

Strategic Plan 2020-2025

Environmental Economics and Natural Resources Group (ENR)



WAGENINGEN
UNIVERSITY & RESEARCH

Introduction

The Environmental Economics and Natural Resource (ENR) Group at Wageningen University & Research (WUR) is part of the Section Economics of the Department of Social Sciences. It is affiliated with two graduate schools, the Wageningen School of Social Sciences (WASS) and the Wageningen Institute for Environmental and Climate Research (WIMEK).

We fully recognise the opportunities arising from being part of the WUR community, and our aspiration is to be societally relevant by contributing to *"the world's challenges and transitions that lie before us"*.¹ Being part of WUR, the ENR Group strongly believes that interdisciplinary and transdisciplinary research is key to finding effective and publicly acceptable solutions. *"Finding answers together"* will enhance the chances of success.

Economists use the concept of welfare to analyse changes in the quality of life. WUR's mission *"to explore the potential of nature to improve the quality of life"* is perfectly aligned with the concepts and methods of the environmental and natural resource economics discipline. Moreover, an environmental economics approach is particularly relevant to the challenges and policy process behind complex transitions. Economics is precisely the science of decision-making under complex trade-offs between goals, stakeholders, and generations, given the prevailing natural, social and moral constraints, and accounting for incomplete knowledge and uncertainty. At WUR, there is a strong demand for the concepts and methods of environmental and resource economics to serve as complements to the natural sciences, and to technology oriented solutions put forward by its scientists.

This strategic plan defines a roadmap towards the achievement of concrete goals in research and education. It should also allow us to communicate who we are and what we do, thereby facilitating the construction of partnerships, and attracting resources and funding. This plan is the agreed consensus of all members of the ENR team, and should also serve as our internal agreement, i.e. "the big picture" used to judge and evaluate the many, albeit small, daily decisions, each of which will be tested for alignment with the plan.



Introduction

Our passion

Quest for excellence at the ENR group

A team stronger than the sum of its members

¹ Text in italics are quotations from the WUR Strategic Plan 2019-2022.

Our passion

The **goal** of the ENR Group is to contribute to the construction of a sustainable and circular economy, as well as low-carbon, climate-resilient socio-ecological systems. Our **vision** is to become a top team in Europe by applying the concepts and principles of environmental and natural resource economics in multidisciplinary teams, towards the construction of circular, low-carbon and climate-resilient production and consumption systems.

The ENR Group strives to be **societally and academically relevant**, which, for the purpose of this strategic plan, entails:

- Ensuring that our work should be based on a solid understanding of societal problems and their stakeholders;
- Contributing to solving those problems through high quality research from our own comparative strengths (as a team and as individuals);
- Placing ourselves within a continuum that moves between theoretical and applied work, allowing for individual differences and the team's comparative strengths;
- Building long-term partnerships and co-creative solutions that allow us to actively conduct transdisciplinary and interdisciplinary research;
- Prioritising education and the formation of the new generations of problem solvers;
- Actively seeking opportunities to communicate to various audiences by using relevant communication strategies for each stakeholder segment, and by being called in as experts, or volunteering as such if the opportunity arise.



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Quest for excellence at the ENR Group



Introduction

Quality is an attitude that should permeate everything we do. As a team, high-quality products should be generated in four distinct areas: research, education, leadership/teamwork, and societal relevance. As individuals, quality should be assessed based on clear and ambitious plans that take account of personal and contextual factors, and recognise the diversity of career paths and profiles among our team members.²

At the ENR Group, we value:

- Carefully conducted research that contributes to finding solutions to societal and/or scientific problems. In terms of publications, we encourage and support high quality (rather than large quantity) outputs in top general science (e.g. Science, Nature, PNAS), top disciplinary (e.g. JEEM, JAERE, JDE) and general economics journals;
- Clear and demonstrable efforts to increase the quality of education, as well as concrete projects for didactical innovation in education;
- A clear embedding in national and international academic networks, as well as presence and visibility in national and international debates, policy outlets, and the media;
- Leadership and teamwork in the preparation of grant proposals, with demonstrated success in obtaining money and/or reaching the final rounds;
- Careful and attentive PhD supervision, leading to quality publications, while ensuring our PhD students have a smooth transition into the labour market;
- A clear and convincing narrative of how the team as a whole and its individual team members contribute to the mission of the university, and ensure societal impact.



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² VSNU, NFU, KNAW, NWO and ZonMw (2019). Room for everyone's talent: towards a new balance in the recognition and rewards of academics. The Hague.

A team stronger than the sum of its members

Our strategy for long term cooperation is centred around trust, unequivocal commitment of all group members, and reciprocity. A careful balance between individual and team success is key to the achievement of the goals of this Strategic Plan. Nowhere is this more salient than in the WUR career policy that demands individually identifiable research contributions that are judged both in relation to a benchmark of scientific quality, but also in terms of their contribution to the group's relevance and success. Day-to-day interaction and cooperation should therefore be built on the following five guiding principles:

Comparative advantages and personal goals guide the distribution of tasks to optimise group and individual performance. We work with each other and stand up for each other.

A trusting environment makes people productive and creative as it brings peace of mind to reflect on research and teaching. We maintain an atmosphere of openness for constructive and transparent communication and close connection with each other.

A learning environment is the key for maintaining the societal and scientific relevance of our work, as times and circumstances change around us.

Diversity fosters creativity through integration. We welcome and encourage the creativity that stems from a true integration of our diverse backgrounds and interests.

Fair distribution of workloads with proper acknowledgement of the less visible, albeit equally valuable, contributions to the success of the group.



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Education and Innovation at the ENR Group

Wageningen University prides itself on “science for impact”. Research and education at Wageningen University aim to solve real-world problems in the life sciences. Wageningen students are, in general, interested in knowledge and skills that enable them to address real-world problems.

In terms of education (course curriculums, thesis supervision and internships) the ENR Group aims to:

- Offer students in interdisciplinary programmes an understanding of key economic concepts and theories, and a command of research methods relevant to their study programme at a level that allows them to integrate economic knowledge with other disciplines;
- Offer economics students more in-depth training in advanced economic theory and research methods;
- Prepare students for a scientific or professional career in environmental and resource economics, and;
- Cover the themes in environmental and natural resource economics that are currently of high societal relevance (see below for the thematic focus of the ENR chair group);
- Train students to adopt values of scientific integrity, and to reflect regularly on their own performance, assumptions, and values.



Education and
Innovation

Education innovation

Flagship education themes

Economics of climate
change

Economics of socio-
ecological systems

Microeconomics applied
to human-environment
interactions

Education innovation

As a team, we will implement an ambitious agenda of pedagogical innovation to address the following challenges: (1) we teach in interdisciplinary programmes, combining high-cognitive learning outcomes with limited economics background; (2) our student population is highly diverse; (3) our student numbers are growing; (4) study programmes, and our disciplinary field are changing constantly. Innovation will be student-centred, and will rely heavily on modularisation and digital tools for blended learning.



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Flagship education themes

Our commitment to education and our effort towards pedagogical innovation will be organised around three flagship education themes, which are clearly aligned with the thematic focus of the ENR (see below).

In the future, these three themes should guide our participation in programme committees, and our participation in new courses and BSc and MSc programmes, while duly recognising that we continue to maintain a strong education agenda focused on the core concepts and methods of environmental and natural resource economics.

Economics of climate change

Our education on climate change should enable students to understand and apply theoretical concepts such as intergenerational ethics, discounting, economic policy instruments (emissions trading, REDD, carbon taxes), and the social cost of carbon. Students should be able to understand, apply, and develop research tools such as integrated assessment models, applied general equilibrium models, economic valuation, and cost-benefit analysis.

Economics of socio-ecological systems

Our education on socio-ecological systems should enable students to understand and apply theoretical concepts related to the economics of food systems, fisheries and forest management, ecosystem services, and the circular economy. Students should be able to understand, apply, and develop research tools, such as bio-economic modelling, non-market valuation, econometric analysis of survey data, and multi-agent models in order to study the effectiveness of various management options and the value of ecosystem services.

Microeconomics applied to human-environment interactions

Our education on the microeconomics of human-environment interactions should enable students to understand and apply theoretical concepts such as game theory, behavioural economics, and social norms to real world cases. Students should be able to understand, apply, and develop research tools such as behavioural laboratory and/or field experiments, analysis of household surveys, and randomised controlled trials.



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Research focus of the ENR Group



Research focus

In this section, we outline a thematic research focus for the ENR Group, that is well-aligned with WUR's strategic plan. The themes below are anchored in our current research agenda, but are also forward-looking. Moreover, the thematic focus below reflects our current capacity, while also allowing us to identify capacity gaps. The themes also reflect our desire to contribute to the field of environmental and resource economics as a scientific discipline.

The field of environmental and natural resource economics is broad, and the core concepts and methods of the economic profession can be applied to a large and growing list of global (e.g. climate change and biodiversity loss), and local (e.g. drought, nitrogen leaching, land use change) challenges. Within economics, tools are available to work on diverse issues, from broad research questions like how to balance current and future welfare in a fair way, to concrete questions like estimating energy saved by a new technology.



Our thematic focus
in relation to WUR's
Strategic Plan

Our thematic focus in relation to WUR's Strategic Plan

In its Strategic Plan 2019-2022, WUR calls for three key transitions in its domain: a transition towards circular food and feed production, and towards a circular economy in a broader sense; a transition towards healthier and more sustainable consumption; and a transition away from fossil-fuel-based production.

From an economic perspective, circular production systems should be driven by increased efficiency in the use of inputs in production and by-products from production and consumption, as well as from the systematic reduction of production and consumption externalities.

Economic decisions are at the basis of (un)healthy and (un)sustainable food choices. Food choices are tiny decisions made by individuals and households. However, in the aggregate, they have a large effect on the planet. Firms and corporations also play a significant role in the selection of inputs and technologies that have an impact on the environment and on human health.

A transition away from fossil fuels is possibly the biggest challenge of our generation. Greenhouse gas emissions are ubiquitous in consumption and production, and the environmental economics discipline is uniquely positioned to provide solutions that can correct for this massive negative externality. Economics can deliver insights into the costs and benefits of action and inaction, and can suggest alternative policy designs to decarbonize the economy.

An improved understanding of humans and their motivations in the face of inevitable trade-offs, their interactions with new promising technologies, and their response to social and environmental changes will allow the identification of policy entry points that can be leveraged to produce many urgent behavioural changes.

The following three themes are an effort to organise our work for the coming five years, and be in the position to describe our concepts and methods in light of concrete, tangible applications. Table 2 provides an overview of these themes and subthemes, and a more complete description is provided in Annex 1.

[Go to table 2](#)



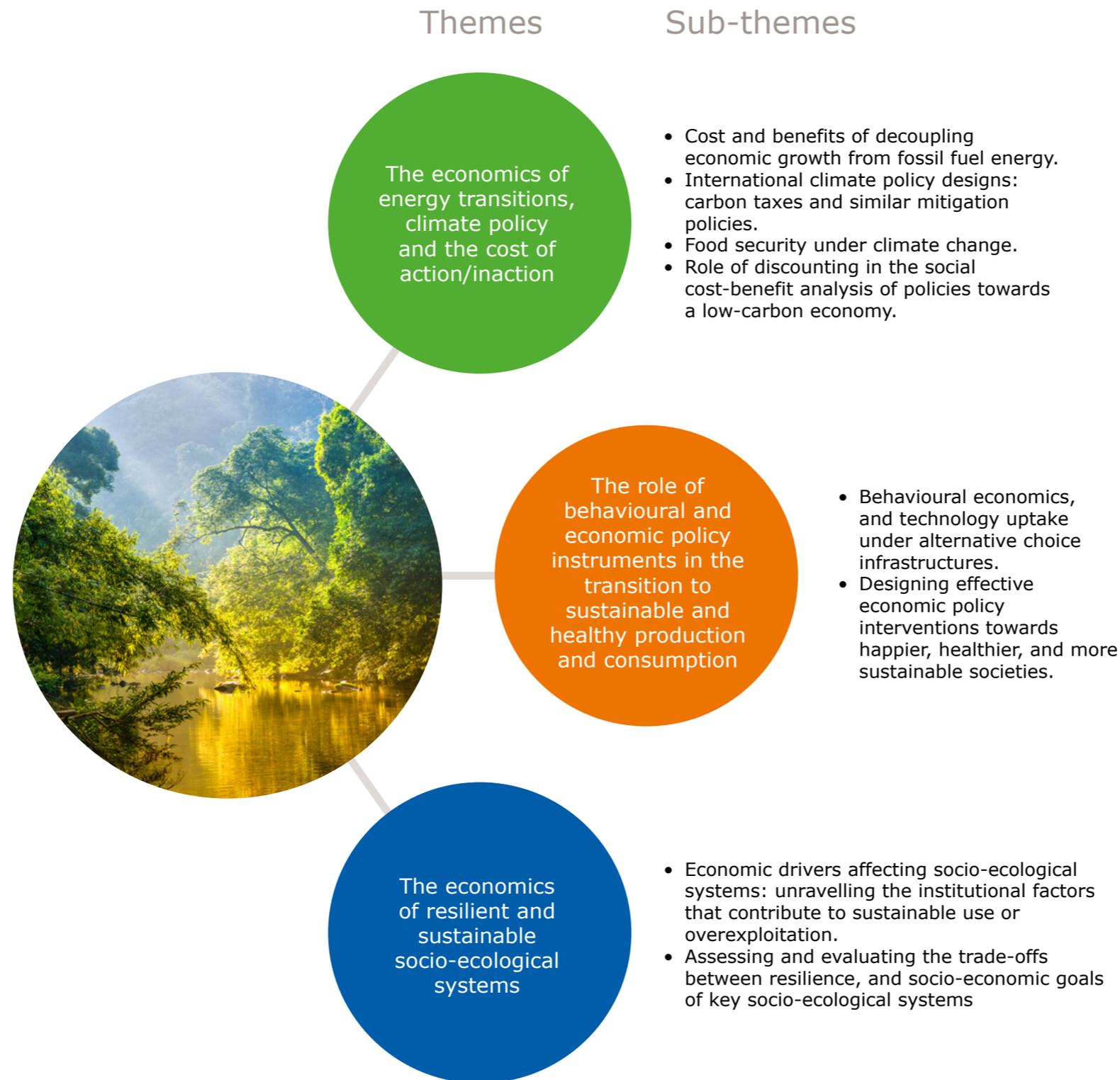
Research focus

**Our thematic focus
in relation to WUR's
Strategic Plan**



Research focus

Our thematic focus in relation to WUR's Strategic Plan



Impact and way forward



Impact and
way forward

To make this strategic plan operative, we will use three key tools. Each year, the ENR team will produce an annual workplan, defining the annual targets and the required administrative, and managerial support. This annual workplan will be derived from individual level Progress and Development (P&D) workplans, detailing individual contributions to the Strategic Plan for the year in question. Progress will be measured at both the individual and ENR Group level. At the individual level, there will be a strong recognition of diversity in career paths. At the ENR Group level, the team is expected to perform well in education, research, societal impact, and academic leadership. Aligned with WUR's career policy, the tenure track system, and the educational path system, we will use tangible and concrete indicators to track our progress along each dimension.³



³ For an example, see KNAW, NWO, VSNU (2020). Strategic Evaluation Protocol.

Theme 1: The economics of energy transitions, climate policy and the cost of (in)action

This theme aims to contribute to a better understanding of the economic problems related to reducing greenhouse gas emissions, and the economic trade-offs in the pathway towards low-carbon and well-adapted societies. We address the economic and institutional challenges in relation to climate change mitigation and adaptation to help identify a justifiable mix of mitigation, adaptation, and development policies.

First, we address issues related to decoupling economic growth from the use of fossil fuel energy towards low, zero and negative emission technologies. We use general equilibrium models and cost-benefit analysis to analyse the impact of a shift of energy use from fossil fuels to renewables and innovative energy options.

Second, we study climate policy designs based on international collective action for mitigating climate change. We use general equilibrium and game theoretic models and econometric tools for ex ante and ex post assessments of the climate and welfare impacts of mitigation policies. We use general equilibrium models to study optimal carbon taxes.

Third, we study the challenges of global food security under climate change. We study alternative strategies to achieve sustainable, low-carbon food systems, including climate friendly and low-carbon technologies. We apply the concepts of circular economy and environmental regime shifts in socio-ecological systems to develop integrated environmental-economic models.

Fourth, we contribute to a better understanding of the fundamental role of discounting in the social cost-benefit analysis of policies towards a low-carbon economy, and in the assessment of adaptation measures. By extending the neoclassical growth models to include technological change, the dynamics of ecosystems and the feedback of climate change, we are able to provide insights into the estimation of the social discount rate, and the consequences of alternative rates on the analysis of economic and ecological systems.



Theme 1: The economics of energy transitions, climate policy and the cost of (in)action

Theme 2: The role of behavioural and economic policy instruments in the transition to sustainable and healthy production and consumption

Theme 3: The economics of resilient and sustainable socio-ecological systems

Theme 2: The role of behavioural and economic policy instruments in the transition to sustainable and healthy production and consumption

The transition towards sustainable and circular economies will require profound changes in individuals' habits, in the demand for resource-conserving technologies, and in the choice architecture behind both. Every day, individuals make a myriad of choices (e.g. car or bus, meat or lentils, lights on or off) that although tiny if taken in isolation, may result in large health and environmental costs if aggregated over time, and amount to dangerous environmental damage if aggregated over the entire human population.

Besides consumers themselves, two other actors are key in the transition to sustainable and circular economies. Governments can play a key role in providing incentives, a choice architecture and promoting social values that are conducive to sustainable food choices. Firms can play a vital role by investing in more efficient and cleaner technologies that reduce environmental damages and resource extraction. Unless individually and globally efficient food choices become a matter of habit, the quest for a more sustainable future appears elusive.

Environmental economics has a crucial role to play in this transformation process. First, we contribute to a better understanding of stakeholder preferences, how those preferences interact with technological progress, and through the choice infrastructure laid out by governmental policies.

The behavioural economics literature sheds light on factors that could be used to encourage healthy, sustainable choices. Second, we study the design of effective economic policy interventions to create happier, healthier and/or more sustainable societies, and how alternative policy mixes can be leveraged to target multiple goals (e.g. happiness, health, or pollution targets).

The research in this theme is anchored in theoretical models of human behaviour, public decision-making, and the link between these and observable consequences such as environmental pollution problems. At the same time, those models can be applied to the data and tested in, for instance, survey-based experiments, laboratory/field experiments and randomised controlled trials.



Theme 1: The economics of energy transitions, climate policy and the cost of (in)action

Theme 2: The role of behavioural and economic policy instruments in the transition to sustainable and healthy production and consumption

Theme 3: The economics of resilient and sustainable socio-ecological systems

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Globally, socio-ecological systems, such as marine systems, forests, or semi-arid grazing lands, are under pressure by multiple natural stressors and anthropogenic drivers, such as climate change and overexploitation. At the same time, we can observe success stories, where resource systems are used sustainably, or conservation efforts translate into ecosystem restoration. Hence, it is important to understand the institutional factors that mediate resource use and explain why some systems are overexploited, while others are sustainably used.

At the ENR Group, we pursue an innovative economic research agenda to better understand how regimes of sustainability in socio-ecological systems can be achieved and maintained over time. Our research broadly falls into two categories. First, we contribute to a better understanding of the economic drivers affecting socio-ecological systems. This work includes unravelling the institutional factors that contribute to sustainable use or overexploitation. Such factors may include formal arrangements, such as protected areas or a wider set of property regimes, or informal institutional arrangements, such as communal social norms. This work helps us understand the two-way feedback between ecological systems and social systems and sheds light on which design principles may foster sustainable use.

Second, we contribute to a normative understanding of how socio-ecological systems should be managed. This typically requires balancing ecological goals, such as sustainable use of ecosystem services and maintaining resilient ecosystems, with socioeconomic goals, such as providing income and maintaining livelihoods. The challenge here is that many socio-ecological systems are multi-use, and multi-stakeholder systems, where objectives are diverse and often contested. While the sustainable development goals offer some guidance, the prioritisation and weighing of trade-offs remain context-specific. Our research contributes to assessing and evaluating those trade-offs and provides the evidence to foster sustainable use and resilient socio-ecological systems.



Theme 1: The economics of energy transitions, climate policy and the cost of (in)action

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Environmental Economics and Natural Resources Group

To know more about the ENR group, click [here](#).