Concept Note

DCZ Science Dialogue

Version 3, Status: April 15, 2018

by Dr. Marco Roelcke

1. Objectives

The Component goal of DCZ Component 3: "Science and Research Coordination" is: "The bilateral applied research is aligned with the agricultural policy topics."

The Annotation to Component 3 in the "Project Logical Framework" (Projektplanungs-übersicht) (= Annex 7 of DCZ Implementation Agreement of March 23, 2015) states: "Implementation is based on a Letter of Intent (LoI) between BMEL Department 2 Food Policy, Product Security & Innovation and CAAS."

In the Implementation Agreement between GIZ and CAAS concerning the "German-Sino Agricultural Science and Technology Cooperation Platform" the above Component Goal is further specified as: "In this framework, the objective of the S&T Platform is to design and coordinate agricultural research projects entrusted by both parties. Additionally the S&T Platform aims to further strengthen the intensity of research cooperation and to foster its long-term development."

In the revised Implementation Agreement between CAAS and the consultant company "IAK Agrar Consulting GmbH" to be signed in April 2018, the overall objective of the DCZ component on Science Dialogue was modified to: "The bilateral applied research (funded from various sources) is promoted and intensified and reflects agricultural issues of relevance for both countries". The next points are identical to the previous Implementation Agreement between GIZ and CAAS.

In a joint declaration at the conclusion of the 4th Sino-German Governmental Consultations on June 13th, 2016 in Beijing, both countries announced that the German-Chinese Agricultural Center (DCZ) opened in 2015 should serve as the central platform for their cooperation in the thematic field of agriculture and food. Amongst other topics of bilateral cooperation, it was stated that the already well-established research collaboration on topics related to agriculture, forestry and food (nutrition) shall be further deepened.

2. Background

Since the signing of the Agreement on Science and Technological Cooperation in the field of Agricultural Research between the German Minister for Food, Agriculture and Forestry and the Ministry of Agriculture of the People's Republic of China (MOA) in Beijing on November 23, 1981, a multitude of applied research projects, mainly based on researchers' mobility on a wide variety of agricultural topics have since been carried out. The framework for this bilateral cooperation is laid down in biannual of the Expert group meetings on Chinese-German Agricultural Research Collaboration (see 4.).

2.1 Official Documents supporting the S&T Platform

The **Agreement on Science and Technological Cooperation in the field of Agricultural Research** between the German Minister for Food, Agriculture and Forestry and the Ministry of Agriculture of the People's Republic of China (MOA) in Beijing on November 23, 1981.

The **Agreement regarding Technical Cooperation** between the Government of the Federal Republic of Germany and the Government of the People's Republic of China, dated 13 October 1982.

The **Framework Agreement** between the Federal Ministry of Food and Agriculture of the Federal Republic of Germany (BMEL) and the Ministry of Agriculture of the People's Republic of China (MOA) regarding the Sino-German Agricultural Center, dated 28 March 2014.

The **Letter of Intent (LoI)** of December 03, 2014, signed by Dr. Klaus Heider, DG of Department of Food Policy, Product Safety and Innovation, BMEL and Mr. Chen Mengshan, Secretary of the Leading Party Group at the CAAS. It was stated that the intensity of research cooperation could further be strengthened by establishing a "China-German Agricultural Science and Technology Cooperation Platform" within the framework of the German-China Agricultural Center (DCZ).

The **Minutes of a meeting** between the Head of Division, Division Research and Innovation (224), BMEL, Dr. Hartmut Stalb and Dr. Jin, Ke, Division Chief, Division of Bilateral Cooperation, Department of International Cooperation, CAAS, dated March 12, 2015.

The **Joint Declaration of Intent** on a Sino-German Agricultural Science and Technology Cooperation Platform, dated 17 November 2015, with supplementary protocol, dated January 20, 2017.

The **Implementation Agreement** between Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, and the CAAS concerning the "German-Sino Agricultural Science and Technology Cooperation Platform" (hereinafter referred to as the "S&T Platform") signed by Ms. Ursula Becker, Head of GIZ Cluster Environment, Climate and Nature Conservation, GIZ Country Office China and Prof. Dr. Wu Kongming, Vice President, CAAS, on November 18, 2015 in Beijing, during the official inauguration ceremony.

The **Joint Declaration of Intent** between the BMEL and the MOA on Extending the Implementation Period of the Sino-German Agricultural Center, dated 21 January 2017.

2.2 Activities

The activities within the S&T Platform in its Implementation Agreement (November 2015) included:

- Coordination between the research institutes of BMEL in Germany and the agricultural and food-related research institutions of MoA in China,
- Coordination between the research institutes of BMEL in Germany and the agricultural and food-related research institutions of MoA in China,
- Coordination of a bilateral exchange programme for researchers,
- Support of both BMEL and MoA in formulating bilateral research priorities,
- Coordination of bilateral research projects jointly supported by BMEL and MoA,

- Organization of bilateral conferences and workshops on research,
- Build a publicly accessible database on research projects and publications,
- Publish a regular newsletter on current topics of the agricultural and food sector and research priorities,
- Technical support to cooperation projects under the DCZ,
- Any other business jointly determined by both parties.

The S&T Platform's initial focus has been the research collaboration between CAAS Institutes and the German Federal Research Institutes under the auspices of BMEL (BfR, FLI, JKI, MRI, TI). It is, however, explicitly open for collaborations with other German and Chinese funding agencies and research institutions, as well as German universities and Chinese national- and provincial-level universities.

Regarding the operating and administrative costs of the S&T platform, including the organization of seminars, workshops and conferences, an equal sharing of costs basis has been agreed upon in the Implementation Agreement between GIZ and CAAS. This principle has since been adhered to in a very transparent and constructive manner.

The Science Advisor (German side), Dr. Marco Roelcke, took up his work in an office provided at the Institute of Agricultural Resources and Regional Planning (IARRP) of CAAS in August 2015, together with the expert Prof. Dr. Zhang, Bin from IARRP. Dr. Roelcke's assignment ended on March 31, 2018 (end of DCZ first phase).

3. Indicators of Component 3 (Science and Research Coordination)

(from DCZ Project Logical Framework Table, Annex 7 to DCZ Implementation Agreement)

3.1 Bilateral symposia and workshops on research organized 2015-2017

Two bilateral thematic events were organized per year. About 6-10 scientists from each side (Germany and China) participated in each of the events. For details please see Annex.

3.2 Database

A concept for a searchable (English language) expert and project database has been developed in close discussions between the DCZ, the Thünen Institut (TI) in Braunschweig, the BMEL and the CAAS. It combines features of the "ExpertAtlas" of the "German Agricultural Research Alliance" (DAFA, hosted by the TI), allowing search for experts solely, with the database of the "Information System for Agriculture and Food" (FISA-online) (under the BLE), which enables a search for projects and institutions. Both ongoing and completed projects are listed in the database. Due to certain restrictions, the original concept of including both German and Chinese experts, and each country's experts being hosted on servers located in their own country, had to be abandoned for the time being. Currently, a database hosting only German experts and their institutions, as well as their research collaboration projects with China has been set up. The option of a future extension to include Chinese language contents (experts and projects) does, however, persist. The database was programmed and is technically supported by the Sino-German company AKRYL, which also hosts the DCZ website in Beijing and has much experience in bilingual web-applications. The trial phase of the database began on August 28th, 2017. it was first introduced to the responsible persons at the DAFA and the FISA, and their feedback was taken into account.

After obtaining permission from the experts, about 40+ experts from the DAFA ExpertAtlas were inserted into the database, as well as about 20 projects (from DAFA and FISA-online) in early 2018. The database went online on March 21st, 2018. It is easily accessible via the DCZ website, by clicking onto the field "Database" at the top, or directly at http://database.dcz-china.org/ .

3.3 Newsletter

A Newsletter, "China Agri-Science News Digest" (中国农业科技新闻摘要) was prepared and published by the Science and Research Component of DCZ. For reasons of work as well as of timing, it was issued bi-monthly instead of monthly. A Pilot Issue of the Newsletter was sent to >100 recipients on June 24, 2016. During the 1st phase of the DCZ, ten regular issues have appeared. The Newsletter was renamed "Sino-German Agricultural Center Newsletter" beginning with the 6th issue. Feedback has been very positive and the number of subscribers reached about 450. Besides news from the Chinese agricultural and research sector gathered from various press sources, it also occasionally contained policy notes issued by Chinese Ministries or institutions that were translated and edited by the DCZ especially for this purpose. By editing the "teasers", German legal regulations were adhered to in line with GIZ standards. Easy subscription/unsubscription is possible on the DCZ website. Previous issues of the Newsletter are available on the DCZ website under Info Portal – Newsletter Archive. The Newsletter is currently in PDF format; a change to HTML format may be considered for the future.

4. Wider framework of Sino-German agricultural research cooperation

4.1 Bilateral Sino – German Cooperation on Agricultural Science and Technology

Joint calls from the German BMEL (via its project management organization BLE) and the Chinese MOA under the programme "Bilateral exchange of scientists" for researchers mobility support are published bi-annually for projects with a two-year duration. The applications received are subsequently evaluated according to different criteria. The projects are managed by the Federal Office for Agriculture and Food (BLE) on the German side and the MOA on the Chinese side.

4.2 Biannual meeting of joint experts group on research

The Expert Group Meetings on Chinese-German Agricultural Research Collaboration (Sachverständigensitzung Agrarforschung) are held every two years, hosted alternately by BMEL and MOA. The 23rd meeting was held in Freising (Germany) on Sept. 28, 2016. It was chaired by the Head of Division 224, Research and Innovation of BMEL, Dr. Hartmut Stalb and by Dr. Zhang Zhenhua, Head of Division for Technology Cooperation and Conditions Construction, Department of Science Technology and Education (DSTE), MOA. The Science Advisor (German side) of the DCZ also participated in 2016. During the meeting, the bilateral cooperation projects for the years 2016/2017 were jointly decided upon, amongst other topics.

Furthermore, during the Expert Group Meeting in 2016, a future alignment of research directions between bilateral expert group and S&T Platform was envisaged. This was to be achieved via a close collaboration with the German-Chinese Agricultural Center (DCZ), in

order to improve the coherence between research and other bilateral activities in the agricultural sector (e.g. selection of topics for scientific workshops). Moreover, an assessment of the long experiences gathered in bilateral collaboration was to be conducted, in order to determine the successes achieved by the projects in the different fields, and whether their results had been put into practical use.

Equally, in the revised Implementation Agreement concerning the Sino-German Agricultural S&T Platform of September 2017 it was stated that "Results of and directions from bilateral expert meetings on scientific cooperation in the field of food and agriculture between the Federal Ministry of Food and Agriculture of the Federal Republic of Germany and the Ministry of Agriculture of the People's Republic of China and or CAAS shall be recognized by [The implementing agency on the German side] and CAAS in the implementation of this agreement."

In both cases, the idea is to more closely coordinate the various activities in place in the field of agricultural science and research collaboration between the German and Chinese Ministries of Agriculture.

5. Identification of priority topics for joint workshops, etc.

During its first two years of operation, the science and research component of DCZ and the S&T Platform initially relied on the priority topics agreed upon by both sides during the meeting between Division Research and Innovation (224), BMEL, and the Division of Bilateral Cooperation, Department of International Cooperation, CAAS, on March 12, 2015, in Beijing, as well as during the meeting of both countries' agricultural ministers for the inauguration of the DCZ on March 23, 2015 in Beijing. This largely enabled the institutions and personnel on both sides to immediately establish a modus operandi and to quickly carry out a string of bilateral workshops and symposia in both countries 2015-2017 (see Activities in Annex). Their successful organization, implementation and outcomes earned both partners great recognition amongst their respective research institutions and Ministries involved. Thus, by using its position straddling between both the German and Chinese research landscapes, the S&T Platform has gradually been able to come up with own suggestions and proposals for future activities and communicate them via the appropriate channels. The decision on which activities are to be carried out in future ultimately lies with both countries' Ministries.

6. Establish contacts with all relevant actors in bilateral agricultural research and establish adequate coordination mechanisms

Since the inception of the work of the DCZ research component in 2015, the Research Advisor on the German side has established contacts with the representatives of all major German research organizations in Beijing and in Germany, incl. BMBF (PTJ, PT-DLR), DFG, DAAD, Helmholtz Association, Fraunhofer Society, the Science Counsellor at the German Embassy and at the EU Delegation in Beijing, representatives from liaison offices of German universities in Beijing, etc., and has met several representatives on the Chinese side. His Chinese counterpart in the S&T Platform has very close contacts to Chinese research organizations, including National Natural Science Foundation of China (NSFC), the Chinese

Academy of Sciences (CAS), and many Chinese universities. Close contacts exist between the S&T Platform and major players in bilateral agricultural research, such as the China Agricultural University (CAU), the Center for Chinese Agricultural Policy (CCAP), the Nanjing Institute of Soil Science (ISS, CAS), the Universities of Hohenheim, Göttingen, Bonn, etc., the German Federal Research Institutes under the auspices of BMEL (JKI, MRI, TI, BfR, FLI), plus the co-funded ones of the Leibniz Association (IAMO, ATB, IGZ, ZALF, etc.).

7. Provide scientific guidance and expertise to DCZ Demonstration Projects and other DCZ components

During the 1st and 2nd Project Steering Committee Meetings of the DCZ in November 2015 and July 2016, the wish was expressed for the DCZ Science and Research Component to deliver scientific guidance and expertise to the Demonstration projects as well as to the other DCZ components. This was based on demand, organized informally and occurred several times in 2016 and 2017. For a detailed description of events see Annex.

8. Planned, as well as started, but not completed activities during 1st phase of DCZ

8.1 Prepare and present an annual review and outlook on bilateral agricultural research

The planned concept is as follows:

1. A matrix of contacts and activities involving 12 CAAS institutes carried out during DCZ 1st phase (April 2015 - March 2018) has been drawn up in March 2018. It is to be expanded to include the existing contacts between the 42 CAAS institutes and German scientific research institutions (under the BMEL or other) and (agricultural) universities.
2. An overview of ongoing and completed bilateral research collaboration projects is to be carried out. This work will be undertaken in parallel to the ongoing contents provision for the new expert and project database.
3. An overview on financial volume of German agricultural research in general, as well as international research collaboration as well as bilateral research collaboration with China in particular is to be updated, based on existing information from the BMEL.
4. Agriculture-related research or personnel exchanges funded by other German Ministries (e.g., BMBF, BMUB, DAAD, etc.) or German science organizations (e.g., DFG, Max-Planck-Society, Humboldt-Foundation, VolkswagenStiftung, etc., are to be listed. Similar information is to be drawn up for China.
5. As next step, corresponding information from related fields (land use, forestry, hydrology, climate change, environment, socio-economics, etc. is to be assembled correspondingly.
6. As parallel step, it is planned to get in touch and exchange related information with the Science and Technology Section at the German Embassy in Beijing, which is at present aiming to create an overview on ongoing German-funded research projects.

This comprehensive review is then to me updated/modified annually.

8.2 Bilateral exchange programme for researchers

During the 23rd Expert Group Meeting in Sept. 2016, both sides agreed to elaborate on modalities for an exchange of PhD-students and Postdocs. This exchange could build on the experience of the German Academic Exchange Service DAAD in China and the China

Scholarship Council (CSC) in Germany. It would also allow for Chinese Ph.D. students to obtain their Ph.D. degrees in Germany. During the meeting both sides agreed that each side would be covering the international air-fares and living expenses of its own scientists in the respective partner country. It was suggested to prepare a draft paper for the exchange of Ph.D. students and Postdocs. A further preliminary meeting by BMEL DG 1 Dr. Hahn and the Directors of the DAAD Beijing Office took place in October 2017. Different options were discussed, including the involvement of the CSC, as well as the Graduate School of CAAS.

8.3 Initiating new Sino-German collaborative projects

In special cases, the German and Chinese partners at the S&T Platform may also proactively initiate new Sino-German research collaborations or development-oriented research projects. This can include the proactive contacting of new potential cooperation partners in both countries, the preparation of draft outlines for later research proposals, first contacts with relevant Ministries, funding agencies and/or development agencies in both countries, etc., and may occur either at own initiative or in response to particular calls with specific deadlines.

During the DCZ's 1st Phase, three joint bilateral exchange projects were successfully applied for (MOA-BLE call of May 2016) as outcomes of bilateral workshops organized by the DCZ's Science Component and the S&T Platform. These included one in the field of *Drosophila suzukii,* and two in the field of Innovative plant breeding research. Moreover, follow-up funding for a Sino-German Symposium on "Integrated Management of *Drosophila suzukii*", was successfully applied for from the Sino-German Center for Science Promotion (CDZ) by the German and Chinese scientists. The symposium was held June 26 - July 01, 2017 at the JKI Institutes in Darmstadt and Dossenheim. The German and Chinese scientists are now eligible to apply for a "Cooperation Group" at the CDZ, with a three-year duration.

9. Summarizing Conclusions and Outlook

Via its wide network and its profound acquaintance with the circumstances in the respective partner country, the DCZ component "Science and Research", with the „Science & Technology Platform" with CAAS in particular, has established itself as important player on both the German and the Chinese sides in the field of Sino-German agricultural research in the agri-food sector. Last but not least this was demonstrated in its concrete support of new research collaborations and scientific events. It is strongly recommended to more closely interact with other German research organizations (BMBF, DAAD, DFG, etc.) in future, in order to make better use of synergies in case of similar topics.

As outlook for the Science and Research component, it may be stated that an agreement on the German and Chinese sides is necessary on its precise aim. While CAAS and the German Federal Research Institutes under the auspices of BMEL more strongly pursue the goal of intensifying the intensity of research collaboration with China, one can read in the documents underlying the 2nd phase of the Agricultural Center that the focus lies more strongly on „Support the DCZ components of the APD and the Agribusiness and Agri-food Dialogue according to demand", as well as guaranteeing that "the bilateral agricultural research reflects the topics of both components".

While working between these two „opposing poles“ may actually be quite productive, it should be noted, however, that narrowing down the Component „Science Dialogue“ to a merely supportive role by preparing existing research results and making them available to the Agricultural Policy Dialogue and the Agri-Business Dialogue would give away a great part of its potential for innovation, and could also lead to a diminished interest on the part of CAAS in the long run.

For the future work it is recommended to establish a bilateral mechanism or process for identifying, specifying and accepting future joint priority topics. The planning meeting for 2018 in form of a brainstorming held at CAAS on Sept. 26th, 2017 was a very promising approach. Seven CAAS institutes were invited by the Department of International Cooperation to attend the meeting. Corresponding topical profiles were then derived, for submission to BMEL and MOA prior to their meeting at Vice-Minister level in November 2017. This process also allows for a linkage with other DCZ components in case that thematically similar topics are proposed. For the future it is strongly recommended that CAAS also deliver their list of proposals for joint priority topics to the Department of Science, Technology and Education of MOA directly, without having to go via the Foreign Economic Cooperation Center (FECC) exclusively, in order to make sure it reaches the recipients (Department of International Cooperation of MOA) in a timely manner.

It is crucial for this component to kick-off meaningful, lasting and sustainable research collaborations. While setting joint research priorities, the sustainability of the scientific cooperation should also be taken into account. Sufficient time and input is needed for the potential partners to clarify their mutual scientific and institutional interests and expectations during the preparation of research collaboration projects. Medium- to long-term financing should be considered by both sides. At the same time, interaction with strategic and "political" levels is important.

Support by CAAS to the activities of the Science Component and the S&T Platform has generally been very strong. During a feedback meeting between DCZ and the Division of Bilateral Partnership at CAAS and three different CAAS institutes on March 9, 2018 about the work of the DCZ’s first phase, the following issues were explicitly addressed by CAAS:

- In future, the Science & Technology Platform should constitute a truly innovative platform; thereby the question of „how to combine the interests of the scientists with the national needs” arose
- Although the platform has only limited resources it can act as a trigger for something bigger, i.e., “little in quantity, but high in quality“
- The Platform’s activities should be more diversified, not just limited to workshops, etc. Other instruments, broader, should also be used, e.g. maybe joint capacity building
- The long-planned bilateral exchange programme for PhD students and Post-docs should be realized.

ANNEX:

A1. Bilateral symposia and workshops on research organized 2015-2017

German-Chinese Workshop on Prevention and Control of Spotted Wing Vinegar Fly
Carried out by DCZ research component with FECC, 16-20 June 2015 at the Zhong-Ou Hotel in Beijing.
Number of participants: 10 German side, incl. 6 invited experts and speakers; 27 Chinese side, incl. 6 invited experts, 7 speakers; 3 European company representatives.
Outcomes: Two joint publications (Vogt et al., 2017; Herz and Vogt, 2018); one joint bilateral exchange project successfully applied for (MOA-BLE call of May 2016) on "Prospects for biological control of *Drosophila suzukii*"; a successful application for a Sino-German Symposium on "Integrated Management of *Drosophila suzukii*", funded by the Sino-German Center for Science Promotion (CDZ), which was held June 26 - July 01, 2017 in Darmstadt and Dossenheim, Germany. Final Workshop reports downloadable on DCZ website.

German-Sino Symposium on Soil Science and Soil Protection
Carried out jointly between DCZ research component and the IARRP of CAAS, 17-20 November 2015 at the CAAS in Beijing, as part of the "1st German-Sino Agricultural Week".
Number of participants: 46 German side, incl. 6 invited German soil science experts and 7 European company representatives; 89 Chinese side, including 6 invited soil science experts.
Outcomes: Increased bilateral exchanges; practical soil seminar at the "Sino-German Crop Production and Agrotechnology Demonstration Park" (DCALDP) in Jiangsu in April 2016; work related to the "Action Plan for for Prevention and Control of Soil Pollution in China" published in May 2016; final report downloadable on DCZ website.

German-Chinese Workshop on Innovative Tools in Plant Breeding Research
Co-organized by, Julius Kühn-Institute (JKI), Institute of Crop Science (ICS), CAAS and DCZ; hosted by JKI institutes in Berlin-Dahlem and Quedlinburg, Germany, 17-21 May 2016.
Number of participants: 26 German side, incl. 13 speakers; 4 European company representatives; 12 Chinese side, incl. 11 speakers.
Outcomes: Increased contacts, Two joint bilateral exchange projects successfully applied for (MOA-BLE call of May 2016), on "Identification and validation of effective resistances against leaf and stripe rust", and on "Systematic reviews in agricultural science and decision support".

Sino-German Workshop on Traceability and Food Metabolomics
Co-organized by Institute of Quality Standards and Testing Technology for Agro-Products, CAAS, IARRP, CAAS and German-Sino Agricultural Science & Technology Cooperation Platform in Beijing, sponsored by CAAS, DCZ and Max Rubner-Institute (MRI), Nov. 29-30, 2016, as part of the "2nd German-Sino Agricultural Week". this workshop was the first major activity of the DCZ under the broad topic of food safety.
Number of participants: 15 German side, incl. 8 speakers; approx. 50 Chinese side, incl. 8 speakers.
Outcomes: Increased contacts. One joint bilateral exchange project successfully applied for (in parallel, prior to the workshop, MOA-BLE call of May 2016), on "Development of methods to identify the quality and authenticity of edible oils".

Workshop on Organic Farming and Green Development
Co-organized by Thünen Institute (TI), the Institute of Agricultural Resources and Regional Planning (IARRP), CAAS, and DCZ; hosted by Thünen Institute of Organic Farming in Trenthorst (Schleswig-Holstein), Germany from June 06-09, 2017. It included 11 German researchers from the Thünen Institute and only 1 Chinese (due to visa issues) researcher and member of a consulting agency (OFRC) at the Organic Food Development Center (OFDC), Nanjing Institute of Environmental Sciences (NIES), under the Chinese Ministry of Environmental Protection (MEP).
Outcomes: Increased contacts.

Sino-German Workshop on Food and Nutrition – Strategies and Research
Co-organized by the Max Rubner-Institute, BZfE, BVL on the German side and the Institute of Food and Nutrition Development (IFND) of CAAS on the Chinese side from 30.11.-01.12.2017. It was the first international event co-organized by the IFND – MOA at CAAS, which was founded in 2012.
Number of participants: 20 German side, incl. 8 speakers; 90 Chinese side, incl. 10 speakers. Eight presentations were given by German and ten presentations were given by Chinese scientists.
Outcomes: Increased contacts.

A2. Scientific guidance and expertise provided to DCZ Demonstration Projects and other DCZ components

A2.1 Soil seminar at the "Sino-German Crop Production and Agrotechnology Demonstration Park" (DCALDP)
Carried out jointly between German Agriculture Society (DLG), AFC Consultants International and the Science Component of the DCZ on 28 April 2016 at the Huanghai State Farm, Dayouzhen Township, Xiangshui County, Yancheng District, Jiangsu Province.
Number of participants: 10 German side, 30 Chinese side (approx.), including German and Chinese soil scientists, extension personnel, company representatives and practitioners. Detailled investigation and discussion of soil profiles *in situ*. Seminar with 4 speakers German, 2 speakers Chinese side.
Outcome: Improved mutual understanding on joint issues, concrete recommendations on widening of crop rotations, tillage depth, etc.

A2.2 Second Working Group meeting of APD on sustainable agriculture in Beijing, and Sino-German Conference on Modern Ecological Agriculture in Liaoyuan Municipality, Jilin Province
On Aug. 30, 2016 and on Sept. 1st, 2016, respectively, the German Science Advisor took part in the 2nd Working Group meeting of the Agricultural Policy Dialogue (APD) on sustainable agriculture in Beijing and attended the "Sino-German Conference on Modern Ecological Agriculture" in Liaoyuan, Jilin, together with other members of DCZ and other German and Chinese experts. On both events, Dr. Roelcke gave a presentation on "Organic residue management options in a Chinese peri-urban region with high livestock densities", from a case study from a previous Sino-German research collaboration project (BMBF-MOST).

A2.3 Two "Best Practice Seminars on Manure Management" of Animal Breeding Project

The 1st "Best Practice Seminar on Manure Management" was organized by the Sino-German Animal Breeding Project and its Chinese counterpart the National Animal Husbandry Service (NAHS) on 19 October 2016 in Tianjin. The 2nd "Best Practice Seminar on Manure Management" was held October 12-13, 2017 in Dingzhou, Hebei Province. During each seminar, Dr. Roelcke gave a presentation on "Biogas effluent utilization and nutrient management plan", including results from recent field experiments on ammonia voilatilization following biogas digestate application in the North China Plain (NCP).

A2.4 Introduction of "N_{min} method" to staff members at the DCALDP

On April 14, 2017, the German Science Advisor introduced the German "N_{min} method" to Chinese staff members at the Sino-German Crop Production and Agrotechnology Demonstration Park" (DCALDP) on the Huanghai Farm in N Jiangsu. The soil N_{min} content is an important parameter for devising N fertilization to crops. The method includes standardized soil sampling in three soil depth increments as well as extraction of the mineral nitrogen (nitrate-N + ammonium-N) using 1 molar potassium chloride (1 *M* KCl) solution. A handout in German describing the method prepared in advance was translated into Chinese. The soil extracts have been analyzed for mineral N at the Institute of Soil Science (ISS) of Chinese Academy of Sciences (CAS) in Nanjing. In early 2018, the farm has determined N_{min} on 11 of its plots; Dr. Roelcke has assisted the farm staff in the calculation of the data. He also introduced the N_{min} method and presented first results during the 3rd Field Day of the DCALDP on Sept. 27. 2017.

A3. Support preparation of bilateral agreements

In the institutional field the DCZ's Science Component has supported new formal agreements on bilateral cooperation. Besides the preparation of the Joint Declaration of Intent (BMEL und MoA) and the Implementation Agreement (GIZ and CAAS) concerning the Science & Technology Platform 2015, support was given for the conclusion of MoUs between CAAS and the German Federal Research Institutes under the auspices of BMEL - MRI (2016), and TI (2017). Planning of an MoU between CAAS and FLI is still in progress.

A4. Attendance of national and international scientific conferences

Both Dr. Marco Roelcke and Prof. Dr. Zhang Bin of the S&T Research Platform have been attending several high-level national and international scientific conferences, including:

RAMIRAN 2015 – Rural-Urban Symbiosis. 16th International RAMIRAN Conference, 8-10 Sept. 2015, Hamburg University of Technology, Germany:
Oral presentation by Dr. Marco Roelcke et al.: "Organic residue management options in a Chinese peri-urban region with intensive animal husbandry and high nutrient loads".
5-page peer-reviewed abstract published in (Roelcke et al., 2016):
http://ramiran2015.de/wp-content/uploads/2016/05/RAMIRAN_2015-Proceedings-Book.pdf

5th International Symposium on Soil Organic Matter (SOM 2015), 20-24 Sept. 2015, Georg-August-University, Göttingen, Germany:
Oral presentation by Prof. Dr. Zhang Bin et al.:
http://www.som2015.org/

SUSTAIN - Soil functions and climate change- do we underestimate the consequences of new disequilibria in soil properties?
23-25 Sept. 2015, Christian Albrechts University, Kiel, Germany.
Oral presentation by Prof. Dr. Zhang Bin et al.: "Physical Functionality of Soil Organic Matter Fractions".

International Composting Conference, 22-25 Oct. 2015, Beijing, China.
Organized by China Agricultural University.
Dr. Marco Roelcke attended on Day 1.

5th Sino-German Environment Forum, 19-20 April, 2016, Nanjing, China:
Dr. Marco Roelcke attended, and joined the Workshop III on Biodiversity and Soil Conservation.

5th Sustainable Phosphorus Summit (SPS 2016), 16-20 Aug. 2016, Kunming, China:
Oral presentation by Dr. Marco Roelcke on: "Soil P status and organic residue management options in a Chinese peri-urban region with high livestock densities".
1-page abstract published under: Session 7 - Environment Sustainability and Management Strategies, Oral presentation O7-1.
http://sps.weinuoda.cn/

Sino-German Symposium: "Explaining transition of Chinese rural areas: A system perspective", 13-16 Sept. 2016, Sichuan Agricultural University, Chengdu, China:
Oral presentation by Dr. Marco Roelcke on: "Organic residue management options in a Chinese peri-urban region with high livestock densities and high nutrient loads".

1st Sino-EU 2016 Bio-Natural Gas Summit, 03 - 05 Nov. 2016, Beijing, China:
Organized by China University of Petroleum (Beijing) (CUPB), European Commission Joint Research Center Directorate for Energy, Transport and Climate (EUBCE) and GIZ. Oral presentation by Dr. Marco Roelcke on "Biogas residue and slurry treatment and fertilizer application".

Two meetings of Sino-German-Cooperation Group „Integrated Water Resource Management: from Modeling to Adaptation", Nov. 2016 in Hamburg, and April 2017 in Shanghai:
Funded by Sino-German Center for Science Promotion (CDZ). Both meetings were attended by Prof. Zhang Bin.

China-EU Workshop on Soil: Policy, Science and Technology, 27-28 February 2017, Beijing:
Organized by Chinese Ministry of Environment Protection (MEP), Chinese Research Academy of Environmental Sciences (CRAES), Directorate-General for Environment, European Commission, and the EU Joint Research Center (JRC). Dr. Marco Roelcke attended.

The 15th International Symposium on Soil and Plant Analysis (15th ISSPA Nanjing 2017), Nanjing, China, May 14-18, 2017:
A poster presentation was given, resulting of a research collaboration project between Technische Universität Braunschweig and Hebei Agricultural University in Baoding, in which Dr. Roelcke was closely involved during 2015-2017.
Widdig, M., M. Roelcke, Z. Gao, W. Ma, A. Michalczyk, K.-C. Kersebaum, and R. Nieder (2017): Quantification and modeling of ammonia volatilization from irrigated and non-irrigated winter wheat plots in the North China Plain.

Biennial conference of the German Soil Science Society DBG (Jahrestagung der Deutschen Bodenkundlichen Gesellschaft DBG), Göttingen, Sept. 2-7, 2017:
This conference was attended by Prof. Dr. Zhang Bin. A poster presentation was given by the M.Sc. student Ms. Meike Widdig, resulting of a research collaboration project between Technische Universität Braunschweig and Hebei Agricultural University in Baoding, in which Dr. Roelcke was closely involved during 2015-2017.
Widdig, M., M. Roelcke, Z. Gao, W. Ma, A. Michalczyk, K.-C. Kersebaum, and R. Nieder: Ammonia volatilization from irrigated and non-irrigated winter wheat plots in the North China Plain – Quantification and modeling.
https://www.dbges.de/de

Forum on "Ecological Civilization Construction", Yuexi County, Anhui Province, Oct. 22-23, 2017:
Dr. Roelcke and Ms. Wei Rong of DCZ were invited to attend this event that coincided with the 20th Anniversary of the Sino-German GTZ project "Development of Biological Agriculture in Poverty Stricken Areas of the P.R. of China", carried out together with OFDC (NIES-MEP) 1997-2003, where Dr. Roelcke had worked as a consultant between 1998 and 2000. The Forum and Anniversary were also attended by several representatives from OFDC and OFRC (NIES-MEP). Two articles by "China Environment News" reported about these two events:
http://www.cenews.com.cn/ztbdnew/2017/1114/#
https://app.cenews.com.cn/hjb/page/index.php?id=8014171

A5. References:

Action Plan for Prevention and Control of Soil Pollution (2016): Issued by the State Council, May 28, 2016 (*in Chinese*). English translation by GIZ:
http://dcz-china.org/wp-content/uploads/2016/12/20161031_National-Soil-Action-Plan_GIZ_ENG.pdf
This third Chinese National Action Plan, following those on air pollution (2013) and water pollution (2015) was issued by the State Council on May 31st, 2016. Together with the GIZ Sino-German Environmental Partnership Project, the Science Advisor Dr. Roelcke, himself a soil scientist by training, took part in the translation of the Soil Action Plan from Chinese into English.

Herz, A., Vogt, A. (2018): Mitteilungen und Nachrichten: Sino-German Symposium on Integrated Management of *Drosophila suzukii*, Julius Kühn-Institut, Darmstadt/Dossenheim 26.06.–01.07. 2017. Collection of Abstracts of presentations held by German and Chinese scientists during the Symposium. Zeitschrift für Kulturtechnik - Journal of Cultivated Plants 70 (2), 59-68.
https://www.journal-kulturpflanzen.de/

Roelcke, M., Heimann. L., Hou, Y., Ma, W.Q., Luo, Y.M., Li, G.X., Liu, X.J., Schuchardt, F., Nieder, R., Zhang, F.S. (2016): Organic residue management options in a Chinese peri-urban region with intensive animal husbandry and high nutrient loads, RAMIRAN 2015 - Rural-Urban Symbiosis. Proceedings of the 16th International RAMIRAN Conference, 8th-10th September 2015, Hamburg University of Technology, Germany; Körner, I. (Ed.): TUTech Verlag, Hamburg, Germany, DOI: urn:nbn:de:gbv:830-88213742, p. 35-39
http://ramiran2015.de/wp-content/uploads/2016/05/RAMIRAN_2015-Proceedings-Book.pdf

Vogt, H., Herz, A., Köppler,. K., Frosch, M., Hoos, G., Müller, S., Roelcke, M., Graf von Hoyos, C. (2017): Report about the German-Chinese Workshop on Prevention and Control of Spotted Wing Drosophila, Drosophila suzukii, held in China, June 16–20, 2015, Zeitschrift für Kulturtechnik - Journal of Cultivated Plants 69 (1), 16-24.
https://www.journal-kulturpflanzen.de/