WASS self-evaluation report 2015-2020

Wageningen School of Social Sciences

Summaries and case studies of the WASS Sections

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WASS self-evaluation report 2015-2020

Summary and case studies

Wageningen School of Social Sciences

Section Business Science

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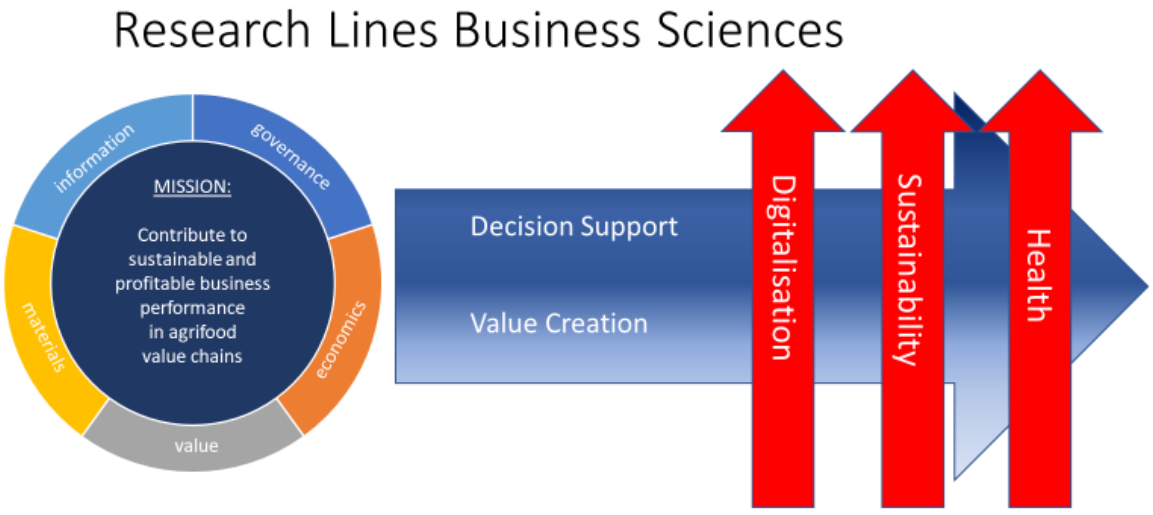
Summary Business Science

Section Business Science consists of five chair groups with 71.5 FTE research staff within the Social Sciences Group (SSG) at Wageningen University & Research. Our key goal is to develop a fundamental understanding of business processes across the complex agrifood value chain as a whole, as well as of specific actors and business functions within this value chain. They are in an active process of re-addressing their scientific disciplinary perspective towards a more collaborative and integrative food and agribusiness value chain perspective to stronger build on their complementarities and synergies in the face of Sustainable Development Goals. The mission of the Business Science section is ***to scientifically contribute to sustainable as well as profitable business performance, together with stakeholders, in national and international agrifood value chains.***

The main research lines of the our section are summarised along three WUR-supported life sciences themes, i.e. ***digitalisation, sustainability and health***, which we study through a ***decision support*** and a ***value creation*** approach.



Our section Business Science has been successful in achieving its scientific and societal aims. Applying different types of research in the agrifood domain has meant that value chain actors could benefit from new scientific and theoretical insights as much as that theoretical and scientific domains could advance on the basis of the unique food and agribusiness context. For years, open science has been on our agenda, which led to the principle that our research had to be open to the public (Open Access publications increased from 19% in 2015 to 73% in 2020). Our publication strategy focussed on a balanced portfolio: it contributed both to the disciplinary traditions in the different business sciences fields (reflected in disciplinary journals) as well as in domain-specific journals with a more applied or thematic focus. We were quite successful in attracting EU, NWO and INREF funding. Also we had a VENI and an NWO-Aspasia grant. Training young researchers was an important part of our strategy and managing high-level professionals was done on a basis of trust and taking care of people. The societal impact is shown by around 600 mentions of publications in media, policy documents etc., as measured via Altmetrics.

Section Business Science can build on a strong reputation. It is financially healthy and has big potential with our talented and dedicated staff and international network. Our dependence on external funding invites us to focus in future even more on joint collaborations and joint acquisition (internally and externally).

Case study 1: Why business sciences matter for successful use of insects as protein sources

Literature shows that vegan and vegetarian diets hold a big potential for reducing environmental impact stemming from dietary consumption. However, this analysis typically foregoes aspects such as acceptance, palatability and nutritional intake, which should all be taken into account when considering alternative diets. Existing research on sustainable diets and dietary consumption alternatives also often excludes aspects related to the production of food products and thus neglects the existing links and interrelations between products as well as other aspects influencing the environmental footprint of a product, such as - for example - processing and transportation.

Sander de Leeuw, chair of the Operations and Research Logistics Group, deliberates: "When considering alternative diets, insects are often suggested as a meat substitute for providing proteins. When assessing the sustainability impact in the supply chain one cannot simply replace meat by insects without considering amongst others (1) the effects of other nutritional components that meat may bring to a diet, (2) the general acceptability of insects as protein source in food items, and (3) the management of the chain of supplies required for delivering insects and other required food components vs that of meat."

Several business sciences related questions are in need of answering for the insect case, including:

- what is the actual operational performance of the current meat-focused supply chain in terms of the triple bottom line (people, planet, profit)?
- how do consumers make choices for alternative diet composition dependent on amongst others feelings of disgust, familiarity with insects and insect recipes as food, diet health, affordability and palatability?
- what are appropriate supply chain structures and the tactical and operational planning issues that optimize sustainability, including sourcing strategies for insects, inventory management in the supply chain and transportation network strategies?
- what are opportunities for new businesses and what do these developments imply for sustainable governance in such new networks?
- how can we ensure using systems and data that food prepared from insect-based proteins is safe and secure?

Hans van Trijp, chair of Section Business Science, states: "Basically we think and act in two ways: (i) more reactively: what new challenges are the 'food & agribusiness sciences' facing, like sustainability?; and (ii) more proactively: how can the food & agribusiness re-invent itself to take the lead in these societal challenges and transition? I think that our unicity lies in the integral approach (value chain from 'seed' to 'valorisation of waste') of the specific section (food & agribusiness) around themes that play an integral part there (health & social issues + environmental sustainability). In other universities this is fundamentally different. Being part of a technical university and focussing on interdisciplinary excellence from a disciplinary top of the bill, makes our researchers the star players of the champions league."

Examples of projects around this insect theme are:
GREENDISH aims to (i) define affordable diets for Dutch citizens that are both healthy and sustainable, as well as (ii) indicate the consequences of alternative healthy and sustainable diets for the (re)design of food supply chains.
InsectFeed: To develop insects as sustainable feed for a circular economy, we investigate (1) insect production, focussing on insect health, insect welfare and intrinsic value of insects, (2) health and welfare of livestock fed with insects and (3) conduct an economic analysis of the new insect sector.
SUSINCHAIN: The main goal of the PhD project is to assess the economic feasibility of insect farms in Europe. The subobjectives are (1) to provide a comprehensive overview of current knowledge on insect farm economics, (2) assess risks and barriers for commercialization of European insect farms and (3) assess the economic feasibility of operating insect farms and (4) design and evaluate viable business models for insect farms.
Closing the Loop: The main goal of the project is to explore the economic feasibility and the adoption behaviour by farmers of insect production, and of the use of insect waste streams for soil improvement.
Customisation of insect proteins: The main aim of the project was to explore how to create products in which insects are integrated in a way they can be produced, have relevant nutrition value and are adopted by consumers. PhD thesis was successfully defended in 2017 and the project leader is associate editor CB of JIFF.

Case study 2: REFRESH Project

Challenge or interest

In the EU about 88 million tonnes of food waste is generated annually with associated costs estimated at 143 billion euros. Most of this food waste occurs in consumer households. This immense amount of food waste presents an environmental, economic, and social problem. The REFRESH project focused on the development of strategic agreements to prevent food waste, the formulation of EU policies based on scientific insights, and the development of new solutions to diminish food waste (see About Refresh | REFRESH (eu-refresh.org)). A main emphasis in the REFRESH project has been to provide insights into consumer behaviour in relation to household food waste.

Activities

The project relied on an interdisciplinary consortium of 26 European and Chinese partners from universities, research institutes, private businesses, governments, civil society and other stakeholders coordinated by Wageningen UR. The project ran between 2015 and 2019. Among the contributions provided by the entire consortium, WU has led the work package aimed at understanding consumer behaviour, conducted a series of focus groups, surveys, and experiments to understand the drivers of household food waste and to test interventions. WU has also developed mathematical models able to provide insight into how food waste can be reduced through specific supply chain interventions, such as introducing dynamically adjustable expiration dates and prices using real time estimates of the actual product quality and safety (for more info see https://www.wur.nl/en/article/Combating-food-waste-by-supply-chain-modelling-and-optimization.htm). The final results brochure (https://eu-refresh.org/refresh-final-results-brochure) details the key results of the REFRESH project.

Societal response

The insights gained from REFRESH have inspired organizations at the national and international levels. At the national level, the Foundation United Against Food Waste (https://samentegenvoedselverspilling.nl/) ensures enduring impact in the Dutch society. Moreover, the Netherlands Nutrition Centre bases their behaviour models and intervention development on the Consumer Food Waste Model developed by REFRESH (Figure 4 in their fact sheet https://www.voedingscentrum.nl/Assets/Uploads/voedingscentrum/Documents/Professionals/Pers/Factsheets/Factsheet%20voedselverspilling.pdf). At the international level, the validated survey measurement of household food waste that was developed in the REFRESH project has been used in food waste research internationally, among others in large studies commissioned by Hello Fresh (https://www.csrwire.com/press_releases/44786-hellofresh-steps-up-fight-against-climate-change-and-reveals-results-of-global-food-waste-study) and Unilever (https://www.hellmanns.com/ca/en/foodwastestudy.html), with WU as member of the advisory board. Insights from the consumer behaviour part of the REFRESH project, in particular the emphasis on social norms, resonate in the Farm to Fork Strategy of the EU and the new Horizon Europe call on this topic. The quantitative design oriented research shows the improvement potential by lifting the state of the art in research to a higher trl level. It informs policy makers and triggers them to relieve any bottlenecks in policy and law. Specifically, it shows that soup kitchens and foodbanks should not be forced to accept all donations. More information on dissemination and exploitation of REFRESH results can be found here: https://eu-refresh.org/final-report-dissemination-and-exploitation-refresh-results, and policy recommendations for behaviour change at household level can be found here: https://eu-refresh.org/policies-against-consumer-food-waste.

Reflection

The Refresh project has triggered many relevant processes such as the work in national platforms and the online "Community of Experts" which continue after the lifetime of the projects. The work in the project has led to important insights on the main drivers of household food waste, and the consumer considerations that play a role. Potential interventions to diminish household food waste were studies within the project as well, and are now receiving follow-up attention in an NWO funded project on transition and behaviour, FETE (Food Waste: From Excess to Enough). In a video message (https://eu-refresh.org/video-message-eu-commissioner-vytenis-andriukaitis), EU Health and Food Safety Commissioner Vytenis Andriukaitis states that REFRESH has resulted in

important guidelines for the EU policy on food waste reduction. The REFRESH project has yielded managerial as well as policy insights, tools, and a guide to reduce food waste throughout the EU. For example, based on REFRESH recommendations, Slimstock is improving their software. The models created help food retailers and other business in finding the right balance in profit, customer service level, and environmental impact.

References

The REFRESH project has led to various publications in scientific journals and working papers currently under review, project reports, and presentations at conferences. Selected publications are:

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Buisman, M., Haijema, R., & Hendrix, E. M. (2018). On the δ-service level for demand substitution in inventory control. *IFAC-PapersOnLine*, *51*(11), 963-967.

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Davison, S., van Geffen, E. J., van Herpen, H. W. I., & Sharp, A. (2020). Applying Behaviour Change Methods to Food Waste. In *Routledge Handbook of Food Waste*. Routledge; Taylor & Francis Group.

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van Herpen, E., van der Lans, I. A., Holthuysen, N., Nijenhuis-de Vries, M., & Quested, T. E. (2019). Comparing wasted apples and oranges: An assessment of methods to measure household food waste. *Waste management*, *88*, 71-84.

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van Lin, A., Aydinli, A., Bertini, M., van Herpen, E., & von Schuckmann, J. (2020). Does Cash Really Mean Trash? An Empirical Investigation Into the Effect of Retailer Price Promotions on Household Food Waste. Working paper under review. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3653259

Snels, J. C. M. A., Tromp, S. O., Buisman, M. E., & Haijema, R. (2019). Gaining insight in possible actions to reduce food waste by developing a prototype monitoring tool and theoretical pilots: REFRESH D2.7. REFRESH. https://edepot.wur.nl/511012

Xue, L., Liu, G., Parfitt, J., Liu, X., Van Herpen, E., Stenmarck, Å., ... & Cheng, S. (2017). Missing food, missing data? A critical review of global food losses and food waste data. *Environmental science & technology*, *51*(12), 6618-6633.

Case study 3 Resilience Project

Challenge

The call for greater resilience responds to the accumulating economic, environmental, institutional, and social challenges facing Europe's agriculture. Since the COVID-19 pandemic, the need for enhanced resilience has become an overarching guiding principle of EU policy making. But what exactly is resilience and how can it be enhanced? How can farming systems prepare for different and often simultaneous types of shocks and stresses, for unexpected and even unknown events? The EU-project SURE-Farm (Towards SUstainable and REsilient EU-FARMing systems; surefarmproject.eu) systematically assessed the resilience challenges and capacities of farming systems and the role of the enabling environment.

Activities

Resilience is a multi-faceted concept and thus requires the involvement of multiple disciplines. A team of scientists from 16 institutes across Europe contributed to the assessments. They assessed adaptive cycle processes of risk management, farm demographics (including the availability of labour), governance with a focus on EU and local policies, and agricultural practices. To do so, 21 different methods were designed ranging from biographical narratives and participatory workshops to agent-based modelling and statistical analyses. The SURE-Farm approach was applied to eleven farming systems which represent different challenges, farm types, agro-ecological zones, produce and affected public goods.

Societal response

Promisingly, SURE-Farm identified various pathways to enhance resilience. However, many of the suggestions require substantial change compared to current practices and policies. For instance, current resilience strategies are often geared too much towards increasing the profitability of farming systems, and tend to neglect the coupling of agricultural production with local institutions, natural resources, and a facilitating infrastructure for innovation. Also, current policies are not sufficiently balanced in their support for robustness, adaptability and transformability of Europe's farming systems.

Reflection

SURE-Farm concludes that many of Europe's farming systems face a formidable and structural resilience crisis. Yet, there are also reasons for optimism. Firstly, outcomes show much spirit for change. Secondly, the systematic analysis of the multiple components contributing to resilience enables the development of a better understanding of processes of change in agri-food systems, the need to develop greater resilience in Europe's farming systems and the priority areas to be addressed.

References

The project, developed tools and main findings were discussed and presented at regional stakeholder meetings, an online co-creation platform, policy seminars and at European and international congresses. Selected publications:

- ✓ EuroChoices, 2020, Special Issue, Towards more resilient agricultural systems in Europe, Vol 19(2), 76 p. https://doi.org/10.1111/1746-692X.12226.
- ✓ Meuwissen, Feindt, P.H., Garrido, A., Mathijs, E., Soriano, B., Urquhart, J., Spiegel, A., 2021. Resilient and sustainable EU-farming systems; exploring diversity and pathways. Cambridge University Press, forthcoming.
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- ✓ Meuwissen, M.P.M., Feindt, P., Spiegel, A., Termeer, K., Mathijs, E., De Mey, Y., Finger, R., Balmann, A., Wauters, E., Urquhart, J., Vigani, M., Zawalińska, K., Herrera, H., Nicholas-Davies, P., Hansson, H., Paas, W., Slijper, T., Coopmans, I., Vroege, W., Ciechomska, A., Accatino, F., Kopainsky, B., Poortvliet, M., Candel, J., Maye, D., Severini, S., Senni, S., Soriano, B., Lagerkvist, C.J., Peneva, M., Gavrilescu, C., Reidsma, P., 2019. A framework to assess the resilience of farming systems. Agricultural Systems 176, 102656. https://doi.org/10.1016/j.agsy.2019.102656.

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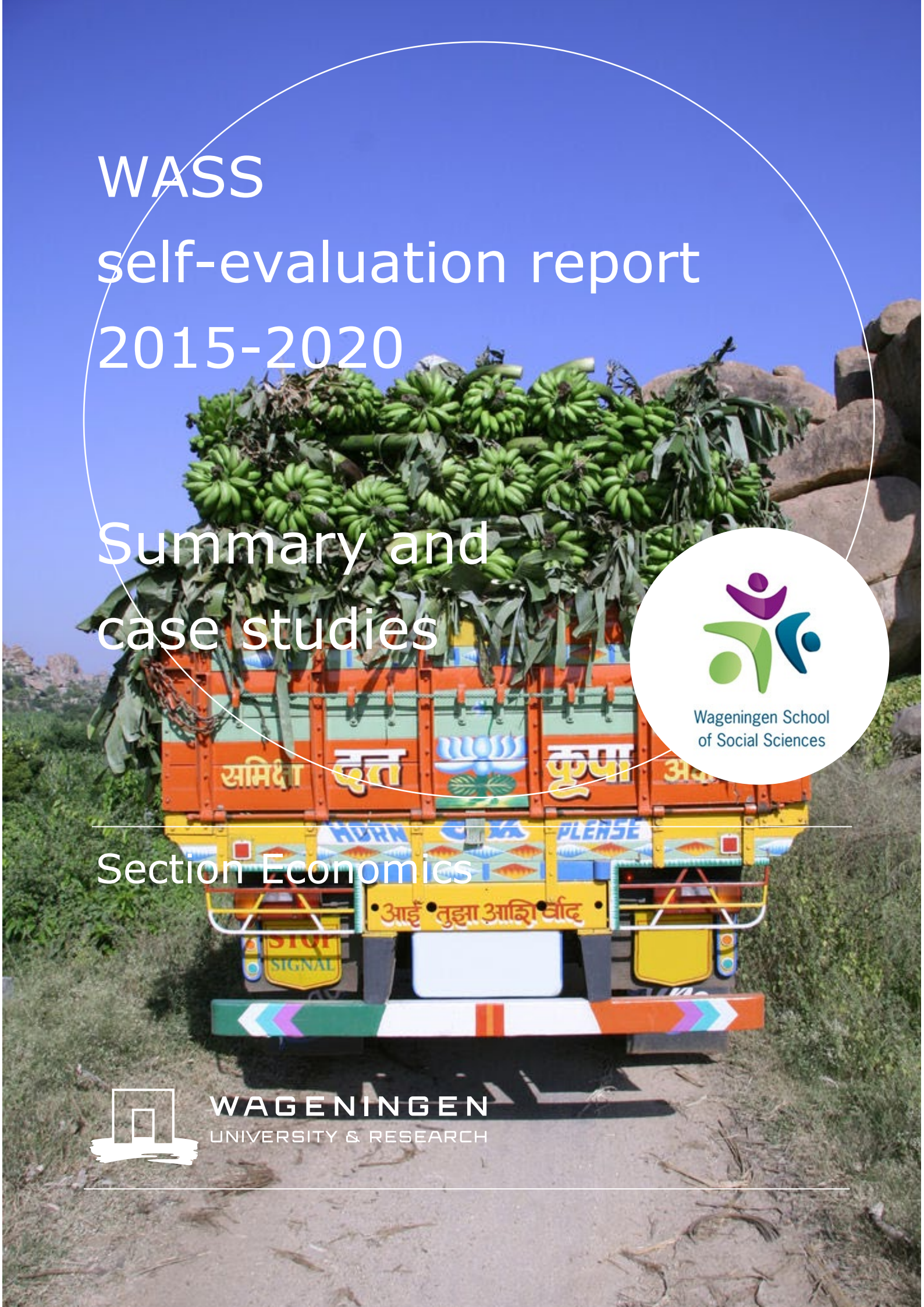
Summary and case studies

Wageningen School of Social Sciences

Section Economics



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Summary Section Economics

The Section Economics comprises five chair groups: Agricultural Economics and Rural Policy (AEP), Development Economics (DEC), Environmental Economics and Natural Resources (ENR), Rural and Environmental History (RHI), and Urban Economics (UEC). ***The mission of the Section Economics is to provide a better understanding of the economics of sustainable and equitable development.*** Sustainable and equitable economic development reduces poverty, enhances food security, improves people's health and nutrition, and generates a sustainable foundation for future well-being. Our research is driven by our desire to understand the world's challenges and to contribute to finding solutions and to an acceleration of two urgent transitions:

- ***Poverty transition and equitable distribution***
- ***Sustainable and circular systems****:*

Our work is organised around three overlapping research domains, **Markets & policies, Spatial structures, and Institutions, cooperation & technology.** The research of the Section Economics is generally characterized by its theory driven empirical approach, including the statistical analysis of secondary data, quantitative datasets constructed from large surveys and field experiments as qualitative analyses of data from interviews or historical archives. Data are analysed with a variety of methods ranging from cross-sectional to time-series and panel data analysis, and serve for testing of hypotheses, micro- and macroeconomic modelling and impact assessments.

Over the past decade, a **transition from a collection of separate chair groups to a more closely-knit Section Economics** has taken place. There is more and more collaboration between the constituent chair groups, in joint research, joint PhD supervision, and the joint writing of grant proposals. We are also increasingly acting as a unit on more strategic issues. The recent addition of RHI and UEC and appointment of Francisco Alpizar as ENR chair have invigorated the Section. **Funding activities have been re-focused to projects that are strategically relevant.** We aim for grants that fit our research targets and strategy and preferably involve more than one of the chair groups. We have been successful in obtaining a number of personal grants. Our involvement in the AMS Institute (with UEC Professor Eveline van Leeuwen as director) and other relevant (inter)national networks ideally positions us for joining promising and relevant research projects. The development of an **academic culture** within the Section Economics has focused on soft practices and management styles that foster a commitment to a **common set of beliefs and the joint pursuit of a common goal**, while at the same time being respectful of the different perspectives, identities and talents that our people bring with them to achieve our objectives. As a section we are strongly aware of the need for openness, both in terms of research as well as personnel policy.

Over the period 2015-20, we have **strengthened our focus on high-quality research**. Firstly, we apply strict criteria in the hiring of PhDs and academic staff. Secondly, we apply for major scientific grants with prestigious donors. Thirdly, we achieve higher quality standards by exposing our work to peers. Fourth, the 2018 midterm review board commented that: "Given the very strong position of the cluster in terms of publication quality, the IAB recommends addressing the most innovative and risky topics", and therefore we have focused more on these types of topics. This has led to successes in terms of high-quality publications and personal grants. Research of the section has benefitted from the involvement of PhD candidates, who are able to make a valuable contribution to the high-quality research as a result of the Section's PhD training policy that complements WASS policies. **The Section Economics is committed to Open Science.** We organize workshops around this theme and an increasing proportion of publications of the group appear as open access - from 13% in 2015 to 63% in 2020.

As a section we are **ideally situated to impact policy at the local, national, and international level**. Over the last 6 years we have managed to improve our impact on society. The section has extended its collaboration with important societal stakeholders, such as ministries, local governments, NGO's and firms. Furthermore, there is a growing awareness among important societal stakeholders that our group offers valuable expertise and the ability to connect theory to practice. Recent changes in the composition of our group have led to a section that combines real world impact with a strong theoretical foundation. Our societal impact occurs along three lines: (1) influence on policymaking to governments (2) influence and contribution to projects developed by NGOs and (3) translation of scientific results to a wider audience.

Collaboration
We have organised collaboration within the section at several levels. There are ongoing collaborative research projects between chairgroups. We are creating an **open and inclusive academic culture,** in which the atmosphere is ideal for constructive criticism, while at the same time offering a safe and stimulating environment for a diverse set of researchers.
Within WUR we have an extensive collaborative network, for example with WEcR, Wageningen Food & Biobased, and many chair groups, both from SSG and other science groups. At a national level we collaborate with several (applied) Universities, but also The Netherlands Environmental Assessment Agency (PBL) and ministries and municipalities. Internationally, our collaborative network is extensive.
We end our report with a **SWOT analysis** and a detailed description of concrete actions regarding Research Quality, Acquisition, and the strengthening of our Organizational Structure, diversity and identity of the Section we intend to undertake to lead us further on the positive path we are on.

Case study 1 BIOMONITOR

Monitoring the Bioeconomy, is a five-year project (2018-2022) funded under the EU Horizon 2020 framework program. Bioeoconomy is generally understood as using renewable biological resources from land and sea, like crops, forests, fish, animals and micro-organisms to produce food, materials and energy. BioMonitor addresses the information gap in bioeconomy research by re-structuring its existing data and modelling framework. The ultimate goal of the project is to get a clearer picture of how bioeconomy affects our lives. The BioMonitor project establishes a sustainable and robust monitoring framework for different stakeholders such as policy makers, public and private sector institutions, and research organisation that they can use to monitor and measure the bioeconomy and its various impacts in relation to the EU and its Member States. Results have been presented at different gathering of stakeholders such as the Global Bioeconomy Summit or the European Green Week. Trainings for statistical officers and government agencies have started, but due to the COVID-19 pandemic several had to be delayed to after the summer of 2021.
The overall project strategy has been summarized in a short video. First results of the monitoring framework are available via the European Bioeconomy Knowledge Center and the related peer reviewed publications. For example a publicly available dashboard has been developed that allows to identify the share of the bioeconomy to the value added of different sectors and subsectors of the EU economy over time and by member state. The methodology for identifying the share has been published in a special issue of *Sustainability* in 2021. Another relevant output is the development of a methodology showing the change of indicators measuring the contribution of the bioeconomy towards reaching the sustainable development goals. The methodology and its application was published in *Ecological Economics* and the results are now made available via the aforementioned dashboard. These are just two examples. The full list of outputs is available via the project web-site.
The project is an example of successful inter- and transdisciplinary research under the leadership of the section economics. The BioMonitor consortium brings together scientists from the natural (e.g. SweTree, European Forest Institute) and social sciences (e.g. AEP, WEcR, Johann Heinrich von Thünen Institute) as well as participants from non-scientific organisations (e.g. Royal Netherlands Standardization Institute, ICONS). The results so far and to be expected are generated by combining the contributions from different fields of science and scientific and non-scientific oriented organisations.
Project results have generated a number of policy impacts. The methodologies developed will be picked-up by the EU Knowledge Center for the Bioeconomy, and be part of the EU taxonomy for bio-based products, project members have contributed to a position paper stressing the importance of the bioeconomy for food systems as part of the UN Food Systems Summit, the bioeconomy has also been put on the agenda of the G20 meeting in Italy with inputs from the BioMonitor project.

Case study 2 SURE+

Sustainable Resource Management for Adequate and Safe Food Provision (SURE+) - is a five year (2016-2021) Strategic Scientific Alliance programme that is funded by KNAW and the Ministry of Science and Technology (MOST), P.R. China.
The SURE+ project aims to form a sustainable Strategic Alliance of leading Dutch and Chinese researchers carrying out interdisciplinary research on the land, water and food nexus in China, to obtain insights to formulate coherent recommendations for adequate and safe food provision based on sustainable resource management, and to develop innovative methodologies that can be applied for examining similar problems in the rest of the world. To realize this aim, the following six coherent sub-projects are carried out by interdisciplinary teams of Chinese and Dutch researchers:

1. *Farm scale enlargement, efficiency gains and environmental spill-overs*: To identify factors affecting consolidation of small and fragmented family farms, and assess the efficiency of family farms in producing food and the environmental spill-over effects from agro-chemical use.
2. *Modelling water pollution and water use in agriculture*: To better understand the interactions between water pollution and water use as a resource for agriculture.
3. *Manure management for diminishing environmental pollution and improving soil quality*: To determine the bottlenecks and possible options for improved manure management.
4. *Designing effective institutional frameworks for supplying sufficient and safe food to all consumers*: To determine which institutional framework contributes effectively to securing access to safe and sustainable food supply.

A. *Impact assessment of land, water and manure management interventions*: To evaluate the effectiveness of proposed interventions through randomized controlled trials.
B. *Design and assessment of integrated management interventions in food systems*: To develop scenarios for integrated management of natural resources for adequate and safe food supply by combining models and data from existing sources and from sub-projects 1 - 4.

Sub-projects 1 – 4 are carried out by 4 PhD researchers in Wageningen and 4 in China, who are jointly supervised by Chinese and Dutch senior researchers; sub-projects A and B involve 2 postdoc researchers in Wageningen and 2 in China. Nico Heerink (DEC) is the PI in Wageningen, while Xueqin Zhu (ENR) and Maarten Voors (DEC) and Liesbeth Dries (AEP) are involved as supervisors and sub-project leads.
Within Wageningen UR, we cooperate with the Environmental Policy (ENP), Soil Quality (SOQ) and the Water Systems and Global Change (WSG) groups. The project builds on existing long-term relationships of the involved groups with Nanjing Agricultural University (DEC), Tsinghua University, Beijing (ENR), China Agricultural University, Beijing (SOQ), and the Chinese Academy of Sciences, Shijiazhuang (WSG).
A Strategic Alliance has developed from this project, called SuReFood (www.surefood.org). This alliance aims to further the cooperation between social and natural scientists and other stakeholders in the governance of natural resources and environmental management of food systems. The SuReFood Alliance is built on five pillars: scientific research for sustainable management of natural resources to feed a growing population; a multi-actor and multidisciplinary approach to progress scientific frontiers; an entrepreneurial approach to involve public and private partners; a strong commitment from all partners already engaged to make the Centre a success; and a flexible set-up to respond to new questions and involve new partners.

Case study 3 SMART BEEjS

Smart Value Generation by Building Efficiency and Energy Justice for Sustainable Living (https://smart-beejs.eu/) - is a consortium of 8 universities and research centres under the Marie Skłodowska-Curie actions, Innovative Training Networks (ITN). The core consortium is supported by 16 non-academic entities, in the United Kingdom, Italy, Portugal, Austria, the Netherlands, Germany, Spain and Switzerland.
The project trains 15 PhD students using an innovative doctoral training program. The training program incorporates three dimensions: (i) deep training in their individual subjects; (ii) systemic thinking and engagement with the needs of citizens and communities as well as experts from different disciplines promoting the development of Positive Energy Districts (PEDs); and (iii) reflection of the impact of our research and realisation of opportunities from outcomes for supporting a Human-Centric energy transition.
The project promotes the development of Positive Energy Districts (PEDs). PEDs are local developments and networks of homes, workplaces and mobility systems which, together, generate more energy than is consumed. This is achieved through a combination of lower energy usage, the local generation of renewable energy and new business models across the energy marketplaces. The PhD students focus on their own aspect of PEDs (eg., technology, social justice, decarbonization, consumption), approach the issues from different angles (e.g., engineering, psychology, economics, law) and uses different methods (eg., interviews, experiments, agent based modelling). The students are specifically trained and encouraged to learn and work together in interdisciplinary teams. This has already led to some interesting papers and reports, on topics like:

- Socio-economic factors & Citizens' practices enabling Positive Energy Districts
- Challenging 'silo thinking' for promoting PEDs
- Business Models and Consumers' Value Proposition for PEDs
- Best Practices Case Study Book. Techno-economic Aspects and Pathways towards Positive Energy Districts

The PhD students are specifically trained to be able to form the link between (EU) policy makers and scientist.

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Summary and case studies

Wageningen School of Social Sciences

Section Communication Philosophy and Technology (CPT)

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Summary CPTE Section

The Communication, Philosophy and Technology (CPT) section consists of three distinct, yet interlocking Chair Groups, the Knowledge, Technology and Innovation (KTI) group, the Philosophy (PHI) group and the Strategic Communication (COM) group[1]. All three groups operate within a shared CPT research ethos that is designed to be both reflexive and action-oriented, critical and policy-relevant. Our ethos of 'studying and doing' is directed to three intersecting research lines, each shaped by cross-cutting themes of dialogue, equity, inclusion, reflexivity, responsibility.

Our mission is to develop critical and policy-relevant understandings of societal challenges and to contribute to clarifying problems, reconfiguring solutions and accelerating transitions. We aspire to be 'the place to be' for engaged scholars who are passionate about understanding and influencing the complex relations and dynamics around societal challenges in life science domains.

In the Communication and Change research line, led by COM, we study complex societal change processes and the power of communication to address them. How can we understand the rise of societal controversy, polarization and experiences of exclusion? How can we contribute to communicative interventions that seek to respond effectively, inclusively and equitably, including the potential of dialogue, storytelling and new forms of engagement? In the Innovation and Transformation research line, led by KTI, we develop reflexive and inclusive approaches to understand, evaluate and transform innovation processes. Much of our research takes place in the Global South, engaging with grassroots actors and initiatives for social innovation and sustainability transitions, studying how innovations can scale up in a responsible manner. In the Ethical Values in Practice research line, led by PHI, we critically reflect on concepts, values, and assumptions often taken for granted. How to understand 'equity', 'health', ('animal') 'welfare' or 'safety' in policy contexts? What is a coherent understanding of what is 'natural' or 'sustainable'? How to evaluate new technologies that not only disrupt societal practices but the very concepts and values that are central in our ethical frameworks?

Our strategic plan is to embed vigorously our research in society to improve wellbeing and quality of life, and to sustain an inclusive academic culture in which people and ideas can flourish. Over the last six years, our research strategy has focused on publications and the acquisition of grants that has enabled us both to make scholarly impacts in our fields accompanied by societal relevance.

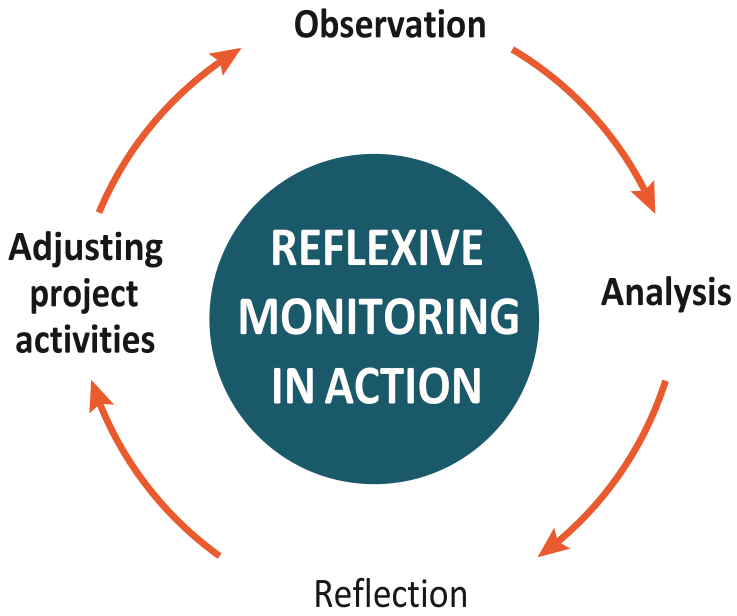
Publications in refereed journals have increased during the period, both in disciplinary and interdisciplinary journals. We have been successful in attracting a strong community of talented new PhDs, postdocs and faculty and have won a series of prestigious fellowships, collaborative grants and programmes. At the same time, CPT has delivered a broad range of societally relevant outputs geared towards supporting reflection, transformation and change in life- science domains, engaging professionals as well as society more broadly. Typically, research and usage are intertwined, as a result of staff members' long-term engagement with a topic and stakeholders involved. CPT's interest in stimulating critical reflection takes multiple forms, from membership in advisory committees and policy influence to invited talks and media coverage.

Our strengths lie in our multidisciplinary composition, our strong reputation in practitioner and multi-stakeholder networks, our capacity to win grants, our section-level support structures and our thought leadership. These strengths provide CPT with the resources to respond to opportunities: for leading collaboration with life sciences groups at WUR, for responding to grant calls, for developing our profile and in ways that capitalize on our tradition of 'intervening and studying'. Internal weaknesses lie in spreading ourselves too thinly, our thought leadership being overly dependent on one or two individuals, and the lack of a visible CPT profile. External threats include reward structures which undervalue societal value creation, excess bureaucracy and the instrumentalization of social science input in multidisciplinary collaboration. To overcome and reduce vulnerabilities to threats, we catalyse collaborative grant writing and publications, develop focus areas within research lines, support the acquisition of prestigious personal grants and collaborative grants, invest in a clear external communication strategy, and promote a warm, safe and welcoming atmosphere for the section.

[1] Note that during writing of the self-evaluation, the Education and Learning Sciences group (ELS) was not yet part of the CPT cluster.

Case study 1 Reflexive Monitoring in Action

Reflexive Monitoring in Action (RMA) is an integrated methodology developed by Barbara van Mierlo and colleagues to encourage learning in multi-actor groups to deal with complex problems and contribute to institutional change. Appointed reflexive monitors stimulate collective learning in the design and adaptation of actions targeting a future system change, triggering reflection in the light of systemic barriers and opportunities. While facing the struggles of a transformative change process, system innovation initiatives are designed to change practices and contribute to sustainability.



The RMA cycle: each activity is aimed at both the innovation initiative and the system targeted

With the Athena institute, CPT scholars wrote the RMA handbook in 2010, generating widespread application across projects and programmes in sustainable agriculture, health, international development, the knowledge infrastructure, and learning for sustainability. Since 2015, Dutch applied universities have adopted the methodology in research and education. In addition, in collaboration with DRIFT, we have developed in-house training for municipalities and research groups.

The impact of RMA has been to widen the repertoire of researchers and consultants across the world, and to translate findings into transdisciplinary action. Practitioners are taking up the role of the reflexive monitor in organisational settings, such as municipalities, with actors involved in collective reflection and action. RMA has helped reframe issues and problems from a systems perspective, with a methodology designed to deal with uncertainty, redesign strategies, grasp windows of opportunity, enhance collaboration, and overcome stagnation in change processes. Check this site for the basic guide, additional tools, practical results and scientific articles.

Case study 2 Responsible innovation and the AIRR framework

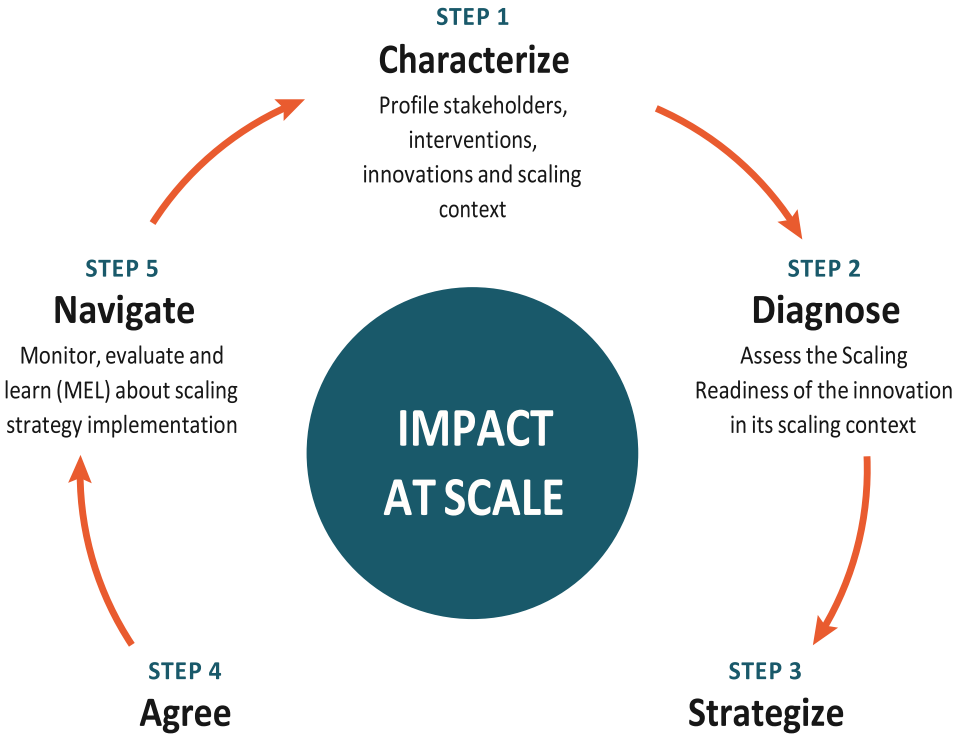
Since 2011, Phil Macnaghten and colleagues have developed frameworks of responsible innovation aimed at extending debates on responsibility in science and innovation to their collective and external impacts on society. More specifically, four dimensions of responsible innovation – anticipation (A), inclusion (I), reflexivity (R), and responsiveness (R): the AIRR framework – have been formulated to provide a scaffold for raising, discussing and responding to questions of societal concern. These dimensions are characteristics of a reflexive vision of innovation and heuristically helpful for decision-makers.

Since 2011, this framework has been taken up by national research funders (the UK's EPSRC, Norway's RCN and the Netherlands NWO), integrated into individual projects and funding schemes (e.g. on synthetic biology and digital technologies), and formulated as a mandatory part of PhD training (across EPSRC's 110 Centres for Doctoral Training). Since 2015 at CPT, we have taken this framework into four domains of practice: (1) to open up debates on gene editing in livestock to make the science more self-reflective in academic and corporate settings, including in four international breeding companies; (2) as a reflexive method for institutionalising responsible innovation as a global concept that is translated and transformed in heterogenous national contexts, including a targeted report on how to implement responsible research and innovation at WUR; (3) as a reflexive research programme for connecting responsible innovation to debates surrounding the self-determination of traditional communities. (4) as a reflexive toolkit for articulating the challenges of implementing responsible innovation in industry.

Case study 3 Responsible scaling and scaling readiness

The use of innovations at scale is an important prerequisite for achieving the Sustainable Development Goals (SDGs). One reason why innovations do not lead to impact at scale is that ideas about scaling are too simplistic. The notion of 'find out what works and do more of the same' (Wigboldus et al. 2016) does not take into account the complex and diverse contexts that shape agriculture across the globe and limits the effectiveness of one-size-fits-all approaches (Hammond et al. 2020).

In collaboration with the CGIAR we have developed, tested and promoted a methodological approach (labelled Scaling Readiness) that engenders reflexivity about scaling in R4D intervention teams (2017-2021). A key starting point is that the scaling of one particular innovation (e.g. a hybrid seed variety) depends on the simultaneous uptake or enhancement of other practices and services (e.g. seed multiplication, input provision, re-organization of labor, pro-poor credit models, etc.) and/or the downscaling of pre-existing practices and configurations (e.g. use of open pollinated seed). Scaling Readiness encourages critical reflection on how ready packages of innovations are for scaling in a particular context for achieving a particular goal and what appropriate actions could accelerate or enhance scaling to realize development outcomes.



Scaling Readiness provides decision support for

1. characterizing a package of interdependent technical, institutional and organisational innovations;
2. diagnosing the current maturity and use of elements in an innovation package to identify unanticipated bottlenecks;
3. developing strategies to overcome bottlenecks for scaling;
4. facilitating multi-stakeholder negotiation on scaling strategies; and
5. navigating the implementation process. We are currently developing a complementary approach to making scaling and Scaling Readiness more sensible to social differentiation and unanticipated consequences (the Gender Responsible Scaling tool).

Our approach has generated widespread impact: we have worked with >10 development initiatives; we have catalyzed an institutional innovation in a large CGIAR programme (RTB) that has established a special fund and policy to make initiatives use Scaling Readiness; our approach has received a lot of attention in the CGIAR, and the thinking behind it is

currently being mainstreamed within the CGIAR as part of the One CGIAR transformation process.

Reflections

Research at CPT has been effective in developing reflexive methodologies that have generated impact as learning tools for organisations at local, national and international scales. The three examples cited in this impact case study has so far has been developed relatively independently from each other. It will be a challenge in the next evaluation period to integrate these (and other) methodological innovations as part of a broader programme of societal and organisational change.

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WASS self-evaluation report 2015-2020

Summary and case studies

Wageningen School of Social Sciences

Section Centre for Space, Place and Society (CSPS)

WAGENINGEN
UNIVERSITY & RESEARCH

Summery Section CSPS

Introduction, mission and objectives

The Centre for Space, Place and Society (CSPS) is a vibrant social science centre within Wageningen University and Research (WUR) dedicated to investigating urgent global challenges around inequality, injustice and environmental degradation in the domains of health, development, food and nature. CSPS consists of four chair groups across the WUR social and environmental sciences: Cultural Geography (GEO), Health and Society (HSO), Rural Sociology (RSO), and Sociology of Development Change (SDC) and its work is focused on four research lines: 1) Global one health, 2) Development and transformation, 3) Agriculture, food, ruralities and nature, and 4) Migration, mobility and tourism. Within and across these research lines, we advance critical-constructive social science scholarship to investigate and understand how critical global challenges manifest across everyday living contexts of people and the political-economic structures that influence these (*scientific objective)*. From this basis, we develop and support imaginative possibilities and practical action for a more just, sustainable and equitable world (*societal objective)*.

Strategy over past 6 years

Over the past 6 years, our core strategy **to meet our scientific objectives** has been to develop an enabling environment and stimulating academic culture for staff and PhD students to organise, exchange and have the basic resources to grow and advance in their careers. This strategy has three central elements. First, we have created a **self-funded, flexible cluster model** around particular themes where staff and PhDs of different groups come together to organise activities and events within or across the four research lines. Second, the CSPS focuses on **centre-wide activities and a conducive human resource policy** to advance research quality and foster collaboration across chair groups and research lines. Our HR policy focuses on talent management, coordinated staff hires, diversity and inclusiveness and an ongoing visiting fellowship scheme. Third, we centralize a **research quality support structure** for staff and PhDs that focuses on being recognised in customary qualitative and quantitative indicators such as citations, high-impact journal articles, important positions in the academic landscape and connects these, increasingly, to non-standard criteria for research quality around wonder, beauty, meaning and value creation. Our strategy to meet **our societal objectives**, rests on four pillars: 1) sharing knowledge through diverse channels with partners, including citizens/civil society, (e.g., through social media); 2) critical reflections on and engagements with policy; 3) influencing the public debate; and 4) direct engagement with the implementation of policies and programmes by societal actors.

Strategy for the future

The CSPS is ready, keen and well positioned to make use of its strengths and opportunities to work on its weaknesses and respond to external threats. Most importantly, we are keen to extend our profile as a world-leading intellectual hub that helps to understand and respond to critical challenges around inequality, injustice and environmental degradation in the domains of health, development, food and nature. Hence, the **CSPS strategy for the next 6 years** is centred on four main elements: 1) strengthening our scientific foundations; 2) building a culture of quality, including through open science; 3) deepening working relationships with societal partners to increase the impact of our work; and 4) investing in our staff, PhDs and organisation.

Case study 1 Food and Health

In much of its research, the CSPS focuses on food and nutrition among marginalized and vulnerable groups and addresses issues related to health inequality, sustainability, and empowerment. Health emerges from complex interactions between social structures and personal and community actions aimed at gaining ownership and control over determinants of health and well-being. Health also represents a dynamic process that develops over one's lifetime during which people learn to identify and use resources to cope with life-challenges. Through this process, people establish connections with themselves and their social, natural and built environment that support them in achieving health and wellbeing while also safeguarding ecological sustainability. The Ten2Twenty Program sponsored by the Edema Steernberg Foundation represents these key principles. Within the specific context of Nepal, the program examined the interrelationship between optimizing the nutrition of adolescent girls and improving their general health, education

and labour participation. Within Scheme 2 of the Edema Steernberg Foundation, there are a number of other CSPS projects that share similar health promotion principles as the Ten2Twenty program, including (1) a project investigating and promoting healthful eating among Type 2 diabetics and how they might be supported practically and socially and (2) another project examining the everyday life of socially vulnerable women and using empowerment approaches to promote healthy diets amongst pregnant women. All three projects transverse a number of CSPS research lines and impact society in multiple ways, such as networking, workshops and practical manuals for so-called salutogenic interventions and empowerment approaches.

Key academic achievements:

- 11 academic publications;
- Presentations on national and international conferences.

Key societal achievements:

- Development of a Nutrition Disparity network (https://www.wur.nl/en/Value-Creation-Cooperation/Nutrition-Disparity-Network-NDN/Members.htm);
- Two international Conferences: Nutrition disparity and equity: from differences to potential (2019) and Collective action on nutrition disparity (2020);
- Empowerment for healthy nutrition Workshop Health & Society/CSPS (2019).

Case study 2 Convivial conservation

Conviviality is turning out to become a key theme for many researchers within the CSPS. In 2021, the CSPS has organised an online conference together with one of its core partners, the School for People, Environment and Planning of Massey University in New Zealand, on conviviality, to ask how tangled global predicaments of climate change, agriculture, biodiversity, and conservation can be tackled through a focus on conviviality – that is, the cultivation of vitality, regeneration, and restoration in shifting terrains of belonging and exclusion in multispecies communities. One important way in which CSPS researchers have worked out this idea is through the concept of **convivial conservation**, which is focused on tackling the biodiversity crisis through transformative development.

Convivial (literally: 'living with') conservation offers a new and integrated approach to understanding and practicing environmental conservation. This approach goes beyond protected areas and faith in markets to incorporate the needs of humans and nonhumans within integrated and just landscapes. It is a vision that responds to the major ecological, social and political-economic challenges in the 21st century. It links with all four CSPS research lines by stimulating broader conceptualizations of global one health, linking the rural and the urban in biodiversity management and studying and promoting transformative change.

The two objectives of the convivial conservation program are 1) to critically understand biodiversity conservation within local and global contexts of social and political-economic development; and 2) on this basis to conceptualize and promote realistic and imaginative alternatives that promote transformative change.

Key academic achievements: the program has so far resulted in 10 academic publications, including several articles in top journals, as well as a book with Verso Press (Büscher and Fletcher, 2020). This book has already been highly influential in conservation, development and political ecology debates, positively reviewed over 10 times, cited over 70 times in Google Scholar, and is slated for translation in German and Spanish. The publications under this programme further show that critical social sciences can trigger strong interdisciplinary interest (Massarella et al, 2021) and push theories connecting environment and development. Other academic achievements include a 1,3 million € Belmont Forum project that studied human-predator interactions in four countries around the world and 1,2 million € interdisciplinary cross-Wageningen University project studying convivial conservation in Egypt.

Key societal achievements: In collaboration with the Dutch Environmental Planning Agency (PBL), the program has changed post-2020 global biodiversity scenario analyses by including convivial conservation as an alternative scenario, which will be used in the Convention for Biological Diversity. Together with nongovernmental partners like WWF Netherlands, the

Indigenous and Community Conserved Areas consortium, the Forest People's Programme and many others, the program has participated in fora like the IUCN World Conservation Congress. The programme has also attracted the attention of major donors, including SIDA, the French Development Agency, and the Oak Foundation, which has now funded a major project in South Africa to implement convivial conservation in practice. Finally, the program has had great general outreach through its websites, many popular blogs (e.g. Fletcher et al, 2020), articles and short videos, while its @convivconserv twitter address has over 1320 followers.

The success of the concept has prompted further research within CSPS on 'convivial spaces', effectively broadening the context to a range of settings relevant to our research foci.

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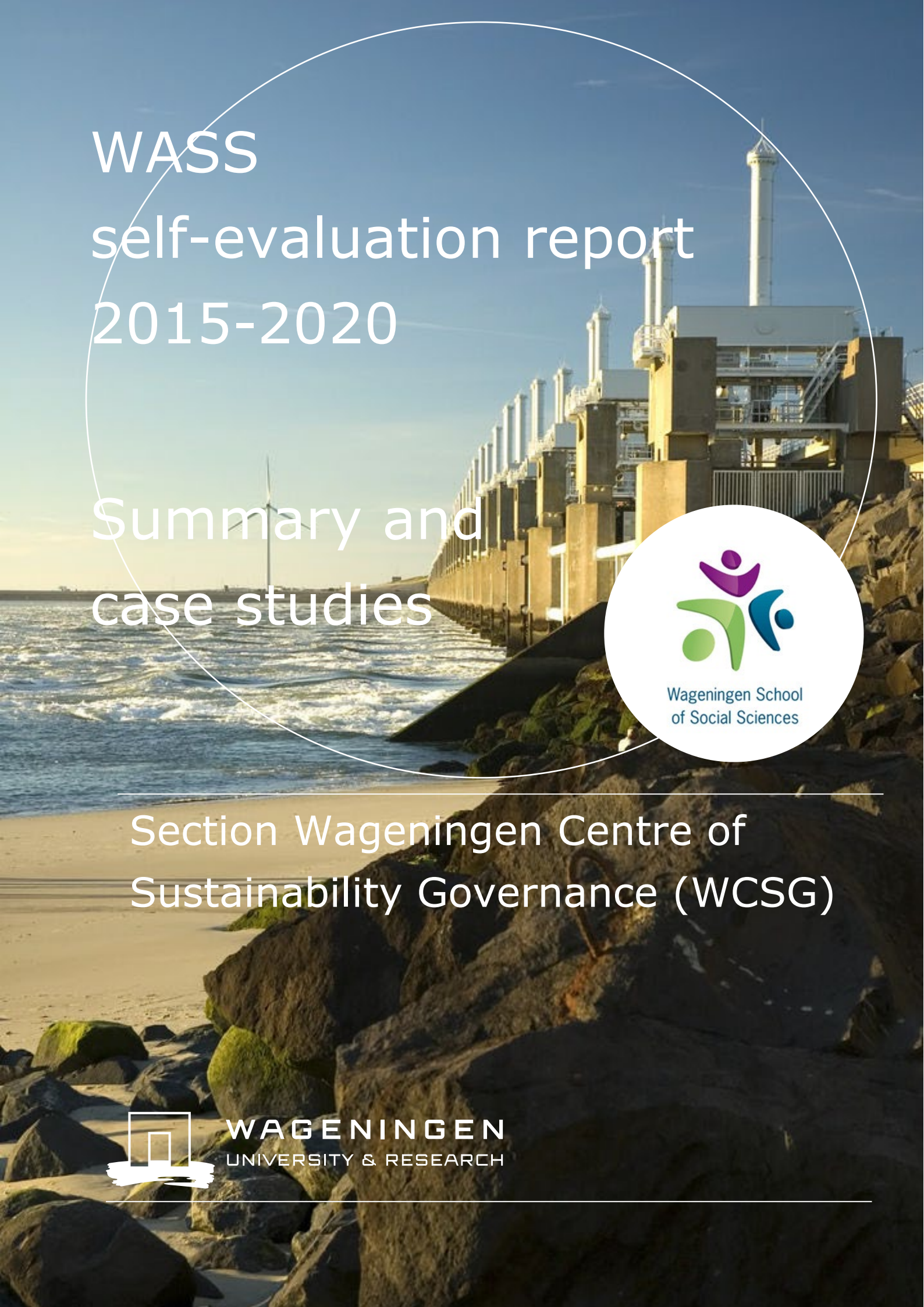

WASS self-evaluation report 2015-2020

Summary and case studies

Wageningen School of Social Sciences

Section Wageningen Centre of Sustainability Governance (WCSG)

WAGENINGEN
UNIVERSITY & RESEARCH

Summary Section WCSG

The Wageningen Centre of Sustainability Governance (WCSG) is a collaboration between the environmental policy (ENP), public administration and policy (PAP), forest and nature conservation policy (FNP), and law (LAW) Chair groups across the Social Sciences Department and the Department of Environmental Sciences of Wageningen University.

Since its start in 2017, The WCSG's ambitious agenda on sustainability governance has combined sociology, political science, legal studies and public administration methodologies to theorise on transformative modes of governance to address global sustainability challenges.

The WCSG mission to 2027 is to further social scientific knowledge on the challenges and solutions to governing societies around the world to achieve inclusive sustainable outcomes in the Wageningen University & Research domains of food, nature, and health.

In doing so, interdisciplinarity continues to play a central role in the design of our research projects as well as in our representation within national and international science and advisory bodies.

Our research programme for the next 6 years is composed of three substantive research lines: (1) Transnational governance and regulation, (2) Transformative sustainability practice, and (3) Uncertainty, knowledge and regulation. In order to further strengthen our visibility and generate greater coherence at the level of the WCSG, three research themes will be prioritised across these research lines: (1) Circular food systems; (2) Climate, water and energy nexus and (3) Landscapes, biodiversity and conservation. These themes cut across the disciplinary work of faculty in each of the Chair groups, align with strategic plans of the Social Science Department, the Department of Environmental Science (where FNP is located) and WUR , and represent ongoing global challenges.

To realise our mission and research programme, the WCSG will continue to invest in the WCSG incubator programme aimed at fostering a creative, risk taking and inclusive and diverse academic culture. We will use these incubators as a means of developing research proposals for national, EU and global funders with collaborators and stakeholders beyond the WCSG. In doing so we will continue to build up our common research infrastructure to support academic debate and our PhD training programme and develop the WCSG as a platform for sociologists, legal scholars and policy scientists to develop and disseminate open knowledge on sustainability governance. We will also invest in joint management strategies to provide the shared institutional systems for substantive collaboration.

Case study 1 Next generation governance arrangements for sustainable global value chains (2015-2020)

The story starts in 2014. At that time, NWO opened a call for smart governance research proposals. We, the groups of Wageningen University who founded the centre in 2016, decided to join forces and develop a joint application. The idea was to focus on governance arrangements for sustainable global value chains (GVCs) and capitalize on the complementing knowledge of the three groups:

(1) the Environmental Policy Group (ENP) on seafood value chains,

(2) the Public Administration and Policy group (PAP) on palm oil value chains,

(3) the Forest and Nature Conservation Policy group (FNP) on timber value chains (the LAW group joint at a later stage, see below).

Enabled by seed money from this NWO program, we organised a workshop with key actors from business, NGOs and public authorities in GVC governance. During this workshop we co-created the following joint problem statement:

Traditional state-centred governance systems have failed to effectively tackle the transnational problem of sustainability of global value chains (GVCs). To fill this 'institutional void', Dutch-led industry and NGOs established a series of global partnerships that designed standards and certification schemes for global commodities. Despite the opportunities and benefits of such initiatives for sustainability, the governance of value chains faces numerous challenges: 1) losing credibility due to unproven performance; 2) the necessity to improve transparency and traceability of products; and 3) lack of synergy with public sustainability policies.

The workshop resulted in a full proposal, including two PhDs and one Postdoc, that aimed to contribute to a better understanding of what we term 'next generation' governance arrangements for sustainable GVCs. The idea was to analyse to what extent and under what conditions such governance arrangements can successfully address the challenges of performance, transparency and public-private synergies; and to assess how these insights can contribute to the design of smarter governance arrangements. Ten key players in value chain management, particularly certification schemes, decided to co-fund this proposal and to actively participate in the research: Round table for Sustainable Palm Oil (RSPO); UTZ Certified; Rainforest Alliance (RA); Marine Stewardship Council (MSC); Forest Stewardship Council (FSC); ISEAL Alliance; Pacifical cv (Sustunable bv); IUCN; PBL Netherlands Environmental Assessment Agency; Oxfam Novib; and GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit). The proposal was subsequently granted in 2015.

The research project deliberately aimed not only to contribute to scientific theories and empirical data on smart forms of hybrid governance in volatile transnational value chains, but also to offer crucial guidance to enhance the effectiveness and legitimacy of GVC governance in practice. Besides conducting research in several countries and on transnational value chains, we regularly organised workshops that were (co)hosted by our societal partners, for example on the performance of certification schemes, on public and private governance of GVCs, on transparency and traceability of products in GVCs and on legal aspects of hybrid governance arrangements. Other stakeholders from outside the consortium were also invited for these workshops. In doing so, we developed an active international 'Community of Practice' on smart GVC governance'. For the workshop on legal aspects, experts from the LAW group were invited, now involving the full WCSG cluster in the project.

The project produced substantial output. Not only were 10 scientific articles published in scientific journals, several blogs and policy briefs also appeared. Particularly the latter are supposed to inspire practitioners to reflect on their governance practices in GVCs. We published policy briefs on transparency and traceability, on public-private synergies, on capabilities to enhance performance and on smart governance in GVCs in general. In the latter, also presented at the latest consortium workshop, we identified four 'building blocks' to support the design of next generation governance arrangements in GVCs that will be better able to address the above mentioned challenges: 1) Developing appropriate meta-governance arrangements to better align the many public and private initiatives; 2) Finding synergies between certification schemes and landscape approaches to better relate value chains of products and geographical spaces of production; 3) Harnessing the potential of hyper-transparency to embrace the pros – and avoid the cons – of the newest digital technologies; and 4) Innovating ways to building trust among public and private stakeholders.

However, these building blocks do not form a fixed recipe, but rather serve to identify new developments and opportunities to strengthen the effectiveness and legitimacy of next generation governance arrangements. Combining these building blocks with a capabilities approach, will allow for a better contribution to sustainable GVC governance. A mixed team of researchers, consortium partners and other stakeholders co-produced these blocks and made some visuals to illustrate their arguments.

These very recent policy briefs are expected to produce impact in the near future. As one consortium member noticed after receiving the policy briefs: "Congratulations! What a nice 'end of the year' gift for all of us, no? The outcome of a huge amount of work, nicely wrapped in digestible policy briefs". But even more important has been the direct impact of the co-creation activities within the consortium, and jointly with invited stakeholders, while conducting the research, organizing the workshops and writing the output

For more information, follow the link to the project: Next Generation Governance Arrangements for Sustainable Global Value Chains – WUR [insert link: https://www.wur.nl/en/Research-Results/Projects-and-programmes/Next-generation-governance-arrangements.htm]

Case study 2 Legal advice on the possibilities to regulate the use of glyphosate

The WUR Law chair group – one of the four constituting chair groups of the WCSG – has provided legal advice to the Dutch Parliament on the options for regulating the use of glyphosate-containing products (Kamerdossier 27858 Plant Protection Products). The advice was written at the request of the Parliament's standing committee for Agriculture, Nature and Food Quality (LNV) and concluded that under certain conditions, European law allows for further national restrictions on the use of Plant Protection Products containing glyphosate. It is expected that this advice will play a crucial role in Dutch policy on the use of glyphosate protection after the new cabinet will be installed in 2021.

Glyphosate is a widely used and effective herbicide for weed control in agriculture. It however raises issues of concern, related to adverse effects on the environment and human health; concerns that are contested at the same time. While the debate continues, the active substance glyphosate in Integrated Crop Protection (ICP) has an EU authorization until 2022. Dutch Parliament adopted motions that did not concern a ban on glyphosate but the restriction of certain of its uses in Plant Protection Products (PPP), for example limiting the use of glyphosate-containing agents for the resetting of grassland; calendar spraying with glyphosate; regular preventive spraying of crops; and pre-harvest applications. The question was whether such national limitations on the use of PPP containing glyphosate were allowed according to EU law despite itsauthorization of glyphosate until 2022. Therefore, legal advice was sought for.

The Parliament has passed two motions by Member De Groot calling for the use of glyphosate-containing products outside of integrated crop protection to be banned (27 858, no. 426 and 463). The Minister of Agriculture, Nature and Food Quality has indicated in the general consultation on 'Nature' of 22 June 2020 that she sees no legal possibilities for a ban on glyphosate-containing products in agriculture, because it concerns an already authorized substance, of which the European reassessment will take place in 2022. The motion by Member of Parliament Tjeerd de Groot (D66), adopted on 3 July 2020, therefore called on the Parliament to gather legal expertise on the possibilities for limiting certain uses of glyphosate-containing products.

Following the motions mentioned in the above, the Parliament's standing committee for LNV also wanted legal advice on the possibilities of limiting certain uses of glyphosate at national level outside the EU framework. The Dienst Analyse en Onderzoek of the Dutch Parliament therefore contacted Dr Schebesta, Associate Professor (UHD) affiliated with the chair group LAW, and the lead of the Law Group's food section. Next to expertise on the subject matter, an important argument for the choice of the LAW group was its reputation for being politically neutral and its ability to act as independent and trustworthy science provider.

The advice was written in collaboration with the entire agri-food section of the chair group, consisting of dr. M.J. Plana Casado, M. Alessandrini and A. D'Amico, under the direction of Dr. Schebesta, whereas the chair holder Prof. Dr. mr. J. van Zeben (expert in European environmental law) undertook a substantive review of the document. The advice made a doctrinal interpretation of the European and Dutch legal frameworks. It further compiled an overview of Dutch plant protection products authorizations. Drawing on the diverse national backgrounds and jurisdictions covered by the food law experts of the Law Group, a comparative overview of legislative developments on plant protection products containing glyphosate in different EU Member States was included in the advice. It clarified that it would be under certain conditions possible to regulate certain uses of glyphosate at national level, and that some restrictions already flow from EU level. This has shifted the legislative debate from the question of whether action on certain uses of glyphosate at national level is legally possible (or impossible) to the question whether this is desirable and in which way. It is expected that the advice will play an important role after the formation of the new Dutch government in 2021.

The advice is not only recognized by Parliament. It also led to a reply by the Minister for Agriculture, C.J. Schouten. She writes in her letter 27858 nr. 525 to Parliament:

"I share Dr. Schebesta's conclusion that Regulation (EC) 1107/2009, the evaluation report of the active substance glyphosate and the implementing regulations extending the approval of the active substance glyphosate, offer opportunities for national action and that these must be based on technical and scientific information and a risk assessment."

Secondly, the advice is also referenced in an analysis of the PBL Netherlands Environmental Assessment Agency (PBL, 2021):

"Possibilities for restricting certain uses of glyphosate-containing products at national level under EU law - The authorization of the active substance takes place at EU level, where the authorisation for glyphosate was extended in 2017 to 2022. Plant protection products (PPPs) containing specific active substances, on the other hand, are authorized by Member States, in accordance with the applicable EU rules. Within this legal framework, according to the advice issued by WUR, there are a number of options for limiting the use of glyphosate (...)."

Sources
Legal Advice H.Schebesta, Juridisch advies: Regulering glyfosaathoudende middelen https://zoek.officielebekendmakingen.nl/kst-27858-520.html

Reply by the Agricultural Minister https://zoek.officielebekendmakingen.nl/kst-27858-525.html

Analysis PBL https://www.pbl.nl/sites/default/files/downloads/pbl-2021-analyse-leefomgevingseffecten-verkiezingsprogrammas-2021-2025-4324.pdf

Case study 3 WCGS Incubator Project: "Accountability and (Contested) Knowledge in Global Environmental Governance"

The WCSG has developed the incubator programme to foster scientific collaboration and impact across the four Chair groups. In this story, the goals, outputs and impacts of one of the first WCSG incubator projects are presented: Accountability and (Contested) Knowledge in Global Environmental Governance. It received pilot funding in 2017 and participants have benefitted since from the collaborative work undertaken. The incubator team included both senior and junior WCSG researchers, with cross-cutting expertise in transparency and accountability in global environment governance, and the politics of knowledge for sustainability. Incubator members included: Aarti Gupta (ENP, incubator lead and contact person), Sylvia Karlsson-Vinkhuyzen (PAP, core member), Nadia Bernaz (Law, core member), Nila Kamil (ENP, core member), Amy Ching (ENP, core member), Esther Turnhout (FNP, additional member), and Tamara Metze-Burghouts (PAP, additional member).

Why this incubator? Individual researchers at WCSG already had significant international visibility on questions of transparency, accountability and (contested) knowledge in sustainability governance. The incubator sought to leverage existing expertise but also to go beyond it, through fostering innovation and co-generation of knowledge through cross-disciplinary collaboration. The goal was to boost collaborative research across the WCSG chair-groups on learning-based accountability mechanisms in global sustainability governance, and the role of transparency and knowledge therein.

What is referred to here as 'learning-based' accountability and transparency mechanisms are increasingly central within multilevel sustainability governance arrangements. These are evident in the 2015 Paris Agreement on Climate Change, the Convention on Biological Diversity, and the Agenda 2030 for Sustainable Development. In these governance arrangements, there is often no (direct) legal framework with targets and timetables to hold actors formally accountable for their agreed-upon aspirational goals. Learning-based accountability relies on a dominant assumption that information, together with procedural agreements, makes it possible for governance actors to 'correct' each other and encourages mutual learning for more effective goal achievement. This presumed role for transparency in fostering accountability faces various challenges, given the contested political contexts within which sustainability-related information and knowledge is produced, disclosed and used. This suggests an important ongoing research agenda.

Via a pilot activity supported by incubator seed money, participants developed a shared understanding amongst themselves, and extended conceptual and methodological innovation, on analysing learning-based accountability in sustainability governance. The activity particularly focused on participant observation and analysis of state-to-state accountability and transparency mechanisms and processes being negotiated and operationalized during the 23rd Conference of the Parties to the United Nations Framework Convention on Climate Change (COP-23) in Bonn (November 6-18, 2017). Specifically, some incubator members observed in-person a process called

the 'Facilitative Sharing of Views' (FSV) whereby developing countries presented the climate actions they are taking to the international community, with the aim to make actions visible and give an account thereof. The objective of this pilot activity was to generate common questions, and design and test appropriate methodologies, by which to analyse development and deployment of transparency–focused learning-based, accountability mechanisms in this governance context.

The incubator and its pilot activity had various impacts. Firstly, it enhanced scientific collaboration amongst incubator members. This included conceptualizing and empirically analysing, via use of Atlas.t software and qualitative analysis, the functioning of the learning-based accountability mechanisms under the Paris Agreement. In this collaborative process, the participants realized the benefits of drawing upon accountability and transparency experiences in issue-domains beyond climate change as well. Thus, a core scientific outcome was also that incubator members Aarti Gupta (ENP), Sylvia Karlsson-Venkhuizen (PAP) and Nila Kamil (ENP)'s ongoing and timely work on climate transparency and accountability, was compared with and enriched by Nadia Bernaz (Law)'s human rights-related accountability work. Results of the incubator were presented at various international conferences during the period 2018 – 2019; and also at WCSG strategy meetings.

Nila Kamil, PhD candidate (ENP), about the collaboration:

"I was at the early stage of my PhD program when this incubator started. I was invited to join as my research focuses on the same topic. We conducted innovative research, focusing on face-to-face account-giving process within global climate governance. We got to attend a UNFCCC inter-sessional meeting in Bonn, Germany in 2017, to directly observe the Facilitative Sharing of Views workshop, which is the manifestation of this account-giving process for developing country Parties."

Secondly, an article in the international peer reviewed journal Climate Policy was published, as a key output of the collaboration: Performing accountability: face to face account-giving in multilateral climate transparency processes'. The incubator team specifically chose Climate Policy because it targets both a scholarly audience and climate policymakers and practitioners as well.

Finally, the participants engaged with the broader scientific community. For example, responses at Twitter immediately appeared when the Climate Policy article was published, even before the authors had tweeted about it themselves. Here, the policy relevance of the paper was noted, while its key findings were highlighted by a prominent scholar.