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# Assessment report Wageningen Food & Biobased Research

Wageningen University & Research



# Assessment Report

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Wageningen University & Research

**15-17 September 2021**

**Assessment Committee:**

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# Preface

The Assessment Committee is grateful to all those who supported and took part in the assessment process. The quality of the organization before, during and after the visit greatly facilitated our task and is a credit to WUR as a whole.

The assessment visit of WFBR took place on the 15-17 September 2021. This visit constituted the culminating point of the Assessment Committee's task, which was preceded by a thorough analysis of WFBR's self-assessment report.

The self-assessment report was transmitted to all Assessment Committee members in July 2021, thus providing the Committee with sufficient time to study the report and prepare its first impressions. The Committee found the report very well written and agreeable to read, containing most of the information required to understand the current status of the Institute's activities and its progress since the last assessment in 2016. In this regard, the Committee particularly appreciated the section on how WFBR treated the 2016 recommendations.

The on-site visit was extremely well organized, with WFBR and WUR management creating the conditions necessary for a thorough assessment. A varied program, including presentations, visits of key installations and an early evening poster session provided the Committee with an in-depth view of WFBR and allowed ample time for questions and very open discussions. The Committee appreciated the availability and openness of WFBR staff, WUR management and members of WFBR's strategic advisory board, and was impressed by the professionalism and enthusiasm of all those involved.

At the end of the on-site visit the Committee delivered its preliminary conclusions and recommendations first to the Vice Chair of WUR's executive board, the Director of the Agrotechnology & Food Sciences Group and the WFBR management team, and then to WFBR staff members joining the session via web conferencing. Overall, the Assessment Committee conveyed the fact that it is highly impressed with WFBR and considers itself privileged to have been given so much insight into this first-rate institute.

The Committee members themselves provided highly complementary backgrounds, ensuring that the expertise necessary to evaluate the different facets of WFBR were available. Internal Committee discussions were excellent, and consensus was obtained on all the key assessment criteria. As Chair of the Committee, I hereby thank all members.

In conclusion, the Assessment Committee congratulates WFBR for its performance. The Committee is confident that WFBR will continue to play a prominent role in translating One Wageningen's first-rate science into social and economic benefits.

November 2021

A handwritten signature in blue ink, appearing to read 'M. O'Donoghue', is written over a light blue grid background.

Chair of the WFBR Assessment Committee



# Summary of general conclusions and recommendations

WFBR is an applied research institute whose mission relates to the development of science-driven technological and organisational solutions for grand societal challenges. In this respect, WFBR conducts research focused on the optimal use of renewable resources to produce healthier food systems and biobased chemicals and materials. In this regard, WFBR's activities are well-aligned with UN SDGs such as Zero Hunger (#2), Climate Action (#13), Good Health and Well-Being (#3), Industry Innovation and Infrastructure (#9), Responsible Consumption and Production (#12), Clean Water and Sanitation (#6) and Sustainable Cities and Communities (#11).

As an applied research institute, WFBR's business model is one that combines precompetitive research with contract-based R&D for companies (both SMEs and larger enterprises) and the production of expertise for national and international public policy-making bodies.

The present assessment confirms that WFBR figures among the world's leading research institutes in the field of agro-food research. In this regard, compared to WFBR's position in 2016, the Committee's findings indicate that WFBR has maintained and possibly consolidated its leadership over the last five years.

Considering the different assessment criteria, the Committee believes that WFBR is performing very well, a large part of its success being attributed to its highly skilled and motivated staff. Notably, compared with the previous assessment, the Committee considers that WFBR has improved its performance in a number of areas, including management, strategic planning and its collaboration with other players present on the WUR campus. The Committee congratulates WFBR for successfully completing the merger of TNO and WFBR and for the overall quality of the work performed in both of its business units.

In terms of general recommendations, the Committee has identified four key points:

## *Recommendations*

1. The Committee invites WFBR management to identify best practice in each business unit and ensure that this is adopted across the Institute.
2. WFBR has made efforts to link its activity to that of more fundamental science groups. The Committee suggests that these efforts should be pursued, deepening and broadening these collaborations.
3. National funding rules for TO2 institutes are hampering collaborations with university groups. WUR senior management should use its influence to lobby for systemic change in national funding schemes.
4. Specifically, regarding the BU BBP, the Committee recommends it to maintain a well-focused project portfolio, using a clear analysis of its core skills and expertise to appraise new opportunities.

In the terms of reference, three criteria (quality, impact and viability) form the framework of the assessment. Using these criteria, the Committee made the following observations and recommendations:

- Quality
  - The academic production of WFBR is very good and compares well with its homologs around the world.
  - The skillset of WFBR staff is relevant and of good quality.
  - Within the world-class WUR campus, WFBR is supplying strategy leaders who stimulate and manage crosscutting, collaborative research programs.
  - WFBR's project portfolio is broad, suggesting that some theme areas result from an opportunistic rather than a strategic approach.

### Recommendations

5. Focus across the WFBR project portfolio must be a managerial priority.
  6. Devise a new program that will create further opportunities for (1) BBP to deepen its work on chemicals and materials and (2) for both BUs to combine forces to better tackle societal challenges.
  7. Accelerate the percolation of data management practices throughout WFBR.
- Societal and economic impact
    - The committee is particularly impressed by WFBR's leadership in programs that were explicitly designed to deliver both social and economic impact.
    - WFBR is correctly assuming its role as an independent knowledge institute, both in the Netherlands and at European and International levels.
    - The Committee found ample evidence attesting that WFBR's activities are producing impact in both the economic and social spheres.

### Recommendations

8. WFBR is encouraged to set as a priority the identification of the right (mix) of methods/instruments to single out and target those stakeholders who will contribute most to impact
  9. The committee advises WFBR staff to adopt impact planning and measurement methods and contribute to their development.
- Viability
    - WFBR staff have identified a number of ways to circumvent hurdles that hamper collaboration with fundamental science stakeholders.
    - Upcoming retirements, especially in BBP, will provide opportunities for renewal of staff.
    - WFBR has recently demonstrated its ability to anticipate new strategic developments.
    - WFBR's IP strategy appears in the report as a rather rudimentary one.
    - WFBR research services are rather expensive.
    - Regarding contract research with the private sector, there is a clear need to carefully examine management of the Institute's customer portfolio. The specificities of working with start-ups and SMEs requires close attention.
    - The Committee believes that staff diversity is not being given high enough priority
    - The assessment revealed that the visibility of the institute to the student population on WUR campus and beyond is insufficient.

### Recommendations

10. The Committee advises WFBR to update its analysis of the most urgent societal challenges and identify the pathways to greatest impact.
11. WFBR should carefully consider its IPR management options and develop a more detailed strategy.
12. WFBR management should carefully appraise cost structure, looking for ways to reduce cost burden.
13. It is vital that WFBR should strike a good balance between time spent on acquisition and time spent on core research.
14. Regarding client-driven activities, WFBR should be careful to select partnerships that involve the generation of new knowledge.
15. The committee strongly encourages WFBR management to seize future recruitment opportunities to increase diversity at all responsibility levels.
16. WFBR should attract more MSc and PhD students of WU to the institute during their training.

### Scores

Quality	Impact	Viability
4	4	3

# 1 Introduction

## 1.1 Assignment of the assessment committee

The Executive Board of Wageningen University and Research (WUR) commissions an independent peer review of each of its Wageningen Research (WR) institutes in a cycle of five years. These institute assessments help the organisation to improve and allow the organisation to account for the public funding received by the WR institutes.

The overall aim of the assessment of WFBR is to get an independent view of the (inter)national position of the institute in its field of expertise, to receive recommendations for further improvements, and to provide an independent account of its activities to the Dutch Government and other stakeholders. The assessment criteria are research quality, research impact and viability of the organisation. The criteria should be assessed considering the institute's mission as an applied research institute and are further specified in Appendix 4.2.

The previous institute assessment of WFBR was in 2016. The institute also participated in the 2016 and 2020 Wageningen Research assessment in the context of the Dutch applied research organisations (TO2), commissioned by the Ministry of Economic Affairs. The current institute assessment of WFBR covers the period from 2016 up to and including the year 2020.

## 1.2 Assessment procedure

The assessment committee based her findings on the following evidence: 1) a thorough self-assessment written by WFBR and 2) a site visit including stakeholder interviews. All relevant background documents were made available to the committee, including the previous assessment report from 2016.

The committee shared their first impressions based on the WFBR self-assessment and aligned their focus for the interview sessions in an online pre-meeting prior to the site visit.

The site visit took place on the Wageningen campus from 15<sup>th</sup> – 17<sup>th</sup> September 2021. The committee was welcomed by the WR vice-president prof. Arthur Mol, who gave an overview of the position of WFBR within WUR. This was followed by two days of interview sessions with WFBR management, researchers and stakeholders, including a poster session and tours of the research facilities belonging to the two WFBR Business Units (BU). The main findings and recommendations were discussed in internal committee meetings in between interview sessions. Preliminary findings based on all the provided evidence were presented to the WR Executive Board member Rens Buchwaldt and the WFBR Management Team, as well as all WFBR staff, in two separate sessions at the end of the site visit. The site visit programme can be found in Appendix 4.3. The assessment report was finalised by email correspondence in the weeks following the site visit, after which it was presented to the director of WFBR to check for factual inaccuracies.

## 1.3 Results of the Assessment

To perform the assessment the committee was provided access to all information needed to get insight into the institute's performance and organisation. The committee's questions were all answered either directly by WFBR staff, or for more general issues (i.e., related to WUR or Dutch national processes) by the University's Quality officer (Ms Mieke Wit). Overall, this ensured that committee members were able to perform an in-depth, informed analysis of WFBR's performance.

The committee's findings and recommendations on the three assessment criteria were agreed unanimously and weighted according to the scale presented in the ToR (Appendix 4.2).

## 1.4 Quality of the information

The self-assessment report was very well-presented, supplying a quantity of information sufficient to perform the assessment according to the ToR. The only exception to this was the future strategic plan, which was deemed by the committee to be slightly less thorough compared to the rest of the report. During the visitation, the committee was generally very impressed by the presentations delivered by different WFBR staff. In some cases, timekeeping considerations meant that presentations had to be shortened, but the key messages were always delivered. Moreover, verbal exchanges between the committee and WFBR staff were facilitated by the obvious keenness of all involved to provide as much information as possible in a very open, honest manner. The committee appreciated the frank exchanges that were held with WFBR managerial staff and with members of the WUR board.

The information supplied to the committee was completed by the organisation of an extremely vibrant poster session and visits of some WFBR facilities. These were opportunities for the committee to fully appreciate the enthusiasm and dedication of WFBR staff.

## 2 Mission and position

WFBR focuses its activities on applied research that underpins the transition to a more sustainable society, characterized by low environmental footprints, healthier food systems and biobased materials that can be recycled, thus closing the carbon loop. In this regard, WFBR's activities are well-aligned with societal challenges and specifically address UN SDGs such as Zero Hunger (#2), Climate Action (#13), Good Health and Well-Being (#3), Industry Innovation and Infrastructure (#9), Responsible Consumption and Production (#12), Clean Water and Sanitation (#6) and Sustainable Cities and Communities (#11). Moreover, WFBR's vision and mission are clearly and concisely stated, thus providing its partners and clients with good understanding of its role.

Considering that the Institute figures among the world leaders in agro-food research, the Committee was inevitably impressed by WFBR's performance. WFBR's prominent position in applied science is further enhanced by its location at the heart of the vibrant WUR community. Having both WR and WU on one campus confers WFBR with a unique selling point. In this regard, the analysis of WFBR's progress over the previous period since the last assessment report allowed the committee to appreciate the advancement of the OneWageningen concept (formalized in WUR's 2015-2018 strategic plan), which is now well-advanced. The Committee was also favourably impressed by the improvement of WFBR's performance in the field of partnerships with the private sector (income increased by 60% compared to 2016). Moreover, considering that just after the previous assessment WFBR merged with a part of TNO to form the present WFBR, the committee congratulates the Institute for the smooth, successful integration of both components within the new structure. Also, during the visitation, the committee saw numerous illustrations of tighter collaboration between WFBR and WU chair groups, and also between WFBR and other WR institutes. WFBR appears proactive in the area, as illustrated by its leadership in establishing a crosscutting data science group.

Regarding points of vigilance, the Committee noted that to fully fulfil its mission WFBR needs to be careful to find the right balance between time devoted to core research activities and time spent working on client projects. On another point, the Committee flagged the fact that WUR management has yet to define a timeline for the OneWageningen concept, describing what this will translate into once it is fully implemented. The committee believes that this is vital to encourage full adoption of the OneWageningen concept by all WUR staff.



# 3 Performance

## 3.1 General

### Findings

All the information provided for the assessment indicates that WFBR is generally performing very well, irrespective of the criterion that is employed to define this. More specifically:

- Probably WFBR's greatest asset is its staff. The committee received ample confirmation that the workforce is highly qualified, possessing an excellent skill set, and composed of very dedicated people who are passionate about their mission. This was especially palpable during the visitation, with great examples of dedication being observed in both BUs and at all levels of responsibility. Equally, it was interesting to learn that WFBR management empowers staff members to choose career pathways best suited to them (e.g., staff members wishing to pursue a doctoral degree, or switch to business development). Additionally, the Committee saw clear evidence that WFBR staff members are providing leadership at the WUR campus level and beyond, often for interdisciplinary research on major societal challenges.
- Comparing WFBR's situation in 2016 with the present one, the committee confirms that the **institute has made significant progress** in a number of areas, taking up most of the recommendations made in the previous assessment report. Noteworthy points include the appointment of two new BU managers (one had just arrived for the last assessment), professionalisation of business development, and better integration of the institute's activities with those of some WU chair groups. Additionally, during the period TNO and FBR groups merged and restructured to deliver WFBR's current organization. Moreover, WFBR has reinforced strategic programming not only as a tool to gain more internal focus, but also to generate collaborations across the WUR campus.
- Although performance is very good, the committee is concerned that **staff have insufficient time** to devote to the exploration of new theme areas, to nurturing of their scientific needs and to creating the conditions required for efficient knowledge transfer (i.e., bilateral transfer between WFBR and fundamental research stakeholders such as WU chair groups). Likewise, the committee is concerned that the **time spent on acquisition and funding is outweighing the time spent on core research and strategy thinking**. This is a pervasive issue that if unchecked can erode WFBR's capacity to nurture its knowledge base and harm its ability to maintain its high level of relevance and performance.
- The committee noted that while WFBR has made considerable progress in linking to the research performed by WU and other university groups, **efforts are being hampered by differences in the Dutch public funding systems** that apply to research institutes and universities respectively.
- Regarding the AFSG Board of Directors' request for an opinion on BBP's program portfolio, the committee found most themes are very relevant and, in some cases, offer interesting scope for crosscutting work with the Fresh Food Chains business unit. However, **the committee questions the soundness of overstressing thematic reach, working on a too large variety of areas ranging from water technologies to sustainable textiles, chemicals and advanced fuels**.

### Recommendations

1. Over the previous period, WFBR has made progress in numerous areas, defining best practices that underpin ongoing gains in performance. Nevertheless, not all best practice is completely shared among the two BUs. Therefore, the committee invites WFBR management to **identify best practice in each BU and ensure that it is adopted across the institute**. Whenever this is achieved it will not only enhance performance, but also integration of activities in both BUs.

2. Clearly collaboration between WFBR and fundamental research stakeholders, particularly WU chair groups, is hampered by external factors related to funding. Nevertheless, here and there WFBR staff members have shown a lot of creativity in solving problems (e.g., joint WU-WFBR professorships, shared PhD students etc). To **deepen and broaden WFBR-fundamental science collaborations** in the future, the committee incites WFBR management to deepen its involvement in this aspect, supporting staff when building collaborations and ensuring that collaboration with fundamental science is generalized across the institute. Experience shows that the creation of joint staff positions is one way to achieve this.
3. Regarding the hurdles that hamper collaboration between WFBR and fundamental research stakeholders, while the Institute's staff have devised solutions, changing the system is not within their power. Therefore, considering the influential status of WUR at the national level and the fact that it hosts both a TO2 institute and a university, the committee encourages WUR senior management to **lobby for systemic change in national funding schemes**.
4. Regarding BBP BU, the committee recommends **maintaining a well-focused project portfolio**. While the Committee recognizes the intrinsic relevance of BBP's different subject areas to the overarching framework of the circular economy and the fact that BBP is often focusing on generic platforms (e.g., biotechnology for a variety of application areas), it encourages BBP staff to be more selective. For this, it is necessary to consider the availability and strength of knowledge and skills across the research continuum, from fundamental research (developed by WU chair groups) to applied research in the application area itself (not always present in WFBR). When stronger expertise is available elsewhere, the Committee advises WFBR to establish strategic alliances with the leaders in these fields. Moreover, any opportunities to link BBP and FFC strengths within the framework of the circular economy should be seized.

## 3.2 Quality

### Findings

Using the data supplied for the assessment, the committee concludes that WFBR is reaching very high-quality standards in all of its research activities. Moreover, in many of these, it is recognized as a world class authority, being sought after for its skills and expertise by a variety of national and international stakeholders. Specifically:

- **The academic production of WFBR is very good**, being flatteringly comparable with that of its homologs around the world. Bibliometric indicators reveal that WFBR is succeeding in achieving a good quantity of scientific publications, while hitting the right target in terms of quality (e.g., good proportion of publications in the international top 10%).
- **The skillset of WFBR staff is relevant and of good quality**. This is attested by the fact that national and international partners regularly collaborate with WFBR and also by the fact that many clients spontaneously seek out WFBR expertise, meaning that the work of business developers is greatly facilitated.
- Considering that activities on the WUR campus are world class, it is remarkable that within this environment of excellence, WFBR has demonstrated its ability to act as a **strategy leader, stimulating and managing crosscutting, collaborative research programs** that draw together people from WU chair groups, other WR institutes and in some cases other universities.
- Currently WFBR is operating on several themes, all of which are intrinsically interesting and relevant to the overarching mission of the institute. Nevertheless, the committee suspects that the **project portfolio is rather broad**. This creates a risk of future dispersity and opportunist rather than strategic development. Moreover, a broad project portfolio reduces the likelihood of reaching high impact.
- Since 2019, WFBR has begun to fully embrace the opportunities offered by digitalisation. This is strategically astute and well-aligned with the institute's ambition to increase research quality and acquire quality certification for its research practices. While the committee congratulates WFBR on the very positive steps that have been made so far (e.g., devising a data manager trainee program), it believes that **progress towards the adoption of data-driven approaches must be sustained and expanded in the future**.

*Scientific quality: very good (score 4)*

### Recommendations

5. **Focus across the WFBR project portfolio must be a managerial priority** to ensure that research performed by the institute is fully geared to produce impact. This implies that in the vast majority of cases projects should focus on areas that are well-aligned with strategy and use the expertise of WUR. Projects that relate less to strong, fundamental expertise present in WU chair groups should be left to more expert groups elsewhere. Moreover, in general terms, projects should fall within well-managed, impact-driven scientific programs, aligned with strategy. This will stimulate creativity, inspire staff and leverage collaborations and synergies within the institute, the Wageningen campus and beyond.
6. Regarding new strategic programs, as mentioned above, the committee believes that the WUR sustainable fossil free society in 2050 challenge might provide an appropriate basis to **devise a new program that will create further opportunities for (1) BBP deepen its work on chemicals and materials and (2) for both BUs to combine forces** (also with WU), frame strategy and improve synergies with the aim of maximizing impact in key societal challenge areas.
7. Regarding digitalisation, the committee strongly believes that WFBR must use early achievements to **accelerate the percolation of data management practices** among all WFBR staff, using all necessary means (including training) to achieve this. In the short-term this will contribute to research quality and then to WFBR's ability to conduct data-driven research. In this regard, considering the size of the task in hand, the committee also believes that WFBR is correct in its strategy of mutualizing skills and people across WUR.

### 3.3 Societal and economic impact

#### Findings

Generally, efforts to transfer knowledge and generate impact are rather good. Both BUs illustrated how they are using expertise to reach citizens, influence policy and set agendas. Specifically:

- While congratulating all efforts to generate impact, including illustrations of added value for commercial clients, the committee is particularly impressed by WFBR's leadership in programs that were explicitly designed to deliver both social and economic impact. In some cases, WFBR have adopted new, challenging methods, such as participatory approaches, to extend their reach into society, and have made good efforts to identify and target appropriate stakeholders (i.e., those through which strongest impact will be achieved). This experience will help WFBR to be competitive in the impact-driven framework program Horizon Europe.
- Among the impacts related by WFBR in the assessment report, there is noteworthy evidence attesting that WFBR is correctly assuming its role as an independent knowledge institute. In some cases, results produced by WFBR are used to influence opinion, propose agendas and help to frame public policy at national, EU and international levels.
- Since the last assessment report, WFBR has shouldered its responsibility as a world leader in post-harvest technologies for fruit and vegetables, developing and implementing technologies to tackle food loss. This is illustrated by work performed in collaboration with developing countries. This involves the transfer of WFBR knowhow to international partners using fair (creative commons) licensing methods to make the knowhow accessible. This strategy undoubtedly creates societal impact, demonstrates social responsibility in action and creates greater visibility for WFBR towards important international bodies (e.g., World Bank) as a collateral effect.

*Societal and economic impact: very good (score 4)*

#### Recommendations

8. As mentioned, the committee acknowledges the good efforts to create impact. However, because the committee recognizes that generating significant and timely impact in the real world is difficult, it encourages WFBR staff to set as a priority the **identification of the right (mix) of methods/instruments to single out and target those stakeholders who will contribute most to impact.**
9. The design of impact pathways and the measurement of impact success are both difficult to achieve. However, a variety of ex ante and ex poste methods are available, and others are under development. **The committee advises WFBR staff to adopt impact planning and measurement methods and contribute to their development.** This should help WFBR to better define the impact of its research.

## 3.4 Viability

### Findings

The committee is prudently confident that WFBR's plan for the coming period is viable. This confidence is underpinned by several positive observations including:

- Over the past period, WFBR staff have identified a number of ways to circumvent hurdles that hamper collaboration with fundamental science stakeholders, especially on the WUR campus. These include shared professorships and program managers, collaborative training of PhD students and the co-hiring of tenure track positions. These examples illustrate the fact that complex routes to collaboration are not a fatality, even when national funding schemes are unhelpful.
- The staff demographics and HR strategy presented by WFBR in the assessment report suggest that several upcoming retirements, especially in BBP, will provide opportunities for renewal of staff and redirect skill sets towards new strategic goals.
- WFBR has recently demonstrated its ability to anticipate new strategic developments taking staff hiring risks to acquire skills that will underpin the development of new strategic programs. According to the committee the investment in staff focused on the human microbiome area is timely, because the commercial area is dynamic and WU excellence in the field is well-established.

On the other hand, despite optimism regarding the viability of WFBR's plan, the Committee has observed some points that could imperil this. Specifically:

- **WFBR's IP strategy appears in the report as a rather rudimentary one**, which relies on patents and the construction of patent families.
- Clearly a downside to being hosted on an extremely attractive, well-equipped campus is the associated costs. Consequently, clients and WFBR staff confirm that **WFBR research services are rather expensive**. This could be a handicap, especially if WFBR wishes to work more with start-up companies and SMEs.
- Regarding client-related activities, WFBR clearly needs to carefully **appraise management of its customer portfolio**, looking at company diversity and size. In this regard, **the ambition to work more with start-up companies and SMEs also needs to be examined**, accounting for the pitfalls that are inherent to collaboration with such companies.
- In the report, WFBR failed to supply sufficient information on how diversity is nurtured in recruitment and promotion processes. Moreover, although this was discussed, the visit did not allow the committee to be fully convinced that **staff diversity is being given high priority**. If so, this could affect long term viability of the WFBR team.
- Several indicators, confirmed by members of WFBR staff, suggest that **the visibility of the institute to the student population on WUR campus and beyond is insufficient**. Consequently, WFBR is failing to profit from the diversity of the MSc and PhD students that are available at the doorstep of the institute.

*Viability: good (score 3)*

### Recommendations

10. Considering that the committee would have liked to see a slightly more detailed strategic plan, it recommends that WFBR continues to elaborate this plan, providing more foresight and details about how WFBR will respond to the constantly evolving social and economic contexts. To achieve this, WFBR staff are advised to **update their analysis of the most urgent societal challenges and identify the pathways to greatest impact**. In this regard, the work performed on the WUR sustainable fossil free society in 2050 challenge seems to be an excellent starting point to insert WFBR into a Bioresource-Water-Energy nexus, where bioresources serve to produce food and biobased goods within a resource sober, circular system.

11. The committee suggests that **WFBR should carefully consider its IPR management options and develop a more detailed strategy**. In the process, the institute should draw upon some of its own recent experiences (e.g., the use of creative commons license to accelerate transfer of knowledge) and also consider IPR management in the light of new ambitions (e.g., working with start-up companies). One suggestion might be to develop a more dynamic approach to IPR management, transferring IPR to partners at an early stage or, if no interested parties are identified, making fast decisions on abandonment. This strategy will limit IPR management-related costs.
12. **WFBR management should carefully appraise cost structure, looking for ways to reduce cost burden**. This analysis should account for One Wageningen ambitions to enhance interactions and increase alignment with WU chair groups. Increased alignment and collaboration might provide the basis for more shared facilities within One Wageningen and beyond (e.g., stronger cooperation with field labs outside Wageningen).
13. Management should display more awareness of the danger of finance-related pressure. While the Committee fully recognizes the importance of project acquisition and a healthy balance sheet, it believes that it is vital to **strike a good balance between time spent on acquisition and time spent on core research** that will maintain WFBR's current excellence and build the basis for its future performance.
14. If WFBR intends to work more with start-ups and SMEs, it must **be careful to select partnerships that involve the generation of new knowledge**. Companies simply requiring basic service support or consultancy should be redirected to partners that are better able to handle this. Moreover, regarding general management of the customer portfolio, WFBR is encouraged to nurture a healthy eco-system (diversity of company type and size) ensuring that it provides the basis for two-way benefits (i.e., transfer of mature WFBR knowledge to clients recompensed with opportunities to challenge new knowledge).
15. The committee strongly encourages WFBR management to **seize future recruitment opportunities to increase diversity at all responsibility levels**. In this regard, the international student population (MSc and PhD) trained in Wageningen is a fantastic resource that should be better exploited.
16. Related to the above recommendation, **WFBR should attract more MSc and PhD students to the institute during their training**. This will provide WFBR with a reservoir of early career stage candidates that could become future employees. To better capture this talent, the committee strongly advises WFBR management to work closely with VLAG. Moreover, for rare or difficult to employ skills, WFBR might like to consider extending its successful trainee scheme, already used to employ data science specialists.

# Appendix 1 Members of the WFBR assessment committee

## **Dr Michael O'Donohue (Chair)**

Michael O'Donohue holds a PhD from the University of Portsmouth in 1991 and a 'Habilitation' from the University of Reims-Champagne in 2000. Since 1996, he works for INRAE (France) in the field of enzyme engineering and biobased processes. During his career, Michael coordinated many projects, mainly focused on biorefining, and is currently leading a European distributed infrastructure for industrial biotechnology ([www.ibisba.eu](http://www.ibisba.eu)) and coordinating two infrastructure related H2020 projects. Since 2008, Michael has been involved in senior management duties, first as deputy Division Director (2008-2015) and then Director (2016-2020) of INRA's CEPIA division. During the recent merger of INRA and IRSTEA, forming INRAE, Michael was assigned the task of creating the new TRANSFORM division. He is currently Director of this 600-staff (29 laboratories) division, whose activity is focused on Science for Food, Biobased Products and Waste Engineering.

## **Dr Kerstin Pasch**

Since 2009 Kerstin Pasch is working at the German Institute of Food Technologies (DIL) and heading the DIL Office Brussels which is the connection of the research institute to the European funding bodies and scientific networks. She is responsible for European and international fundraising (Horizon Europe, Horizon 2020, FP7, ERA-Nets, others), is/was active project coordinator and partner in 2 respectively 6 EU projects, supports the legal and financial administration of DIL's projects and participate in other European scientific networks. Her team sets up and runs the DIL Innovation Hub in and coordinates DIL activities in EIT Food. Kerstin Pasch studied agricultural biology at the University of Hohenheim and subsequently completed her doctorate in the field of plant protection at the University of Bonn, both in Germany. From 2006-2009 she headed the EU liaison office in Brussels of two research associations (GFP / German plant breeders, FEI / German food industry).

## **Professor Katja Loos**

Katja Loos is Professor at the Zernike Institute for Advanced Materials of the University of Groningen, The Netherlands, holding the chair of Macromolecular Chemistry and New Polymeric Materials. She specialized in Organic Chemistry and Polymer Chemistry during her university studies at the Johannes Gutenberg Universität in Mainz, Germany and the University of Massachusetts in Amherst, USA. She moved into the field of Enzymatic Polymerizations during her doctoral research at the University of Bayreuth, Germany and the Universidade Federal do Rio Grande do Sul, Porto Alegre, Brasil. After a postdoctoral research stay at Polytechnic University in Brooklyn, NY, USA she started an independent research group at the University of Groningen.

Katja Loos is a Fellow of the Dutch Polymer Institute (DPI) and the Royal Society of Chemistry (RSC). Among other recognitions she recently received the IUPAC Distinguished Women in Chemistry and Chemical Engineering Award and the Friedrich Wilhelm Bessel Research Award of the Alexander von Humboldt Foundation.

**Dr Marcel Wubbolts**

Since November 2016 Marcel Wubbolts holds the position of Chief Technology Officer and is member of the Executive Committee at Corbion. As Chief Technology Officer, Marcel is responsible for Corbion's global Science and Innovation portfolio and for Sustainability. He is passionate about developing sustainable solutions, in conjunction with partners from academia and industry.

Marcel Wubbolts holds a PhD from the department of Biochemistry, University of Groningen, The Netherlands, and was Post- Doctoral research associate and Assistant Professor at the Institute of Biotechnology at the ETH in Zürich, Switzerland, leading a research group on biocatalyst development and remained there until late 1997.

Following his positions in academia, he joined the Life Sciences and Material Sciences company DSM, Heerlen, The Netherlands, where he held several positions including that of Chief Technology Officer from 2011 to 2016.

**Ms Irénke Meekma**

Chief Executive Officer at Koninklijke Zeelandia Groep b.v. After graduating in child psychology, educated in the field of project and financial- economic management, commerce, logistics, IT and organization. Highly experienced on both the buyer and producer side of the food industry. After a successful career at Albert Heijn where she held various senior positions, last being Regional Manager Amsterdam, she moved to Greenyard where she held the position of Managing Director Fresh / Bakker Division for 13 years.

Zeelandia is an independent international producer of ingredients for bread and pastry shops. The head office is in Zierikzee, where approximately 430 employees work.

# Appendix 2 Terms of Reference for WR institute assessments

## Key evaluation criteria and sub criteria

Key criteria	Elements to be considered
<i>Predominantly directed towards the evaluation period</i>	
<p><b>Quality of research</b></p> <p><i>This criterion reflects the research quality</i></p> <ul style="list-style-type: none"> <li>• as it is perceived in the professional eyes of its peers and competitors (scientific quality).</li> <li>• as it is appreciated by clients for usefulness and reliability.</li> </ul>	<ul style="list-style-type: none"> <li>• Scientific quality</li> <li>• Output</li> <li>• Knowledge / experience / training</li> <li>• Esteem / authority / visibility</li> <li>• Strategic choices / targets</li> <li>• Position / share in Topsector- and EU-research programmes and other renown competitive research programmes</li> <li>• Client satisfaction</li> <li>• Collaborations that add synergy / critical mass</li> <li>• Acquisition strength as appears from e.g. portfolio</li> <li>• Case studies that indicate the research strength</li> </ul>
<p><b>Societal and economic impact</b></p> <p><i>This criterion reflects the institute's impact</i></p> <ul style="list-style-type: none"> <li>• as it appears from the knowledge utilisation by users. The evaluation is based on information about knowledge utilisation by various user groups (client questionnaires or interviews / surveys about knowledge utilisation).</li> <li>• as it is appears from the efforts to promote knowledge utilisation by users. The evaluation is based on information about the actions that the WR institution undertakes to promote the utilisation of research results. The question about impact thus becomes a question about how the WR institution connects with which stakeholders. This concerns e.g. the organisation of demand-driven research for stakeholders, performing research in partnership with users, helping users to utilise the research results, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Strategic relevance of research for             <ul style="list-style-type: none"> <li>- Government (contribution to national policy / Topsectors)</li> <li>- Private industry</li> <li>- Economy (contribution to innovation agenda's etc.)</li> <li>- Public in general (contribution to social theme's in the national policy)</li> </ul> </li> <li>• Customer orientation / knowledge utilisation</li> <li>• Role in public debate / opinion / agenda setting</li> <li>• (Inter)national visibility (EU-, Topsector- programmes etc.)</li> <li>• Successes in economic value creation through             <ul style="list-style-type: none"> <li>- new business cases and start-ups</li> <li>- intellectual property</li> </ul> </li> <li>• Visibility in Steering committees / media</li> <li>• Volume and ratios of money flow</li> <li>• Customer relations in public and private arena</li> <li>• Collaborations with prominent knowledge institutions</li> <li>• Case studies (narratives) that support these indicators</li> </ul>

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*Predominantly directed towards the future*

**Viability of the organisation**

*This criterion reflects the attractiveness of the institute's activities towards its stakeholders and the feasibility of their strategic plans and business plans. It gives an indication of its competitive strength, the robustness of the institute and its continuity.*

*It also reflects the institute's abilities to operate in an efficient and effective way, supported by its management, leadership and skills of its employees.*

*N.B. The market is a broad window that includes the total of customers. It includes the industrial clients but also governmental clients, NGO's and in some cases the general public.*

- Customer appreciation (in the past and expectations towards the future)
- Strategic plan and marketing strategy (focus on needs of industry and general public)
- Competitiveness
- Strategic investments (strategic expertise (KB))
- Innovative strength (through examples)
- Order portfolio analysis / analysis of market segments / successes in Topsector-, EU-calls, bilateral contracts
- Attention for critical mass and synergy
- Collaboration (internal / external) especially with the counterparts within WUR
- Quality of the SWOT (focus on portfolio, staff, facilities, business model / finances)
- Organisation structure
- Leadership
- Skilled project-/programme-leaders
- Human resource management, recruiting and retaining good personnel

*Continued on next page*

<b>Score</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
	<b>Unsatisfactory</b>	<b>Satisfactory</b>	<b>Good</b>	<b>Very good</b>
<b>Quality</b>	The group's research has clear weaknesses and is insufficiently appreciated by its stakeholders.	The group's research shows some weaknesses but is generally of good quality. The research is respected by most stakeholders.	The group conducts good and respected research for its stakeholders.	The group conducts very good and highly respected research for its stakeholders. The research is highly respected world-wide.
<b>Impact</b>	The group is insufficiently connected to its stakeholders. Also the utilisation of its research products is insufficient. The strategic importance for the economy (or policy-making / agenda setting) is minimal.	The group has good connections to stakeholders in general but falls short on some aspects. Also the utilisation of its research products is generally good but falls short in certain places. The strategic importance of this knowledge utilisation for the Dutch and European economy and/or resolution of societal challenges is generally substantial, but not in all respects.	The group has good and substantial connections with its stakeholders. Its research is used by its stakeholders. The utilisation of its research products has strategic influence on the economy (or policy-making and agenda setting) in the Netherlands and Europe and / or is of great use for challenges that society has to face nowadays.	The group has very strong structural connections to stakeholder groups. Its research products are used on a large scale. The utilisation of the research products is of great strategic importance for the economy (or policy-making and agenda setting) in the Netherlands and Europe and / or is of great use for challenges that society has to face nowadays.

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<b>Score</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
	<b>Unsatisfactory</b>	<b>Satisfactory</b>	<b>Good</b>	<b>Very good</b>
<b>Viability</b>	<p>Group with significant weaknesses. Not well positioned and insufficiently equipped for the future. The strategy has clear deficiencies. Problem might be of internal (strategy, expertise) or external (market related) origin. Group is facing problems, caused by internal deficiencies. Management is responding not adequately. Decisions made on a rather ad hoc basis. Significant improvements are achievable.</p>	<p>The group has a good strategy in general but in certain parts there is room for improvement. The groups is generally well-positioned and well-equipped for the future, but shows some deficiencies. Not too innovative and not very competitive. In general the management do what is required and are not too exciting. Prerequisites for achieving good quality and impact in terms of finance and staff and facilities fall short on certain places.</p>	<p>Good group with strong focus and strategy and sufficient critical mass. Innovative and competitive. The group is well positioned and equipped for the future. The strategic plan is adequate and well thought out. It has not used all the opportunities yet and with a few adjustments its attractiveness will improve. Management is solid and stimulating. Nevertheless some improvements might be worthwhile considering in respect to finance, staff and / or facilities.</p>	<p>Very strong group with strong focus and strategy and sufficient critical mass. Very innovative and competitive. The group is very well positioned and equipped for the future. The institute is very attractive to its stakeholders. Good strong, proactive management. Decisions are correct and timely. The strategic plan is highly adequate and well-thought-out. Highly satisfied employees and staff. Prerequisites for optimal performance in terms of finance and staff and facilities are present.</p>

# Appendix 3 Programme of site visit 15-17 September 2021

## Wednesday September 15<sup>th</sup>, 2021

at the Hotel de Wageningse Berg

15.00-16.00	Arrival and check in of committee members
16.00-17.00	Welcome and Introduction, in presence of Rector Magnificus/vice president WUR Arthur Mol
17.00-18.30	Meeting Committee
18.30-20.00	Diner Committee at the hotel

## Thursday September 16<sup>th</sup>, 2016

On Campus, Building 125 Phenomea, room Plaza

08.30-09.15	Welcome, introduction and discussion with board of directors AFSG (Sjoukje Heimovaara (managing director) and Tamara van Rozen (director operations) and BU-managers Gerhard de Ruiter and Wouter Noordman
09.15-10.30	Discussions with key staff BU Biobased Products on the following topics <ul style="list-style-type: none"><li>• Transition pathways to renewable carbon – Harriette Bos</li><li>• New polymers for plastics that degrade on land and in sea – Jacco van Haveren</li><li>• Water treatment and technology – Irma Steemers</li><li>• Protein from sugar beet leaves – from lab to pilot – Paul Bussmann</li><li>• Expertise Sustainable Chemistry – Daan van Es</li></ul>
10.30-10.45	Short break
10.45-11.30	Discussions with management team of Biobased Products
11.30-12.15	Tour at Facilities Biobased Products
12.15-12.45	Meeting committee
12.45-13.30	Lunch committee
13.30-14.45	Discussions with key staff BU Fresh Food & Chains on the following topics <ul style="list-style-type: none"><li>• No more time to waste! Food Loss and Waste Prevention – Sanne Stroosnijder</li><li>• Protein Transition – Stacy Pyett</li><li>• Smart Food Processing – Martijn Noort &amp; Martijntje Vollebregt</li><li>• The role of Postharvest Quality Management in low income countries – Bas Hetterscheid &amp; Jan Verschoor</li><li>• Smart Nutrition for Optimal Health – Martine vd Mast &amp; Annelies Dijk</li><li>• The potential of data science &amp; artificial intelligence – Rutger Vlek &amp; Aneesh Chauhan</li></ul>
14.45-15.00	Short break
15.00-15.45	Discussions with management team of Fresh Food & Chains
15.45-16.30	Tour at facilities FFC
16.30-17.45	Meeting committee
18.00-19.30	Buffet (walking dinner) with Poster presentations at the Impulse Restaurant (Building 105, Impulse)

**Friday September 17th, 2021**

On Campus, Building 125 Phenomea, room Plaza

09.00-09.45	Meeting with early career WFBR employees
09.45-10.30	Meeting with members advisory board AFSG
10.30-10.45	Short break
10.45-11.30	Meeting with AFSG professors
11.30-15.15	Meeting committee discuss results and formulate conclusions (incl. lunch)
15.15-16.15	Meeting with representative Board Wageningen UR, Board of directors AFSG and the BU Managers WFBR about results and draft conclusions
16.15-16.45	Plenary meeting with employees Wageningen Food & Biobased Research, Chair Committee presents findings
16.45-17.00	Formal closure by Sjoukje Heimovaara (Management Board AFSG)



To explore  
the potential  
of nature to  
improve the  
quality of life



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The mission of Wageningen University & Research is "To explore the potential of nature to improve the quality of life". Under the banner Wageningen University & Research, Wageningen University and the specialised research institutes of the Wageningen Research Foundation have joined forces in contributing to finding solutions to important questions in the domain of healthy food and living environment. With its roughly 30 branches, 6,800 employees (6,000 fte) and 12,900 students, Wageningen University & Research is one of the leading organisations in its domain. The unique Wageningen approach lies in its integrated approach to issues and the collaboration between different disciplines.

