

**Stellungnahme zum
Leibniz-Zentrum für Agrarlandschaftsforschung,
Müncheberg/Mark (ZALF)**

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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 9. und 10. Juni 2016 das ZALF in Müncheberg. Ihr stand eine vom ZALF 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 ZALF nahm dazu Stellung (Anlage C). Der Senat der Leibniz-Gemeinschaft verabschiedete am 9. März 2017 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 Leibniz-Zentrum für Agrarlandschaftsforschung (ZALF) verfolgt das **Ziel**, Wissen für die nachhaltige Nutzung von Agrarlandschaften bereitzustellen. Dazu werden die Wirkungszusammenhänge der Landnutzung auf unterschiedlichen Systemebenen erforscht. Das umfasst natur-, sozial- und agraringenieurwissenschaftliche Fragestellungen. Die Erkenntnisse werden auch an Politik, Verwaltung, Öffentlichkeit und Praxis vermittelt. Der Dialog mit Akteuren in der Anwendung wirkt dabei auf die Forschung am ZALF zurück.

Bei der letzten Evaluierung 2012/2013 hatte der Senat das Gesamtkonzept und die Leistungen des ZALF kritisiert, so dass in der Konsequenz eine **vorgezogene Begutachtung** bereits nach vier Jahren vorgesehen wurde. Daraufhin begann ein umfassender Veränderungsprozess, den Wissenschaftlicher Beirat und Aufsichtsgremium intensiv begleiteten.

Im Zuge dessen kam es zu zahlreichen **personellen Veränderungen** im Vorstand und auf der darunter liegenden wissenschaftlichen Leitungsebene. Ab Frühjahr 2014 leitete ein kommissarischer Vorstand den Veränderungsprozess erfolgreich ein und steuerte ihn so, dass ihn auch die Beschäftigten überzeugt mittrugen. Im Jahr 2015 wurden zwei der drei vakanten wissenschaftlichen Leitungsstellen des ZALF neu besetzt. Im gleichen

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

Jahr nahm dann eine neue administrative Direktorin ihre Tätigkeit auf, der wissenschaftliche Direktor im März 2016. Der Senat begrüßt, dass hierfür ein ausgewiesener Wissenschaftler mit klaren Perspektiven für die weitere Entwicklung des Zentrums gewonnen werden konnte. Er ist derzeit als Hochschullehrer andernorts beurlaubt. Bestrebungen, eine gemeinsame Berufung in der Region Berlin-Brandenburg zu erreichen, werden begrüßt.

Die **Leistungen** in einigen der sechs Abteilungen des ZALF, die die Bezeichnung „Institut“ tragen, wurden seit der letzten Evaluierung gesteigert. Sie werden nun vier Mal als „sehr gut“ und zwei Mal als „gut“ bewertet. Wie empfohlen, haben sich die meisten Institute inhaltlich fokussiert und die wissenschaftlichen Publikationsleistungen verbessert. Auch in Wissenstransfer und Beratung werden geeignete Aktivitäten verfolgt. Der Senat empfiehlt, auf dem eingeschlagenen Weg konsequent fortzufahren. Mit den Forschungsstationen und dem Landschaftslabor (AgroScapeLab) betreibt das Zentrum Forschungsinfrastrukturen, mit deren Hilfe dauerhaft und skalenübergreifend agrar- und landschaftsökologische Prozesse und Systeme untersucht werden. Bei der letzten Evaluierung waren auf diesem Gebiet große, ungenutzte Potenziale gesehen worden. Der Senat begrüßt, dass sich das ZALF hier mittlerweile gut positioniert und sich mit seinen umfangreichen Datenreihen in wichtige Forschungsnetzwerke einbringt. Die daran anschließenden Planungen des neuen wissenschaftlichen Direktors, das ZALF mit einer Daten- und Modellierungs-Plattform in Richtung integrierter Agrarlandschaftsforschung weiter zu entwickeln, sind zukunftsfruchtig.

Die Ausstattung des ZALF mit **Mitteln** der institutionellen Förderung ist zur Erfüllung seines Aufgabenspektrums auskömmlich. Der Anteil der Drittmittel an den Gesamteinnahmen ist angemessen. Das ZALF hat insbesondere Bundesförderung, aber auch EU-Projekte vorzuweisen. Nach wie vor müssen deutlich mehr Mittel bei der DFG eingeworben werden, wie es der Senat bereits bei der letzten Evaluierung empfohlen hat. Seit der zweiten Jahreshälfte 2015 ist ein Aufwärtstrend festzustellen, der sehr begrüßt wird.

Wichtigste Hochschulpartner des ZALF sind die Universität Potsdam und die Humboldt Universität zu Berlin, mit denen derzeit je zwei Institutsleitungen gemeinsam berufen sind. Der Senat begrüßt, dass diese Verbindungen durch weitere gemeinsame Berufungen gestärkt werden sollen. Das ZALF kooperiert mit einer Vielzahl wissenschaftlicher Einrichtungen. Innerhalb der Leibniz-Gemeinschaft, auf nationaler und auch auf europäischer Ebene ist es in zahlreiche institutsübergreifende Initiativen und Netzwerke zum Teil auch federführend eingebunden. Es wird empfohlen, die internationalen **Kooperationen** deutlicher nach strategischen Gesichtspunkten auszurichten und die Zusammenarbeit mit weltweit tätigen Organisationen zu stärken.

Der Senat stellt fest, dass die **Personalentwicklung** am ZALF sehr positiv gestaltet wird. Das „Strukturkonzept 2016“ wurde, wie bei der letzten Evaluierung empfohlen, konsequent als Grundlage für eine personelle Flexibilisierung umgesetzt und weiterentwickelt. Empfehlungsgemäß wird auch der **wissenschaftliche Nachwuchs** am ZALF besser gefördert: Es werden deutlich mehr Promovierende und Postdocs betreut als vor vier Jahren; die Zahl der abgeschlossenen Promotionsverfahren hat sich seitdem verdoppelt. Das ZALF wird ermuntert, den eingeschlagenen Weg wie geplant fortzusetzen.

Der Senat spricht sich jedoch für eine weitergehende Internationalisierung aus, was, neben der wissenschaftlichen Zusammenarbeit, auch die Personalgewinnung und -entwicklung einschließt. Auch sollte das ZALF anstehende personelle Veränderungen nutzen und den **Frauenanteil** in wissenschaftlichen Leitungspositionen weiter steigern.

Das ZALF wird wissenschaftlich und administrativ jetzt sehr gut geführt. Der Senat begrüßt, dass die **Verwaltung** sukzessive auf ein modernes Forschungs- und Personalmanagement umgestellt wird. Das ist auch deshalb erforderlich, da der Landesrechnungshof Mängel im früheren Verwaltungshandeln des ZALF festgestellt hat.

Der Senat hält fest, dass das ZALF das Potenzial hat, wesentliche gesellschaftliche Herausforderungen im Kontext von Agrarlandschaften, wie beispielsweise Klimawandel, Ernährungssicherheit oder Schutz der Biodiversität, zu adressieren. Das ist nur in der fächerübergreifenden Zusammenarbeit und unter langfristig angelegter Nutzung von Forschungsinfrastrukturen möglich. An einer Hochschule kann ein derartiges Aufgabenspektrum nicht in dieser Weise wahrgenommen werden. Eine Eingliederung des ZALF in eine Hochschule wird daher nicht empfohlen. Das ZALF erfüllt die Anforderungen, die an eine Einrichtung von überregionaler Bedeutung und gesamtstaatlichem wissenschafts-politischem Interesse zu stellen sind.

2. Zur Stellungnahme des ZALF

Der Senat begrüßt, dass das ZALF 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 ZALF als Einrichtung der Forschung und der wissenschaftlichen Infrastruktur auf der Grundlage der Ausführungsvereinbarung WGL weiter zu fördern.

Annex A: Status report

Leibniz Centre for Agricultural Landscape Research, Müncheberg/Mark (ZALF)

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1. Structure, tasks and institutional environment

Development and funding

The Leibniz Centre for Agricultural Landscape Research (ZALF) was established in 1992 at the location of the previous “Research Centre for Soil Fertility”. Since then it has been jointly funded by the Federal and *Länder* governments. Its national importance was confirmed in external evaluations by the German Council of Science and Humanities in 1997 and by the Senate of the Leibniz Association in 2006 and 2013. In 2013, though, the Senate determined the need for improvement and, as a consequence, recommended to schedule the next verification of ZALF’s funding eligibility in 2017 already.

RESPONSIBLE DEPARTMENT AT *LÄNDER* LEVEL: Ministry of Science, Research and Culture of the State of Brandenburg (MWFK)

RESPONSIBLE DEPARTMENT AT FEDERAL LEVEL: Federal Ministry of Food and Agriculture (BMEL)

Mission and tasks

ZALF’s mission is to scientifically explain causal relationships in agricultural landscapes, and to provide society with sound information for the sustainable use of agricultural landscapes through excellent interdisciplinary research. ZALF follows a systems-based approach to landscape research considering not only abiotic and biotic resources, processes and components and their interactions, but also anthropogenic influences. ZALF investigates these relationships in order to support the development and sustainable management of agricultural landscapes by preventing or minimising negative effects of their use, by assessing alternative or competing uses and by proposing management approaches for solving land-use conflicts.

Legal form and organisation

ZALF has the legal status of a registered non-profit association (*eingetragener Verein*). As a result of its 2012 evaluation, ZALF initiated a change process involving external consultants. In the beginning of 2016, the new statutes came into force and the new organisational structure was implemented. The change process is still ongoing, hence Appendix 1 depicts both the previous and the new organisational structure.

Major changes concern the Executive Board, now consisting only of the Scientific Director and the Administrative Director jointly representing ZALF (with the Scientific Director as chairman). Both are appointed for five years by the Assembly of Members, and may be reappointed. The Executive Board, the Heads of Institutes and the three Core Topic Speakers come together in the ZALF Board.

The Scientific Advisory Board (SAB) consists of six to ten scientists who represent ZALF’s main research areas. Its members are appointed for four years by the Assembly of Members with the option of a single reappointment. An additional two-year extension is possible. The SAB meets at least once per year. It advises ZALF on all significant scientific questions, comments on the draft of the programme budget and issues recommen-

dations for the use of resources. The SAB supports the Assembly of Members in senior staff recruitment. For the future, ZALF aims at more international expertise in its SAB.

The Assembly of Members is the supervisory body responsible for all fundamental issues concerning ZALF. It is chaired by the representative of the Ministry of Science, Research and Culture of the State of Brandenburg and convenes at least annually.

Research structure

ZALF currently has six institutes

- Institute of Soil Landscape Research,
- Institute of Landscape Biogeochemistry,
- Institute of Landscape Systems Analysis,
- Institute of Land Use Systems,
- Institute of Landscape Hydrology,
- Institute of Socio-Economics,

and one new service unit

- Agricultural Landscape Data Centre.

They provide the necessary disciplinary expertise for the interdisciplinary work which is focused in the three Core Topics “Landscape Functioning”, “Land Use and Impacts” and “Land Use Conflicts and Governance”. Within the institutes, research is structured into research areas.

Considerable changes of the research structure have been implemented since 2013 in response to the recommendations of the last evaluation. These include (1) focusing all research activities on three Core Topics (see Chapter 2), (2) reorganising and concentrating all data related scientific services (primary data generation, data provision) in the Agricultural Landscape Data Centre (see Chapter 3), (3) concentrating all further research-supporting services (e.g. Publication Management, Central Library, Research Information Systems, IT, Central Laboratory) under the leadership of the Administrative Director, and (4) assigning the former Scientific Director’s research department partly to the Institute of Land Use Systems and partly to the Institute of Socio-Economics.

National and international scientific environment

With its focus on agricultural landscape research, ZALF sees itself as unique both nationally and internationally: No other research institute conducts systems-based research on agricultural landscapes in such a comprehensive and integrated way. However, specific landscape related aspects are also addressed by other national and international research institutes, frequently in cooperation with ZALF (see Chapter 4).

ZALF states that the Helmholtz Centre for Environmental Research (UFZ) is concerned with the complex interactions between people and the environment more generally and in the context of global change. The Helmholtz Centre in Potsdam – German Research Centre for Geosciences (GFZ) is primarily interested in abiotic components of terrestrial ecosystems, whereas the Institute of Bio- and Geosciences of the Jülich Research Centre stands for hydrological and biogeochemical process research in agrarian soil-

groundwater systems. According to ZALF, neither the GFZ nor the Institute of Bio- and Geosciences currently address socio-economic issues. The Thünen Institute (TI) is concerned with land use and food economics and emphasises production and relevant framework conditions, which contrasts with ZALF's focus on landscape and the interconnectivity of various land uses. In the European context, ZALF mentions i.a. the French National Institute of Agricultural Research (INRA), the Norwegian Institute of Bioeconomy (NIBIO), and the Joint Research Centre (JRC) of the European Commission as performing agricultural research at comparable latitudes as ZALF and regularly addressing questions relating to landscapes.

Moreover, ZALF explains that at German universities individual professorships or departments pursue comparable research interests (e.g. in Göttingen, Bonn, Potsdam, Jena and at TU Munich). Among the collaborative programmes funded by DFG, the research group "Agricultural Landscapes under Global Climate Change" coordinated by University of Hohenheim focuses on questions related to agricultural landscapes. Traditional European agricultural universities, for example the Swedish University of Agricultural Sciences, Wageningen University and Research Centre (WUR), and the University of Natural Resources and Life Sciences (BOKU) in Vienna, according to ZALF often concentrate on arable production at field and farm scale and less on landscapes.

Some important agriculturally oriented research and consulting institutions on other continents are the Brazilian Agricultural Research Corporation, the Chinese Academy of Agricultural Sciences, and the Agricultural Business Unit of the Commonwealth Scientific and Industrial Research Organisation, CSIRO). The research institutes of the Consultative Group of International Agricultural Research (CGIAR), for example, play a prominent role in research on sustainable food security. However, ZALF states that it is rare for these institutes to explicitly relate to agricultural landscapes; nor remain socio-economic issues as equally important on their agenda as agronomy and natural science-oriented questions.

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

ZALF explains that the impact of intensified land use is threatening the provision of ecosystem services and biodiversity in agricultural landscapes worldwide. The United Nations' sustainability goals therefore include food security, sustainable agriculture, sustainable water management, renewable energy, the fight against climate change, and the sustainable use of terrestrial and fresh water ecosystems. These global challenges shape the national and international science policy discourse. They require interdisciplinary research approaches and collaboration which ZALF can provide with its integrated, system-based approach across disciplines and scales. In large part, this interdisciplinary approach sets ZALF research apart from the more discipline-oriented research performed at universities. Moreover, agricultural landscape research demands systematic long-term observations, on-farm investigation, landscape experiments and field trials of several years which ZALF's research infrastructure can provide. Therefore, its success depends on close cooperation with universities and other non-university research institutions in the national and international research environment.

2. General concept and profile

Development of the institution since the last evaluation

As part of the change process mentioned above and in taking up recommendations of the last evaluation, in 2012, ZALF began to work on its scientific profile. Also, activities were implemented to improve internal communication. Thus, the change process followed a new participatory approach involving the scientific staff already in programme planning phase. In a first step, the number of programme areas was reduced from five to three. The three remaining programme areas were eventually transformed into the Core Topics (see above/below). Here, also the former cross-section projects (Querschnittsprojekte) were integrated.

In 2014, ZALF was confronted with a significant turnover in staff on the leadership level: the Scientific Director, the Administrative Director and three of the six Head-of-Institute had left the Centre. Nevertheless, thanks to the commitment of numerous scientists filling in the vacancies on an acting basis, the change process could be continued. In 2015, a new Administrative Director started working at ZALF (January) and new heads could be recruited for the Institute of Land Use Systems (April) and for the Institute of Landscape Biogeochemistry (October). Since March 2016 ZALF has a new Scientific Director (for details see Chapter 5).

Results

The most significant scientific achievements of ZALF are

- the development of new methods for elucidating interdependencies in agricultural landscapes. For example, in a long-term comparative study (CarboZALF) that was equipped with a new automated CO₂-chamber measurement technique, full carbon balances and related CO₂ source/sink functions of erosion-affected soils could be quantified experimentally on a field scale;
- the theme leadership in the European knowledge hub MACSUR on crop rotation modelling and data quality evaluation, accompanied by very well appreciated performances of ZALF simulation models HERMES and MONICA in international model intercomparisons, organised within MACSUR or the globally acting Agricultural Model Intercomparison and Improvement Project (AgMIP);
- the simulation of expected dry periods in Europe with “Rainout” shelters, thus yielding information on the changes of active soil microbiomes (syn. Microbial communities) that give insights into the adaptation of microbiomes to climate change and raises the unresolved issue of altered C and N cycling by changed soil microbiomes;
- the development of methods to quantitatively disentangle various effects on the observed hydrological and hydrochemical dynamics in complex landscapes, e.g., in the AgroScapeLab Quillow and at aquatic-terrestrial interfaces (forensic hydrology);
- the exploration of linkages of different land uses with ecosystem services and biodiversity and the development of impact assessment methods to analyse diverse production and adaptation pathways;

- the development of geostatistical methods that combine aesthetic valuations of landscapes with the costs of an enhanced provision of ecosystem services;
- the development of new forms of cooperation and new financing models within the ecosystem services concept, including payments for ecosystem services considering existing regulatory laws.

In its publication concept ZALF aims at two publications per FTE scientist in highly ranked peer-reviewed journals per year. Also, in order to improve visibility, it is intended to focus publication activity on certain journals. Open-access publications are stored and made accessible via the centre's repository and, increasingly, via the repository LeibnizOpen. ZALF implemented an output-orientated allocation of financial resources: Sixty per cent are allocated depending on the output of peer-reviewed publications from the previous years. The scientists are offered training courses on successful publishing. Since the last evaluation the number of peer-reviewed articles nearly doubled (from 112 to 215), as did the output per FTE scientist (from 0.9 to 2.2; number of publications see Appendix 2). Also, according to the centre, the articles appeared in journals with higher impact factors and were cited more often.

ZALF offers the following scientific services and infrastructures:

- The AgroScapeLab Quillow is an open research platform and landscape laboratory in the Quillow catchment (Uckermark) where, since 2000, long-term monitoring of soils, water, land use, and biodiversity is established. Several larger cooperation projects, according to ZALF, reflect the interest of external partners in this infrastructure.
- The Core Facility Stable Isotopes is a Leibniz application laboratory that has been jointly run by the Leibniz Institute of Freshwater Ecology (IGB) and ZALF since 2014, also offering services to external partners. It is an essential building block for the establishment of a joint research campus which is planned by IGB, ZALF, and the University of Potsdam.
- ZALF datasets are published on the open repository ZALF Open Research Data where they can be accessed publicly. ZALF Open Research Data is listed in the Registry of Research Data Repositories and has been included in the Thomson Reuters Data Citation Index in 2015 as a trusted repository. In the future, the BonaRes Data Centre will provide soil related data in standardised form as well as infrastructures as it is required for the exchange of data and knowledge.

ZALF's knowledge and technology transfer aims at improving the development process and innovation chains in the land-use, agricultural, and food sectors. The non-commercial way of exploiting research results is followed within the ZALF's institutes. At the ZALF research station, advice for farmers is provided as all-day training events in a Science-Practice Dialogue. If there is commercial potential, transfer will be implemented via agrathaer GmbH, a private limited company founded as a ZALF spin-off in 2011. The company acts as an innovation broker and is responsible for innovation management along the entire innovation and value chain. Between 2013 and 2015 it carried out nineteen transfer projects in cooperation with ZALF with a total project funding of €300,000 in 2015.

The target groups of ZALF's scientific advice are politics (EU commission, ministries and regional authorities), the private sector (farmers, companies, consultants and associations) and research (universities, non-university research institutions and research consortia). ZALF's consulting is based on the research results of the three Core Topics and the institutes. The scientists are considered in advisory boards at EU, Federal and *Länder* level. They are asked for expert reviews and compete for them. Additional consulting takes place via the provision of freely accessible knowledge platforms, support systems, serious games, handbooks, policy briefs or study material, for example:

- ZALF provides recurring annual consultancy services to the Ministry of Rural Development, Environment and Agriculture (MLUL) of the State of Brandenburg in the field of water and wind-erosion risk assessment for the Integrated Administration and Control System (IACS).
- The ZALF-handbook "Ecological Recycling Agriculture: Guidelines for Farmers and Advisors" is currently translated into seven European languages.
- ZALF developed an interactive web-based serious game on water resource management in the context of climate change.
- The EU projects CLAIM and FOODMETRES, in which ZALF is one of several partners, provide knowledge platforms on their websites that each registered between 10,000 and 12,000 clicks in 2015.

Academic events and public relations

During the reporting period, ZALF scientists presented their research results at numerous scientific conferences. Together with Humboldt-Universität, ZALF organised two large international meetings in Berlin: the International Farming Systems Association (IFSA) conference "Farming Systems Facing Global Challenges: Capacities and Strategies" in 2014, and, in 2015, the "Conference on Tropical and Subtropical Agricultural and Natural Resource Management". Also, as local organiser ZALF contributed to the International Crop Modelling Symposium (iCROP) held in Berlin in March 2016.

ZALF uses a mix of communication channels to reach the appropriate target groups, including the annual report, brochures, special project websites, social media, press releases and press conferences. ZALF states, for example, that its "Research container" on soil was very popular with visitors at the EXPO in Milan. In 2012, ZALF and the Friedrich Löffler Institute started the "Mückenatlas" (Mosquito Atlas) inviting citizens to report their observations via the project website. This has received a great deal of attention in the public media.

Strategic work planning for the next few years

The new Scientific Director started at ZALF in March 2016. His key focus will be on the enhancement of the modelling and data activities. The plan is to have two cross-cutting (across institutes and core topics) platforms. The first platform will concentrate all data-related activities and will eventually be developed into an institute dealing with the generation, management, provision, analysis, and publication of agricultural landscape data.

Furthermore, it is intended to conduct independent research on integrated landscape data management, processing, and analysis. The second platform will integrate and guide all modelling activities within ZALF and shall evolve into an institute with basic and applied research on integrated landscape modelling and the development of modelling framework(s) for the integrated assessment of relevant societal problems. Such modelling framework(s) shall go beyond the integration of disciplinary quantitative models also allowing for consideration of qualitative data and models and interactions with users and stakeholders to support transdisciplinary research and the transfer of results. Both platforms are closely linked with each other and to the thematic research in the core topics and institutes. This tripodal structure of ZALF's future research aims at significantly strengthening the centre by enabling integrated landscape research.

Appropriateness of facilities, equipment and staffing

Appendix 3 gives a detailed list of ZALF's revenue and expenditure from 2013 to 2015. In 2015, the revenue totalled 24.3 M€, with 18 M€ thereof stemming from institutional funding by Federal and *Länder* governments.

The share of revenue from project funding grants slightly decreased in the past few years (from 31% in 2013 to 25% in 2015). ZALF explains this, inter alia, with its new policy to only apply for funding if the project fully aligns with the research focus, as was recommended in the last evaluation. So far, the biggest share of project funding stems from the Federal government (Ministries for Research, for Agriculture and Federal Agency for Nature Conservation). ZALF is optimistic, though, that with most of the vacancies on leadership positions filled now it will soon acquire additional DFG and EU funding. For 2015, already, the centre states that the amount of new proposals submitted and accepted has increased.

ZALF sees itself as well equipped for implementing its research agenda in the coming years, mostly thanks to EFRE funds that could be allocated for (re)construction work and equipment investment. For the staffing concept see Chapter 5.

Building facilities: ZALF's campus at Müncheberg covers approximately 45 ha. The structural units are distributed across the entire site. The buildings were mostly built in the beginning of the last century. In the reporting period, ZALF was able to finance construction work with some €2.4 million from EFRE funds.

Infrastructures: ZALF operates a research station with three locations in Müncheberg, Paulinenaue and Dedelow, running two large lysimeter systems. The Institute of Landscape Biogeochemistry provides the non-profit Core Facility Stable Isotopes that is jointly organised with the partner Leibniz Institute for Freshwater Ecology (IGB, see above). The Institute of Soil Landscape Research has a wind tunnel to conduct experiments on wind erosion (for the AgroScapeLab Quillow see above).

IT equipment: The ZALF computer network is run by the Central Service Facility for IT Management and was thoroughly restructured and expanded in the reporting period. Data are centrally held via a first-level data storage system (approximately 40 TB) that self-synchronises across two buildings and a second-level data storage system via a distributed, hierarchical storage management system.

3. Subdivisions of ZALF

The **Institute of Soil Landscape Research** aims at a fundamental understanding of soil-landscapes' development and functionality. This requires cross-scale analysis of soil structures and soil processes from the micron scale to the landscape scale. The institute has four research areas: Soil Erosion, Dynamics of Soil Fertility, Hydropedology, Digital Soil Mapping and Soil Landscape Modelling. Its work is characterised by method development, experiments, long-term measurements, and modelling.

Since the last evaluation, the institute has intensified its research on the interplay between erosion and the carbon cycle (CarboZALF). It is actively participating in the terrestrial environmental observatories of the Helmholtz Initiative TERENO which led to extensive investment in the Joint Lab AgroScapeLab Quillow. Also, research on wind erosion and dust emissions has become more important during the last few years. Interdisciplinary studies on the silicon cycling in terrestrial biogeosystems became an important feature of the institute. For the years to come, cross-scale analyses of soil erosion (water, wind, tillage) and related feedback processes, a spatiotemporal modelling of soil landscapes, and silicon cycling in agricultural systems will represent the thematic framework of the institute's research.

In December 2015, staff corresponding to 23 full time positions were working at the institute (thereof three FTE doctoral candidates and eleven service staff). They published 15 (2013) to 35 (2015) articles in peer-reviewed journals per year. The yearly revenue from project grants averaged out at 220 k€, largely deriving from DFG. Three Doctoral degrees were awarded to members of the institute.

The **Institute of Landscape Biogeochemistry** examines the interactions between biotic components and biogeochemical processes in human-impacted landscapes in the micro-biome-plant-soil-atmosphere system. It combines long-term field experiments and landscape monitoring with targeted process and functional biodiversity studies both in the laboratory and in mesocosms. In 2013, in cooperation with the Leibniz Institute of Freshwater Ecology (IGB), the Core Facility "Stable Isotopes" was established.

After a vacancy of eighteen months, a new head of the institute started in October 2015. Since then, the institute consists of four research areas: Terrestrial Microbiology, Organismic Interaction Biology, Trace Gas Biogeochemistry, and Stable Isotope Biogeochemistry. Under its new leadership, the institute will increasingly concentrate on the functional link between (micro)biomes and their biogeochemical functions in landscapes. Going forward, the institute will work in depth on the functional biodiversity and eco-physiology of trace gas fluxes and microbiomes, with a continued focus on the significance of terrestrial-aquatic transition systems.

In December 2015, staff corresponding to 38 full time positions were working at the institute (thereof four FTE doctoral candidates candidates and 16 service staff). They published 25 (2013) to 42 (2015) articles in peer-reviewed journals per year. The yearly revenue from project grants averaged out at 1.1 M€, largely deriving from Federal and *Länder* governments. Two Doctoral degrees were awarded to members of the institute.

The **Institute of Landscape Systems Analysis** is engaged in research on the analysis and modelling of ecosystem functions and services of agricultural landscapes, and develops application-oriented methods and models. Since the last evaluation, the institute has become increasingly active in large international networks and consortiums for the reduction of uncertainty in the process-based simulation of agricultural yields, for yield gap analysis, for scaling methods using 1D process models, and for soil-plant-atmosphere interactions under climate change. Long-term data series were made available to the research community in joint simulation studies (e.g. MACSUR, AgMIP).

After the former head of the institute had retired at the end of 2012, the position was vacant until 2014. Since then, the institute has been led on acting basis. Now, with the new Scientific Director of ZALF having taken office, the position should be filled soon. The institute faces even more turnover in staff in the years to come: Most of its scientists will have retired by 2020. The institute currently establishes two research areas “Ecosystem Modelling” and “Simulation Methods and System Theory” from existing working groups and prepares a third one with focus on “Model-Data Integration”. The latter is aimed at strengthening the portfolio of remote-sensing methods at ZALF and at working at the interface between “big data” and regional-scale models.

In December 2015, staff corresponding to 21 full time positions were working at the institute (thereof five FTE doctoral candidates and seven service staff). They published 17 (2013) to 23 (2015) articles in peer-reviewed journals per year. The yearly revenue from project grants averaged out at 600 k€, largely deriving from Federal and *Länder* governments. Four Doctoral degrees and one Habilitation degree were awarded to members of the institute.

The **Institute of Landuse systems** explores the influence of land use and landscape changes on ecosystem services and biodiversity to develop integrated solutions for sustainable land use. In the development of site-specific and region-specific sustainable agricultural systems the institute links concepts, models, and empirical data. Data are collected at the research station, in the AgroScapeLab Quillow, in landscape sections of various regions, and in on-farm experiments.

Since the former head of institute took a position in New Zealand in early 2013, the institute was led on an acting basis. The new head who is jointly appointed with Humboldt-Universität Berlin started at ZALF in April 2015. The institute was restructured into three research areas: Resource-efficient Land Use Systems, Habitat Quality and Dynamics of Agricultural Landscapes, Sustainability Assessment of Land Use. Each of the research areas is led by a head and includes several project-related working groups. New research concepts such as “Landwirtschaft 4.0 (Agriculture 4.0)” and “Agrarsysteme der Zukunft (Agrosystems of the Future)” were introduced. In the next few years, it is planned to expand the range of studied landscape types, for example, by including intensively used systems in Asia.

In December 2015, staff corresponding to 43 full time positions were working at the institute (thereof nine FTE doctoral candidates and fourteen service staff). They published 26 (2013) to 60 (2015) articles in peer-reviewed journals per year (in 2015 including

the publications of the research department of the former Scientific Director). The yearly revenue from project grants averaged out at 1.3 M€, largely deriving from Federal and Länder governments. Two Doctoral degrees were awarded to members of the institute and one additional thesis was supervised externally.

The **Institute of Landscape Hydrology** examines the interplay of hydrological, hydro-chemical, and biological processes and their reciprocal effects under changing environmental conditions along with the effects of landscape structure on the examined processes and components of landscape hydrology. The institute implements process studies and long-term monitoring programmes, usually as part of larger joint projects (AgroScapeLab Quillow, TERENO, BIBS, LandScales), applies process-based, hydrological, hydrogeological, and biogeochemical models on different spatial scales, and uses and develops systems-analysis approaches and non-linear multivariate statistics.

The institute's three research areas (Soil and groundwater hydrology, Surface water and wetlands, Modelling and management) overlap with respect to content and staff, so there is no distinct internal delineation. In recent years, research has focused on the transition zones between terrestrial and aquatic systems, in particular, kettle holes. The first publications on the evaluation of the comprehensive data gained in AgroScapeLab Quillow have been released. In addition, the institute is continuing its comparative application of various methods for determining evapotranspiration. In the coming years, the research topics "Boundary areas, transition zones, and heterogeneity" and "Forensic landscape analysis" will become more important.

In December 2015, staff corresponding to 21 full time positions were working at the institute (thereof five FTE doctoral candidates and six service staff). They published 10 (2013) to 22 (2015) articles in peer-reviewed journals per year. The yearly revenue from project grants averaged out at 380 k€, largely deriving from Federal and Länder governments. Two Doctoral degrees were awarded to members of the institute.

The **Institute of Socio-Economics** aims at providing sound knowledge on economic, social and policy aspects of agricultural landscapes. Research focuses on drivers and economic impacts of land users' decisions. This includes cost-impact and cost-efficiency analyses. The institute has dedicated its efforts to institutional aspects of governance models to solve land use conflicts and to the management of ecosystem services. Also, for the sustainable development of rural areas the understanding of actors' values, interests and knowledge for change and innovation processes are important.

Since the last evaluation, the institute's research has been concentrated in three research areas: Economics of Sustainable land use, Governance of ecosystem services and rural development, Co-design of change and innovation. Thereby, transdisciplinary work has been enforced, and Food Security has been established as a new research field. By contrast, activities focusing on practical transfer were moved to the ZALF spin-off agrathær GmbH. Research on bioenergy has been substantially reduced. In the years to come, the concept of ecosystem services will be developed further and methodological approaches from experimental economics will become more important.

In December 2015, staff corresponding to 41 full time positions were working at the institute (thereof twelve FTE doctoral candidates and eight service staff). They published 20 (2013) to 68 (2015) articles in peer-reviewed journals per year. The yearly revenue from project grants averaged out at 2.9 M€, largely deriving from Federal governments and EU. Seven Doctoral degrees were awarded to members of the institute and two additional theses were supervised externally.

The **Agricultural Landscape Data Centre** (32.5 FTE, thereof 24 service staff) was founded as a service unit in 2015. It comprises two working areas: The area Primary data generation includes the research station (with experimental field sites at three locations) and the AgroScapeLab Quillow. The area Data provision consists of parts of the previous Landscape Information Systems Department and the ZALF-part of the BonaRes Data Centre.

In the Agricultural Landscape Data Centre, the strategically important research areas of the former Central Services for Research are continued. In order to assure transparency of its work and to make better use of synergies across institutes and core topics, in the new organisational structure of ZALF, the Data Centre is affiliated to the ZALF Board. Important aims of the Data Centre are to better integrate data related activities with external partners and networks to establish common and sharable foundations and standards for data generation, storage, management, analysis, distribution and publication. The Data Centre will further evolve into a platform and institute concentrating all data related activities at ZALF including research on integrated landscape data management, processing and analysis (see Chapter 2: Strategic work planning for the next few years).

4. Collaboration and networking

Cooperating partners of ZALF are selected based on their research field and scientific reputation, but also to ensure scientifically relevant access to regions that pose particular challenges to agricultural land use. Also, collaborations may include the joint use of research infrastructure and the joint collection and use of data.

Collaboration with universities

ZALF has formal cooperation contracts with nine German universities and nine universities abroad. Particularly close collaborative partners are the University of Potsdam (three joint professorships and two extracurricular professorships) and Humboldt-Universität Berlin (two joint professorships; for details see Chapter 5). In addition, there is one joint appointment with Hannover University and two with Eberswalde University of Applied Sciences. In April 2016, a junior research group on nature-based solutions of resilient rural-urban relationships (PlanSmart) was established together with Hannover University. Furthermore, it is planned to establish a junior professorship on “Landscape Ecophysiology of Crop Plants” with Potsdam University. Close and often long-term collaborations of ZALF scientists with other universities in Germany (in Halle, Cottbus, Hohenheim) and abroad (Poznan, Uppsala) have been acknowledged with the appoint-

ment of five honorary professorships, one guest and four associate professorships (Privatdozent – PD).

Wageningen University and Research Centre as well as Vienna University of Natural Resources and Life Sciences (BOKU) are important partners in several third-party funded projects in 7th Framework Programme and Horizon 2020 (e.g. SPARD, FOODMETRES, LIAISE). Sokoine University of Agriculture (Tanzania) is a central partner in Food Security activities in Sub-Sahara Africa (Trans-SEC).

Collaboration with other domestic and international institutions

Among the non-university research institutions, the focus of collaboration is primarily with institutions that, like ZALF, pursue a systems-oriented research approach with emphasis on both basic and applied research. In Europe, ZALF has been cooperating with the French National Institute for Agricultural Research (INRA) for many years and in several EU-funded and international projects (e.g. PRO AKIS, CLAIM, PROVIDE). ZALF's institutes cooperate with the Helmholtz Centre for Environmental Science (UFZ), the German Research Centre for Geoscience (GFZ), the Potsdam Institute for Climate Research (PIK), and the Thünen Institute (TI) in various third-party funded projects (e.g. the BMBF-funded BonaRes-Centre, the TERENO initiative in northern Germany, and the EU Knowledge Hub MACSUR). Within Leibniz-Association, ZALF is currently involved in the “Sustainable Food Production and Healthy Nutrition“, “Biodiversity“, and “Infections 21“ Research Alliances.

Other collaborations and networks

In its Fellow programme ZALF recruited renowned scientists from Germany, Switzerland, India, Nigeria, and the US. Together with the ZALF scientists, the Fellows conducted workshops and summer schools, partnered in joint research projects and publications. In 2013-2015, 87 guest scientists visited ZALF, 32 from Europe, 49 from non-European countries, and 6 from Germany. In the same time period, ZALF scientists visited research institutions in Germany and abroad, thirteen of them staying away for more than three months.

5. Staff development and promotion of junior researchers

Staff development and personnel structure

On 31 December 2015, ZALF had 308 employees (265 full time equivalents). 159 of them were scientists, 122 were working in service positions and 27 in the administration. Additionally, 21 student assistants, three trainees and twelve scholarship recipients worked at the centre (for details see Appendix 4).

ZALF does not have a formal staff appointment scheme, but is subject to the regulation that no more than ten per cent of its staff expenditures may be used for non-tariff salaries. The last evaluation, however, recommended more flexibility here in order to improve the options for recruiting and retaining highly qualified leadership personnel. Subsequently, the Land Brandenburg increased the number of positions available for

joint appointments from one W3 and five W2 positions (until 2013) to the current seven W3, four W2, and one W1 position.

Changes in leadership positions since the last evaluation:

- The former Scientific Director resigned from his position in 2014. He holds a joint appointment with the University of Potsdam (C4-professorship in Geoecology). From May 2014 to February 2016 the head of the Institute of Socio-Economics led the centre on an acting basis. Since March 2016, ZALF has a new Scientific Director. He is full professor of Crop Science at the University of Bonn. A joint appointment with a university in the Berlin-Brandenburg region is planned.
- After the former Administrative Director had left in 2014, his successor started working at ZALF in January 2015.
- In early 2013, the head of the Institute of Landuse Systems took a position in New Zealand. His successor started in April 2015. She holds a joint appointment with Humboldt-Universität Berlin (W2-professorship in Land Use Systems).
- In February 2014, the former head of the Institute of Landscape Biogeochemistry and jointly appointed W2-professor at Humboldt-Universität Berlin (HU) left ZALF for Switzerland. The new head started in October 2015. He is Associated Professor (Privatdozent) at Jena University. A joint appointment with HU is planned.
- Since the former head of the Institute of Landscape Systems Analysis had retired at the end of 2012, the institute has been led on an acting basis. It is planned to fill in the position in a joint appointment procedure soon.
- Since 2014, the speaker of the core topic “Land use conflicts and governance” holds a joint appointment with Universität Hannover (W2-professorship in Ecosystem Services).

Further joint appointments:

- The head of the Institute of Soil Landscape Research holds a joint appointment with the University of Potsdam (C3-professorship in Soil Landscape Research).
- The head of the Institute of Landscape Hydrology holds a joint appointment with University of Potsdam (W3-professorship in Landscape Hydrology).
- The head of the Institute of Socio-Economics holds a joint appointment with Humboldt-Universität Berlin (C3-professorship in Economics and Politics of Rural Areas).

In order to compensate for current imbalances in terms of resources among ZALF institutes, to increase thematic flexibility and to prepare for upcoming age-related personnel changes ZALF has developed a so-called Basic Staffing Concept. The concept defines a basic endowment of personnel in each of the ZALF-institutes financed by institutional money that covers the central disciplinary orientations and achieves continuity in the methodological competences. Any positions exceeding this basic staffing structure that become vacant (e.g., because of retirement) now enter a pool of vacant positions. This pool is used to set priorities within the core topics and to initiate new activities.

Approximately half of the employees of ZALF are fifty years and older, with quite a substantial part of them reaching retirement age soon. Thus, the centre faces a major turnover in staff in the years to come. In order to secure the necessary expertise particularly in the technical and non-scientific sectors, ZALF developed a concept of strategic partnerships allowing for measures as early replacements and part-time employment prior to retirement.

Promotion of gender equality

ZALF has an equal opportunities representative and, in 2012, agreed on an Equal Opportunity Plan defining the relevant principles in recruiting, working conditions, participation on committees, and promotion of early-career staff.

Since the last evaluation, ZALF recruited women for one of the three vacant Head-of-Institute-positions and for the Administrative Directorate. Two female scientists became Core Topic speakers. In the end of 2015, just below forty percent of the total number of scientists were female. Eight out of 23 executive positions in research and scientific services were filled with women (35 percent).

Promotion of junior researchers

The promotion of junior researchers at ZALF encompasses all career levels, ranging from undergraduate studies to the postdoc phase. In accordance with the objectives of the Leibniz Association, ZALF endeavours to increase the transparency of career paths, to establish the presentation of solid career options as a task of ZALF management, to guarantee job security during the qualification phase, and to increase job security through collaborations. With its qualification standards, ZALF aims to be an attractive employer for early career scientists.

In the end of 2015, 46 PhD students with an employment contract and ten scholarship holders were supervised at ZALF. This means an increase by 75 % since the last evaluation. 24 PhD-theses were completed in 2013 to 2015 (compared to eleven in 2009-2011). Doctoral candidates enter into a thesis agreement with their supervisor. They are integrated in working groups and present their research results in colloquia. ZALF is a partner in structured PhD-programmes such as the DFG Research Training Group Bio-Move (University of Potsdam) and the Doctoral Certificate Programme in Agricultural Economics (Promotionskolleg Agrarökonomik) in which all German agricultural university faculties take part. As a rule, at ZALF the thesis should be completed within four years.

In December 2015, sixteen postdocs were working at ZALF. Two Habilitations were completed in 2013/2014 and two more are close to be finalised soon. (For the junior research group and the junior professorship see Chapter 4.)

Vocational training for non-academic staff

ZALF offers a broad range of educational and training opportunities to scientific support and administrative staff. In the end of 2015, there were three trainees working at ZALF. During the reporting period, four biology laboratory technicians, one agriculturist, and three office administrators successfully completed their dual vocational training. Further trainee positions in office management, media and information services, personnel services, marketing, and communication are planned for the fall of 2016, along with a trainee position as a chemical laboratory technician.

6. Quality assurance

Internal quality management

ZALF has two ombudspersons who are elected by the scientific staff to three-year terms. Good scientific practice is based on the DFG guidelines, which are defined in the memorandum "Sicherung guter wissenschaftlicher Praxis" and have been accepted by the Leibniz Association and by ZALF ("Rules for Assurance of Good Scientific Practice at ZALF and Procedures for Handling Scientific Misconduct") with certain adaptations. The obligation to comply with the guidelines is part of every employment contract.

With an increased number of peer-reviewed publications, ZALF's research increasingly is subject to quality control by the international scientific community. Data generated by ZALF's monitoring work are now being published in peer-reviewed journals; thus, quality control according to international standards is also applied at this level. Competitive acquisition of third-party funds is also seen as a kind of quality control mechanism.

To foster these funding and publication activities, ZALF applies a performance-based allocation of resources. Exceptional publication activities and the successful acquisition of DFG and ERC funds are rewarded by means of additional research funds.

The ZALF-administration had to be restructured in order to meet the requirements of modern science management. Following a recommendation of the last evaluation, ZALF began to develop a cost/performance accounting system and a more thorough controlling system. This process is backed up with appropriate human resources measures.

Quality management by the Scientific Advisory Board

The Scientific Advisory Board currently has nine members. In support of the change process initiated at ZALF after the last evaluation, it has since met twice per year. Recommendations were made regarding the improvement of the scientific performance parameters, on measures in the change process, and on preparations for the 2016 evaluation. Another central topic at every meeting was the development of an overall strategy. The reduction to three core topics within the 2015 programme budget was strongly recommended by the Scientific Advisory Board as a first step towards sharpening ZALF's profile. Also, the chairman of the Board was engaged in the search for a new Scientific Director. As the mandates of some members will expire in the fall of 2016, the Board will be renewed considering more international expertise.

Implementation of recommendations from the last external evaluation

OVERALL CONCEPT AND RESEARCH FOCUS

1. *In principle, the overall thematic and structural concept at ZALF is coherent. However, its implementation and development require thematic focus and further concentration of research content in some of the institutes. With the continued promotion of networking within ZALF, the institutes should contribute more significantly and beyond the interdisciplinary cross-sectional projects to an overarching, cross-topic guiding principle.*

In 2013, ZALF has initiated a comprehensive discussion and strategy process to further focus its profile (see Chapter 2). In close cooperation with the Scientific Advisory Board, the former five-part research programme with many institute specific sub-programmes was abandoned in favour of a programme with three cross-institutional programme areas (core topics). The process is still on-going. ZALF expects new strategic ideas for its research direction from the newly appointed Scientific Director.

2. *ZALF's publication performance needs to be significantly improved, both qualitatively and quantitatively. To this end, ZALF should align its activities even more consistently with application-orientated basic research and endeavour to become internationally more visible with its findings.*

Based on the goal of at least 200 peer-reviewed publications per year (two publications per full-time equivalent scientist) for ZALF as a whole, target agreements or self-commitments with the Heads of Institutes were concluded. The publication goals were broken down by the institutes depending on their size and clearly communicated to the scientists. At the same time, ZALF's publication management extended support measures for publishing and established individual incentive systems for outstanding publication performance (see Chapter 2 and 6 above).

3. *The extensive sets of agricultural landscape data are a remarkable and unique feature that the institute should use to further sharpen its profile. The opportunities for participation in national and international research networks – presented by ZALF's unique long-term monitoring areas and observatories – should be more consistently used to the institute's advantage.*

ZALF's long-term studies continued throughout the reporting period, with the focus remaining on AgroScapeLab Quillow. The infrastructure and data are integrated into the TERENO initiative of northern Germany and are complemented by third-party funding acquired within the initiative. In addition, AgroScapeLab Quillow is also the basis for the DFG Research Training Group BioMove and for a BMBF-financed joint project (Bridging in Biodiversity Science – BIBS). The dataset from the long-term study V140 in Müncheberg which has been on-going since 1963, played a major part in ZALF's ability to successfully establish the BonaRes Centre together with the UFZ. Also, ZALF data are actively provided to the scientific public for joint-modelling projects in the international networks AgMIP and MACSUR.

COOPERATION

- ZALF should develop a strategy to improve international cooperation and thereby strengthen its institutional collaborations. Also, the centre should examine whether collaboration with eastern European partners could be extended.*

ZALF pursues and develops its collaborations in order to strengthen its scientific level of excellence and to increase the relevance of its research, thus making the centre more visible in the scientific community. Cooperating partners of ZALF are selected based on their research direction and scientific excellence, but also to ensure scientifically relevant access to regions that pose particular challenges to agricultural land use. In Eastern Europe, cooperation contracts have been established with five universities. For example, ZALF collaborates with Poznan University of Life Science, with the All Russian Institute of Agrochemistry in Moscow, and the Kazakh Research Institute of Soil Science and Agrochemistry in Almaty.

WORK RESULTS

- In order to improve its publication performance, ZALF must determinedly work towards its goal of averaging at least one publication in a peer-reviewed journal per full-time equivalent scientist per year. In particular, ZALF should publish in a way that calls greater international attention to its research results.*

With 2.2 publications in peer-reviewed journals per FTE scientist per year in 2015 this goal was achieved (see above and Chapter 2). According to ZALF, most of the peer-reviewed articles appear in journals rated as very good and good (in terms of the impact factor related to the relevant scientific communities).

- ZALF should ensure that its scientific services and consultancy are based on quality-assured research results.*

ZALF explains that by significantly increasing the number of articles published in peer-reviewed journals the centre has already achieved an essential prerequisite for providing quality-assured research findings to policymakers, administrators and the economy. The results that are presented for discussion in renowned journals are the quality-assured foundation of knowledge transfer.

PROMOTION OF JUNIOR RESEARCHERS

- ZALF should further develop its support concept for training junior researchers and should make sure that all doctoral candidates working at ZALF participate in this programme. The number of doctoral candidates should be increased. In addition, cooperation with partner universities and their structured programmes should be intensified.*

According to ZALF, the promotion of junior researchers was consistently developed and equipped with additional resources, with approximately 5% of the total budget being used directly for this purpose. ZALF currently supervises 56 doctoral students (increase by 75% compared to the last evaluation) and since 2013, 24 doctoral theses were successfully completed (increase by 100%; see Chapter 5). Based on the Leibniz Career Guidelines, ZALF has developed a career profile.

8. *ZALF should significantly increase its efforts to support its postdoctoral junior researchers. Existing measures should be systematised and complemented by innovative instruments, which should be documented in the Human Resources Development concept. It is suggested to provide junior professorships in the near future.*

The promotion of postdoctoral early-career scientists is an integral part of ZALF's strategy to promote junior researchers (see recommendation above and Chapter 5). Important measures were to create four postdoc positions in the core topics and to provide one year of support to outstanding postdocs for the preparation of a project application. Together with the Leibniz University of Hannover, ZALF successfully applied for a junior research group on the topic of Ecosystem Services in 2015. The establishment of a junior professorship on "Landscape Ecophysiology of Crop Plants" is currently prepared in cooperation with the University of Potsdam. Starting in 2018, a further W1 junior professorship will be available, depending on the Brandenburg State budget.

STRUCTURE AND MANAGEMENT OF THE INSTITUTION

9. *It is important and commendable that the ZALF administration is considering new options for benchmarking. The results should be integrated into the shaping and development of quality assurance measures.*

The change process at ZALF also entailed fundamental administrative changes. A new Administrative Director was appointed at the beginning of 2015. To satisfy the informational requirements of a modern science management system and to facilitate successful quality assurance, the controlling system was enhanced and the existing cost accounting system is currently being expanded. Performance-based resource allocation also contributes to quality assurance at ZALF (see above).

10. *It is welcomed that ZALF intends to adapt its statutes to the specifications of the Leibniz Association's administrative agreement (AV-WGL) and to finish this process within the year 2012.*

The changes were approved by the Assembly of Members in April 2013.

FUNDING ALLOCATION AND USE

11. *As part of the recommended improvement of its research performance, ZALF should continue to increase the proportion of DFG funds within its third-party funding portfolio.*

ZALF started several activities to increase the proportion of DFG funds within its third party funding portfolio (e.g. support for grant preparation, higher rating of DFG funds in the performance-based resource allocation, participation in Coordinated Programmes in cooperation with external partners). Despite these efforts, the ratio of DFG funds to total third-party funding increased only slightly, partly because of the medium term effects of the above mentioned measures. The share (and the absolute amount) of DFG funds is expected to increase in the medium term, though. In 2015, six new DFG funded projects were started.

PERSONNEL

12. ZALF is encouraged to implement the "Strukturkonzept 2016" (Basic Staffing Concept 2016) as the basis of its staff development.

ZALF has continued to implement the Basic Staffing Concept 2016 and has created new fixed-term positions.

13. It is welcomed that, since 2011, the grant authority adapted the staff appointment scheme within the tariff pay scale. However, ZALF needs more flexibility outside of the pay scales to make the positions of leading scientists more attractive.

Since 2014, the grant authorities have significantly increased the non-pay-scale positions for highly qualified management personnel. The number of positions available for joint appointments has been increased from one W3 and five W2 positions to seven W3, four W2, and one W1 positions, with an additional W1 expected as of 2018. Also, the Administrative Director is on a non-pay-scale position. These management positions are generally limited to five-year terms with the possibility of reappointment. They are subject to target agreements. On this basis, ZALF successfully recruited a Scientific Director, an Administrative Director, and two Heads of Institutes.

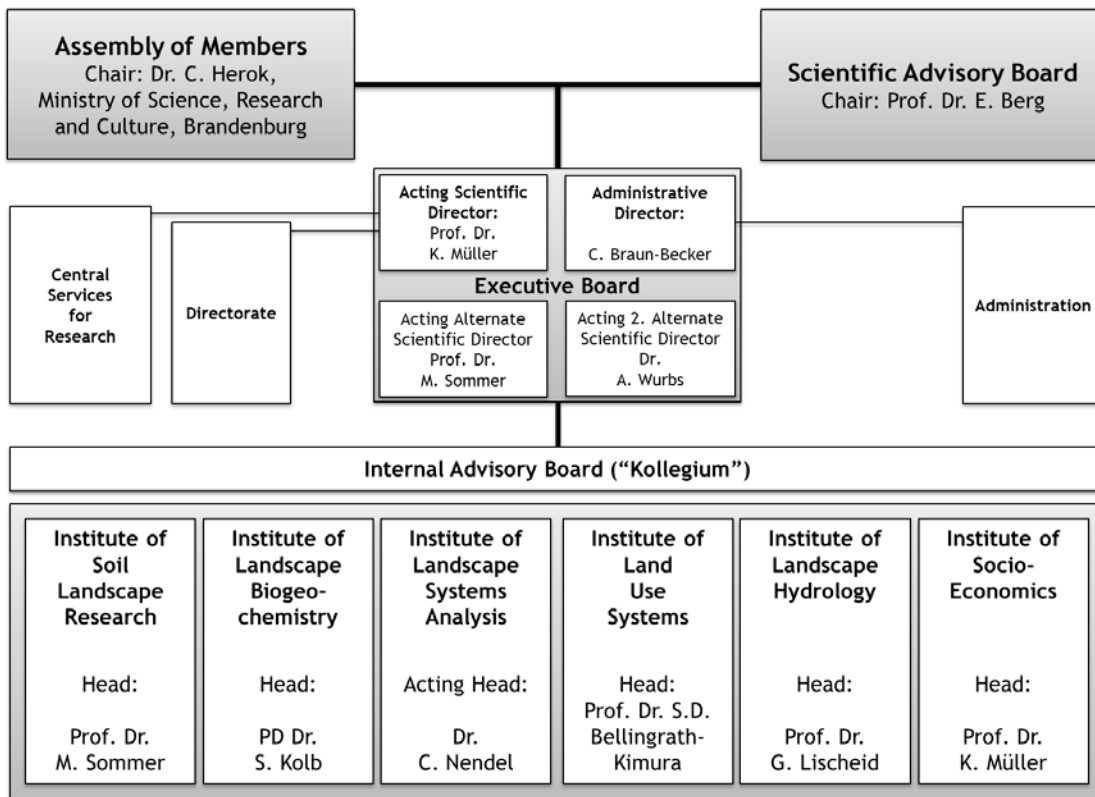
14. ZALF must make more targeted efforts towards gender equality, especially at the leadership level. Such efforts should be aligned with the target quotas of DFG's cascade model.

According to the current equal opportunity plan, ZALF has eleven leadership positions: two Directors, six Heads of Institutes, and three Core Topic Speakers. Of these eleven leadership positions, four are currently staffed with women (one Director, one head of institute, two Core Topic Speakers), which corresponds to 37%. Of the eight current joint appointments with universities, three are staffed with women.

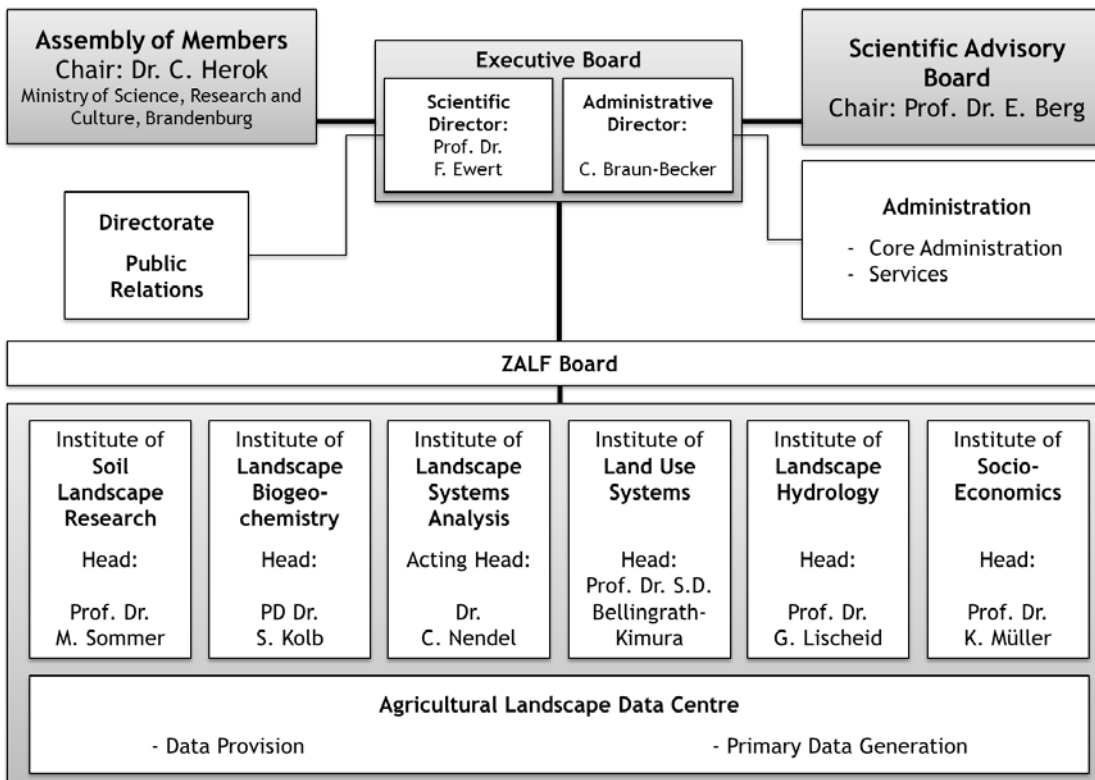
Appendix 1

Organisational Chart

Organisational chart as of February 29, 2016



Organisational chart effective March 1, 2016



Appendix 2

Publications and patents

	2013	2014	2015
Total number of publications	289	340	364
Monographs	26	42	27
Individual contributions to edited volumes	112	117	90
Articles in peer-reviewed journals ¹⁾	115	139	215 (46)
Articles in other journals	26	39	31
Working and discussion papers	0	0	0
Editorship of edited volumes	10	3	1

Industrial property rights (2013-2015) ²⁾	Granted	Registered
Patents		2
Other industrial property rights		
Exploitation rights / licences (number)		

¹ Contributions that have been accepted for publication but not yet appeared are added in parenthesis.

² Concerning financial expenditures for revenues from patents, other industrial property rights and licences see Appendix 3.

Appendix 3

Revenue and Expenditure

Revenue		2013			2014			2015 ¹⁾		
		T€	% ²⁾	% ³⁾	T€	% ²⁾	% ³⁾	T€	% ²⁾	% ³⁾
Total revenue (sum of I., II. and III.; excluding DFG fees)		28,137.7			30,091.7			25,576.4		
I.	Revenue (sum of I.1.; I.2., and I.3.)	24,573.9	100 %		24,457.3	100 %		24,294.9	100 %	
1.	<u>Institutional Funding (excluding construction projects and acquisition of property)</u>	16,811.0	68.41%		17,536.1	71.7%		18,069.5	74.38%	
1.1	Institutional funding (excluding construction projects and acquisition of property) by Federal and <i>Länder</i> governments according to AV-WGL	16,811.0			17,536.1			18,069.5		
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>	7,679.8	31.25 %	100.00 %	6,857.0	28.04 %	100.00 %	6,144.9	25.29 %	100.00 %
2.1	DFG	610.8		7.95 %	301.1		4.39 %	316.7		5.15 %
2.2	Leibniz Association (competitive procedure)	324.0		4.22 %	428.0		6.24 %	243.9		3.97 %
2.3	Federal, <i>Länder</i> governments	5,135.9		66.88 %	4,794.8		69.93 %	4,281.7		69.68 %
2.3.1	<i>of this amount: BMBF</i>	3,542.9			3,131.9			2,781.9		
2.3.2	<i>of this amount: BMEL</i>	1,175.1			1,308.2			1,120.4		
2.3.3	<i>of this amount: Länder</i>	112.5			217.0			250.1		
2.3.4	<i>of this amount: other [e.g. BfN, UBA]</i>	305.5			137.7			129.4		
2.4	EU	991.7		12.91 %	808.1		11.79 %	589.9		9.60 %
2.5	Industry [e.g. Vattenfall, Rentenbank]	251.9		3.28 %	274.1		4.00 %	356.7		5.80 %
2.6	Foundations	4.5		0.06 %	47.1		0.69 %	87.9		1.43 %
2.7	Other sponsors [e.g. CIAT]	361.0		4.70 %	203.8		2.97 %	268.0		4.36 %
3.	<u>Revenue from services</u>	83.0	0.34 %		64.2	0.26 %		80.5	0.33 %	
3.1	Revenue from commissioned work	83.0			64.2			80.5		
3.2	Revenue from publications	0.0			0.0			0.0		
3.3	Revenue from exploitation of intellectual property for which the institution holds industrial property rights (patents, utility models, etc.)	0.0			0.0			0.0		
3.4	Revenue from exploitation of intellectual property without industrial property rights	0.0			0.0			0.0		
3.5	Revenue from other services	0.0			0.0			0.0		
II.	Miscellaneous revenue (e. g. membership fees, donations, rental income, funds drawn from reserves)	304.1			290.0			356.4		
III.	Revenue for construction projects (institutional funding by Federal and <i>Länder</i> governments, EU structural funds etc.)	3,259.7			5,344.4			925.1		
1.	<i>of this amount: Institutional</i>	1,008.8			1,225.7			901.4		
2.	<i>of this amount: EFRE</i>	1,457.6			912.9			23.7		
3.	<i>of this amount: EFRE Equipment</i>	793.3			3,205.8			0.0		

Expenditures ⁴⁾		T€	T€	T€
Expenditures (excluding DFG fees)		28,137.7	30,091.7	25,576.4
1.	Personnel	17,883.2	17,705.3	16,983.3
2.	Material expenses	548.3	1,025.5	1,212.8
2.1	<i>Proportion of these expenditures used for registering industrial property rights (patents, utility models, etc.)</i>			
3.	Equipment investments	1,910.7	3,681.5	960.2
4.	Construction projects, acquisition of property	2,466.3	2,138.7	925.1
5.	Other operating expenses (if applicable, please be specific)	5,329.2	5,540.7	5,495.0
DFG fees (if paid for the institution - 2.5 % of revenue from institutional funding)		470,1	493,1	507,9

[1] Preliminary data: yes

[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.2.7 add up to 100 %. The information requested here is thus the percentage of the various sources of "Revenue from project grants".

[4] The total amount of the expenditures differ from the overall outcome of the Programme Budgets of the respective year as at the end of the budget years cash assets and so called "Selbstbewirtschaftungsmittel" were built, which are not taken into account in the table

Appendix 4

Staff

(Basic financing and third-party funding / proportion of women (as of 31 December 2015))

	Full time equivalents		Employees		Female employees	
	Total	on third-party funding	Total	on temporary contracts	Total	on temporary contracts
	Number	Percent	Number	Percent	Number	Percent
Research and scientific services	129,0	40,3	159	59,9	62	75,6
Professors / Direct. (W3, or equivalent)	2,0	0,0	2	0,0	0	0,0
Professors / Direct. (C3, W2, or equivalent)	6,5	0,0	7	28,8	3	66,6
Academic staff in executive positions (A15, A16, E15, or equivalent)	13,6	0,0	14	7,1	5	20,0
Junior research group leaders / junior professors / post-doctoral fellows (C1, W1, A14, E14, or equiv.)	2,0	75,0	2	50,0	0	0,0
Scientists in non-executive positions (A13, A14, E13, E14, or equivalent)	72,7	39,9	88	51,4	34	70,3
Doctoral candidates (A13, E13, E13/2, or equiv.)	32,2	66,4	46	100,0	20	100,0
Service positions	109,7	16,5	122			
Central Laboratory (E9 to E12, upper-mid-level service)	3,0	0,0	3			
Central Laboratory (E5 to E8, mid-level service)	4,0	0,0	4			
Technical staff subunits (E9 to E12, upper-mid-level service)	53,9	20,4	62			
Technical staff (E5 to E8, mid-level service)	36,5	19,5	40			
Library (from E13, senior service)	1,0	0,0	1			
Library (E9 to E12, upper-mid-level service)	1,0	0,0	1			
Library (E5 to E8, mid-level service)	1,5	0,0	2			
Data management (from E13, senior service)	2,9	0,0	3			
Data management (E9 to E12, upper-mid-level service)	3,0	0,0	3			
Administration	26,1	0,0	27			
Head of administration	1,0	0,0	1			
Staff positions (from E13, senior service)	1,0	0,0	1			
Internal administration (financial administration, personnel, etc.) (E9 to E12, upper-mid-level service)	4,9	0,0	5			
Internal administration (financial administration, personnel, etc.) (E5 to E8, mid-level service)	13,5	0,0	14			
Building service (E1 to E4)	5,8	0,0	6			
Student assistants	5,7	59,2	21			
Trainees	3,0	0,0	3			
Scholarship recipients at the institution	7,0	100,0	12		5	
Doctoral candidates	5,0	100,0	10		4	
Post-doctoral researchers	2,0	100,0	2		1	

Annex B: Evaluation Report

Leibniz Centre for Agricultural Landscape Research,
Müncheberg/Mark (ZALF)

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Appendix:

Members of review board and guests; representatives of collaborative partners

1. Summary and main recommendations

ZALF investigates causal relationships in agricultural landscapes at different system levels, including issues relating to the natural sciences, (agricultural) engineering and social sciences. Its scientific and societal mission is to provide a knowledge base for the sustainable use of agricultural landscapes.

In consequence of the Senate's statement of 2013, which recommended that ZALF should be evaluated again after four years, a successful process of change was launched. It was the enormous achievement of the interim board of directors to communicate and manage it in such a way that the staff fully complied with the necessary strategic changes. Thus, in a collaborative process a coherent general strategy was elaborated which provides a very good basis for ZALF's future development. During this period, the Supervisory Board and the Scientific Advisory Board demonstrated exceptional commitment in supporting ZALF.

ZALF cooperates with multiple scientific institutions and partners. Generally, further internationalisation should be considered from a strategic point of view. Already at the last evaluation it was established that ZALF was managing the major turnover in personnel, which had been ongoing for a number of years, effectively. Great importance is ascribed to the promotion of junior researchers, which now also includes the postdoctoral phase.

The performance of ZALF's six departments, which are known as "institutes", has clearly improved since the last evaluation. Four institutes are now rated as "very good" and two as "good". As recommended, most institutes have focussed their activities. They have significantly increased their publication performance whilst still providing manifold advisory and knowledge transfer services. Moreover in 2015, the Agricultural Landscape Data Centre was established as a new service unit. In accordance with recommendations, since the last evaluation, ZALF has managed to incorporate the extensive data series it has collected at its research and monitoring stations in important research networks. It has thus acquired visibility at national and, increasingly, at international level.

In 2015, two of the three scientific leadership positions that had become vacant since the last evaluation were filled. In the same year, a new Administrative Director assumed office. In March 2016, immediately before the evaluation visit, a new Scientific Director started at ZALF. His plans, which were sketched out during the evaluation visit, envisage ZALF's further development and consolidation in the field of data processing, data analysis and modelling towards integrated landscape research. This is convincing and appropriately builds on the overall strategy that has been developed since the last evaluation.

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

GENERAL CONCEPT

1. ZALF's publication performance has been improved since the last evaluation. However, the self-imposed goal of two peer-reviewed publications per scientific position per year has not yet been achieved by most institutes. There is also still upward potential concerning the number of publications in top-ranked journals. Consequently, it is recommended to be more ambitious and self-confident in the choice of publication organs.

2. As established at the last evaluation already, ZALF must acquire more funding from the German Research Foundation (DFG); in 2014 and 2015, the relevant revenue fell below the fees paid by ZALF to participate in DFG funding programmes. However, the acquisition of four larger-scale projects in the second half of 2015, which will only be of full financial relevance in the following years, indicates a decidedly positive trend.

COLLABORATION AND NETWORKING

3. ZALF should take greater note of strategic considerations in determining its international collaborations and focus on especially strong partners. Given, amongst other things, its excellent facilities it can offer them a great deal. Furthermore, ZALF is recommended to strengthen its global perspective, for example by collaboration with international organisations (WHO, FAO etc.). It is welcomed that ZALF has recognised the need for action and is already planning to increase human resources in the international field.

STAFF DEVELOPMENT AND PROMOTION OF JUNIOR RESEARCHERS

4. It is recommended to implement the staffing concept as quickly as possible and then to develop career profiles for the staff in the technical sector, as well.

5. ZALF should use the forthcoming changes in personnel to further increase the proportion of women in scientific leadership positions.

6. ZALF is recommended to continue structuring the supervision and promotion of its doctoral researchers yet further and to extend it according to its specific areas of expertise. It is welcomed that the Centre is already making good progress: The staffing concept, which is still in the implementation phase, implies that all future Ph.D. students will be integrated in a structured doctoral programme and will take part in qualification measures.

7. ZALF has increased its efforts to promote post-doctoral junior researchers and should continue to do so.

8. Care should be taken to ensure that in future all institutes advertise their positions for junior researchers internationally.

QUALITY ASSURANCE

9. The plans to increase the share of international members on the Scientific Advisory Board are welcomed.

2. General concept and profile

ZALF investigates causal relationships in agricultural landscapes at different system levels, including issues relating to the natural sciences, (agricultural) engineering and social sciences. Its scientific and societal mission is to provide a knowledge base for the sustainable use of agricultural landscapes. Themes like food security, soil as a natural resource and biodiversity are addressed by the six departments at ZALF, which are known as “institutes”, using a cross-disciplinary approach (see Chapter 3).

Development of the institution since the last evaluation

ZALF was last evaluated in 2012. In its statement of March 2013, the Leibniz Association Senate recommended the Federal and *Länder* Governments to continue ZALF’s joint funding but to schedule the next evaluation after just four years. Amongst other things, the Senate expected the institute to refine its overall strategy and improve its performance. Both elements are closely related to staffing issues so a need was also seen for action in this area (see Chapter 6).

As a consequence of the last evaluation, a process of change was launched which gained significant momentum after the scientific and administrative leadership had left in spring 2014. The acting head of ZALF, who was also head of the Institute of Socio-economics, addressed his tasks with remarkable engagement, successfully implementing the recommendations made at the 2012 evaluation. In particular, it was an enormous achievement of the interim board of directors to communicate and manage the process in such a way that the staff fully complied with the necessary strategic changes.

In the course of a collaborative process strongly supported by the Scientific Advisory Board, it was possible to reduce the five programme areas considered at the last evaluation to three core topics: Landscape Functioning, Land Use and Impacts, Landuse Conflicts and Governance. They investigate causal relationships, firstly in the field of natural science, secondly in land use and management and thirdly in society. As recommended, a coherent general strategy was thus elaborated which provides a very good basis for ZALF’s future development.

In 2015, two of the three scientific leadership positions that had become vacant since the last evaluation were filled. In the same year, a new Administrative Director assumed office. In March 2016, immediately before the evaluation visit, a new Scientific Director started at ZALF. It is much welcomed that a successful scientist could be recruited for this position who outlined his convincing ideas for continuing to develop the institute (see below, Strategic Work Planning) during the evaluation visit at the beginning of June 2016.

A decisive factor in the positive structuring of the major changes in personnel at leadership level was the fact that the *Land* Brandenburg which hosts the institute allowed ZALF to group all seven scientific leadership positions on the first and second management levels in the W3 salary bracket. This means that leadership positions can be made attractive enough to compete in international calls for applications, as stipulated at the last evaluation.

Strategic work planning for the next few years

With its extensive landscape laboratories (AgroScapeLabs) ZALF has a central research infrastructure which can be employed on a permanent, multi-scale basis to investigate agricultural and landscape ecological processes and systems. At the last evaluation, it was established that the comprehensive datasets acquired in this way were a unique feature of the Centre which should be highlighted and exploited to a much greater extent. In accordance with this recommendation, ZALF has since managed to participate in some important research networks (TERENO, MACSUR) and thus to enhance its visibility at national and, increasingly, at international level.

Since the beginning of 2015, ZALF has rightly incorporated all data-related scientific services (primary data generation, data provision) in the new service unit **Agricultural Landscape Data Centre**. Also located in this unit is the BonaRes Data Centre that ZALF acquired from the BMBF in cooperation with the Helmholtz Centre for Environmental Research (UFZ). Such an acquisition is a huge achievement and an important step on the path to providing standardised research data and integration in an international data infrastructure.

The plans outlined by ZALF's new scientific leadership during the evaluation visit envisage to continue ZALF's development and consolidation in the field of data/modelling towards integrated landscape research. They include the establishment of a data platform and a modelling platform that will cooperate closely both with one another and with the theme-related research in the individual institutes and core topics. Moreover, it is planned to conduct independent data science in order to develop innovative concepts and methods for data integration, analysis and use, and for model integration and application. The aim is to use agricultural landscape data in new ways (e.g. via novel statistics, machine learning, pattern recognition, computer vision, developing storage).

The plans outlined are convincing and build appropriately on the overall strategy for ZALF which has been developed since the last evaluation. They include structural adjustments, especially with regard to expertise which has recently been bundled in the Agricultural Landscape Data Centre in combination with the Institute for Landscape Systems Analysis (see Chapter 3). It is welcomed that one leadership position in this area will involve a joint appointment with the University of Potsdam.

Results

ZALF's publication performance has been improved since the last evaluation. The number of publications in refereed journals, in particular, has been increased. The support measures and incentives introduced by the Centre have obviously been effective. **However, the self-imposed goal of two peer-reviewed publications per scientific position per year has not yet been achieved by most institutes. There is also still upward potential concerning the number of publications in top-ranked journals. Consequently, it is recommended to be more ambitious and self-confident in the choice of publication organs.** It can be assumed that the publication performance will continue to be enhanced once the new leadership team has become settled.

The three research stations conduct essential infrastructure tasks and services for the ZALF institutes. They can also be used by external scientists. As already ascertained at the last evaluation, ZALF has valuable datasets that have been generated by the research stations' own surveys. It is welcomed that ZALF has acted upon a recommendation made at the time and started to highlight and develop this unique feature appropriately (see above Strategic Work Planning). It is also welcomed that the datasets are published on the open repository ZALF Open Research Data where they can be accessed publicly.

ZALF carries out manifold services and consultancy on the political, administrative and practitioners' level. Staff are active in expert and advisory bodies, working groups and on committees. They also contribute their expertise, for example, in the context of European Foresight. Following the recommendations at the last evaluation, ZALF has clearly systematised its consultancy activities so that its services can explicitly be referred back to scientific outcomes. For example, the Science-Practice Dialogue projects with farmers and their associations also involve channelling the practitioners' needs back to science.

In the area of knowledge transfer, ZALF pursues many appropriate activities that lead to visibility in the relevant fields, such as the Innovation Network of Climate Change Adaptation Brandenburg Berlin (INKA-BB). Coordinated by ZALF, the network connects the players addressing the challenges of climate change at regional level as a science-practice hub. As examples of concrete outreach to the population at large, special mention should be made of ZALF's involvement in the BMBF's science theme years and the citizen science project "Mückenatlas" (Mosquito Atlas). At EXPO 2015 in Milan, the Centre was represented by a research container on soils which demonstrated the connections between soil properties and agricultural yield potential.

Appropriateness of facilities, equipment, and staffing

ZALF has only received the increases in institutional funding foreseen in the Joint Initiative for Research and Innovation since 2012. This is one of the positive effects of the change in portfolio to the Brandenburg ministry responsible for science. The volume of ZALF's institutional funding is now sufficient to fulfil its spectrum of activities.

In the last few years, the proportion of third-party funding for research projects averaged 28 per cent of the overall budget. In comparison with 2011 (30%), this is a slight drop, which is explained by the changes at the scientific leadership level. From 2013 to 2015, the main third-party funder was the Federal Government (especially project funding from the Federal Ministry of Science and Research and the Federal Ministry of Food and Agriculture). EU funding accounted for an average of 11.5 per cent of third party revenue whereby the Institute of Landuse Systems and the Institute of Socio-Economics were particularly successful. **As established at the last evaluation already, ZALF must acquire more funding from the German Research Foundation (DFG); in 2014 and 2015, the relevant revenue fell below the fees paid by ZALF to participate in DFG funding programmes. However, the acquisition of four larger-scale projects in the second half of 2015, which will only be of full financial relevance in the following years, indicates a decidedly positive trend.**

ZALF's facilities and equipment are appropriate. Since the last evaluation they have been extended and modernised thanks to considerable funding through European structural funds. With its research stations and additional experimental facilities ZALF boasts an impressive research infrastructure.

3. Subdivisions of ZALF

Institute of Soil Landscape Research (23 FTE, thereof 3 FTE PhD and 11 service staff) is one of ZALF's smaller institutes. In accordance with recommendations, it has reduced its spectrum of topics. The resulting thematic coherence means the institute can now be a role model for ZALF.

The institute works in a relevant and promising area. As recommended, modelling has been strengthened. The work on the impact of wind erosion and dust emission on soil fertility, which is partly being conducted with Argentinian partners in the context of a DFG project, is very good. The projects on silicon cycling in soils and their extension to agricultural biogeosystems are innovative and promising. The institute is responsible for the important project on the interplay between the carbon cycle and agricultural landscapes, CarboZALF. Within ZALF, the group cooperates in particular with the institutes that work on biogeochemistry and hydrology. Beyond ZALF, it is involved in the Helmholtz initiative TERENO and the BonaRes-Centre for Soil Research.

In comparison with the other institutes at ZALF, this institute raises a remarkably high proportion of third-party funding from the DFG, although the number of third-party funded projects as a whole could be increased further. The institute publishes at a high level. At the same time, it is the only ZALF institute to achieve the envisaged two reviewed publications per scientific FTE per year. The institute is rated as "very good" and has the potential to enhance its performance yet further.

After remaining vacant for 18 months, it was possible to fill the position of head of the **Institute of Landscape Biogeochemistry** (38 FTE, thereof 4 FTE PhD and 16 service staff) in October 2015. The new head is pursuing interesting plans. He should continue to steer the institute in this direction and complete its thematic refocussing as soon as possible.

By concentrating on the function of microbiomes in cultural landscapes the institute is pursuing an interesting and innovative approach. The investigation of substance conversion processes in the carbon and nitrogen cycles of agriculturally-used landscapes links up well with other work being conducted at ZALF, and the focus on the microbiome in biogeochemical hotspots is a promising specialisation. The institute collaborates productively, especially with the Institute of Soil Landscape Research.

The new head has introduced modern techniques and methods. It is promising, for example, that in future the institute will draw on expertise in the fields of metagenomics und metatranscriptomics in addition to isotope and gas analytics. It is recommended to include additional biocomputational expertise, possibly via external collaborations. The institute benefits to a high degree from the excellent core facility "Stable Isotopes", which

it has developed and now operates together with the Leibniz Institute of Freshwater Ecology and Inland Fisheries (IGB).

Under the previous leadership, the institute boasted the best publication performance at ZALF, principally in interdisciplinary journals. Whilst the position was vacant, this level could not be maintained. Since the change in leadership, however, the group has quickly gained in importance within Germany. It should now become more visible once again internationally. In order to achieve this, it should be more ambitious in its publications. Both the themes and the results presented have the requisite potential. This is particularly true of the work on trace gas. The researchers in the institute should also present their results at the relevant conferences. Once again, due to the change in leadership, the institute's third-party funding dropped for some time. Initial successes under the new head, with the DFG for instance, do however suggest that a sustainable improvement can be expected. The institute is rated as "very good" overall.

At the last evaluation, the **Institute of Landscape Hydrology** (21 FTE, thereof 5 FTE PhD and 6 service staff) was recommended to resolutely pursue the thematic re-orientation that had been initiated under its then new leadership in order to improve its thematic and methodological focus. Now, convincing signs of scientific focussing can be observed but they still lack conceptualisation.

The institute holds special expertise in the field of measuring/data collection. The work and developments on determining evapotranspiration, for example, that include ecohydrological modelling, are rated positively. This work should be extended as should the lucrative collaboration with the Institute of Landuse Systems in this area. Together with the Institute of Biogeochemistry, interesting work at the interface of aquatic-terrestrial systems has been conducted, in particular in the field of kettle holes. This collaboration should also be intensified. It is pleasing that the institute has developed methodological expertise in the field of non-linear multivariate analysis in order to evaluate the impact of changes in land use and climate change on landscape hydrology. The fact that this work has been amalgamated under the heading of "forensic landscape analysis", however, reflects a lack of conceptual clarity that should be addressed and result in the choice of a different term.

Since the last evaluation, the institute has increased its publication performance in field journals but it should significantly enhance its presence in overarching journals. Third-party funding should also be increased. In the collaborative projects mentioned above, potential is recognised for promising third-party funding applications, e.g. to the DFG. In accordance with recommendations, supervision of junior researchers at the institute has been intensified. Overall, it can be established that the institute contributes to the mission of ZALF and that a hydrology group is essential for the Centre. The institute is rated as "good".

The head of the **Institute of Socio-Economics** (41 FTE, thereof 12 FTE PhD and 8 service staff) became the acting Scientific Director of the entire ZALF Centre (see Chapter 2) in spring 2014. Despite taking on this enormous extra task, it was possible to focus the

number of research areas at the institute in line with recommendations. This focussing process must now be continued.

It is the institute's highly ambitious goal to develop transdisciplinary methods and theory. For this purpose, different kinds of social and economic as well as scientific knowledge must be amalgamated. Against this backdrop, the work on risk and consumer behaviour is rated very positively whilst the work on bioeconomic modelling still needs to be refined. All in all, the success of the institute will be measured against the success of the researchers involved in making considerable contributions to the cross-disciplinary development of new methods and theory.

The institute is well-connected both within and beyond ZALF. It has produced convincing research output which has been published in a broad spectrum of refereed journals. The institute should consider how it can publish its cross-disciplinary work strategically so that it can both reach the various specialist areas and enhance its own visibility at the same time. The institute's scientists advise the political and administrative arenas intensively and successfully at regional, national and EU level. Third-party funding continues to be exceptionally high. It is acquired, above all, from the Federation and the *Länder* and, to a considerable extent, from the EU. The institute is rated as "good".

After two years under an acting head, the **Institute of Landuse Systems** (43 FTE, thereof 9 PhD and 14 service staff) has been under new leadership since April 2015. The position is a joint appointment with HU Berlin. In the same year, Sustainability Assessment, which was a working group of the previous directorship, was integrated in the institute, leading to an overall consolidation of both staff and content.

In accordance with recommendations, the institute has managed to clarify and refine its scientific strategy since the last evaluation. Work focusses on three topical, interesting research fields which rely strongly on data collection. The institute conducts visible ecological work. With its strongly agronomic components it is central to ZALF as a whole. Thus, it is well-connected with the other institutes whereby the overlap with the Institute of Socioeconomics is seen as particularly productive. The institute's strong performance in knowledge transfer had already been evaluated positively at the last evaluation. The institute interacts effectively, for example with farmers via farmers' associations in the context of a Science-Practice Dialogue which also channels the practitioners' needs back to science.

Since the last evaluation, publication performance has improved which has allowed the institute to gain in visibility. It acquires substantial third-party research funding, mainly from the Federal Government and the *Länder*. The institute is rated as "very good" overall.

After remaining vacant for some time, an acting head was appointed to the leadership of the **Institute of Landscape Systems Analysis** (21 FTE, thereof 5 FTE PhD and 7 service staff) in 2014; he fulfils his responsibilities very well indeed. It is a strong group with profound knowledge of methods which has contributed its work on modelling and simulation to important national and international consortia (MACSUR, Tereno, BonaRes). It

also cooperates closely with the individual ZALF institutes in the context of modelling activities.

The institute has thus developed particularly well since the last evaluation. It has produced a very convincing publication performance and acquired an appropriate level of third-party funding. In future, DFG funding should also be raised. Since the last evaluation, the institute has made an increasingly important contribution to the Centre's research outcomes. The institute is rated as "very good".

The institute's future development, including the **Agricultural Landscape Data Centre**, is a core component of ZALF's strategic planning which envisages strengthening data/modelling towards integrated landscape research (see Chapter 2). Part of this planning, which in general is rated very positively, is to fill the leadership position as a joint appointment with the University of Potsdam.

4. Collaboration and networking

Collaboration with universities

ZALF cooperates closely with the University of Potsdam and Humboldt Universität zu Berlin, which currently also includes four institute directors holding joint appointments, as well as with Leibniz Universität Hannover where a leading scientist also holds a professorship. It is welcomed that the connections to these universities are due to be extended by further joint appointments. The opportunities opened up by the *Land Brandenburg* that hosts the institution to create additional professorships are extremely helpful in this respect (see Chapter 2). It is pleasing to note that, as suggested at the last evaluation, there are also plans for a junior professorship and a junior research group. A second joint appointment has been realised with the Eberswalde University for Sustainable Development. To foster closer links with this university of applied sciences with its pertinently interested students is meaningful.

In addition, several members of ZALF staff are extraordinary honorary and associate professors at other universities at home and abroad. Their teaching activities are greatly welcomed.

Collaboration with other domestic and international institutions

ZALF cooperates with multiple scientific institutions and partners. It is involved in the relevant Leibniz research alliances and has successfully participated in the Leibniz Competition together with other Leibniz institutes. A particular example of close, productive cooperation is that with the Leibniz Institute of Freshwater Ecology and Inland Fisheries (IGB) with which ZALF operates the core facility "Stable Isotopes" (see Chapter 3, Institute of Landscape Biogeochemistry). At national and European level, too, ZALF is involved in numerous cross-institutional initiatives and networks, in some cases as the leading institute, a fact that is impressively demonstrated by its success in acquiring funding from the BMBF and the EU. One of ZALF's particular strengths is its successful, productive research collaboration with various partner institutions in Tanzania which seeks to improve nutrition security in rural sub-Saharan Africa (Trans-Sec, Scale-N).

Already at the last evaluation, it was established that ZALF had good contacts that needed to be systematised and intensified from a strategic point of view. This recommendation is still valid: **ZALF should take greater note of strategic considerations in determining its international collaborations and focus on especially strong partners. Given, amongst other things, its excellent facilities it can offer them a great deal. Furthermore, ZALF is recommended to strengthen its global perspective**, for example by collaborating with the World Health Organisation, the United Nations' Food and Agriculture Organisation (FAO) or the partner institutions in the Consultative Group on International Agricultural Research (CGIAR, e.g. ICRISAT). **It is welcomed that ZALF has recognised the need for action and is already planning to increase human resources in the international field.**

5. Staff development and promotion of junior researchers

Staff development and personnel structure

Already at the last evaluation, it was established that ZALF was mastering the major turnover in personnel that had been ongoing for several years effectively. On the reporting date (31 December 2015), 308 individuals were employed at ZALF, 159 of whom in research and scientific services.

Drawn up in 2009, the "Basic Staffing Concept" created a convincing basis for achieving flexibility in the human resources (and thus the content-related) structure of the ZALF institutes. It is welcomed that this concept has been implemented and continually developed in accordance with recommendations. Since its introduction, the institutes' basic provisions with regard to institutionally funded positions have been clearly defined. Across ZALF, in 2016, this should average one leadership position as a joint appointment with a university and six scientific, four technical and two additional scientific support positions. Following the last evaluation, the basic provisions of each institute were increased by two further positions for Ph.D. students (at 65% FTE) in order to promote junior researchers as recommended (see below). Positions over and above basic provisions that become vacant are channelled into a job pool from which they are re-allocated on a fixed-term basis under a competitive procedure. The Centre thus has a highly-appropriate mechanism for setting priority areas and initiating new developments.

In the course of work on ZALF's overall strategy, a coherent staffing concept for the scientific sector was drawn up in 2015, which had not yet been fully implemented at the time of the evaluation visit. It envisages a career profile for every level of qualification – Ph.D., postdoc (orientation phase, up to six years after defence of Ph.D.), scientist, head of research area/group leader – for which requirements have been defined based on the performance parameters of programme planning. It is welcomed that, in future, ZALF will hold annual appraisal interviews for which the career profiles – once they have been implemented – will provide a basic structure. As a flanking measure, staff at leadership level will receive in-service training in human resources management. **It is recommended to implement the staffing concept as quickly as possible and then to develop career profiles for the staff in the technical sector, as well.**

Promotion of gender equality

It is welcomed that issues relating to equal opportunities and combining work and family life play an appropriate role at ZALF and are supported by suitable measures. In 2014, the Centre was once again awarded the “Audit berufundfamilie” certificate.

As at the last evaluation, on 31 December 2015, approximately 40 per cent of scientific staff at ZALF were female. At middle-management level the proportion of women has increased since then from 15 per cent in 2011 to 35 per cent in 2015. It has also been possible to fill one of three head of institute positions which had become vacant with a woman. The other five institutes are headed by men. **ZALF should use the forthcoming changes in personnel to further increase the proportion of women in scientific leadership positions.**

Promotion of junior researchers

In line with recommendations, the number of doctoral candidates has increased significantly since the last evaluation from 36 in 2011 to 56 in 2015. With 24 Ph.D. theses between 2013 and 2015, more than twice as many doctorates were completed as in the comparable period before the last evaluation. Ph.D. students are integrated in project work and are well supervised in the respective institutes. Some spend time abroad.

As recommended at the last evaluation, ZALF has continued to develop its supervision and promotion of junior researchers: the general conditions for a Ph.D. are contained in a thesis agreement which is signed by the supervisors and the candidates. ZALF offers a special in-service training programme for doctoral candidates which covers sessions on preparing publications as well as presentation and moderation techniques. Some participate in the modules of the Doctoral Certificate Programme in Agricultural Economics, which is run by all the agricultural faculties in Germany and BOKU Vienna, or the DFG Biomove Research Training Group, which was acquired together with the University of Potsdam (and other partners). **ZALF is recommended to continue structuring the supervision and promotion of its doctoral researchers yet further and to extend it according to its specific areas of expertise. It is welcomed that the Centre is already making good progress: The aforementioned career profiles, which are still in the implementation phase, imply that all future Ph.D. students will be integrated in a structured doctoral programme and will take part in qualification measures.**

Picking up another recommendation from the last evaluation, **ZALF has also increased its efforts to promote post-doctoral junior researchers and should continue to do so.** The establishment of a BMBF-financed junior research group in the ambit of the joint professorship with Leibniz Universität Hannover and, as recommended, the preparations for a junior professorship at the University of Potsdam are measures that are welcomed in this context. Drawing on the aforementioned job pool, postdoc positions to continue developing core topics have been created, financed from the budget. At the end of 2015, a total of 14 postdocs were employed at ZALF institutes in positions for which the career profiles (see above) that are currently being implemented provide an appro-

priate framework for development. At the same time, however, only two postdoctoral fellows with a scholarship worked at ZALF. This is considered rather few.

ZALF's junior researchers are motivated and engaged. It is pleasing that they have formed an interest group. The atmosphere at ZALF is welcoming so that junior researchers coming from abroad feel at home. **Care should, however, be taken to ensure that in future all institutes advertise their positions for junior researchers internationally.**

Vocational training for non-academic staff

In the course of the change process, the number of trainees has dropped from four to three since the last evaluation. It is therefore welcomed that ZALF wants to offer more traineeships in future.

6. Quality assurance

Internal quality management

ZALF is very well managed both scientifically and administratively. The Scientific Director has clear perspectives for the future development of the Centre. The Administrative Director is highly supportive of implementing the scientific plans. It is welcomed that ZALF's administration is gradually adopting modern research management practices for which the staff are being trained appropriately. Additional in-service training should be considered to prepare administrative staff for ZALF's continuing internationalisation.

ZALF employs performance-related allocation of funds based on publications in refereed journals and third-party funds raised (especially DFG and ERC). Relevant regulations, including the institution of ombudsperson, to ensure good scientific practice are in place.

Quality management by the Scientific Advisory and Supervisory Boards

The Supervisory and Scientific Advisory Boards have shown exceptional engagement in accompanying ZALF through a phase of intensive change.

In future, too, the chairperson of the Scientific Advisory Board should not be employed by a university that cooperates with ZALF or is associated with the Centre by joint appointments. **The plans to increase the share of international members on the Scientific Advisory Board are welcomed.**

The Members' Assembly carries out the duties of a supervisory board effectively. In accordance with recommendations, ZALF's statutes have been brought into line with the Administrative Agreement between the Federal and *Länder* Governments with regard to the joint funding of member institutions of the Leibniz Association (AV-WGL) since the last evaluation.

Implementation of recommendations from the last external evaluation

In the opinion of the Review Board, ZALF has implemented the recommendations made at the last evaluation (see Status Report, p. A-16f) with a good deal of success; a few points still need attention:

- 1. In principle, the overall thematic and structural concept at ZALF is coherent. However, its implementation and development require thematic focus and further concentration of research content in some of the institutes. With the continued promotion of networking within ZALF, the institutes should contribute more significantly and beyond the interdisciplinary cross-sectional projects to an overarching, cross-topic guiding principle.*

On this point ZALF is making good progress. With the support of the Scientific Advisory Board it has been possible to reduce the five programme areas considered at the last evaluation to three core topics (see Chapter 2, Development of the Institution). Focusing took place also within the institutes where – partly due to changes in leadership – it has reached different stages of advancement (see Chapter 3, Institute of Soil Landscape Research, Institute of Biogeochemistry, Institute of Hydrology and Institute of Socio-economics).

- 2. ZALF's publication performance needs to be significantly improved, both qualitatively and quantitatively. To this end, ZALF should align its activities even more consistently with application-orientated basic research and endeavour to become internationally more visible with its findings.*

Since the last evaluation, ZALF's publication record has clearly improved. The number of publications in refereed journals, in particular, has been increased. However, the self-imposed goal of two peer-reviewed publications per scientific position per year has not yet been achieved by most institutes. There is also still upward potential in terms of quality. Consequently, it is recommended to be more ambitious and self-confident in the choice of publication organs (see Chapter 2, Results).

- 3. The extensive sets of agricultural landscape data are a remarkable and unique feature that the institute should use to further sharpen its profile. The opportunities for participation in national and international research networks – presented by ZALF's unique long-term monitoring areas and observatories – should be more consistently used to the institute's advantage.*

In accordance with this recommendation, ZALF has managed since the last evaluation to participate in important research networks with the data series collected at its landscape laboratories (TERENO, MACSUR, BonaRes) and thus to enhance its visibility at national and, increasingly, at international level (see Chapter 2, Strategic Work Planning for the new Scientific Director's further plans for developing and strengthening data/modelling at ZALF).

- 4. ZALF should develop a strategy to improve international cooperation and thereby strengthen its institutional collaborations. Also, the centre should examine whether collaboration with eastern European partners could be extended.*

This recommendation still holds, but no particular necessity is seen to specifically strengthen institutional collaboration with eastern European partners: ZALF should take greater note of strategic considerations in determining its international collaborations and focus on especially strong partners. It is welcomed that ZALF has recognised the need for action and is already planning to increase human resources in the international field (see Chapter 4).

5. *In order to improve its publication performance, ZALF must determinedly work towards its goal of averaging at least one publication in a peer-reviewed journal per full-time equivalent scientist per year. In particular, ZALF should publish in a way that calls greater international attention to its research results.*

See 2. above.

6. *ZALF should ensure that its scientific services and consultancy are based on quality-assured research results.*

ZALF has systematised its consultancy activities so that its services can explicitly be referred back to scientific outcomes (see Chapter 2 Results).

7. *ZALF should further develop its support concept for training junior researchers and should make sure that all doctoral candidates working at ZALF participate in this programme. The number of doctoral candidates should be increased. In addition, cooperation with partner universities and their structured programmes should be intensified.*

In line with recommendations, the number of doctoral candidates has increased significantly since the last evaluation. ZALF has also continued to develop the supervision and promotion of junior researchers. The Centre is making good progress and should continue along this path (see Chapter 5, Promotion of Junior Researchers).

8. *ZALF should significantly increase its efforts to support its postdoctoral junior researchers. Existing measures should be systematised and complemented by innovative instruments, which should be documented in the Human Resources Development concept. It is suggested to provide junior professorships in the near future.*

Here, too, a significant improvement can be noted. Postdoctoral positions have been created and an appropriate framework for development has been drawn up in the “career profiles” that are being implemented. A junior research group and a junior professorship are on the drawing board (see Chapter 5, Promotion of junior researchers).

9. *It is important and commendable that the ZALF administration is considering new options for benchmarking. The results should be integrated into the shaping and development of quality assurance measures.*

ZALF's administration is currently adopting modern research management practices. Performance-related funding allocation has already been introduced and has had a positive impact on performance (see Chapter 6, Internal Quality Management).

10. It is welcomed that ZALF intends to adapt its statutes to the specifications of the Leibniz Association's administrative agreement (AV-WGL) and to finish this process within the year 2012.

The changes were approved by the Assembly of Members in April 2013.

11. As part of the recommended improvement of its research performance, ZALF should continue to increase the proportion of DFG funds within its third-party funding portfolio.

ZALF still needs to acquire more funding from the DFG. The acquisition of four larger-scale projects in the second half of 2015 indicates a positive trend (see Chapter 2, Appropriateness of Facilities, Equipment and Staffing)

12. ZALF is encouraged to implement the "Strukturkonzept" (Basic Staffing Concept) as the basis of its staff development.

It is welcomed that the Basic Staffing Concept has been implemented and continually developed in accordance with recommendations. With the job pool that has now been created, the Centre has a meaningful tool for setting priority areas and initiating new developments (see Chapter 5, Staff Development and Personnel Structure).

13. It is welcomed that, since 2011, the grant authority adapted the staff appointment scheme within the tariff pay scale. However, ZALF needs more flexibility outside of the pay scales to make the positions of leading scientists more attractive.

The *Land* which hosts the institute allowed ZALF to group all seven scientific leadership positions on the first and second management levels in the W3 salary bracket. This means that leadership positions can be made attractive enough to compete in international calls for applications, as stipulated at the last evaluation (see Chapter 2, Development of the Institution).

14. ZALF must make more targeted efforts towards gender equality, especially at the leadership level. Such efforts should be aligned with the target quotas of DFG's cascade model.

Since the last evaluation it has been possible to fill one of three head of institute positions, which had become vacant, with a woman. The other five institutes are headed by men. ZALF should use the forthcoming changes in personnel to further increase the proportion of women in scientific leadership positions (see Chapter 2, Promotion of Gender Equality).

25 November 2016

Annex C: Statement of the Institution on the Evaluation Report

**Leibniz Centre for Agricultural Landscape Research,
Müncheberg/Mark (ZALF)**

ZALF thanks the chair, co-chair and all members of the evaluation board as well as the guests and the staff of the Leibniz Association's evaluation office for the comprehensive and thorough review and the valuable comments and recommendations.

The evaluated time-period comprised three years (2013-2015) within which ZALF has initiated and started to implement a "Change Process" characterised by substantial changes in its personnel, organisational and research structure and focus. We were pleased to read that the evaluation board clearly expressed its support for the initiated "Change Process" and that it acknowledged the tremendous effort and time, which such change process requires to successfully improve the performance of a larger research centre like ZALF. We were particularly satisfied to see that the evaluation board could confirm clear indications of improved performance since the last evaluation for many activities throughout the review report.

ZALF's overall performance averaged over its six institutes improved from "good" to "very good" (four institutes were rated "very good" and two institutes were rated "good"). This upwards trend in our performance based on a comparison of the evaluated three year period compared to the last evaluation is even more visible if the trend within this three year period is considered. For example, in the last year of this period (2015) all institutes met the self-set target of 2 publications in peer-reviewed journals per FTE-scientist. We are also pleased that reviewers found our responses to the recommendations of the last evaluation report appropriate and could assess these positively.

Despite the recognised positive development at ZALF we are in full agreement with the evaluators that the initiated "Change Process" needs to be continued. We therefore also acknowledge the positive feedback to our future vision about our research strategy and structure. The recommendations given in support of our planned activities help to prioritise our next activities and are a great motivation to pursue with the planned changes.

As we have been highly and undisruptively active after the evaluation visit, for some recommendations, progress has already been made in recent months. For example, obtaining funding from DFG has become of high priority and several projects could be acquired after the evaluation period and new proposals are in preparation or have been submitted. Another area of particular emphasis and immediate action is the internationalisation of ZALF's activities and the establishment of strategic partnerships. A recent step into this direction is the substantial renewal of our Scientific Advisory Board with several internationally highly recognised scientists and a new head of the Scientific Advisory Board decided unanimously at the meeting of the Assembly of Members on 16th November 2016.

We are strongly convinced that with the further continuation and implementation of the "Change Process" considering the helpful recommendations of the evaluation board, ZALF will be able within a manageable time-period to further improve its performance moving towards scientific excellence with large international visibility in its research domain. The remarkable internal support of all ZALF employees as also recognised by the evaluators and the external support through the highly committed State of Brandenburg and the partner Universities are crucially important assets for the success of this process.