



RESEARCH ASSESSMENT

IHE DELFT INSTITUTE FOR WATER
EDUCATION, 2014-2020

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REPORT ON THE RESEARCH REVIEW OF IHE DELFT INSTITUTE FOR WATER EDUCATION

1. FOREWORD BY COMMITTEE CHAIR

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 IHE Delft Institute for Water Education 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 IHE Delft Institute for Water Education, 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 its outstanding quality of research and opportunities for increasing interdisciplinarity and integration of social sciences. As well as strategic questions around societal impact, open access publishing, and directions and actions going forward in managing wellbeing in the PhD community.

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 IHE Delft Institute for Water Education 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 IHE Delft Institute for Water Education. 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. Emily Boyd
Chair of the committee



2. THE REVIEW COMMITTEE AND THE PROCEDURES

2.1. Scope of the review

IHE Delft Institute for Water Education (IHE Delft) asked an assessment committee of external peers to perform an assessment of the research conducted at the institute 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, IHE Delft asked the committee to reflect on two issues specific to the unit, namely:

- As an independent institution not affiliated with a larger university, what special strategic considerations, directions and actions are advisable to enhance the long-term relevance and viability of IHE Delft?
- As an institution committed to the development agenda of UNESCO and the wider United Nations, how can IHE Delft make solution-oriented, action research a more explicit strength/foundation of our identity as an institute?

This assessment was part of a cluster assessment of five institutes participating in the SENSE Research School. 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.

2.2. Composition of the committee

The composition of the committee was as follows:

- Prof. Emily Boyd (Lund University Centre for Sustainability Studies, Lund University) - chair
- Prof. Joe 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 as project manager and dr. Meg van Bogaert as secretary on behalf of Qanu.



2.3. Independence

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 IHE Delft. 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.

2.4. Data provided to the committee

The committee received the self-evaluation report from the units under review, including all the information required by the SEP.

The committee also received the following documents:

- The Terms of Reference;
- The SEP 2021-2027.

2.5. Procedures followed by the committee

All five assessments were planned in the week of 19-23 April. 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 visit to IHE Delft took place on 22 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 IHE Delft 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 IHE Delft 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 the institute.

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

2.6. About the SENSE Research School

SENSE is an academic network for integrated environmental and sustainability research PhD training. It is a partnership involving ten Dutch universities and research organizations. 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. More information: www.sense.nl



3. RESEARCH ASSESSMENT OF IHE DELFT

3.1. Introduction

IHE Delft Institute for Water Education (IHE Delft) is a unique knowledge institute in the Dutch research and educational landscape. The institute originated in 1957 for the purpose of training engineers from developing countries. The institute expanded through the decades in response to growing international needs and requests from international organizations, like WHO, OECD, FAO, and UNESCO. In 1990 a PhD programme was launched and in 2003 IHE Delft joined UNESCO as a Category-1 institute, which means that it is an integral part of UNESCO. In 2018 the Institute was re-categorized as a Category-2 institute, which means that it is recognized as an important extension of UNESCO. This Category-2 status better fits the status as an independent institute for higher education. The institute has approximately 140 academic staff members, over 100 PhD researchers and roughly 150 new master students each year.

The institute's mission is to strengthen capacity in the water sector and support sustainable development, especially in the Global South. Partnerships are considered integral to achieving this mission. IHE Delft forges strong and lasting partnerships with universities, government agencies, NGOs, and private sector institutions, both in the Netherlands, across Europa and around the world. Water is the unifying theme, and the institute has the ambition to make a tangible contribution to achieving all Sustainable Development Goals (SDGs) in which water is key. Research, education, and institutional strengthening form the three pillars of the Institute's activities.

3.2. Organization, Management and Governance

IHE Delft has six academic departments:

- Water Governance
- Coastal and Urban Risk & Resilience;
- Hydroinformatics and Socio-technical Innovation;
- Land & Water Management;
- Water Resources and Ecosystems;
- Water Supply, Sanitation and Environmental Engineering;

In the period 2014-2020 significant changes took place in the arenas influencing IHE Delft's activities, for example the refocus of priorities in the 2030 Agenda for Sustainable Development and UNESCO's International Hydrological Programme. Water-related challenges of clean water shortages, poor sanitation, environmental degradation, climate change, poverty, conflict, and injustice continued. Over the past period IHE Delft has endeavoured to adapt to the processes of change to progress its mission.

On average the funding of IHE Delft was 38.8 m EUR annually. Funding sources were diverse, which was an explicit focus over the past period. IHE Delft receives base funding from the Dutch Ministry of Education, in order to subsidize the core activities of the institute (approximately 10,5 mEUR annually). Part of this funding is used for research purposes and to subsidize the PhD programme. Another source of funding comes through the direct tuition fee for PhD research from separate and diverse funding through fellowships from Dutch and local governments, inter-governmental agencies, donors, and private companies. On average 4.6 mEUR is annually acquired in externally funded research projects. The largest contributor was the Ministry of Foreign Affairs, primarily through the DUPC2 program, but also RVO, NWO and the Ministry of Infrastructure and Water Management (Rijkswaterstaat) were major contributors. In addition, European research funding (predominantly Horizon 2020) was acquired (on average 2.0 mEUR annually). IHE Delft also had other funding sources, like international organizations, development banks, private companies, and donors.



IHE Delft is not a regular university but operates as a foundation under Dutch law, with a Governing Board serving to safeguard the mission and financial stability. The institute is led by a Managing Board (Rectorate) that is being advised on all academic activities by an Academic Board composed of the institute's professors. The unique position of IHE Delft requires the institute to have an orientation towards cooperation. In fact, the committee notes that collaboration with stakeholders in joint missions is daily business.

3.3. Strategy and aims

IHE Delft is positioned to play a significant role in the water-related transition to a sustainable world through the pursuit of research that is cutting edge, demand driven, targeting pragmatic, evidence-based solutions. In 2014 a strategic planning process was launched, integrating all aspects of IHE Delft's mission and activities. In this strategy the results of the previous evaluation were incorporated. In 2018, after becoming a UNESCO Category-2 institute, the strategy was updated, focussing on increasing the flexibility of the institute to respond to changes in the educational, research and international development landscape in which it operates. Concerning research, the strategy is to do cutting edge and demand driven research, targeting pragmatic, evidence-based solutions. The institute strives to operate as a linking pin between universities and knowledge institutes in the Global South and North.

The research is linked to five essential elements of sustainability: 1) to meet basic needs (water supply, sanitation, hygiene, and food security), 2) to protect the integrity of the resource base, 3) to ensure equity and reduce conflict, 4) to mitigate risks and build resilience, and 5) to enable economic development. Since 2019 there are six academic departments pursuing overarching research topics addressing major social challenges.

The committee discussed the aims and strategy of IHE Delft in depth in the interviews. A very positive aspect is the open attitude of IHE Delft towards its strengths and struggles, and its reflectiveness on challenges. According to the committee the strategy and aims of IHE Delft are clear and highly relevant for the 2030 Agenda and international development in general. The themes and topics are in line with those of the SENSE research school. At the same time, SENSE does not really fit the water governance/social sciences focus of some of the work by IHE. SENSE should consider including this social sciences approach as well. The institute not only focuses on excellent research but is also committed to addressing a range of water sector challenges and the support of sustainable development, specifically in the Global South. This focus on applied and socially relevant research, like being a UNESCO institute and the international leadership on global water sustainability, shows that the institute has a culture of impact-oriented activities and employees that drive the mission. However, the presentation of the research focus could reflect the diversity of approaches to study water, and be more challenging, also highlighting original contributions to knowledge. It currently tends to be presented in a more mainstream way as opposed to addressing the more critical approaches to water studies as pursued by some of IHE researchers.

The research and teaching programmes are closely connected at IHE Delft, the teaching programme is seen in terms of traditional capacity building, e.g., the statement seeks to 'strengthen capacity and support sustainable development in the Global South'. According to the committee this is a somewhat conventional mission and vision with top-down appearances and not based on horizontal partnerships and learning. Based on its written mission and ambition IHE Delft could be critiqued for implicit ideas of neo-colonial superiority coupled with ideas that development is a unilinear evolutionary process. From the interviews the committee has the impression that the institute acknowledges the process they are going through in this respect. They are in a learning process when it comes to terms and vocabulary and clearly seem willing to evolve. The committee suggests that it would be a good idea to think about ways to decolonize these practices in order to see research, teaching and learning being equitable partnerships based on mutual capacity facilitation/learning in order to facilitate critical post-positivist and indeed decolonial ways of doing teaching and research. The collaborations are impressive and a shift of framing from capacity building to mutual learning and co-development would benefit the ambitions of IHE Delft.



The impressive and critical work in water research that IHE Delft is doing was not immediately apparent from the documentation. The documents show a conventional presentation of themes and a more technical rather than political approach to water. The committee considers it important for the future of the institute as *water leaders* to gain broader perspectives than just the technical ones and recommends the institute to include this perspective in the evaluation of its work.

Partnerships

The strategic approach of IHE Delft relies on strong and lasting partnerships with universities, NGO's, governments, and private sector institutions. A commitment to working in partnership emphasizes co-design and co-production of research with a coalition of key partners. According to the committee, IHE Delft is already for a long time a model of successful partnership between the UN and the academic world. The well-established partnership with the UN allows for high impact research and sets IHE Delft as a global reference for graduate training in sustainability and water challenges. The new MSc programme in Research Master of Science in Water and Sustainable Development is expected to engage students in research at earlier stages and stimulate new research ideas and further strengthen the IHE's leadership in excellent education.

IHE Delft being an independent institute and not affiliated with a Dutch university offers opportunities to collaborate with many academic and non-academic partners, but also poses challenges. One of the issues introduced by IHE Delft for this review is how to deal with this. According to the committee the enhancement of long-term relevance and viability are key in the direction to choose. The committee recommends the institute developing a strategy that works best for this independent institute that has to rely on partnerships. Whether IHE Delft should opt for one intensive collaboration with one partner or continue with multiple strategic alliances is not a question the committee can answer. This decision will be influenced by the diversification of the funding portfolio, the position of PhD students and support for interdisciplinary research. Currently, the collaboration with academic partners is a clear strength, although formalization in long-term agreements is recommended. Having shared and affiliated junior and senior positions is a proven bridge builder and the interviews the committee had with representatives indicated that this is also the case for IHE Delft. However, it remains somewhat unclear to the committee how formalized these structures are in institutional arrangements as opposed to an ad-hoc basis that is depending on personal contacts. Particularly for PhD students the lack of uniformity leads to different requirements and unease among the PhD candidates.

3.4. Research Quality

To assess the quality of research conducted at IHE Delft the committee considered the research output in the light of the strategic aims. It concludes that IHE Delft is one of the world leading institutes for research on water and sustainability. Over 2000 scientific publications were produced in the period of evaluation across a range of interdisciplinary topics and with co-authors from approximately 150 different institutions in 116 countries (of which 50% from low- and middle-income countries). The scientific output is outstanding, both in quantity and quality, is well cited and well used by peers and the co-authorships indicate an important international role for the institute. Already for 64 years IHE Delft is a world class research and educational institute and – because of strong links with UNESCO and the academic world – excellent contribution to different aspects of water. The research is solution and action oriented, but still generates original contributions to knowledge. The committee appreciates the strong commitment to citizen science, living labs etc. The committee observes impressive results on geographical focus, collaborations, prizes, and awards. The leadership and academic reputation are strong, as is indicated by the extensive collaborations that focus on the low- and middle-income countries.

The presentation of the research focus currently tends to be presented in a more positivist/mainstream way. There seem to be tensions between more critical approaches to water studies and the engineering/managerialists approaches. The committee is of the opinion that the research focus could more strongly reflect the diversity of approaches to study water and more strongly highlight the original contributions to knowledge.



A scientific challenge is interdisciplinarity, particularly combining social sciences with engineering. The committee was impressed by the way IHE Delft is working to go beyond multidisciplinary and be an interdisciplinary institute. Despite the challenges and tension, the committee genuinely sees interdisciplinary research being done and concludes that IHE Delft is on its way to really become an interdisciplinary institute. The IHE Delft research is based on a broad diversity and experiences from the Global South. IHE already combines social sciences with natural sciences in several research lines. The institute has a very strong community of interdisciplinary scholars working on water and sanitation and a very diverse and international student community. The committee strongly supports the four overarching societal challenges and thinks that the focus on a problem-oriented approach and continued working on integration of the social sciences perspective could be critical in developing a unified and interdisciplinary approach. The committee encourages IHE to go even further and to include humanities in its further development into a truly interdisciplinary institute. This will help the institute to connect to new research questions, partners, and outreach (impact).

The committee learned that IHE Delft ended its use of journal impact factors in assessing the quality of research papers and introduced more qualitative measures to annually assess performance to also include recognition to collective contributions. The committee appreciates this development to not only focus on high-ranking journals, but rather the best fitting journals and other outlets that lead to scientific impact of the work. This shift, according to the committee, can be used to further strengthen inclusivity in the upcoming years.

Open science

The current rate of open access publications is low, which is problematic as IHE Delft has – at the core of its mission – to reach out to low- and middle-income actors. The committee understands that costs for open access publications are high for a small and independent institute like IHE Delft. Available funds are limited and quickly exhausted. Nevertheless, the committee recommends raising the open access publications through more resources or efforts toward parallel publishing. Funding agencies increasingly demand for open access publications, so it is essential that IHE finds a solution. According to the committee IHE could – like other institutes in the Netherlands – develop policy that allows online publication in repository six months after the (paid) publication). The committee furthermore supports the suggestion that was made by the institute to use the affiliations with universities that have internal ways of financing open access publications. This is particularly interesting for PhD students who are affiliated with those universities. The infrastructure for data management in relation to open science is being developed. Furthermore, IHE Delft adheres to the FAIR principles and is open where possible.

3.5. Societal Relevance

IHE Delft's focus on the water sector and support of sustainable development, in particular in the Global South, is highly relevant for the 2030 Agenda and international development more general. The institute has developed impressive partnerships (including that with UNESCO) and networks over the past decades. The outcomes of the research have served as input for governmental planning in various countries and there have been several spin-offs. Furthermore, training activities (courses, webinars, workshops) for international professionals working on water management have major impact.

Like many institutes and universities, IHE Delft highlights their societal relevance. The committee is impressed with the actual actions that are taken and it considers the societal relevance to be a visible strength of the institute. The committee did not encounter an overarching IHE Delft strategic approach to societal impact and relevance. Having a strategic approach might further strengthen the already outstanding actions by the institute and its reflective approach on co-design, training of researchers that worldwide end up in influential positions and a clear connection to the 2030 agenda. Assessment of the real-world difference the institute makes in terms of the SDG and measuring not only the number of tools but the uptake by end-users (where possible) might support the institute in prioritizing its efforts. By systematically identifying promising pathways to impact and assess the effectiveness and long-term use of the product, even more impact of the research can be obtained.



Open science

The institute supports the engagement in more open science. It has conducted citizen science research and knowledge co-creation projects. Access of the research to stakeholders is assured through strong collaborative approaches and collaborations with public institutes and research partners, specifically in the Global South. The stakeholder use is impressive with key elements involving traditional capacity building approaches. The institute contributed to the development of tools for water management and sustainability outside academia. The committee does recommend reflecting on how to improve collaborative co-design and co-development and open science even further, with the aim to improve equity and move away from the classical 'capacity building' in the Global South.

Training and education

IHE Delft has a huge impact on the Global South by training not only scientists that end up in influential positions, but also future water leaders, civil servants, and future partners. The education and training portfolio is outstanding and, in its discipline, IHE Delft is one of the largest institutions worldwide in training students and researchers in the Global South. One issue to address is the strong focus on non-Dutch and largely non-EU students, as it weakens the role of IHE Delft as it limits the possibilities for dialogue and mutual learning between Dutch/EU students and other students. The committee realizes that this is a consequence of the funding strategy of educational programmes in the Netherlands but emphasizes that it should be addressed to continue the excellent training and education.

3.6. Viability

Diversity, talent management, research integrity and HR policy

IHE Delft staff come from 29 countries and about 30% are women. The institute actively recruits internationally to diversify its cultural and scientific perspectives and to better support its global focus. The committee confirms that IHE Delft is very international, although this is not reflected in the management team. The management appears to be homogenous and is stimulated to work more on diversity in terms of age, gender, and background. In other words, intersectional diversity. Even though diversity at junior and mid-level staff is increasing, the institute should not wait for them to move up, but actively target diversification at the top. There are limits to equal opportunities, so the committee emphasizes the importance of recruitment and promotion policies to change the composition of staff. The committee notices that critical discussion on the topic of diversity is ongoing. Although this is a good development, the committee points out that the problem must be dealt with in its full depth.

IHE Delft could benefit from a more intersectional and integrated approach in the diversity and inclusion policy. Diversity is currently largely defined by the male/female ratio and internationalization. Although important, this only focuses on (limited) physical representation in the 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. The committee recommends IHE Delft 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.

The institute fully recognizes that in order to continue doing high quality and relevant research, a healthy, safe, inclusive, and inspiring working environment for staff and students is important. From the site visit the committee concludes that currently, some of the talented (young) research staff seem frustrated by the lack of career opportunities within the institute. IHE Delft has a plan to improve talent management and aspires to recruit and hold on to talented young researchers by creating more clearly defined career trajectories and providing tailored support more proactively. The committee fully supports this ambition although the concrete implementation is not clear to the committee.

PhD training



As IHE Delft is not a university, PhD degrees are awarded through partnerships with Delft University of Technology, Wageningen University, University of Amsterdam, and University of Twente, in line with the formal affiliation of the IHE Delft professor who acts as promotor. PhD researchers must fulfil all requirements set by the university partner. In addition, in 2015 IHE Delft created the International Graduate School for Water Development with the aim to promote a vibrant and intellectually exciting research and development environment in association with the partner universities.

The committee encountered a very diverse and stimulating PhD community. The quality of the PhD programme and training is applauded by the committee. At the same time, from the interviews the committee noticed that there are several challenges and issues that IHE Delft should deal with to support the (predominantly) international PhD students. Many PhD students have a fellowship, bursary, or contract. Although IHE is adhering to the requirements stipulated by the Dutch Immigration and Naturalization Service (IND) – PhD students and postdocs feel that bursary and fellowship contracts are not always equivalent to that for (Dutch) PhD students at Dutch universities. This results in different conditions and benefits (salary, social benefits, maternity benefits, etc.) between PhD students with different forms of contracts. Some externally funded PhDs earn less than those with contract and have no secondary benefits. This sometimes leads to precarious living conditions but also adds up to the stress experienced by them and between them in their work environment. This situation, in which PhD students in an institute have various contracts and conditions, is not unique for IHE. However, IHE has a relatively large group of PhD students with no employment contract, making this a pressing issue. In addition, the partner universities have different requirements for promotion, such as the number of publications required and training opportunities. While the fact that PhD students are always co-supervised by two institutions is appreciated, for it stimulates cross-institutional and interdisciplinary exchanges, it also seems to cause confusion. The challenges faced by PhD students in turn may explain the long duration of PhD projects. IHE has a particularly high fraction that takes more than seven years to graduate.

The committee urges IHE Delft to address the issues – including underlying causes - in the upcoming years. Although some of the challenges PhD students encounter are not unique for IHE Delft, its independent position (not being a university) and having many PhD students from the Global South reinforce the challenges and problems. The IHE Delft quality assurance system would need careful consideration and sharpened, especially since the PhD students are admitted to different academic partners. It is important to have an active PhD community that advocates for the PhD well-being and position within the institute. One practical recommendation is to actively engage with the PhD candidates in a dialogue with management, for example by organising regular meetings between management and PhD representatives, or even include a PhD representative in some of the management meetings. To level the playing field and alleviate some of the stress, particularly on PhD candidates from the Global South, IHE Delft might take an example from the University of Groningen, which tops-up the competitive, governmental scholarships from abroad to match those of their own programme. The committee furthermore suggests creating an own graduate school within IHE Delft and setting PhD guidelines rather than following the guidelines of the co-supervising universities. This might streamline the training and supervision planning while the actual courses are still attended at other universities or research schools.

Specific attention is requested for PhD candidate and junior researchers in a so-called 'sandwich construction' in which the junior researcher is expected to spend part of each year at their home institution abroad and part at IHE Delft. There are restrictions in the support these researchers experience, e.g., not the freedom to make the best decisions for their specific research topics, or when to spend time at their home institution. Structure seems to be leading the content, rather than vice versa. The committee would suggest reconsidering these 'sandwich constructions' and only use them when this also serves the researchers and their research aim.

Future outlook

For the upcoming period IHE Delft wants to even more explicitly and pro-actively relate its research activities to help addressing contemporary societal challenges. A limited number of specific manifestations of societal challenges as



case study areas will be identified. According to the committee IHE Delft is a very diverse institute involved in scientifically and societally highly relevant and outstanding research – the broader water research. As already mentioned before, the tendency to move away from quantitative indicators to assess research quality is applauded and stimulated by the committee. The committee stimulates IHE Delft to explore opportunities to further broaden the partnerships by establishing multiple strategic partners, further diversification of the funding portfolio and looking for interdisciplinary approaches. One strategy for the future might be to add water problems and challenges in the Global North. The vast knowledge of the Global South can be a valuable resource for the water challenges facing Europe. This might also make the institute more attractive to Dutch and European students, thus achieving a better balance in student population.

The institute is proud of the diverse ways to view water and seems to discuss tensions open and frank. The social sciences perspective is mainly present in the governance stream of the research at the institute. For a critical social sciences perspective on for instance politics, governance, care solidarity, well-being, and justice, it would be good to crosscut across all departments and research themes. This relates to the added value of and relation to SENSE research school. SENSE tends to approach 'water' from a natural science, technical perspective and consequently adhering to positivist approaches and methods. Therefore, SENSE is less relevant to those who do research on water governance or critical water studies. Together with the Copernicus Institute, IHE Delft could play a bigger role in changing the perspective of SENSE and opening it up to include the social scientist's perspective.

Finally, the committee stimulates IHE Delft to continue building on its societal relevance and impact by systematically identifying promising pathways to impact and assessment of the effectiveness and long-term use of products. Getting feedback on tools and appliances and evaluations with end-users can help in prioritizing and strategizing.



4. EXECUTIVE SUMMARY

IHE Delft Institute for Water Education (IHE Delft) is a unique knowledge institute in the Dutch research and educational landscape. It is closely related to UNESCO and its mission is to strengthen capacity in the water sector and support sustainable development. This large institute trains researchers from all over the world, in particular the Global South. Producing this many young researchers worldwide is impressive, but also comes with challenges. The committee appreciated the open and honest discussion with institute representatives. The tensions and challenges are known and discussed within the institute and a direction has been chosen to implement improvements.

The committee is positive about the relevance of the strategy and aims of IHE Delft in relation to the 2030 Agenda and international development in general. The mission seems somewhat conventional though the learning curve concerning terminology, vocabulary and valuing the added value of social sciences at the institute is encouraging. Continued consideration to research, teaching and learning being equitable partnerships is stimulated. IHE Delft is dependent on collaborating with many academic and non-academic partners. To avoid ad-hoc collaborations and an unclear perspective, a strategy on collaborations and having sustainable partnerships should be developed.

The quality of the research by IHE Delft is outstanding. Already for decades it is one of the world leading institutes on water and sustainability. Interdisciplinary research is a scientific challenge, in particular combining social sciences and engineering. IHE Delft is doing an impressive job in this respect, it is working hard to go beyond multidisciplinary and is on its way to actually becoming an interdisciplinary institute. Critical in achieving this is continuing to work on integration of the social sciences perspective throughout all research of the institute.

The outcomes of the research not merely lead to scientific excellence, they have also served as input for governmental planning in various countries and led to spin-offs. Impact by the institute is furthermore achieved by its major role in training and education of scientists and future water leaders, and civil servants. By developing an overarching IHE strategic approach to societal impact and relevance, the societal impact of the work will further excel. The committee asks attention for the assessment of the real-world difference the institute makes by also including the uptake by end-users.

Diversity in terms of gender and nationality is good, but not well reflected in the management team. The institute could benefit from a more intersectional and integrated approach in diversity and inclusion policy and a policy that goes beyond a 'recruitment problem'. Currently, the career opportunities for young, talented research staff are limited. The committee fully supports the ambition to recruit and hold on to young researchers more proactively.

PhD degrees are always awarded through partnerships with universities, the PhD student must fulfil the requirements of the university partner. The PhD community is diverse and stimulating and the training programme is of high quality. At the same time, IHE Delft has to deal with some challenges with a major impact on the wellbeing of PhD students. Different conditions apply to the contract of PhD students, but also to the requirements for promotion. The committee urges IHE Delft to address these issues in the upcoming years and develop its own quality assurance system.

For the future, the committee stimulates IHE to explore opportunities to further broaden the partnerships, further diversification of the funding portfolio and looking for interdisciplinary approaches. The social sciences perspective can be further integrated and crosscut across all departments and research themes. Societal impact is already impressive, by systematically identifying promising pathways and evaluation of the effectiveness and long-term use of products, impact will further increase.



5. RECOMMENDATIONS

- The quality of the research of IHE Delft is outstanding. There are opportunities for increasing interdisciplinarity by working towards the integration of social sciences more broadly. Going forward, the committee sees added value for research quality and societal relevance/impact on mainstreaming the social sciences across the entire institute.
- IHE Delft is recommended to develop a strategy concerning its collaborations and affiliations, taking into consideration diversification of the funding portfolio, the position of PhD students and support for interdisciplinary research. Whether this results in one intensive affiliation with one partner or continuing with multiple partnerships is not up to the committee to decide. However, the chosen partnerships must be sustainable.
- The rate of open access publications is still too low. The institute should develop a strategy on increasing the percentage of open access publications.
- By developing an overarching strategy on societal relevance and systematically identifying promising pathways to impact and assess the effectiveness and long-term use of the products, and by connecting with humanities in further development, even more societal impact can be obtained.
- IHE Delft should reflect on how diversity can be increased beyond gender and nationality and work on a management team that reflects the diversity of the staff.
- IHE Delft should urgently deal with challenges for PhD students that result from different contracts, different affiliated universities, and different supervisors. An IHE Delft quality assurance system should be developed that prevents arbitrariness and leads to equal treatment of all doctoral students. The institute should furthermore facilitate and stimulate an active PhD community that advocates for the PhD wellbeing and position in the institute. By creating its own graduate school, IHE Delft can set PhD guidelines rather than following those of co-supervising universities. Particular attention is required for protecting PhD students and postdocs in so-called 'sandwich constructions'.



APPENDICES



APPENDIX 1: THE SEP 2021-2027 CRITERIA AND CATEGORIES

The committee was requested to assess the quality of research conducted by the UHS as well as to offer recommendations 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: PROGRAMME OF THE SITE VISIT

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
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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 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												
Professor ¹	16	5.2	15	4.7	16	5.4	18	6.3	15	5.0	15	5.0	15	4.9
Associate Professor	21	7.7	22	8.2	23	8.6	24	9.1	26	9.5	26	9.5	34	9.5
Senior Lecturer	28	10.7	30	11.4	32	12.6	34	13.5	35	13.8	33	13.0	24	9.3
Lecturer	27	10.6	25	9.6	26	10.1	44	17.0	46	18.0	35	13.2	32	12.2
Post-docs ²	1	0.9	4	2.8	4	2.8	5	3.3	1	0.6	0	0	0	0
PhD candidates ³	136	102.0	129	96.8	141	105.8	145	108.8	139	104.3	124	93.0	104	78.0
Total	229	137.1	225	133.5	242	145.3	270	157.9	262	151.1	233	133.8	209	113.9

#: Total number of staff members

FTE: Research Capacity in Full Time Equivalents (not for laboratory technicians)

Standards for Research Capacity (in case of part time appointment adjustment is needed):

¹Professor, Assistant Professor and Associated Professor: Research Capacity = 40% of the appointment

²Post-doc: Research Capacity amounts to 90% of the appointment (if not otherwise specified)

³PhD candidates: Research Capacity amounts to 75% of PhD numbers

Research Unit	2015	2016	2017	2018	2019	2020	In:
Funding	Estimate						
Base Funding	N/A	N/A	N/A	N/A	N/A	N/A	FTE
	10,419	10,624	10,225	10,456	10,672	11,198	kEuro
	27%	28%	26%	27%	28%	29%	%
Research grants	2.18	2.21	3.27	3.31	1.29	1.24	FTE
	464	498	546	579	260	251	kEuro
	1%	1%	1%	1%	1%	1%	%
Contract research	22.80	27.25	36.71	39.64	32.20	25.23	FTE
	4,845	6,148	6,121	6,936	6,478	5,089	kEuro
	13%	16%	16%	18%	17%	13%	%
Other	67.20	69.95	77.62	78.05	79.51	81.98	FTE
	22,888	24,155	19,991	20,984	23,418	19,706	kEuro
	59%	63%	52%	54%	61%	51%	%
Total Funding	174.39	179.90	201.20	206.40	200.20	193.47	FTE
	38,616	41,425	36,883	38,955	40,828	36,244	kEuro
	100%	100%	100%	100%	100%	100%	%
Expenditure							
Personal costs	13,245	15,060	16,865	17,718	17,497	17,182	kEuro
	36%	33%	36%	34%	34%	36%	%
Direct order costs	18,580	20,271	14,562	16,977	18,045	15,480	kEuro
	50%	54%	39%	46%	48%	42%	%
Other costs	5,461	5,089	5,416	4,529	3,900	4,086	kEuro
	15%	14%	15%	12%	10%	11%	%
Total Expenditure	37,287	40,419	36,843	39,223	39,443	36,747	kEuro
	100%	100%	100%	100%	100%	100%	%



Enrolment			Success rates: Graduated in						
Starting year	Enrolment (male / female)		Total (M+F)	4 yrs or earlier	5 yrs or earlier	6 yrs or earlier	7 yrs or earlier	Not yet finished	Discontinued
T-8 (2012)	8	9	17	# / %	4 / 24%	6 / 36%	8 / 48%	4 / 24%	1 / 6%
T-7 (2013)	9	9	18	1 / 6%	3 / 17%	5 / 28%	7 / 39%	4 / 22%	6 / 33%
T-6 (2014)	17	5	22	# / %	3 / 14%	8 / 37%	9 / 42%	8 / 36%	5 / 23%
T-5 (2015)	12	6	18	# / %	3 / 17%	6 / 34%	-	10 / 56%	2 / 11%
T-4 (2016)	3	9	12	# / %	1 / 8%	-	-	11 / 92%	0 / 0%
Total	49	38	87	1 / 1%	14 / 16%	26 / 30%	31 / 36%	37 / 43%	14 / 16%*

*Success rate %s do not add up to 100% because 5 of the 87 fellows graduated after their 7th year, for which there is no column in the table.

