



RESEARCH ASSESSMENT

WAGENINGEN INSTITUTE FOR
ENVIRONMENT AND CLIMATE
RESEARCH, 2014-2020

**WAGENINGEN UNIVERSITY &
RESEARCH**

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PREFACE

Regular review of a research institute is an essential instrument to guarantee its scientific quality, societal relevance and viability. A panel of international experts had the challenging task to form a balanced judgement of the Wageningen Institute for Environment and Climate Research of Wageningen University and Research (WIMEK) on the basis of a self-evaluation report, a site visit (which was organized virtually this year) and a variety of discussions with research leaders, senior and junior staff, and PhD students. The committee members were impressed by the high quality of the research produced in WIMEK, which is without any doubt linked to the very research-friendly atmosphere and the good working conditions in the different research units.

Some specific issues discussed during the site visit included reflections on WIMEK's ambitious mission to engage with 'Grand Challenges' and how to build on existing excellence to achieve and realise transdisciplinarity and transformations. The discussion also focused on the importance of growth and development strategies and managing pressures associated with growth, planning for greater diversity in leadership, and actions to guide PhDs to timely completion.

Given the particular circumstances of this year's online visit, I would like to stress the keen organization and the smooth interaction before and during the assessment visit. The researchers of WIMEK were assiduous in providing us with a great deal of additional information on their work, thus providing us with the necessary means to sketch the whole picture of the ongoing research at WIMEK. I am certain that I speak for all committee members when I acknowledge how much we profited from this very cooperative atmosphere.

Many persons were involved to make the effort as enjoyable as it turned out to be. On behalf of the review committee, I would like to acknowledge and thank them all.

Prof. dr. Emily Boyd
Chair of the committee



EXECUTIVE SUMMARY

WIMEK is a Graduate School, cross cutting the scientific departments at WUR. As a Graduate School for environment and climate research, WIMEK is responsible for PhD education and training in these fields, coordinating the development of a coherent research programme for environment and climate research, and to safeguard, monitor and stimulate the quality and progress of research by staff, postdocs and PhDs.

The strategy of WIMEK is based on three Grand Environmental Challenges: climate action, managing our future biosphere and advancing circular systems. For these Grand Challenges, WIMEK aims to promote interdisciplinary and transdisciplinary research. The committee thinks these challenges are very relevant and that the strategic activities of WIMEK are a good start. However, with regards to its aim for interdisciplinarity, WIMEK does not have the current capacity to be a deep interdisciplinary institute that spans the natural sciences, social sciences and humanities. To do so it must either very significantly build-up its internal capabilities in the social sciences and humanities, or it establish a very extensive cooperation with a social science institute. If this is not feasible, the mission statement should underline that interdisciplinary research is mostly promoted from a natural science perspective.

Researchers within WIMEK make an excellent contribution to research. They publish high-quality and influential papers and are able to attract competitive research funding on a wide arrange of topics. WIMEK has a unique leading position to explore in-depth fundamental problems in Earth System science. At the same time, the strong natural science focus leads to a sometimes narrow focus on sustainability. The committee recommends expanding collaborations with in particular humanities and social sciences to approach sustainability issues to gain a broader and more integrated advantage to the research. This goes beyond WIMEK and could include cooperations with other Graduate Schools and departments within or outside Wageningen University.

WIMEK has shown many impressive examples of contributions towards the three Grand Challenges, and actively pursues opportunities to reach policy makers, industry and other stakeholders through public-private projects, direct stakeholder involvement in projects, working with universities in the Global South and pursuing open access publication. According to the committee, the impact of WIMEK could further advance by considering a more coordinated outreach strategy linking all the individual achievements and efforts. By specifying goals, target groups and actions on a more systematic and central level, a more focused contribution toward the Grand Challenges could be achieved. This should be strongly rooted in an open science approach, involving stakeholders from the very start to maximize societal impact.

The chair groups connected to WIMEK are generally well-funded and well-staffed. As funding for sustainability research is increasing, WIMEK should prepare for further growth. This includes determining strategic investments in topics regarding to the Grand Challenges, as well as determining how to realize manageable growth with regard to workload and quality of supervision of junior staff. The committee supports the efforts Wageningen University launched to change the culture of rewarding and recognition towards a more diverse set of activities rather than scientific output alone, and recommends WIMEK to keep working on this and other efforts to address workload issues. The committee is positive on the efforts of WIMEK to pursue gender balance. It recommends accelerating the diversity of leadership within WIMEK wherever possible, for instance by considering talented junior staff members when looking to fill leadership positions. The committee also stresses that diversity is broader than gender and nationalities, and encourages WIMEK to also keep considering equal participation and representation on other dimensions.

The committee was impressed by quality of the PhD programme and training at WIMEK. PhD students have ample opportunities for development, both in terms of academic and transferable skills, and the guidance and support



system are well-developed. With regard to success rates, WIMEK should take more responsibility to help PhD students finish their thesis on time. This could include investigating whether the requirement of four published papers is realistic for every research project, and looking into possible relations between well-being, delays and backgrounds of PhD students, in particular their employment status. Ultimately, Wageningen could consider topping the income of bursary PhD students to that of employed PhD students.

The committee considers the SENSE Research School to be a valuable network between universities working on environmental and climate science, that could have more potential than is currently envisioned by the participating universities. The committee encourages SENSE to develop a vision of the future. Depending on the ambitions, this could result in maintaining the current, low-profile set-up, discontinuing SENSE or revitalizing the network, for instance as a platform for interdisciplinary research. According to the committee, the Netherlands is a relatively small country with a relatively large number of small and medium sized research institutes in environmental and climate sciences. In this context, there is much to gain both nationally and internationally by joining forces.

Main recommendations

- If significant investments in social sciences and humanities research are not feasible for WIMEK, underline in the mission statement that interdisciplinary research is mostly promoted from a natural science perspective.
- Broaden the perspective on sustainability through an increased opportunity to collaborate with social sciences and humanities, within as well as outside Wageningen University. This could for instance be pursued through a challenge-based approach that includes all disciplines and expertises relevant to a particular aspect of the Grand Challenges.
- Improve internal and external communication to highlight a comprehensive story that links all contributions to society and the Grand Challenges, specifying goals, target groups and actions.
- Keep pursuing an open science approach, involving stakeholders and policy makers from the very start of the project to maximize the potential for achieving change.
- Formulate a clear strategy for growth, including determining strategic research investments, as well as how to manage the workload associated with growth.
- Continue implementing the new assessment criteria of researchers to include a broader range of activities to relieve pressure on researchers, and investigate other measures to promote work-life balance.
- Improve diversity in leadership, for instance by considering talented junior staff members when looking to fill leadership positions.
- Keep attention on diversity beyond gender and nationality, for instance by considering the inclusion and representation of various minority groups.
- Increase efforts to help PhD students finish their thesis in time by reconsidering thesis requirements, looking into possible relations between well-being, delays and backgrounds of PhD students, in particular their employment status and taking appropriate actions.
- Develop a vision of the future for SENSE and organize the SENSE Research School accordingly.



1. INTRODUCTION

1.1. Aims of the assessment

Wageningen University & Research (WUR) asked an assessment committee of external peers to perform an assessment of the research conducted at the Wageningen Institute for Environment and Climate Research (WIMEK) over the period 2014-2020.

In accordance with the Strategy Evaluation Protocol 2021-2027 (SEP) for research reviews in the Netherlands, the committee was requested to carry out the assessment according to a number of guidelines. The evaluation was to include a backward-looking and a forward-looking component. The committee was asked to judge the performance of the unit on the main assessment criteria specified in the SEP and to offer its written conclusions as well as recommendations based on considerations and arguments. The main assessment criteria are:

- 1) Research Quality;
- 2) Societal Relevance;
- 3) Viability of the Unit.

During the evaluation of these criteria, the assessment committee was asked to incorporate four specific aspects relating to how the unit organises and actually performs its research, how it is composed in terms of leadership and personnel, and how the unit is run on a daily basis. These aspects are:

- 1) Open Science;
- 2) PhD Policy and Training;
- 3) Academic Culture;
- 4) Human Resources Policy.

Finally, WUR asked the committee to reflect on two issues specific to the unit, namely:

- How can WIMEK increase its societal impact further through interdisciplinary and transdisciplinary research approaches (such as co-creation, living labs, citizen science, stakeholder involvement) in the coming decade?
- Does the graduate school have a sufficiently proactive innovation process (e.g., exchange of best practice between graduate schools) to continuously improve the quality of its three main tasks?

1.2. Assessment procedure

This assessment was part of a cluster assessment of five institutes participating in the SENSE Research School. The SENSE Research School is a partnership involving ten Dutch universities and research organizations for integrated environmental and sustainability research. SENSE provides disciplinary and multidisciplinary PhD training, a network for high quality environmental and sustainability research, as well as a bridge for sustainable solutions at the science-practice interface. Institutes could choose to participate in this joint assessment on a voluntary basis. Other partner institutes opted for a stand-alone review, or a joint review at a higher or lower level of aggregation within their own university.

The composition of the committee was as follows:

- Prof. Emily Boyd (Lund University Centre for Sustainability Studies, Lund University) - chair
- Prof. Joseph Alcamo (Sussex Sustainability Research Programme, University of Sussex)
- Dr. Ana Bastos (Department Biogeochemical Integration, Max Planck Institute for Biogeochemistry)
- Prof. Rik Eggen (Department of Environmental Systems Science, ETH Zürich)
- Fenna Hoefsloot MSc (ITC, Twente University) - PhD student member
- Prof. Björn-Ola Linnér (Department of Thematic Studies – Environmental Change, Linköping University)
- Prof. Lyla Mehta (Institute of Development Studies, University of Sussex)



- Prof. Lena Neij (The International Institute for Industrial Environmental Economics, Lund University)

The committee was supported by Peter Hildering MSc, who acted as project manager and secretary on behalf of Qanu.

All members of the committee signed a statement of independence to guarantee an unbiased and independent assessment of the quality of the research performed by WIMEK. Personal or professional relationships between committee members and the research unit under review were reported and discussed at the start of the site visit amongst committee members. The committee concluded that no specific risk in terms of bias or undue influence existed and that all members were sufficiently independent.

1.3 Realization of the assessment outcome

All five assessments were planned in the week of 19-23 April 2021. The five participating institutes were Wageningen Institute for Environment and Climate Research (WIMEK) of Wageningen University and Research, the Institute for Environmental Studies (IVM) and the Department of Environment & Health (E&H) of Vrije Universiteit Amsterdam, IHE Delft Institute for Water Education (IHE Delft) and the Copernicus Institute of Sustainable Development (Copernicus) of Utrecht University.

The committee proceeded according to the SEP 2021-2027. Due to Covid 19 restrictions, all meetings took place online. Prior to the first online meeting, all committee members independently formulated a preliminary assessment of the units under review based on the written information that was provided before the site visit. In a preliminary online meeting on 16 April 2021, the committee was briefed by Qanu about research reviews according to the SEP 2021-2027. It also discussed the preliminary assessments and identified questions that they would raise during the site visit. The committee also agreed upon procedural matters and aspects of the review.

The online site to WIMEK took place on 20 April 2021. After the interviews the committee discussed its findings and comments in order to allow the chair to present the preliminary findings and to provide the secretary with argumentation to draft a first version of the review report. The full schedule of the assessment week is included in Appendix 2. The final review is based on both the documentation provided by WIMEK and the information gathered during the interviews with management and representatives of the research unit during the site visit.

The draft report by the committee and secretary was presented to WIMEK for factual corrections and comments. In close consultation with the chair and other committee members, the comments were reviewed to draft the final report. The final report was presented to the Board of Wageningen University & Research and to the management of the research unit.

The committee used the criteria and categories of the Strategy Evaluation Protocol 2021-2027. For more information see Appendix 1.

1.4 Quality of the information

The committee received the following documents:

- The Self-Evaluation Report
- Overviews and data on selected performance indicators, including Case Studies
- The Terms of Reference;
- The SEP 2021-2027
- Information on staff, organization and policies of WIMEK and WUR
- Videos of the research facilities
- A number of recorded PhD pitches



The committee was positive on the quality of the information received. The self-evaluation report, appendices and case studies painted a clear picture of the mission, strategy and accomplishments of WIMEK.

3. STRUCTURE, ORGANIZATION AND MISSION OF WIMEK

3.1. Introduction

The Wageningen Institute for Environment and Climate Research (WIMEK) is one of six Graduate Schools at Wageningen University & Research (WUR) and was founded in 1993. WIMEK aims to develop an integrated understanding of environmental change, its impact on the quality of life, and sustainability, and it offers solutions for environmental improvement. WIMEK combines fundamental, strategic and participatory research in environmental, climate and sustainability sciences, from both social and natural sciences perspectives. WIMEK is focussed on pressing environmental problems and sustainable solutions from a local to a global scale. The scientific expertise of researchers associated with WIMEK covers the environmental domains of soil, water, atmosphere, landscape, and spatial planning, as well as environmental governance, economics, policy, technology, microbiology and toxicology.

3.2 Strategy and mission

The main aims of the WIMEK Graduate School are:

- To conduct high quality scientific research for impact at the global scientific forefront of environmental and climate research
- To provide an inspiring tailor-made in-depth and skill-oriented training programme for PhD candidates and postdocs
- To form an internal WUR interdisciplinary network and social community of staff, postdocs and PhD candidates on environmental, climate and related sustainability sciences
- To work transdisciplinary, by exchanging emerging insights, recent research results and novel technological & policy approaches in an interactive way to companies, public institutions, regulating authorities and other parties in society.

In order to focus its research programme, WIMEK has identified three Grand Environmental Challenges, for which it aims to contribute to solutions. These are:

- *Climate action*: Towards fair and effective solutions for climate change mitigation and adaptation
- *Managing our future biosphere*: Developing strategies for the sustainable use of soil, water, atmosphere, biodiversity, ecosystems and landscapes
- *Advancing circular systems*: Inclusive innovation towards closed water, nutrient, and material flows

These Grand Challenges are the basis of WIMEK's strategy. It promotes interdisciplinary and transdisciplinary research between chair groups on these challenges. Strategic activities to achieve this include providing seed money for grant applications, quality assurance of research performed on these topics, an honours programme in which talented MSc students take part in a grant competition for a PhD programme and the education and training of PhD students working on these challenges.

3.3. Management and organization

WIMEK is a Graduate School, cross cutting the scientific departments at WUR, and is positioned as the horizontal bar in the matrix structure of WUR. As a Graduate School for environment and climate research, WIMEK is responsible for PhD education and training in these fields, coordinating the development of a coherent research programme for environment and climate research, and to safeguard, monitor and stimulate the quality and progress of research by staff, postdocs and PhDs.

A Graduate School is research supportive, and has no tasks and responsibilities in the formal management of human resources, finances, BSc and MSc education and research facilities. This is the responsibility of the chair groups,



which are the foundational units for research and education at Wageningen University. The chair groups are clustered in larger units, often participating in multiple Graduate Schools. The clusters in turn are grouped in five large science groups covering all of WUR.

Twelve chair groups participate in WIMEK with a full or significant part of their research capacity and six with a limited number of senior researchers, postdocs and PhD candidates. Most of these chair groups participate in one of the following clusters:

- Climate, Water and Society (CWS)
- Environmental Technology and Microbiology (ETE-MIB)
- Landscape Architecture and Spatial Planning (LSP)
- Soil Science (Soil)
- Wageningen Centre of Sustainability Governance (WCSG)

The WIMEK management organization consists of a General Board, a Scientific Director and executive staff, an Education Committee, a PhD Council and an International Advisory Board (IAB). The Board is in charge of the development of the general policy and strategy of the Graduate School and decides on the budget. The Scientific Director is responsible for the daily management of the School. He or she prepares its long-term vision, its scientific direction and an action plan, and discusses this with the executive board of WUR and the science groups. The International Advisory Board advises WIMEK on strategy and research quality.

WIMEK receives a budget for the execution of its main tasks, and can use it to appoint staff, organize PhD education and training, and to promote its research programme through financial incentives. This budget is a percentage of the research revenues generated by the academic staff within the Graduate School.

4. ASSESSMENT OF WIMEK: FINDINGS AND RECOMMENDATIONS

4.1. Aims and strategy

The committee considered the strategy and aims of WIMEK, and thinks that they are fitting for the field of environmental and climate research. The Grand Challenges as defined by WIMEK are very relevant, and fit the research performed within the chair groups.

The current strategic activities of WIMEK to promote trans- and interdisciplinary research are a good start, especially considering the scope and budget of the Graduate School. For instance, the postdoc hired by WIMEK to investigate opportunities for interdisciplinary cooperation between chair groups is a good initiative. However, with regards to its aim for interdisciplinarity, WIMEK does not have the current capacity to be a deep interdisciplinary institute, i.e., one that spans the natural sciences, social sciences and humanities. To do so it must very significantly build-up its internal capabilities in the social sciences and humanities, or it must establish a very extensive cooperation with a social science institute. If WIMEK is not prepared to do so, the committee recommends that WIMEK clarifies its mission statement to underline that interdisciplinary research is mostly promoted from a natural science perspective.

4.2. Research Quality

To assess the quality of research conducted within WIMEK, the committee considered the research output in the light of the strategic aims described above. It concludes that the researchers connected to WIMEK make an excellent contribution to scientific knowledge. Its research is among the best in the global environmental sciences research, which is evidenced by the high-quality publications and the use of these papers by the academic community as demonstrated in the bibliometric analysis provided to the committee. WIMEK is a main participant in the European Wetsus centre of excellence for sustainable water technology, resulting in a high number of projects. Researchers associated with WIMEK were able to attract competitive research funding in the past six years such as individual grants from NWO (13 Veni, 5 Veni and 1 Vici grant) and the European Research Council (1 ERC Consolidator and 1 ERC Advanced Grant). Other major research funding includes 7 Horizon 2020 projects, 2 grants in the NWO National Programme for Large-Scale Research facilities and many more. WIMEK makes fundamental contributions in the fields of climate and environmental science, covering a wide range of topics. WIMEK's research brings together meteorology, climate science, and ecohydrology to answer fundamental questions about the Earth System's dynamics. In the past six years this has led to many prominent results, ranging from underlying processes for climate change to adaptation to sea level rise, from CO₂ uptake in rainforests to measuring microplastics in the environment and water management in water-scarce regions. With its strong natural science focus, it has a unique leading position to explore in-depth fundamental problems in Earth System science.

This natural science orientation leads to a particular approach to sustainability. Perspectives such as the politics of sustainability, ethical impacts of climate change and water scarcity and trade-offs are less prominent within the Graduate School. WIMEK would benefit a lot from expanding collaboration with for instance researchers associated with the WASS Research School. WUR has excellent researchers working on socio-natural issues in water management or sustainability and conservation, which could really aid WIMEK in contributing to the Grand Challenges in a more interdisciplinary way. This could for instance be pursued by increasingly working in an intrasystem, challenge-driven approach. Rather than organizing research around specific systems such as water, climate and soil, research lines could be interpreted as working on particular aspects of the Grand Challenges, incorporating all necessary research expertises in an interdisciplinary way. This would help WIMEK to gain a broader and more integrated advantage to their high-quality research.

As noted above, if certain expertise is not present within WUR, especially in humanities and social sciences, the options are to expand this capacity internally or secure it via cooperation with other institutions. More intellectual cross-fertilization and critical engagement between graduate schools. and critical engagement of social science



debates in general would help move away from the narrower, science-driven perspectives on environment and climate research.

4.3 Societal Relevance

In the documentation and during the site visit, WIMEK has shown many impressive examples of contributions to the three Grand Challenges (climate action, managing our future biosphere and advancing circular systems). According to the committee, WIMEK is very aware of the need to create impact with its research, and makes structural efforts to perform research with societal impact, actively pursuing opportunities to reach policy makers, industry and other stakeholders. This includes working with stakeholders in public-private projects, direct stakeholder involvement in projects such as the development of climate information services, and working with universities in developing countries through joint PhD candidates (the so-called 'sandwich PhDs', that do the start and finalization of their project in Wageningen, and their field work in their home country) on environmental and climate challenges in emerging economies. Approximately 50% of WIMEK's funding is from contract research, funded by governments, the EU, companies or NGO's, which the committee considers excellent proof of the societal relevance of WIMEK's research.

Prominent results in the past years include invitations to international assignments such as the International Panel for Climate Change (IPCC) and the International Panel for Biodiversity and Ecosystems (IPBES), the development of water and climate information services, the many projects in the European Wetsus consortium, and the Nature's Calendar, that monitors yearly cycles such as the growth season under the influence of temperature rises. Furthermore, WIMEK increasingly shares its research results through open access publications. Even in the case of closed access publications, WUR publishes the article in the university's repository after six months. This means that almost all of WIMEK's research is readily available for all interested parties.

The committee thinks highly of the efforts of the individual researchers and groups. The documentation and interviews showed many great examples of very societal relevant research results. Nevertheless, the committee thinks that there is still room for improvement, not on the level of individual achievements such as reports, conferences, contracts and patents, but by systematically demonstrating collective efforts on a higher level. WIMEK could work on improving both internal and external communication to highlight a comprehensive story that links all these efforts, and brings to light what WIMEK as a whole aims to contribute to society and the Grand Challenges. The committee advises to develop an outreach strategy in which the Graduate School specifies its goals, target groups and actions on the level of the Grand Challenges, and the contributions it wants to highlight. The committee realizes that the WIMEK as a Graduate School has limited budget for such efforts, so it might be necessary to determine where in the Wageningen matrix structure such strategies can be best developed and carried out. Of course, these initiatives are not limited to the Graduate School or even WUR alone, wherever possible networks and collaboration partners can be approached to make a coordinated joint effort.

In developing such an outreach strategy, the committee stresses that research is at its most impactful when pursued as part of open science approach. WIMEK presents some strong examples of this in its case studies, but to achieve this more structurally, WIMEK should aim to abandon the classical approach of presenting research results to policy makers after completion, but include stakeholders from the very beginning of the research conceptualisation. To achieve this in a more structural way, the committee advises WIMEK to discuss their ambitions with regard to the Grand Challenges internally and with stakeholders. For the issues in which it really wants to make a difference, stakeholders and policy makers should be included from the very start of the project developing stage as well as during the project duration. If the research questions investigated align with the challenges stakeholders, and include their perspective and context, the results have the best chance of contributing to change.



4.4 Viability

Future outlook

The committee has considered the viability of WIMEK with regard to funding, staffing and internal and external developments that can be expected in the coming years. It concludes that WIMEK is well-funded and maintains an excellent body of researchers. Even though staffing and research funding are not primarily the responsibility of the research school, the committee nevertheless is fully confident that WIMEK is well-equipped for the future.

The committee notes that national and European funding for sustainability research is increasing, and is expected to grow further, as the societal relevance of the field is rapidly growing. It recommends formulating a clear strategy on how WIMEK wants to develop, and to equip itself for the possibility of growth. This includes determining what topics with regard to the Grand Challenges should be expanded, but also on strategies to incorporate more researchers. For instance, how many PhD students can WIMEK's researchers realistically supervise, what support will be necessary to retain a high-quality PhD training and a vibrant academic culture, and how can the workload be managed in such growth processes. The committee advises to develop an overarching strategy focusing on growth and sustained quality and possible need for strategic investments in different areas.

Talent management

One of the most pressing issues at WIMEK is the high workload that in particular its junior staff experiences. PhD students reported to the committee that they sometimes feel that their supervisors can barely find time for weekly supervision, notwithstanding their good intentions. A high workload is a broad issue in academia and not unique to the Wageningen context, but should nevertheless be addressed. The committee is glad to note that WIMEK recognizes the issue, and is devoted to finding a solution.

One of the proposed solutions is to lower the pressure on in particular junior staff by changing the culture of rewarding and recognition from scientific output indices to a more diverse set of activities. Recently, WUR has started on adjusting the assessment criteria for its tenure track system to recognize achievements in all key areas of an academic career: education, research and leadership. This allows for differentiation and specialization: not all staff has to be equally active and successful in all three aspects. WIMEK is directly involved in this process, with the WIMEK director being a member of the committee advising the WUR Executive Board on this matter. Additional steps can and should be taken in promoting an improved work-life balance in the institution, such prevention of mental health issues and support for staff with young families or caregivers. There is no universal solution, but such efforts are ongoing across the world, so that WIMEK can adapt best practices from other institutions.

Diversity

With regard to diversity, WIMEK aims to increase staff diversity in terms of disciplines, gender, nationalities, age, experience and competences, and to help teams benefit from this diversity. The gender ratio among WIMEK PhD candidate is almost equal: 47% female and 53% male PhD candidates. For assistant and associated professors this ratio is approximately 35%-65%, and for full professors 20-80%. The composition of the staff is very international, especially on a junior level, with two-thirds of PhD candidates and 60% of postdocs from outside the Netherlands. At higher academic positions (assistant to full professors) only 15% are not Dutch. To improve the gender balance, WIMEK actively recruits female staff members for vacancies. As most vacancies are for tenure track positions, the gender balance can be expected to gradually increase towards the senior levels, as is already starting to become visible in the statistics.

The committee is positive on the efforts of WIMEK to pursue gender balance. It considers the current staff composition of WIMEK to be very international, and increasingly diverse. However, it agrees with the conclusion of WIMEK that diversity in full professor positions and management is less favourable. It recommends accelerating the diversity of leadership within WIMEK wherever possible, for instance by considering talented junior staff members when looking to fill leadership positions.



With regard to the policy on diversity and inclusion, WIMEK could benefit from a more intersectional and integrated approach. Diversity is currently largely defined by the male/female ratio and internationalization. Although important, this only focuses on (limited) physical representation in staff and student bodies. Focussing on these dimensions turns the question of diversity and inclusion into a 'recruitment problem' rather than aiming for the deep institutional change which is needed for guaranteeing the equal participation and well-being of minority groups (including queer, disabled, and people of colour). The committee recommends WIMEK to reflect on how diversity can be increased beyond gender dichotomies and nationality to include diversity in knowledge, expression, and experience in education, research, and institutional practice.

4.5 PhD training and education

Education

WIMEK organizes PhD education and training for all PhD students in environmental and climate research. PhD students at WUR within these fields register at WIMEK. After an introduction meeting at the Research School, each PhD student is asked to write a PhD proposal and a Training and Supervision Plan (TSP) together with his or her supervisor.

The PhD proposal contains the project details and planning of the PhD project. This proposal is assessed by two external reviewers, and the student is asked to address their comments. The TSP includes a self-assessment of the student, with points of personal development for the next four years. This includes research skills, project management, science communication and career planning. PhD students and their supervisor then choose a 30 EC set of courses appropriate for these personal development goals. They can choose from general skills courses at the Wageningen Graduate School, specialized skills courses at WIMEK and topical courses, symposia and other activities at the SENSE Research School. Some elements are mandatory: all PhD students at least attend the introductory and research impact course at the SENSE Research School. The PhD proposal and TSP should be completed six months after the start of the PhD at the latest, and serve as the basis of the PhD trajectory of the candidate.

Next to the guidance and support by the supervisor, PhD students can also turn to the WIMEK PhD education and training coordinator or PhD mentor for confidential advice on any issues they encounter, including possible conflicts or issues with regard to well-being. The WIMEK PhD Council represents the interest of WIMEK PhD students within the chair groups. For new PhD students, the PhD Council provides a buddy, a fellow PhD student that helps him or her get integrated in WIMEK, the university and (for international students) Dutch society.

The committee was impressed by quality of the PhD programme and training at WIMEK. PhD students have ample opportunities for development, both in terms of academic and transferable skills. WIMEK and the SENSE Research School provide an inspiring community in which PhD students can meet with their peers and experts in the field. The guidance and support system at WIMEK is well-developed. It is very good and necessary that there is an active PhD committee that advocates for the PhD well-being and position within the institute. This should be fostered.

Success rates

WIMEK aims to have PhD students complete their thesis in four years, and to have the PhD graduation within six months after finishing this, so within 4.5 years. However, only 39% of the WIMEK PhD candidates graduated within 5 years or less, and 60% within 6 years. This can be partly explained by part-time contracts (5-year contract working 80% of time) and extended contracts because of additional tasks (research or teaching). However, this is only part of the explanation. Other reasons are personal factors (illness, pregnancy) and delays caused by accepting a new job directly after the PhD contract, without finishing the draft of the thesis.

Still, part of the delays is unexplained. Based on the interviews during the site visit, the committee considers this to be mainly a cultural issue. Timely completion is not the number one priority when assessing a PhD trajectory, and



PhD students inclined to continue doing research to reach better results are not always guided towards completion. The committee feels that WIMEK should take more responsibility to help PhD students finish their thesis on time. According to the committee, the university has a social responsibility in preventing PhD students from ending up in a situation where they keep working on their thesis without compensation. Apart from the fact that financial compensation ends after four years, an extended PhD trajectory does not look good on a resume and might hinder the chances of WIMEK's PhDs to successfully find positions abroad. The committee believes that with more attention towards this issue and less tolerance towards extensions, WIMEK's PhD students can be better supported to finish on time. In particular, the committee asks WIMEK to reflect on whether the requirement of four published papers is realistic for each thesis. In line with the qualitative assessment procedures in development at WIMEK, PhD trajectories might also benefit from putting quality over quantity. Some projects might take longer to yield results, or could be more suitable for one or two papers with a larger scope. Flexibility in this regard might not only promote success rates, but also reduce stress for PhD students.

The committee noted during the site visit that a large fraction of PhD students is funded by fellowships, which do not offer the same financial stability and opportunities (such as social security) as employed PhDs. Such situations might be a hidden factor in delays through of stress and demotivation. Bursary students are more likely to be non-Dutch students, often from the Global South, and earn less than the minimum income in the Netherlands. Moreover, PhDs who relocate to the Netherlands often lack the social infrastructure and know-how of the Dutch academic culture to thrive from the start of their PhD trajectory. Looking through this lens of differences across funding structures, Dutch/non-Dutch and genders might provide new insights regarding the unexplained dropouts and can improve the supervision for candidates who are at risk of delays. If WIMEK really wants to create a level playing field and alleviate additional stress, it could consider topping up the competitive, governmental scholarships from abroad to match the payment levels of employed PhD students, like for example the University of Groningen does.

4.6 SENSE Research School

The environmental and climate research institutes in the Netherlands cooperate in the SENSE Research School. WIMEK is one of the original founders and currently the main promotor of SENSE. 13 institutes spread over 10 research institutions participate in SENSE. All of the five institutes the committee reviewed during the week were part of SENSE. SENSE primarily supports PhD education in educational and climate science, and to some limited extent researchers, by providing courses and a network.

During the site visits, the committee learnt that SENSE is the continuation of a former national Research School. Where most Research Schools were discontinued once universities started to increasingly use own Graduate Schools, the SENSE Research School was maintained, as the participating institutes saw the added value of a national School in PhD education. The committee also learnt that the added value attributed to SENSE differed among the institutes, and that this is the reason why the Research School has a rather narrow scope, focusing on PhD education and a number of networking and outreach opportunities.

The committee thinks that a national network for cooperation between environmental institutes is a very good idea with great potential. The current limited scope however does not fully realize the opportunities such a network has. Also, the level of support is very dependent on a small number of participants, in particular WIMEK. The committee encourages SENSE to develop a vision of the future.

It could be that the Research School is happy with the current situation, and does not see possibilities for cooperation beyond the current efforts. Another possibility is to discontinue SENSE. The third scenario is a revitalization of the network. In that case, the committee sees lots of possibilities. As discussed earlier in this report, the sustainable development goals that environmental and climate sciences work on are so interdisciplinary that SENSE should consider a broader range of institutes working on environment and science from other disciplines, such as social sciences, governance, political science and law. This would mean opening up the requirements and



prerequisites for the certificates, for instance by cooperation with other Research Schools such as CERES of WTMC to suit PhD students' needs.

In the most ambitious scenario, SENSE could be a platform for interdisciplinary cooperation which can be used to collectively seek collaboration with other fields, governments and international partners, and for coordinated outreach and lobbying. Another possibility is to develop SENSE into a platform for the interests of PhD students and other researchers in the field, and develop joint policies and procedures on issues such as intersectional inclusivity, safety, equal opportunities and work-related conflicts.

According to the committee, the Netherlands is a relatively small country with a relatively large number of small and medium sized research institutes in environmental and climate sciences. In this context, there is much to gain both nationally and internationally by joining forces.



APPENDICES



APPENDIX 1: CRITERIA OF THE SEP PROTOCOL

The committee was requested to assess the quality of research conducted by the UHS as well as to offer recommendations in order to improve the quality of research and the strategy of the UHS. The committee was requested to carry out the assessment according to the guidelines specified in the Strategy Evaluation Protocol. The evaluation included a backward-looking and a forward-looking component. Specifically, the committee was asked to judge the performance of the unit on the main assessment criteria and offer its written conclusions as well as recommendations based on considerations and arguments. The main assessment criteria are:

- 1) **Research Quality:** the quality of the unit's research over the past six-year period is assessed in its international, national or – where appropriate – regional context. The assessment committee does so by assessing a research unit in light of its own aims and strategy. Central in this assessment are the contributions to the body of scientific knowledge. The assessment committee reflects on the quality and scientific relevance of the research. Moreover, the academic reputation and leadership within the field is assessed. The committee's assessment is grounded in a narrative argument and supported by evidence of the scientific achievements of the unit in the context of the national or international research field, as appropriate to the specific claims made in the narrative.
- 2) **Societal Relevance:** the societal relevance of the unit's research in terms of impact, public engagement and uptake of the unit's research is assessed in economic, social, cultural, educational or any other terms that may be relevant. Societal impact may often take longer to become apparent. Societal impact that became evident in the past six years may therefore well be due to research done by the unit long before. The assessment committee reflects on societal relevance by assessing a research unit's accomplishments in light of its own aims and strategy. The assessment committee also reflects, where applicable, on the teaching-research nexus. The assessment is grounded in a narrative argument that describes the key research findings and their implications, while it also includes evidence for the societal relevance in terms of impact and engagement of the research unit.
- 3) **Viability of the Unit:** the extent to which the research unit's goals for the coming six-year period remain scientifically and societally relevant is assessed. It is also assessed whether its aims and strategy as well as the foresight of its leadership and its overall management are optimal to attain these goals. Finally, it is assessed whether the plans and resources are adequate to implement this strategy. The assessment committee also reflects on the viability of the research unit in relation to the expected developments in the field and societal developments as well as on the wider institutional context of the research unit

During the evaluation of these criteria, the assessment committee was asked to incorporate four specific aspects. These aspects were included, as they are becoming increasingly important in the current scientific context and help to shape the past as well as future quality of the research unit. These four aspects relate to how the unit organises and actually performs its research, how it is composed in terms of leadership and personnel, and how the unit is being run on a daily basis. These aspects are as follows:

- 4) **Open Science:** availability of research output, reuse of data, involvement of societal stakeholders;
- 5) **PhD Policy and Training:** supervision and instruction of PhD candidates;
- 6) **Academic Culture:** openness, (social) safety and inclusivity; and research integrity;
- 7) **Human Resources Policy:** diversity and talent management.



APPENDIX 2: SITE VISIT PROGRAMME

Friday 16 April

Time slot	Meeting
09.00 - 13.00	Panel instruction & preparation

Monday 19 April

Time slot	Meeting
14.00 - 15.00	Internal panel meeting: final preparation
15.00 – 16.00	Welcome and introduction by the rector of Wageningen University and Research and the participating SENSE institutes

Tuesday 20 April

Time slot	Meeting
11.00 - 11.30	Final preparations for Tuesday
11.45 - 12.30	Management WIMEK-WUR: organization, SWOT, future strategy and policy
13.30 - 14.15	Research at WIMEK-WUR: presentation and discussion regarding WIMEK's Grand Challenges and case studies; research facilities; future perspectives
14.30 - 15.30	Training and education of young researchers: PhD and postdoc policy WUR and WIMEK; PhD education and training programme; meeting with the WIMEK PhD Council and/or PhD and postdoc representatives.
15.45 - 16.45	Evaluation WIMEK-WUR
16.45 – 17.30	Final preparations for Wednesday

Wednesday 21 April

Time slot	Meeting
08.30 – 08.45	Welcome by Dean VU Faculty of Science
08.45 - 09.30	Organizing IVM-VU: management & strategy
09.45 - 10.30	Using research from IVM-VU: social impact & academic excellence
10.45 - 11.30	Working at IVM-VU: careers & community
11.45 - 12.45	Evaluation IVM-VU
13.45 - 14.30	Organization E&H-VU (incl. management, HR policy)
14.45 - 15.30	Research quality E&H-VU (incl. PhD policy, academic culture)
15.45 – 16:30	Societal Impact E&H-VU
16:45 - 17:45	Evaluation E&H-VU

Thursday 22 April

Time slot	Meeting
12.00 - 12.45	Final preparations for Thursday
13.00 - 14.00	IHE Delft - Research management and infrastructure
14.15 - 15.00	IHE Delft - From research to impact
15.15 - 16.00	IHE Delft - Future positioning in an international playing field



16.15 - 17.15	Evaluation WIMEK-WUR
17.15 – 17.45	Final preparations for Friday

Friday 23 April

Time slot	Meeting
09.30 - 10.30	Copernicus UU - Management/ Strategy / Talent policy
10.45 - 11.30	Copernicus UU - Young Researchers / PhDs /Postdocs
11.45 - 12.30	Copernicus UU - Research and Societal Impact
13.30 - 14.30	Evaluation Copernicus - UU
14.30 - 16.30	Preparation provisional findings all institutes
16.30 - 17.30	Presentation provisional findings & wrap-up



APPENDIX 3: QUANTITATIVE DATA

Quantitative data on the research unit's composition and funding, as described in Appendix E, Tables E2, E3 and E4:

- Research staff;
- Funding;
- PhD candidates

	2014		2015		2016		2017		2018		2019		2020	
Scientific staff	#	FTE	#	FTE	#	FTE	#	FTE	#	FTE	#	FTE	#	FTE
Professor ¹	39	8.2	38	8.2	37	9.0	37	9.5	37	9.7	40	9.6	37	9.7
Associate professor ¹	23	6.9	28	7.5	36	9.9	37	11.1	38	11.4	47	13.4	47	12.5
Assistant professor ¹	51	14.9	51	14.2	47	12.3	43	14.4	40	13.6	43	12.9	53	14.1
Subtotal	113	30.0	117	29.8	120	31.3	117	35.0	115	34.7	130	35.8	137	36.2
Post-docs ²	22	10.7	23	14.0	31	16.2	37	18.3	41	23.8	38	23.0	38	24.3
PhD candidates ³	234	115.9	243	120.8	253	129.4	262	130.1	263	129.2	272	137.0	300	150.2
Total	369	157	384	165	404	177	416	183	419	188	440	196	475	211

#: Total number of staff members

FTE: Research Capacity in Full Time Equivalents

¹Professors, Assistant Professors and Associated Professors should spend 40% of their time on research regularly. However, they are not always connected to the chair group all year round; many of them have a part-time contract; staff members at ENP, ENR, MIB and MAE split up their research input in a WIMEK part and another GS part; and the teaching work load sometimes limits the available time for research.

²Post-doc: Research Capacity amounts to 90% of the appointment. Many of them have a part-time contract and are not connected to the chair group all year round (a post doc contract is usually one to three years)

³PhD candidates: number of PhD candidates, excluding external PhD candidates, because their research effort doesn't count as research input at WUR.

	2014		2015		2016		2017		2018		2019		2020		Average	
Funding	FTE	%	FTE	%	FTE	%	FTE	%	FTE	%	FTE	%	FTE	%	FTE	%
Direct funding ¹	44.4	28.3	45.8	27.8	47.0	26.6	43.2	23.6	44.9	23.9	50.4	25.7	55.3	26.3	47.3	25.9
Research grants ²	21.4	13.7	25.5	15.5	35.6	20.1	45.1	24.6	46.8	24.9	48.6	24.8	53.2	25.3	39.5	21.6
Contract research ³	91.1	58.1	93.3	56.7	94.3	53.3	95.0	51.8	96.2	51.2	97.0	49.5	102.0	48.4	95.5	52.4
Total funding	157	100	165	100	177	100	183	100	188	100	196	100	211	100	182	100

Note 1: Direct funding by the University

Note 2: Research grants obtained in national scientific competition (e.g. grants from NWO, KNAW)

Note 3: Research contracts for specific research projects obtained from external organisations, such as industry, governmental ministries, European Commission, charity organisations

PhD candidate: Research capacity amounts to 75% of the appointment/fellowship (all categories except external)



Starting year	Enrolment		Success rates																
	Enrolment (male / female)		Total (M+F)	Graduated in year 4 or earlier		Graduated in year 5 or earlier		Graduated in year 6 or earlier		Graduated before 31-12-2020		Not yet finished		Discontinued <18 months		Discontinued 18 - 48 months		All but dissertation	
	# M	# F	#	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
2011	8	10	18	2	11	8	44	12	67	16	89	-	-	1	6	1	6	-	-
2012	13	13	26	2	8	8	31	15	58	16	62	6	23	3	12	1	4	-	-
2013	16	12	28	1	4	9	32	20	71	21	75	6	21	-	-	1	4	-	-
2014	12	13	25	-	-	10	40	16	64	17	68	5	20	2	8	1	4	-	-
2015	14	9	23	1	4	11	48	-	-	15	65	6	26	1	4	-	-	1	4
2016	14	17	31	1	3	-	-	-	-	13	42	17	55	-	-	1	3	-	-
Total	77	74	151	7	5	59	39	91	60	98	65	40	26	7	5	5	3	1	1

Notes: Table shows numbers (#) of male (M) and female (F) PhD candidates

All employed PhD candidates conducting research with the primary aim/obligation of graduating, based on a 0.8-1.0 FTE contract.

Reasons to discontinue PhD < 18 months: Not enough progress (3); acceptance of another job (3) and conflict with supervisors (1); Reasons to discontinue PhD > 18 months: illness (3); acceptance of another job (2); all but dissertation (1). This last category means that a PhD candidate has finished all research tasks and published the results, but has not succeeded in finalising the final text of the PhD thesis.

