

**Research Review
Athena institute
2009-2017**

May 2018

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Preface

Our external review committee was asked to assess the scientific quality and the relevance to society of the research conducted by the Athena institute in the period 2009-2017, as well as its strategic targets and the extent to which it is equipped to achieve them.

To enable the committee to fulfil this task, the Athena institute provided an informative self-assessment report, and additional information on specific activities and projects. During the site visit, the committee received all other requested information that it needed to make its assessment.

The committee highly appreciated the useful and interesting interviews with the leadership, senior staff, junior researchers, and PhD students of the Athena institute, and the conversation with the dean of the Faculty of Science.

The committee hopes that its findings and recommendations will contribute to the further development and strengthening of research of the Athena institute.

On behalf of the assessment committee,

Professor André Knottnerus
Chairman

1. Introduction

1.1 Terms of reference for the assessment

The quality assessment of research of the Athena institute is carried out in the context of the assessment system as specified in the Standard Evaluation Protocol For Public Research Organisations by the Association of Universities in The Netherlands (VSNU), the Netherlands Organisation for Scientific Research (NWO), and the Royal Netherlands Academy of Arts and Sciences (KNAW).

The review committee was asked to assess the scientific quality and the relevance and utility to society of the research conducted by the Athena institute in the reference period 2009-2017, as well as its strategic targets and the extent to which it is equipped to achieve them.

Accordingly, three main criteria are considered in the assessment: research quality, relevance to society, and viability. In addition, the assessment considers three further aspects: the PhD training programme, research integrity and diversity.

This report describes findings, conclusions and recommendations of this external assessment of the Athena institute.

1.2 The Review Committee

The Board of the VU University appointed the following members of the committee for the research review:

- Prof. dr. Andre Knottnerus (chairman)
- Prof. dr. Lawrence Green
- Prof. dr. ir. Gerrit Meester
- Prof. dr. Richard Smith
- Prof. dr. Pamela Wright

More detailed information about the members of the committee can be found in Appendix A. The Board of VU University appointed dr. Annemarie Venemans of De Onderzoekerij as the committee secretary. All members of the committee signed a declaration and disclosure form to ensure that the committee members made their judgements without bias, personal preference or personal interest, and that the judgment was made without undue influence from the Athena institute or stakeholders.

1.3 Data provided to the Committee

Prior to the site visit, the committee received detailed documentation comprising:

- The Self-assessment report of the Athena institute, including appendices
- The Standard Evaluation Protocol (SEP) 2015-2021

In addition, the committee studied the financial five year plan provided during the site visit.

1.4 Procedures followed by the Committee

The committee proceeded according to the Standard Evaluation Protocol (SEP). The assessment is based on the documentation provided by the institute and the interviews with the management, a selection of researchers of the institute, and PhD students. The interviews took place on 13 March 2018 (see Appendix B).

The committee discussed its assessment at its final session during the site visit. The members of the committee commented by email on the draft report. The draft version was then presented to the institute for factual corrections and comments. Subsequently, the text was finalized and presented to the dean of the Faculty of Science and the management of the Athena institute.

2. Assessment of the institute

According to the SEP scoring system, as explained in Appendix D, the committee has awarded the following scores to the institute:

| | |
|-----------------------|---|
| Research quality: | 2 |
| Relevance to society: | 1 |
| Viability: | 2 |

2.1 The Athena institute

Governance of the institute

The Athena Institute is one of the departments of the Faculty of Science (BETA). The Director of the Athena Institute is a member of the board of directors of the Faculty and reports directly to the Dean of BETA.

Athena has two sections:

- Science & Society (formerly Biology and Society);
- Science Communication.

Currently, the institute consists of 11 scientific staff (assistant professor, associate professor and professor), 13 post-doctoral researchers, 23 junior researchers and 13 PhD students (AIOs). The research staff is assisted by 2.2 FTE support staff. An additional 53 external people contribute as guest lecturers or in other invited functions.

Research area

Athena's mission is to scientifically study the interface between science and society and work to improve that interface, with the aims :

- To increase academic and societal understanding of key factors in innovation processes;
- To enrich the societal legitimacy of science and improve research utilization;
- To improve societal awareness of how innovations may benefit the sustainability, equity and fairness of societies.

Athena focuses on inter- and transdisciplinary research in science and technology developments that are specifically – but not exclusively – related to health and life sciences. It concentrates not only on scientific analysis of problems and innovations, but also on developing methodologies and strategies for knowledge integration.

Athena comprises four domains:

- Emerging science and technology;
- Health, well-being and society;
- Sustainability and society;
- Education for science-society interaction.

The committee is impressed by the internationally distinct academic mission of the Athena institute. It addresses a highly relevant research niche of transdisciplinary approaches to complex international challenges at the interface of science and society, research, policy and

practice. The committee also feels that this unique, productive, and impressive mission was not clarified sufficiently in the self-evaluation report; its value became clear during the interviews. The committee applauds the internal organization of the institute with its matrix structure and open communication. In its opinion the institute found a productive match between the ambitions and talents of its researchers and the mission of Athena.

2.2 Research quality

The committee came to the conclusion that, when translating its opinion into the categories of the SEP 2015-2021, the overall quality of the research falling within its remit qualifies as 2 (the research unit conducts very good, internationally recognized research). The committee's opinion is based on the following considerations.

The institute does highly original and valuable research covering the various relevant research areas in a coherent way, clearly related to its mission. The quantitative data provided in the self-assessment report give a good picture of the research activities at Athena and of the productivity of its researchers during the reference period. The data show that the scientific output of the institute increased from 29 refereed articles in 2009 (2.1 per research FTE) to 89 articles in 2017 (2.9 per research FTE). Of this, a high percentage was published in the 10% top-cited international scientific journals of the field. The committee observed that about one third (35%) of the more recent articles appeared in the 10% top-cited international scientific journals of the field, compared with 43% in 2009. During the site visit it became clear, that, while the absolute numbers of scientific papers published by Athena are increasing, over the years relatively more papers are being deliberately published in domain-specific journals that may have a lower impact factor. This is related to the fact that, as also confirmed by the institute, it is not a main target of the institute to publish in high-impact journals, but to publish in journals that fit its unique mission at the interface of science and society.

The committee grades the productivity as very good and appreciates the mix of scientific and other public outputs. At the same time, given the above-mentioned importance of publishing in domain-specific journals in addition to more general top journals, the committee suggests that the institute more explicitly defines the publication strategy that optimally fits its mission, being clear and transparent on the required balance of the various publication and output types. In addition, the committee expects that - given the considerable achievements of the institute in developing mixed-methods approaches in its transdisciplinary research - there is considerable opportunity to increase its scientific impact in methodology development.

As was stated in the interviews with the management, the institute faced a decline in direct funding in 2013/2014 due to budget cuts. The management of the institute did its best to overcome and compensate for this critical situation, and was successful in doing so. In terms of funding, the institute has clearly grown in the level of research funding since 2009. Over the period 2009-2017, the institute's direct funding developed from €955,000 to €2,680,000. Also, external funding increased significantly (from €807,000 in 2009 to €1,382,000 in 2017). During the site visit, the five-year financial plan was presented, showing an anticipated further increase in both direct and indirect funding in the coming years.

Despite the cuts, the committee finds the institute to be in a strong position in terms of funding. In its opinion, Athena is very successful in winning grants applications in various funding domains. It was impressed by the high success rate of project proposals of 50%.

Based on interviews with staff members, the committee noted a substantial teaching load of the staff. Besides several individual courses for bachelor and master students, the institute facilitates two integral master programmes, two master differentiations and a minor programme. However, staff members manage to be efficient in their teaching to deal with the load. Courses are more streamlined, research topics are used in teaching, use of advanced educational technology is impressive, and students work with researchers during their internships, so increasing the research output of the institute. The committee is impressed by the close integration of teaching, engagement of policy and practice agencies, and research in the institute.

2.3 Relevance to society

The committee came to the conclusion that, when translating its opinion into the categories of the SEP 2015-2021, Athena research generally qualifies as excellent (1: world leading; the research unit makes an outstanding contribution to society) as far as relevance to society is concerned.

An explicit part of Athena's mission is to improve societal awareness of how innovations may benefit the sustainability, equity and fairness of societies. In this context, as the self-evaluation report describes, one of Athena's major objectives during the reporting period was stimulating and managing internal and external relations, including relevant societal stakeholders.

Societal relevance is high. The published papers transfer knowledge to a broad, worldwide audience of relevant societal stakeholders as well as to other scientific domains. The papers cover a wide range of societally important topics, including prevention, (bio)medicine and health care, new technologies, healthy food, innovation in agriculture, equity, and environmental sustainability.

In order to realize the development of science and technology that contributes to solving complex societal challenges in a sustainable and equitable way, the key question for the Athena institute is how to organize interaction so as to facilitate effective and meaningful exchange of knowledge and expertise between scientific and non-scientific groups. The self-evaluation report describes some examples of methodological and strategic approaches to effectively address this key question such as 'Interactive Learning and Action (ILA)' and 'Reflexive Monitoring in Action (RMA)'. The ILA integrates available knowledge and perspectives on societal needs and on potential innovations from relevant actors in societal and scientific fields. The RMA method uses participatory learning to guide multi-level innovation/change to study ongoing system innovation processes (scaling up). The committee was impressed by the development and implementation of these innovative and relevant frameworks.

Based on the self-evaluation report and the interviews during the site visit it became clear that the Athena institute has a history of closely working with policymakers, civil society organizations, companies, citizens, patients and consumers and successfully continues on this path. Athena collaborates with several institutes, both nationally and internationally. Many staff members maintain joint affiliations between university and industry, NGOs, government agencies or other public authorities. The committee was impressed that important stakeholders are approaching the Athena staff with a problem or challenge instead of the other way around. In addressing these problems, Athena has been effective in integrating these societal initiatives in its own long term mission and strategy of independent transdisciplinary research focused on complex issues at the interplay of science and society.

Teaching is not only a way of reaching wider audiences but also a basis for innovation and a source for attracting new talent. Athena's contribution to society through education is growing. Besides the training in the bachelor and master programmes the committee noted the development of training on public engagement, patient participation and reflexive monitoring, in interaction with staff of ZonMw (The Netherlands Organization for Health Research and Development), NWO (National Research Organization), and municipalities. The committee applauds the establishment of the Athena Centre for Participation and Transformation, which will provide advice and training to societal stakeholders.

One of the research products for societal groups mentioned in the self-evaluation report is open access publishing. The committee noted that more than half of the institute's research is already published in open access scientific media, but – given its mission at the interplay of science and society - it should consider a policy of requiring all publications to be open access. If research does not lend itself to publication in journals then the committee suggests the institute publishes the results on its website. This strategy of publishing could lead to the institute becoming a globally recognized source of innovative science for society.

Athena used the following indicators of societal relevance to pursue its work that could lead to important societal impact: (1) addressing complex problems based on societal needs, (2) facilitating research designed for impact, (3) creating research products for societal target groups and enhancing societal understanding, and (4) encouraging use of research products by societal groups. While the committee applauds the description of indicators of accomplished achievements regarding public impact, this impact assessment might be more systematic. According to the committee, the institute has the expertise to develop a methodology to make its public impact more visible. This would also be an important research product in itself, meeting the international need for a better method of assessing societal impact.

2.4 Viability

Whilst the previous two sections contained an assessment of the performance of Athena during the reference period, this section is more forward-looking. The committee came to the conclusion that, when translating its opinion into the categories of the SEP 2015-2021, Athena ranked as very good for viability (2: the research unit is very well equipped for the future).

The self-evaluation report states that Athena expects to attain its objectives in all the research program domains and themes. The committee believes that there is a great potential to live up to this expectation. Steady signs of quality improvement could be observed across the review period. Besides that, the institute is financially sound and receives support from the faculty board, acknowledging the importance of Athena for VU University and facilitating its research ambitions. In addition, the group of staff members is increasing and highly committed to Athena and its inspiring mission at the interplay of science and society.

Based on the self-evaluation report the committee noted that Athena identified possible threats and weaknesses, as well as strengths and opportunities, in a SWOT analysis, but did not fully, comprehensively and coherently address these in presenting its perspectives and strategy for the future. According to the committee, the SWOT analysis could be more explicitly related to analyzing future challenges in academia, science and society and how Athena will be able to meet these. It would be good to know how the institute will build on strengths, mitigate weaknesses, seize opportunities, and avoid threats. And - maybe even more importantly - to discuss this in the institute's research community. This should lead to a well-articulated and broadly supported vision on a strategy for Athena's national and international positioning in the future.

Given the substantial and necessary variety of domains and topics in Athena's research, the committee recommends the institute to more explicitly relate the generic dimensions of its mission and transdisciplinary approach to the domains in which these are applied. Such a 'matrix' may lead to a more comprehensive and coherent overarching oversight of Athena's research, and would support its strategic decision making about the appropriate themes and services.

A problem facing Athena is with respect to the visibility and findability of the institute. It became clear that the Athena institute is less well-known than it could and should be, given its performance and importance. Most committee members were unfamiliar with the institute yet familiar with the university and individual scholars. The institute should put together a strategy to move from being a "well-kept secret" to being a global resource. The strategy might include:

- A branding exercise;
- Building or further developing a public relations capability and strategy;
- Publishing a textbook, e.g., on the principles, domains, and methods of transdisciplinary research.
- Creating an advisory board of national and international advisors;
- Building a formal and vital worldwide network of alumni;
- Improving the website;
- Making effective links with and applying for funding from global funders like Gates, Wellcome, etc.

During the site visit, it was mentioned that the target of the institute is to grow to 100 FTE. The institute is well aware of the possible challenges that come with this regarding the structure and the stability of the institute. The committee agrees with the institute leaders that

growth should at the same time ensure that the positive features of the structure of the institute, in terms of internal coherence, communication and directness, is preserved.

With the growth of the institute it is important to keep a balance between senior and junior staff. The committee applauds the intention of the institute to grow from 20% to 30% tenured staff. In addition, the institute should consider appointing researchers who are based primarily in low and middle income countries. Given the institute's mission and aspiration for global visibility, a future target might be to reflect more Athena's international diversity in its senior and management staff.

2.5 PhD programme

Since the number of PhD students who are active in the Athena research programme has substantially increased in the evaluated period and is currently very high, a solid PhD training programme with a good match with the talents and needs of the students is of utmost importance.

The committee is of the opinion that the PhD students are from an impressive blend of disciplines and origins, national and international, assuring transdisciplinarity and cross-fertilization in the research and its application.

The committee interviewed current and former PhD students in various stages of development of their PhD research about their supervision, research facilities and possible constraints of their research. Members of the committee were impressed by the quality and enthusiasm of the students they met. These PhD students had carefully selected Athena specifically for its transdisciplinarity and its experience with new and original research topics and methodologies.

It appears that PhD students are well integrated into the research structure of the institute. The graduate students spoke very positively of the supervision they received and the match between projects and their own interests. They appreciated the flexible, informal atmosphere of the institute and both formal and informal discussion groups and meetings with people sharing similar research interests. In addition, they appreciated the interaction with scholars from other fields, recognizing how that contributes to their broader academic capabilities.

All PhD students registered after April 2015 follow a 30 European Credit (EC) training program. PhD students typically follow this program within the framework of the Netherlands Graduate Research School of Science, Technology and Modern Culture (WMTC) or the Erasmus Mundus Joint Degree Program TransGlobal Health Program. Each PhD student completes a training and development plan at the beginning of his or her term, and chooses a set of courses. The Athena PhD education program includes two compulsory courses: 'scientific integrity' (2 EC) and 'inter- and transdisciplinary research methods' (6 EC) and offers several elective courses.

The students the committee spoke with during the site visit were content with the courses they could attend. They appreciated the amount of freedom in choosing the courses that fit into their research field. However, they were not yet fully satisfied with the support to find the

right courses, especially internationally, in subjects that are not fully covered by Athena. The committee applauds the flexibility given to the students, but advises more guidance on (international) high level courses elsewhere that are relevant for the training and career development of the students.

According to the self-evaluation report, PhD graduates usually find a job directly after finishing their contract. Of Athena PhD graduates from 2009-2017 (in total 60), about two-thirds have moved into research careers (often in combination with university lecturing), 15% are working as policymakers, and 8% are working in business/industry. An additional 3% are pursuing medical careers, with 2% each in the fields of law, education and technology. It was mentioned during the site visit that there is a lot of informal contact between faculty and the alumni.

The committee is of the opinion that the policy of aiming at good career possibilities in both science and society has been successful. It recommends formalizing the contacts with alumni and systematically organizing an alumni-network.

2.6 Research integrity

Faculty and staff of VU Amsterdam are subject to guidelines set out by the KNAW in its Academic Integrity Code of Conduct, which has been further elaborated by the VSNU. Additional research ethics documents that are applicable include the European Science Foundation (ESF) and All European Academies (ALLEA) European Code of Conduct for Research Integrity. In addition, VU Amsterdam and VU Medical Center have a joint policy for handling academic integrity complaints.

The committee is pleased with the processes in place for ensuring research integrity. In its opinion, the faculty is well aware of the ethical dimensions of science. Although the institute is well ahead of most research organisations in its approach to research integrity, the committee is of the opinion that research integrity might be even more an integral part of the culture of the Athena institute. This could be achieved not only by the existing procedures and compulsory courses for PhD students, but especially by discussing these aspects in the context of everyday working at the institute. As was also suggested by one of the PhD students, the institute could take a broader, proactive view of research integrity, including, for example responsible decisions in developing the research agenda and how to collaborate and communicate with target groups and stakeholders. This might also be a subject for a research project, possibly in collaboration with the chair of Methodology and Integrity of VU University Medical Center.

2.7 Diversity

The self-assessment report states that Athena employs almost twice as many women as men. The percentage of women is also high among senior staff (about 70%). Their intention is to give preference to an equally qualified male candidate in some future hiring decisions. About 20% of the staff members is international. The committee noted that most international

staff members are junior staff. It suggests as a target that in the future international staff members should also be represented at the more senior and management levels of Athena.

2.8 Summary and recommendations

The Athena institute has an internationally unique academic mission. It especially fills in a highly relevant research niche of transdisciplinary approaches to complex international challenges at the interplay of science and society. The quality and societal relevance of the research in the period under review is very good to excellent. The committee also acknowledges a positive financial trend in recent years, which forms a solid basis for further development and improvement. The committee is convinced that the institute is well on its way to be an internationally highly visible and influential leader in global health research.

The most important recommendations, as substantiated by the foregoing, are the following:

- to define more explicitly a publication strategy that optimally fits the mission of the institute, being clear and transparent on the required balance of the various publications and types of output;
- to strive for more scientific impact in methodology development;
- to strive for making all its publications open access, either or both in open access journals or on the website of the institute;
- to develop a well-articulated and internally broadly supported strategy for further strengthening Athena's national and international positioning and visibility, in order to become a well known global resource;
- to relate more explicitly the generic dimensions of its mission and transdisciplinary approach to the various domains in which these are applied;
- to formalize the contacts with alumni and systematically organize an alumni network
- to develop its approach to research integrity to include responsible decisions regarding the research agenda and how to collaborate and communicate with target groups and stakeholders;
- to reflect more fully Athena's international diversity in its senior and management staff;
- to ensure that, given its fast growth, the structure of the institute in terms of internal coherence, communication and directness is preserved.

Appendix A: Curricula vitae of the Committee members

Prof. dr. André Knottnerus (chair) obtained his MD degree at the Vrije Universiteit. In 1986 he delivered his PhD thesis on the development and application of clinical epidemiological research methods in diagnostic research. In 1988 he was appointed as professor of general practice and primary care research at Maastricht University. In 1990-1991 he was dean of the Medical Faculty in Maastricht, and subsequently research executive of the board of the Maastricht Medical School until 1994. From 1994 he was founding scientific director of the university's research institute for primary care and public health (until 2000) and the Netherlands School of Primary Care Research (until 2002). From 2001 to 2010 he was president of the Health Council of the Netherlands (of which he was vice-president from 1996 to 2001). From 2010 to 2017, André Knottnerus was chair of the Scientific Council for Government Policy (WRR). Knottnerus holds positions in various national and international scientific and public health boards. Since 1999 he is editor-in-chief of the Journal of Clinical Epidemiology. In 2004 André Knottnerus was elected as a member of the Royal Netherlands Academy of Sciences (KNAW), and from 2009 to 2013 he was chair of the Medical Section of the Academy.

Prof. dr. Pamela Wright completed her PhD in immunology in Ottawa, Canada in 1975. After four postdoctoral years at the Institute of Medical Genetics in Turin, Italy, she moved to Amsterdam to coordinate a Master programme for immunology in developing countries, focused on the Caribbean and Vietnam. Later at the University of Amsterdam she designed and coordinated short-term training courses for scientists from developing countries. That led to a position at the Royal Tropical Institute (KIT), Amsterdam where she was responsible for updating the International Course on Health Development. Still at the KIT, she designed and ran a new international Master course, Biomedical Research Management, with the UvA's Academic Medical Center. As a KIT consultant Dr. Wright carried out missions for the Ministry of Foreign Affairs, the World Bank and others in Asia and Africa. Her involvement with Vietnam continued; from 1993 to 2012 she was one designer and the main technical adviser for a series of Dutch-funded programmes to modernise medical education at eight medical schools in Vietnam. One reward was a professorship at Hanoi Medical University. From 1999 until her retirement in 2016, she worked for the Medical Committee Netherlands-Vietnam; as Director she was responsible for design and implementation of health and community development programmes in Vietnam and Laos, on HIV, disability, poverty alleviation and inclusive development. With MCNV, Dr. Wright built research cooperation with several Dutch universities, as part of medical development in Vietnam (Vietnamese students doing PhDs in the Netherlands) or supervising Dutch master/PhD students to do research in Vietnam and Laos.

Prof. dr. Lawrence Green has served on public health and medical faculties at Berkeley, Johns Hopkins, Harvard, Texas and University of British Columbia, and most recently at University of California at San Francisco, now Professor Emeritus in its Department of Epidemiology and Biostatistics, the Cancer Center, the Center for Tobacco Research and Education, and the Health and Society Scholars Program. From work in the US Federal government as Director of the Office of Health Promotion under the Office of the Assistant Secretary of Health, at CDC as head of the Office on Smoking and Health and the Office of Science and Extramural Research, and as Vice President of the Kaiser Family Foundation,

he returns to his academic interests in making public health and medical research more relevant, useful, actionable, and adaptable to varied practice settings. He is best known by health education researchers as the originator of the PRECEDE model and co-developer of the PRECEDE-PROCEED model, which has been used throughout the world to guide health program intervention design, implementation, and evaluation and has led to more than 1000 published studies, applications and commentaries on the model in the professional and scientific literature. A fifth edition of the textbook is in press with the Johns Hopkins University Press.

Prof. dr. Richard Smith is chair of the board of trustees of icddr,b (formerly the International Centre for Diarrhoeal Disease Research, Bangladesh) and chair of Patients Know Best (a company that brings all medical and social care records together in one place under the control of patients). Until 2015 he was the director of the UnitedHealth Chronic Disease Initiative, a programme with the National Heart, Lung, and Blood Institute that created 11 centres in low and middle income countries that work to counter chronic disease (cardiovascular disease, diabetes, chronic obstructive pulmonary disease, and common cancers). From 1979 to 2004 he worked at the BMJ and was the editor of the journal and chief executive of the BMJ Publishing Group from 1991 until he left. A member of the board of the Public Library of Science from 2004 to 2011, he continues to blog for the BMJ and to publish regularly. He is an adjunct professor at Imperial College Institute of Global Health Innovation. Having qualified in medicine in Edinburgh, Smith worked in hospitals in Scotland and New Zealand before joining the BMJ. He also worked for six years as a television doctor with the BBC and TV-AM and has a degree in management science from the Stanford Business School. He was made a Commander of the British Empire in 2000.

Prof. dr. ir. Gerrit Meester received his Ir and PhD degrees in Agricultural Economics at Wageningen University. He was Staff Member in the Department of Economics of the Faculty of Law at the Erasmus University in Rotterdam (1970-1976) and Researcher at the Agricultural Economics Research Institute (LEI) in The Hague (1976-1986). Since then he worked until his retirement (in 2009) in the Ministry of Agriculture, Nature and Food Quality in The Hague as Deputy Director International Affairs and Spokesman for the Netherlands in the EU 's Special Committee on Agriculture (1986-1994), as Head of the Strategic Policies Division within the Minister's Office (1994-1999) and as Agricultural Policy Adviser in the International Affairs Directorate (2000-2009). He was also Parttime Professor in Agricultural Economics, later European Economic Integration, at the Faculty of Economics and Management, University of Amsterdam (1992-2009) and Chairman of the Committee on Agriculture of the OECD in Paris (2008-2010). He is since his retirement in 2009 member of various advisory committees of the Netherlands government and civil society organizations. Moreover he wrote and co-edited several publications and gave courses at Leiden University and Wageningen University, especially about EU policies for agriculture, food and rural areas.

Appendix B: Programme of the site visit

| Monday 12 March | | |
|-----------------|----------------------|----------------|
| Time | Part | Collocutors |
| 17.30 | Welcome drinks | |
| 19.00 - | Preparation + dinner | Committee only |

| Tuesday 13 March | | |
|------------------|--|---|
| Time | Part | Collocutors |
| 09.00 – 09.45 | Management | Prof. dr. Joske Bunders, Prof. dr. Marjolein Zweekhorst, drs. Astrid v.d. Wal-Kooijmans, Prof. dr. Jacqueline Broerse, Dr. Barbara Regeer |
| 09.45 – 10.00 | Evaluation by committee | |
| 10.00 – 10.45 | Senior staff | Dr. Frank Kupper, Prof. dr. Jacqueline Broerse, Dr. Barbara Regeer, Prof. dr. Fedde Scheele, Prof. dr. Eric Claassen |
| 10.45 – 11.15 | Evaluation by committee and coffee break | |
| 11.15 – 12.00 | Junior staff | Linda van de Burgwal Msc, Dr. Eduardo Urias, Dr. Dirk Essink, Dr. Elena Syurina, Dr. Tomris Cesuroglu |
| 12.00 – 12.15 | Evaluation by committee | |
| 12.15 – 13.00 | PhD students | Ona Ilozumba Msc, Jantien Schuijjer Msc, Cedric Middel Msc, Harsh Mander Msc, Ibukun Abejirinde, Msc |
| 13.00 – 13.45 | Evaluation by committee and lunch | |
| 13.45 – 14.15 | formulating questions for management | |
| 14.15 – 14.45 | Management | Prof. dr. Joske Bunders, Prof. dr. Marjolein Zweekhorst, drs. Astrid v.d. Wal-Kooijmans, prof. dr. Jacqueline Broerse, Dr. Barbara Regeer |
| 14.45 – 16.15 | Internal meeting | Committee only |
| 16.15 | Presentation of preliminary results | Plenary |

Appendix C: Quantitative data

Table 1 Research staff in FTE

| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Scientific staff | 2.6 | 2.4 | 2.7 | 2.6 | 2.3 | 2.3 | 2.3 | 2.3 | 3.4 |
| Post-docs | 0.5 | 0.7 | 1.4 | 0.8 | 3.9 | 4.6 | 5.1 | 5.1 | 5.6 |
| Researchers | 1.7 | 7.1 | 9.4 | 9.8 | 13.1 | 12.1 | 13.1 | 10.8 | 9.8 |
| PhD employed | 6.4 | 9.6 | 9.0 | 10.7 | 8.8 | 8.8 | 8.8 | 8.8 | 12.2 |
| PhD external | - | - | - | - | - | - | - | - | - |
| Phd scholarship | - | - | - | - | - | - | - | - | - |
| Total research staff | 11.2 | 19.8 | 22.5 | 23.9 | 28.1 | 27.8 | 27.8 | 27.0 | 31.0 |
| Support staff | 3.3 | 3.2 | 1.8 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 2.2 |
| Visiting fellows | - | - | - | - | - | - | - | - | - |
| Total staff | 14.5 | 23.0 | 24.3 | 25.2 | 29.4 | 29.1 | 29.1 | 28.3 | 33.2 |

Table 2 Main categories of research output

| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|--------------------------|-----------|-----------|-----------|-----------|------------|-----------|------------|-----------|------------|
| Refereed article | 29 | 37 | 39 | 37 | 55 | 53 | 83 | 70 | 89 |
| Professional publication | 22 | 30 | 12 | 13 | 42 | 16 | 15 | 16 | 25 |
| Book chapter | 7 | 2 | 5 | 5 | 13 | 8 | 8 | 0 | 11 |
| PhD thesis | 3 | 5 | 4 | 2 | 5 | 9 | 8 | 11 | 13 |
| Non-refereed article | 0 | 2 | 4 | 0 | 1 | 1 | 2 | 0 | 0 |
| Book | 2 | 4 | 1 | 1 | 2 | 0 | 1 | 0 | 3 |
| Total | 63 | 80 | 65 | 58 | 118 | 87 | 117 | 97 | 141 |

Table 3 Funding

| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|--------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <i>Funding in FTE</i> | | | | | | | | | |
| Direct funding | 12 | 20 | 23 | 28 | 38 | 37 | 38 | 31 | 38 |
| Research grants | 1 | 2 | 4 | 3 | 4 | 4 | 3 | 3 | 3 |
| Contract research | 9 | 10 | 8 | 7 | 9 | 11 | 13 | 17 | 17 |
| Total funding | 22 | 32 | 35 | 38 | 51 | 52 | 54 | 51 | 58 |
| <i>Expenditure in M€</i> | | | | | | | | | |
| Personnel costs | 1,289 | 1,854 | 2,020 | 2,471 | 2,768 | 2,831 | 2,913 | 2,932 | 3,664 |
| Other costs | 465 | 800 | 850 | 1,433 | 1,399 | 579 | 735 | 568 | 398 |
| Total expenditure | 1,754 | 2,654 | 2,870 | 3,904 | 4,167 | 3,410 | 3,648 | 3,500 | 4,062 |

Table 4 PhD candidates

| Starting year | Enrollment | | | Success rates | | | | | | | |
|---------------|------------|-----------|-----------|---------------|-----------|-----------|-----------|------------------|-----------|--------------|----------|
| | M | F | M+F | ≤ 4y | | ≤ 5y | | Not yet finished | | Discontinued | |
| | | | | # | % | # | % | # | % | # | % |
| 2005 | 0 | 0 | 0 | - | - | - | - | - | - | - | - |
| 2006 | 1 | 1 | 2 | - | - | 2 | 100 | - | - | - | - |
| 2007 | 0 | 1 | 1 | - | - | 1 | 100 | - | - | - | - |
| 2008 | 1 | 1 | 2 | 1 | 50 | 1 | 50 | - | - | - | - |
| 2009 | 1 | 4 | 5 | 1 | 20 | 4 | 80 | - | - | - | - |
| 2010 | 0 | 2 | 2 | - | - | 2 | 100 | - | - | - | - |
| 2011 | 1 | 2 | 3 | 1 | 33 | 2 | 67 | - | - | - | - |
| 2012 | 2 | 2 | 4 | - | - | 2 | 50 | 1 | 25 | 1 | 25 |
| 2013 | 2 | 2 | 4 | 2 | 50 | - | - | 2 | 50 | - | - |
| Total | 8 | 15 | 23 | 5 | 22 | 14 | 61 | 3 | 13 | 1 | 4 |

Appendix D: Explanation of the SEP scores

| Category | Meaning | Research quality | Relevance to society | Viability |
|----------|-----------------------------|---|--|---|
| 1 | World leading/ excellent | The research unit has been shown to be one of the few most influential research groups in the world in its particular field | The research unit makes an outstanding contribution to society | The research unit is excellently equipped for the future |
| 2 | Very good | The research unit conducts very good. internationally recognised research | The research unit makes a very good contribution to society | The research unit is very well equipped for the future |
| 3 | Good | The research unit conducts good research | The research unit makes a good contribution to society | The research unit makes responsible strategic decisions and is therefore well equipped for the future |
| 4 | Unsatisfactory | The research unit does not achieve satisfactory results in its field | The research unit does not make a satisfactory contribution to society | The research unit is not adequately equipped for the future |