

Drs. 8956- 21
Cologne23 04 2021

Statement on the Institute for Advanced Sustainability Studies e.V. (IASS), Potsdam

Translator's note

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Preliminary note

In December 2018, the Federal Ministry of Education and Research (BMBF), in consultation with the State of Brandenburg, requested that the Science Council evaluate the *Institute for Advanced Sustainability Studies* e. V. (IASS) in Potsdam and to begin its evaluation process in the second half of 2019.

In January 2019, the German Council of Science and Humanities asked the Evaluation Committee to carry out the evaluation of the IASS; the Evaluation Committee then set up a working group for this purpose. The membership of this working group included experts who are not members of the Science Council. The Council of Science and Humanities is particularly grateful to these members.

Due to the coronavirus pandemic, the on-site assessment originally scheduled for mid-March 2020 had to be postponed. The working group reviewed the IASS on the basis of documents and videoconferences on 2 and 3 November 2020 and prepared an evaluation report on this basis. Once adopted by the working group, the evaluation report cannot be changed in the further procedure.

On the basis of this report, the Evaluation Committee of the German Council of Science and Humanities prepared its Science Policy Statement on 11 March 2021. The Council of Science and Humanities discussed and adopted the statement at its meetings from 21 to 23 April 2021.

A. Development and key figures

The *Institute for Advanced Sustainability Studies* (IASS) was founded on 2 February 2009 by the German Government, the State of Brandenburg and some members of the Alliance of Science Organizations as a registered association based in Potsdam. The Institute commenced its work on 1 January 2010.

The IASS is funded by joint project grants from the Federal Ministry of Education and Research (BMBF, 85%) and the Brandenburg Ministry of Science, Research and Culture (MWFK, 15%). In the 2019 fiscal year, the IASS received grants totalling 9.7 million euros (core funding incl. carryover), of which 8.3 million euros came from the Federal Government and 1.4 million euros from the state. In addition, the IASS received third-party funding of 7.3 million euros in the same financial year.

As of 31 December 2019, the IASS employed 123 staff (105.3 FTE) through its core funding from the BMBF and MWFK, of which 87 (72.7 FTE) were scientific staff and 36 were non-scientific staff (32.6 FTE). 15 of the 87 scientists were financed using both core funding and third-party funding. In addition, 53 scientists (40.0 FTE) were financed exclusively by third-party funding. The entire scientific staff are employed on fixed-term contracts.

The IASS was evaluated by the German Council of Science and Humanities for the first time in 2014. ^{|¹} The recommendations of this evaluation led the Institute to initiate organisational reforms and a strategic realignment of its programme over the following years. This included, in particular, a strengthening of social science competencies, an increase in in-house scientific staff, a down-sizing of the Fellow Programme and a reorganisation of its management structure and research. In a statement on the interim implementation of its recommendations issued in April 2018, the Council of Science and Humanities commended the IASS on the first of these measures. At the same time, it advocated for a renewed evaluation in order to ascertain whether the measures introduced could adequately support sustained improvement in the quality of research. ^{|²}

| ¹ Wissenschaftsrat: Stellungnahme zum *Institute for Advanced Sustainability Studies* (IASS), Potsdam (Drs. 4204-14), October 2014.

| ² Wissenschaftsrat: Umsetzung der Empfehlungen aus der zurückliegenden Evaluation *Institute for Advanced Sustainability Studies* e. V. (IASS), Potsdam (Drs. 6995-18), April 2018.

B. Tasks

According to § 2 of its statutes, the purpose of the IASS association is “to promote science and research for global sustainability, especially in the areas of climate change, Earth systems and sustainable development. Its purpose is also to provide training and professional development for young scientists, exchange scientific information and engage in societal dialogue at the interface of research and politics. It achieves its purpose in particular by:

- a) operating an interdisciplinary, globally oriented institute that performs outstanding research with support from the members of the Alliance of German Science Organizations and their institutions;
- b) supporting German scientists and visiting scientists from abroad (Fellows) while they pursue research projects of their own choosing for a limited period in Potsdam;
- c) initiating a strategic dialogue with policymakers, industry, and society that accelerates the transfer of scientific knowledge to society;
- d) forming strategic partnerships with selected universities and non-university research institutes to boost research collaboration;
- e) communicating IASS findings to policymakers and the public. |³

| ³ Statutes of the "Institute for Advanced Sustainability Studies e. V. (IASS)" dated February 2, 2009, as amended on November 22, 2017.

C. Statement and Recommendations |⁴

C.I OVERALL ASSESSMENT

Since the previous evaluation of 2014, the IASS has made significant progress in terms of its research practice and organisation. Within the broad field of sustainability research, the IASS places its focus on the challenge of shaping transformations necessary to achieve climate and sustainable development goals through democratic processes and with the involvement of affected actors. As part of its practice, the IASS has developed a scientific concept that combines sustainability research, transformation research and transformative research as well as transdisciplinary, co-creative political and societal consultancy. |⁵ The Institute's aspiration to overcome the dichotomy between research and transfer and to shape transformation processes with the methods of science is relevant to society and contemporary

There is a growing demand, especially from political actors, for research and policy advice of the kind provided by the IASS as well as its expertise in the design and accompanying study of transformation processes. This reflects the growing need for actors who understand their role as that of an interface between science and politics or society (*science-policy-interface*) and who can both reflect on the exchange between the two sides through the lens of science and – precisely because of this – foster it in

| ⁴ The following text is a draft translation of the statement on the Institute for Advanced Sustainability Studies e. V. (IASS), Potsdam, by the German Council of Science and Humanities. It contains the parts C. and B. The original document can be found here:

https://www.wissenschaftsrat.de/download/2021/8956-21.pdf?__blob=publicationFile&v=4

| ⁵ The IASS applies the term “transformative research” in reference to the application of evidence-based knowledge in the context of efforts to shape transformation processes. According to the IASS, policy advice is evidence-informed when it informs but does not determine political action *and* includes knowledge relating to the design of transformations in addition to factual knowledge. According to the IASS, participatory processes are co-creative when they empower actors (from science, politics, business, media, and civil society) to share their knowledge, values and interests in a discursive process and facilitate efforts to arrive at a common understanding of the problem and to identify possible solutions that will enjoy broad support.

practical terms. Underpinned by a fundamentally cogent concept, the IASS has established itself at the interface of sustainability research and transformation research, the natural and social sciences as well as science and politics, business, and society. As a result, the Institute has the potential to initiate and advance scientific developments and to become an attractive partner for scientific cooperation.

The far-reaching organisational reforms implemented at the IASS following the previous evaluation were an important prerequisite for this development. The scope and importance of the Fellow Programme, which was constitutive for the IASS as an *Institute for Advanced Study* in its formative years, has been scaled back in favour of building out its in-house scientific expertise. This improved the Institute's ability to pursue longer-term research goals. At the same time, the role of policy and societal consultancy activities as well as the science-based design and monitoring of concrete transformation processes has increased within the Institute's research portfolio. As a result, the IASS can no longer be considered an *Institute for Advanced Study* in the narrower sense, as the Science Council notes in its most recent recommendations.¹⁶ Today, the IASS is characterised by the institutional integration of its functions as a research institute *and* advisory institution, with a fellowship programme that dovetails with both functions. To ensure its future success, it is vital that the Institute maintains a productive balance between these functions and exploits its existing potential even better. The recommendations in the following section should be implemented to this effect.

In view of the considerable need within the political sphere and society at large for the specific contribution the IASS makes to science-based transformations towards greater sustainability, as well as the positive development of the Institute since 2014, the German Council of Science and Humanities recommends that the funding agencies offer the IASS a concrete institutional development perspective. The institutionalisation of the IASS should be guided by an integration concept that takes up the recommendations outlined in this statement. In particular, the multifunctional character of the Institute should be maintained, rather than shifting its focus to one or the other side. In addition, the Institute's profile should be honed further. If the IASS is to continue its activities credibly and successfully at the interface between science, politics, business, and society, it is vital that it remains independent in the choice of research topics and transfer activities. In order to ensure this, the funding bodies and General Assembly should consider the institutional options as openly and broadly as

¹⁶ Wissenschaftsrat: Entwicklungsperspektiven von *Institutes for Advanced Studies* (IAS) in Deutschland (Drs. 8958-21), April 2021.

possible, while also considering what format would be suitable for this new type of institution. During this transition, the Institute should adopt a new English name that better reflects the changes in the function and profile of the IASS. During the transitional period, the funding bodies should provide the IASS with sufficient funding to perform its work to the same extent as before.

C.II KEY ASPECTS

Research and work planning

The Institute's fundamentally compelling concept (cf. C.I) should guide the design of the future research and work programme(s) as well as the selection of suitable core and third-party funded research and consultancy projects. Greater coherence should be sought. The responsibility for this lies with the leadership of the Institute and the research areas. Scientific staff should be involved in this process in an appropriate form.

The range of topics researched at the IASS is still too broad for a research institute of this size. The scientific study of transformation processes that are likely to strengthen sustainability touches by necessity on diverse issues. To improve its performance in research practice and deliver high-quality output for policymakers and civil society, the IASS should narrow the range of topics addressed in its research and focus on key areas. At the same time, it should remain open to dynamic developments in the research and policy fields around sustainability and transformations and seek to identify and address issues relevant to society within the scope of its thematic priorities.

The research areas and forums

The configuration of the research areas and forums should be reviewed with the aim of achieving a higher degree of thematic and methodological consistency within these organisational units and improving cooperation among them. In keeping with the Institute's programme, sustainability research, transformation research and transformative research, as well as research in the natural and social sciences should be more closely intertwined within the research areas and forums in future. At present, this is best achieved in the research area "Energy Systems and Societal Change". With the energy transition as their common point of reference, the research groups comprising this area have a comparatively high level of consistency and a

common methodological core. In the other research areas and the forums, links between individual projects are often lacking. The overarching perspective connecting such projects should be defined more clearly.

The quality of the diverse research projects being worked on in the research areas “Systemic Interdependencies: Nature, Technology, Society”, “Governance for the Environment and Society” and “Energy Systems and Societal Change” is mostly satisfactory to good; in some cases, it is very good. In contrast, the scientific performance of the research area “Perceptions, Values, Orientation” needs improvement. In view of the transversal importance of this topic, its integration across all the thematic fields would be advisable. The research area “Democratic transformation” is still in its infancy and has enjoyed some initial success with the development and implementation of dialogue processes with stakeholders affected by the structural transformation underway in Lusatia. An in-depth scientific assessment of its findings is pending.

Transfer projects are among the major strengths of the IASS. The Institute has continued to develop its understanding of transfer since the last evaluation and now involves partners from different fields of practice in the formulation and processing of research questions. This approach makes transfer a recursive process and improves the likelihood of achieving the desired impacts.

The large number of commissions received by the IASS during the evaluation period, especially from the Federal Government and Brandenburg, but also from other German states and municipalities, shows that political actors in particular view the IASS as a reliable partner with the ability to develop and execute new formats for science-based political and societal consultancy around transformation processes and science-led process design. The IASS is to be commended for its willingness to actively seek out potential clients and partners for its consultancy work. To improve the coherency of these activities, the IASS should concentrate on consultancy and process design projects that are aligned with its areas of focus and available expertise.

Overall, the Institute should seek to better harness the potential of its diverse research and transfer projects. To achieve this, exchange within and across the research areas should be strengthened; this would facilitate mutual learning and joint reflection on the results of research projects, many of which have a very local focus, with a view to deriving more generalisable findings. Similarly, there is a need to clarify how the findings of this research can be translated into policy or societal advice and how transformative impact should and can be achieved in concrete terms. In doing so, the

IASS should strive to contribute to theory building and to develop generically applicable collaborative methods and formats for the implementation of transformations. The IASS must continue to develop its toolset to advance transformative goals and test their effectiveness regularly.

Some of these tasks are already addressed through the research area “Forums: Science, Policy, Society”, which works to foster dialogue between science, politics, and society, builds connectivity between the research areas, and facilitates reflection on the Institute’s transformative research approach. However, given the insufficient coherence of the IASS, this unit appears to be structurally overburdened with this task, and the function of the “Forums” should be reviewed and corrected accordingly. Nevertheless, it should be noted that individual groups within this area do perform well – particularly in transfer projects.

Publications and third-party funding

Since the last evaluation (and especially in 2019 and the first half of 2020), the volume and quality of publications authored by the scientific staff of the IASS have increased/improved; most recently, there has also been a considerable increase in articles in peer-reviewed journals. This development is especially positive considering that the scientific staff perform research, consultancy, and process design tasks in roughly equal proportions. The adoption, in 2018, of a publication strategy that includes options to address different target groups and promotes contributions to peer-reviewed journals for scientific publications, aimed to stabilise this trend and is another positive development.

The IASS researchers are to be commended on their willingness to hold lectures, participate in panels, and moderate events. The national and international conferences organised by the IASS independently or in cooperation with partners, as well as various events on the fringes of conferences of the United Nations and other international organisations, provide valuable forums for exchange among representatives from science, politics, business, and society.

There has been a significant increase in third-party funding secured by the IASS (2011-2013: 0.89 million euros; 2016-2018: 12.85 million euros). This development is to be welcomed, in principle. However, the share of funds acquired through the competitive funding streams of the EU and the DFG (3.6 % and 1.3 % respectively) are clearly inadequate, even considering the Institute’s focus on applied research and consultancy. The third-party funding strategy implemented in 2018, which prioritizes

efforts to acquire third-party funding through competitive funding streams – whether alone or in cooperation with other institutions – is strongly supported.

Teaching and promoting young researchers

The dedication with which scientists from the IASS engage in university teaching in Berlin and Brandenburg, and in some cases farther afield, is particularly noteworthy. The German Council of Science and Humanities was pleased to learn that the IASS grants postdocs employed at the Institute who aspire to a scientific career special leave to engage in academic teaching activities. The establishment of junior research groups at the IASS with funding from the BMBF is another positive development and an effective means to support early career scientists.

In view of the highly diverse disciplinary backgrounds of the doctoral students employed at the IASS, it is unlikely that an adequate graduate programme could be established in cooperation with just a single university. It is therefore even more important that the IASS realises its plan to establish an internal programme in its entirety in cooperation with a small number of universities in the region and beyond. The German Council of Science and Humanities also strongly encourages the IASS in its plan to revise the supervision agreements and more clearly define the responsibilities of the supervisors. The doctoral agreements should stipulate that candidates be supervised by at least one senior researcher at the IASS and one university-based supervisor working in the candidate's discipline of origin. This would ensure that doctoral researchers working on IASS projects with transdisciplinary or transformative approaches remain in touch with developments in their discipline of origin. The German Science Council recommends that the IASS establish a position to support the numerous doctoral researchers at the Institute and to coordinate the doctoral programme.

The Fellow Programme

The German Council of Science and Humanities is positive in its assessment of the far-reaching reform of the Fellow Programme undertaken since the last evaluation. A substantial reduction in the number of appointments made it possible to increase the number of positions for academic staff, which has in turn facilitated greater continuity in research and consultancy activities, including accompanying research in connection with transformation processes. The establishment of a public application process for all fellowship positions and the selection of candidates based on transparent criteria is another welcome development. The open application process for the position of

Senior Fellow should be reviewed in two to three years and the Institute should decide on this basis whether a share of these positions should be awarded by invitation to ensure that the IASS continues to attract high-profile scientists. If the Institute opts to pursue this course, the criteria applied to the open call should be used here as well.

Considering the above-noted changes in the function of the IASS (see C.I), the Institute should seek to expand the involvement of fellows in its research and transfer activities for the mutual benefit of both parties.

Exchange between fellows and IASS researchers in both concrete projects and in the context of the joint events held regularly at the Institute is perceived as enriching by both sides. The fellows particularly appreciate the support given to them, the programme itself, and the immense diversity of professional backgrounds, levels of experience, and countries of origin among their ranks. This diversity should be maintained and deepened. The IASS is encouraged to pursue its stated goal of attracting more researchers from countries previously underrepresented in the ranks of the fellows, as well as representatives of industry.

Cooperation

As the IASS cannot and should not maintain a staff of researchers spanning the full range of disciplinary expertise required to address its diverse topics, strategically oriented cooperation is of great importance. The German Council of Science and Humanities accordingly welcomes the three joint appointments made with the Universities of Potsdam and Stuttgart, the preparations for further joint appointments with Humboldt-Universität zu Berlin and Technische Universität Berlin, and the awarding of honorary professorships to IASS scientists. These appointments will extend the Institute's network and facilitate its integration within collaborative research projects, such as those of the DFG and the EU. Preparations are already underway for the first joint projects. If the IASS is institutionalised, the previous fixed-term appointments should be put on a permanent basis or, in the case of junior professorships, tenure track.

To systematically expand its cooperative relationships, the IASS should develop a cooperation strategy and a procedure to facilitate the identification of scientists in Germany and abroad who would be suitable candidates for long-term cooperation. The Fellow Programme should be an integral part of this strategy. Its contribution to the Institute's national and international networking efforts could be bolstered by the planned alumni programme.

Quality assurance

The IASS has a very active Advisory Board, which is to be commended for its efforts to support the topical and organisational reforms pursued at the Institute since the last evaluation. The Advisory Board should continue to audit the IASS at regular intervals to safeguard the quality of the work and advise the Institute in particular regarding the focus of its research and work programme.

The Council notes with approval that, in cooperation with its Advisory Board, the Institute has developed indicators for measuring and evaluating its transfer services as well as a tailored approach to assess the effectiveness of its advisory activities and the processes it designs and accompanies. These instruments should be developed further and supplemented with qualitative evaluation criteria and surveys of partners from the field. As soon as sufficient experience with these quality assurance tools has been gained, the IASS should publish its findings.

C.III ORGANISATION AND EQUIPMENT

Organisation

The IASS should implement its plan to reduce the number of positions on the Board of Directors, with a future composition of two scientific directors and one administrative director. To maintain the Institute's interdisciplinary character, the natural and social sciences should be represented equally on the board. The contract of the current Managing Scientific Director should be extended until a successor is secured to avoid leaving this position vacant for an extended period.

The German Council of Science and Humanities supports the Institute's plan to establish a second management tier with clear responsibilities below the Board of Directors. It should enjoy a degree of freedom in the management of the research areas, be included in the Board of Directors' decision-making on important issues and, where possible, be appointed in cooperation with universities. When filling management positions, the IASS should pursue the goal of gender equality.

The current structure of the research areas should be reviewed with a view to achieving greater thematic and/or methodological consistency. The role and function of the forums must also be reconsidered and defined more precisely. The issue of how

the German secretariat of the Franco-German Forum for the Future can be integrated into the organisational structure of the IASS in a way that is beneficial to all parties must also be clarified. |⁷

Funding

The IASS is adequately equipped in terms of its scientific personnel and funding. However, its administrative capacities are exhausted due to the significant increase in third-party funding. IT personnel are also in short supply. The IASS should examine whether additional positions could be created in both units through internal redeployment.

The great commitment shown by staff members from all areas and at all qualification levels, who have so far only been employed on a fixed-term basis, is to be commended. The Institute should offer its scientific staff opportunities for further training across the full spectrum of relevant methods or endeavour to provide staff with access to appropriate courses and training at universities and non-university research institutions by agreement.

Request for review

The BMBF and the State of Brandenburg are kindly requested to report to the Science Council on the implementation of the recommendations made in this report after a period of three years.

| ⁷ The Franco-German Forum for the Future aims to establish new dialogues between politics, civil society, science and business in both countries. It is a priority project of the Treaty of Aachen (Article 22), which was concluded between the German and French governments on 22 January 2019. (...) The BMBF is providing a total of 11 million euros in funding over the next three years to support the establishment of the Forum for the Future. A sixteen-member Franco-German steering committee will supervise the work of the Forum for the Future. The steering committee is made up of representatives of the German and French governments (BMBF, Federal Foreign Office, Ministère de l'Europe et des Affaires étrangères and Ministère de la Transition écologique et solidaire) as well as members of the national parliaments. It also includes representatives of civil society, the social partners, business and science. The Franco-German Forum for the Future is currently being established at two locations by a secretariat in Potsdam by the Institute for Advanced Sustainability Studies (IASS e.V.) and in Paris by the think tank France Stratégie. (...) The secretariat will organize the work of the Forum for the Future and establish structured dialogues on both sides of the Rhine. The results of these discussions will be processed and analysed by the Franco-German team of Forum for the Future. The ideas developed through this work are to be made accessible to the public and handed over to Franco-German bodies (e.g., the Franco-German Council of Ministers). Cf. <https://www.bmbf.de/de/deutsch-franzoesisches-zukunftswerk-startet-12073.html> (last accessed on 24.03.2021).

Annex: Evaluation Report on the
Institute for Advanced Sustainability Studies e. V.
(IASS), Potsdam

2021

Drs.8827-21
Cologne 25.01.2021

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Preliminary note

This evaluation report on the Institute for Advanced Sustainability Studies e.V. (IASS), Potsdam, comprises two sections. The descriptive section was finalised in cooperation with the Institute and its funding bodies to ensure an accurate representation of the facts. The evaluative section offers an assessment of the Institute's scientific performance, structures, and organisational features.

A. Initial Situation

A.1 DEVELOPMENT AND TASKS

I.1 Development

The Institute for Advanced Sustainability Studies (IASS) was founded as a registered association on 2 February 2009 by the Federal Government, the State of Brandenburg and several members of the Alliance of Science Organizations. The IASS is based in Potsdam.

The impetus for founding the Institute came from the Global Sustainability Symposium: A Nobel Cause, which brought together Nobel laureates in Potsdam in 2007. In the Potsdam Memorandum, the laureates agreed on a series of urgent measures that should contribute to climate stabilisation, a secure energy supply and sustainable development. In addition, they called for a "*global contract between science and society*" to harness all relevant sources of innovation and knowledge to address sustainability challenges in the 21st century and beyond.¹⁸ Following on from this, the IASS has adopted a transdisciplinary approach that seeks to bring together insights from research, politics, business and civil society (cf. A.I.2). This is also the purpose of the Fellow Programme, which has been in place since the Institute's inception and aims to bring together people from different disciplines, sectors, and countries.

The Institute began its work on 1 January 2010 with an initial research cluster (*Global Contract for Sustainability*) under the leadership of the founding director. In the summer of 2010 and in the fall of 2011, two scientific directors were appointed to lead two additional interdisciplinary research clusters: *Earth, Energy and Environment and Sustainable Interactions with the Atmosphere*. In addition, the then Secretary General of

¹⁸ Potsdam Memorandum. Main conclusions from the symposium 'Global Sustainability: A Nobel Cause', Potsdam, Germany, 8 – 10 October 2007, in: *Global Sustainability – A Nobel Cause*, (Eds.) v. Schellnhuber, H. J., Molina, M., Stern, N., Huber, V. and Kadner, S., Cambridge/U.K., New York/ USA 2009, S. 369-372, here: p. 371 (Available online: https://www.iass-potsdam.de/sites/default/files/2021-01/Potsdam%20MemoranN.dum_eng.pdf, last accessed 24.03.2021).

the IASS was entrusted with the management of the platform Enabling Technologies for Sustainability. In this start-up phase, which according to the Institute lasted until 2014, the IASS scientists were engaged in work on the following topics: the energy transition in Germany, the assessment and development of new energy-related technologies, soils, oceans, economic and cultural aspects of sustainability, the relationship between air quality and climate change, climate engineering, circular economy, and capture and reuse of carbon dioxide.

In 2014, the IASS was evaluated by the German Science Council. In its statement, the committee acknowledged the work done to establish the Institute but assessed the quality of the research services provided up to that point as not yet satisfactory and made recommendations for a scientific and organisational reorientation. In order to implement these recommendations, the Board of Directors, the Advisory Board and the General Assembly of the IASS took a number of measures. As a result, the research clusters and the platforms were dissolved; the topics and work were reorganised, streamlined, and bundled. Some activities of the Institute were abandoned.⁹ Following the departure of the founding director and an additional scientific director, two new scientific directors were appointed in February and April 2016. According to the IASS, this has specifically strengthened the Institute's social science expertise; at the same time, natural science work on air quality and climate has been continued. The position of Secretary General was replaced by the position of Administrative Director without research responsibilities and was filled in October 2017. In 2018, the IASS introduced a new organisational structure based on the 2017-2021 research programme, which, according to the Institute, established a systematic link between transformation research and transformative research and established a new conceptual framework for the various building blocks: research, transdisciplinary consultancy, and the Fellow Programme (see A.I.2 and Appendix 1).

The German Council of Science and Humanities welcomed these initial substantive and structural changes in April 2018 in a statement on the interim implementation of its recommendations. In order to check whether these have generally ensured a sustained upward gradient in research quality, the Council advocated for a renewed evaluation of the IASS.

⁹ This applies to work on the sustainable use of soils, on the subject of electronic waste, as well as research into energy-related technologies and experimental work on their conceptual development.

I.2 Tasks

According to § 2 of its statutes, the mission of the IASS is to promote science and research on global sustainability, with a particular focus on climate change, the Earth system and sustainable development. In addition, its tasks include promoting the education and training of young scientists as well as the exchange of scientific information and social dialogue at the interface between research and politics. To achieve this, the association operates an interdisciplinary and internationally oriented institute that conducts excellent research with the support of several major scientific organisations. The Institute is intended to support domestic and foreign guest researchers (Fellows) in carrying out freely chosen, temporary research projects in Potsdam, to establish strategic partnerships with selected universities and non-university research institutions in order to intensify research cooperation, to initiate strategic dialogues with politics, business, and society in order to accelerate the transfer of scientific findings to society, and to communicate the results of its work.^{| 10}

On the basis of this statute, the IASS considers three closely interrelated features to be constitutive of its work:

- the integration of disciplinary and interdisciplinary transformation research (understood as research on characteristics, barriers and drivers of transformations towards sustainability) and transformative research (understood as the co-design of these transformations on the basis of evidence-informed ^{| 11} knowledge);
- transdisciplinary political and social consulting, especially by means of co-creative ^{| 12} methods;

^{| 10} Article 2 (1) of the Statutes of the *Institute for Advanced Sustainability Studies* e.V. (IASS) dated 02.02.2009 as amended on 22.11.2017.

^{| 11} The IASS understands this to mean scientific policy advice that informs but does not determine political actions and at the same time brings not only factual knowledge but also design knowledge into the advice. This understanding has been developed under the leadership of the Managing Scientific Director of the IASS in the *Science Advice for Policy by the European Academies* (SAPEA) working group and will be captured in a report by this working group in 2019. Cf. *Science Advice for Policy by the European Academies | SAPEA: Making Sense of Science for Policy under conditions of complexity and uncertainty* (= *Evidence Review Report* No. 6), Berlin 2019, Available online: <https://www.sapea.info/wp-content/uploads/MASOS-ERR-online.pdf> (last accessed Oct. 16, 2019).

^{| 12} The IASS defines co-creation as a participatory process in which the actors involved (from science, politics, business, media and civil society) contribute their knowledge, values and interests and, in a discursive process, arrive at a common understanding of the problem and, if necessary, at potential solutions that they jointly support.

- the involvement of fellows from academia and practice in its research activities.

In addition, the Institute's focus on research that serves the common good and intensive networking in the regional, national, and international political arena are characteristic of its profile.

I.3 Positioning of the IASS in the professional environment

According to the IASS, the Wuppertal Institute for Climate, Environment and Energy most closely reflects its approach. Both institutions researched and developed guiding principles, strategies and instruments for sustainable development at regional, national and international level. In its research areas "Democratic Transformations" and "Perceptions, Values, Orientation" (cf. A.II.1.a), the IASS explores topics that are not addressed at the Wuppertal Institute. Where overlaps exist, for example in climate research or energy systems, the IASS pursues a special approach with its transformative research approach. While the Wuppertal Institute has its strengths in guiding and accompanying regional living labs, the IASS concentrates on the integration of natural and social scientific research and on the relationship between human interventions and their consequences for the environment, society and culture. The Institute for Social-Ecological Research (ISOE) in Frankfurt/Main has a similar orientation to the IASS and is also dedicated to transdisciplinary methods and transformative research approaches. According to the IASS, the strength of the ISOE lies in considering economic or social questions of sustainability in the light of ecological effects or the enabling of ecological goals. In contrast, the IASS is thematically more diverse and is dedicated to cross-cutting issues such as systemic risks or certain processes of governance and societal decision-making. Transdisciplinary and transformative sustainability research is also performed at some German universities, in particular the universities of Hamburg, Kassel and Lüneburg and, more recently, the TU Berlin. Parts of the departmental research also dealt with similar topics, for example the Federal Environment Agency or the Federal Institute for Risk Assessment. The IASS also identifies partial overlaps with Potsdam Institute for Climate Impact Research (PIK), which primarily researches the effects of climate change and possible measures for climate protection. One of PIK's focal points is system-analytical simulations and scenarios, especially in the field of climate and energy research and climate governance. In contrast, the IASS is characterised by a greater thematic diversity and range of competencies in the social sciences and humanities, as well as a greater use of transdisciplinary methods.

In the international field, the *International Institute for Applied System Analysis* (IIASA)

in Laxenburg near Vienna is thematically very close to the IASS. However, the IIASA pursues a different approach that focuses on generating knowledge through the use of numerical models and simulations, which is then passed on to politicians and social actors. In contrast, the transdisciplinary genesis and communication of knowledge is central to the IASS. A similar task is pursued by the *Institut du Développement Durable et des Relations Internationales* (IDDRI) in Paris, which is dedicated to the political structures and processes of sustainable development and organises *multi-stakeholder* dialogue platforms. However, the focus of IDDRI is on international relations and governance analysis. Scientific or technological impact research is carried out only marginally at IDDRI. The *Stockholm Resilience Centre* (SRC), internationally renowned for its transdisciplinary research, is also close to the IASS in terms of its topics and methodology. This Swedish institute researches governance and management of social-ecological systems to secure ecosystem services for the common good and to enable long-term sustainability. It uses numerical models and simulations, discusses the resulting systemic findings with *stakeholders* and translates them into policy options. A major difference to the IASS is the SRC's emphasis on resilience as a criterion for evaluating sustainability policies. Moreover, the approach of the IASS is broader.

The IASS emphasises the great importance it attaches to cooperation with institutions in Germany and abroad that intersect with its own fields of activity. One example of a central joint exchange format is the *Global Sustainability Strategy Forum* (GSSF), which was founded on the initiative of the IASS and is funded by the Volkswagen Foundation.

A.I FOCUS OF WORK

The IASS emphasises that research, services for science and knowledge transfer are closely intertwined in its transformative research approach, which is why a division of services according to target groups is not always possible. With this restriction, the IASS estimates the share of own research in the activities of the scientists at 50 %. About 30 % of the activities serve the transfer of knowledge or services for third parties and the public, 10 % each are services for science and for the funding bodies (this includes above all the supervision of a sustainability platform for the State of Brandenburg and the organisation and management of the national Science Platform

Sustainability 2030, see A.II.1.b). Thus, services take up about half of the work capacity of the scientific staff. According to the Institute, these services are predominantly provided in the form of co-designing transformation processes.

II.1 Research and development

According to its own statements, the IASS conducts research on and for transformations towards sustainable societies. Following the Brundtland Report of the *World Commission on Environment and Development* of 1987, these are understood as developments towards globally just and ecologically and economically viable forms of co-existence that would allow all people living today and in the future to realise their vision(s) of a good life.^{|¹³} Transformations in this sense, as the IASS emphasises, require societal debates about the concrete development goals and the measures required to achieve them. In this process, the IASS sees its task in creating and shaping knowledge as an essential "motivator and catalyst" of transformations and in bringing it into these debates.

This results in three overarching research questions for the current research programme, which are intended to guide the work of the IASS in this funding period (duration 2017-2021)^{|¹⁴} and are each assigned to a knowledge category:

- Knowledge and Democratic Governance in the Anthropocene: What are characteristics, barriers and drivers for successful sustainability transformations?
- A Just Society and Common Futures: What goals align with sustainable development and how can societal processes for their negotiation and ethical justification be organised?
- Design and Facilitation of Transformations: How can and how should transformation processes be designed and supported in order to be successful?

In this context, the IASS is focusing in particular on the following three political processes: the global process towards the *Sustainable Development Goals* (SDGs) of the United Nations of 2015, the energy transition, and the Paris Climate Agreement and its implementation. In addition, the IASS also researches emerging issues and processes to determine whether and to what extent they contribute to or hinder

| ¹³ The term "Brundtland Report" refers to the following report: *World Commission on Environment and Development: Our Common Future*, Oxford 1987, which was prepared under the chairmanship of the then Norwegian Prime Minister Gro Harlem Brundtland.

| ¹⁴ In the meantime, the project duration has been extended by the funding agencies until 30 June 2022.

sustainable change processes.

According to the IASS, its projects are guided by four functions:

- Exploration: The respective object of research is described and analysed, also together with actors from different areas of society. Where appropriate, common objectives and orientations for the research work will be identified.
- Understanding: Systemic relationships are identified and explored. In addition, research activities explore, reconstruct, and define the ethical orientations of transformations towards sustainability.
- Facilitation: Through conception, organisation and participation, active involvement is made in the design and implementation of concrete transformation processes.
- Reflection: IASS researchers review and reflect on their research practice and its societal impacts, in particular with regard to their own understanding of science and the relationship between science, policymaking and society.

In annual target agreements, a binding key for the distribution of working time to these four functions is defined for an entire research group in each case, although this key can vary between employees within this organisational unit. For the IASS as a whole, about 40 % of the working time of scientific staff should be devoted to exploration and understanding, another 40 % to co-creation and 20 % to reflection.

II.1.a Research and development planning

The Board of Directors discusses and defines new topics and focal points. An overarching four-year research programme (2017-2021) was designed for the core-funded ¹⁵ research projects, which was adapted for the level of individual research groups in 2018 as part of the organisational development process. In 2019, the *Research Integration Committee* (RIC) was established as an advisory body for research planning, with representation from area spokespersons, as well as science management, communications, and the coordinator of the Fellow Programme. Its establishment is intended to ensure that decisions by the Board of Directors concerning the selection and development of research topics and other strategic issues are informed by activities and initiatives at the research area level.

According to the IASS, the decisive factors for the selection of research topics for core-

¹⁵ Core-financed projects are those that are financed with funds from the annual grants of the BMBF and the MWFK. For more on the financing structure of the IASS cf [A.III.2.b](#).

funded projects are: their potential for knowledge and action for transformation processes; a complex problem structure that includes a particular focus on interdependencies; their suitability for inter- and transdisciplinary methodology; their resonance and connectivity in political and public discourse, the central role of evidence for action orientation and implementation, and the potential for reflection in the sense mentioned above (cf. A.II.1). In addition, the topics should tie in with existing subject and content-related expertise and be suitable for supporting the careers of young researchers and for developing interdisciplinary and transdisciplinary competence.

Cross-cutting issues are identified and addressed in two specific programmes: In the *Knowledge Pools*, employees teach their colleagues methods, concepts, and procedures from their respective disciplines in order to strengthen exchange between the disciplines. On the basis of joint findings, new topics are taken up and complex issues are dealt with on an interdisciplinary basis. Currently, there are four *Knowledge Pools*, among others on theory building in inter- and transdisciplinary research as well as on the basics of modelling. The *incubator* will also develop interdepartmental research projects. All employees are invited to put forward research questions or topics for the incubator. These proposals are discussed in the RIC and selected by the Board of Directors on the basis of the above criteria. The Board of Directors and RIC state that they support cross-cutting cooperative projects. Currently, for example, the Institute is engaging with “Mobility” as a cross-cutting theme, in which core and third-party funded projects are interlinked in terms of content (for the selection of third-party funded projects, see A.II.1.d). According to the IASS, scientific employees have the opportunity to use up to 20 % of their working time for internal institute activities beyond the main expertise of their research group.

II.1.b Research and development priorities

The IASS pursues its research and advisory activities in five research areas (RA) and the area "Forums: Science, Policy, Society" (cf. Annex 1):

RA “Systemic Interdependencies: Nature, Technology, Society”:

Taking a risk perspective, this research area investigates the complex relationships between technological development, the ecological parameters of a sustainable human-environment relationship, and the normative requirements of sustainable governance structures and processes derived from these insights. The focus is on decision-making processes within the context of complexity, uncertainty and

ambiguity. The work is carried out in the following four research groups (RG):

- The Systemic Risks group investigates primary, secondary and tertiary effects of interactions between transboundary, long-term and complex risks (such as climate change, financial risks) and their governance at all policy levels. It seeks a comprehensive understanding of these threats and provides policy recommendations for effective and resilient solutions to risk conflicts.
- The potentials and risks of the digitalisation of communication, services and industrial production are researched in the Digitalisation & Sustainability group with regard to the transformation towards a sustainable economic and social structure. One focus is on the importance of digitalisation for economic and social development in countries of the Global South.
- The group Air Quality Modelling for Policy Advice models the formation and transboundary transport of air pollutants and greenhouse gases and identifies technical and legal ways to control air pollution. The aim is to contribute to concrete political regulations at the international level.
- The group Climate Engineering in Science, Society and Politics analyses how ideas of technological interventions in the global climate find their way into science, politics and society and how scientific expertise and societal ideas of order emerge in mutual dependence on each other. One project, for example, studies the risk perceptions of experts involved in the processes of the *UN Framework Convention on Climate Change* (UN-FCCC) and the *Intergovernmental Panel on Climate Change* (IPCC) with respect to *climate engineering*. Since 2014, this research group has organised the triennial *International Climate Engineering Conference* (CEC).

RA "Perception, Values, Orientation":

This RA deals with the analysis of societal sustainability discourses and here in particular with convergences and tensions between the basic values of preservation/stability, innovation, and justice. Research interests focus on the relationships between individual consciousness, institutions, and cultural patterns. The RA examines the question of whether these make it possible or difficult to live up to the postulate of sustainable lifestyles. In order to assess how sustainability narratives engage the attention of listeners and readers, the research area has developed its own method of narrative analysis. In addition, a normative framework has been developed that provides a process- and democracy-theoretical foundation for the concept of sustainability and formulates standards for the equitable inclusion of future generations. As a concrete proposal for the economic and political shaping

of a sustainable future, the concept of a future fund for the financing of socio-ecological transformation was presented.

- The research group Narratives and Images of Sustainability reconstructs collective narrative patterns of sustainability discourse using the methods of social scientific discourse research. For example, it explores the question of how blockades created by dogmas – such as the equation of mobility with motorised individual transport – can be disrupted. It also explores how emotions (e.g. fear, hope) can be made productive for action through political discourse or works of art.
- The research group Politicizing the Future concentrates on the analysis of discourses and practices concerning the future and their significance for the normative model of sustainability. In this context, it understands future practices as practices that either explicitly refer to visions for decision-making in the present or that determine future paths through present knowledge as well as images that remain implicit and can thus limit the openness of the future. Corresponding practices are analysed in case studies with regard to their potential to think and enable open, sustainable and democratic futures, for example for the implementation of sustainability education in schools.
- The research group A Mindset for the Anthropocene is concerned with the characteristics and potentials of transformative spaces and processes (e.g. *transformation labs, reflection spaces*) that enable actors to rethink and change their values and *mindsets* in order to develop more sustainable strategies for action. The RG has also set itself the goal of building networks among numerous actors involved in individual aspects of this subject area; to this end, an online platform with a database has been designed and has already been published.

RA "Democratic Transformations":

This RA explores how transformations towards sustainability can be shaped democratically and how democratic procedures must be changed in order to open up a creative space for the sustainable transformation of society. With regard to socio-ecological problem areas (e.g. protection of the rainforest, coal phase-out, traffic change), the department combines the interdisciplinary investigation of the potentials of democratic innovations for sustainable transformations with the initiation of co-creative processes for their implementation.

- As part of a BMBF project (06/2018-06/2021), the RG Social Transformation and Policy Advice in Lusatia is investigating the challenges around a democratic and

socially just transition to a post-fossil society. Together with local civil society initiatives, politics and administration, approaches are being developed for a cooperative structural change that brings together the different perspectives. This specific case should also contribute to the further development of approaches to transformative sustainability research.

- The aim of the RG Democratic (Re-)Configurations of Sustainability Transformations, which has been in existence since March 2019, is to identify and expand democratic possibilities for action towards sustainable societies and to investigate their implementation. |¹⁶ Together with partners from the five countries of the Amazon region, a monitoring system is to be developed to monitor and promote compliance with national contribution targets for climate protection under the Paris Agreement |.¹⁷
- The RG Co-Creation and Contemporary Policy Advice aims to analyse, evaluate, and improve the effectiveness of instruments of co-creative policy advice in concrete transformation and decision-making processes. For this purpose, different modes and formats of cooperation and consultation are systematically researched with a special focus on citizen participation, as well as examined and further developed in real-world experiments.

RA "Governance for the Environment and Society"

This RA is primarily dedicated to transformation processes dealing with ecological challenges and related societal changes from the individual micro level to the societal and global macro level. Research conducted in this group is expected to generate new insights into complex governance structures and to promote policy development and individual behavioural change. The aim is to determine how transdisciplinary processes for the (further) development of policy instruments and other procedures for nature conservation can be effectively designed.

- The group Network for Investigating Clean Air Solutions - Himalaya aims to contribute to the reduction of air pollution in the urban Kathmandu Valley of Nepal by improving the scientific basis, identifying effective measures, and raising awareness among policymakers and the public about the problem of air pollution

| ¹⁶ This group brought together researchers from the projects *Governance and Participation, Implementing the Paris Agreement*, and *Democratic Anthropocene*, which were discontinued at the end of 2018.

| ¹⁷ An application for funding was submitted for this in July 2019 as part of the International Climate Initiative of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU). The decision is expected in February 2020.

and possible solutions.

- Transformations towards a more integrative policy to mitigate climate change and improve air quality in the context of mobility are the topic of the group Climate Change and Air Pollution: Research Needs and Pathways to Policy Implementation. Focusing on air quality in urban areas, this group investigates interactions between air pollution and climate change and their significance for the transport transition. It also initiates dialogues between policymakers, civil society and academia to promote interest and awareness of these issues.
- Transport Transition and Real-World Experiments wants to make a contribution to the socio-ecological transformation of transport in metropolitan regions, using Berlin as an example. In addition to a systemic and process-oriented perspective on the transport transition, social conflict potentials, quality of life and participation in the context of new infrastructures (e.g. *cargo bike sharing*) are examined. To this end, the group is conducting a real-world experiment focusing on active mobility in a district of Berlin.
- The FG Ocean Governance generates knowledge and conducts participatory dialogues with political decision-makers and social actors in order to analyse the causes of pollution and overexploitation of the world's oceans and to develop proposals for solutions. In this way, a contribution is to be made to the transformation of marine governance towards the sustainable use of seas, coasts and maritime resources. For example, the FG claims to have conducted the world's first analysis of the interactions between the Sustainable Development Goal for Oceans and other *Sustainable Development Goals* (SDGs). Based on this, together with German representatives from politics, NGOs and science, it developed recommendations for the concrete implementation process of the SDGs for the ocean, which were incorporated into the results of the UN Ocean Conference.
- In contrast, the FG Governance of the Arctic aims to contribute to a better understanding of social, legal and economic changes in this region of the world and their interplay with natural processes. Special attention is paid to the interdependencies between global changes and local Arctic contexts. Through comparison with other maritime regions, new ideas for the design of governance are to be gained. Furthermore, processes that can lead to a sustainable future for the Arctic are to be accompanied in close cooperation with stakeholders.

RA "Energy Systems and Societal Change":

This research area explores the implications of a more sustainable human-

environment relationship for efforts to restructure energy systems worldwide. The social, political, and institutional dimensions of the energy transition and the multi-dimensional evaluation of socio-technical options for the development of a low-carbon economy are the main focus of this research. The RA examines the role of national, European and global governance of the energy transition, develops options for action at these levels of governance together with partners and investigates links and interdependencies between these levels.

- In the BMBF-funded Copernicus project System Integration: Energy Transition Navigation System (ENavi), 80 partners from science and practice, led by the IASS, have developed an integrative, system-analytical approach for the analysis and evaluation of socio-technical transformation paths in the context of a decarbonisation of the energy system with a focus on Germany. Within the framework of a transdisciplinary dialogue, central options for action in the areas of electricity, heat and transport were evaluated and compared on a multi-criteria basis. This project ended in 2019 after three years of operation. A follow-up project led by PIK is planned from mid-2020; a corresponding application has already been prepared with the participation of the IASS.
- The RG Energy Transition Dynamics focuses on the analysis and evaluation of policy instruments and institutional frameworks for the complete decarbonisation of the energy system, especially in Europe. The focus is on conflicting goals of European energy policy as well as interactions of different policy instruments in the EU and its member states.
- As part of its partnership with two foundations |¹⁸, the group Pathways to Sustainable Energy conducts an annual, representative household survey on attitudes and perceptions of various population groups in Germany regarding the energy transition. Building on this, these foundations promote a social dialogue on the social sustainability of the energy transition. In addition, the survey results provide a database for the multi-criteria evaluation in the ENavi project mentioned above. In another project, the group is investigating the transformation of foreign energy policy and the potentials of international cooperation in the context of the global energy transition and is developing approaches for the development of an international energy transition policy together with partners from politics, business, and civil society.
- The research group Social and Economic Co-Benefits of Renewable Energy and Climate Action investigates the complementary benefits of renewable energy

| ¹⁸ These are the innogy Foundation for Energy and Society and the 100 Prozent erneuerbar Foundation.

transitions (e.g. human health, local economic value creation, jobs) and is preparing country reports in cooperation with local partners in India, South Africa, Turkey and Vietnam. Its research results are used to develop strategies and options for action to promote sustainable and socially just energy transitions in close cooperation with political decision-makers in the partner countries.

- With a special focus on emerging and developing countries, the research group Investigating the Systemic Impacts of the Global Energy Transition addresses the opportunities and risks of this transformation. To this end, it examines the distribution of global investment flows in renewable energies, technology access in the Global South and - by means of scenarios for specific countries (groups) - the effects on value chains. The aim is to develop proposals for equitable energy governance that reconcile conflicting policy objectives.
- Together with European and international partners from science, industry and society, the group CO₂ Utilization Strategies and Society investigates societal potentials and risks that could be associated with the implementation of CO₂ utilization technologies (e.g. interdependencies with energy transition processes, contributions to a circular economy). In co-creative processes, scientific foundations are developed for the social and political evaluation of technology options in this field. With dialogue events and other communication measures, the RG initiates and accompanies a social discourse on the use of appropriate technologies.

Forums: "Science, Politics, Society":

In order to strengthen exchange with politics and society, the IASS has established its Forums area, which, in cooperation with the five research areas, has the task of exploring and understanding complex processes of change and helping to shape them through innovative dialogue formats. To this end, discursive spaces are opened up between the Institute's researchers and potential users at all levels of state governance, from the municipal to the global level. By processing impulses from the external cooperation partners, the forums contribute to the reflection of the transformative research approach.

- The research focus of the Climate Action in National and International Processes group is on participation in and understanding of political climate change forums, in particular the *UN-FCCC* and the *Climate and Clean Air Coalition* (CCAC). The group supports societal transformation processes situated within the framework of the Paris Climate Agreement and the UN Sustainable Development Goals, and

investigates how such processes can promote or hinder sustainability transformations.

- Two complementary projects are being worked on in the group International Dialogues for Pathways to Sustainable Futures: Global Sustainability Strategy Forum (GSSF) and Alliance for Knowledge, Learning and Social Change (KLASICA). The aim of both projects is to understand the processes leading to a transformation of society towards a sustainable future in the context of the UN Sustainable Development Goals. The GSSF brings together international experts from academia, business, politics and civil society to addresses regional trends and societal processes and develops strategies for building institutional and organisational structures for transformations towards sustainability. The GSSF collects evidence that goes beyond purely quantitative, conventional indicators of sustainable development, taking into account qualitative indicators of complex, multi-temporal and -spatial societal trends and patterns. In this context, the GSSF views sustainability primarily as a social rather than an ecological challenge. The aim of KLASICA is to explore the institutional conditions for promoting self-organised learning processes at the community level, to explore the significance of narratives and traditions in relation to attitude and behaviour change within communities, and to understand the cultural contexts in different countries and regions. Building on this, impulses for communal learning processes are to be generated.
- Science Platform Sustainability 2030 serves the discussion of science, politics, business and civil society about urgent questions of German sustainability policy. This independent platform has initiated an exchange between more than fifteen departmental scientific advisory boards and is systematically integrated into the official political steering, dialogue and implementation process of the 2030 Agenda for Sustainable Development in Germany. It is managed by the IASS together with the German Committee for Sustainability Research in *Future Earth* (DKN *Future Earth*) and the *Sustainable Development Solutions Network Germany* (SDSN); the office is located at the IASS.
- The Sustainability Platform Brandenburg, which was launched in January 2019 and is funded by the Brandenburg Ministry for Rural Development, the Environment and Agriculture, serves as a communication forum and network for the diverse sustainability initiatives in the State of Brandenburg. The platform also has the task of raising public awareness around sustainability issues and highlighting options for action to achieve the objectives of Brandenburg's sustainability strategy.

The IASS emphasises that work from the research areas and forums is interrelated. It also reported that all of the research areas and forums have contributed to an institute-wide process of further developing the Institute's transformative research approach since March 2019.

According to the IASS, the approaches, methods and research processes of the transformative research approach are attracting particular interest in the scientific community. The same applies to the results of concrete inter- and transdisciplinary projects, such as the evaluation of climate engineering or research on the social sustainability of the energy transition. Unorthodox questions, such as the integration of futures into present planning, also met with a particular response. In politics, business and civil society, practical issues were at the forefront of interest, such as the scientific monitoring and co-design of structural change in Lusatia, the effect of diesel engines on air quality or the international agreement on the protection of the high seas.

II.1.c Publications and scientific conferences

IASS researchers published a total of 519 publications from 2016-2018, including 191 papers in peer-reviewed journals and 32 in non-peer-reviewed journals. In addition, there were 110 contributions to edited volumes (38 of which were peer-reviewed), 91 independent, non-reviewed internet publications, 64 publications in the IASS series and 21 monographs. They have also published ten edited volumes, including two with peer review processes (see Annex 8). 62 of the publications published during the review period were co-authored by IASS staff and fellows.

According to the IASS, interdisciplinary publications accounted for about 40 % of the total in 2018. The Institute estimates the proportion of publications and lectures that are not scientific in the narrower sense at about 30 % each. The five most important publications of the IASS according to its own assessment can be found in Annex 9.

The IASS also publishes its research results in its own online publications. Primarily addressed to the scientific community:

- "Discussion Papers", which is intended to stimulate discussions within the Institute and with external parties,
- "Studies" comprising scientific contributions from the author's own research which meet scientific standards but which, because of their length (more than 30 and less than 100 pages), cannot find a place in a scientific journal or are to be published quickly for topical reasons.

In 2018, the IASS adopted a publication strategy that defines the purpose, target audiences, and monitoring of publications. According to its own statements, the IASS attaches great importance to *peer-reviewed* publications for the dissemination of its research results in the scientific community. In addition to scientific quality assurance, the Institute also expects these to enhance its reputation in the scientific and political spheres. There is no incentive system for publications at the IASS, but targets are set. Compliance with the standards of good scientific practice is to be ensured by means of an internal monitoring process. In addition, a "publication pipeline" has been established, which brings together all information on planned publications by employees and is thus intended to ensure that publications fit the Institute's profile. Practical issues, such as *open access* regulations, are set out in a publication guideline. The IASS is committed to the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities.

During the review period, IASS researchers gave more than one thousand presentations, participated in panels, or moderated. Of the 425 scientific presentations delivered on invitation, 84 underwent a *peer review* process. In addition, the scientific employees were involved in numerous events by contributing to discussions, moderating, etc.

In the same period, the IASS has hosted seven national and six international conferences ^{|¹⁹} and *side events* at international conferences such as the *UN Oceans Conference*, the *UN Climate Change Conference* or the *International Seabed Authority Annual Session*. In June 2019, the IASS organised the 4-day *SRA Europe Conference* ^{|²⁰} together with the German Research Centre for Geosciences on *Systemic Risks: From Natural Hazards to Cyber Risks*; the three-day *Marine Regions Forum* was held in Berlin in September 2019.

II.1.d Third-party funds

From 2016-2018, the IASS received third-party funding totalling 12.85 million euros. ^{|²¹} In the process, third-party funding income increased from 0.95 million euros at the time of the previous evaluation in 2014 to 5.45 million euros in 2018. ^{|²²} Almost 92 % of the third-party funding received in the review period came from the Federal Government, 3.6 % from the EU, 2.3 % from other third-party funding sources and 1.3

^{|¹⁹} The international events took place in Brussels, Nairobi, New York, Shenyang and Taipei (2x) and were mainly carried out with local partner institutions

^{|²⁰} SRA = *Society for Risk Analysis*.

^{|²¹} The annual grants from the BMBF and MWFK are also project grants but are not counted as third-party funds here.

^{|²²} In 2016, 3.3 million euros and in 2017 4.1 million euros in third-party funds were received.

% from the German Research Foundation (DFG). The share of third-party funding from the state or federal states and from foundations is less than one percent (cf. Annex 10).

There is no incentive system for the acquisition of third-party funding at the IASS. According to a resolution of the Board of Directors, the share of third-party funds should not exceed one third of the total annual budget in the long term, in order to ensure a balance between own and third-party funds in terms of content and administration. The IASS has a third-party funding strategy in which the following key objectives for third-party funding are set out:

- Promote the objectives stated in the Articles of Incorporation and strengthen the strategic goals of the Institute;
- Complement research projects and deepen the research profile;
- Expand cooperation, build networks and enhance the international dimension/character of the research programme;
- Strengthen the position of the Institute in the scientific landscape and the career prospects of young researchers.

On this basis, the Board of Directors selects from the groups' initiatives those that promise the greatest added value.

Since 2018, according to the Institute, the focus has also been on acquiring competitively awarded funds, primarily from traditional research funding (BMBF, DFG, EU). In addition, the IASS applies for funding from other federal ministries, international organisations, or foundations. The acquisition of third-party funding from industry is bound to the fulfilment of the statutory purpose and must comply with the Ethical Code of the IASS (cf. A.IV).

According to the IASS, the acquisition of third-party funding is made more difficult by its status as a project-funded institute. For example, the Institute could theoretically not carry out any third-party funded projects that required its own financial contribution. If the overhead lump sums (as is usually the case) do not cover costs, applications for third-party funding would have to be approved separately by the DLR, which could lead to delays. In addition, successful acquisition of third-party funding leads to a cramped space and workspace situation, as the rental of additional rooms is often ruled out for third-party funded projects, while core funding cannot be used to rent space outside the IASS campus.

II.1.e Young researchers and participation in university teaching

During the evaluation period, the IASS participated in university teaching with an average of sixteen semester hours (SWS) per semester, primarily at the University of Potsdam, FU Berlin, TU Berlin, as well as the Universities of Heidelberg, Lüneburg and Stuttgart, the University of Stavanger (Norway), the *Adam Mickiewicz University* in Poznan (Poland), the *Normal University Beijing* (China) and the FH Burgenland (Austria). This teaching offer was supported by an average of ten teachers. From 2016-2018, IASS researchers supervised seventeen master's theses and one bachelor's thesis.

At the time of the survey (30.06.2019), one postdoctoral researcher and 27 PhD students, including thirteen women, were working at the IASS. |²³ Of these, eighteen were funded by core funding and nine by third-party funding. In addition, 26 external doctoral students (16 women, ten men) were supervised by IASS staff at this time. The majority of these external doctoral candidates came from the University of Stuttgart, six came from universities abroad (Great Britain, China, Norway). In 2016-2018, junior staff at the IASS successfully completed eleven doctorates and one post-doctorate.

The IASS emphasises that it pays particular attention to the balance between transdisciplinary research competence and disciplinary anchoring in the promotion of young scientists. Therefore, it supports doctoral projects on interdisciplinary issues in the field of transformative sustainability science as well as on specific disciplinary research questions that contribute to transformative sustainability science. The use of transdisciplinary research methods is desirable in both cases. At the IASS, doctoral projects should preferably be undertaken that would be difficult to pursue in a conventional university context and which would especially benefit from the transdisciplinary research approach practised at the IASS.

The "Concept for the Promotion of Young Academics" ("Young Academics Concept"), which was adopted in 2017, was developed together with the doctoral researchers. This sets out requirements, funding opportunities and support measures. These include *PhD Advisory Committees*, which are set up if a corresponding counterpart has not already been established at the respective university. In addition, the IASS has developed a mentoring programme in which ten doctoral students at the Institute are accompanied by fellows and other experienced external scientists. Within the framework of this program, which is supported by an external trainer, the doctoral candidates are to engage in interdisciplinary exchange with representatives of other

| ²³ In 2016, the number of doctoral students was 13.

disciplines as well as transdisciplinary exchange with non-academic mentors. In order to promote exchange between the doctoral researchers, an annual "Doctoral Dialogue" and a closed meeting of the doctoral researchers are held with the participation of Senior Fellows.

The IASS cooperates with the *Potsdam Graduate School* (PoGS). Their advanced training courses are also open to junior researchers at the IASS. The IASS would also like to open up its internal training programmes to doctoral students at the University of Potsdam in the future. Young scientists of the IASS can also participate in the programme of the joint graduate school on "Environmental and Loss Prevention" of the TU Dresden, the Karlsruhe Institute of Technology (KIT) and the University of Stuttgart.

The *Potsdam Summer School* (PSS), organised by the IASS and partner institutions ^{|24}, aims to bring together young international researchers from academia, NGOs, governmental organisations, and industry and to facilitate an exchange on annually changing global sustainability issues.

The IASS has also stated that it offers support to postdocs, including time off for academic teaching activities. There are currently two BMBF junior research groups at the Institute.^{|25} In addition, an *ERC Starting Grant* previously located at ETH Zurich is being processed at the IASS. A research group has also been set up with competitively acquired DAAD funds as part of the Franco-German programme *Make our planet great again*.

II.1.f Prizes and awards

Two IASS scientists were awarded scientific prizes in 2017, firstly the *Distinguished Research Award* from the International Society for Integrated Disaster Risk Management (IDRiM) for leadership in the development of the *International Risk Governance Council's* internationally accepted risk governance framework, and secondly the *Liaoning Youth Science and Technology Award* from the Liaoning Association for Science and Technology (China) for innovative research and results in the field of sustainability research that contribute to local application in Liaoning province and

^{| 24} These are the Potsdam branch of the Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research, the Helmholtz Centre Potsdam German Research Centre for Geosciences, the Potsdam Institute for Climate Impact Research, the University of Potsdam, the Geo.X research network consisting of Berlin and Potsdam institutions, and the city of Potsdam.

^{| 25} These are the groups "Sustainability Management 4.0 - Transformative Potentials of Networked Manufacturing for Humans, the Environment and Technology (ProMUT)" and "The Mobility Transition as a Socio-Ecological Real-World Experiment" (EXPERI)", together with the TU Berlin and the Institute of Transport Research of the DLR.

promote international cooperation. One of the scientific directors was also appointed as a full member of the National Academy of Sciences Leopoldina in 2018. In the same year, the IASS together with the KIT received the Innovation Award of the German Gas Industry in the category Research & Development for the research project "Decarbonization of Natural Gas".

II.2 Fellow Programme

According to the Institute, the Fellow Programme is constitutive for the IASS. It is intended to support the further development of the research programme, open up innovation spaces for interdisciplinary and transdisciplinary research, and advance the Institute's networking in global sustainability research and its implementation in science, politics, culture and society. The IASS was initially conceived as a classical *Institute for Advanced Study*, in which mainly fellows and only a small number of scientists permanently employed at the Institute were active. In the course of the first funding phase, however, this concept proved to be inadequate for the continuous scientific analysis and monitoring of transformation processes. Therefore, the function of the Fellow Programme has been fundamentally changed in the second funding phase since 2017. The number of IASS scientists has been significantly increased, while the number of fellowships has been reduced, so that the total of 108 scientific employees (as of 31 December 2018) is now matched by 35 to 40 fellows annually.^{| 26} At the same time, the proportion of highly qualified and well-connected *Senior Fellows* was significantly increased. *Fellows* who work closely with the IASS beyond the duration of the Fellowship will be affiliated with the Institute as *Affiliate Scholars*. Currently, the IASS is establishing an alumni programme that aims to maintain the connection to the former fellows and to ensure the future availability of their expertise for the research and consulting activities of the IASS.

The Fellow recruitment process has also been redesigned. Until 2017, fellows were invited by the Board of Directors without a call for applications; since 2018, the IASS has conducted public calls for applications, initially for only some fellowships, and since 2019 for all fellowships.^{| 27} Fellows are selected on the basis of the quality and originality of the project presented in a work programme, as well as its thematic fit

^{| 26} The range of values given includes all *Fellows* who were at the IASS per year in the period 2016-2018, i.e. also those *Fellows* whose *Fellowship* began in the previous year and extends into the following year. In 2014, the ratio of scientific employees of the IASS to *Fellows* was 45 to 55.

^{| 27} In 2018, twelve *Fellows* in the 2019 cohort were awarded Fellowships without public advertisement and 13 were awarded Fellowships with public advertisement.

with the IASS (exclusion criterion) and feasibility. In addition, professional experience is expected to varying degrees, as well as experience at the interface between science and other areas of society. A distinction is made between Junior Fellows, Fellows and Senior Fellows. |²⁸

In a two-stage process, the applications are first evaluated internally by employees in terms of quality and thematic suitability. The best 25 % of the applications are then passed on to an external committee consisting of former Senior Fellows, who prepare at least two reviews per application. On the basis of these previous assessments, the Board of Directors, as the body responsible under the Articles of Association, makes the final decision. With regard to fellows from science, the IASS considers this procedure to be very successful, but for fellows from other areas of society, further efforts are needed to motivate suitable candidates.

In a departure from the procedure outlined above, the annual *Klaus Töpfer Sustainability Fellowship* is announced and awarded to a person in mid-career who has made a particular contribution to the interface between science, society and sustainability. This fellowship, which is endowed with material resources of 50,000 euros, is awarded by a commission consisting of personalities from science and society as well as one member each of the IASS Board of Directors, the General Assembly and the Advisory Board. In addition, the IASS has begun to advertise specialised fellowships in 2019: Together with the *Israel Public Policy Institute* (IPPI) in Tel Aviv, three fellows from Israel were sent to the IASS and three fellows from Germany to the IPPI for four months each to work on the topic of decarbonisation strategies for the 21st century. In addition, to strengthen collaboration between art and science in the field of sustainability, fellowships were announced for two to four artists to work with research groups at the IASS for up to twelve months and to develop concrete activities.

In 2016-2018, the IASS hosted 97 fellows from 22 countries. |²⁹ These came primarily from academia (66), but also from politics, civil society and culture (31). The proportion of women among the twelve Junior Fellows was just under 42 %, around 51 % among the 41 fellows and just under 25 % among the 44 Senior Fellows. The majority of fellows (54) stayed at the Institute for a period of up to six months, 19 % stayed for up to twelve months, around 3 % for up to 18 months and around 22 % for

| ²⁸ This roughly corresponds to the differentiation between doctoral candidates, postdocs/junior professorships and W2/W3 professorships. For Fellows from other areas of society, career stage and professional experience serve to categorize them.

| ²⁹ In addition, seven fellows with external funding (e.g. via the Alexander von Humboldt Foundation) were at the IASS during this period – these are designated as Associate Fellows by the Institute. Associate Fellows are affiliated with a research group at the IASS and are integrated into the Fellow Program. There are a total of eight Associate Fellows at the IASS in 2019.

up to two years. In 2018, twelve fellowships for the 2019 cohort came from 172 applications; for 2019, the IASS anticipates 25 fellowships for the 2020 cohort from 177 applications. In the rounds of calls for proposals to date, the majority of applications have come from OECD countries (primarily Western Europe, North America, Australia and Japan) and - at some distance - from China, India, and Brazil. In order to further increase internationality and cultural diversity, the IASS would like to specifically reach out to applicants from other countries from 2020 onwards.

In order to further improve the integration of the fellows into the Institute as well as knowledge management, individual kick-off meetings are held to establish links with the thematically relevant research groups. The fellows are invited to group-specific meetings (e.g. *Jour fixes*) and present their work to the Institute's public and the other fellows at *Tuesday Talks*. Fellow meetings take place every two weeks to promote exchange between the fellows; the research groups of the IASS also present themselves in this context. The activities of the fellows (publications, lectures, etc.) are documented in an internal research database. Final interviews and reports at the end of the fellowship serve to improve the fellowship programme. The IASS Fellows have their own website with a members' area, which will also serve as a platform for the alumni network to be launched in 2020. In order to improve control, knowledge management and quality assurance from the call for proposals to the integration of the fellows at the Institute and their admission to the IASS alumni network, the responsible organisational unit (*Fellow Unit*) was restructured and its staff increased to three full-time equivalents (FTE). According to the IASS, the increased number of joint publications by IASS staff and fellows points to their close exchange.

II.3 Transfer and science-based services

According to the IASS, the form of scientific policy advice has changed with the change of scientific board members: While it was originally carried out by directly addressing political office-holders or decision-makers, it is now more evidence-informed. Now all transfer and service activities are based on the findings of in-house research or cooperation with partners from science and society. In addition to traditional consulting on factual issues, the IASS specialises in transdisciplinary consulting as well as the design and monitoring of deliberative processes with a focus on co-creation, in which actors from science, politics, and civil society are involved.

Overall, the interest of politics and civil society in the transfer and services of the IASS has increased in recent years. Indicators for this are the increasing number of target group-specific events as well as the increase in third-party funding (especially from direct awards) and appointments of employees to committees.

II.3.a Research infrastructure and services for the scientific community

In its Forums and research areas the IASS develops, establishes, and expands networks that serve the exchange between science, politics and civil society. Examples include the National Dialogue on Ocean Governance and expert discussions on deep-seabed mining hosted by the Ocean Governance research group.

The IASS is an associated partner of the NFDI4Earth consortium (Earth System Research) in the current call for proposals for a National Research Data Infrastructure (NFDI).^{|30} Although extensive data collections and their analysis are not the focus of the IASS's work, the Institute collects primary data within the framework of research projects. For example, the IASS, together with the RWI - Leibniz Institute for Economic Research e. V., surveys more than 7,500 households annually in the Social Sustainability Barometer of the Energy Transition in order to record attitudes, perceptions of justice and experiences of different population groups with regard to the energy transition.^{|31} The Sustainable Atmosphere for the Kathmandu Valley project produced an emissions dataset that was accepted for publication in a peer-reviewed journal. Social science datasets are routinely transferred to GESIS - Leibniz Institute for the Social Sciences, while natural science datasets are made available either on request or directly via data portals such as PANGEA. Internet access systems are being developed for some of the data. So far, the IASS does not have a data management concept. In cooperation with GESIS, it is planned to explore models for sustainable and secure handling of the data obtained.

On a smaller scale, the Institute provides numerical codes to the scientific community for use in models. For example, the Air Quality Modelling for Policy Advice group has developed a *framework* for 'tagging' ozone, through which modelled ozone can be traced back to emitted precursors. This should help to better assess the effectiveness of emission reduction measures.

II.3.b Transfer and services for the funding agencies

The IASS advises the Federal Government and the State of Brandenburg as funding bodies on central cross-cutting issues relating to sustainability policy. To this end, it is developing a series of participatory processes. One example of transdisciplinary consultation using co-creative methods is the Science Platform Sustainability 2030, commissioned by the BMBF, which reflects on sustainability policy, provides inputs

| ³⁰ Addendum October 2020: The proposal submitted to DFG on 15 October 2019 was unsuccessful; a revised follow-up proposal from the consortium was submitted on 30 September 2020.

| ³¹ The survey is part of the forsa.omninet household panel.

to various sectors (science, politics, civil society) in which actors are involved and contributes to the implementation of Germany's National Sustainable Development Strategy. Within the framework of the Brandenburg Sustainability Platform coordinated by the IASS, the Institute brings together the most important sustainability actors at the state level in order to set joint impulses for the implementation of the sustainability strategy of this state, taking into account local conditions.

II.3.c Transfer and services for third parties

Beyond the funding agencies, the IASS also advises actors from politics (decision-making bodies and associated administration at regional, national and international level) and civil society (citizens' initiatives, political foundations, *think tanks*, media, NGOs, actors from education and culture) and, to a lesser extent, from business and industry, and includes them in its advisory services. Examples for the consulting of political actors on regional and national level are the strategy development for the participation of the city of Potsdam in the *BreatheLife* campaign of the *Climate and Clean Air Coalition* (CCAC) and the generation of advice for the Federal Office for Nuclear Waste Disposal Safety (BfE), the federal company for radioactive waste disposal (BGE) and the National Monitoring Committee in the design of their citizen information and participation concept. In cooperation with the city of Magdeburg and the Mitteldeutscher Rundfunk (MDR), researchers of the "Co-Creation and Contemporary Policy Advice" group randomly selected citizens of the city test different forms of citizen participation. At the international level, for example, the Ocean Governance research group is involved in UN consultations on the further development of marine legislation with a view to sustainable development. According to the Institute, proposals by the IASS on the effective, fair and democratically legitimised design of processes of sustainable transformation have found their way into guidance issued by the *International Risk Governance Council* and into the agreement on the management of natural hazards following the *Sendai Framework* |³².

The scientific members of the board and other senior scientists of the IASS are active at the national, European, and/or international level in numerous advisory bodies of scientific and non-scientific institutions and in some cases hold leading positions in organisations, for example in the Board of Trustees of the TU Berlin, in *Science Advice for Policy by European Academies* (SAPEA) and the EU advisory body *Science Advice Mechanism*. The Institute says it is looking for additional opportunities to expand its

| ³² This is an internationally binding framework for disaster prevention and preparedness.

participation in national and international bodies in the future.

II.3.d Science communication to the general public

For the communication of its research results and contributions to transfer processes, the IASS uses its own formats (e.g. events, blog on the IASS website, special project websites) and publications as well as classical media (e.g. newspapers, radio). In order to provide its scientific staff with orientation for public relations, the IASS has developed a communication strategy. The employees are also supported by the Institute's Press and Communications group, which is responsible for maintaining the Institute's website and social media presences as well as publishing ongoing reports on the Institute's work. It also provides the media with lists of experts at the IASS and carries out continuous monitoring of current issues and events in sustainability research and policy.

Two publication formats of the IASS are aimed specifically at political decision-makers:

- *IASS Policy Brief*: event-related publications with evidence-informed, solution-oriented recommendations or options for action;
- *IASS Fact Sheet*: exclusively electronically distributed compilation of evidence-based facts from IASS research without recommendations for action.

Events of the IASS are directly related to the work priorities and goals of the RA and RG and are developed by them alone or in cooperation with other groups of the Institute. Criteria for the selection of event topics are the added value for research and consulting processes, the relevance to day-to-day politics and the societal need. The number of events held by the IASS increased from 155 in 2016 to 211 in 2018; over the same period, the number of target groups reached by these events also increased. The events are used particularly intensively by actors from politics and civil society. The business community and the general public are to be even more closely involved in the future.

II.3.e Cooperation

In accordance with its transformative research approach, the IASS cooperates with institutions from academia, politics, and civil society (for strategically relevant cooperation partners from Germany and abroad, see Appendix 11). The Institute points out that long-term cooperation with universities and non-university research institutions is made more difficult by its status as a project-funded institute and the associated time limit on funding. This also applies to the implementation of joint

appointments. Nevertheless, the IASS had succeeded, by means of specific agreements, in realising three joint appointments, albeit mainly of limited duration, according to the Jülich and Thuringia models. |³³ In addition, an IASS staff member has been appointed to a junior professorship at the TU Berlin; a cooperation based on the Karlsruhe model is in preparation. |³⁴ Another joint appointment based on the Jülich model is currently being negotiated with the HU Berlin. In addition, one member of staff is a full professor at the University of Erfurt; a cooperation based on the Karlsruhe model is being sought for him. In addition, four scientists of the Institute have been appointed as visiting or honorary professors at universities in Germany and abroad.

In addition to the 97 fellows who visited the Institute as part of the IASS Fellow Programme and the seven fellows who were externally funded, a further five visiting scientists from Australia (2), Italy, Peru and the USA stayed at the Institute for periods of between one month and half a year with their own funding. During the same period, seven members of staff of the IASS were guests at universities in Great Britain and the USA, some of them for several months.

II.4 Quality assurance

The IASS has an Advisory Board, the majority of which, according to the statutes, must be made up of scientists. Other members include prominent experts and practitioners from relevant areas. The Advisory Board consists of a maximum of twelve (currently eleven) members, who elect a chairperson from among their number. The members are elected by the General Assembly for a period of three years; a single re-election is permissible. The task of the Advisory Board is to advise the General Assembly independently in all matters of the association. This applies in particular to the thematic orientation and the research programme of the IASS, the planned research projects, the appointment of fellows and the orientation of the strategic dialogue. According to § 9 of the IASS statutes, it is jointly responsible for the

| ³³ The Jülich model provides for the appointed person to be granted leave of absence by the university. According to the Thuringian model, an employee of a non-university research institution can be appointed to the position of a university lecturer at a university; this is associated with a teaching obligation of at least two SWS. There is no employment with the university. Cf. Gemeinsame Wissenschaftskonferenz von Bund und Ländern: Gemeinsame Berufungen von leitenden Wissenschaftlerinnen und Wissenschaftlern durch Hochschulen und außerhochschulische Forschungseinrichtungen. Bericht und Empfehlungen – Fortschreibung (= Materialien der GWK, Heft 37), Bonn 2014, S. 7 sowie 9 f.

| ³⁴ The Karlsruhe model is a model of secondary employment according to which the non-university research institution pays a remuneration for secondary employment. Cf. Gemeinsame Wissenschaftskonferenz von Bund und Ländern: Gemeinsame Berufungen von leitenden Wissenschaftlerinnen und Wissenschaftlern durch Hochschulen und außerhochschulische Forschungseinrichtungen. Bericht und Empfehlungen – Fortschreibung (= Materialien der GWK, Heft 37), Bonn 2014, S. 9.

quality assurance of the Institute's scientific work. |³⁵ The Advisory Board reviews developments and key performance indicators on which the Board of Directors reports regularly; if necessary, it makes recommendations in this regard. In addition, individual RGs present their projects in Advisory Board meetings. In the spring of 2018, the Advisory Board conducted an audit and, as a result, came out in favour of the IASS prospectively seeking inclusion in the joint funding provided by the Federal Government and the German states within the framework of the Leibniz Association.

Target agreements and two specially created positions directly assigned to the Board of Directors for quality development and research management and for the further development of the transformative research approach (these are currently vacant, with recruitment efforts due to commence shortly) are intended to contribute to the Institute's internal quality assurance of its work. The first position is associated with the task of advising the research groups. It also has conceptual responsibility for internal quality assurance mechanisms. |³⁶ A concept developed with the participation of the Advisory Board includes indicators for the quality of the work and for measuring performance both in research and in transfer for politics, business sector and society. The IASS has developed its own approach to assessing the effectiveness of transdisciplinary policy and societal advice in particular. Six categories are distinguished:

- Contributions to the development of new (alternative) models and socially negotiated visions of the future;
- Network effects;
- Assistance in the elaboration and modification of strategies;
- Contributions to organisational change;
- Influencing collective decisions or actions;
- Assistance in capacity building and improvement.

The scientific achievements and the transfer effects are documented in the internal research database and will be evaluated in the future for quality assurance purposes. In the future, written surveys of user groups from politics, business and civil society

| ³⁵ Article 9 (1) of the Statutes of the *Institute for Advanced Sustainability Studies e. V. (IASS)* dated 02.02.2009 as amended on 22.11.2017.

| ³⁶ Addendum October 2020: One of the two positions was redefined and assigned to lead the newly established research group "Theory, Evaluation and Culture of Transdisciplinary Research"; it was filled in August 2020. The second position has been assigned to the same research group and is currently being advertised.

will be carried out as a supplement.

The second position is intended to improve the positioning of the IASS in scientific and societal debates on the role of science in sustainability transformations and to organise and steer an institute-wide process for the further development of the transformative research approach. The Ombudsperson for Good Scientific Practice is responsible for cases of conflict in quality assurance.

A.III ORGANISATION AND EQUIPMENT

III.1 Organisation

The Institute comprises the five research areas mentioned above, the area of "Forums: Science, Politics, Society", Science Management, Administration, Press and Communication and Fellow Support (cf. Annex 1).

The bodies of the *Institute for Advanced Sustainability Studies* e. V. are the General Assembly, the Board of Directors and the Advisory Board (for information on the Advisory Board, see A.II.4).

The members of the General Assembly are: four scientific organisations |³⁷ as well as the University of Potsdam, each represented by their presidents or other high-ranking representatives, the Federal Ministry of Education and Research (BMBF) and the Ministry of Science, Research and Culture (MWFK) as well as persons who have rendered outstanding services to the Institute. Currently (as of June 2019), the General Assembly has eleven members. They elect a chairperson and a deputy chairperson from among their number for a period of two years; the re-election of members to these roles is permitted. The tasks of the General Assembly include, in particular, the adoption of the research programme and the annual business plan, the discharge of the Board of Directors, the appointment and dismissal of the members of the Board of Directors as well as the determination of the remuneration of the Board of Directors and the adoption of the rules of procedure of the Board of Directors. Furthermore, this body is responsible for the election and deselection of members of the Advisory Board, the admission and exclusion of members of the association as well as the passing of resolutions on amendments to the Articles of Association and the dissolution of the association. The statutes require at least two ordinary meetings of the General

| ³⁷ These are the German Academy of Science and Engineering (acatech), the Max Planck Society, the Helmholtz Association and the Leibniz Association.

Assembly per year; the chairperson of the Advisory Board may be invited to attend and holds advisory voting rights. The Board of Directors participates in the meetings as a guest, unless the General Assembly decides otherwise in individual cases.

The Board of Directors manages the Institute and conducts the business of the Association. It consists of up to four members with equal rights, including up to three scientific directors and one administrative director. The tasks of the Board of Directors include, in particular, the development of the Institute's strategic orientation, the research programme and the objectives of the strategic dialogue with politics, business and society. Furthermore, the Board of Directors - advised by the Advisory Board - decides on the research projects to be funded and the selection of the fellows. The directors are appointed by the General Assembly for a term of five years or until the end of the respective funding period; reappointment is permitted. The Board of Directors may appoint one of its members as spokesperson and entrust him/her with the representation of the IASS vis-à-vis politics and the public; the General Assembly must confirm this appointment. The management rotates every two years between the scientific directors. The filling of positions on the Board of Directors is based on the recommendation of a recruitment committee convened by the General Assembly and cannot be made against the votes of the Federal Government and the MWFK. Management positions below the Board of Directors (heads of research groups, heads of the forums or their offices, area spokespersons, non-scientific management positions) are filled internally.

III.2 Equipment

III.2.a Staff

As of the reporting date (31.12.2018), the IASS - including the Board of Directors - employed 108 staff members (94.1 FTE) from core funding from BMBF and MWFK, of which 74 persons (62.7 FTE) belonged to the scientific staff and 34 to the non-scientific staff (31.4 FTE). Ten of the 74 researchers were financed by both core funding and third-party funding (cf. Annex 2). Furthermore, 43 scientists (35.6 FTE) were financed exclusively by third-party funds. All scientific staff were employed on a fixed-term basis (cf. Annex 3). According to the IASS, the increase in third-party funding has resulted in a need for additional administrative staff, which can only be partially offset by the overheads received.

Of the scientific staff employed under core funding, 36 female scientists (48.7 %) and 38 male scientists (51.3 %) were employed at the IASS on the reporting date, the majority of whom were younger than 40 and had been working at the IASS for less

than five years. The scientific staff hold numerous academic degrees from various disciplines. The largest group is made up of political scientists (21 persons), followed by representatives of the social sciences (nine), environmental sciences (six) and atmospheric, marine and climate research (five) (cf. Annex 4).

To promote equality, the IASS Board of Directors adopted an Equality and Diversity Strategy in 2018. According to the Institute, gender equality has since been regarded as a cross-cutting issue that is taken into account in all relevant strategic decisions and processes. In the meantime, the Institute has also elected and appointed an Equal Opportunities Officer and her deputy by secret ballot. The Diversity Working Group reports to the Board of Directors every six months on the current status. Furthermore, the IASS - on its own initiative - has appointed an Inclusion Officer. While 100 % of the programme area leaders were still men in the period 2014 to 2016, women now account for 35 % of the scientific group leaders and 50 % of the area spokespersons and leadership positions in science management. With flexible and family-friendly working conditions (e.g. flexible working hours, home office arrangements), the IASS strives to make itself attractive as an employer.

According to its own statements, the IASS encourages its employees to expand and update their expertise and supports them in this by promoting subject-specific and cross-disciplinary further and advanced training as well as internal training courses. Special support is given to employees with management responsibility and to young academics (cf. A.II.1.e). The respective supervisors hold annual meetings with all employees of the IASS, and annual target agreement meetings with the scientific employees, in which scientific targets are set for the respective research group on the basis of defined indicators.

While the IASS says it has no difficulty attracting qualified scientific staff from Germany and abroad, its status as a project-funded institute makes it difficult to retain qualified staff. Since 2016, 68 people have left the IASS; the Institute has been informed of the new positions of 48 of these former employees. The majority of these are employed in national and international scientific institutions. Other fields of activity are NGOs and *think tanks*, politics, or public authorities, the business sector, and a museum. 35 of these former IASS employees work in Germany, thirteen abroad.

Three people who left the IASS during the last five years were appointed to professorships abroad, and another former staff member was appointed Director of the Environmental Policy Research Centre and Visiting Professor of Comparative Politics at the FU Berlin. Two former IASS staff members have taken on leadership

positions in the business sector.

III.2.b Financial resources

The IASS is financed within the framework of project funding by a joint grant from the BMBF (85 %) and the MWFK (15 %).³⁸ In the 2018 financial year, the IASS received grants totalling 9.34 million euros (core funding incl. carryover) in this context, of which 7.99 million euros came from the Federal Government and 1.35 million euros from the state. In addition, the Institute received rental income totalling 26,000 euros. Of this, the Institute spent 6.66 million euros on personnel (incl. Fellows), 0.97 million euros on the awarding of contracts and 0.83 million euros on material resources. Other funds were spent on missions, rent and purchases (e.g. IT investments, office equipment). In addition, the IASS received third-party funding amounting to 5.45 million euros in the 2018 financial year (cf. A.II.1.d).

As a recipient of public grants within the framework of project funding, the IASS does not have a global budget. A reallocation between personnel and material funds as well as a transfer of funds to the following budget year are possible under certain conditions in agreement with the funding agencies. As the grants are fixed for each project phase (currently five and a half years³⁹) and are not adjusted to cost increases, the real budget decreases annually. In addition, this form of financing makes it difficult to react flexibly to newly emerging political challenges or issues. However, this flexibility is central to the Institute's approach. Project funding also makes it more difficult to allocate funds on the basis of performance. However, with the establishment of the incubator (cf. A.II.1), the IASS has created an opportunity to support particularly promising projects with material resources. This and the conclusion of target agreements would pave the way for the introduction of elements of performance-related resource allocation in the future.

III.2.c Premises and technical equipment

The IASS is housed on a campus in Potsdam, which includes three buildings (including the Kleist Villa) and a park. The State of Brandenburg has made the property (almost 10,944 m²) available to the Institute for an unlimited period and free of charge. The IASS bears the costs and responsibility for the management of this facility. The Institute has 1,568.73 m² of office space with a total of 204 workstations at its disposal; in addition, there are ten meeting rooms for twelve to 78 people (640 m²

³⁸ This ratio applies to grants throughout the funding period. It may differ slightly for grants actually received in individual financial years.

³⁹ Before that, it was four and a half years. In the meantime, the project duration has been extended by the funding agencies until 30 June 2022.

in total). Additional premises were rented for two RGs during the reporting period. Four apartments are available for the accommodation of fellows and guests, two of which are rented by the IASS from the State of Brandenburg. According to the IASS, the room capacities available for the work of the employees are reaching their limits due to the increase in third-party funding.

The library of the IASS is part of the Albert Einstein Science Park, to whose holdings and services the IASS employees have unlimited access.

A.IV FUTURE DEVELOPMENT

In the coming years, the IASS would like to further develop and strengthen its profile in the context of the thematic orientation of the Institute and, in doing so, address important methodological, scientific-theoretical, and organisational questions - for example, how to reconcile different time horizons of social developments and scientific research at the level of the research organisation. At the same time, the Institute intends to focus increasingly on how socially controversial transformations towards sustainability can be shaped more effectively and creatively, particularly through democratic institutions and procedures. Against this background, the following overarching task priorities are to be continued in the coming years:

- Consolidation of competences in the field of transdisciplinary methods and co-creative procedures;
- Theorising transformative research;
- Focus on mobility as a cross-sectional task;
- Thematic focus on innovative democratic procedures;
- Development of new scientific transfer services(*spin-off strategy*), e.g. the Franco-German *Zukunftswerk* (Forum for the Future) for the promotion of local and regional transformations towards sustainability |⁴⁰ or the Chamisso Academy for the transfer of competences in the field of organisation and reflection of co-creative and participative processes for decision-makers from politics, administration and business;
- Accompanying and supporting the implementation of a fund for aesthetics and sustainability for the inclusion of the arts in the development of strategies for a

| ⁴⁰ In November 2019, the Bundestag provided funding to establish the Zukunftswerk at the IASS, initially with a temporary funding volume of eleven million euros until 2022.

transformation to a more sustainable society as well as its establishment at the IASS.

In order to be able to perform these tasks in good quality, the IASS strives for institutional funding and affiliation with one of the scientific organisations. In this way, scientific independence in terms of content should be ensured and the above-mentioned limitations (cf. A.II.1.b and A.III.2) removed. In this context, the Institute emphasises that the interdisciplinary and transdisciplinary treatment of cross-cutting issues in sustainability research requires integrated and controlled research planning across the disciplines involved, as well as structurally anchored interdisciplinarity, which is difficult to achieve at universities. The close exchange with societal actors, the high degree of flexibility and speed of reaction required for the transformative research approach of the IASS, and the Fellow Programme could also be implemented more easily outside the university.

The IASS has set itself the goal of further increasing the number of publications in peer-reviewed journals and edited volumes, thus continuing the trend seen during the review period. Per FTE for academic staff, 1.4 corresponding articles will be published annually over the next three years (2016: 0.87; 2017: 0.93; 2018: 1.1) to further enhance the Institute's reputation in academic communities and visibility in academia, politics, business, and civil society. To achieve this goal, the IASS relies on long-term competence building. A closer familiarity of scientific employees with inter- and transdisciplinary methods is an essential prerequisite for expanded publication opportunities in the respective leading journals. Since 2019, publication targets have been set in target agreements.

In the future, the IASS would also like to increase the share of competitive third-party funding from science-related sponsors, especially the DFG. For this reason, too, the Institute aims to expand its cooperation with universities and non-university research institutes in the future and to prepare joint applications, for example for research groups or priority programmes.

The IASS aims to involve economic actors more actively in its research activities in the future. This is not only in line with the mission specified in its statutes, it is also a prerequisite for a successful transformation to a sustainable economic and social structure. In order to prevent the IASS from being influenced or instrumentalised by economic interests, the Institute has adopted an *Ethical Code*. Currently, a strategy for cooperation and exchange with actors from the business sector and business associations is being developed.

B. Evaluation

B.1 THE SIGNIFICANCE AND DEVELOPMENT OF THE IASS

The Federal Republic of Germany has pledged to implement the United Nations Sustainable Development Goals and the climate protection goals of the Paris Agreement. Close cooperation between science, politics, the business sector and civil society is necessary if these goals are to be achieved. In particular, science is expected to provide insights into which factors have a beneficial or detrimental effect on efforts to achieve sustainability and climate protection goals and which technologies, steering instruments and behaviours can help to deliver more sustainable outcomes. In recent years, however, it has become increasingly apparent that the availability of relevant scientific knowledge alone is not sufficient to initiate and drive political, economic, and social transformations towards greater sustainability. As a result, the prerequisites and processes of successful transformations are increasingly becoming the focus of political and social actors as well as scientific research.

The basic idea of the IASS was and is that it should occupy a position – both as a scientific institution and in its research orientation – at the interface of sustainability research and transformation research, the natural and social sciences as well as science and politics, business, and society. Since the previous evaluation in 2014, the IASS has been able to establish itself at these interfaces as an actor with a unique profile. Structural reforms, together with a reorientation of the Institute's research focus initiated and partially completed since then, have contributed significantly to this development. As part of this, the IASS has taken up and implemented some of the recommendations of the Science Council. Among these, the following were of particular importance:

- the formulation of a mission and the development of a basic scientific concept for its pursuit, focusing on a combination of sustainability research, transformation research and transformative research as well as transdisciplinary public sector, societal, and government consultancy. |⁴¹ These critical steps in the Institute's

| ⁴¹ According to the IASS, so-called "transformation research" "generates" findings in a "descriptive or analytical sense without wanting or having to have a transformative effect itself". In contrast, so-called "transformative research" "explicitly claims to be a shaping force: it aims to advance and support processes of social change by developing specific approaches and contributing to their implementation", Patrizia Nanz/Ortwin Renn/Mark Lawrence: Der transdisziplinäre Ansatz des Institute for Advanced

development were underpinned by a strengthening of its expertise in the social sciences;

- an increase in the number of academic staff at the Institute, paralleled by a reduction in the scale of the Fellow Programme. This reorganisation has improved the Institute's capacity to work on a research programme with a medium-term horizon;
- the structural reforms that led to the reorganisation of the Institute's management and research. These facilitated significant progress in contrast to the structures that were in place in 2014. This process of reorganisation should be continued in order to further improve the Institute's performance and to enable the IASS to respond appropriately to the dynamics of both the research and policy fields in which it operates (cf. B.III.1).

These measures have led to far-reaching changes in the profile and function of the IASS since the last evaluation. While at the time the IASS resembled an *Institute for Advanced Study*, with an extensive Fellow Programme that was central to its concept, it has significantly strengthened the role of its own research since then, without having fully evolved into a research institute in the classical sense. This is particularly due to the growing importance of political and social consultancy in the Institute's portfolio in recent years and its aspiration to actively shape and accompany transformation processes in order to achieve desired impacts. Today, the IASS is characterised by the institutional integration of its functions as a research institute and an advisory institution, with a fellowship programme that engages with both functions. This, together with its concept and co-creative methodology⁴², has enabled the IASS to develop a unique profile in the growing field of sustainability research in Germany. This and the combination of natural and social scientific sustainability and transformation research (*science-science-interface*) afford the Institute the potential to initiate and advance scientific developments and to become an attractive partner for scientific cooperation. The co-existence of these diverse functions (research, consultancy, and process design and support) and the pursuit of collaborative-oriented research gives rise to various tensions, which cannot be easily reconciled with classic basic research and *high-impact* publications. A crucial challenge for the IASS is to maintain a productive balance between these functions, to continue to develop successfully within the context of these challenges and to exploit existing potentials.

The Institute's research and advisory services, as well as its work on the design and

Sustainability Studies (IASS). Konzept und Umsetzung. GAIA – Ecological Perspectives for Science and Society, 26, 3, p. 293.

| ⁴² For an outline of the Institute's definition of co-creation, see footnote 5.

accompaniment of concrete transformation processes, are increasingly in demand from policymakers, civil society, and the business sector – both in local and regional contexts as well as the national, European and international levels. This reflects the growing need for actors who understand their role as that of an interface between science and politics or society (*science-policy-interface*) and who can both reflect on the exchange between the two sides through the lens of science and – precisely because of this – can foster it in practical terms. The competent performance of this role relies firstly on the development of strong relationships with relevant actors across politics, civil society, and the business sector. The IASS fulfils this to a high degree. Secondly, high-quality research and output are indispensable in ensuring that the Institute's consultancy work rests on a firm foundation. Despite significant advances in its performance since 2014, there is a need for further improvement. Thirdly, in order to be able to successfully promote transformation processes, researchers must be actively involved in efforts to shape relevant processes beyond the scope of classic consultancy. The IASS has already gained some initial experience in this area. Future research should benefit from this experience in both conceptual and methodological terms. Insights gained through this experience will also inform emerging role models and provide guidance to actors in other transformation processes. Fourthly, closer links should be established between the Fellow Programme and ongoing and/or planned projects with the aim of more effectively benefitting research, consultancy and participation in transformation processes. Parallel to this, the exchange between fellows and researchers at the Institute should be intensified. The IASS has made progress in these areas and should continue these efforts.

Further measures are also necessary to facilitate the further development of the IASS and enable it to achieve its ambitious mission:

- While maintaining its broad research profile, the Institute should tighten its focus on key areas and hone its methodological expertise accordingly.
- The coherent and consistent implementation of the Institute's concept is crucial to the success of these efforts. The implementation of this compelling and unique concept, which links sustainability research with transformation research and transformative research, and applies a method of transdisciplinary, co-creative research, should be improved across the Institute's multi-year research programmes and the individual projects. The succession of multi-year research programmes should connect together well and be in themselves coherent. To achieve this, these programmes, as well as the individual projects (incl. externally funded projects) through which they are implemented, must be consistently

aligned with the overarching concept and the chosen transformation tasks. At the same time, the connections between individual projects must be strengthened. The high degree of coordination required to achieve this must be underpinned by a common understanding and should shape interactions (especially indirect interactions) across the research community at the IASS. However, coordination remains a task for the Institute's leadership; it must be initiated, steered and monitored – and ultimately demanded.

- In future, results from the individual projects should be increasingly examined in order to ascertain whether generalisable findings can be derived and how the results of research with a localised focus might be transferred to other contexts and governance processes. In doing so, the IASS should strive to contribute to theory development as well as to developing generically applicable collaborative methods and formats for the implementation of transformations. At the same time, the IASS must continue to develop instruments to achieve transformative goals and test their effectiveness regularly.
- Communication and cooperation between the individual research areas of the IASS should be improved in order to facilitate the pursuit of these important developments. In addition to this, the role of the forums needs to be clarified. Overall, a restructuring of these organisational units with the aim of achieving greater thematic consistency could prove beneficial.
- As the IASS cannot and should not maintain in-house expertise from across all the scientific disciplines relevant to its ambitious goals, cooperation with universities and non-university research institutions is of increasing importance. These relationships should be strategically expanded and, where possible, planned for the longer term. Cooperation partners from all over Germany and from abroad should also be increasingly involved.
- In order to further increase the effectiveness of its work and to initiate scientific as well as societal debates, efforts should be undertaken to heighten the national and international visibility of both project results and the IASS as a whole.

The necessary further development of the IASS will take place under difficult conditions. On the one hand, until an institutional solution is found, the Institute will have to continue to work on the basis of temporary funding and exclusively fixed-term employment contracts. This entails the risk that qualified researchers will leave the Institute, requiring positions to be filled under unfavourable circumstances. On the other hand, two of the three scientific director positions will become vacant in the foreseeable future, the first already in early 2021, the second probably in 2022. The

task of filling one or both of these positions with distinguished scholars that possess leadership experience represents a significant challenge in view of the Institute's temporary funding status (cf. B.III.1). This circumstance might not only delay the necessary development steps, but also harm the still fragile structures of the Institute's operational and organisational structure. Nevertheless, this impending change in leadership should be used as an opportunity to press ahead with the structural reforms that are still necessary and to further hone the Institute's profile. Support from the federal and state funding agencies will be essential to achieving this and should include both the development of an institutional perspective for the IASS and the provision of financial security for the transition period. The broadest possible range of institutional perspectives should be examined, rather than focusing solely on a specific research association.

In order for the IASS to continue to perform its function as a *science-policy interface* credibly and successfully in the future, the Institute's continuing independence – with respect to the choice of research topics as well as in its advisory and process support activities – will be indispensable.

B.II ON THE WORK AREAS

II.1 The research and work programme

Within the broad field of sustainability research, the IASS places a specific focus on a transformation shaped by democratic processes and with the involvement of affected actors and that will lead to more sustainable societies. This orientation is fundamentally cogent, as corresponding research can be expected to make an important contribution to dealing with major societal challenges.

In order to answer the question of how this complex transformation can succeed in democratic societies, it is essential that research be conducted across a variety of topical areas. Given the Institute's size, however, the spectrum of topics addressed in research at the IASS is too broad at present, ranging from climate change, energy systems, digitalisation, and future mobility to questions around the governance of the oceans and the Arctic to narratives of sustainability and mindsets for the Anthropocene. As yet it has not been possible to lend this thematic diversity sufficient coherence through an overarching concept that links transformation research and

transformative research or through a common methodological approach. In many cases, connections are not forged between individual projects and, as a consequence, potential synergies go untapped. There is also a need for improvement with regard to the interactions of natural and social scientific research.

In addition, the newly established system of research areas and forums does not seem entirely plausible. There is also a lack of coherence within these organisational units, the allocation of topics or projects to research areas is not clear in all cases, and some topics are addressed simultaneously in several projects assigned to different research areas.

In order to exploit its potential and further improve its performance in science and consultancy, the IASS should tighten the focus of its research and work programme further, while remaining open to dynamic developments in the research and policy field addressing sustainability and transformation. Topics that are already being worked on at numerous other institutions, such as the future of mobility, do not need to be established as new areas of focus at the IASS. Rather, the Institute should concentrate on topics in which it already possesses the necessary expertise. In doing so, it is equally important that the Institute strives to deliver profound insights and to develop high-quality contributions for policymakers and society.

This requires the adoption of a suitable procedure for making binding decisions on the design of the multi-year research programme and the acceptance or rejection of new research projects and consultancy assignments. These decisions should be guided by the overarching programme and must not depend on the interests of individual scientists or the successful acquisition of third-party funding. Making these decisions is particularly the responsibility of the Institute's management (including the second level). Scientific personnel should nevertheless also be involved in this process in an appropriate form. It remains to be seen whether the current lack of coherence is due to the continuation of numerous older research and consultancy projects, or whether the relatively new decision-making procedure is not yet up to the task of bringing about the necessary alignment with more overarching goals. In future, the selection of both core funding projects and externally funded research and consultancy projects should be approached with a strategic view as to whether they fit the priorities of the Institute and its research areas. It is especially important for an institute like the IASS – which is located at the interface of science, politics, and society – to proactively identify and address emerging topics of political and societal relevance.

II.2 Research and consultancy activities

The IASS approach closely links sustainability research, transformation research and transformative research. As a result, in many cases it is difficult to distinguish between the Institute's research and consultancy work and efforts to shape transformation processes; instead, these aspects must be viewed as intertwining and mutually dependent. The IASS explicitly has the aspiration to overcome the dichotomy between research and transfer and to shape transformation processes through the application of scientific methods. While the efforts of the IASS to realise this goal across the research areas are still in their infancy – and in many cases sustainability research, transformation research and transformative research are more juxtaposed than interconnected – the following assessment of the research areas and forums is based on this aspiration.

"Systemic Interdependencies: Nature, Technology, Society": According to the IASS, this research area is focussed broadly on the transdisciplinary and deliberative approaches to the governance of systemic risks. The case studies for the research area cover a very broad spectrum of topics, ranging from digitalisation and *climate engineering* to air quality modelling. A clear rationale for the choice of topic areas and the way these are approached is not discernible. Another focus in this research area is the (meta-)theoretical foundation of the concept of systemic risks. The significance of this last aspect remains unclear and whether systemic risks are *the* guiding concept of the area's work or one of several. The quality of the projects based in this research area is mostly satisfactory, and some are of high quality. However, there is a need to improve the necessary linkages between projects and their common orientation. The reference to the overarching risk perspective is not yet sufficiently clear across all the projects. In order to be able to exploit synergies even better in the future, the research results and outcomes of individual projects would need to be reflected on more intensively across the research area and studied to identify possible linkages and patterns. Similarly, there is a need to clarify how the findings of this research can be translated into policy or societal advice and how transformative impact should and can be achieved in concrete terms. In order to adequately address some of the questions raised in the research groups of this research area as well as the research area "Governance for the Environment and Society", legal and/or economic expertise is required, which the IASS does not have at its disposal, or only to a limited extent. Efforts to acquire this expertise through the integration of appropriately qualified fellows into these research groups are encouraging; however, this solution is not an adequate substitute for long-term cooperation with researchers from these disciplines.

The IASS should accordingly make greater efforts to establish long-term partnerships with relevant expertise. Wisely chosen strategic partnerships would also help to resolve the inherent tension between the desired technical depth (e.g. studies on ground-level ozone in climate research) and the necessary overarching focus on transformation-oriented concepts (e.g. the identification of societal drivers for the reduction of ground-level ozone).

"Governance for the Environment and Society": The focus of this research area is also broad, with five research groups covering future mobility, climate change and air quality, the governance of the Arctic and the oceans, as well as air pollution mitigation in the Himalayas. Research conducted across these exemplary topics aims to consider which governance approaches and regulatory frameworks are suitable for initiating and supporting transformations towards ecological and societal sustainability. Focusing on different levels (municipal, regional, global), the individual projects use various dialogue and advisory formats and are mostly of good quality. In some cases, interdisciplinary cooperation between the natural and social sciences should be significantly increased. In this research area, too, the very heterogeneous projects should enter into a systematic exchange with each other and more clearly define their relationship to the overarching research question in order to learn from each other and identify generalisable findings for research, consultancy and process development.

"Energy Systems and Societal Change": The six research groups in this research area have a comparatively high level of coherence as they share a common point of reference – the energy transition – and a common methodological core. The quality of the projects worked on in this area is predominantly good, and in some cases very good. However, some of these projects, which are located at the local, regional, international and global levels, are very small-scale and would clearly gain from closer cooperation between the different teams. One highlight of this research area is the "Social Sustainability Barometer for the German Energiewende", in which the IASS, together with the RWI - Leibniz Institute for Economic Research (e. V.), surveys more than 6,500 households annually in order to offer insights into the views and experiences of different population groups with regard to the energy transition and to improve our understanding of its social dimension. It is pleasing to note that there are plans to make the data gathered in this context more accessible to actors from science and society in the future. The research area is encouraged to pursue its intention to systematically expand its already extensive international links with partner institutions from science and scientific policy advice. It is particularly important for this research area to intensify its cooperation with economists beyond

the scope of the social sustainability barometer.

"Democratic Transformations": This research area has set itself the task of investigating the connections between democracy and transformations towards sustainability and developing these further in practice. In doing so, researchers will closely link transformation research and transformative research. At the heart of this research area is a project aimed at understanding as well as shaping and supporting socio-ecological transformations in the former mining region of Lusatia. This project has already proved successful in developing and implementing dialogue processes among actors from the region. An in-depth scientific evaluation of its findings is pending. Another research group, which is working with partners from the Amazon region to develop a compliance monitoring system for NDC targets under the Paris Agreement, is still in its infancy. The same applies to the research group "Co-Creation and Contemporary Policy Advice", which aims to investigate the contribution of co-creation to democratic transformations using three case studies in Berlin and Magdeburg. Overall, this research area could deliver significantly greater returns if research groups communicated more closely and reflected on their respective findings together in order to identify common experiences and generalisable insights into the potentials and limits of co-creative processes. The latter could also help to advance the scientific debate on co-creation and transformative research.

"Perception, Values, Orientation": This research area currently comprises three research groups, whose work addresses narratives and images of sustainability, the normative vision of sustainability as well as ways of thinking and mindsets for the Anthropocene. The quality of this research is very heterogeneous and therefore acutely in need of improvement in many respects. The rationale underpinning the choice of case studies – ranging from value conflicts around future deep-sea mining to the social dimension of efforts to achieve global sustainable development goals in Baltimore, USA – remains unclear. While it is the intention of the IASS to link this area more closely with the other research areas, these plans are only beginning to take shape. If this research area were to be continued, it would be necessary to more clearly define its focus (research questions) and to improve and expand its methodological foundations. In view of the transversal importance of this topic, its integration across all the thematic fields would be advisable.

Forums: "Science, Policy, Society": This organisational unit, whose task is to foster dialogue between science, politics and society, build connectivity between the research areas, and facilitate reflection on the Institute's transformative research approach, is not fulfilling this demanding role satisfactorily at present. It is possible

that the unit is structurally overburdened with this task, particularly considering the insufficient coherence of the IASS as a whole. The unit performs well at the individual group level. For example, the “Brandenburg Sustainability Platform ” is highly appreciated by Brandenburg’s Ministry of Rural Development, Environment and Agriculture, which commissioned its development. As noted with regard to the aforementioned organisational units, the rationale behind the current composition of this research area is unclear. Here, too, cooperation between the four research groups and their project teams could be more synergetic.

II.3 Transfer and science-based services

The great strength of the IASS lies in the area of knowledge transfer; indeed, its expertise in this area has been acknowledged internationally since its inception. The large number of commissions, especially from the Federal Government and Brandenburg, but also from other German states and municipalities, shows that political actors in particular view the IASS as a reliable partner with the ability to develop and execute new formats for science-based political and societal consultancy around transformation processes and science-led process design. Past clients have been very satisfied with the results achieved. Another positive aspect in this context is the proactive approach taken by the IASS, which seeks out potential clients and partners to offer its consultancy services. This affords the IASS greater flexibility, which it should use to improve the coherency of its research and work programmes in the future. In doing so, the IASS should concentrate on consultancy and process design projects that are aligned with the Institute’s areas of focus and available expertise.

The reviewers note with approval that the IASS has significantly developed its understanding of transfer since the last evaluation and now includes partners from different fields of practice in politics, society, and business in the formulation of research questions and in their processing. This fosters an ongoing exchange between science and practice, makes transfer a recursive process, and improves the likelihood of achieving the desired impacts.

During the assessment period, the IASS successfully developed dialogue and participation formats in various research areas and in the forums together with representatives of relevant groups and applied these in the field to shape and support transformation processes. These projects also benefited from the considerable attention given to local framework conditions by IASS researchers. It would now be important to evaluate the methods applied in these contexts and the insights gained

through this work, and to examine the extent to which the desired transformative impacts were achieved and how methods and insights can be transferred to other contexts and processes.

II.4 On publications, lectures, and scientific events

The reviewers welcome the significant increase since the last evaluation in the number of publications by researchers at the Institute (2011-2013: 161 publications; 2016-2018: 519 publications). Taking into account the increase in scientific staff over the same period, this corresponds to an increase in publications per FTE for scientific personnel from 3.5 to 5.8. Over the same period, the number of articles in peer-reviewed journals also increased, although this specific increase (publication/FTE) does not yet appear to be significant. |⁴³ 2019 and the first half of 2020 have seen an encouraging increase in both publications overall and articles in peer-reviewed journals, including international journals. In the first half of 2020, the IASS already exceeded the total number of publications as well as the number of peer-reviewed articles in 2019. Given that the academic staff perform research, consultancy and process design tasks in roughly equal proportions, this increase should be viewed very positively. Another positive aspect is that, in order to stabilise this development, the IASS adopted a publication strategy in 2018 with options to address different target groups and a focus on contributions to peer-reviewed journals for scientific publications.

It is not clear which criteria were applied in the selection of the five publications that the IASS considers to be the most important in the review period. The selection includes programmatic articles that present the mission of the IASS or offer examples of its specific approach to issues relating to sustainable development or transformations towards sustainability. Although most of these publications are good, and in one case good to very good, they contain little innovative content. Some of the results have attracted interest in the political arena, but the scientific impact of these publications is likely to remain limited.

The commitment displayed by IASS researchers in terms of their willingness to give lectures, participate in panels, or moderate events is commendable. During the review period (2016-2018) each scientific employee gave an average of 3.6 scientific presentations.

The national and international conferences organised by the IASS independently or

| ⁴³ In this area, there was an increase from 64 (1.4 per FTE for academic staff in 2011-2013) to 191 (2.1 per FTE for academic staff in 2016-2018) articles in peer-reviewed journals.

together with cooperation partners, as well as various events on the fringes of conferences of the United Nations and other international organisations, reflect the Institute's transformative aspirations and create spaces for intensive exchange between representatives from science, politics, business and society; they should accordingly be viewed positively.

II.5 Regarding third-party funds

While the IASS only received third-party funding totalling 0.89 million euros in the review period 2011-2013, it was the recipient of a total of 12.85 million euros in the review period 2016-2018. In principle, this substantial increase is to be welcomed. However, the share of funds acquired through the competitive funding streams of the EU and the DFG (3.6 % and 1.3 % respectively) is clearly too low – as is quite usual for a young and evolving institute – and efforts should be made to increase this urgently. This applies even when the Institute's focus on policy advice and applied research is taken into account.

The reviewers encourage the IASS to pursue its strategy, which has been in place since 2018, of prioritising efforts to acquire third-party funding through the classical research funding bodies. In order to be successful in this, it will be essential to lend scientific depth to individual projects and to cooperate more closely with scientists from universities and non-university research institutions. The reviewers note positively that cooperation partners from Berlin universities intend to include the IASS as a partner in extensive DFG joint research proposals. The IASS should take care that it is perceived as an equal partner in this context. The Institute should only participate in cooperation projects that are aligned with its thematic focus.

II.6 On participation in university teaching and the promotion of early career scientists

The dedication with which scientists from the IASS engage in university teaching in Berlin and Brandenburg, and in some cases farther afield, is commendable. At Humboldt University Berlin, a new master's programme "*Knowing and Governing the Anthropocene*" is currently in planning and it is anticipated that scientists from the IASS will be involved in its delivery. The benefits for both teaching staff and students at the university could be improved further if the IASS were able to contribute to the development of this degree programme and not only in its delivery. Opportunities to gain experience in university teaching are essential in particular for postdocs working at the IASS who wish to pursue a career in science; the reviewers note positively that the IASS grants its postdocs special leave for academic teaching activities. Another

positive development is the establishment of junior research groups at the IASS with funding from the BMBF.

The reviewers strongly support the Institute's plan to establish a structured and systematic programme for its doctoral students and to deliver the previously sporadic workshops at regular intervals. In view of the highly diverse disciplinary backgrounds of the doctoral students working at the IASS, it is unlikely that a joint graduate programme could be established with *one* university alone. Nevertheless, the IASS should endeavour to implement its planned internal programme in its entirety in cooperation with a small number of universities in the region and beyond.

The vast majority of doctoral researchers at the IASS are satisfied with the supervision they receive. Individual researchers did note some problems, particularly with respect to a lack of clarity around the division of responsibilities between supervisors at universities and at the IASS. The Institute's intention to revise the doctoral *supervision agreements* and more clearly define the responsibilities of supervisors is to be welcomed. It should be noted that contributing to IASS projects with transdisciplinary and transformative approaches *and* keeping up with current debates, methods, and developments in their disciplines of origin presents a particular challenge for doctoral researchers. To account for this, doctoral agreements should stipulate that at least one of the supervisors should be among the more experienced researchers at the IASS and that at least one other person at a university should represent the doctoral candidate's discipline of origin. This would ensure that doctoral researchers benefit from continuous supervision and safeguard the scientific quality of the doctoral project. Overall responsibility for the success and quality of doctoral projects at the IASS must be assumed by those members of the Institute's leadership with the authority to award doctorates and cannot be devolved to external body or individual. A doctoral agreement must be reached before the doctorate begins. In view of the large number of doctoral students at the IASS, the Institute should also consider establishing a position to support these researchers and to coordinate the planned doctoral programme.

II. 7 The Fellow Programme

Since the last evaluation, the Institute's Fellow Programme has undergone far-reaching and positive changes. The number of fellowships was significantly reduced in favour of an increase in the number of positions for academic staff. This created an important foundation that facilitates continuity in research and consultancy activities despite the Institute's status as a recipient of project funding. In addition, a public

tendering procedure was established, which is now used for all fellowships. This is in line with an important recommendation made by the German Council of Science and Humanities in the previous evaluation. The practice of inviting applications for the position of Senior Fellow should be reviewed in two to three years and the possibility of awarding a share of the senior fellowships by invitation in order to continue to attract highly renowned researchers to the Institute. Should the Institute pursue this course, the criteria applied in the public call should also be applied here. All research staff should be able to propose possible candidates, but the decision on the final selection and overall responsibility for ensuring the quality of candidates should rest with the Board of Directors.

The reviewers support the Institute's plan to increase its efforts to attract applicants from countries not yet significantly represented in the ranks of the programme in the future. A moderate increase in the number of candidates from the business sector would also be desirable.

The IASS continues to attribute a constitutive importance to its Fellow Programme. As such, the programme serves to position the Institute in the international research landscape, supports the further development of the research programme, and creates opportunities for innovation in inter- and transdisciplinary research, thereby contributing significantly to the *science-science interface* of the IASS. In order to achieve this, the fellows should be integrated into the research activities of the IASS to an even greater extent than in the past. Against this background, the current practice of encouraging potential applicants to discuss possible fellowship projects with IASS researchers prior to the submission of an application is advisable and should be maintained and, if possible, expanded. However, care should be taken to ensure that personnel contributing to these discussions are not subsequently involved in the evaluation of the application.

The Fellow Programme and the regular joint events involving fellows and IASS personnel also contribute to a broader exchange beyond the scope of specific projects at the Institute and are perceived as enriching by both sides. Fellows at the Institute particularly appreciate the immense diversity of professional backgrounds, levels of experience, and countries of origin among their ranks. This diversity should be maintained at all costs. In order to make the fellowships profitable for both sides, it is important to maintain this exchange during the pandemic by means of suitable formats. The individual fellows rated the support provided to them at the IASS predominantly very positively. The improved cooperation between fellows and scientists from nearby universities is also to be welcomed.

II. 8 Cooperation

On a very positive note, the IASS has now made three joint appointments together with the University of Potsdam and University of Stuttgart, and another joint appointment with TU Berlin is currently in preparation. The Institute is also pursuing the possibility of a joint appointment in cooperation with the HU Berlin. These joint appointments and the honorary professorships awarded to IASS scientists give the Institute access to qualified younger scientists and contribute to its networking efforts. This will facilitate the future participation of the IASS in collaborative research projects, such as those of the DFG or the EU, to the benefit of both parties.

As the Institute is a recipient of project funding, all of these joint appointments are fixed-term without exception. In the event that the IASS is institutionalised, such appointments should in future be made on a permanent basis or, in the case of junior professorships, with *tenure track*.

The IASS cannot and should not maintain a staff spanning the full range of disciplinary expertise necessary to address its diverse research topics. This makes it all the more important for the Institute to build long-term partnerships with researchers from relevant disciplines beyond the scope of fixed-term invitations to fellows with corresponding expertise, despite the obstacles presented by the Institute's temporary status. In individual cases, such as in the research area "Energy Systems and Societal Change", the IASS has already succeeded in doing achieving this goal; in addition to various fellows, the area has successfully attracted a scientist to the Institute with an *ERC Starting Grant*. In order to systematically expand its cooperative relationships, the IASS should develop a cooperation strategy and a procedure to facilitate the identification of suitable scientists for long-term cooperation. The search for cooperation partners should cover the whole of Germany and abroad. The Fellow Programme should be one of the building blocks comprising this cooperation strategy, and its positive impact on the Institute's national and international networking efforts could be further enhanced through the planned alumni programme for IASS Fellows.

II. 9 Quality assurance

The Institute's Advisory Council has closely accompanied and supported the far-reaching substantive and structural reforms undertaken by the IASS in recent years. Its particular attention to the Institute's scientific performance is commendable. The Advisory Council should continue to support future efforts at the IASS to further focus its research and consultancy programme and improve the quality of its scientific

work. Audits, such as the one performed in 2018, should be carried out by the Advisory Council at regular intervals between external evaluations in order to contribute to quality assurance around the Institute's work in the future.

While indicators and procedures for quality assurance have been established for research in the science system, this is still not the case in the consultancy sector, although proposals and recommendations have been made by various actors. It is therefore to be welcomed that the IASS, with the involvement of the Advisory Council, has itself developed indicators for measuring and evaluating its transfer services as well as its own approach to evaluating the effectiveness of its policy and societal advice and efforts to shape transformation processes. These indicators should be developed further and supplemented with qualitative evaluation criteria. The IASS is encouraged to reflect on these experiences in (a) suitable publication(s) when, in a few years, it has gained sufficient experience with this quality assurance model for consultancy and process participation. The reviewers also support the Institute's plans to survey users from politics, business, and civil society in writing.

The IASS should offer its scientific staff targeted training in the various methods relevant to its research or seek to provide access to appropriate courses and training through agreements with universities and non-university research institutions.

B.III ORGANISATION AND EQUIPMENT

II.1 Organisation

It is strongly recommended that the funding agencies and the Institute's General Assembly reach an agreement on the future of the IASS as soon as possible. Should this decision favour the continuation and institutionalisation of the Institute, the range of options to be considered should not be limited to its integration within the Leibniz Association. Instead, it should be as open and broad as possible and also include new types of institutionalisation. The Institute's special character, resulting from the integration of the functions of a research institution and an advisory institution with a fellowship programme, as described earlier, should be maintained going forward, rather than pivoting towards or abandoning a particular aspect. It is equally important that the Institute's autonomy be preserved so that it can continue to act as an independent advisory institution. During the transitional period, the IASS should be provided with sufficient funding to perform its work to the same extent as before. In view of the far-reaching changes in the function and profile of the IASS described

above, which no longer corresponds to that of an *Institute for Advanced Study*, the possibility of changing the Institute's English name should be explored in the event of its continuation. The Institute's unique character – the intended connection between transformation research and transformative research – should be clearly recognisable in this new name. With this in mind, the future German name of the Institute should also be reviewed.

The reviewers support the Institute's intention to use the upcoming vacancy of one of the three positions of scientific director to reduce the overall size of the Board of Directors to two scientific directors and one administrative director. The third scientific director position was necessary during the previous reform phase in order to strengthen the role of the social sciences at the IASS, as recommended by the German Council of Science and Humanities. This goal has now been achieved. In future, ensuring that the natural and social sciences are equally represented on the board would be in the interest of the Institute's interdisciplinary orientation. This can be achieved through the two remaining director positions. The contract of the current Managing Scientific Director should be extended until a successor can be secured, as leaving this position vacant for a longer period would jeopardise the Institute's further development.

In view of the increase in staff numbers in recent years, the IASS is exploring the possibility of establishing a second management tier, below the Board of Directors, with clearly defined responsibilities. The reviewers also support this plan, as it would relieve the burden on the Board of Directors. Care should be taken to ensure that this second tier is involved in important decisions by the Board of Directors, enjoys a degree of freedom in the management of the research areas and, if possible, is appointed within the framework of joint appointments with a university. At the same time, care should be taken to ensure that this measure does not establish new organisational silos between research areas.

Following the retirement of a female scientific director in early 2021, the board of the IASS will again be entirely male; at the level of the research areas and forums, two of the total of six management positions are occupied by women. When filling new management positions, the IASS should pursue the goal of gender parity. It is commendable that the board of the IASS adopted a Gender Equality and Diversity Strategy in 2018 and that the Institute has now also elected and appointed an Equal Opportunities Officer and her deputy.

The current organisation of the research areas should be reconsidered with the aim of

achieving significantly greater thematic and/or methodological consistency. At the same time, coordination, communication, and permeability across the areas should be increased, especially for early career researchers. It is also necessary to precisely define the role and function of the forums in the IASS. In addition to this, it must be clarified how the German secretariat of the Franco-German Forum for the Future can be integrated into the organisational structure of the IASS in such a way that both the Institute and the Forum for the Future gain the greatest possible benefit. |⁴⁴

The establishment of the *Research Integration Committee*, which advises the Board of Directors on research planning and ensures that initiatives led by the research areas and forums are taken into account, is commendable. Nevertheless, ensuring coherence across the research and work programme remains the responsibility of the Institute's leadership.

III.2 Funding

In principle, the IASS is adequately financed in terms of its core funding. However, no compensation is made for increasing costs, resulting in an annual decline in the actual budget. The funding bodies should consider how this loss could be compensated in the future where legitimate grounds apply.

Personnel capacities in the scientific area are sufficient. The substantial increase in third-party funding secured by projects has significantly increased the workload of the Institute's administration, so that capacities here are exhausted. A shortage of staff also affects the IT unit, which, alongside its regular work, has implemented the adoption of digital solutions for many processes and events during the pandemic. The IASS should examine whether additional positions can be created through internal redeployment to address third-party funding management and IT services.

| ⁴⁴ "The Franco-German Forum for the Future aims to establish new dialogues between politics, civil society, science and business in both countries. It is a priority project of the Treaty of Aachen (Article 22), which was concluded between the German and French governments on 22 January 2019. (...) The BMBF is providing a total of 11 million euros in funding over the next three years to support the establishment of the Forum for the Future. A sixteen-member Franco-German steering committee will supervise the work of the Forum for the Future. The steering committee is made up of representatives of the German and French governments (BMBF, Federal Foreign Office, Ministère de l'Europe et des Affaires étrangères and Ministère de la Transition écologique et solidaire) as well as members of the national parliaments. It also includes representatives of civil society, the social partners, business and science. The Franco-German Forum for the Future is currently being established at two locations by a secretariat in Potsdam by the Institute for Advanced Sustainability Studies (IASS e.V.) and in Paris by the think tank France Stratégie. (...) The secretariat will organize the work of the Forum for the Future and establish structured dialogues on both sides of the Rhine. The results of these discussions will be processed and analysed by the Franco-German team of Forum for the Future. The ideas developed through this work are to be made accessible to the public and handed over to Franco-German bodies (e.g. the Franco-German Council of Ministers). Cf. <https://www.bmbf.de/de/deutsch-franzoesisches-zukunftswerk-startet-12073.html> (last accessed on 16.11.2020).

Personnel quality management poses particular challenges for the IASS. The efforts of the IASS to be an attractive employer by offering further training, flexible working hours and other family-friendly arrangements as well as a congenial working atmosphere are to be strongly commended. The great dedication of the staff from all areas and at all qualification levels confirms that the Institute is succeeding in this endeavour. As the Institute can only offer fixed-term employment contracts due to its project funding status, it will nevertheless face a high turnover of staff for the foreseeable future. This is neither conducive to research nor to consultancy services or the work of those units supporting the Institute's scientific work.