

**Stellungnahme zum
Potsdam-Institut für Klimafolgenforschung e.V. (PIK)
Potsdam**

Inhaltsverzeichnis

1. Beurteilung und Empfehlungen	2
2. Zur Stellungnahme des PIK	4
3. Förderempfehlung	4

Anlage A: Darstellung

Anlage B: Bewertungsbericht

Anlage C: Stellungnahme der Einrichtung zum Bewertungsbericht

Vorbemerkung

Die Einrichtungen der Forschung und der wissenschaftlichen Infrastruktur, die sich in der Leibniz-Gemeinschaft zusammengeschlossen haben, werden von Bund und Ländern wegen ihrer überregionalen Bedeutung und eines gesamtstaatlichen wissenschaftspolitischen Interesses gemeinsam gefördert. Turnusmäßig, spätestens alle sieben Jahre, überprüfen Bund und Länder, ob die Voraussetzungen für die gemeinsame Förderung einer Leibniz-Einrichtung noch erfüllt sind.¹

Die wesentliche Grundlage für die Überprüfung in der Gemeinsamen Wissenschaftskonferenz ist regelmäßig eine unabhängige Evaluierung durch den Senat der Leibniz-Gemeinschaft. Die Stellungnahmen des Senats bereitet der Senatsausschuss Evaluierung vor. Für die Bewertung einer Einrichtung setzt der Ausschuss Bewertungsgruppen mit unabhängigen, fachlich einschlägigen Sachverständigen ein.

Vor diesem Hintergrund besuchte eine Bewertungsgruppe am 7. und 8. Mai 2014 das Potsdam-Institut für Klimafolgenforschung (PIK) in Potsdam. Ihr stand eine vom PIK erstellte Evaluierungsunterlage zur Verfügung. Die wesentlichen Aussagen dieser Unterlage sind in der Darstellung (Anlage A dieser Stellungnahme) zusammengefasst. Die Bewertungsgruppe erstellte im Anschluss an den Besuch den Bewertungsbericht (Anlage B). Das PIK nahm dazu Stellung (Anlage C). Der Senat der Leibniz-Gemeinschaft verabschiedete am 23. März 2015 auf dieser Grundlage die vorliegende Stellungnahme. Der Senat dankt den Mitgliedern der Bewertungsgruppe und des Senatsausschusses Evaluierung für ihre Arbeit.

1. Beurteilung und Empfehlungen

Der Senat schließt sich den Beurteilungen und Empfehlungen der Bewertungsgruppe an.

Das Potsdam-Institut für Klimafolgenforschung (PIK) hat sich als eine der weltweit führenden Einrichtungen zur Erforschung des globalen Klimawandels und seiner Folgen etabliert. Es konzentriert sich dabei auf die Entwicklung und Durchführung von Modellsimulationen und die Analyse und Vermittlung der Ergebnisse.

Seit der letzten Evaluierung hat sich das Institut ausgezeichnet entwickelt. Um die Verbindung der Kompetenzen aus den verschiedenen Fachbereichen zu stärken, wird das Forschungsprogramm nun in vier interdisziplinären Forschungsbereichen – statt wie zuvor in disziplinär ausgerichteten Abteilungen – bearbeitet. Diese neue Struktur ist zielführend und hat sich sehr bewährt.

Die **Arbeitsergebnisse** des PIK sind hervorragend. Dies spiegelt sich in einer Vielzahl von exzellenten Publikationen in renommierten Fachzeitschriften wider. Zwei der vier Forschungsbereiche werden als „exzellent“, zwei als „sehr gut bis exzellent“ bewertet. Mit vielen seiner Modelle ist das Institut international führend an der dynamischen Entwicklung des Forschungsfeldes beteiligt. Daneben ist es als kompetenter Ansprechpartner für die Beratung von Politik, öffentlichen Einrichtungen und Unternehmen gefragt und geschätzt. Hervorzuheben sind hierbei die Beiträge zum Fünften

¹ Ausführungsvereinbarung zum GWK-Abkommen über die gemeinsame Förderung der Mitgliedseinrichtungen der Wissenschaftsgemeinschaft Gottfried Wilhelm Leibniz e. V.

Sachstandsbericht des *Intergovernmental Panel on Climate Change* sowie die Mitwirkung in internationalen und nationalen Gremien wie beispielsweise im Wissenschaftlichen Beirat der Bundesregierung zu Themen Globaler Umweltveränderungen (WBGU). Das PIK wird ermutigt, seine vielbeachteten Informations- und Beratungsaktivitäten im Rahmen einer übergeordneten Strategie noch stärker zu systematisieren.

Für die vier Forschungsbereiche bestehen überzeugende Planungen für die weitere Entwicklung der jeweiligen Arbeitsfelder. Damit das PIK seine führende Stellung erhalten und nach Möglichkeit weiter ausbauen kann, ist es jedoch notwendig, klarer als bisher bereichsübergreifend **strategische Forschungsziele** zu formulieren und zu operationalisieren. In Bezug auf die Weiterentwicklung der Modellierungsarbeiten zum Klimawandel ist interdisziplinär die anspruchsvolle Frage zu prüfen, inwieweit menschliches Handeln und weitere nicht-lineare Faktoren einbezogen werden können. Außerdem sollte die Forschung zu Anpassungen an die Folgen des Klimawandels verstärkt werden.

Seit der letzten Evaluierung hat das PIK hohe finanzielle Aufwüchse zu verzeichnen. Entsprechend ist die Anzahl der Beschäftigten des Instituts stark gestiegen und war 2013 etwa dreimal so hoch wie 2005. Nach dieser außergewöhnlichen Wachstumsphase hält der Senat die **Ausstattung mit Mitteln der institutionellen Förderung** für auskömmlich; über den für die kommenden Jahre vereinbarten Aufwuchs hinausgehende Zuwächse können nicht erwartet werden. Das Institut sollte die von ihm selbst benannten Bedarfe priorisieren und die Gestaltungsspielräume bei der Ressourcenverteilung nutzen.

Bei der Einwerbung von **Drittmitteln für Forschungsprojekte** war das PIK in den letzten Jahren außerordentlich erfolgreich. Allerdings wird erwartet, dass das Institut den Anteil von DFG-Mitteln innerhalb seines Drittmittelportfolios deutlich erhöht. Insbesondere durch die Beteiligung an koordinierten DFG-Programmen könnte auch die Zusammenarbeit mit den Hochschulen der Region weiter intensiviert werden.

Das PIK ist im In- und Ausland hervorragend mit anderen renommierten wissenschaftlichen Einrichtungen vernetzt. Auch unterhält es sehr gute **Kooperationsbeziehungen** zu wichtigen klimapolitischen Akteuren sowie zu nicht-akademischen Partnern. Seine Kontakte in der Region Berlin-Brandenburg und innerhalb der Leibniz-Gemeinschaft sollte das Institut allerdings weiter stärken.

Im Zuge des Wachstumsprozesses der vergangenen Jahre gelang es dem PIK empfehlungsgemäß, die Anzahl von Promovierenden deutlich zu erhöhen. Sie werden sehr gut qualifiziert. Mit seinen weltweit exzellenten Verbindungen sollte es dem PIK in Zukunft möglich sein, den Anteil **wissenschaftlicher Nachwuchskräfte** von außerhalb zu steigern.

Am PIK sind **Frauen** im wissenschaftlichen Bereich unterrepräsentiert. Lediglich eine von neun Leitungspositionen (Direktorenstelle und Forschungsbereichsleitungen) ist mit einer Frau besetzt. Das PIK muss den Frauenanteil im wissenschaftlichen Bereich und insbesondere auf der Leitungsebene deutlich erhöhen.

Der Direktor leitet das PIK sehr erfolgreich. Er wird in den nächsten Jahren in den Ruhestand eintreten. Die Wiederbesetzung muss strategisch gut gesteuert werden. Das Auf-

sichtsgremium sollte die erforderlichen Schritte rechtzeitig angehen und sich durch den Beirat sowie ggf. weitere externe Sachverständige beraten lassen.

Die Erforschung des globalen Klimawandels und seiner Folgen im Rahmen eines breit angelegten, interdisziplinären und langfristigen Ansatzes sowie die umfangreichen Tätigkeiten in wissenschaftlichem Service und Beratung verschiedener Interessengruppen sind in dieser Form an einer Hochschule nicht möglich. Eine Eingliederung des PIK in eine Hochschule wird daher nicht empfohlen. Das PIK erfüllt die Anforderungen, die an eine Einrichtung von überregionaler Bedeutung und gesamtstaatlichem wissenschafts-politischem Interesse zu stellen sind.

2. Zur Stellungnahme des PIK

Der Senat begrüßt, dass das PIK beabsichtigt, die Empfehlungen und Hinweise aus dem Bewertungsbericht bei seiner weiteren Arbeit zu berücksichtigen.

3. Förderempfehlung

Der Senat der Leibniz-Gemeinschaft empfiehlt Bund und Ländern, das PIK als Einrichtung der Forschung und der wissenschaftlichen Infrastruktur auf der Grundlage der Ausführungsvereinbarung WGL weiter zu fördern.

Annex A: Status Report

Potsdam Institute for Climate Impact Research (PIK)

Contents

1. Structure, Tasks and Institutional Environment	A-2
2. General concept and profile.....	A-3
3. Subdivisions of PIK	A-7
4. Collaboration and networking.....	A-14
5. Staff development and promotion of junior researchers.....	A-15
6. Quality assurance	A-17

Appendices

Appendix 1: Organisational Chart	A-22
Appendix 2: Publications.....	A-23
Appendix 3: Revenue and Expenditure	A-24
Appendix 4: Staff.....	A-25

1. Structure, Tasks and Institutional Environment

Development and funding

The Potsdam Institute for Climate Impact Research (PIK) was founded in 1992. 50 % of its institutional funding is provided by the Federal Government, 50 % by the States (*Länder*). The national importance of PIK was confirmed by the German Council of Science and Humanities in 1999 and by the Senate of the Leibniz Association in 2007.

Responsible department at *Länder* level: Ministry for Science, Research and Culture of the State of Brandenburg

Responsible department at federal level: Federal Ministry of Education and Research (BMBF)

Mission and tasks

According to its statutes, PIK's mission is to investigate the acute and potential impacts of global climate change on the environment and on society as a whole. The main methodologies are systems and scenario analysis, modelling, computer simulation, and data integration. These methodologies are used to predict or assess the consequences of global and regional environmental changes. In addition, the institute offers evidence-based advice on political and socio-economic management strategies to develop mitigation and adaptation measures and policies.

Legal form, structure, and organisation

PIK is a registered non-profit organisation (*eingetragener Verein*). Its supervisory committee is the Board of Trustees, which consists of nine voting members. The chair is appointed by the responsible department at *Länder* level; the deputy chair is appointed by the responsible federal department. The Board of Trustees makes all decisions concerning matters of fundamental significance to the institute.

The director and his or her deputy constitute PIK's Board of Directors. The director is responsible for scientific, public, and administrative affairs. In managing the institute's day-to-day affairs, the Board of Directors is supported by the management team, which comprises the head of Director's Office, the head of Science Coordination, the head of Administration, and the head of IT Services.

The Scientific Advisory Board (SAB) advises the institute's management on all important scientific and administrative aspects, comments on the institute's programme budget, and issues recommendations on the use of available resources (cf. Chapter 6).

PIK's structure has changed fundamentally since the past external evaluation in 2007. Research is now organised in four interdisciplinary research domains (RD) which have replaced the previous five disciplinary departments.

National and international scientific environment

According to PIK, the institute holds a unique position due to its covering of the entire climate change complex, from basic science to policy advice and stakeholder dialogue. It emphasises its encompassing model portfolio which reflects the interdisciplinary approach and depicts processes from the sub-national to the global scale.

As other major institutes involved in climate change research in Germany, PIK mentions the Max Planck Institute for Meteorology, the German Climate Computing Center (*Deutsches Klimarechenzentrum*, DKRZ), and the *Klimacampus* (all three in Hamburg), the Helmholtz Centre for Environmental Research (*Helmholtz-Zentrum für Umweltforschung*, UFZ) in Leipzig, the Kiel Earth Institute, a recently founded virtual institute comprising the Helmholtz Centre for Ocean Research Kiel (GEOMAR) and the Kiel Institute for the World Economy, the Karlsruhe Institute of Technology (KIT), the Wuppertal Institute for Climate, Environment and Energy, and the Climate Service Center at the Helmholtz Centre Geesthacht.

Internationally, PIK mentions the following institutes with similar structures and research portfolios: the International Institute for Applied Systems Analysis (IIASA) in Laxenburg (Austria), the Columbia Earth Institute at New York City (USA), the Stockholm Resilience Center (Sweden), the Grantham Research Institute on Climate Change and the Environment at London School of Economics (UK), and the Grantham Institute for Climate Change at Imperial College London (UK).

National interest and justification for funding as a non-university institution

According to PIK, the institute has established itself as an internationally leading agent in climate change research. It contributes to shaping the research agenda in central fields such as impacts analysis and decarbonisation pathways. It also plays an important role in integrating and contextualising existing research. For example, it has set up the Inter-Sectoral Impact Model Intercomparison Project (ISI-MIP) in 2011, thus providing a framework for the worldwide impact modelling community. The institute is involved in informing decision-makers in order to contribute scientific policy advice embracing different policy options. It participates in the Integrated Assessment Modelling Consortium (IAMC), a global collaborative science effort aimed at developing a new set of consistent scenarios for the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC). Many PIK scientists have contributed to this report, often as lead authors, and the deputy director, who is also a co-chair of Research Domain 3, acts as a co-chair of IPCC Working Group III on mitigation. With these activities, PIK claims a pivotal role in climate science and socio-economic research, societal outreach, and policy dialogue.

PIK views its integrated research programme as more comprehensive than typical university-based efforts. Its scientific work includes both natural and social sciences and encompasses studies of Earth system processes related to climate change, impact analyses, and the development of sustainable solutions to the identified challenges. In addition, the institute seeks to communicate its scientific understanding in an ongoing dialogue with relevant stakeholders, thus contributing to knowledge transfer and, at the same time, generating feedback to be integrated in its future research agenda.

2. General concept and profile

Development of the institution since the last evaluation

PIK strives for both excellence – as measured by traditional indicators such as publication output, journal impact factor, and number of citations – and social relevance – measured by quotations in the media, scientific consultancy, and visibility in public

policy processes – in the field of climate change and climate impact research. It is committed to an interdisciplinary research approach. Accordingly, following the last evaluation in 2007, the institute has replaced the five primarily disciplinary departments by four interdisciplinary research domains (RD). The first three RD, “Earth System Analysis”, “Climate Impacts and Vulnerabilities”, and “Sustainable Solutions”, reflect the three Working Groups of the Intergovernmental Panel on Climate Change (IPCC). The fourth RD, “Transdisciplinary Concepts & Methods”, aims at developing new concepts and methods for climate impact research. The institute’s dissemination and discourse activities beyond the scientific work conducted within the four RD are subsumed in a virtual unit “Science & Society” (for details cf. Chapter 3). Each RD is led by two co-chairs representing different disciplines.

PIK states that due to its limited size, it cannot and does not attempt to address all questions pertaining to climate change. Rather, it focuses on a number of key areas and competences in the climate change debate and has initiated a process of building a strategic alliance of leading institutions in the wider field of sustainability research, with the working title “Earth League”. According to PIK, computer-based simulation models are pivotal to the institute’s scientific work and reputation. The current model portfolio covers Earth system analysis, climate impact assessment, and mitigation and adaptation options.

Key research themes are tackled in so-called flagship projects, which form the core of scientific work at PIK. Each flagship project serves as a thematic container for externally funded and internal projects. There are currently 23 flagship projects within the RD (seven, six, seven, and four, respectively, with one of these projects being jointly run by RD 1 and 4).

Since the last evaluation, the institute has grown significantly. The amount of institutional funding increased from € 5.9 million in 2005 to € 9.9 million in 2013, revenue from third-party funding from € 3.1 million in 2005 to € 8.3 million in 2013. The total number of staff increased accordingly from 127 (116 full-time equivalents [FTE]) in 2005 to 352 (290 FTE) in 2013 (cf. Chapter 5) including student assistants and stipendiaries as well as staff of the Technical Support Unit (TSU) of IPCC Working Group III and of the German Co-Location Center of Climate-KIC (Knowledge and Innovation Community of the European Institute of Innovation and Technology, EIT; cf. Appendix 4).

Results

Research

PIK mentions the following exceptional results achieved during the past years:

In Earth system analysis (RD 1), glacial cycles can now be simulated with orbital forcing as the only explanatory factor, i. e. without recurrence to prescribed carbon dioxide concentrations. PIK scientists also established a semi-empirical modelling approach for sea-level projections.

In climate impacts and vulnerability research (RD 2), model chains have been developed that describe a 2°C, 3°C, or 4°C warmer world and its impacts on several sectors (such as water, agriculture, and ecosystems), allowing comparisons across different scenarios.

In sustainable solutions research (RD 3), the global energy-economy model REMIND and the land use model MAGPIE have procured the group a leading role in the integrated

assessment of global climate mitigation. Two newly developed models, PRIDE and MICA, allow the exploration of optimal policy instruments in the presence of multiple market failure.

In RD 4, complex systems science could be established as a valuable tool for climate change research. New concepts, such as recurrence networks and basin stability, have been applied to paleoclimatic research approaches.

As two major joint efforts spanning different PIK research groups, the institute mentions the publication of the IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation (SRREN) and two climate impact reports for the World Bank.

During the reporting period (2011 to 2013), 663 articles were published in peer-reviewed journals (224, 213, and 226 in 2011, 2012, and 2013, respectively), a three-fold increase compared to the reporting period of the previous evaluation (2003 to 2005: 222). For detailed indicators of the publication record cf. Appendix 2.

Scientific services, consultancy, knowledge and technology transfer

Within cooperative projects, PIK's IT Services group makes the institute's computing infrastructure available to project partners. Scientific consultancy, knowledge and technology transfer play an important role for the institute. The activities in these fields are described in detail in Chapter 3, section on "Science & Society".

Academic events and public relations

PIK scientists organised or co-organised 73 academic events like conferences, conference sessions, workshops, and project meetings in 2011 and 85 in 2012. Among the most important events held at PIK or in Potsdam, the institute mentions the 2013 IMPACTS WORLD International Conference on Climate Change Effects, the 3rd International Conference on Data Analysis and Modelling in Earth Sciences (DAMES) in 2012, the Plenary Project Meeting of the EU FP7 Project "Visions on Land Use Transitions in Europe" (VOLANTE) in 2011, a Workshop for developers of energy climate models under the umbrella of the Stanford Energy Modeling Forum in 2011, the CARBOExtreme Expert Workshop on Carbon Management under Extreme Events in 2013, and a stakeholder workshop to disseminate initial results of the *Entdecken* project.

PIK employees gave about 380 lectures at scientific venues per year between 2011 and 2013 and about 250 presentations per year to stakeholder, policy, business, student, or other audiences. They also regularly organise summer schools and training events for young scientists.

The institute receives about 40 visiting groups of stakeholders and interest groups per year. Another 25 groups, mostly from schools, visit PIK's small educational exhibition "*Wetterküche*". The institute also actively participates in large-scale public events.

PIK's press and public relations efforts have been reorganised during the past three years. The institute has developed a fourfold communication strategy, aiming at I) targeting opinion leaders through leading media, II) increasing worldwide public visibility, III) adopting new communication channels, and IV) capacity building for scientists.

Between 2010 and 2012, PIK researchers were quoted in more than 7,000 print articles and 8,000 online articles per year. Since 2010, the institute has organised yearly one-day workshops for journalists and regularly managed to attract journalists from leading

German media. In order to increase international media coverage, PIK initiated interviews with news agencies in the USA, in China, India, Russia, and other countries. PIK also runs an account on twitter which currently has more than 800 followers.

In general, the PR office does not represent science in the media, but rather connects the scientists with journalists for quotes and mentions. The PR officers support the scientists by organising interviews, checking quotes, and providing feedback. Specific media training sessions are offered to doctoral candidates and to postdocs.

Strategic work planning for the next few years

According to PIK, the institute follows and will continue to follow a strategy of selecting themes and initiating projects based on compliance with the overall mission and on opportunities for funding and cooperation. Consequently, the institute will continue in its attempts to successfully combine fundamental research with applications for the benefit of society. Hence, it aims at covering a multi-task ground and improving both in indicators representing scientific reputation and in indicators of high societal impact.

In order to reach this goal, PIK plans to further intensify the integration of different disciplines, especially from both the natural and the social sciences, and to foster collaboration within and across the research domains as well as with other institutions in Germany and abroad. This network approach will also include the involvement of stakeholders at appropriate stages of the investigations.

PIK will further pursue its strategy of model development, coupling, and integration. It intends to develop further two big integrated modelling frameworks: the Potsdam Earth Model (POEM) and the Potsdam Integrated Assessment Modelling framework (PIAM). The institute also plans to explore so-called community modelling approaches. To this end, it has co-initiated the Earth League, an association of academic institutions and think tanks worldwide addressing global sustainability topics.

With the aim of promoting whole-systems approaches in climate impact research, PIK has spearheaded the Intersectoral Impact Model Intercomparison Project (ISI-MIP), which will enter its main phase in 2014. Furthermore, the institute plans to adopt a perspective on societal transformations integrating mitigation and adaptation research. In this field, PIK expects the Climate-KIC (Knowledge and Innovation Community of the European Institute of Innovation and Technology, EIT) to become a major counterpart for innovation in the coming years. The collaboration between PIK and the World Bank shall be intensified as well.

Appropriateness of facilities, equipment, and staffing

In 2013, PIK's total revenue was € 29.2 million, including € 10.5 million (36 %) in institutional funding, € 11.9 million (41 %) in revenue from project funding grants, € 1.0 million (3 %) in revenue from services, € 1.4 million (5 %) miscellaneous revenue, and € 4.4 million (15 %) in revenue for construction projects. During the reporting period (2011 to 2013), more than half of third-party funding was raised from the federal and *Länder* governments, about one fifth from EU programmes; another substantial third-party funder was the EIT (cf. Appendix 3).

PIK sees itself generally well-equipped to implement its research agenda. A new office building on the Telegrafenberg Campus, which is currently under construction, is ex-

pected to improve the working conditions. State-of-the-art supercomputing facilities are essential to the institute's research. According to PIK, the current system from 2008 is at its capacity limits, and an upgrade is thus necessary. In order to check possible alternatives, testing of several models on the high-performance computer of *Norddeutscher Hochleistungsrechnerverbund* (HLRN) has been executed. PIK emphasises that the results clearly indicated the need for in-house computing facilities; this is also endorsed by the Scientific Advisory Board. As a result, an upgrade has already been approved at federal and Brandenburg levels and is planned for 2015. Nevertheless, there is no fixed procedure for this investment, and more security in planning would be very valuable for the institute.

PIK sees a need of additional non-scientific personnel (a total of 21 full-time equivalents [FTE]) to cope with the institute's third-party funding-driven growth in the last years. It lists the following areas:

- a) technical support to maintain models and to improve model codes, facilitation of model coupling and software development, data acquisition and management of databases, and visualisation of modelling results (8 FTE)
- b) additional IT staff for personal computer management and helpdesk service, scientific visualisation, and advanced office automation (3 FTE)
- c) administrative personnel for financial reporting and for risk assessment (6 FTE)
- d) additional staff for a conference secretariat and for the press and PR office (4 FTE)

3. Subdivisions of PIK

Research Domain 1: "Earth System Analysis" (24.5 FTE in research and scientific service, 14.0 FTE doctoral candidates, 2.1 FTE service staff)

Overview

Research in this Research Domain aims at learning from Earth's history and modern data about the dynamics of the Earth system, at understanding feedbacks, thresholds, and tipping points of climate and biosphere, and at defining a sustainable operating space for humankind. The major lines of research are: 1) analysis of past climate change in order to understand the processes that cause gradual or rapid change in the Earth system components, 2) analysis of data and scenarios of current and future climate change and its system-wide feedbacks and impacts, 3) analysis of the role of human activities as major drivers of global climate and environmental change and their impacts on ecosystems.

RD 1 is subdivided into three research areas, each hosting two flagship projects. In addition, there is a cross-topic common flagship project aimed at the development of the new Earth model POEM 1.0.

In Research Area "Understanding the Past", the interactions of Earth system components during glacial-interglacial cycles and selected "hothouse" climates of the past are studied to reveal key processes that help understand the current Earth system dynamics.

In Research Area "Stability and Transitions", the spatial and temporal dynamics of the Earth system during the Anthropocene, with both natural and anthropogenic forcing, are studied.

In Research Area “Towards a Comprehensive View of the Earth System”, the interactions between human society and planetary dynamics are studied. The aim is to produce conceptual models of planetary social ecology and to quantify development opportunities for human societies given “planetary boundaries”.

RD 1 also maintains the cross-topic common flagship project “Development of the New Earth Model POEM 1.0” (“NEXT”). Its objective is to place model development and maintenance on a professional basis across the flagship projects within RD 1. Specifically, it coordinates the development of the new Earth model POEM 1.0.

Results

During the reporting period (2011 to 2013), there were 199 articles in peer-reviewed journals, five monographs, 38 contributions to monographs (including editorships), seven work and discussion papers, and twenty other articles. About one fourth of these publications were co-authored with scientists from other research domains.

In Research Area “Understanding the Past”, PIK claims to have come close to achieving transient simulations of glacial cycles driven only by orbital forcing, without prescribed carbon dioxide concentrations. The paleoclimate modelling expertise has been applied to earlier greenhouse periods in Earth’s history.

In Research Area “Stability and Transitions”, PIK has contributed to understanding mechanisms of and changes in extreme weather events and to a better understanding of important tipping points in the Earth system. The semi-empirical modelling approach was introduced to the international discussion on sea-level rise.

In Research Area “Towards a Comprehensive View of the Earth System”, a systematic multi-sectoral climate impact analysis on the terrestrial biosphere was conducted with a single, self-consistent global model. Freshwater resources, ecosystem stability, and permafrost soils were found to change strongly and non-linearly in response to global warming, with geographically diverse implications for human societies, biodiversity, and atmospheric feedbacks. The work of the RD has influenced the debate on the potential of bioenergy.

Work planning

PIK plans to continue focusing on understanding Earth as a complex system and the effects of anthropogenic influence on this system. Research objectives are to increase knowledge about Earth’s response to previous episodes of high greenhouse gas concentrations, non-linear dynamics of the Earth system in the Anthropocene, the role of climate change and land use for future terrestrial ecology, planetary boundaries and opportunities, and the co-evolutionary social ecology of human societies.

To achieve these goals, RD 1 will make use of the increased availability and quality of datasets on Earth’s paleoclimates and on climate history up to the present. Methodically, emphasis will be placed on the further development of intermediate-complexity climate modelling, especially on the integration of Earth system components into the new coupled model POEM 1.0. The model will allow fast simulations because its atmosphere does not explicitly simulate weather variability, as it is not required for many applications. A further avenue will be to couple evolving adaptive network models of social interactions to environmental resource and climate modelling.

Research Domain 2: “Climate Impacts and Vulnerabilities” (43.7 FTE in research and scientific service, 31.4 FTE doctoral candidates, 8.7 FTE service staff)

Overview

Research in this Research Domain aims at elucidating climate change impacts across sectors and scales, at assessing adaptation options, and at exploring synergies between adaptation, mitigation, and human development. The specific goals are to 1) assess climate change impacts, socio-economic effects, and uncertainties at different levels of global warming (2°C, 3°C, and 4°C), 2) aggregate multi-sector impacts at different spatial scales, 3) analyse societal risks related to changes in climate variability and extreme events, and 4) explore transition dynamics and pathways of socio-economic systems and understand city dynamics as drivers and solutions with respect to climate change.

RD 2 is subdivided into three research areas, each hosting two flagship projects. During the restructuring process, the research agenda was refocused and now concentrates more on impact model comparisons at regional and global scales.

In Research Area “Global Impact Assessments”, the global impacts of climate change are assessed.

In Research Area “Regional Impacts and Adaptation Strategies”, impacts of climate change at the regional scale as well as adaptation strategies are assessed. Since the last evaluation, the range of case studies has been broadened and now includes regions in Asia, Africa, and Latin America in addition to Germany and Europe.

In Research Area “Climate Change and Development”, the link between climate change and development is explored.

RD 2 also hosts the Cross-Cutting Activity “Inter-Sectoral Impact Model Intercomparison” (“ISI-MIP”). In addition, global and regional modelling approaches are integrated.

Results

During the reporting period (2011 to 2013), there were 204 articles in peer-reviewed journals, five monographs, 124 contributions to monographs (including editorships), 26 work and discussion papers, and nine other articles. About one fourth of these publications were co-authored with scientists from other research domains.

In Research Area “Global Impact Assessments”, PIK has developed new approaches to assess climate impacts at the global scale, including impacts on agricultural production and prices, land use change, water scarcity, and the loss of coral reefs.

In Research Area “Regional Impacts and Adaptation Strategies”, a network of regional impact case studies could be established around the world. Comprehensive assessments of climate change impacts on agriculture, water, forests, power generation, and urban systems have been performed and can now be systematically compared.

In Research Area “Climate Change and Development”, new methods have been developed to assess climate impacts on urban dynamics in a wide range of conditions around the world, especially in developing countries. A better understanding of urban dynamics is expected to help shape the role of cities for adaptation, mitigation, and human development in a changing climate.

In the Cross-Cutting Activity “Inter-Sectoral Impact Model Intercomparison” (“ISI-MIP”), PIK has initiated a new generation of climate impact research by providing the basis for systematic long-term impact model intercomparisons at global and regional scales.

Work planning

Future research efforts in RD 2 will focus on integrating climate impacts, socio-economic effects, and adaptation strategies across sectors, on increasing the robustness of impact assessments through systematic model evaluation, benchmarking, and improvement in model intercomparisons, and on improving the interaction between modelling approaches across scales.

Research Domain 3: “Sustainable Solutions” (24.4 FTE in research and scientific service, 26.0 FTE doctoral candidates, 5.7 FTE service staff)

Overview

In this Research Domain, originally, mainly options for climate change mitigation were explored. The analyses included and continue to include climate protection scenarios, the associated transformation of energy and land use, and the design and implementation of such scenarios and transformation processes. Starting in 2011, research on global adaptation strategies was added to the agenda, since according to PIK’s assessment, strategies to adapt to climate change will play an increasingly important role in the coming years. Building on the original research results obtained in this RD, advice is offered to climate policy-makers. The RD is closely connected to Working Group III of the Intergovernmental Panel on Climate Change (IPCC): since 2008, one of the co-chairs of RD 3 also serves as a co-chair of IPCC Working Group III.

The specific research objectives are to 1) identify and evaluate transformation pathways that accomplish the reduction of greenhouse emissions necessary for achieving long-term climate protection, 2) develop a better understanding of regulatory regimes that implement the necessary mitigation measures on all levels, and 3) evaluate strategies for global adaptation to climate change.

RD 3 is subdivided into three research areas, hosting seven flagship projects (four, two, and one, respectively).

In Research Area “Integrated Assessment Modelling”, international low-carbon transformation pathways are analysed based on scenarios for the global energy and land use systems.

Research Area “Integrated Policy Assessment” focuses on the implementation of climate policies at different governance levels.

The recently established Research Area “Global Adaptation Strategies” aims at estimating the costs of climate change, including indirect costs and costs of low-probability, but high-damage events as well as a systemic analysis of the adaptation limits of the supply network.

In addition, the cross-cutting Model Operations Group is run by this RD. It offers operational support for the development of complex models as well as code modularisation and restructuring.

Results

During the reporting period (2011 to 2013), 130 articles in peer-reviewed journals, two monographs, 61 contributions to monographs (including editorships), 38 work and discussion papers, and 15 other articles were published. About one fourth of these publications were co-authored with scientists from other research domains.

In Research Area “Integrated Assessment Modelling”, the Integrated Assessment Modelling (IAM) cluster operates the global energy-economy-climate model REMIND and the land use model MAgPIE, among others. According to PIK, the IAM cluster has developed into one of the world’s leading centres for the integrated assessment of global climate mitigation.

In Research Area “Integrated Policy Assessment”, analyses of the implementation of climate policies with the relevant instruments, treaties, and institutions have been conducted. A specific focus was on real-world imperfections (second-best settings), considering governance levels ranging from regional and national to international. Both the results of economic modelling and the offered policy advice especially in the German and European context are highly regarded according to PIK.

In Research Area “Global Adaptation Strategies”, the global dynamic damage model *acclimate* has been developed (and is still developed further). The aim is to compute the impacts of climate change on the global infrastructure and supply network and the associated costs as well as to develop a global adaptation strategy for this system.

Work planning

For future efforts of providing long-term solutions to a changing climate, PIK has recognised the need to account for the diverse national, sectoral, and near-term interests. Research will focus on three main areas: 1) analysis of the transformation requirements of long-term climate targets to further develop an integrated assessment of transformation pathways to mitigate climate change (including the relation to broader sustainability and development goals); 2) better understanding of regional and national incentives, distributional consequences, and institutional design options, including public financing of climate policy, in order to provide better solutions for the design and implementation of transformation pathways; 3) better understanding of climate impacts and global adaptation options (including their costs and limitations) to provide strategies of adaptation to unavoidable residual climate change.

Research Domain 4: “Transdisciplinary Concepts and Methods” (16.4 FTE in research and scientific service, 13.6 FTE doctoral candidates, 2.4 FTE service staff)

Overview

This Research Domain developed from the previous PIK departments “Global Change and Social Systems” and “Data and Computation”. Research aims at integrating complexity and sustainability science by developing and applying new modelling and analysis methods. The following more specific questions are addressed: 1) How can the concept of “networks of networks” (NEONET) be applied to the internal dynamics and mutual couplings among complex Earth, climate, and social systems? 2) How can complex network analysis help quantify the spatio-temporal dynamics of the social metabolism and identify vulnerable societal pathways? 3) What kind of scientific information and what kind of communication processes can best support a transition towards sustainability?

4) How can the quality of models and the visualisation of complex data in the context of uncertainty be assessed and improved for PIK at large?

RD 4 is subdivided into two research areas, hosting four flagship projects (three and one, respectively) and a group “Governance and Policy of Transformations Processes”.

In Research Area “Complex Systems”, the “networks of networks” approach is employed for the transdisciplinary study and modelling of heterogeneous climate impacts and interacting social systems.

In Research Area “Social Metabolism”, stocks and flows of energy and raw materials which support human societies (social metabolism) are studied, and intervention strategies to assist policies of sustainable socio-metabolic pathways are explored.

RD 4 also hosts the Cross-Cutting Activity “Computational Methods” (“COMET”).

Results

During the reporting period (2011 to 2013), there were 222 articles published in peer-reviewed journals, four monographs, 36 contributions to monographs (including editorships), 18 work and discussion papers, and four other articles. About one tenth of these publications were co-authored with scientists from other research domains.

In Research Area “Complex Systems”, complex systems science has been successfully linked with global change research. Among the results are the development of new concepts on recurrence networks and basin stability, studies of climate impacts on human evolution, the development of a new design principle for smart power grids, and analyses of international coalition formation.

In Research Area “Social Metabolism”, new analytical tools based on complex network theory were developed to quantify trade-related supply risks of critical commodities. Research has contributed to assessments of sustainable urban energy systems and to the development of new methods to analyse drivers of urban energy use and greenhouse gas emissions.

The Cross-Cutting Activity “Computational Methods” (“COMET”) contributes to the implementation of a PIK-wide modelling strategy by bringing together domain experts, developing and applying tools and languages for model specification, model quality assurance, visualisation of climate data, and visual analytics.

Work planning

Work in RD 4 will focus on the development of innovative methods for complex systems analysis (“networks of networks”) and on their integration and application in climate and sustainability research, in collaboration with the three other RD. PIK aims at improving 1) the detection of approaching regime shifts (tipping points), 2) the investigation of interacting natural and social tipping points, their metabolic and network-like nature, and their constraints due to social organisation as well as 3) handling and communicating uncertainties in modelling this. Thus, the institute endeavours to establish social metabolism as a core concept in interdisciplinary sustainability science.

“Science & Society” (no dedicated personnel)

Overview

Following the institute’s mission “to provide society with sound information for decision-making”, PIK’s activities at the intersection of “Science & Society” are presented in a separate chapter, even though this is a virtual unit and not a separate Research Domain. The activities cover a broad range of formats from visits to the institute to highly formalised science-policy processes, such as contributions to IPCC Assessment Reports. PIK engages with different societal groups, involving political actors, businesses, and civil society on all geographic scales.

Results

Interaction with political actors and institutions: At regional and national levels, PIK scientists serve as members or chairs of several advisory boards and committees, most notably the German Advisory Council on Global Change (*Wissenschaftlicher Beirat der Bundesregierung Globale Umweltveränderungen, WBGU*), which regularly publish reports on topics such as climate change, impact research, mitigation strategies, energy system transformation, and sustainability.

At international level, PIK has assumed leadership in formalised science-policy processes. It plays a central role in shaping the Fifth Assessment Report of the *Intergovernmental Panel on Climate Change* (IPCC): one coordinating lead author, seven lead authors, and 13 contributing authors are employed at PIK. One of the co-chairs of Research Domain 3 has served as a co-chair of IPCC Working Group III on the mitigation of climate change. Moreover, a Technical Support Unit (TSU) of this Working Group is located at PIK. Since 2012, PIK cooperates with the World Bank. This engagement has resulted in two World Bank Reports on climate impacts in developing countries. Furthermore, PIK scientists contribute their expertise to different bodies of the United Nations, the European Parliament, and to numerous international conferences and expert panels. The institute regularly hosts delegations from other countries and offers models and online tools to inform and support political decision-makers. At the local level, PIK researchers have worked together with cities (Hyderabad, Potsdam, Berlin) and developed strategies to substantially reduce emissions in the medium to long run (“climate neutrality”).

Interaction with business partners: PIK is a core partner of Climate-KIC (Knowledge and Innovation Community of the European Institute of Innovation and Technology, EIT). In a Climate-KIC-funded project, the institute has created the online tool “*Klimafolgen-Online*” which provides access to information in areas such as agriculture, forestry, and hydrology for a wide range of users. PIK has also been an active member of the “Product Carbon Footprint” pilot project funded by ten large German corporations from the manufacturing and trade sectors.

Interaction with civil society: PIK views the dialogue with the public, especially with young people, as a central task. In 2012 and 2013, the institute, together with the Institute for Advanced Sustainability Studies (IASS), held the two-week Global Sustainability Summer School. In 2013, PIK hosted one day of the 1st World Youth Sustainability Summit. Regularly, groups of visitors are received at the institute, and between 2011 and 2012, PIK staff gave more than 500 science & society lectures and presentations. In cooperation with a local school and Potsdam University, PIK manages the “*Wetterküche*”, an education and information centre on Telegrafenberg. The institute is also engaged in

other forms of knowledge transfer, e. g. science blogs, children's books, a graphic novel, and initiatives such as the Climate Media Factory, the Green Music Initiative, and the "Artist in Residence" programme.

Work planning

PIK's goal is to contribute to social learning in a wider transformation process towards sustainability. To this end, it plans to conduct further research on science-policy-society interactions. It will also continue to try new ways of reaching out, as e. g. in the partnership programme with the arts or by using novel media channels.

"Administration and Services" (36.8 FTE; additionally 7.0 FTE in the German Co-Location Centre of Climate-KIC (Knowledge and Innovation Community of the European Institute of Innovation and Technology, EIT) and 10.6 FTE in the Technical Support Unit of Working Group III of the Intergovernmental Panel on Climate Change)

Besides the research domains, PIK maintains an Administration unit, an IT Services group, the Director's Office, a Science Coordination unit, and a Press and Public Relations unit. In addition, it hosts the Technical Support Unit (TSU) of Working Group III of the Intergovernmental Panel on Climate Change (IPCC). As a result of PIK's leading role in setting up the Knowledge and Innovation Community (Climate-KIC) of the European Institute of Technology (EIT), staff members of Climate-KIC are still formally on PIK's payroll (cf. Appendix 4), although they belong to a separate, external entity with offices in Berlin.

4. Collaboration and networking

Collaboration with universities

According to the institute, collaboration with universities is regionally focused. Besides joint research projects, joint professorial appointments constitute a central element of PIK's overall institutional strategy. The institute aims at filling all co-chair positions with jointly appointed professors. Currently, seven PIK scientists hold professorships: one W2 and two W3 professorships at Potsdam University, one W3 professorship at Technische Universität Berlin, one W2 and two W3 professorships at Humboldt-Universität zu Berlin (HU Berlin). The W2 professor at HU Berlin will retire in May 2014. The procedure for appointing a successor is underway. Two further joint W3 professorships with HU Berlin are to be established in 2014. In addition, there are plans for establishing a junior professorship with Potsdam University and an assistant professorship with tenure track with the Otto Beisheim School of Management (Vallendar and Düsseldorf).

Many members of PIK's staff contribute to teaching activities at these universities and at Eberswalde University for Sustainable Development. The institute's scientists are also involved in several graduate schools, and they regularly supervise doctoral candidates as well as undergraduate students (for details cf. Chapter 5).

Collaboration with other institutions in Germany and abroad

PIK cooperates closely with national and international academic as well as non-academic institutions. Currently, PIK is involved in about 130 third-party projects with over 300 partners worldwide.

In Germany, it is a member of the German Climate Consortium (*Deutsches Klima-Konsortium*, DKK), which encompasses more than 20 German organisations involved in climate and climate impact research. It has also been invited by the Federal Minister of Education and Research to participate in the German Research Union (*Forschungsunion*), which has been installed by the federal government to assist in the development and implementation of the “Hightech Strategy 2020”. Furthermore, PIK is a partner of the Integrative Research Institute on Transformations of Human-Environment Systems (IRI THESys) of *Humboldt-Universität zu Berlin* and part of the Potsdam Research Cluster for Georisk Analysis, Environmental Change and Sustainability (PROGRESS).

Within the Leibniz Association, PIK is connected to many other institutes due to its involvement in five Leibniz Research Networks and in twelve different projects funded through the Leibniz Competition (SAW). It is also a founding member of the Berlin-Brandenburg Institute of Advanced Biodiversity Research (BBIB), which comprises four universities and five Leibniz institutes in the Berlin-Brandenburg area.

In Europe, PIK participates in currently 26 EU projects, coordinating four of them: RAMSES (Reconciling Adaptation, Mitigation and Sustainable Development for Cities), ADVANCE (Advanced Model Development and Validation for the Improved Analysis of Costs and Impacts of Mitigation Policies), AMPERE (Assessment of Climate Change Mitigation Pathways and Evaluation of the Robustness of Mitigation Cost Estimates), and TESS (Towards European Sustainability Transition). It is a founding member of Climate-KIC (Knowledge and Innovation Community of the European Institute of Innovation and Technology, EIT).

Among its collaborative efforts worldwide, PIK emphasises its contribution to the work of the Intergovernmental Panel on Climate Change (IPCC): A total of 24 PIK scientists plus ten Technical Support Unit (TSU) members are involved in all three IPCC Working Groups, often as lead authors. The institute is also a partner in international networks such as the Inter-Sectoral Impact Model Intercomparison Project (ISI-MIP), the Stanford Energy Modeling Forum (EMF), and the Integrated Assessment Modelling Consortium (IAMC). Furthermore, PIK has assisted the Qatar Foundation and the COMSATS Institute of Technology in Islamabad (Pakistan) in designing and establishing climate change research institutes.

PIK also maintains partnerships with the industry sector. Furthermore, it cooperates with a number of local, national, and international scientific and public administrative bodies, among them the World Bank, the World Health Organisation, the International Energy Agency, and the German Advisory Council on Global Change (WBGU).

Between 2011 and 2012, PIK hosted almost 200 guest scientists, two thirds of them for longer than three months. In turn, about 50 PIK scientists stayed at other institutions during this time period, six of them for longer than three months.

5. Staff development and promotion of junior researchers

Staff development and personnel structure

As of 30 September 2013, PIK employed 352 people (290 FTE, including scholarship recipients and student assistants as well as staff of the Technical Support Unit of IPCC and Climate-KIC). Among them, 229 (205 FTE) were scientists (including scholarship

recipients). Among the scientific staff, 35 % were women, 75 % were funded by third-party money, and 84 % were employed on temporary contracts (cf. Appendix 4).

During the years following the last evaluation in 2007, the total staff number of PIK has more than doubled (31 December 2005: 127 people, 116 FTE). According to the institute, this increase in staff numbers has served to strengthen socio-economic and complex network research, as conducted in Research Domains 3 and 4, and to support the Board of Directors. In 2008, a new co-chair of Research Domain 4 joined PIK. In 2009, a new co-chair of Research Domain 2 joined the institute; she moved to Research Domain 4 in 2012 (assuming a co-chair position there).

Following a recommendation from 2007, the number of doctoral candidates has been increased significantly from 22 in 2005 to 91 in 2013. The Board of Directors has now decided to consolidate the growth and considers a size of 300 to 350 employees as reasonable.

Promotion of gender equality and family-work balance

PIK is committed to the principles of equal opportunities and a work environment that supports a family-work balance. It has defined equality goals as part of its Institutional Strategy in 2010. In 2010 and in 2013, it received the TOTAL E-QUALITY award. Since 2006, there is an equal opportunities officer connected to the office of the director and disposing of a budget for supporting training and further education.

At the end of September 2013, 32 % of the 91 doctoral candidates (including scholarship recipients) and 44 % of the remaining 99 scientists in non-executive positions were female. Seven of 39 executive positions (18 %) were held by women; none of the seven professors were women. The institute has defined target quotas of female scientists to be reached by 2017. In 2013, PIK has successfully applied for means for an early professorial appointment of a female scientist from the so-called impulse fund of the president of the Leibniz Association. At present, there is a woman in each research domain board of chairs, at least at deputy level.

In order to promote a good family-work balance, PIK allows for flexible working hours and places. It runs two in-house day-care facilities and two rooms for nursing women. Furthermore, it provides an information platform, "Family&Career@PIK".

Promotion of junior researchers

Between 2011 and 2013, 77 academic degrees qualifying for doctoral work (diploma, Master's) were completed under the supervision of PIK staff.

During the same period, 51 doctoral dissertations were completed at PIK. At the end of September 2013, 91 doctoral candidates worked at the institute. In 2010, a structured PhD programme was set up. Since 2012, binding criteria have been in place for all new doctoral candidates. They include written supervision agreements, a supervision team, reporting obligations, a career development plan, a mediator team, and an interdisciplinary education programme with regular mandatory events for the candidates. PIK also cooperates with regional graduate schools such as the Potsdam Graduate School (PGS) and graduate schools of *Humboldt-Universität zu Berlin*. All doctoral candidates are financed for at least three years. The mean duration of PhD projects is about 44 months.

PIK also supports the career development of postdocs. They may also participate in courses of PGS. The PR office offers coaching on communication skills. In order to involve postdocs in management responsibilities, the Board of Directors appointed several postdocs as deputy chairs of the research domains in 2012.

One person completed his habilitation at PIK in 2013. In the past three years, three PIK scientists were appointed full professors; two further scientists received junior professorships.

Vocational training for non-academic staff

Since 2013, yearly staff appraisal meetings are used to identify the individual training needs of staff members. They can then apply for training measures funded by PIK.

PIK employs two apprentices in IT services, two in administration, and one in the Press and PR office. During the reporting period, three apprentices successfully completed their vocational qualifications.

6. Quality assurance

Internal quality management

PIK is committed to the standards and rules of Good Scientific Practice as published by the German Research Foundation (DFG). The institute has developed corresponding “Rules for Ensuring Good Scientific Practice at PIK and Procedures for Dealing with Scientific Misconduct”. An elected ombudsperson (currently two persons) adopts the role as mediator in case of possible scientific misconduct or other problems. There are also “Guidelines for Ensuring Good Scientific Modelling Practice” in place to optimise the modelling process and ensure high quality standards. A modelling strategy has been developed in cooperation with the Scientific Advisory Board and implemented in recent years.

The institute’s research programme is mainly conducted through its flagship projects. These projects and the overarching research strategy can be discussed in the context of retreats or during the annual Research Days. Any problems concerning quality management can also be discussed during the monthly meetings of the PIK Council¹.

Publications need to be approved by one of the co-chairs. The publication activity is monitored centrally by the Science Coordinator.

Quality management by the Scientific Advisory Board

The Scientific Advisory Board (SAB) consists of six to twelve voting members. The members are appointed by the Board of Trustees on the basis of recommendations by the Board of Directors. The term of office for SAB members is four years, with the possibility of extension for a second period. The SAB advises the institute’s management on all important scientific and administrative aspects, comments on the institute’s programme budget, and issues recommendations on the use of available resources. It meets at least

¹ The PIK Council consists of the board of directors, the research domain co-chairs and deputies, the head of Administration, the head of Director’s Office, the head of Science Coordination, a member of the Press and Public Relations office, the head of IT Services, the Equal Opportunities Officer, and a member of the Employees Council.

once per year, and, subsequently to its meetings, prepares written reports to the Board of Directors. In 2011, the SAB conducted an audit as required according to the guidelines issued by the Leibniz Association.

Implementation of recommendations from the last external evaluation

In order to meet the Senate's recommendations of the last evaluation (below in *italics*; cf. *Senatsstellungnahme zum Potsdam-Institut für Klimafolgenforschung*, 22. November 2007; pp. B-13ff.), PIK has reacted as follows:

MISSION, TASKS, WORK FOCUS

1. *The future scope and mission must be clearly defined in order to address the increasing complexity of global change issues. New ideas and methods are needed for PIK to retain its leading position.*

PIK has modified its structure and introduced a radically interdisciplinary composition of the working groups. Furthermore, in order to set PIK apart from larger or more specialised research institutions, RD 3 "Sustainable Solutions" was strengthened.

2. *The institute's plans to develop a focus on adaptation are strongly supported, as there has been little research in this area hitherto.*

Adaptation research at PIK has been strengthened and is now conducted in Research Domains 2 and 3 (see also recommendation 8).

3. *PIK should also strengthen its capacity for application-oriented activities without losing a strong connection to basic research.*

In recent years, PIK has developed a number of application-orientated activities (cf. Chapter 3, section on "Science & Society").

4. *The core competencies in climate impact research where PIK has excelled in the past should not be neglected in the process.*

Redefinition and refinement of the mission of the individual research domains in the course of recent years has tended to strengthen some of PIK's core competencies.

5. *PIK has to develop a more specific modelling strategy with a focus on intermediate-complexity models. The institute should think about focusing on a smaller number of models.*

PIK has developed an organisational framework in 2010 to implement PIK's "Guidelines for Ensuring Good Scientific Modelling Practice". The concept of model operations groups within each RD has been tested and will be extended.

6. *Climate System Department: ... should receive support in the form of additional personnel to address data management and regional modelling. It is recommended that the group focus on strategically well selected, comparatively large projects implemented in cooperation with partners with the expertise PIK might be lacking.*

Regional modelling is now located in RD 2 with about ten researchers. The main focus is on coupling regional statistical and dynamical models.

7. *Global Change and Natural Systems Department: ... it is also recommended ... the number of researchers working in the hydrology group be increased significantly to strengthen this area.*

The importance of the hydrology group was underlined in PIK's Institutional Strategy and the whole group has grown considerably since the last evaluation.

8. *Global Change and Social Systems Department: collaboration with other departments should be improved. Six to eight new positions are required to build up a good adaptation group.*

Social systems research has been expanded and is now well integrated, primarily in Research Domains 2 and 3. Economic expertise in RD 3 has grown strongly. Moreover, PIK continues in its efforts to build up an additional adaptation group in RD 3 (see also recommendation 2).

9. *Integrated Systems Department: it must be ensured that integrated and complex system aspects are continued in PIK's new structure.*

The integrated system analysis was replaced by the theory of complex networks in RD 4 (cf. Chapter 3).

10. *Data and Computation Department: PIK should invest in its software system, producing sustainable software that will also run on future parallel systems. [...] The institute should ensure that the IT group does not diminish within the new structure.*

The modelling software used and developed at PIK has been adapted to allow parallel processing. The IT group has been consolidated and developed as a separate IT Services unit with 9.5 staff members in 2013 (as opposed to six full-time staff in 2007).

STRUCTURE AND ORGANISATION

11. *The process of reorganisation has to be carefully monitored in order to make sure that the social sciences, which were developed mainly since the last evaluation, do not lose their impact as a result of integration into the new structure.*

According to the Scientific Advisory Board's reports and PIK's understanding, the reorganisation has been successful, and the social sciences nowadays play an even more important role within the institute than seven years ago.

12. *The institute should increase its efforts to recruit and promote women to senior positions.*

PIK has made and continues to make serious efforts to promote women to senior positions (cf. Chapter 5). In 2008, a woman was appointed as a co-chair for the first time, and there are currently negotiations ongoing with two women designated to fill leading positions.

13. *It is strongly recommended that the internal communication across departmental boundaries be improved.*

PIK has changed its organisational structure to one that transcends disciplinary boundaries. Numerous collaborations and joint publications cut across RD boundaries.

FINANCING, USE OF FUNDS, AND STAFF

14. Institutional funding should be significantly increased to restore Annex funds, invest in computer infrastructure, and create several new positions.

Institutional funding has increased significantly (cf. Chapter 2, “Appropriateness of facilities, equipment, and staffing”). Since the last evaluation, 34 positions have been added.

15. PIK should increase its efforts with regard to raising funds from DFG and should look for additional funds from NGOs, companies, and energy producers that use the scientific results produced by the institute.

According to PIK, the institute has had no problem in acquiring third-party funding in recent years. In 2011, 2012, and 2013, DFG funds represented 2.3 %, 1.7 % and 3 % of the revenues from project grants. The institute is circumspect with regard to collaborations with NGOs, as such collaboration could be detrimental to its reputation.

16. Following the successful upgrade of the DKRZ (Deutsches Klima-Rechenzentrum, Hamburg) system, the strategy should be reconsidered with respect to the dimensioning and use of existing and future computer resources at PIK and DKRZ.

The institute uses DKRZ capacities in several smaller projects. The institute’s present high-performance computing system, procured in 2008, is now at the end of its life cycle. Funding for new facilities was granted together with the institute’s new research building (cf. Chapter 2, “Appropriateness of facilities, equipment, and staffing”).

PROMOTION OF JUNIOR RESEARCHERS, AND COOPERATION

17. Although the number of PhD students has increased since the last evaluation, it is recommended that this number be even further increased.

The number of PhD students has been increased significantly to about 90 (cf. Chapter 5).

18. The Evaluation Committee recommends setting up a career development programme for young scientists. At least one joint Master’s (MA) and one joint PhD programme should be established in cooperation with more than one university from the region.

A structured PhD programme is in place, and the institute cooperates with local graduate schools (cf. Chapter 5).

19. PIK should strengthen its collaboration with other leading institutions in complementary fields. A clearer strategy on where to invest its own resources and where to import competence by cooperation could increase efficiency in several places.

PIK sees its future as a part of a global network. A first important step for achieving this has been taken by founding the “Earth League”.

20. The institute should focus its networks more on data input from other scientists than on exporting results; indeed, the institute could greatly benefit from the coordination of its needs in respect to specific datasets for the study of climate systems.

According to PIK, it uses data from external partners on many levels, but also supplies its results to the worldwide scientific community.

RESEARCH RESULTS AND SCIENTIFIC IMPACT

21. The distribution of publication output among the staff could be improved, since some individuals have not produced measurable scientific results over the past few years.

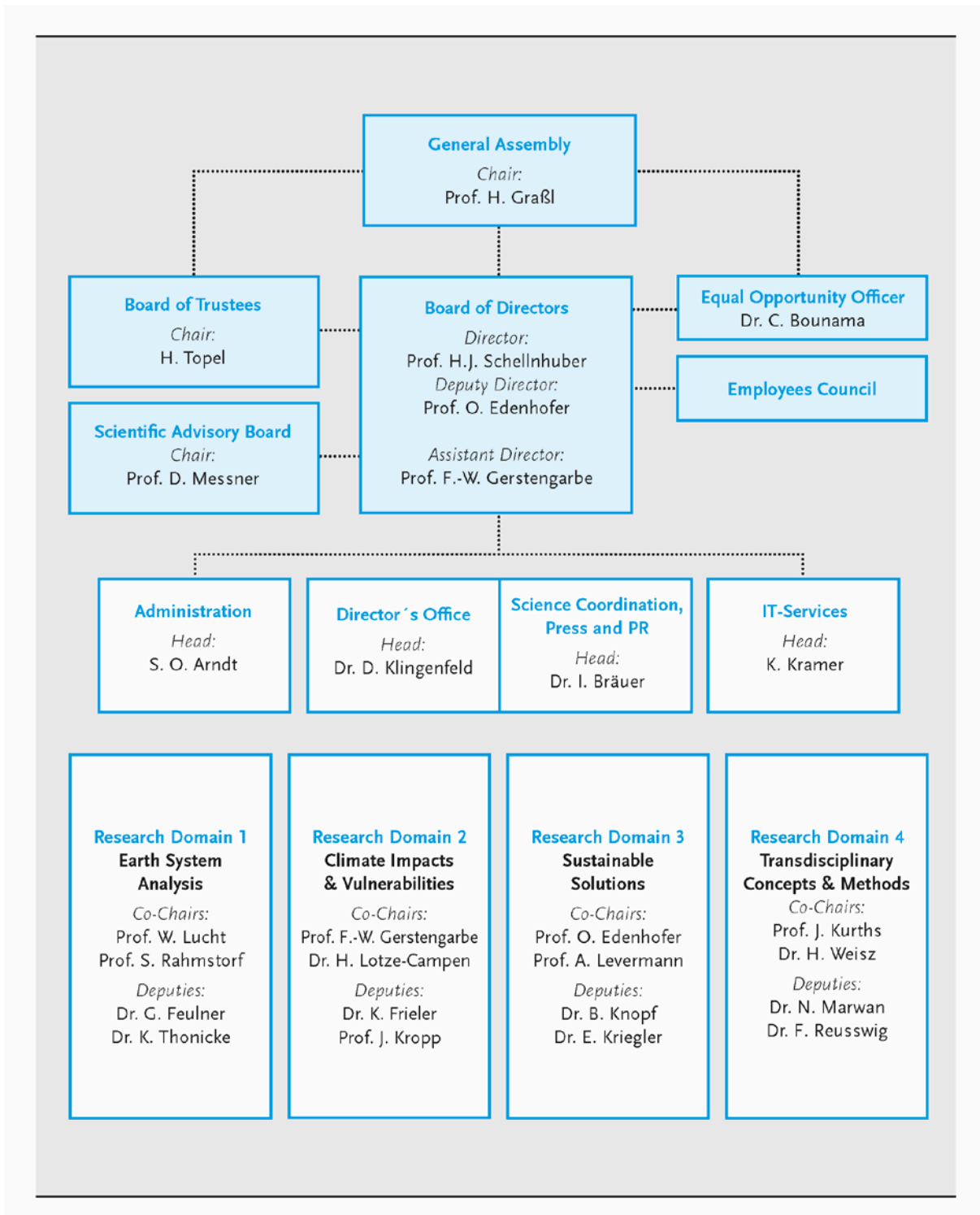
Since the last evaluation, the institute's publication output has increased (cf. Chapter 2).

22. To improve and stabilise knowledge transfer and public work, a minimum of three additional permanent positions are required.

Staff in the relating units has been increased (cf. Chapter 3, "Science & Society").

Appendix 1

Organisational Chart



Appendix 2

Publications

	Period		
	2011	2012	2013 ¹
Total number of publications	370	356	328 (+93)
Monographs	9	7	2
Individual contributions to edited volumes	88	88	57 (+2)
Articles in peer-reviewed journals	224	213	226 (+86)
Articles in other journals	17	13	16 (+5)
Working and discussion papers	23	30	25
Editorship of edited volumes	9	5	2
Number of publications per full-time equivalent (FTE) in “research and scientific services” (not including doctoral candidates)	3.4	3.3	3.0 (3.9)

¹ In parentheses: additional accepted and online-first publications.

Appendix 3

Revenue and Expenditure

Revenue		2011			2012			2013 ¹⁾		
		k€	% ²⁾	% ³⁾	k€	% ²⁾	% ³⁾	k€	% ²⁾	% ³⁾
Total revenue (sum of I., II. and III.; excluding DFG fees)		21,048.1			26,718.6			29,239.3		
I.	Revenue (sum of I.1.; I.2. and I.3)	19,464.1	100 %		21,382.3	100 %		23,467.8	100 %	
1.	<u>Institutional funding (excluding construction projects and acquisition of property)</u>	9,855.4	51 %		10,243.0	48 %		10,539.0	45 %	
1.1	Institutional funding (excluding construction projects and acquisition of property) by Federal and <i>Länder</i> governments according to AV-WGL	9,855.4			10,243.0			10,539.0		
1.1.1	<i>Proportion of these funds received through the Leibniz competitive procedure (SAW procedure)⁴⁾</i>	485.3			299.3			0.0		
1.2	Institutional funding (excluding construction projects and acquisition of property) not received in accordance with AV-WGL	0.0			0.0			0.0		
2.	<u>Revenue from project grants</u>	8,290.6	43 %	100 %	9,985.5	47 %	100 %	11,909.5	51 %	100 %
2.1	DFG	187.1		2 %	174.0		2 %	362.0		3 %
2.2	Leibniz Association (competitive procedure) ⁴⁾	0.0		0 %	0.0		0 %	93.5		1 %
2.3	Federal, <i>Länder</i> governments	5,096.2		61 %	5,484.0		55 %	6,347.3		53 %
2.4	EU	1,759.5		21 %	2,179.3		22 %	2,632.9		22 %
2.5	Industry	0.0		0 %	0.0		0 %	0.0		0 %
2.6	Foundations	490.8		6 %	482.5		5 %	456.6		4 %
2.7	European Institute of Innovation & Technology (EIT)	375.4		5 %	1,260.7		13 %	1,417.0		12 %
2.8	Foreign authorities and institutes	133.7		2 %	128.0		1 %	241.2		2 %
2.9	Other sponsors	248.0		3 %	277.2		3 %	358.3		3 %
3.	<u>Revenue from services</u>	1,318.1	7 %		1,153.8	5 %		1,019.3	4 %	
3.1	Revenue from commissioned work	1,191.0			1,143.9			951.3		
3.2	Revenue from publications	0.0			0.0			0.0		
3.3	Revenue from exploitation of intellectual property	0.0			0.0			0.0		
3.4	Revenue from other services	127.1			9.9			68.0		
II.	Miscellaneous revenue (e.g. membership fees, donations, rental income, funds drawn from reserves)	490.3			1,137.1			1,409.3		
III.	Revenue for construction projects (institutional funding by Federal and <i>Länder</i> governments, EU structural funds, etc.)	1,094.0			4,199.3			4,362.2		

Expenditures		k€	k€	k€
Expenditures (excluding DFG fees)		20,816.9	26,476.4	28,984.9
1.	Personnel	12,052.4	13,086.6	14,004.6
2.	Material resources	6,171.9	6,596.8	7,870.0
2.1	<i>Proportion of these expenditures used for registering industrial property rights (patents, utility models etc.)</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>
3.	Equipment investments and acquisitions	763.1	515.8	1,153.6
4.	Construction projects, acquisitions of property	826.6	2,389.6	4,504.0
5.	"Reserves" (e.g. cash assets, unused funds)	1,003.0	3,887.6	1,452.8
6.	Miscellaneous items	0.0	0.0	0.0

DFG fees (2.5 % of revenue from institutional funding)	231.5	242.2	254.3
--	-------	-------	-------

[1] Preliminary data: no

[2] Figures I.1, I.2 and I.3 add up to 100 %. The information requested here is thus the percentage of "Institutional funding (excluding construction projects and acquisition of property)" in relation to "Revenue from project grants" and "Revenue from services".

[3] Figures I.2.1 to I.2.9 add up to 100 %. The information requested here is thus the percentage of the various sources of "Revenue from project grants".

[4] Competitive procedure of the Leibniz Association: until 31 December 2010, funds allocated through this procedure were designated as institutional funding. Since 1 January 2011, the Leibniz Association has granted these funds as project grants.

Appendix 4

Staff

(as of 30 September 2013)

	Full time equivalents		Employees		Female employees	
	Total	on third-party funding	Total	on fixed-term contracts	Total	on fixed-term contracts
	Number	Percent	Number	Percent	Number	Percent
Research and scientific services	190.6	73 %	214	83 %	75	91 %
Professors / Directors (C4, W3, or equivalent)	5.0	0 %	5	0 %	0	
Professors / Directors (C3, W2, A16, or equivalent)	2.0	0 %	2	0 %	0	
Academic staff in executive positions (A16, A15, E15, or equivalent)	28.9	24 %	31	45 %	6	33 %
Junior research group leaders / junior professors / post-doctoral fellows (C1, W1, A14, E14, or equivalent)	0.5	100 %	1	100 %	1	100 %
Scientists in non-executive positions (A14, A13, E14, E13, or equivalent)	34.1	68 %	42	76 %	14	93 %
Postdocs (E14, E13Ü, E13)	38.9	83 %	43	100 %	18	100 %
RD coordination (E14, E13)	2.5	20 %	3	67 %	3	67 %
RD coordination (E10)	0.5	0 %	1	0 %	1	0 %
Project coordination (E9 to E13)	6.4	88 %	9	100 %	7	100 %
Doctoral candidates (A13, E13, E13/2, or equivalent)	61.8	98 %	67	100 %	22	100 %
Doctoral candidates (external financing)	10.0	100 %	10	100 %	3	100 %
Service positions	30.7	14 %	37			
Director's office (E13, senior service)	1.8	0 %	3			
Director's office (E9, mid-level service)	1.2	0 %	2			
Executive staff (E14, E13, senior service)	1.6	0 %	2			
Executive staff (E10, upper-mid-level service)	0.8	0 %	1 *			
Equal opportunities officer	0.3	0 %	1			
Data protection officer	0.3	0 %	1 *			
Press and PR office	1.8	0 %	2			
Science coordination (E14, E13, senior service)	1.8	0 %	2			
Science coordination (E8, mid-level service)	1.5	0 %	2			
IT Services – Head (E14, senior service)	2.0	0 %	2			
IT Services – Deputy head (E12, upper-mid-level service)	1.0	0 %	1			
IT Services staff (E9 to E12, upper-mid-level service)	9.1	42 %	10			
Secretariat (E9 to E12, upper-mid-level service)	1.8	0 %	2			
Secretariat (E5 to E8, mid-level service)	6.0	8 %	7			
Administration	14.1	7 %	15			
Head of administration (E14, senior service)	1.0	0 %	1			
Deputy head (E12, upper-mid-level service)	1.0	0 %	1			
Staff positions (E9 to E12, upper-mid-level service)	3.0	33 %	3			
Staff positions (E5 to E9, mid-level service)	9.1	0 %	10			
Student assistants (with diploma)	10.4	89 %	24			
Student assistants (without diploma)	6.9	62 %	23			
Vocational trainees	5.0	0 %	5			
Scholarship recipients at the institution	14.2	100 %	15		5	
Doctoral candidates	13.2	100 %	14		4	
Post-doctoral researchers	1.0	100 %	1		1	

* One person has two contracts: a 0.75-FTE position as executive staff and a 0.25-FTE position as data protection officer. Thus the total number of employees in service positions is 37.

Status Report of PIK

	Full time equivalents		Employees	
	Total	on third-party funding	Total	on fixed-term contracts
	Number	Percent	Number	Percent
Technical Support Unit, Working Group III of the Intergovernmental Panel on Climate Change (IPCC) **	10.6	100 %	12	100 %
Head (E15, senior service)	1.0	100 %	1	100 %
Staff positions (E14, E13, senior service)	6.1	100 %	7	100 %
Staff positions (E9 to E12, upper-mid-level service)	2.5	100 %	3 ***	100 %
Staff positions (E5 to E9, mid-level service)	1.0	100 %	1	100 %
German Co-Location Center of Climate-KIC (Knowledge and Innovation Community of the European Institute of Innovation and Technology, EIT) **	7.0	100 %	8	
Staff positions (E14, E13, senior service)	5.5	100 %	6	
Staff positions (E9, mid-level service)	1.5	100 %	2	

** These positions are not covered by PIK's normal institutional funding, but are third-party funded.

*** One of these employees is also a member of PIK's service staff (IT Services staff).

Annex B: Evaluation Report

Potsdam Institute for Climate Impact Research (PIK)

Contents

1. Summary and main recommendations	B-2
2. General concept and profile	B-4
3. Subdivisions of PIK	B-8
4. Collaboration and networking	B-12
5. Staff development and promotion of junior researchers.....	B-13
6. Quality assurance	B-15

Appendix:

Members of review board and guests; representatives of collaborative partners

1. Summary and main recommendations

The Potsdam Institute for Climate Impact Research (PIK) conducts very successful basic research on the past, present, and potential future impacts of global climate change on the environment and human society. It follows a clear concept with a focus on modelling climate impact scenarios.

Since the last evaluation, PIK has grown significantly: both the amount of institutional funding and the staff size have increased considerably, from about € 6 million and 127 staff members in 2005, to about € 10 million and 352 staff members in 2013. The institute has also undergone major structural changes. The previous disciplinary departments have been abandoned in favour of four interdisciplinary research domains (RD). These RD bundle the expertise from different research fields very effectively and have facilitated cross-cutting research activities.

Overall, PIK has produced excellent results and established itself as a major player in international climate research. Many of its models are world-leading. The institute is also very involved in public outreach and in high-profile scientific consultancy to policy-makers as well as academic and industrial partners. These activities are highly regarded. The outstanding contributions to the Fifth Assessment Report of the *Intergovernmental Panel on Climate Change* (IPCC) are particularly noteworthy.

The institute maintains numerous collaborative relations with renowned and influential institutions in climate impact research and in international climate policy both in Germany and abroad. It also cooperates fruitfully with non-academic partners, e. g. in industry.

During the previous growth process, the number of doctoral candidates at PIK, in particular, was increased substantially. The junior scientists are very well educated and can provide valuable input for developing the institutional strategy. PIK should further exploit its excellent connections to other distinguished research institutions in order to recruit a higher proportion of young scientists externally.

For the future, PIK plans to continue refining, connecting, and supplementing the existing models. The two main modelling efforts are the Potsdam Earth Model (POEM), aimed at achieving an encompassing analysis of the Earth system, and the Potsdam Integrated Assessment Modelling (PIAM) framework, which will allow new insights on climate change and mitigation scenarios. They both promise to assert PIK's leading position in these areas. In order to secure top-level research and novel insights in the long run, in addition to the current model portfolio, PIK should initiate a new generation of models which take into account hitherto less considered factors such as actors and agency.

Special consideration should be given to the following main recommendations in the evaluation report (highlighted in **bold face** in the text):

GENERAL CONCEPT AND PROFILE

1. Recently, PIK has established a new line of research on adaptation to global change. The first projects are highly innovative and have yielded very promising results. PIK must intensify its efforts in this area well beyond the steps taken so far and turn adaptation research into a major pillar of its research portfolio. The respective recommendation issued in the last evaluation report is thus emphatically reiterated.
2. Within the research domains, the future strategies are well-elaborated and both ambitious and realistic. However, the multi-dimensional task space envisaged for the institute as a whole is not fully convincing, as it does not provide sufficiently concrete strategic guidance. It would be very helpful for PIK's further development if specific and practical strategic objectives were articulated clearly, and explicit steps on how to reach them were elucidated.
3. The well-established work on Integrated Assessment Models (IAM) is a pivotal pillar of PIK's recognition. PIK quite rightly plans to develop these models further. In order to maintain its top position in this important area in the long run, however, PIK is recommended to initiate a new generation of agent-based models in addition to the existing ones. Currently, as the institute has recognised itself, the aspects of actors and agency are becoming ever more important. However, they are not modelled appropriately and are indeed difficult to implement in the existing models. In order to expand the range of possible scenarios, it would be highly useful to enhance the consideration of factors with non-linear effects.
4. Systematically calibrating and validating the models is notoriously difficult, yet indispensable. In order to continue making progress in this area, PIK should explore ways of acquiring better access to high-quality observational data, especially via strategic collaborations.
5. Since much of PIK's research is highly relevant to the economics community, there is substantial potential to increase the number of publications in economics journals that should be fully tapped by the institute.
6. PIK has stated that additional personnel for supporting tasks would be helpful. The institute will have to prioritise these needs and use the increased financial flexibility to allocate the available resources to administrative and other urgent tasks. After the recent years of marked growth, PIK will have to adapt to the changed circumstances, according to which a further exceptional increase of institutional funding cannot necessarily be expected.
7. PIK has been very successful in procuring third-party funding for research projects. Whilst the overall level should be maintained, acquisition of funding from the German Research Foundation (DFG) should be increased, as already recommended in the last evaluation.

SUBDIVISIONS OF PIK

8. Whilst PIK's numerous activities in public outreach and policy advice are highly regarded, it is suggested that these activities should be more systematically coordinated by formulating clear goals and then devising an overarching strategy on how to reach them.

COLLABORATION AND NETWORKING

9. In order to strengthen the ties to universities further, PIK should make significant efforts to initiate and participate in larger DFG-funded joint research projects such as Collaborative Research Centres or Research Units.

STAFF DEVELOPMENT AND PROMOTION OF JUNIOR RESEARCHERS

10. Women are clearly underrepresented in the scientific sector, especially at leadership level. PIK must further intensify its efforts to increase the proportion of women in scientific leadership positions.
11. PIK harbours great expertise within its pool of junior scientists, many of whom are able to generate creative ideas and valuable strategic input. It is recommended to encourage more bottom-up contributions from these junior researchers and to introduce procedures to systematically utilise this potential input in order to promote PIK's further development.

QUALITY ASSURANCE

12. It is necessary that PIK develop and implement a clear overarching data management strategy with standard procedures for data acquisition, processing and management, access and dissemination, exploration and analysis, data storage, archiving, retrieval, safety (including disaster recovery), and security.

2. General concept and profile

Development of the institution since the last evaluation

During the past years, on the basis of excellent scientific results, PIK has successfully established itself as a major player in international climate research. It has effectively adopted the role of convener of various conferences and workshops. Its outreach activities are highly regarded, as are its important contributions to policy advice. PIK's efforts in Working Group III of the *Intergovernmental Panel on Climate Change* (IPCC) are particularly noteworthy (see Chapter 3 for details).

Since the last evaluation, PIK has grown significantly. The amount of institutional funding increased from € 5.9 million in 2005 to € 9.9 million in 2013, revenue from third-party funding from € 3.1 million to € 8.3 million. The total number of staff increased accordingly from 127 to 352 (see the PIK Status Report for further details).

Besides this growth process, the institute has undergone major structural changes. The previous disciplinary departments have been abandoned in favour of four interdisciplinary research domains (RD). These RD bundle the expertise from different research fields very effectively and are aligned with IPCC's Working Groups. With this new struc-

ture and the broad spectrum of expertise covered by PIK's researchers, the institute is well-equipped to expand its cross-cutting research efforts further and to continue tackling innovative, high-risk research projects.

The overall concept with a focus on modelling climate impact scenarios is convincing. Concentrating on models of intermediate complexity, PIK has developed a world-leading model portfolio on climate impacts. Work on the rural and urban dimensions of global change has been sharpened, and much attention has been paid to differentiating between impacts at different spatial scales. PIK's regional models in particular have produced significant new insights and should be expanded further by considering more key countries whose development will be of major importance for global change, such as China, India, Indonesia, Russia, or Brazil (see Chapter 3, the section on Research Domain 2).

Recently, PIK has established a new line of research on adaptation to global change. The first projects are highly innovative and have yielded very promising results. Providing society and policy-makers with viable strategies on how to adapt to unavoidable climate change will become increasingly important in the future. **PIK must intensify its efforts in this area well beyond the steps taken so far and turn adaptation research into a major pillar of its research portfolio. The respective recommendation issued in the last evaluation report is thus emphatically reiterated.**

Strategic work planning for the next few years

PIK very successfully managed the previous growth process to establish itself as an internationally leading research institution in the field of global change and climate impacts. As it aspires to do, the institute should now use this position, its reputation, and its excellent connections to other institutions worldwide more systematically to initiate and host conferences and workshops and thereby further increase its influence on international research trends.

Within the research domains, the future strategies are well-elaborated and both ambitious and realistic. However, the multi-dimensional task space envisaged for the institute as a whole, which covers twelve objectives relating to scientific reputation and societal impact, is not fully convincing, as it does not provide sufficiently concrete strategic guidance. It would be very helpful for PIK's further development if specific and practical strategic objectives were articulated clearly, and explicit steps on how to reach them were elucidated. This does not preclude explorative and high-risk projects from continuing to be encouraged.

The well-established work on Integrated Assessment Models (IAM) is a pivotal pillar of PIK's recognition (see Chapter 3). PIK quite rightly plans to develop these models further and has initiated the very promising Potsdam Integrated Assessment Modelling (PIAM) framework. **In order to maintain its top position in this important area in the long run, however, PIK is recommended to initiate a new generation of agent-based models in addition to the existing ones. Currently, as the institute has recognised itself, the aspects of actors and agency are becoming ever more important. However, they are not modelled appropriately and are indeed difficult to im-**

plement in the existing models. The bounded-rationality approach mainly pursued so far should be challenged more systematically, as it is questionable whether it is suited to capturing all relevant aspects of the real world. **In order to expand the range of possible scenarios, it would be highly useful to enhance the consideration of factors with non-linear effects,** such as tipping points and extreme events, political instabilities or shifts in power, conflicts over resources, economic risks or crises, social and cultural particularities, and technological innovation processes. The institute already explores some innovative designs, e. g. using game-theoretic approaches. These efforts must be increased significantly.

PIK should think of ways to further strengthen social science aspects, such as development or transition pathways (see also Chapter 3, the section on Research Domain 2). Coupling adaptive network models of social interactions with environmental resource and climate modelling will be an important addition to the institute's modelling portfolio and should be pursued more rigorously.

Systematically calibrating and validating the models is notoriously difficult, yet indispensable. In order to continue making progress in this area, PIK should explore ways of acquiring better access to high-quality observational data, especially via strategic collaborations. It might also be worthwhile to consider initiating workshops or conferences addressing model-data comparisons.

In general, PIK should continue to build on its particular strengths in basic research, for which it has gained its reputation, rather than diverting too many additional resources towards transdisciplinary efforts with co-production of evidence with a broad variety of stakeholders. This does not preclude state-of-the-art knowledge from being regularly and systematically disseminated to political decision-makers, business partners, and the general public, as the institute has successfully shown over the past years.

Results

Research and other research-based results

In the last years, PIK has conducted high-quality research work. This has included analyses of the Earth system, research on climate impacts and vulnerabilities, and the exploration of sustainable solutions. Many of the models are world-leading and have allowed new insights into the aspects under scrutiny. The institute also continually works on the development of new concepts, such as recurrence networks, and introduces these ideas into the international debate on global change and climate impacts (see Chapter 3 and the PIK Status Report, Chapters 2 and 3 for further details).

The publications are of very high quality and impressive quantity: the number of peer-reviewed publications has tripled since the previous evaluation. In accordance with the institute's established and recognised strengths, the vast majority of the results have been published in natural science journals. **Since much of PIK's research is highly relevant to the economics community, there is substantial potential to increase the number of publications in economics journals that should be fully tapped by the institute.**

Scientific consultancy, knowledge and technology transfer

PIK is very involved in high-profile scientific consultancy and knowledge and technology transfer. Its numerous activities are highly regarded (see Chapter 3, the section on the Virtual Unit, “Science & Society”, for details).

Appropriateness of facilities, equipment, and staffing

PIK’s facilities and equipment are generally adequate to fulfil its mission. The space requirements, which have increased due to the institute’s growth during the past years, will be met once the new building, which is currently under construction, has been completed.

Since modelling is at the heart of PIK’s research work, it is pivotal that the institute be equipped with modern, regularly updated, in-house supercomputing facilities, closely coordinated with and complementing the regional (*North-German Supercomputing Alliance*, HLRN), topical (*German Climate Computing Centre*, DKRZ), and national (*Gauß-Allianz*, GA; *Gauss Centre for Supercomputing*, GCS) facilities. It is very positive that, recently, funding could be secured from the European Fund for Regional Development (EFRE) to upgrade the outdated system. Since the new system will replace the current one, no additional institutional funding for personnel will be needed for the maintenance and management of the computing facilities. In order to prevent damage or loss of data, a sound data security strategy and data mirroring system should be devised and implemented.

The total number of staff has increased significantly since the last evaluation. **PIK has stated that additional personnel** (a total of 21 full-time equivalents) **for supporting tasks**, e. g. in IT, knowledge transfer, and conference management, **would be helpful. The institute will have to prioritise these needs and use the increased financial flexibility to allocate the available resources to administrative and other urgent tasks. After the recent years of marked growth, PIK will have to adapt to the changed circumstances, according to which a further exceptional increase of institutional funding cannot necessarily be expected.**

PIK has been very successful in procuring third-party funding for research projects (2013: € 11.9 million). **Whilst the overall level should be maintained, acquisition of funding from the German Research Foundation (DFG) should be increased, as already recommended in the last evaluation.** It is positive that in 2013, DFG funding amounting to more than the DFG fee paid by the institute could be obtained. PIK should make significant efforts to explore whether collaborative research projects with the local universities and other Leibniz institutes might add value to its programmes. This would also serve to strengthen the ties to these important collaborative partners (see also Chapter 4).

3. Subdivisions of PIK

RESEARCH DOMAIN 1: "EARTH SYSTEM ANALYSIS"

(24.5 full-time equivalents [FTE] in research and scientific services, 14.0 FTE doctoral candidates, 2.1 FTE service staff)

In this Research Domain (RD), highly successful research is conducted on the feedback processes, thresholds, and tipping points of climate and biosphere. Past climate change is analysed, and scenarios of current and future climate change are modelled. A special focus is placed on the role of human activities as major drivers of global change. The results have led to an impressive number of publications, many of them in high-ranking journals.

PIK has established itself as one of the world-leading institutions in paleo-climatological modelling, especially with respect to ice dynamics and glacial cycles. The work conducted in this field is both of excellent quality and highly relevant.

The concept of tipping points has been introduced into the international debate on climate change by PIK. It has changed the assessment of climate change risks fundamentally by opening a new perspective on the stability of key components of the Earth's system.

The project on planetary waves is highly innovative and very promising. Certain wave patterns may be linked to extreme weather events, thus enabling tracing such events in Earth's history with available paleo-climatological data. In addition, it might be interesting to put more emphasis on the analysis of Holocene climates, as they provide the most recent backdrop for human-induced effects.

In the project on the impacts of climate change and land use change on the biosphere, some very promising results have been obtained. Until now, the main focus has been on the carbon and water cycles. In order to achieve a more complete understanding of biogeochemical patterns and their changes, nitrogen and phosphorus should be included in the analyses. Furthermore, it would be very interesting to expand the work to other regions of the world, e. g. China or India.

PIK's further plans for the development of this RD are convincing. The work envisaged on the Potsdam Earth Model (POEM) constitutes a leading effort in linking different models with the aim of achieving an encompassing analysis of the Earth system. PIK's strategy of focussing on intermediate-complexity models is endorsed.

In summary, this Research Domain is rated as "excellent".

RESEARCH DOMAIN 2: "CLIMATE IMPACTS AND VULNERABILITIES"

(43.7 FTE in research and scientific services, 31.4 FTE doctoral candidates, 8.7 FTE service staff)

The activities in this Research Domain (RD) are aimed at elucidating the impacts of climate change across different sectors and scales, at assessing the pertinent societal risks and socio-economic effects at different levels of global warming, and at exploring transition dynamics and pathways. The projects are clearly devised to contribute to these

goals, and the results have been published very successfully, often in high-ranking journals. A lot of PIK's research in this RD is highly relevant in economic terms. Accordingly, the institute is encouraged to increase the number of publications in economics journals.

The Inter-Sectoral Impact Model Intercomparison (ISI-MIP) project, defined as a cross-cutting activity, has yielded significant insight into climate impact hotspots. With its regional impact models, PIK has assumed a world-leading role in this field. The institute is involved in the international global crop model intercomparison project, which constitutes a significant and promising effort and should be developed further: it should be expanded to include regional aspects within highly relevant countries like China, India, Indonesia, Russia, or Brazil, for example. In addition, the criteria according to which the quality of different models is assessed need to be defined clearly.

The project on urban heat mapping is an excellent example of innovative research linking the physical aspects of climate change to societal elements. In particular, sustainable transition pathways are explored systematically. In general, research on such topics and on adaptation dynamics should be expanded significantly (see Chapter 2).

It is positive that PIK has initiated work on health issues related to climate change. The respective projects are still at an early stage. The institute should consider carefully how it can contribute significantly to ongoing research in this highly relevant field. PIK's strategy to initiate more extensive collaborations with research institutions with more experience in this area is endorsed. The institute should particularly investigate the possibilities within the Leibniz Association.

Overall, much of PIK's research is focussed on the impact of climate change on humans and human well-being. This is of great interest to society. However, it might be beneficial to give more weight to a wider perspective including impacts on biological systems or on the biosphere as a whole. Collaborations, especially within the Leibniz Association (e. g. *Biodiversity and Climate Research Centre BIK-F at Senckenberg Research Institutes*), may allow for synergetic and highly efficient research.

Human population growth will be a key factor influencing and interacting with climate change. Since it can be expected to affect model predictions significantly, it should be included in the models explicitly. In order to do so successfully, PIK should strive to obtain high-quality demographic data sets.

In summary, this Research Domain is rated as "very good to excellent".

RESEARCH DOMAIN 3: "SUSTAINABLE SOLUTIONS"

(24.4 FTE in research and scientific services, 26.0 FTE doctoral candidates, 5.7 FTE service staff)

In this Research Domain (RD), scenarios for climate protection, for transformation processes of energy and land use, and for the implementation of such processes are explored. In addition, global adaptation strategies to unavoidable climate change are developed. PIK has been extremely successful in these areas during the past years. The results have been published in high-ranking journals and recognised world-wide as state of the art. PIK communicates the most important findings very actively to different stakeholders,

including policy-makers both at national and international level. Most notably, the institute has made outstanding contributions to the Fifth Assessment Report of the *Intergovernmental Panel on Climate Change* (IPCC), with one of the co-chairs of this RD acting as a co-chair of IPCC's Working Group III (see the PIK Status Report for details).

The well-established line of work on Integrated Assessment Models (IAM) has particularly contributed to PIK's renown. The models have been refined further since the last evaluation, and they have generated – and continue to generate – major insights into a wide range of climate change scenarios and mitigation pathways. PIK quite rightly plans to develop these models further. However, in order to capture the important concept of agency and to enhance the consideration of factors with non-linear effects, it is recommended that PIK initiate a new generation of models that take these issues into account in addition to the existing ones (see Chapter 2).

Under the umbrella of “Integrated Policy Assessment”, different climate policy instruments, such as taxes, treaties, or prices for carbon dioxide emissions, have been analysed. PIK's excellent efforts at developing a framework for integrating renewable energy sources, focussing on technological solutions, are highly regarded. The institute's approach of not only considering single, optimum strategies, but also devising alternative, second-best options is endorsed. As planned, PIK is encouraged to continue pursuing the constructive analysis of transformation pathways towards a more sustainable utilisation of resources and to persist in developing solutions for the successful implementation of such pathways, taking into account the particular regional and national interests and priorities.

In summary, this Research Domain is rated as “excellent”.

RESEARCH DOMAIN 4: “TRANSDISCIPLINARY CONCEPTS AND METHODS”

(16.4 FTE in research and scientific services, 13.6 FTE doctoral candidates, 2.4 FTE service staff)

This Research Domain (RD) has developed very well since its establishment in 2007. Innovative concepts and ideas are pursued very successfully and have led to numerous high-quality publications.

Though the general approach is not “transdisciplinary” in the sense that stakeholders are systematically included in defining research objectives and strategies, the activities cross sectional boundaries in an excellent way and link the efforts of all research domains very effectively. In particular, several methodological tools are being developed in this RD to match models to real-world data. These tools are of great potential use to all of PIK's research and should be applied more widely. The visualisation techniques of climate data, simulation results, and climate networks are excellent and have promoted very fruitful collaboration with external partners.

One major focus in this RD is placed on complex systems or network approaches to climate. The concepts of recurrence networks and “networks of networks” (NEONET) have been used very successfully to study paleo-climatic variability or extreme weather

events. The NEONET approach, in particular, is poised to advance the field significantly further if social aspects are incorporated more extensively.

The projects on industrial metabolism are very interesting and have provided important insights. So far, the research efforts have mainly been concentrated on energy and land use. In addition, PIK should contemplate how to include other resources, such as water or raw materials (e. g. critical rare earth metals), more explicitly in the research programme. Research on transition pathways towards a more sustainable utilisation of resources as well as analyses of risk sensitivity and uncertainty should be expanded beyond the current projects.

In summary, this Research Domain is rated as “very good to excellent”.

VIRTUAL UNIT: “SCIENCE & SOCIETY”

(no dedicated personnel)

PIK is very active in public outreach and engages a wide range of stakeholders, from civil society to the business sector as well as political actors and institutions. Staff members have given an impressive number of science & society lectures and presentations during the past years, and groups of visitors are frequently received at PIK. It is commendable that the institute regularly hosts summer schools and conferences, often targeting young people. Other forms of knowledge transfer are used as well. In order to increase outreach, it is recommended to draw on social media much more effectively and to expand the presence on platforms such as Facebook and Twitter significantly.

The review board recognises the progress PIK has made in its interactions with business partners, which are mainly channelled through the Knowledge and Innovation Community of the European Institute of Innovation and Technology (Climate-KIC). These efforts, which can help generate cultural changes in enterprises, should be continued.

Members of PIK’s staff are sought after by political decision-makers and institutions for advice on climate change, impact research, mitigation strategies, or transformations towards a sustainable energy system. PIK’s outstanding contribution to the Fifth Assessment Report of the *Intergovernmental Panel on Climate Change* (IPCC) is particularly noteworthy (also see the section on Research Domain 3, “Sustainable Solutions”, and the PIK Status Report for details).

Whilst PIK’s numerous activities in public outreach and policy advice are highly regarded, it is suggested that these activities should be more systematically coordinated by formulating clear goals and then devising an overarching strategy on how to reach them. Amongst the questions that the institute needs to contemplate are, for example, whether and how far PIK should go beyond promoting the results obtained at the institute and disseminating scientific knowledge, whether and how it should attempt to evoke societal action towards more sustainable behaviour, and whether and how political action on climate can be instigated without risking that the research activities become politicised.

PIK is justified in not striving for a truly transdisciplinary approach involving co-production of knowledge with stakeholders, since its strengths are rather its cutting-

edge basic research and the propagation of state-of-the-art scientific insights. With regard to transformation processes towards a more sustainable utilisation of resources, the institute must reflect intensively on the role that science can or must adopt in such processes. Whilst the decision on whether and how to implement specific measures rests on political actors, it might be worthwhile trying to demonstrate, with well-evidenced scientific reasoning, why and how transitions can be economically attractive.

PIK quite rightly strives to further professionalise its numerous and high-quality activities in public outreach and policy advice. In order to do so, it would be beneficial to dedicate a modest amount of the institute's resources to this important work, e. g. by creating specific positions for media work or conference organisation.

4. Collaboration and networking

Collaboration with universities

PIK fosters intensive collaborative relations with the regional universities, *Potsdam University*, *Technische Universität Berlin*, and *Humboldt-Universität zu Berlin* (HU). Currently, seven PIK scientists hold joint professorships with one of these universities. The plans to fill all co-chair positions with jointly appointed professors are endorsed, as are the attempts to establish junior professorships.

Members of PIK's staff are very involved in teaching activities and in several graduate schools at *Potsdam University* and at HU. They also contribute to the *Integrative Research Institute on Transformations of Human-Environment Systems* (IRI THESys), one of the flagship activities of HU, funded within the framework of the German "Excellence Initiative".

In order to strengthen the ties to universities further, PIK should make significant efforts to initiate and participate in larger DFG-funded joint research projects such as Collaborative Research Centres (*Sonderforschungsbereiche*, SFB) or Research Units (*Forschergruppen*, FG). As a promising start, one grant proposal for an SFB is currently under preparation.

Collaboration with other institutions in Germany and abroad

PIK also collaborates fruitfully with other partners in Germany and abroad. As a member of the *German Climate Consortium* (*Deutsches Klima-Konsortium*, DKK), it is well connected to other national institutions involved in climate and climate impact research. PIK's membership of several Leibniz Research Networks and the *Berlin-Brandenburg Institute of Advanced Biodiversity Research* (BBIB) is welcomed. Nevertheless, its collaborative activities with other Leibniz institutes as well as the academic connections within the Berlin-Brandenburg area should be intensified significantly for the mutual benefit of all partners.

At European level, PIK's commitment to joint research efforts is outstanding. The institute contributes to numerous EU-funded projects and currently coordinates four of them, thus living up to expectations to adopt a leading role in international climate and climate impact research.

PIK also maintains high-profile collaborations worldwide. For example, the institute is deeply involved in the Inter-Sectoral Impact Model Comparison (ISI-MIP) project, a community-driven modelling effort with the goal of providing cross-sectoral global impact assessments. In cooperation with the World Bank, PIK has produced a widely perceived report on the impact of climate change in developing countries. The regional differentiation within this report has proven very useful, and a follow-up report is currently being prepared. PIK's contribution to the *Intergovernmental Panel on Climate Change* (IPCC) has fostered networking and further augmented the institute's excellent reputation (see also Chapters 2 and 3).

Overall, PIK collaborates very successfully with the most renowned and influential institutions in climate impact research and international climate policy. The institute should, however, also keep in view and significantly expand collaborative endeavours in countries which will very likely have a major influence on the future development of global climate change and climate policy, such as China, India, Indonesia, Russia, or Brazil (see also Chapter 3).

PIK also cooperates fruitfully with non-academic partners, e. g. in industry. With its engagement in the *Knowledge and Innovation Community* (Climate-KIC) of the *European Institute of Innovation and Technology* (EIT), a very promising public-private innovation partnership to address the challenges of climate change, it might contribute to an economically driven transition towards more sustainable industrial solutions.

5. Staff development and promotion of junior researchers

Staff development and personnel structure

The total number of staff has increased significantly since the last evaluation. Most of this increase has been used to strengthen and expand the research activities. The number of doctoral candidates, in particular, was raised significantly, thus implementing a recommendation from the last evaluation, and is now appropriate.

For administrative support, four coordinator positions were created recently, one for each research domain. PIK has stated that additional non-scientific personnel would be helpful to cope with the expanded portfolio. The institute will have to prioritise these needs and use its increased financial flexibility to allocate the available resources to administrative and other urgent tasks (see also Chapter 2, the section on "Appropriateness of facilities, equipment, and staffing").

It is welcomed that a working group on staff development was established in 2012. It has led to much greater awareness of issues pertaining to internal and external opportunities and risks affecting scientific careers. Training opportunities and support for junior scientists are now regularly offered. Many of them will find it helpful if they receive additional professional training on how to perform outreach activities to a broader, non-scientific audience effectively.

According to PIK's statutes, the Board of Directors – consisting of the Director and a Deputy Director who acts only if the Director is not available – is responsible for scien-

tific, representative, and administrative affairs including financial matters. Daily administrative tasks have been delegated to the head of Administration, who, whilst part of the PIK Council (see the PIK Status Report, p. A-18), is subject to the Director's directives. The Board of Trustees, chaired by the *Land Brandenburg*, should examine whether the introduction of a dual leadership model with equal scientific and administrative directors might be more appropriate to managing the institute professionally.

PIK's current Director has shaped the institute since its foundation in 1992 and successfully led its development into a highly esteemed research institute. His international standing and excellent worldwide connections have been most conducive to PIK assuming an outstanding position in policy advice on global change and climate impacts. As he will retire in a few years' time, it will be of crucial importance to initiate the procedure of finding a successor in order to appoint a comparably distinguished person.

Promotion of gender equality

Women are clearly underrepresented in the scientific sector, especially at leadership level. The proportion of women amongst the 190 scientists in non-executive positions (including doctoral candidates) was relatively low: 38 % at the end of September 2013. Only 18 % of the 39 executive positions were held by women, and none of the seven professors was a woman. At the time of the evaluation visit, one female co-chair of a research domain was in the process of being appointed to a professorship. As **PIK** has recognised, it **must further intensify its efforts to increase the proportion of women in scientific leadership positions.**

PIK has committed itself to the principles of equal opportunities and a work environment that supports a family-work balance. The measures implemented are expedient and well-received. It is, therefore, positive that the institute received the TOTAL EQUALITY award in 2010 and 2013.

Promotion of junior researchers

Junior researchers at PIK enjoy a good working environment and are well educated. A working group on staff development was established in 2012 (see above).

The number of doctoral candidates has increased significantly since the last evaluation (see above). Binding criteria have been formulated and include written supervision agreements and a career development plan. It is very beneficial that the doctoral candidates have access to graduate schools at *Potsdam University* and at *Humboldt-Universität zu Berlin*.

Given the high proportion of postdocs who have acquired their doctoral qualifications at the institute, it is apparent that many doctoral candidates are satisfied with the conditions and opportunities offered at PIK. However, in order to foster exchange with other institutions and to benefit even more from external input, it would be advantageous to increase the recruitment of postdocs, and possibly of doctoral candidates as well, from other internationally renowned research institutes.

Already, **PIK harbours great expertise within its pool of junior scientists, many of whom are able to generate creative ideas and valuable strategic input. It is recommended to encourage more bottom-up contributions from these junior researchers and to introduce procedures to systematically utilise this potential input in order to promote PIK's further development.**

Vocational training for non-academic staff

It is welcomed that non-scientific staff are regularly offered the opportunity of participating in individual training. At the time of the evaluation visit, five trainees were employed at PIK. In addition, the institute regularly offers internships to high school and university students. It is very positive that many of the interns are from abroad. This and the fact that the applications by far outnumber the positions available are clearly indicative of PIK's excellent international reputation.

6. Quality assurance

Internal quality management

PIK's research programme is mainly implemented through flagship projects, which have proven very useful for shaping the medium-term agenda. In general, the development of the scientific programme is well organised. Every few years, there is a retreat during which the general strategy for the next two to three years is discussed and decided upon. Currently, the main strategic guidelines are determined in a rather top-down process. PIK should deliberate how bottom-up procedures can become more important and how the competent junior researchers can be involved more effectively in order to contribute to the development of the overall conceptual agenda (see Chapter 5).

PIK is committed to maintaining high standards of good scientific practice. It is very positive that besides "Rules for Ensuring Good Scientific Practice at PIK and Procedures for Dealing with Scientific Misconduct", "Guidelines for Ensuring Good Scientific Modelling Practice" have been established as well. These are purposeful and constitute an important first step in PIK's path towards an encompassing, institutionalised software engineering concept with professional code development, maintenance, and utilisation, as it must be pursued more rigorously in the future.

PIK keeps backups of most data underlying its publications for an extended period of time. Currently, however, this data management is only organised within the different units. **It is necessary that PIK develop and implement a clear overarching data management strategy with standard procedures for data acquisition, processing and management, access and dissemination, exploration and analysis, data storage, archiving, retrieval, safety (including disaster recovery), and security.**

Quality management by the Scientific Advisory Board and Supervisory Board

The Scientific Advisory Board (SAB) provides excellent mentoring and critical support of the institute. It is very well informed, and its constructive recommendations are valuable for PIK's development.

According to the statutes, the SAB chair is a voting member of the Board of Trustees, PIK's supervisory committee. In order to make a clear distinction between the functions of supervision and scientific advice, this regulation must be changed. As is usually the case at Leibniz institutions, the SAB chair should be a non-voting member of the Board of Trustees in a purely advisory capacity.

PIK's Board of Trustees carries out its tasks on the basis of its statutes. According to the AV-WGL¹, decisions made by the institutions' supervisory bodies on important research and science-policy matters, which have significant financial implications, or which refer to the institutions' managerial staff require the agreement of the representatives of the Federal Government and the *Land*. Currently, the clause relating to managerial staff is missing in the statutes. The Board of Trustees should make the appropriate amendment and change the wording of the PIK statutes to bring them into line with the respective formulations in the AV-WGL.

Implementation of recommendations from the last external evaluation

The institute has made a conscientious effort to consider and implement most of the recommendations made at the last evaluation (see the PIK Status Report, pp. 19ff.). However, there are three issues on which PIK must continue to work intensively:

Whilst PIK has established a new line of research on adaptation to global change, the institute must intensify its efforts in this area well beyond the steps taken so far and turn adaptation research into a major pillar of its research portfolio (see recommendation No. 2 in the PIK Status Report and Chapter 2).

PIK must further intensify its efforts to increase the proportion of women in scientific leadership positions (see recommendation No. 12 in the PIK Status Report and Chapter 5).

Acquisition of funding from the German Research Foundation (DFG) should be increased significantly, e. g. through participation in collaborative research projects (see recommendation No. 15 in the PIK Status Report and Chapters 2 and 4).

¹ Administrative Agreement between the Federal and *Länder* Governments with regard to the joint funding of member institutions of the Leibniz Association

Appendix

1. Review Board

Chair (Member of the Leibniz Senate Evaluation Committee)

Harry **Vereecken** Institute of Bio- and Geosciences, Forschungszentrum Jülich

Deputy Chair (Member of the Leibniz Senate Evaluation Committee)

Hans **Spada** Department of Psychology, University of Freiburg

Reviewers

Birgit **Blättel-Mink** Department of Sociology, University of Frankfurt/Main

Joachim **von Braun** Center for Development Research, University of Bonn

Hans-Joachim **Bungartz** Department of Informatics, Technische Universität München

Barbara **Drossel** Institute for condensed matter physics, Technische Universität Darmstadt

Jim **Hall** Environmental Change Institute, Oxford (United Kingdom)

Michael **Kaplan** Lamont-Doherty Earth Observatory, Columbia University, Palisades, NY (USA)

Russell **Marsh** Clean Energy Council, Melbourne (Australia)

Jan **Rotmans** Rotterdam School of Management, Erasmus University (The Netherlands)

William H. **Schlesinger** Cary Institute of Ecosystem Studies, Millbrook, NY (USA)

Two additional reviewers called off at short notice.

Representative of the Federal Government

Ursula **Mühlen-Münchhoff** Federal Ministry of Education and Research, Bonn

Representative of the Länder Governments (Member of the Leibniz Senate Evaluation Committee)

Thomas **Grünewald** Ministry of Innovation, Science and Research of the state of North Rhine-Westphalia, Düsseldorf

2. Guests

Representative of the relevant Federal government department

Gisela **Helbig** Federal Ministry of Education and Research, Bonn

Representative of the relevant Land government department

Claudia **Herok** Brandenburg Ministry of Science, Research and Culture, Potsdam

Representative of the Scientific Board

Dirk **Messner** German Development Institute, Bonn

Representative of the Leibniz Association

Ulrich **Bathmann** Leibniz Institute for Baltic Sea Research, Rostock-Warnemünde

3. Representatives of partner institutions (one hour with review board and guests)

Ken **Caldeira** Senior Scientist at the Department of Global Ecology, Carnegie Institution for Science, Stanford, CA (USA)

Oliver **Günther** President of University of Potsdam

Pavel **Kabat** Director and Chief Executive Officer of IIASA - International Institute for Applied Systems Analysis, Laxenburg (Austria)

Rachel **Kyte** Vice President of Sustainable Development for the World Bank Group, Washington, DC (USA)

Jan-Hendrik **Olbertz** President of Humboldt-Universität zu Berlin

Lord Nicholas **Stern** Chair of the Grantham Research Institute on Climate Change and the Environment, The London School of Economics and Political Science, London (UK)

29 October 2014

Annex C: Statement of the Institution on the Evaluation Report

Potsdam Institute for Climate Impact Research (PIK)

The Potsdam Institute for Climate Impact Research (PIK) would like to thank the members of the evaluation board, the guests, and the staff of the Leibniz Association's evaluation office for the careful and professional manner in which the review process was conducted. The institute is grateful for the positive, fair and constructive evaluation report which both endorses the key elements of PIK's current strategy and provides a number of useful recommendations for its future development.

We are delighted that the report praises the high quality of the scientific studies produced and the models developed at PIK, and that it concludes that the institute has “established itself as a major player in international climate research”. This assessment is highly motivating for all members of our staff. The institute is gratified by the fact that the reviewers acknowledge not only our scientific performance but also our success in public outreach and scientific advisory activities.

We feel encouraged that our proposed research agenda has been endorsed as innovative and promising. PIK welcomes the recommendations put forward by the review board as objective pointers to areas in which the institute's work could be further improved. Together with our Scientific Advisory Board and PIK's Board of Trustees we will elaborate ideas for implementing all recommendations. Indeed, we have already started to work on some of the issues mentioned. This will certainly help us to maintain the leading role that PIK plays in international climate research as highlighted in the report.

The institute also agrees with the reviewers' statement that all possible internal options to use its financial flexibility and to prioritise tasks should be exploited. Nevertheless, and in view of PIK's already high quota of third-party funding recognised in the report, certain recommendations can hardly be implemented without a modest increase in institutional funding to support key services, e.g., in the areas of outreach and IT. This will allow us to further strengthen the excellent performance and international competitiveness of PIK.