them somewhere in 2025!

MARIANNE FRED

HEAD OF RDI BIOECONOMY

BLUE ECOSYSTEMS

JONNA ENGSTRÖM-ÖST

TEAM LEADER

How are plankton affected by a changing environment? Can zooplankton adapt to climate change? What about the pond mussel in our lakes - can it be used as food for humans? We research how different environmental changes, including climate change and eutrophication, affect our aquatic ecosystems, both in lake, sea, river and wetland. We mainly work with zooplankton and investigate their ecophysiology, reproductive success, stress levels, adaptation and fatty acids. The projects in the Blue Ecosystems team were funded in 2024 by Aktion Österbotten, the Swedish Cultural Foundation, the Waldemar von Frenckell Foundation, and the Research Council of Finland.

Projects:

- CARBONATE - Forskningsprojekt om hur kalktillsats i havsvatten påverkar kolsänkan samt plankton och bottenlevande musslor
- ARKTIS - Eco-physiological responses of plankton to spatial differences in warming and salinity in the Arctic
- WarmSea - project studying marine warming and ecosystem effects
- Dammussla - Utredning om akvakultur
- ZETA - Losing weight in marine biota?

Sammanfattning på svenska

Hur påverkas plankton av en förändrad miljö? Kan djurplankton anpassa sig till klimatförändringen? Hur mår dammusslan i våra sjöar – kan den användas som mat för människor? Vi forskar i hur olika miljöförändringar, bl.a. hur klimatförändring och övergödning påverkar våra vattenekosystem, både i sjö, hav, å samt våtmark. Vi jobbar främst med djurplankton och undersöker deras eko-fysiologi, reproduktionsframgång, stressnivåer, anpassning samt fettsyror. Projekten i Blue Ecosystems teamet var år 2024 finansierat av Aktion Österbotten, Svenska kulturfonden, Waldemar von Frenckells stiftelse, samt Finlands akademi.

CLIMATE CHANGE AND PLANKTON ECO-PHYSIOLOGY

During 2024 we collected field samples along a gradient from Husö Biological Station, and Archipelago Research Institute at Seili to Tvärminne Zoological Station to study eutrophication and warming effects on plankton energy content in zooplankton *in situ*. The question we wanted to answer was to see if plankton energy content decreases during eutrophication and heatwaves. Nayanadaree Banneheka (Novia) did her internship and thesis in the project during the summer season.

The 2019 huge mesocosm data set from Sète Marine Station, University of Montpellier, France was finally published in Plos One together with lead authors Soultana Zervoudaki and Maria Protopapa (Zervoudaki et al. 2024). The main results showed at high mortality and high stress in zooplankton during heatwave but also increased salinity due to evaporation caused stress in plankton.

Jonna Engström-Öst, Nayanadaree Banneheka and Andriana Koutsandrea taking a break by the Seili harbour.

Ella von Weissenberg defended her PhD thesis *Reproduction, oxidative stress biomarkers and fatty acid profiles reveal salinity- and warming-induced forcing on marine zooplankton* in University of Helsinki in May 2024. One of Ella's articles on field data of (von Weissenberg et al. 2024) presenting zooplankton community fatty acid profiles was published in Frontiers in Marine Science with focus on a main grazer *Limnocalanus* in the northern Baltic Sea. She showed that a main copepod in northern Baltic Sea that functions as important food for herring, can do dietary shifts, based on the fatty acid profiles. But warming and eutrophication pose threats to this important species. The paper is a collaboration between Novia and University of Helsinki.

Collaboration

- Anttila Katja, Mottola Giovanna, Tytti-Maria Uurasmaa, Univ. Turku (biomarkers, energy)
- Bednaršek Nina, Oregon State Univ., USA (pteropod ecology)
- Brennan Reid, GEOMAR-Kiel, Germany (gene expression, ocean acidification)
- Daase Malin, Norges Arktiske Univ., Norway (Arctic ecology)
- Feely Dick A, National Oceanic and Atmospheric Administration, USA (Pacific oceanography)
- Käkelä Reijo & team, Univ. Helsinki (fatty acid profiles)
- Mostajir Behzad, Vidussi Francesca, Univ. Montpellier, France (mesocosms)
- Sakellari Aikaterini, National & Kapodistrian Univ. Athens (alkalinity)
- Strandberg Ursula, Univ. Eastern Finland – Joensuu (fatty acid profiles)
- Virta Leena, Tvärminne Zoological Station (microphytobenthos ecology)
- Zervoudaki Soultana, Hellenic Centre for Marine Research, Greece (zooplankton ecology)

Stefan Heinänen, Anna-Karin Almén, Jonna Engström-Öst on Furuskär, Tvärminne archipelago, teaching Coastal Ecology I. Photo: Jonna Engström-Öst

JONNA ENGSTRÖM-ÖST
SPECIAL RESEARCHER

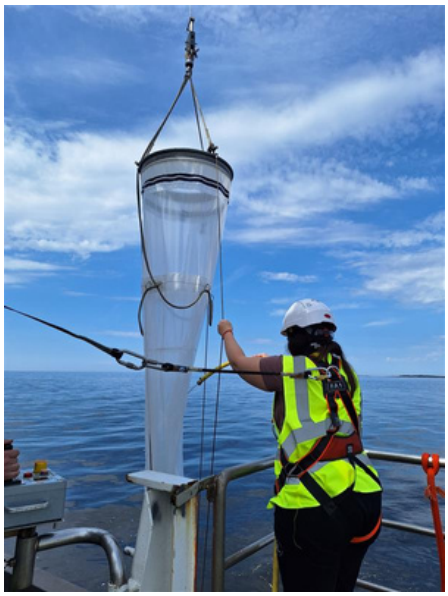
Sammanfattning på svenska

Under 2024 undersöktes hur övergödning och värme påverkar energiinnehållet i djurplankton vid flera forskningsstationer i Finland. Resultat från tidigare studier i Frankrike visade att värmeböljor och ökad salthalt orsakar stress hos plankton. Ella von Weissenberg disputerade på en avhandling om hur klimatförändringar påverkar plankton i Östersjön, där hon visade att viktiga arter hotas av uppvärmning och övergödning.

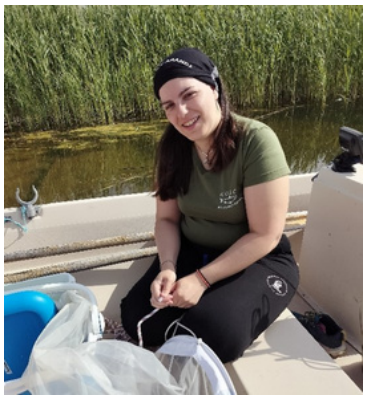
ECO-PHYSIOLOGICAL RESPONSES OF MARINE BIOTA TO WARMING WATERS AND OCEAN ACIDIFICATION - FOCUS ON BENTHIC-PELAGIC COUPLING

Last summer I joined a cruise along the Finnish coast onboard R/V Aranda together with intern Nayanadaree Banneheka. We collected a lot of samples off-shore for plankton fatty acids and energy content. The aim of my study was to look into the spring season fatty acid profile of zooplankton that is directly coupled to the food quality in water. The food quality is changing rapidly due to warming. Later in the summer I visited Tvärminne Zoological Station, Husö Biological Station and Archipelago Research Institute Seili to sample more along a eutrophication gradient. I analysed fatty acids in the laboratory of Ursula Strandberg in University of Eastern Finland. I attended also a summer school about climate change in Palma de Mallorca. In 2024, data from my MSc thesis was published in Plos One (Zervoudaki et al. 2024). My first paper, based on 2023 data from the Gulf of Finland, is currently under review in journal.

Collaborators:
Prof. Katja Anttila, Tytti-Maria Uurasmaa, University of Turku
Dr. Ursula Strandberg, University of Eastern Finland
Dr. Soultana Zervoudaki, Hellenic Centre for Marine Research



Andriana collecting zooplankton on R/V *Aranda* in spring 2024. Photo: Panu Hänninen



Andriana preparing for sampling at Husö Biological Station. Photo: Jonna Engström-Öst

ANDRIANA KOUTSANDREA
PHD STUDENT

Sammanfattning på svenska

I mitt doktorandarbete mäter jag fleromättade fettsyror, energiinnehåll samt respiration hos pelagiska organismer i kustnära förhållanden påverkade av olika stressfaktorer. Bl.a respiration är en viktig faktor som bidrar till havsförsurning. Jag skall också bedöma effekten av ökad alkalinitet i havet under globala uppvärmning på planktonsamhället i en kustnära miljö.

ZETA - LOSING WEIGHT IN MARINE BIOTA?

ZETA – Losing weight? Eco-physiology and transcriptomics reveal climate forcing on lipid profiles and adaptation in marine biota

I have started as a project researcher in a new project: *ZETA - Losing weight? Eco-physiology and transcriptomics reveal climate forcing on lipid profiles and adaptation in marine biota* in the end of 2024. My goal is to complete my PhD thesis as part of this project, under supervision of Jonna Engström-Öst, who is leading the ZETA-project and Katja Anttila from University of Turku, one of our collaborators.

My work focuses on studying the responses of marine organisms, particularly zooplankton, to seawater warming and acidification, resulting from burning fossil fuels. I observe shifts in communities, their physiology and genetic responses of zooplankton, as they adapt to future seawater conditions. I have a special interest in changes in the lipid content and profiles of zooplankton, because these changes significantly affect the entire marine food web. Zooplankton have a vital role in providing food rich in polyunsaturated fatty acids to fish, and other planktivores.

This project consists of three sub-projects. The work packages have different perspectives concerning adaptation of zooplankton to warming and acidification, and the geographical study location varies. I will investigate zooplankton naturally experiencing warming and low pH from Saronic Gulf, Greece with collaborators from the Hellenic Centre for Marine Research in Study I. In Study II, I use zooplankton from the Eastern Pacific Ocean. Study III is a large-scale mesocosm experiment about ocean alkalinity enhancement, to be run in Tvärminne Zoological Station in Hanko.
I am looking forward to starting the field and laboratory work for this exciting project.

Henna Yliluikki on a boat during preliminary sampling in Méthana, Greece. Photo: Jonna Engström-Öst

Collaborators:

Katja Anttila, University of Turku (biomarkers)

Reid Brennan, National Oceanic and Atmospheric Administration (gene expression)

Reijo Käkelä, University of Helsinki (fatty acids)

Soultana Zervoudaki, Hellenic Centre for Marine Research (zooplankton ecology)

Photo: Jonna Engström-Öst

Research Council of Finland

Svenska kulturfonden

Waldemar von Frenckells stiftelse

HENNA YLILUIKKI
PROJECT RESEARCHER

Sammanfattning på Svenska
Henna jobbar som projektforskare i ZETA - Losing weight? Eco-physiology and transcriptomics reveal climate forcing on lipid profiles and adaptation in marine biota projektet. Målsättningen är att skriva doktorsavhandlingen under handledning av Jonna Engström-Öst och Katja Anttila (Åbo universitet).

Forskningen fokuserar på hur marina organismer, särskilt djurplankton, reagerar på uppvärmningen av havsvattnet och försurningen som orsakas av förbränning av fossila bränslen. Henna undersöker förändringar i planktonsamhälle och deras fysiologiska samt genetiska anpassningar, med ett särskilt intresse för lipidinnehåll och -profiler, som är avgörande för marina näringsvävar. Projektet består av tre delprojekt. I studie I undersöks djurplankton från Saroniska bukten i Grekland i samarbete med Hellenic Centre for Marine Research. Studie II fokuserar på djurplankton från östra Stilla havet. Studie III är ett storskaligt mesokosmexperiment för att öka alkaliniteten i havet vid Tvärminne zoologiska station i Hangö.

THE DUCK MUSSEL PROJECT - A STUDY ON AQUACULTURE

The project is funded by the Coastal Action Group of Ostrobothnia, with funding from the European Maritime Fisheries and Aquaculture Fund (EHFVF). The aim is to investigate the potential uses of duck mussels, initially including both general and larger specimens. Duck mussels are effective filters – capable of filtering up to 40 liters of water per day – which could be beneficial for purifying aquatic environments. The key question is what potential uses these mussel have in the future. Could they be used as food for humans, or are there other applications? This is the central question the project seeks to answer.

The project has gathered information from research around the world. In Finland, mussel research is being carried out at the University of Jyväskylä. As part of his doctoral thesis, Ville Julkunen is testing artificial mussel recruitment in a laboratory setting, which provides valuable insights for the initial cultivation phase. An important step in determining the mussels' potential uses is analyzing their contents – specifically toxins and heavy metals.

Two sites were selected: Maxmo (Finnholmen) and Larsmosjön (Hästöskata). Samples were collected in early October, with 60 mussels taken from each site. These samples were sent for analysis, which included testing for heavy metals (As, Cd, Co, Cr, Cu, Hg, Mn, Ni, Pb, Zn). It would also be beneficial to analyze for organic pollutants (PCBs, TBTs, and dioxins) and E. coli bacteria, especially if the mussels are to be used as feed or food. Additionally, testing for perfluorinated compounds such as Perfluorooctanoic acid (PFOA) and Perfluorooctane sulfonic acid (PFOS) is recommended, along with the sum of Perfluorononanoic acid (PFNA), Perfluorodecanoic acid (PFDA), and Perfluoroundecanoic acid (PFUnDA). Nutrient analysis samples were also collected. Two different samples were taken from Finnholmen: one from mussels that had been cleaned for a shorter period and one from those exposed for a longer time. These will be sent for nutrient analysis.

To raise awareness about the project and duck mussels, the team participated in the Farmari Fair in Seinäjoki from July 4–6, 2024, where we shared a booth with other Novia projects. We featured an aquarium with live duck mussels, which attracted significant attention. Many visitors stopped by to discuss and share their experiences with duck mussels. The aquarium served as an engaging centerpiece — seeing live mussels in action drew people in, sparked curiosity, and encouraged conversation. Over the three days, the fair attracted more than 90,000 visitors.

Anita Storm and Jonas Harald collecting duck mussels in Ostrobothnia.

Later, the project shared a booth with other Novia projects during the Community Days in Kristinestad on July 10–11, 2024. Visitors to the event had the opportunity to observe pond mussels in an aquarium.

ANITA STORM
PROJECT LEADER

Medfinansieras av Europeiska unionen

Sammanfattning på svenska

Projektet Dammussla – en utredning om akvakultur finansieras av Europeiska havs- fiskeri- och vattenbruksfonden (EHFVF) via Kustaktionsgruppen i Österbotten. Målsättningen är att utreda hur och till vad man kan använda dammusslan. Musslan är en bra filtrerare av vatten, men kan den även användas till annat, t.ex. som mat för människor? Under år 2024 har fokus varit på att ta prover och analysera vad dammusslor innehåller. Provtagning för bl.a. tungmetaller och näringsämnen har gjorts. Dessutom har projektet deltagit i olika mässor för att sprida information om dammusslan. Projektet pågår till sommaren 2025.

ENERGY TRANSITION

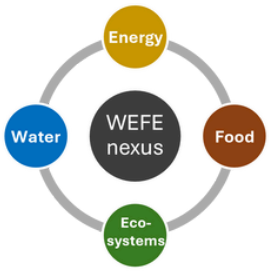
JORGE GOMEZ-PAREDES

TEAM LEADER

Energy is essential for all living organisms and Earth's processes and is indispensable for the functioning of our economies and modern societies. From fire to nuclear reactions, humanity has continuously harnessed various energy sources to maintain an expanding Socio-Economic Metabolism (SEM) and drive societal transformations that have shaped our current Social-Ecological Systems (SES). But while our energy systems enable continuous innovation, they are increasingly threatening environmental stability and human well-being by causing rising pollution, resource depletion, ecological degradation, and climate change. Therefore, to achieve a sustainable future, our energy systems must be transformed. Yet to implement an energy -and broader sustainability- transition, we must navigate the complexities of our SES.

At the Energy Transition Team at Novia UAS, we combine systems thinking (Complex Systems Modelling) and macroeconomic modelling (Input-Output Analysis) to understand our SES and underlying SEM and identify ways to generate changes toward sustainability. Our research focuses on:

- Water-Energy-Food-Ecosystems (WEFE) Nexus: An integrated framework to analyze the impacts of the energy transition on other critical sustainability factors (i.e., water, food, and biodiversity)
- Spillover Effects: The global consequences of implementing sustainability agendas (e.g., the Sustainable Development Goals -SDGs-, -including Goal 7[1]) within "national silos"
- Circular Economy: The prospects and promises of transforming "linear" economic processes into systems that minimize energy and material inputs, and emissions and waste outputs
- Rebound Effects: The social and economic adaptations to increased energy efficiency that may undermine energy and emissions reduction goals



In this way, we look at energy from a big perspective, with energy systems at the heart of SEM, and co-evolving with SES.

[1] SDG 7 calls for universal "access to affordable, reliable, sustainable and modern energy"

Highlights of the year

On July 5th, the team leader chaired the session “Nexus Analyses for Sustainability Transitions” at the 30th International Input-Output Association Conference organized by the United Nations Economic Commission for Latin America and the Caribbean (ECLAC), et al.

On September 19th, the team leader chaired the session “Energy Transitions within Complex Social-Ecological Systems and a Global Economy” at the 12th International Conference on Sustainable Development (ICSD) 2024

On October 30th the team leader co-hosted and participated in a panel discussion on “Biodiversity Threats from Climate Change and the Energy Transition” at the United Nations 16th Conference of the Parties (COP16) to the UN Convention on Biodiversity Diversity (CBD) – Green Zone side event.
On November 29th, the team leader met the Ambassador of South Africa Mr. Phumelele Stone Sizani at an event about South Africa’s vision for its 2025 G20 Presidency and shared with him a copy of a Policy Brief on international spillover effects published as a T20 Policy Brief -TF06- for the G20 meeting in Brazil

Sammanfattning på svenska
Energi är en förutsättning för liv, ekonomier och samhällen. Genom olika energikällor har mänskligheten lyckats upprätthålla en växande socioekonomisk metabolism (SEM) och driva på samhällsförändringar, vilket har format våra nuvarande social-ekologiska system (SES). De nuvarande energisystemen hotar dock nu miljöns stabilitet och människors välbefinnande genom föroreningar, resursutarmning, ekologisk nedbrytning och klimatförändringar. För att säkra en hållbar framtid måste vi omvandla dessa system samtidigt som vi navigerar genom komplexiteten i vårt SES. Inom teamet för Energiomställning använder vi systemtänkande och makroekonomisk modellering för att analysera SEM och SES och identifiera vägar till hållbarhet. Vår forskning fokuserar på:

- Vatten-energi-mat-ekosystem (WEFE) Nexus
- Spillover-effekter
- Cirkulär ekonomi
- Rebound-effekter

Genom detta tillvägagångssätt ser vi energisystem som centrala för SEM, som samutvecklas med SES och som är avgörande för att uppnå hållbarhet.

GEOSPATIAL SYSTEMS

AURÉLIE NOEL
TEAM LEADER

In today's world, most of us, every day, use what we call (geo)spatial data without even knowing it. Spatial data can tell you almost anything you want to know about any location you like; and that information is crucial to act efficiently. Since the world around us is in constant change, spatial data bring a steady and reliable foundation on which flexible solutions are consistently built, always adjusted and geared towards resilience.

At Novia, we understand the importance of spatial data to make sound and sustainable decisions and to find solutions to pressing issues. Our team uses geo-informatics to assess and develop those transformative spatial solutions for the natural and social environments to implement further integrated projects. Working with geospatial systems is the basis to identify connections, networks or structure that are thriving or not, and thus promote preservation of drastic shift based on evidence. Our competences encompass versatile methods like satellite and drone remote sensing, environmental monitoring, field data collection planning, conventional, web and mobile mapping, spatial analysis (using ArcGIS Pro, QGIS and R), habitat/species distribution modelling. Furthermore, our transdisciplinary profile is based on mixed methods research design allowing us for a comprehensive and participatory approach to develop collaboration across practices.

What drives our field of expertise today lies in three interconnected pillars: digitalization, data collection and legislation. Spatial data are now collected by anyone, from anywhere, in real time and shared to the world via cloud services almost instantaneously. This created a plethora of new opportunities such as virtual reality and the digital twins that is recreating an entire space from the comfort of your chair, automation of tasks with artificial intelligence or location-based services offering personal experiences on the spot when you want it where you want it. But also challenges linked to privacy and ethical guidelines, as we now can be anywhere and see everything through others that share anything, all the time, should we really?

After one year building and leading a team with a diverse background, we are ready to tackle those ever-evolving situations while coordinating multidisciplinary projects, maintaining the skills in current curricula, connecting relevant actors and teaching spatial competence. Our core tool is the SCC – Spatial Competence Centre is currently under development.

Projects:

- Spatial Competence Centre
- TFK: The Finland-Zanzibar Marine Spatial Planning for a Sustainable Blue Economy
- GeoICT4E: Social innovations in Geo-ICT education at Tanzanian HEIs for improved employability
- Seabirds and offshore wind power

Sammanfattning på svenska

I dagens samhälle använder de flesta av oss geografisk (spatiell) data dagligen utan att tänka på det. Denna typ av data är avgörande för att fatta effektiva beslut, särskilt i en värld som ständigt förändras. På Novia används geoinformatik för att utveckla hållbara lösningar för både natur- och samhällsmiljöer. Genom att analysera spatiell data kan man identifiera mönster och samband som hjälper till att bevara eller förändra miljöer på ett evidensbaserat sätt.

Novias expertis omfattar metoder som satellit- och drönarbaserad fjärranalys, miljöövervakning, datainsamling i fält, kartläggning via web och mobil, samt rumslig analys med verktyg som ArcGIS Pro, QGIS och R. Vi arbetar tvärvetenskapligt och inkluderar deltagande metoder för att främja samarbete mellan olika aktörer.

Tre centrala faktorer driver området framåt: digitalisering, datainsamling och lagstiftning. Spatiell data kan nu samlas in i realtid av vem som helst och delas globalt, vilket skapar nya möjligheter som digitala tvillingar, AI-automation och platsbaserade tjänster – men också utmaningar kring integritet och etik.

Efter ett års arbete med att bygga ett mångsidigt team är Novia redo att hantera dessa förändringar genom att leda projekt, utbilda i spatiell kompetens och utveckla sitt verktyg: Spatial Competence Centre (SCC).

SPATIAL COMPETENCE CENTRE

In 2023, Novia identified the need to build permanent spatial data literacy and awareness to achieve its goals of bringing transformative approaches within its community to build resilience; the Spatial Competence Centre (SCC) was initiated as an internal project to fill this need. The SCC has been designed as a transdisciplinary centre serving multiple purposes: mentoring, support and data broker and allowing its perfect integration into Novia diverse portfolio, whether it is bioeconomy (Red-throated divers project), business (CNE 2.0 project) or culture (Bothnia Business Heritage Network project). In 2024, the SCC has officially been launched and currently in the advertisement phase (Fig. 1).

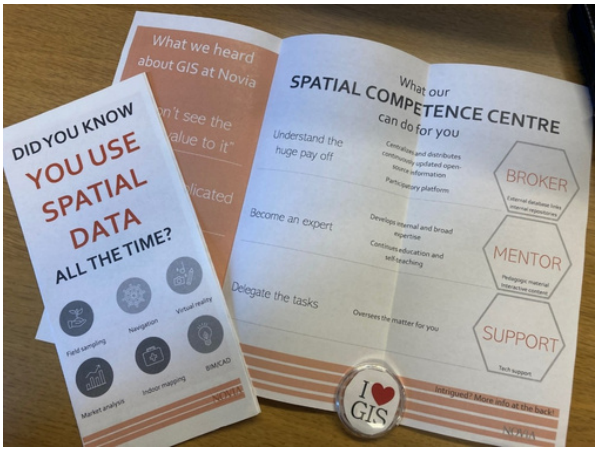
Fig. 1 – SCC development timeline

The advertising took several forms. Online presence has been designed with the edition of the project webpage, its intro video, and its social network presence via its Facebook page. Live networking was also crucial with the creation of a brochure (Fig. 2), a presentation at conferences (Mediated geographies presentation about Maps as media for open representation of perception), the creation of new collaboration notably with University of Highlands and Islands (CIRCUS project) or reactivation of previous connections to partners such as University of Turku (GeoICT project) or Aalto University (Geoinformatics Days). The SCC became a member of the Geographical Society of Finland and the European Geosciences Union.

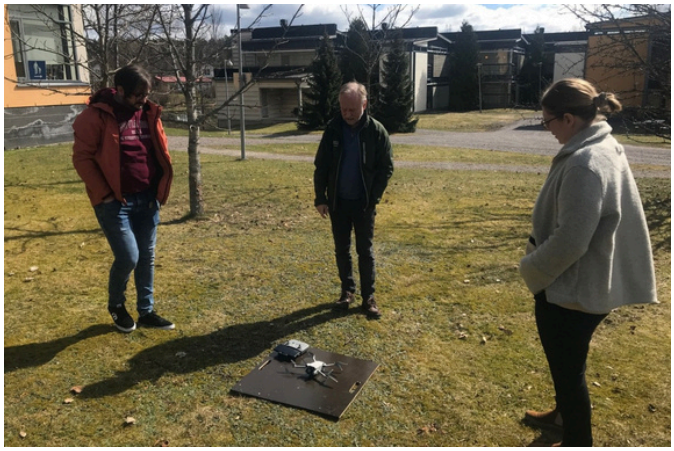
Throughout all year, the SCC has been involved on the research side of Novia with internal collaborations (Dammussla project), partnership in projects (Slätbergets naturstig project) and inclusions in proposals. SCC has also been present on the educational side of Novia with a guest lecturing for Sustainable Coastal Management, an open course (GIS in bioeconomy), 2 trainings with drone (Fig. 3) and mentoring (NyIAF project).

Diverse actors use geospatial technologies daily at Novia and those technologies are also already present in small places in curricula in Sustainable Coastal Management master program, Natural Resource Management, Agrologist, Forestry and Land survey Engineering bachelors. Showing great interest in geospatial and leaving plenty of space to maintain and grow.

Much work remains, notably on delivering educational material and on the third facet of the SCC with data handling and repositories – we will see what 2025 brings.



SCC Marketing material. Photo: Aurelie Noel


Getting acquainted with drones. Photo: Aurelie Noel

AURÉLIE NOEL
PROJECT LEADER

Summanfattning på svenska

Under år 2023 identifierade Novia behovet av att bygga upp kunskap och medvetenhet om spatiell data för att uppnå sina mål med att skapa metoder för omställning inom samhället för att bygga resiliens. Spatial Competence Center (SCC) initierades som ett internt projekt för att fylla detta behov. SCC har utformats som ett tvärvetenskapligt center som tjänar flera syften: mentorskap, stöd och datamäklare, vilket möjliggör en perfekt integration i Novias mångsidiga portfölj.

År 2024 har SCC officiellt lanserats och befinner sig för närvarande i marknadsföringsfasen. Internt har SCC varit involverat i flera projekt inom bioekonomi, företagsekonomi och kultur, och även i viss undervisning och mentorskap. Den externa marknadsföringen har tagit olika former: online och personligen via konferenser, samarbeten eller nya medlemskap. SCC fortsätter på samma väg med målet att vara i full drift år 2025.

GEOICT-4E - GEOSPATIAL TOOLS AND METHODS FOR SUSTAINABILITY AND EMPLOYABILITY

A consortium consisting of Novia UAS, University of Turku and Turku UAS, participated in a the project that aimed at strengthening the geospatial skills for students in Tanzanian universities. The project received funding from HEI ICI, a programme financed by the Ministry of Foreign Affairs and administered by the Finnish National Agency for Education in 2020.

The 4 year project, named GeoICT4e, aimed at improving entrepreneurial skills for university students in five Tanzanian universities, skills related to geospatial sciences (GIS) and to sustainability in a broad sense.

University of Turku has previously implemented two similar HEI ICI projects in Tanzania, then aiming at developing the infrastructure at the universities such as GIS labs, as well as training the university staff in geospatial matters. This project took a step closer to the society as it built on a learning method that we call MCL, Multi-Competence Learning, and was implemented through so called challenge campaigns, where students solved multi-faceted problems in a real-world setting.

The project consisted of several themes, the most important being climate change and its implications, geospatial technologies and ICT, innovation and entrepreneurship and natural resources management. Novia's input was channeled through the Faculty of Bioeconomy, which means that our main focus was on natural resources management and sustainable coastal management issues, but we will also took part in development and testing of the MCL method and other activities during the project.

Visit to Ministry of Blue Economy, Zanzibar, Tanzania, in February 2024. Photo: Romi Rancken

The project ended in August 2024. In February a high-level seminar and excursion was organised in Tanzania, in both Dar-es-Salaam and Zanzibar, where also Novias president Örjan Andersson and vice-president Eva Sandberg-Kilpi participated.
In May an early June, a group of lecturers from the participating Tanzanian universities visited Finland for two weeks, including Raseborg, where future cooperation were discussed. The project also organised a final seminar in Turku on June 5th, where the results of the project were presented.

From Novia's point of view, the project has given new insights into educational, international collaboration with developing countries and a strengthened connection to the two Finnish partner universities. During the project, another project, with TFK (Team Finland Knowledge) funding, was established between Novia and partners in Zanzibar, and an application for an Erasmus project related to Marine Spatial Planning with University of Turku, Dutch and Zanzibarian actors will be made in early 2025.

The MCL concept and its possible application in a localised form at Novias campus in Raseborg is also under further study. Novia will also participate in updating the website DIDAIHUB, hosted by University of Turku. The website contains results and practices from the GeoICT4e and other projects.

ROMI RANCKEN
PROJECT LEADER

Summanfattning på svenska

Projektet GeoICT4e avslutades i august 2024. Projektet strävade efter att förbättra entreprenöriellt kunnande hos studerande inom branscherna för GIS och hållbar utveckling vid fem universitet i Tanzania.

Universitetssektorn i Tanzania växer i snabb takt och miljoner utexaminerade förväntas komma in i arbetslivet under de kommande åren. Tidigare generationer har kunnat förlita sig på en karriär som tjänsteman inom offentliga sektorn, men nu behöver studerande utveckla färdigheter som gör dem attraktiva på arbetsmarknaden.

Hållbar utveckling, klimatförändringen och dess konsekvenser genomsyrade projektet. Teman som har lyfts fram är bland annat geospatial teknik och ICT, innovation och entreprenörskap samt förvaltning av naturresurser.

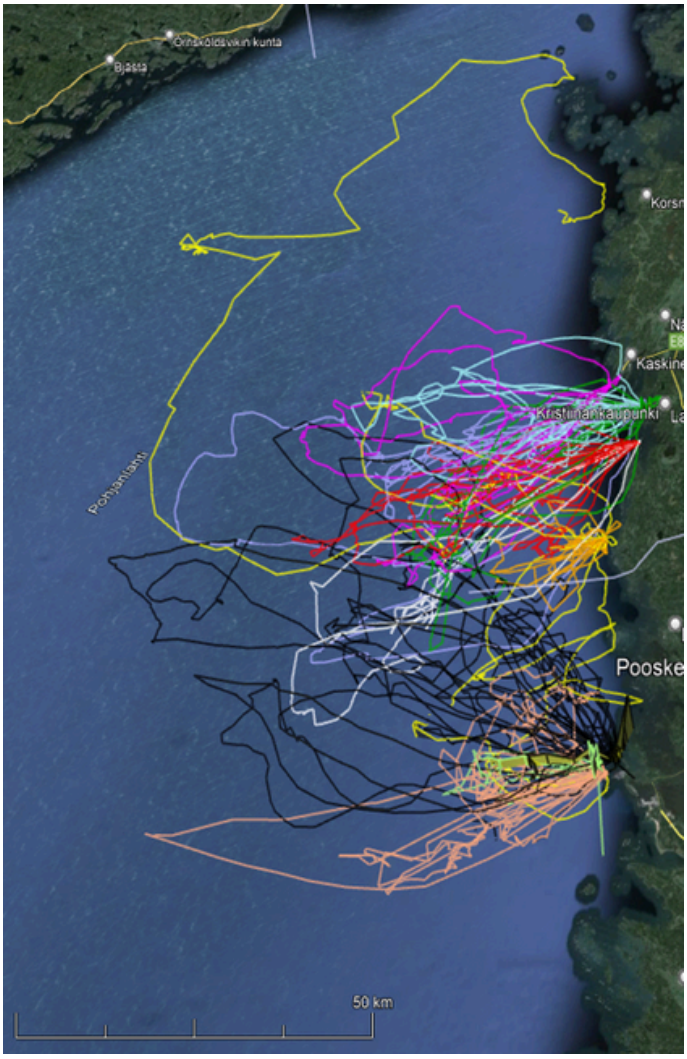
Inom projektet fokuserade Yrkeshögskolan Novia på kunskaper om förvaltning av naturresurser samt hållbar kustförvaltning.

SPACE USE OF SEABIRDS AND LARGE-SCALE OFFSHORE WIND POWER PRODUCTION

The goal of the project is to investigate how the space use of seabirds overlaps with current offshore wind power projects. To investigate this, we during 2024 equipped 22 lesser black-backed gulls with GPS transmitters in breeding colonies on the Finnish west coast located next to current wind energy project areas. Based on data delivered by the transmitters it is possible to investigate how seabirds equipped with transmitters are spatially and temporally exposed to the areas intended for energy production. Our overall goal is to strengthen ecological considerations related to the expansion of offshore wind power in Finland. Understanding the movement patterns of species vulnerable to wind energy is a first step to identify potential conflicts and thus contributes to reducing the impact on marine ecosystems.

Collaborators
·Teemu Lehtiniemi, Aki Arkiomaa (BirdLife Finland)
·Kimmo Nuotio, Matti Sillanpää (Porin LTY)
·Hyötytuuli

A female lesser black-backed gull has been caught and equipped with a GPS-tracker enabling follow-up of her movements when she forages over the seascape. Kristinestad 2024. Photo: Patrik Byholm



Movement patterns of 11 lesser black-backed gulls on the Finnish west coast during the first week in June 2024.

Svenska kulturfonden

PATRIK BYHOLM
RESEARCHER

Sammanfattning på svenska

Projektets mål är att utreda hur havsfåglars områdesanvändning överlappar med aktuella havsbaserade vindkraftsprojekt. Vårt övergripande mål är att stärka ekologiska hänsyn i samband med utbyggnaden av vindkraft till havs i Finland. Att förstå rörelsemönstren för arter som är sårbara för vindenergi är ett första steg för att identifiera potentiella konflikter och på så sätt bidra till att minska påverkan på marina ekosystem.

GREEN ECOSYSTEMS

JOSHUA FINCH

TEAM LEADER

All our Teams at Novia are a reflection of the expertise and background of their respective Team Leaders. The Green Ecosystem Services Team is no different than any of the others: with such rich focal areas, there are many directions any of these teams could choose to excel at. With ours, I have chosen to focus on establishing connections within Novia as well as externally across the EU.

The theme that I bring to the table in each of these conversations is a lot different than the emphasis ecosystem services are often given in high level policy discussions or in the emerging green financial markets. Ecosystem services are often portrayed as something so intangible that they can only bring benefits when they are quantified & monitored by specialists and eventually monetized in a new market. While this is an important emerging possibility to ascribe financial value to these critical functions of our ecosystem, we also understand that these services have been at work for all evolutionary time. Things that work that long have tremendous intrinsic value.

It should not be surprising, then, that we believe that ecosystem services provide real, tangible value, now, to those who learn to both see and strengthen their function. We do not need to wait for third parties operating to tell us that they suddenly have worth. More than half of the battle is in getting us to see what is taking place all around us, all the time. A holistic approach to system function is necessary for long term sustainability and regeneration of degraded ecosystems. We can get started now, while the markets find their feet, by taking proactive measures to ensure that the impact of our actions is in sync (as far as possible) with ecosystem health.

An organic intercrop of wheat and broad beans outside of Toulouse, France. This is a crop association that works particularly well for organic agriculture and can be harvested together. The farm has just planted silvoarable tree lines into their fields as well. Almost all of the production is used in the farm's on-site brewery. France, 2024. EU CAP Network. Photo: Joshua Finch

To that end, while we have participated in two separate Horizon Europe applications with an agricultural emphasis. Although neither of the applications were successful, the intense work required to put them together and participate as a full partner in the consortia has led to enduring ties to all manner of professionals across the EU who share our passion for working with nature.

I also participated in the EU CAP Network Focus Group on “Crop Associations.” Here, the emphasis on what ecosystem services are already doing and how we can begin to tell stories about them – and their relationship to practical things like farming – was able to shine in the co-authorship of two of the group’s four publications. Ideas from our team helped spur clearer ways of discussing crop associations and help newcomers find what they are looking for.

In addition, plans are afoot to simultaneously improve water quality and upcycle polluting fertilizers, have neared completion and gained additional cooperation from colleagues.

Ultimately, even if ecosystem services begin to be valued and paid for in a fair manner, it will be up to farmers, foresters, landowners, and citizens who work with the land to put into practice management styles and holistic processes to ensure that these outcomes are realized. That is why we focus on getting everyday people to see what is already occurring and placing them in a position to bolster these ancient and fundamental outcomes of ecosystem function.

Projects:

- Agroforestry i Nyland
- Humlor

Summanfattning på svenska

Teamet för gröna ekosystemtjänster på Novia fokuserar på att bygga kontakter inom Novia och i hela EU, och betonar ett holistiskt synsätt på ekosystemtjänster utöver deras finansiella värdering. Medan marknaderna i allt högre grad kvantifierar och omvandlar dessa tjänster till pengar, lyfter teamet fram deras inneboende och omedelbara värde och uppmuntrar till proaktiva åtgärder för hållbarhet och ekosystemförnyelse.

Vi deltar bland annat i ansökningar till Horizon Europe, samarbetar med yrkesverksamma inom EU, bidrar till EU CAP Network Focus Group on ”Crop Associations” och utvecklar projekt för att förbättra vattenkvaliteten och återanvända gödselmedel. I slutändan syftar vi till att ge jordbrukare, skogsbrukare och markägare möjlighet att erkänna och förbättra ekosystemfunktioner för långsiktig hållbarhet.

AGROFORESTRY IN NYLAND

Expanding Horizons
After the conclusion of the Lill-Nägels Agroforestry Pilot Project (2023), we increased the scope of our ambition for the next project. Initiating a next-generation agroforestry system in Kirkkonummi allowed us to interact with a growing number of people interested in agroforestry. From those conversations it became clear that a situation has arisen in which farmers are not necessarily acting due to a lack of perceived support for the concept, while at the same time, policy makers are hesitant to promote agroforestry when there is a lack of working domestic examples.

In response to this, we decided to create a new project – Agroforestry in Nyland (2024-2026) – which brings farmers together, leveraging the creative power of teamwork, to create thorough case studies of agroforestry practices for their farms. We set a target of ten farms completing case studies from across Nyland as our top objective. By joining our project, the farmers would receive targeted support and a detailed roadmap for how to do such a study.

The relatively uniform outputs from this work would allow us to bring something in black-and-white to the large community of professionals supporting the work of farmers – advisors, policy makers, and NGO's working to promote sustainable agriculture. With the case studies and the teams, we would be supporting the emergence of a community of practice that could potentially be used to advocate for broader support.

Finally, the project also continues the work to develop the site in Kirkkonummi. These next three years are the critical window for us to employ adaptive management, accelerating the positive changes that have begun in the soil and above ground. We intend see the first fruits from our target cash crop species as well as phase out the garlic cash crop in the understory. As the system moves into production, we will increase interaction with the local community – engaging them in citizen science to help us document the yields across each productive perennial individually. This is a big task, but we look forward to high quality data that will help us determine, in the long run, whether the polycultural design of the tree lines was efficacious or not.

Agroforestry i Nyland

WP 1: Agroforestry Design Teams

Our first Agroforestry Design Team gathered six farms in just a few weeks of opening registration in February. With so much interest, we decided to close registration to keep the first group tight knit. This would provide leeway for the project to develop the materials necessary without an enormous amount of pressure. After all, the project had just started and needed to make much of the plans and templates from scratch. The plan is to open another Agroforestry Design Team in early 2025, incorporating feedback from the first team's experience. Over the course of the spring and summer of 2024, the first team began observing their farm from an agroforestry perspective and gathering information about what kinds of agroforestry they would find most interesting. When autumn came around, we were poised to begin the often overlooked but crucial step of setting out clearly defined goals for both the farm and agroforestry's integration with their farm vision. As winter has progressed, farmers have been analyzing their farms from multiple perspectives and spatial resolutions to ensure that the final design phase brings them a system that is in alignment with their context.

WP 2: Advisors and policy

With the main emphasis in year one on creating material and interacting with farmers, the second work package necessarily took a back seat. After all, we wish to advocate for agroforestry with farmer's experiences and include fresh ideas backed by some information, even if it is not data from existing systems and is drawn from models. Still, we took the time to reach out to registered agroforestry consultants in Finland to discuss how they saw the potential for these systems. Our goal to integrate them into the Agroforestry Design Team process as observers was not very successful, but we did find that our project aims were going to be useful for their work in the long term. In the meantime, the project leader volunteered to take part in the steering group for the informal Finnish Agroforestry Network which was established in 2019 with the Baltic Sea Action Group. Through this role, the project would have a finger on the pulse of the Finnish agroforestry community and be aware of proceedings.

Agroforestry Design Team 1 members attend a silvopasture workshop in Loviisa. Photo:Joshua Finch

WP 3: Lill-Nägels Agroforestry Pilot Project

Twenty twenty-four was a big year for the Lill-Nägels Agroforestry Pilot Project. The system had been initiated in summer of 2022 and mostly planted out in 2023. However, both years were beset by serious droughts which prevented a lot of biological restoration: the goals of the project hinge around promoting biodiverse communities of organisms to begin restoring soil function and plant production, so without adequate rainfall it was difficult to make more progress than establishing a foothold. For 2024, we were excited to see how many trees would overwinter and survive the ravages of root eating rodents as well as brave the cold temperatures.

Spring arrived very late in 2024, with a large snowfall at the very end of April delaying important work in the field. Yet, when the snow finally melted, the management could begin in earnest. Hard work was put in the year before to remove many of the problematic weeds and this effort paid off by saving many hours of labor caring for the second round of garlic in the successional system. Given the self-imposed limits to fertilization, we did make some progress improving the nutritional profile of the plant sap in the garlic and were met with a much higher survival rate than the year before. Still, the harvest was ultimately unsuccessful from a production-only perspective.

This, among other factors, led the project manager to reconsider the very strict limits on interfering with the soil's chemistry. With consultation from the steering committee and farm owner, Rikard Korkman, we decided that we would begin using more biostimulants, inoculants, and investigate applying calcium to the soil to help improve soil structure. From our sap analysis, we could see that calcium was not always an issue with the nutritional profile, but the flocculating effect of calcium on clay soil was being missed out on. Flocculation in this regard refers to calcium's ability to open the pore space between clay particles, allowing gas exchange and more biological activity.

Project leader inspecting tree systems at Lill-Nägels in June. Photo: Multifoto Ab Oy / Novia.

The negative effects of compaction have been accentuated by the fact that droughts have reduced the ability of us to establish good cover crops, which can begin to build soil aggregates. Due to this, neither the first nor the second garlic crops (2023 and 2024) benefited from the planned soil improving mechanisms of diverse cover crops, inoculated with beneficial biology (including fungi) in the year before. So without any biological remediation of the soil it is little wonder that neither of the garlic crops thus far have thrived.

By the time autumn rolled around at it was time to plant the third round of garlic, we noticed that the soil had improved significantly under the cover crops that a more mild 2024 season had helped us grow. Significant aggregation was developing in the top 8 cm or so of some of the tree lines and into this much improved soil condition we planted our own self-saved seed garlic. Garlic harvested in July 2025 will be the first to actually benefit from the initial plan of the system!

I should also note that the trees and shrubs – with the noticeable exception of Ribes rubrum – performed quite well over the summer and put on decent growth despite poor soil health. We look forward to seeing how many plants survive a very different winter that has set in over 2024-2025 and know that the trees are likely ready to put on significant growth in 2025 because of the progress we have only just started to see from cover cropping in 2024.

Lastly, the alleys and margins were largely left alone as we did not have sufficient soil moisture to establish a cover crop in the spring or early summer. By autumn, the grass roots were still too thick in the autumn to bode well for an autumn – winter cover crop, so we have been debating ways to deal with this weed pressure before planting again in 2025.

Second Year Plans

Heading into the second and middle year of the project, we have a lot to look forward to. The project has gained a reputation amongst farmers, advisors, and even internationally through efforts to reach out to other agroforestry organizations. We will launch our second Agroforestry Design Team on the back of the first and are eager to share with a new group of potential agroforesters the insights we have gained in the last years. More field days will be organized for associations, businesses, NGOs, and the government to highlight the important development taking place in Nyland.

Project Partners

Agroforestry in Nyland is a 3-year development project aiming to lower the threshold for implementation of agroforestry practices in Uusimaa and Finland. The project is publicly funded by the EU Rural Development fund through Uusimaa's ELY-Keskus and privately by Novia University of Applied Sciences, Svenska kulturfonden, and Stiftelsen Finlandssvenska Jordfonden.

JOSHUA FINCH
PROJECT LEADER

Sammanfattning på svenska

Projektet Agroforestry in Nyland (2024-2026) bygger på tidigare initiativ för att främja agroforestry, genom att stödja jordbrukare i att utveckla fallstudier och främja en praxisgemenskap. Det första Agroforestry Design Team engagerade sex jordbrukare, med planer på ett andra team 2025. Projektet har också kontakt med rådgivare och beslutsfattare för att förespråka agroforestry samtidigt som fältarbetet fortsätter i Kyrkslätt.

Lill-Nägels Agroforestry pilotprojekt stod inför utmaningar på grund av torka men gjorde framsteg i markåterställning och trädtillväxt. Justeringar i markhanteringen, inklusive användning av biostimulanter och täckgrödor, förväntas förbättra framtida avkastning. När projektet nu går in på sitt andra år siktar vi på att öka den utåtriktade verksamheten, anordna fältdagar och stärka partnerskapen med jordbrukare, organisationer och beslutsfattare för att främja agroforestry i Finland.

LOCAL ECONOMY

ULRIKA DAHLBERG
TEAM LEADER

The first year of the team was characterized by trying to define what local economy means for us, and which type of future projects would fit in. The work in two ongoing natural fibres projects NorNa and F.E.L.T. WOOL was continued, the nettle project NyNässla and the nature trail project Slätbergets naturstig were started. Some initiatives to start projects and collaboration around themes such as integration in rural areas and social scientific research of local industry investments were made.

Currently, the team has an emphasis on natural fibers produced by small and medium-sized businesses in rural areas. In collaboration with local producers, we explore strategies to enhance the resilience and sustainability of value chains. By also engaging with local consumers, the aim is to raise awareness of the social and environmental impacts of their choices.

The research area covers aspects of rural development, diversity, active citizenship and entrepreneurship, nature-based solutions as well as non-food applications from agriculture. The development and research in the team can be done locally, for example as a case study, or as a collaboration between different regions where knowledge is transferred and data is compared and shared.

Projects:

- NorNa - Nordisk naturfiber i cirkulär ekonomi
- F.E.L.T. Wool - Future Emergence of Local Textiles based on Wool
- NyNässla
- Slätbergets naturstig

Sammanfattning på svenska

Under det första året fokuserade teamet på att definiera vad lokal ekonomi innebär och vilka framtida projekt som passar in. De fortsatte arbetet i projekten NorNa och F.E.L.T. WOOL, och startade nya initiativ som NyNässla och Slätbergets naturstig. Teamet arbetar nu främst med naturfibrer från små och medelstora företag på landsbygden, i syfte att stärka hållbara värdekedjor i samarbete med både producenter och konsumenter. Forskningsområdena inkluderar landsbygdsutveckling, mångfald, medborgarengagemang, entreprenörskap och naturbaserade lösningar. Arbetet sker både lokalt och i regionala samarbeten.

NORNA - NORDIC NATURAL FIBRES IN CIRCULAR ECONOMY

The project NorNa spreads information about natural fibers such as flax, nettle, hemp and wool, mostly through articles, seminars, and other events. Also, heritage grains with high straw yield, as well as natural grasslands and grazing are within the project's area of interest. NorNa aims to promote biodiversity in agricultural settings, diversify the farm production and bolster agricultural resilience against adverse weather conditions and rising input costs in the Uusimaa region in Finland. By establishing a versatile network, the project wishes to stimulate domestic natural fiber production, processing, and sales across various industries including textiles, gardening, and construction. Some highlights from the project year 2024 are presented below.

An event about Natural fibres in arts and design 14.2: The event was held at the art museum Chappe in Ekenäs. Three invited artists shared their experiences about natural materials, such as wool and flax, and explained how they work with them, from perspectives including beauty, finding your roots, and connecting with nature and agriculture. At the same time, it was possible to see the exhibition Craft Rituals, presenting the three Norns from Norse mythology, which were regarded as responsible for shaping the course of human destinies.

Trip to Germany 21-23.2: Three Finns, working with wool in different ways, got the fantastic opportunity to visit Bremen, get to know the city's history in the wool trade, and have a glimpse of the present situation. In the beginning of the 20th century cotton exchange was big in Bremen, and millions of bales were imported to Europe through the city's port. Wool was another commodity that moved in large quantities through the city, resulting in wool combing mills and spinneries being established in the area. Today only a few companies working with wool or cotton are left, but Bremen still has a renowned cotton and wool lab and hosts the International Cotton Conference. Places we visited were for example:

- The laboratory ICA Bremen, analyzing, cotton, wool and other natural fibres
- Bremer Wollservice GmbH, one of Europe's largest logistics centers with wool from all over the world.
- Nordwolle wool museum, located in the old industrial area in Delmenhorst.

The trip made of realize some perspectives on wool production. All of Finland's 80 000 sheep could for example fit in one Australian farm. We cannot compete against the big wool producing countries, offering the buyers large quantities of raw materials of an even quality at a good price. At the same time, we are lucky to have Finnsheep and another native breed, Kainuu Grey, with very soft and fine wool. It gives us possibilities to develop ethically produced products with an identity, and to develop local and national production chains. There are still consumers who are willing to pay more for that, but there is a need to collaborate on a regional and European level to sustain and boost wool production and processing on the continent. The participants of the trip were Project manager Ulrika Dahlberg, Sheep production advisor Kaie Ahlskog from ProAgria and sheep farmer/wool expert Anu Pentti.

Brochures about natural fibres werepublished in Finnish and Swedish in collaboration with Fiberhsed Finland. The brochure contains pictures of different fibre crops and a sheep, as well as pictures of the fibres. It is distributed as a printed version, but also available online https://www.novia.fi/fui/novias-publikationsserie/serie-p-produktioner The design of the brochure was further developed into a folder with fibre samples, which will be published in 2025.

Kaie Ahlskog, Christoph Behrens, Benedyct Nadolski and Anu Pentti walking around in Bremer Woll Service warehouse. Photo: Ulrika Dahlberg

Seminar about natural pastures
During NorNa:s seminar on natural pastures, the discussion went from biodiversity, products and how to tell customers about the business, to bureaucracy and the ignorance of decision-makers. Decisions on natural pastures are made in Brussels, and you have to understand and be able to handle this when working with natural pastures, said one of the speakers, Fredrik von Limburg-Stirum from Koskis farm. Patricia Wiklund from the project Next Generation Natural Pastures believes that we have gone from natural pastures as a central and important role in agriculture, via increased intensive agriculture to natural pasture management via bureaucracy. She hopes for completely new, economically and ecologically regenerative ways to keep natural pastures alive. The third speaker, Tommi Pohjakallio talked about raising native sheep on the Åland island, where also nature, silence and farmwork are things appreciated by the visitors and customers. The seminar was concluded with a visit to Fiskars village to see grazing Eastern Finnish cows from Bovik farm.

NorNa is funded by Henrik Nysténs fond, The Swedish Cultural Foundation in Finland.

ULRIKA DAHLBERG
PROJECT LEADER

Sammanfattning på svenska

Projektet NorNa – Nordisk naturfiber i cirkulär ekonomi sprider information om produktion och användning av naturfibrer, såsom lin, hampa nässla och fårull. Under året 2024 ordnades bland annat ett evenemang om naturfiber i konst och design på konstmuseet Chappe i Ekenäs. Projektledare Ulrika reste till Bremen i Tyskland tillsammans med två ullexperter för att bekanta sig med internationell ullhandel och analys av naturfibrer. Broschyrer om naturfibrer gavs ut tillsammans med Fibershed Finland och ett seminarium om naturbeten, där byråkrati, biodiversitet, bevarande av ursprungsraser, samt försäljning av produkter och hur man berättar om sin verksamhet för kunderna diskuterades. Seminariet avslutades med ett besök till Fiskars där Bovik gårds kor av Östfinsk lantras betade.

NYNÄSSLA - NETTLE FOR FIBRE AND FOOD IN UUSIMAA

Stinging nettle (*Urtica dioica*) has been accompanying humans in Europe for thousands of years, thriving in areas with moist soil and nutrients from human and animal waste. It has been a source of food, traditional medicine, fertilizer, and raw material for textiles. In the nineteenth century and the beginning of the twentieth century there has been commercial farming and textile manufacturing of nettle in Europe. In recent years, a resurgence of interest in nettle-based textiles has risen within the sustainable fashion industry.

Now, farming methods to get both fibres from the stalk and leaf biomass from the same harvest are being tried out in the NyNässla project at Västankvarn research farm in Ingå. The project aims to localize and bring production of raw materials closer to potential users, to create an interest in nettle farming, and to build networks and potential product development, together with processers of fibres and nettle leaves. NyNässla project combines previous nettle field studies from Finland and continental Europe. The project tests agronomic management steps and tries to test and create new information on farming practices so that as many new farmers as possible could take nettle into their own production systems, if possible. The harvest will be processed to food and fibres together with local businesses and other higher education institutions.

Samica Sadik sowing nettle. Photo: Ulrika Dahlberg

Ulrika Dahlberg doing field work. Photo: Samica Sadik

Project leader: Ulrika Dahlberg
Project expert: Samica Sadik
Project partner: Nylands Svenska Lantbrukssällskap rf.

NyNässla is funded by EAFRD/ Uusimaa's Centre for Economic Development, Transport, and the Environment (ELY-Keskus), The Swedish Cultural Foundation in Finland (Svenska kulturfonden) and Finlandssvenska Jordfonden.

ULRIKA DAHLBERG
PROJECT LEADER

Sammanfattning på svenska

I maj 2024 startade projektet NyNässla - Nässla för fiber och mat i Nyland. Projektet testar odlingsmetoder för nässla, för att få en kombinerad skörd av fiber från stjälken och bladbiomassa. Skörden förädlas i samarbete med lokala företag och andra högskolor. Ett av målen är att jordbrukare i regionen kan införa nässla i sin produktion. Under åren 2024-2026 odlas nässla på Västankvarn försöksgård på en 0,2 ha stor areal. Halva arealen såddes på våren, medan den andra sparades för höstsådd. Eftersom vårsådden inte lyckades, såddes hela arealen om i september. I november spreds fårull på en del av åkern, efter projektledarens observation att nässlan trivs i trädgården på områden där ull lagts ut. Förhoppningsvis finns det skörd att förädla de två följande åren.

F.E.L.T. WOOL - FUTURE EMERGENCE OF LOCAL TEXTILES BASED ON WOOL

Why is so much sheep wool thrown away? Could coarser wool not suitable for being worn next to skin be used for other things, like felted products? The Nordic-Baltic project F.E.L.T. WOOL – Future Emergence of Local Textiles based on WOOL is up for finding answers to these questions. In the beginning of June 2024, the project made its first study visit with representatives from all partner countries: Norway, Sweden, Finland, Estonia and Lithuania. This time the journey went through Vilnius to other Lithuanian towns and villages with wool processing companies and some sheep breeders. The visit was organized by the Lithuanian partner organization Viva Sol and their CEO, Lina Gumbrevičienė. The organization works to enhance the vitality in rural areas.

After the June project trip to Lithuania, a combined trip to Estonia and Finland was organized. In November a group of 13 people explored spinneries, felting studios, breeders of native sheep, and other wool related places. One of the places visited in Estonia was Villakamber, that produces duvet blankets using lightly felted wool, a complimentary business to yarn spinning. The spinning mill owns machinery to produce quilted duvets that are made by order, but also other quilted products like blankets for kids, pillowcases and soon some clothing. This production helps increase profitability by manufacturing products from the same raw material that is used for yarn spinning. In Finland, one must-see was Jämsä, which has been the home for have been up to seven factories making felted shoes. Now there are two left: Lahtiset Felt Factory and J. Alho. Both factories make felt shoes for both indoor and outdoor use, but also other products, such as bags.

Some conclusions from the trips are that there are many possibilities to promote the use of Nordic and Baltic wool, through handcrafters, artists, teachers and local businesses with a will to focus on native wool. There is also potential to mix wool with other natural fibres, such as flax and nettle, to get different qualities of yarn for different purposes.What it takes is innovative people who want to learn about the traditional materials and have the possibility to experiment - and the right machinery.

Lithuanian black headed sheep. Photo: Ulrika Dahlberg

Also, consumers need to be informed about the properties, environmental and local economic effects of natural fibres, to start choosing, for example mixes of natural fibres over mixes of natural and synthetic fibres or fully synthetic materials, when they are available.

In the production chain, for smaller manufacturers and handcrafters, it is possible to use wool from native breeds, or native wool in general, from different breeds. For the slightly larger manufacturers, it seems the availability of native wool of the right quality in larger amounts is the problem, as usual. But, as the largest wool mill in Estonia is using native wool in addition to imported, it is not impossible if there is a will to make an effort.
The project aims to gather information about felting and the usage of coarser wool, to learn about businesses and associations that work with local sheep breeds and wool. The goal is to share knowledge and create a network between Nordic and Baltic countries, to help businesses and local entrepreneurs find new ways to use wool that might otherwise be thrown away. Hopefully this can inspire individuals, industry and organizations to improve and reduce waste in the wool industry.

Project lead: Selbu Spinneri (NO)
Project partners: Novia UAS (FI), Rodens Ullbruk (SE), University of South-Eastern Norway (NO), Nordenfjeldske Fibershed (NO), Association Viva Sol (LT), University of Tartu Viljandi Culture Academy (EE).

Felted shoes at Lahtiset factory in Jämsä. Photo: Ulrika Dahlberg

Nordplus

ULRIKA DAHLBERG
PROJECT LEADER

Sammanfattning på svenska

I projektet F.E.L.T. WOOL söker svar på frågorna varför så mycket ull kastas bort i de nordiska och baltiska länderna och om den grövre ullen som inte lämpar sig för textilier kunde användas för andra ändamål, till exempel tovning, i högre grad. I juni gjorde projektet en studieresa till Litauen, där projektpartners från Finland, Sverige, Norge och estland bekantade sig med lokala fårraser, tovade produkter och industriell användning av ull. I november gjordes en kombinerad resa till Estland och Finland, för att besöka spinnerier, företag som säljer filtprodukter, konstnärer som jobbar med ull och uppfödare av ursprungsraser. En av slutsaterna var att de större företagen helst använder importerad ull som är lätt att få färdigtvättad och är av jämn kvalitet, men det finns potential för att använda lokal ull, om de rätta aktörerna förs samman och de rätta maskinerna hittas.

SLÄTBERGET NATURE TRAIL

The project Slätbergets naturstig (Slätberget nature trail), was launched in September 2024, with the goal of creating a nature trail in Västankvarn, Ingå, to provide a place for recreation in nature as well as serve an educational purpose.

There is a need for more trails and routes for exercise and recreational activities in Västra Nyland. Several municipalities are working to expand their recreational areas, while raising awareness of environmental and climate issues is becoming increasingly important. This project targets the public, including permanent and holiday residents, tourists, researchers, and school students.

The nature trail is located on Västankvarn farm's land, extending from Söderlandsvägen up towards Slätberget. The 3.1 km long trail covers diverse terrain, featuring a mire, a mountain area, an intriguing rocky outcrop, an old-growth forest, and a hazel grove. It also passes the Västankvarn wetland, constructed by WWF in 2019. Both the wetland and the hazel grove are easily accessible from the nearby gravel road and can be visited independently of the trail.

In addition to offering a place for recreation and exercise, the aim of the nature trail is to inform about current environmental and climate issues, such as the ongoing biodiversity crisis and the important role of forests in mitigating climate change. The trail serves as a platform to inform visitors about the various habitats and significant species found in the area, and related environmental concerns. The aim is to inspire people to explore, learn and contribute

The nature trail is built on Västankvarn farm in Inkoo. Photo: Kjell Svenskberg

to a sustainable environment. This is realised through illustrated information signs in three languages (Swedish, Finnish, and English) placed along the route. A dedicated webpage with more information about the trail, maps, photos and facts will also be launched.

In 2024, the trail was planned, and routes were mapped and cleared. Students from Novia build a board walk over the mire and a small bridge over a ditch. The design of the information signs, and webpage is ongoing, and the trail is set to open to the public in 2025.

The project is realised in cooperation with Västankvarn farm and co-funded by the EU, through the Leader group Pomoväst r.f. The project runs until 30. November 2025.

Collaboration partners:

- Västankvarn farm

ANNA-KARIN ALMÈN
PROJECT LEADER

Sammanfattning på svenska

Västra Nyland behöver fler platser för rekreation och motion, samtidigt som miljö- och klimatmedvetenheten blir allt viktigare. I september startades projektet Slätbergets naturstig för att bygga en ny naturstig på Västankvarn gårds mark i Ingå. Naturstigen erbjuder en plats för rekreation och motion för en bred målgrupp. Stigen fungerar också som en plattform för att informera om aktuella miljö- och klimatfrågor. Genom faktabaserade informationsskyltar på tre språk och en tillhörande websida, ger naturstigen information om till exempel den pågående biodiversitetskrisen och skogarnas roll för klimatet.

Arbetet med naturstigen pågår och hittills har rutten planerats och markerats ut. Röjningsarbete har utförts och Novias studerande har byggt en spång över en myr och en bro. Arbetet med att designa skyltar och den tillhörande hemsidan pågår. Projektet genomförs i samarbete med Västankvarns gård och medfinansieras av EU, genom Leader-gruppen Pomoväst r.f. Projektet pågår till 30.11.2025.

SUSTAINABILITY

RUSLAN GUNKO
TEAM LEADER

The establishment of something new is always a complex process that requires a comprehensive approach. This is certainly true when it comes to building the Sustainability team, where I have the privilege of being the leader. At the same time, it's an exciting journey of creating something new that feels much like "being the first person on the moon," where there are no clearly defined right or wrong decisions. Together with other team leaders and the head of research, we are all in the same boat and shaping our teams like a sculpture, guided by the university's goals and strategy, as well as our own research interests.

Sustainability is a broad term that is familiar to most of us. It encompasses many factors that influence how we perceive it in different contexts of human activity. It's clear that sustainability has become a key philosophy in our transforming world, particularly through the framework of the Sustainable Development Goals (SDGs), which target the world's most pressing issues. One could say that sustainability is about transformation and about everything, and that would not be wrong. It requires a broad mindset that draws from multiple disciplines, considering diverse experiences and ideas. Sustainable transformations, by their very nature, demand cooperation across various fields. Our objective is to build bridges between disciplines and remain open to new challenges. This is why I am personally excited to be part of the development of the Sustainability team, where my interdisciplinary background fits well.

As you can gather from the text above, our team does not limit itself to specific directions or disciplines in potential projects. This flexibility allows us to collaborate broadly, both within Novia and on national and international levels. However, as team leader, I've chosen to start by focusing on the relationship between people and nature, and its critical role in supporting people's well-being. I believe that community involvement is key to the success of sustainability transformations. The complex nature of these transformations often requires a paradigm shift, where individuals or groups must adapt to a new reality.

Nature and our relationships with the environment form the foundation of these changes starting with understanding the need for transformation, followed by planning and community involvement. This process ensures a more effective and inclusive approach to navigating the evolving landscape of sustainability.

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Projects:

- LES 2.0. Road to environmental democracy through investigation of relationships with the environment.

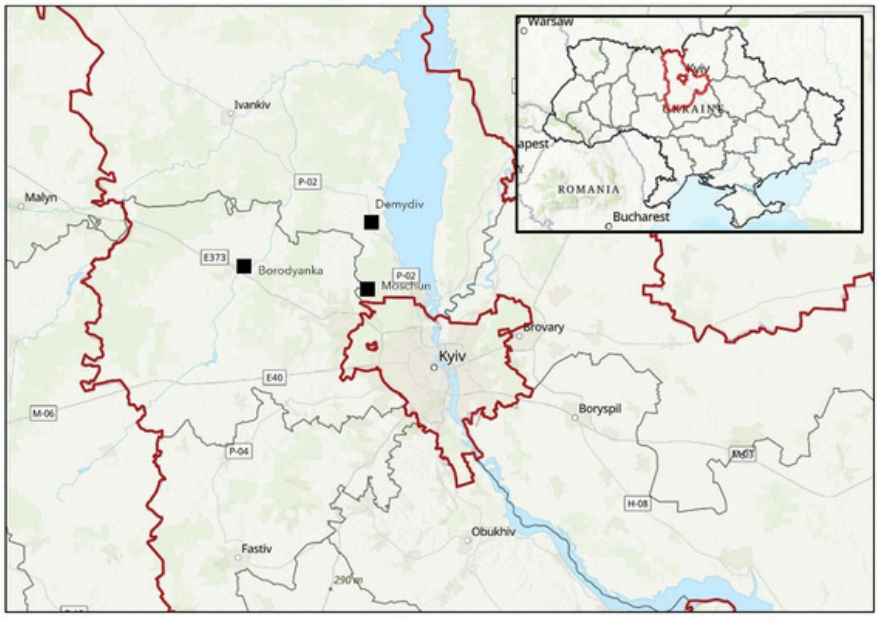
Sammanfattning på svenska

Jag har förmånen att leda utvecklingen av hållbarhetsteamet vid institutionen för bioekonomi. Denna process är både utmanande och givande, eftersom vi arbetar tillsammans för att anpassa oss till yrkeshögskolans mål samtidigt som vi utforskar innovativa hållbarhetslösningar. Teamets fokus ligger på att skapa tvärvetenskapliga projekt som överbryggar olika områden, med början i relationen mellan människor och natur. Vi strävar efter att underlätta omställning som stöder välmående genom samhällsengagemang och relationer med naturliga miljöer. Även om vi fortfarande är i de tidiga faserna, vägleds vårt arbete av de globala målen för hållbar utveckling (SDG), och flera tvärvetenskapliga projekt är på gång, som hämtar inspiration från miljömässiga, sociala och politiska vetenskaper samt GIS-perspektiv.

NATURE AND WELL-BEING: POLITICAL, ENVIRONMENTAL, AND WAR IMPACT PERSPECTIVES

Every person interacts with local natural environments daily, and nature plays an important role in our lives. In my previous projects, together with my colleagues from Novia and Åbo Akademi, we identified a clear link between human well-being and the perceived state of the environment. This gave us a starting point to explore further how people-nature relationships vary with fluctuations in different factors or even under pressure. While the picture has become clearer in 2024, many aspects remain unknown.

In 2024, I was busy with two projects. First, I was wrapping up the project LES 2.0: Road to Environmental Democracy through Investigation of Relationships with the Environment. The goal of this project was to explore the role of different types of nature on people's well-being and study the impact of political factors, such as political orientation or active participation in political life, on people-nature relationships. The study area covered two neighboring municipalities, Naantali and Masku, which had similar political preferences during the last elections and provided access to different types of natural environments, such as forests and coastal areas. Our findings demonstrated the strong effects of visiting different natural environments frequently and its importance for well-being. We also discovered a strong link between political orientations and environmental perceptions at the municipal level. LES 2.0 resulted in two scientific papers, which are currently under review by journals.



Three settlements where study in Ukraine was executed. Moschun, Demydiv and Borodyanka residents experienced active warfare and occupation.

The second project I was involved in during the year was a collaborative project on the role and accessibility of different ecosystems during and after the occupation in Ukraine. In this project, along with scholars from Ukraine and Sweden, we investigated changes in people-nature relationships in three settlements affected by warfare and Russian occupation. Interestingly, we found that nature played a significant role in mitigating the stress experienced by community members, particularly in relation to the cultural value of local nature and its role for place attachment. The project resulted in a scientific paper, which was recently published in the journal Ecosystem Services.

The findings from these projects have sparked new ideas, and I have been working on new project proposals, which I have applied for funding. Hopefully, these projects will begin in 2025.

RUSLAN GUNKO
RESEARCHER

Sammanfattning på svenska

Under 2024 arbetade jag med två viktiga projekt som utforskade människans relation till naturen. Det första, LES 2.0, undersökte naturens roll för välbefinnande och hur politiska faktorer påverkar detta i två grannkommuner, Nådendal och Masku. Resultaten visade att frekventa besök i naturen har stor betydelse för välbefinnandet, och att det finns ett starkt samband mellan politiska orienteringar och miljöuppfattningar. Det andra projektet fokuserade på naturens roll under och efter ockupationen i Ukraina, i samarbete med forskare från Ukraina och Sverige. Det visade hur naturen hjälpte till att lindra stress i samhällen som påverkades av krig, särskilt när det var kopplat till det kulturella värdet av naturen och platsanknytning. Dessa projekt har lett till nya forskningsidéer, och jag har ansökt om finansiering för kommande projekt som förväntas starta 2025.

SUSTAINABLE FOOD SYSTEMS

HEIDI BARMAN-GEUST
TEAM LEADER

The first year of the Sustainable Food Systems team has largely been about defining what sustainable food systems are and how we at Novia work in this thematic area. Food systems are complex and include the entire food chain from production to consumption. At Novia, we work around the entire chain, but the focus is on small-scale, sustainable and local systems. This includes everything from regenerative farming methods to Artisan Food and consumer behavior.

The Sustainable Food Systems team had four ongoing projects during the year. The Pro Bioeconomy 2.0 and Komio projects were finalized during the year. Together with the Green Ecosystem Services team, we worked on regenerative agriculture and submitted an application to Horizon Europe, which unfortunately was not granted funding, but instead we gained valuable contact with new partners in the Baltic and Nordic countries.

Together with RDI Business Administration, we submitted a funding application to the Rural Development Fund and were granted funding for the two-year project Vegetables of the Future, which will start in 2025. In the autumn, new partners in Sweden, Norway and Estonia were contacted to jointly submit a project application to Nordplus Horizontal on Artisan Food.
As a team leader I have also had the opportunity to spend time expanding our networks both nationally and internationally.

Projects:

- Pro Bioekonomi 2.0
- Komio
- Bondenyttan
- Flexibelt till agrolog och skogsbruksingenjör - Österbotten

Sammanfattning på svenska

Det första året för teamet Hållbara livsmedelssystem har handlat om att definiera vad hållbara livsmedelssystem innebär och hur Novia arbetar inom området. Fokus ligger på småskaliga, lokala och hållbara system, från regenerativ odling till konsumentbeteende. Fem projekt har pågått under året, varav två avslutades. Nya samarbeten har inletts i Norden och Baltikum, och ett nytt projekt, Framtidens grönsaker startar 2025. Teamet har också arbetat med nätverksbyggande för framtida samarbeten.

PRO BIOEKONOMI 2.0

Pro Bioeconomy 2.0 was a project that started in 2020 after Pro Naturbruk (2015–2019). The aim was to further develop bioeconomy educations at Novia University of Applied Sciences, campus Raseborg, with a focus on quality improvement, increased visibility, internationalization, and integration of research and development (R&D) into teaching.

Over the years, the project has given our students the opportunity for more study visits, external expertise, and fair visits, even abroad. This makes the studies more interesting and fills them with invaluable knowledge and expertise. Several external experts and organizations have been regularly engaged, and several study visits have been made to the same place regarding different subjects with different perspectives. For example, forestry engineers have visited Yrkesakademin i Österbotten every year to use their facilities, technology, and machines to try forestry work with the right machinery, while the agricultural students have varied between parts of Finland for several days of visits with as many farm and study visits as possible.

Among the fairs abroad, grand fairs such as the IUFRO World Congress in Stockholm 2024 and SPACE in Rennes have been visited. Fairs that one might not usually have the opportunity to visit but which the project's financiers have made possible.

One of the wetlands that we heard about at Koskis farm during the seminar 2024. Photo: Marianne Selenius-Holmström.

Within the project, a lot of continuing education has also been planned and carried out, as well as some seminars and lectures. A full-day seminar on the theme of water management in the forest was organized in September 2024 in collaboration with some other external projects. Experts in aid, politics, and forestry were invited to share relevant facts and answer all the questions that interested participants had. The seminar was organized so that the morning was spent with presentations at the campus Raseborg, and in the afternoon, there was lunch and a tour at Koskis farm with concrete examples of solutions for water management in forestry. Among the participants were students, forest owners, advisors, and others working with forest-related tasks.

A picture from Farmari 2024 in Seinäjoki. Photo: Marianne Selenius-Holmström

One of our more popular courses in continuing education was our course in Permaculture and Regenerative Agriculture. The course filled up quickly and was well-liked. Several experts were brought in to lecture on everything from mushroom cultivation to agroforestry and food processing. Some of Novia's own experts also shared their views and knowledge.

Part of Pro Bioeconomy 2.0's goal was also marketing and visibility. In addition to advertisements and some articles in various newspapers and brochures, advertising was also done at fairs and events. For example, a joint effort was made with SLC, FS4H, and ProAgria to increase the visibility of nature and agriculture at the Stafettkarnevalen 2024 in Helsinki, which was then also requested for another sport-event in 2024. In collaboration with the Finnish universities of applied sciences that also organize studies in bioeconomy, we were also at the Farmari agricultural fair in Seinäjoki in 2024.

In November, in collaboration with Novia's own alumni coordinator, an alumni event was organized with the Swedish lecturer Mikael Karlsson, who lectured on alternative methods in forestry. A very interesting lecture that sparked questions and discussions.
The Pro Bioeconomy 2.0 project reached its goal in December 2024, and we thank our financiers for the opportunities.

MARIANNE SELENIUS-HOLMSTRÖM
PROJECT LEADER

STIFTELSEN FINLANDSSVENSKA JORDFONDEN

UTBILDNINGSSTIFTELSEN SYDVÄST

Sammanfattning på svenska

Pro Bioekonomi 2.0 var ett projekt som genomfördes mellan 2020 och 2024 som en fortsättning på Pro Naturbruk. Syftet var att vidareutveckla naturbruksutbildningarna vid Yrkeshögskolan Novia, campus Raseborg, med fokus på kvalitetshöjning, ökad synlighet, internationalisering och integrering av forskning och utveckling i undervisningen.
Projektet gav studerande möjlighet till fler studiebesök, externa expertföreläsningar och mässbesök, även utomlands. Exempelvis besökte skogsbruksingenjörerna Yrkesakademin i Österbotten för att använda deras teknik och maskiner, medan agrologerna besökte olika gårdar i Finland. Stora mässor som IUFRO-kongressen i Stockholm och Spaces i Paris besöktes också.
Fortbildning, seminarier och föreläsningar var en viktig del av projektet. Bland annat ett heldagsseminarium om vattenvård i skogen hölls i september 2024, och en populär kurs inom permakultur och regenerativt jordbruk erbjöds. Projektet fokuserade även på marknadsföring och synlighet genom annonser, artiklar och deltagande i mässor och evenemang.
Projektet avslutades i december 2024 och tackade sina finansiärer för möjligheterna.

KOMIO - EDUCATIONAL COOPERATION ON CLIMATE COMPETENCE IN THE LAND USE SECTOR

In KOMIO, nine universities of applied sciences specializing in bioeconomy in Finland have collaborated on climate issues within the agriculture and forestry sectors. The project was led by Seinäjoki University of Applied Sciences (SeAMK). The main objective was to compile and disseminate research results from previous projects, particularly those funded under the Catch the Carbon program, by producing open and accessible materials for students.

Novia University of Applied Sciences has participated in the development of teaching materials and ensured that these materials are available in Swedish, thereby increasing accessibility for Swedish-speaking target groups. The Finnish-speaking universities of applied sciences—SeAMK, Lapin AMK, HAMK, JAMK, Savonia, XAMK, Karelia, and OAMK—have contributed with their respective areas of expertise. The study materials demonstrate versatility, consisting of various formats such as slide presentations, text files, recorded webinars, blog posts, and podcasts. The materials are available in the Open Educational Resource Library (aoe.fi) and AgriHubi.

In collaboration with Savonia, Novia organized the webinar "Take Control of Carbon with Water Management." Experts from the Finnish Environment Institute, the Drainage Association, ProAgria, the Ostrobothnia Forest Management Association, and the national climate unit of the ELY Centers gave presentations at the webinar. The discussions covered new research findings and practical examples of how carbon can be managed in agriculture and forestry.

Panel discussion with experts at the Three Million Tons of CO_2 Equivalents conference in Seinäjoki on 7 May 2024. The discussion was led by Lena Korkea-aho and Kristian Bengts from the company Lykkan. Photo: Christel Holmlund-Norrén

In an educational collaboration involving nine universities of applied sciences in bioeconomy, cooperation and networking play a crucial role. In addition to recurring digital meetings, events and gatherings were organized to connect the education sector with various actors in the agriculture and forestry sectors. One of the largest events was the conference "Three Million Tons of CO_2 Equivalents." The name refers to the Climate Plan for the Land Use Sector, which served as a guiding theme throughout the project.

Project duration: 1 August 2023 – 30 September 2024
Funder: Ministry of Agriculture and Forestry, Catch the Carbon Action Program

CHRISTEL HOLMLUND-NORRÈN
PROJECT LEADER

Sammanfattning på svenska

Projektet KOMIO samlade nio yrkeshögskolor inom bioekonomi i Finland för att samarbeta kring klimatfrågor inom jord- och skogsbruk. Seinäjoki yrkeshögskola (SeAMK) ledde projektet, vars mål var att sprida forskningsresultat genom öppet undervisningsmaterial, särskilt från Fånga kolet-programmet. Yrkeshögskolan Novia bidrog med svenskspråkigt material, vilket ökade tillgängligheten. Materialet, som finns på aoe.fi och Agrihubi, inkluderar bland annat bildspel, poddar och webbinarier. Ett exempel är webbinariet “Ta kontroll över kolet med vattenhantering”, arrangerat av Novia och Savonia. Projektet betonade samarbete och nätverkande, med flera evenemang, inklusive konferensen ”Tre miljoner ton CO_2-ekvivalenter”, som knöt an till Finlands klimatplan för markanvändningssektorn.

AGROLOG OCH SKOGSBRUKSINGENJÖR 2028 - ÖSTERBOTTEN

Under 2024 kom flerformsutbildningen för både agrolog (YH) och skogsbruksingenjör (YH) via öppna YH, enligt modulläroplanerna vid Institutionen för bioekonomi i gång på riktigt. Redan hösten 2023 genomfördes de första kurserna, vilket lade grunden för den nya utbildningsformen.

För att anpassa utbildningen till flerformsformatet har lärarna, genom projektet, vidareutvecklat kursinnehållet. Upplägget kombinerar interaktiva kvällssessioner online, självstudier med varierande aktiviteter och uppgifter samt en närstudiedag per månad. Dessutom har gårds- och fältbesök organiserats på olika platser i Österbotten inom ramen för flera kurser, vilket ger studerande praktisk erfarenhet och branschinsikt.

En viktig del av projektet är att stärka och synliggöra den svenskspråkiga utbildningen inom bioekonomi. Både studerande och personal har varit aktiva vid olika branschevenemang. Bland annat deltog Novia på Farmari-utställningen sommaren 2024, som lockade 90 000 besökare, samt vid flera andra evenemang i samverkan med branschorganisationer. Att bygga nätverk och samarbeta med gårdar, företag och organisationer har varit en prioritet och kommer att förbli en central del av projektet.

Rektor Örjan Andersson möter studerande efter gemensam sommarlunch. Photo: Christel Holmlund-Norrén

För att stärka gemenskapen inom utbildningen har olika sociala aktiviteter anordnats för både studerande och personal. En sommarlunch och ett Luciakaffe, där studerande själva stod för programmet, har bidragit till att skapa en stark sammanhållning. Dessutom möts lärare och personal varje månad via Teams vid "Öppet forum", ett fristående diskussions- och informationstillfälle om aktuella frågor inom studierna.

Genom en tilläggsansökan sommaren 2024 antogs ytterligare drygt 10 studerande. Totalt har cirka 60 studerande, främst från Österbotten men även från andra delar av Svenskfinland, deltagit i kurserna som arrangerats av öppna YH under året.

Vad säger studerande efter ca ett år av studier – har det skett någon personlig utveckling?

”Jag har mött flera nya kontakter vilket gör att både jag och mina framtida arbetsmöjligheter utvecklas.”
”Ja, studierna har utvecklat mitt kunnande.”
”Jag har studerat rätt så mycket hittills i livet så den biten är inte ny, men att kombinera studier med allt annat är nytt, så då får man lära sig att prioritera.”
”Absolut, man har valt det här själv och är genuint intresserad. Tar för mig mer än jag gjorde tidigare.”
”Jag har fått enormt med energi och stimulans i hjärnkontoret.”
”Berikande är det att jag ifrågasätter mycket mera mitt tänkande efter att jag inledde studierna.”

Citaten från ”Reflektion över studierna flexibelt till agrolog och skogsbruksingenjör”, en förfrågan som studerande besvarade i november 2024.

CHRISTEL HOLMLUND-NORRÈN
PROJECT LEADER

SLC Svenska lantbruksproducenternas centralförbund

Summary in English

In 2024, flexible study paths for the B.Bc in Agriculture and B.Sc in Forestry were fully launched through Open UAS, based on the Bioeconomy Department’s module structure. The first courses began in autumn 2023. The program uses a blended learning model with online evening sessions, self-study, and one in-person day per month. Farm and field visits across Ostrobothnia offer hands-on experience. A key goal is to strengthen Swedish-language education in bioeconomy. Students and staff have taken part in events like the 2024 Farmari exhibition and collaborated with farms, companies, and organizations. To build community, social events such as a summer lunch and Lucia coffee have been arranged. Staff also meet monthly via Teams in an open forum.
Following an additional intake in summer 2024, around 60 students—mainly from Ostrobothnia and other Swedish-speaking regions—have participated in Open UAS courses.

PERSONNEL

Almén, Anna-Karin, Project Leader
Barman-Geust Heidi, Project Leader
Byholm Patrik, Senior lecturer
Dahlberg Ulrika, Project Leader
Engström-Öst Jonna, Special Researcher
Finch Joshua, Project Leader
Fred Marianne, Faculty head of RDI
Gómez-Paredes Jorge, Researcher
Gunko Ruslan, Researcher
Gustafsson Pia, Research Assistant
Heinänen Stefan, Senior Lecturer
Holmlund-Norrén Christel, Project Leader
Karell Gun, Senior Lecturer
Koutsandrea Andriana, PhD student
Noel Aurelie, Project Leader
Rancken Romi, Project Leader
Riesinger Paul, Senior Lecturer
Sadik Samica, Project specialist
Selenius-Holmström Marianne, Project Leader
Storm Anita, Project Leader
von Weissenberg Ella, PhD student
Yliluikki Henna, Project Researcher

PUBLICATIONS, PRESENTATIONS AND MEDIA APPERANCES

A1 Peer-reviewed scientific articles

Balotari-Chiebáo, Fabio & **Byholm, Patrik** (2024). Quantifying land impacts of wind energy: a regional-scale assessment in Finland. Environment, Development and Sustainability, 26, 50.

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Gunko, Ruslan (2024). Paneldiskussion om flerspråkig vetenskaplig kommunikation, vetenskaplig publicering och vetenskapens språk (Helikon, på engelska och svenska). Vinterdagarna i öppen vetenskap och forskning 2024. 4.12.2024. Plenary speaker.

Koutsandrea, Andriana (2024). Ecophysiological responses of zooplankton to warming and eutrophication. Result seminar. Novia University of Applied Sciences 24.5. 2024

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https://novialia.novia.fi/novialia/bloggar/bioekonomi

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