







Greeting from Julia Klöckner, Federal Minister of Food and Agriculture

Dear Readers,

Securing the global supply of food is a central task. The continuously expanding population of the world needs to be kept supplied with sufficient healthy and safe food, with the agricultural and food sectors consequently holding a vital function. Satisfying this task calls for a capable and sustainable agricultural industry worldwide. Germany is making a key contribution to this in various areas.

The agricultural and environmental policy cooperation of my ministry with key regions and the expansion of scientific capacities are central strategic tasks for the future.

The establishment of high-yield agriculture and the further development of the rural areas of the countries of Eastern and South-eastern Europe, Central Asia and the Caucasus are significant factors in generating prosperity and countering the causes of flight—by creating future prospects. This secures food supplies, but also contributes to the economic and political stability of these countries and Europe as a whole.

The Leibniz Institute of Agricultural Development in Transition Economies (IAMO) plays a central role as partner for international cooperation in agriculture. Since it was established 25 years ago, the institute has made a significant contribution to the international visibility of German agricultural research.

For example, the institute produces excellent scientific papers to support economic development and the ecological future in the direct European neighbourhood as well as in the Eurasian area.

At the same time, close links have also been established to partner countries in the region. Ukraine, Kazakhstan and Russia in particular have enormous agricultural potential, the utilisation of which is closely tied to the research and training conducted in the respective countries.

IAMO is carrying out diverse projects aimed at expanding agricultural science capacity in Ukraine, Uzbekistan and Romania. Furthermore, the institute is also involved on behalf of my ministry in moulding the agricultural policy dialogue and cooperation with Ukraine and China. It conducts key pioneering work with research into sustainable land use in the European and Asian transition economies. In addition, its extensive expertise on issues regarding the agricultural trade of the partner countries is indispensable for us.

Its scientific and practice-related policy advising makes it a valuable partner for all agricultural policy decision makers, both in Germany as well as the partner countries and international organisations.

I wish IAMO continued success in its various projects.

Julia Klöckner

Federal Minister of Food and Agriculture

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IAMO was founded 25 years ago, in November 1994. The institute began its work in April 1995. Since then, IAMO has travelled far. Thanks to outstanding performance in research and science-based policy consulting, IAMO has evolved into a valued liaison contact in its partner countries. Both high-ranking political decision makers and managers of agricultural administration bodies and companies turn increasingly to the expertise of IAMO to resolve urgent problems of the agricultural sector and rural development. This applies to the countries of Central Asia and the western Balkans in particular, but also to Ukraine, Russia and China. One particular focus of the institute is upon the establishment of internationally viable academic research and teaching institutions in the regions concerned.

Examples of these are a number of new, combined research and advising projects that are actively underway in the IAMO partner countries. For example, since 1 December 2017 the Federal Ministry of Education and Research has been supporting the three-year project 'KlimALEZ – Increasing climate resilience via agricultural insurance – Innovation transfer for sustainable rural development in Central Asia'. The goal, in cooperation with German and local insurance companies, is to carry out the piloting and testing of index-based agricultural insurance in the countries Uzbekistan, Kazakhstan and Kyrgyzstan. The superordinated objective here is to improve the climate resilience of the drought-prone agriculture of Central Asia. In 2018 there were meetings in Kyrgyzstan with high-ranking politicians and experts, as the government there is planning a reform of the insurance sector.

Parallel to this, IAMO is also supporting the establishment of an insurance laboratory (*Insurance Lab*) at Tashkent State Economic University (TSEU) in Uzbekistan in the scope of the KlimALEZ project. The Insurance Lab will function as an innovation hub for creating science-based empirical recommendations for policy makers and business partners. The Insurance Lab is a cooperation between the GROSS Insurance Company and the TSEU.

In the scope of a new doctoral programme on sustainable agricultural development in Central Asia (SUSADICA) 10 PhD students have now begun their research in the fields of Agricultural Economics, Development Studies and Land Use. The project is being conducted in cooperation with Justus Liebig University Giessen, Martin Luther University of Halle-Wittenberg (MLU), the Tashkent Institute of Irrigation and Agricultural Mechanization Engineers (TIIAME) and the Regional Environmental Centre for Central Asia (CAREC, Kazakhstan). SUSADICA is intended to serve as a model project to help establish high standards in PhD education, strengthen international links and improve academic yields for other disciplines and universities throughout Central Asia. The project is funded by the Volkswagen Foundation in Germany and the Ministry for Innovative Development as well as the Ministry of Agriculture of the Republic of Uzbekistan.

Resilience in all of its various dimensions is not only a key item on the agricultural economy agenda in Central Asia. A strong and future-capable agricultural sector is also a key objective of the EU Common Agricultural Policy (CAP). SURE-Farm (Towards

SUstainable and REsilient EU FARMing systems) is a research project that is funded within the scope of the EU Horizon 2020 programme. It comprises 16 universities and research institutes (including IAMO) from 11 European countries and is coordinated by Wageningen University & Research. The project involves researchers examining how agricultural systems can sustainably and resiliently retain their social functions in the face of uncertain and shifting framework conditions. A similar approach is taken by the DFG-funded 'Sustainability of the AgriPoliS research software' (AgriPoliS 2020) project, which aims to support the use of the agent-based simulation model AgriPoliS in research and policy advising. The AgriPoliS research software was developed to investigate the dynamics of the structural transformation of agrarian regions and to model various future scenarios. AgriPoliS is used extensively in the EU SURE-Farm project, amongst others.

The IAMO and IAK Agrar Consulting GmbH have received the go-ahead for the second project stage of the German-Sino Agricultural Center (DCZ). Since 2015 the DCZ has been the key contact and information point for cooperation between Germany and China in the agricultural and food sector. Beginning in April 2018, the second realisation phase is now seeing the existing cooperations expanded to include three main components, agricultural policy, economic and scientific dialogue. These activities are supported by comprehensive public relations work, networking activities, workshops and conferences. The DCZ is a joint initiative of the German Federal Ministry of Food and Agriculture (BMEL) and the Ministry of Agriculture and Rural Affairs of the People's Republic of China (MARA).

The aforementioned projects represent just a selection of the various activities of IAMO at the interface between science and practice that serve to significantly increase the impact of IAMO research. It is also important for IAMO to identify the numerous possible, feasible agricultural development paths in transition economies. Whilst the IAMO Forum 2018 focused on the global perspectives of large-scale agricultural operations, the IAMO Forum 2019 looks at 'Small farms in transition: How to stimulate inclusive growth?'. Small farms with less than two hectares of land continue to produce a third of the food worldwide. In addition, these farms are also engines of agricultural growth, a pool of labour and a key element in securing the social stability of rural areas in many European and Asian transition economies.

The exceptionally positive development of the IAMO would not be possible without a modern administrative operation that satisfies the highest requirements. Amongst the various initiatives of 2018, the optimised data collection at IAMO stands out. The overhaul of the ERP system controlling and the complete reworking of the research information system (FIS) has seen IAMO significantly improve the collecting of its data in research and administration. The term ERP (Enterprise Resource Planning) refers to a complex software solution for the planning, control and monitoring of operational procedures. At the beginning of September 2018 a joint project initiated by IAMO and Merseburg University of Applied Sciences was launched under the heading 'Scientific Support of ERP System Introduction' (ERPIAMO). The aim of the project is to provide scientific support for the further operation and expansion of the ERP system at IAMO. The focus here is upon the systematic analysis of the fields of requirements management, supplier and software selection, implementation

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and process optimisation as well as documentation. The new IAMO research information system (FIS) has been in operation since September 2018. In the system the research, teaching and transfer activities of the institute are centrally documented and processed into the form of various statistics, in keeping with the requirements of reporting.

An Administration that successfully addresses the diverse challenges of an institute facing intense international competition and acts flexibly is one of the main pillars of IAMO. Special thanks therefore go out here to the staff of the Administration and Central Services/Technical Support department for their outstanding efforts, including under difficult conditions and in the face of increasingly high requirements.

The successful work of IAMO would not be conceivable without the wide support of the Ministry of Economics, Science and Digitisation of the Federal State of Saxony-Anhalt and the Federal Ministry of Food and Agriculture (BMEL). Our special thanks consequently also go out to these two ministries. Key impulses also came from the members of the Board of Trustees and the Scientific Advisory Board. We wish to express our special thanks to all of these at this point.

The ten articles of this **IAMO Annual** provide exemplary insights into the work of the institute, with a focus on research.

The leading article deals with the prospects for inclusive growth in rural areas, on the basis of small farms. This theme is of decisive importance for Eurasian transition countries to ensure that rural areas do not fall further behind.

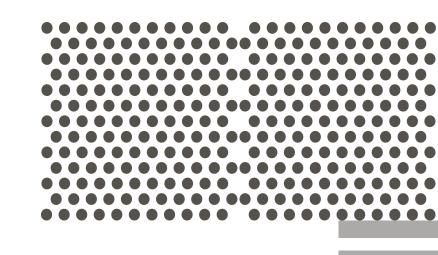
This is followed by two essays on Central Asia. One deals with the causes, extent and consequences of the increasing feminisation of agriculture in Uzbekistan. The second essay addresses the previously mentioned KlimALEZ project (Increasing climate resilience via agricultural insurance – Innovation transfer for sustainable rural development in Central Asia).

Environmental aspects of agriculture are also covered in the fourth article. This addresses the question of whether overgrazing is responsible for soil damage on the steppes of the Mongolian Plateau. The Mongolian Plateau is one of the largest of its kind in Asia.

The fifth article is an interview with Lena Kuhn, head of the China International Research Group, on topics including the work of the aforementioned DCZ – German-Sino Agricultural Center. The following essay offers an overview of the relations between the central government in Moscow and the regions in the implementation of Russian agricultural policy. This issue is examined in the FEDAGRIPOL project, acquired by IAMO in the scope of the Leibniz Competition of the Leibniz Association.

Climate change as a threat to the booming cereal sector in Ukraine is the subject of the seventh article. The following essay is dedicated to the aforementioned SURE-Farm project, with the first research findings concerning what defines resilient agricultural systems in Europe.

Agricultural operations are undertaking comprehensive corporate social responsibility activities, including in Germany. This is illustrated in the ninth article. In conclusion, there is a summary of the IAMO Forum 2018 'Large-scale agriculture – for profit and society?'.





Setting a course for sustainable development: small farms in the transition process

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Thomas Herzfeld Judith Möllers Nodir Djanibekov Not least due to the UN International Year of Family Farming in 2014, smallholders are moving increasingly into the focus of attention. In addition, the United Nations has also designated the period 2019–2028 as the Decade of Family Farming. It is estimated that there are approximately 570 million smallholders worldwide. The number of people directly dependent on these farms is thought to be 1.5 billion. In developing countries these farms are responsible for around 80% of food production (WIGGINS and KEATS, 2014). In Europe, Central and East Asia comparatively small farms also represent an important group within the agricultural sector. For example, in the EU nearly two thirds of all farms are smaller than two hectares.

Common stereotypes regarding smallholdings are subsistence production and malnutrition. Despite this, many actors are hoping that these small farms will contribute to food security and see them as an engine of economic development (WEGREN and O'BRIEN, 2018). Examples show that increasing productivity in these farms can improve the living standards in rural areas. Obstacles to this in many cases include poor infrastructure, low to non-existent professional training and high transaction costs for accessing production factors and marketing produce. In addition, the political influence wielded by smallholders is often only marginal.

This paper offers a current overview of the situation of smallholders in the agricultural sectors of transition countries. Utilising the findings of selected projects of IAMO researchers, it focuses on three aspects:

- the role of remittances for investments in agriculture,
- access to agricultural policy instruments for small farms and
- 3 the obstacles and potential of increased co-operation between small farms.

In the first step we illustrate the frequently used yet highly unspecific classification of smallholders or semi-subsistence farms. According to the definition of Ellis (1993), so-called *peasant farms* are agricultural enterprises that are only partially integrated into markets and therefore largely dependent upon the families' own production factors. In keeping with this definition, the enterprises concerned only have a limited





'Peasant farms' are largely dependent on the families' own production factors. They only have a limited ability to obtain additional labour, land, capital or other inputs via markets.

Agricultural smallholding in Albania © Wiebke Meyer

ability to obtain additional labour, land, capital or other inputs via markets. The availability of family labour and the access to land therefore have a strong influence on the production of these enterprises. If no other financial means are available, the result is a subsequent lack of both investment and the use of fertilisers or pesticides that need to be purchased.

#### Smallholders in transition countries

During the process of transformation, subsistence farming was often a strategy for securing survival. The laying-off of workers, lacking or inadequate social security systems combined with access to small areas of agricultural land even resulted in a surprising effect in a number of countries: in Armenia, Georgia, Moldova, Romania and Tajikistan there was a temporary increase in the share of the agricultural sector in employment and the share of small farms increased (HERZFELD, GLAUBEN, DRIES and TEUBER, 2015).

With ongoing economic recovery, the removal of barriers to mobility in the factor markets—such as the previously strict regulation of migration to the towns and cities and the consolidation of new institutional framework conditions on land and labour markets—the share of smallholders in the transition countries fell markedly almost everywhere. Nevertheless, in many countries these farms still make up a large share of agricultural operations overall, cultivate a medium-sized portion of the overall land and make a major contribution to agricultural production. In a number of countries this applies in particular for labour-intensive produce such as milk or fruit and vegetables. Figure •1• presents an overview of the role of smallholders in selected transition countries. Austria is depicted for a comparison with a non-transition Central European country.

A range of factors limits economies of scale that characterise medium-sized and large agricultural enterprises (BURKITBAYEVA and SWINNEN, 2018). The loss of advantages of scale increases where large enterprises are broken up, with the widening ratio of capital and land to labour. The labour input in Albania, Moldova or Romania in relation to capital input was significantly higher than in Russia or Kazakhstan, for example. As a consequence, resistance to the break-up of large enterprises in the latter two countries was considerably stronger and more successful. In contrast,

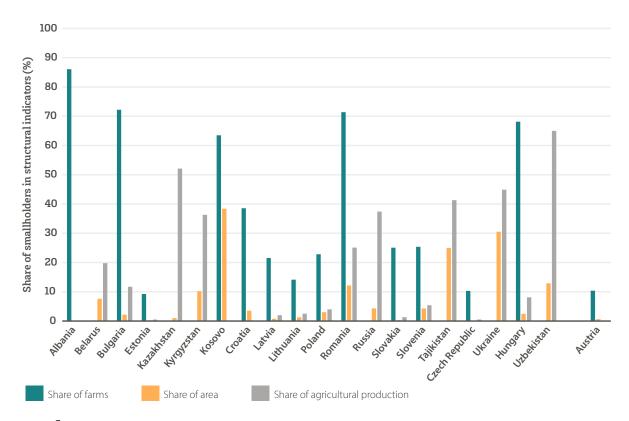


Figure  $\cdot 1$ 

## Share of smallholders in the agricultural sector

Source: Eurostat, Statistical Offices of Kosovo and Albania

rights of use and title to the land of the former collective farms and in some cases also state enterprises in Albania, Azerbaijan, Kyrgyzstan and Moldova were awarded to rural households, similar to the situation in China and Vietnam a number of years previously. The resultant structures limited the growth potential of labour productivity, as there was either a severe restriction of access to capital for smallholders

and/or the introduction of new technology favoured larger production units. In addition, factor and product markets were—and remain—oriented towards large enterprise structures. Small farms find it particularly difficult to market their produce in markets with a strong dominance of supermarket chains with their high quality requirements.

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	Wheat	Maize, barley, rye	Dairy cows	Milk quality programme
Thresholds	2 ha	1 ha	5 cows	1500 l/ quarter
Percentage of small- holdings below the lower limit	63%	41%	87%	

Table • 1 •

## Eligibility thresholds for selected direct payments in Kosovo

Source: Own calculations based on MAFRD (2017) and Statistical Office of Kosovo

# Remittances and smallholdings: the example of Moldova

### Smallholders are largely dependent on additional sources of income to cover their daily requirements. In many transition countries the remittances of migrated family members therefore constitute one of the key sources of extra-agricultural income. Moldova numbers amongst those countries where remittances make up a high share of gross domestic product. Accessing formal loans is very difficult for farmers there. The extent to which these remittances are also used for investments in agriculture was the focus of an IAMO research project (PIRAS, VITTUARI, MÖLLERS and HERZFELD, 2018). The project incorporated data from the Household Budget Survey (HBS) between 2007 and 2013 as well as a survey of small farmers. Around 80% of the households in the HBS sample reported that they had their own land. On average, the available land amounted to just 0.74 hectares. 23% of the households said that they received remittances. In the survey 22 out of 35 households also stated that they used remittances to cover farming costs, for example to purchase land or machinery, or renovate greenhouses.

# Exclusion of smallholders from agricultural policy instruments: the example of Kosovo

Any implementation of agricultural policy instruments involves striking a balance between the widespread effectiveness of these instruments and their administrative feasibility. As a consequence, the EU and many other countries often set lower limits that farms must exceed in order to be able to apply for specific measures. In an ongoing research project IAMO staff are co-operating with the University of Kent, the FAO and the Kosovan Ministry of Agriculture, Forestry and Rural Development (MAFRD) in investigating the role of agricultural policy for small farms. In preceding years the MAFRD introduced a large number of different direct payment schemes. In 2016 the ministry paid out over 26 million euros directly to farmers. However, these funds only go to a few farms, which are on average relatively large. Table •1• illustrates the level of the respective lower limits for selected products as well as the share of farmers that are below this limit.

As counter argument, it can be posited that the concentration on large enterprises—that are con-

sequently more capable of developing—is the right decision when it comes to achieving the agricultural policy goal of purely increasing productivity. However, absolute size requirements do not give a sufficiently accurate indication of development potential. At the same time, this example also illustrates an underlying problem in many countries: smallholders benefit more from social policy measures or the supporting of a diversified rural economic structure than from classic agricultural policy measures.

# Limitations and potentials of co-operation: the example of Kosovo

In Kosovo, international donors have already funded numerous agricultural projects in the past. For example, more than half of approximately 1,800 raspberry producers received either further training, young plants or support with the installation of irrigation systems. In addition to the funded projects, further small farms also expanded raspberry production. This saw the area of cultivation for raspberries increase from 23 hectares in 2013 to 1,000 hectares in 2016. Production for export markets, particularly the EU market, requires high quality standards and the provision of large quantities. Smallholders could improve their market participation through co-operation. However, due to the legacy of the centrally planned economy of the past, there are considerable reservations concerning formal co-operation in many transition countries. On the basis of a survey of some 190 Kosovan raspberry producers at IAMO Theresa Bäuml (2019) investigated attitudes towards forms of formal co-operation: in general, farmers have a positive view of producer organisations and informal co-operation with neighbours and relatives is widespread. However, the problem is that the producer organisations themselves are relatively unknown. There is also scepticism regarding the acceptance of producer groups amongst the farmers. Further obstacles named by the respondents were a lack of seasonal workers during the harvest and strongly-deviating prices in the scope of informal agreements.

#### What will the future look like?

In addition to the situation regarding smallholders in transition countries, the focus of the IAMO Forum 2019 is also upon research issues concerning the future paths of development of these enterprises.

The lack of interest in agricultural work amongst young people from smallholder families means that numerous small farms are discontinued in the course of the generational transition. The institutional framework conditions subsequently have a significant impact on determining how the remaining agricultural producers utilise production factors—land in particular—and thereby influence the orientation of the structural transition. If land fails to find a buyer or there is no trust in the security of lease agreements, there is an increasing risk that such areas will remain uncultivated in the future.

In many countries of the region coupled or decoupled direct payments, subsidies or interest subsidies for investments are the prevailing agricultural policy instruments. However, in many cases the measures are linked to limitations to access for very small farms. At the same time, small farms and the families dependant on them would benefit much more from social policy interventions to tackle poverty and from the provision of public goods. However, the level of political support for these policy instru-





Around 20% of the global population is directly dependant on agricultural smallholdings.







1 A farmer on his raspberry field in Kosovo © Theresa Bäuml, 2017. 2 Chinese farmer with carrying baskets © Lena Kuhn, 2014. 3 Smallholders in China © Eefje Aarnoudse, 2006. 4 Growing cotton in Tajikistan © Martin Petrick, 2012. 5 Small farm in Kosovo © Judith Möllers, 2018.

ments is traditionally relatively low in the agricultural ministries.

Theoretically, the co-operation between farmers offers great potential for overcoming the barriers to development that smaller farms face. Co-operation also helps with the introduction of new technology, access to new knowledge, the joint use of machinery and infrastructure, the marketing of produce or the political representation of interests. However, in reality there is significant resistance and uncertainty regarding such co-operation.

What successful examples are there and what factors can be identified?

There are numerous examples where actors actively bring together producers at other stages of the value chain, particularly in marketing. The models range from bilateral agreements to the certification of producer groups. And the discussion of the impact of this co-operation on smallholders is not yet concluded. On the one hand there are studies illustrating the benefits, such as higher producer prices or more reliable produce sales, on the other hand some authors point to the disadvantaging of smallholders and their exclusion from certain marketing channels.

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Burkitbayeva, S. and Swinnen, J. F.M. (2018). Smallholder Agriculture in Transition Economies. *Journal of Agrarian Change*, *18*(4), 882–892. doi:10.1111/joac.12284

Ellis, F. (1993). Peasant Economics: Farm Households and Agrarian Development. Cambridge: Cambridge University Press.

Herzfeld, T., Glauben, T., Dries, L. and Teuber, R. (2015). Agricultural Labor Adjustment and the Impact of Institutions: Panel Data Analysis. In A. Kimhi and Z. Lerman (eds), Agricultural Transition in Post-Soviet Europe and Central Asia after 25 Years. Halle (Saale): IAMO, 53–73.

Piras, S., Vittuari, M., Möllers, J. and Herzfeld, T. (2018). Remittance Inflow and Smallholder Farming Practices: The Case of Moldova. *Land Use Policy*, 70, 654–665.

Wegren, S.K. and O'Brien, D.J. (2018). Introduction to Symposium: Smallholders in Communist and Postcommunist Societies. *Journal of Agrarian Change*, 18(4), 869–881. doi:10.1111/joac.12281

Wiggins, S. and Keats, S. (2014). Topic Guide: Leveraging the private sector to promote agriculture and natural resource-based livelihoods. Evidence on Demand.

Ultimately, the issue of whether or not the members of the rural households have other sources of income plays a decisive role in the continued existence of small farms. If the livelihood of the households is assured, then agriculture as a side-line activity may be a long-term strategy. If, in contrast, other sources of income are not available, then there is an increasing likelihood that the households will also give up agriculture and migrate into the towns and cities, or even abroad.

Researchers at IAMO are investigating the situation and the possible development prospects of smallholders in the scope of the IAMO Forum 2019, as well as in a series of research projects. The discussion between international experts and researchers from the region aims to provide new insights into existing mechanisms and indicate perspectives for the possible support of development processes.

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## The feminisation of agriculture in Tajikistan and Uzbekistan

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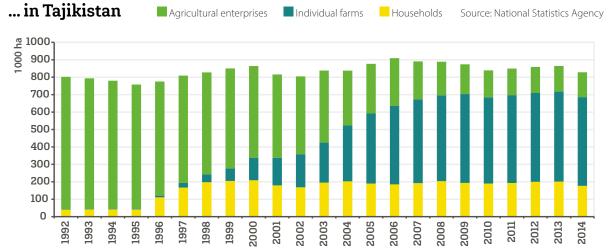
#### Nozilakhon Mukhamedova Martin Petrick

The agricultural profession in Central Asian societies has traditionally been dominated by men. Occupational segregation of gender-based labour positions changed only to a small extent during the Soviet period. However, today, over 60% of agricultural workers in Central Asia are estimated to be female. This transition is closely linked to the fact that the level of female representation in the workforce outside farming has fallen as a consequence of the transition process. The process of transition and societal change in Central Asia did not have the immediate intention of excluding women, but had a discriminatory impact nevertheless. Specifically, women's ability to work outside of the home decreased rapidly in the post-independence tran-

sitions of the Central Asian countries. Contributing factors included a weakening of social protection systems, such as the decline of public childcare services. In addition, men benefited particularly from the redistribution of state property in the course of privatisation.

During the Soviet era the economies of the majority of the Central Asian Soviet republics were largely agrarian. As a consequence, the reforms of the transition era had a particular focus on the agricultural sector. This resulted in the transformation of land rights as well as water management and had a fundamental effect on governance systems in agriculture. In Tajikistan and Uzbekistan the Soviet state and collective farms (sovkhozes and kolkhozes) were restructured (Figure •1•). The land was kept in the ownership of the state, which offered long-term land use rights to new farming entities. These processes affected the female and male rural population in an unequal way. For instance, during the

Figure · 1·
Distribution of arable land by farm types



land allocation process in Tajikistan women were disadvantaged as they were not thought capable of running an agricultural enterprise on their own. In Uzbekistan the awarding of a lease and therefore land use rights was linked to experience in agricultural management, which women often lacked.

Following the disintegration of the Soviet Union there was increasing uncertainty in agriculture, in particular due to the sudden loss of markets. The loss of jobs in countries such as Uzbekistan and Tajikistan resulted in a high level of labour migration. Since that time workers have increasingly migrated from rural areas into towns and cities, or to Russia and Kazakhstan as 'guest workers'. Both forms of migration represent an overwhelmingly male phenomenon.

With this article we aim to analyse gender-related aspects of agricultural labour markets in Tajikistan and Uzbekistan. In particular, we wish to investigate the shifts in the gender composition of occupations that

occurred as a response to widespread migration of men. The basis for this article is official statistical data from Tajikistan and Uzbekistan. In addition, we use data gathered from case study research that we conducted in eight villages of Fergana and Syrdarya provinces of Uzbekistan and Sughd province of Tajikistan. In total 120 interviews and 10 focus group discussions were conducted with farm managers and their agricultural workers.

# Migration and gender dimensions of agricultural labour

Average remittances received by Tajik households from migrated family members account for only 10 to 12 percent of total household income. At the same time, the welfare system does not offer benefits comparable to those offered during the Soviet era. Taken together, both factors increase the pressure on women to take low-paid agricultural jobs. According to the official statistics of Tajikistan, the average wage income in the agricultural sector in

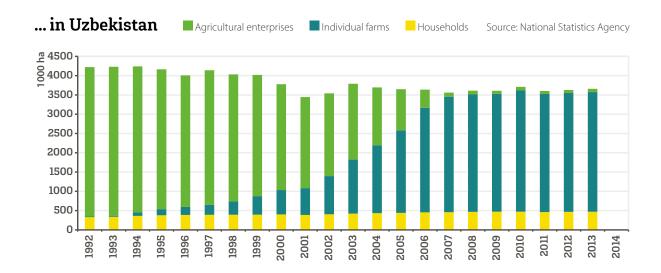
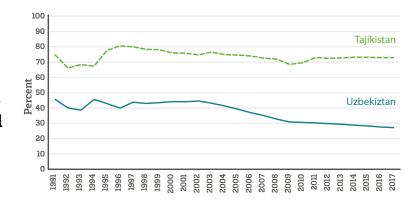


Figure •2•

## Share of female employment in agricultural employment in % of total female employment in all sectors

Source: International Labour Organization



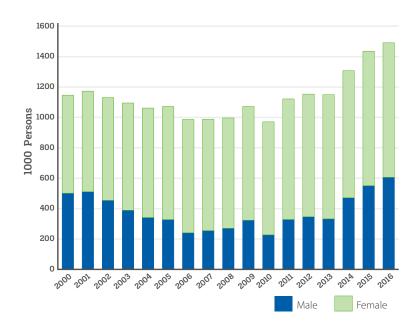
#### Figure ·3·

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# Estimated number of persons actually employed in Tajikistan's agriculture

(without labour migrants). An estimate with an assumption that the official labour survey also considers migrant workers to be active in agriculture during their absence and assuming that 75% of migrant workers are registered at the border crossing.

Source: Labour force from International Labour Organization, migrants from Statistical Agency of Republic of Tajikistan



2017 was around 40 dollars per month, low even by Tajik standards. For this reason, rural households require multiple sources of income to secure their livelihoods.

One such source is kitchen gardens, which have gained considerable importance for the income of female-headed households with male migrants. In addition, they also make an important contribution to the overall food security of rural communities. The migration of male labour has resulted in female household members becoming the primary users and managers of kitchen gardens.

According to traditional Central Asian family attitudes, women are seen as responsible for all tasks within the house, whilst men are the breadwinners and the protectors of their families. As previously

mentioned, the strict gender-related division of labour in agriculture changed little during the Soviet era. However, the impact of extensive male labour migration on rural households has resulted in a shift and partial replacement with female decision makers in agriculture. More and more facts point to the feminisation of agricultural labour. This is not only expressed in increased numbers of women in agriculture (often not captured in official statistics) (Figure \*2\*), but also suggests that women are both increasingly willing and able to enter what is traditionally considered a male domain.

In summary, the migration of male labour has resulted in Tajik and Uzbek women taking on the work of the absent men in the agricultural sector (**Figure \*3\***). Female workers have therefore left their established areas of work, effectively reducing the occupational segregation in agriculture.

The radical policy shift during the transition towards the restructuring of agricultural enterprises not only produced new forms of agricultural operations, it also altered the contractual relations between agricultural actors—both private farms and collectives. These contractual relationships are typically formal or informal labour agreements that are established between the farm managers, mostly men, and the workers, mostly women. This gender imbalance is due to the fact that men are often unwilling to accept low paid jobs in agriculture. Most of the wage agreements between farms and female labourers are informal. As a result, these newly acquired employment positions often push women further into the informal labour market. This is characterised by factors such as insecure income, working conditions and contractual periods. As they are not registered as official workers, they are not eligible for social

support or pension provisions. At the same time, full-time farm-based roles are limited for women, and day labour rates are typically lower than for men. Farmers in the new market conditions have not been eager to offer official contracts due to tax burdens, market instabilities and probably due to existing gender norms. However, migration reduces the domestic labour supply as a whole, thus triggering an increase in the wage level expectation in the local employment market. In this situation, many unemployed men decide against formal job offers in agriculture, as they do not want to accept low-wage jobs (Figure \*4\*).

This trend induces informal labour relations for women, who have closer ties to the area. Most of the informal positions consist of kitchen garden and seasonal farm employment. Neither of these are separately defined in the national labour legislation of Tajikistan and Uzbekistan. As a consequence, labour relations between the employers and employees are not regulated; the conditions of employment and dismissal, overtime payments and medical insurance are absent. Nevertheless, such informality of positions is found to be essential for rural women as it offers flexibility of time management and the opportunity to earn, whilst also fulfilling other family obligations.

#### Challenging male-dominated occupations

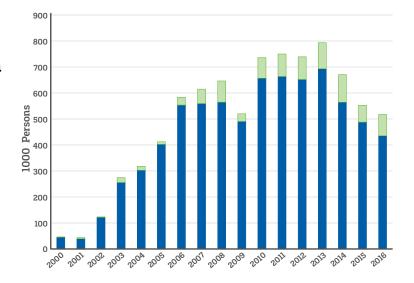
Understanding feminised contract relations in the labour market is an important step in comprehending the nuances of women's livelihood strategies within agricultural production. Feminisation occurs simultaneously at a range of spatial and social levels and affects different stages of the agricultural value chain. These include key agricultural prerequisites,

Figure •4•

## Number of labour migrants originating from Tajikistan, 2000–2016

Source: National Statistics Agency





such as water management and other non-farming activities that have the potential to position women beyond being unskilled agricultural workers.

Rural women in Uzbekistan have become more active in irrigation and water management at local level. It appeared that the new roles of women are often defined according to age groups, with young women (kelins) watering whilst the older women negotiate with men, including community water specialists, staff of the Water Users' Association (WUA) or other local authorities. Increased involvement of female small water users represents a challenge to traditional irrigation-specific gender roles as well as village norms. So far, these new roles for women have not been institutionalised within the village setting nor within the new organisations that have been set up (WUAs). Therefore, women irrigators are still operating outside the new institutional setting and the traditional setting. There are two consequences of this: being outside decision-making processes excludes them, but non-involvement can also enable

them to manipulate the existing processes to their advantage.

A similar situation can be found in Tajikistan where women, to some extent, have also taken over roles in irrigation services, including working as community water specialists and as farm irrigation managers. Cases of women working as water specialists within village communities could indicate that water providers to rural settlements find themselves having to turn to a female labour force in order to engage with the now dominant female clients. This shift to female employees can be traced to existing, still highly restrictive gender norms and a lack of men willing to take on low paid work. It is likely that this shift will not be limited to the water sector as direct contact with households, for collecting gathering cash payments, for example, is also common for other utilities as well as when collecting taxes.

Due to the fragmentation of land and the pressing need to irrigate with scarce water resources with-





female trainers in this field is also on the increase. It is likely that the absence of men initially triggered the shift to hiring female specialists. However, it is also likely that trust and confidence based on the quality of the services of these first female specialists led to a wider acceptance among male farmers and, therefore, triggered a rise in female apprentices in this field, making such feminisation acceptable to both men and women.

# Female autonomy is changing traditional gender norms

Structural reforms in the agricultural sector of Tajikistan and Uzbekistan and the continued gender-

in a given time period, farmers generally hire specialists to irrigate their land. Due to the shortage of experienced male water specialists Interviewee, Tajikistan © Nozilakhon Mukhamedova, 2018

# New gender role: female water specialist

based assignment of activities have influenced the formation of social roles and decision-making power of men and women in rural areas over the past

and younger men interested in taking over such a job, women are increasingly learning this occupation. Although women still consider irrigation to be a man's profession, they recognise the importance of women's involvement in the irrigation of farmland. Women now work as water specialists on collective farms or private farms dominated by men. They are involved in decision making regarding irrigation methods, the quantities of water used and negotiations with other water users. However, this learning process is a case of learning on the job, without formal training. Some of the Soviet-style institutions as well as newly established private farms within the agricultural sector have already adapted to the situation of feminising rural societies by hiring more female specialists in various sectors. The number of

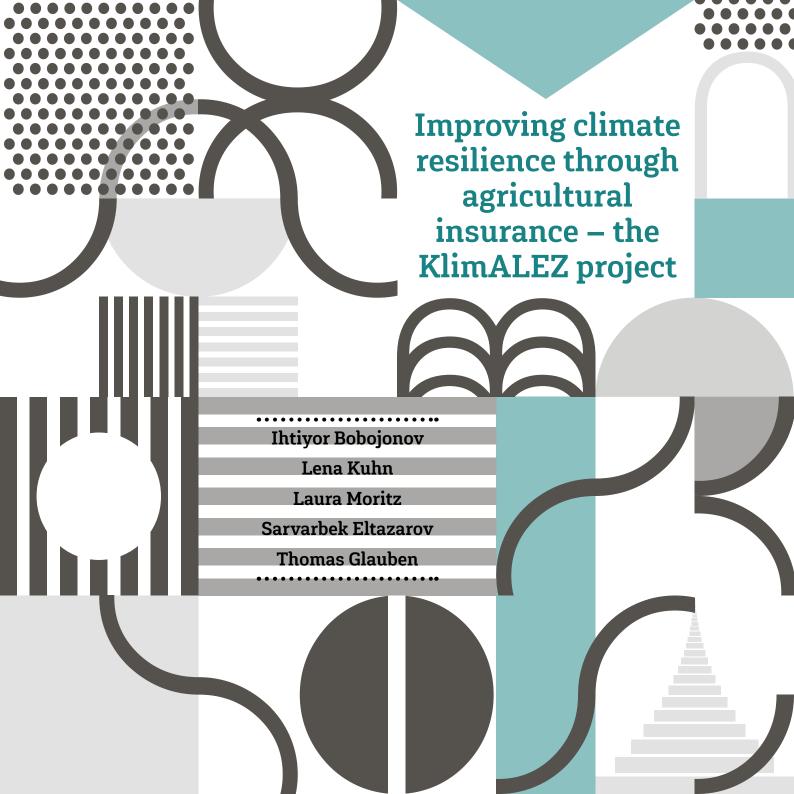
few decades. Since the collapse of the Soviet Union and the beginning of the transition period, new types of employment relationships have emerged in Tajikistan. This has occurred on the one hand on the basis of historical gender system legacies (cultural, religious, and political elements), on the other hand as a result of socio-economic and legal transformations and through changes in the labour market. Economic transition, agrarian reforms, male outward migration and the subsequent increase in women's labour participation have in turn facilitated changes in gender norms and contractual relations.

In transition countries such as Tajikistan and Uzbekistan, the increased participation of women in the labour force is a sign of their entrance into a wider

spectrum of employment opportunities. Nevertheless, the jobs women perform remain subject to low protection, security, and earnings. Despite this, the increased level of female participation has increased their involvement in economic, social, and political events and contributed to the growth of their decision-making power. The work of the women strengthens the trust of male employers in mutual co-operation and consolidates employment relationships, although these are often informal in nature.

The break from the male-dominated society and partial turning away from patriarchal values in our case studies is based on economic changes and the development of new social environments, such as outmigration of men, and women subsequently becoming the majority in rural areas. The feminisation of agriculture has brought about a series of changes in social behaviour and cultural norms. However, it remains to be seen if these changes are positive and long-lasting. On the one hand, the outward migration of male workers leaves space for female autonomy and offers increased employment opportunities for women. On the other hand, the enduringly informal character of female employment relations in agriculture could diminish the social status of female workers. This would be the case, for example, if they remain excluded from advantageous working hours regulations, employer contributions to healthcare and pension systems or career opportunities.

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Improving climate resilience through agricultural insurance – the KlimALEZ project

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Laura Moritz
Sarvarbek Eltazarov
Thomas Glauben











Risk management tested in realistic simulation





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he significance of the agricultural sector in Central Asia – as compared to European countries – is reflected in the substantial contribution of agricultural production to the GDP and the large share of employment in agriculture. Between 40% and 60% of the national population in gainful employment works in the agricultural sector. However, agricultural production in this region faces significant problems, such as market inefficiencies and declining area of irrigated land, with associated land degradation. Climate change is making the situation worse for farmers in the region and has further increased susceptibility to falls in production (LIOUBIMTSEVA and HENEBRY, 2009; BOBOJONOV and AW-HASSAN, 2014). Dry periods are occurring with greater frequency, causing considerable damage to the livelihoods of the rural population in the semi-arid and arid regions of Central Asia (CAREC, 2011). The droughts of 2001–2003 and 2007–2008 were some of the worst in the history of Central Asia and brought with them numerous socioeconomic problems (LIOUBIMTSEVA and HENEBRY, 2009). At the same time, the rains that do occur are increasingly severe and often lead to flooding in the poor mountain regions in particular.

The ability of agricultural producers to adapt to such developments is yet limited in Central Asia. Although there is a wide range of drought mitigation techniques found suitable to cope with negative consequences of climate change in the region, these technologies are rarely adopted in practice (e.g. MIRZABAEV, 2013). A lack of private finance and underdeveloped credit markets are important factors hindering the

adoption of such technologies. Consequently, a risk management tool adapted to regional requirements and challenges is urgently needed.

#### Agricultural insurance markets in Central Asia

One promising tool for climate risk management is agricultural insurance, which allows agricultural risks to be mitigated via agricultural insurance markets. Agricultural insurance stabilises the future expectations of farmers, thereby also boosting investment and productivity (BRYLA and SYROKA, 2007). Agricultural insurance can balance farming income in developing countries in particular. It not only secures the profits of farmers, but also contributes to increased regional production (HAZELL and HESS, 2010).

Amongst Central Asian countries, only Kazakhstan and Uzbekistan have functioning agricultural insurance markets. Under Kazakh law, farmers are obliged to insure themselves against the principal risks, such as drought and floods. Depending on the region, premiums range from 2.5% to 9% of revenues. The government subsidises agricultural insurers by paying half of the pay-outs (MAHUL and STUTLEY, 2010). However, this compulsory insurance was not very successful in the past, due to its inadequate realisation and pay-out shortfalls. Although large areas of cultivation are insured in some regions, the fact that farmers often reduce their insurance cover to a minimum means that the effect on risk management is low (HEIDELBACH, 2007). This situation prompted Kazakhstan to ask for support from international

Photos of the KlimALEZ series of workshops with Uzbek farmers in April 2019 and of experiments with Kyrgyz farmers in July 2018.

<sup>1+2</sup> Non-irrigated and irrigated farming, Kyrgyzstan © Lena Kuhn Laura Moritz. 3 Insurance experiment with Uzbek smallholders © L. Kuhn.

**<sup>4</sup>** Evaluating the results of the game after each round © Intiyor Bobojonov. **5** Introduction to the 'rules of the game' © L. Moritz. **6+7** Farmers counting their gain/loss|Group discussion|Evaluating the results of the game © L. Kuhn.

organisations in developing its agricultural insurance programmes (e.g. WORLD BANK, 2012; BOBOJONOV, 2015).

Uzbekistan launched subsidised insurance programmes in 1998 and, until 2001, subsidised about 25% of insurance premiums (MURADULLAYEV et al., 2015). About 30% of the crop area for wheat and cotton in Uzbekistan is currently insured. However, insurance companies regularly run into considerable financial difficulties when facing yield losses in whole regions or countries. To cope with such cases of systemic risk, co-operation with international re-insurance companies is urgently required.

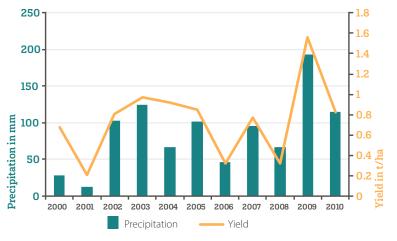
One proposed improvement to insurance markets in Central Asia is modernisation through the introduction of index-based insurance products. Indexbased agricultural insurances, also known as weather derivatives, are a promising tool for hedging against climate-related uncertainties and are thus considered very suitable for developing countries (SKEES, 2008). Farmers insured in such a way receive indemnity when the specified index falls below (or above, depending on the index) a certain value. Today, most index insurances work with weather indices that correlate highly with local yields. Put in different words, index insurance is based on factors that are beyond the control of farmers. This helps to eliminate fundamental problems when creating insurance policies, such as moral hazard (e.g. lack of incentive to avoid risks) and adverse selection (e.g. insurance is bought only by high-risk individual farmers). In addition, index-based insurance reduces the costs for insurance companies as there is no requirement for cost-intensive field visits to assess damage (BRYLA and SYROKA, 2007). These cost savings mean that insurance products can also be affordable to small farmers.

#### The KlimALEZ project

In the scope of the KlimALEZ project funded by the Federal Ministry of Education and Research (BMBF) IAMO researchers are working with research institutions and insurance companies from Germany and the target countries to develop and implement an index-based agricultural insurance programme. KlimALEZ stands for 'Climate resilience via agricultural insurance - Innovation transfer for sustainable rural development in Central Asia'. In a transdisciplinary approach, the project pursues two closely related objectives in selected Central Asian countries: firstly, the project aims to improve the resilience of the agricultural sector to climate risks. The goal is to achieve this by introducing innovations to the agricultural insurance markets, taking into account local requirements and capabilities. The second objective of the project is to analyse and explore the influence of index insurances on the production and efficiency of resource use on the level of individual agricultural producers. By analysing chances and determinates of adoption of index insurances in the region, the KlimALEZ project is opening a new research field. So far, there are no large-scale analyses concerning the impact and adaptation of agricultural index insurances in Central Asia. Also in Europe, as well as globally, this is a research question that is rarely dealt with.

#### The development of an index

Weather indices use information from remote sensing data or ground-level data to estimate yield shortfalls. For instance, indices can be established based on the data from climate stations. Figure •1• shows an example of application of precipitation data as an index to identify yield shortfalls using the example of



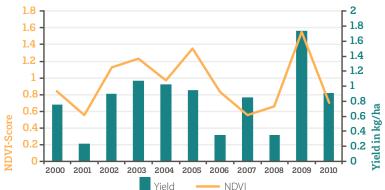
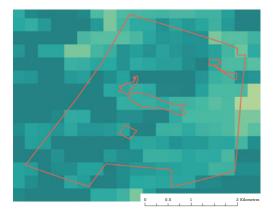


Figure · 3 · Farm level yield and NDVI data in Gallaral district, Uzbekistan

#### Figure $\cdot 1 \cdot$

Farm level yield and precipitation data for Gallaral district, Uzbekistan

Demonstration of usage of NDVI data to estimate yield shortfalls



rain-fed wheat in Uzbekistan. The close fit between both items demonstrates the good quality of cumulative rainfall as an instrument for identifying yield shortfalls. Remote sensing data meanwhile provides data at higher resolution. Therefore, KlimaALEZ also tests indices that are based on satellite data. For instance a NDVI, a normalised difference vegetation index, identifies shortfalls in vegetation growth

and is considered suitable for yield estimations by many scientists. Figure •2• provides an illustrative example for a wheat producing farm, consisting of several NDVI data grids. Darker green pixels represent higher biomass and higher yields while yellow areas stand for areas with limited biomass growth. As shown in Figure •3•, NDVI information also correlates very well with the yields measured.

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Beyond technical challenges of index development, the KlimaALEZ project also aims to develop an actual insurance product to guarantee sustainable impact of the research. The acceptance of three pilot insurance products was consequently tested among Kyrgyz farmers during fieldwork conducted in June 2018. Around 150 farmers from the area around Bishkek participated in so-called insurance games. These simulated farm management under variable weather and recorded participants' choices with respect to farm inputs and risk management. Each session involved 10-20 participants as well as at least three enumerators, who documented all decisions. Prior to the beginning of the game we introduced ourselves, the project and the game itself. The farmers had previously stated the size of their farm in a registration form. In the game itself farmers were asked to allocate a game endowment to a bundle of fixed costs to maintain their farming activities or optional farming investments. Specifically, we offered to allocate money to fertiliser that would increase yields by 30% and/or one of three index-based drought insurances that result in payouts of varying levels in the event of drought. The remaining endowment was automatically deposited in a savings account with an annual interest rate of five percent. After all farmers had made their decision, the resulting income was calculated based on rainfall and the selected input of fertiliser. Insured farmers additionally received an insurance pay-out when lack of rainfall had triggered their selected insurance product. This procedure was played for five consecutive years (five rounds) in which neither the sequence nor the probability of the various weather events was known to the farmers.

The design of the game was based on real information concerning yield, climate and insurance products as well as on the realistic simulation of decision-making processes in the life of a farmer. The insurance product offered was developed in co-operation with both a German reinsurance and a Kyrgyz direct insurance company. They set premiums, pay-out amounts and triggers in the manner of a commercial product, thus reflecting a realistic, market-based insurance innovation.

Initial analysis of the data collected shows the generally high interest of farmers in improved risk management. Many of the sample farmers perceive climate risk, particularly drought, as a threat to their production. This applies in particular to crops like wheat and barley (see Figure •4•). The majority of existing drought management techniques are mostly restricted to costly ex-post mitigation measures such as the off-farm use of private loans. Correspondingly, nearly 80% of the participating farmers decided to purchase insurance during the field experiment (see Figure •5•). However, the number of insurance purchases dropped towards the end of the game, as many farmers faced financial shortages. Although insurance covers all production costs, small farms also depend on their harvest to cover their own consumption. They are therefore not able to sell their entire harvest. These smallholders naturally first cover their own consumption needs before making input decisions with the remaining surplus income.

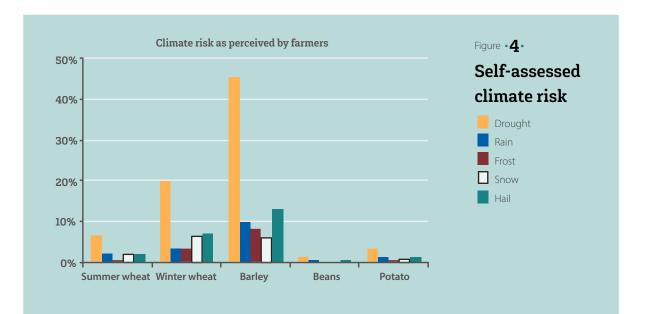
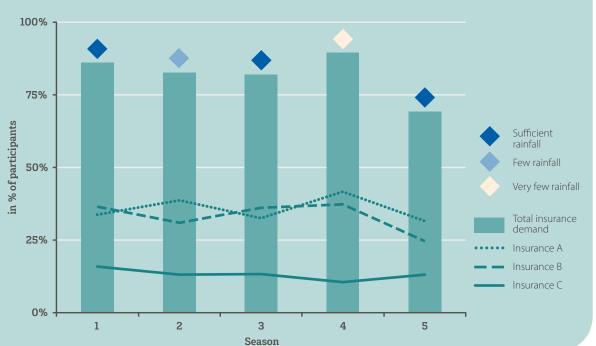


Figure •5•
Insurance demand across game rounds



## High interest in insurance cover meets low level of available funds

During the first year of the project, suitable indices and insurance products were developed. Data obtained from climate stations and satellites provide an efficient base for estimating yield shortfalls. These data consequently form an effective basis for index-based harvest shortfall insurance. The insurance experiments conducted in the field revealed a very high interest amongst farmers in these kinds of risk management instruments. However, one of the main challenges remains the financial constraints that prevent farmers from purchasing market-based insurance products at the onset of the vegetation period. During that time of the year, farmers need to buy seed and prepare the fields and often do not have the funds for purchasing insurance. Developing possible solutions to these problems forms part of the current and upcoming activities of the project.

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Lijuan Miao Yanjun Ren Zhanli Sun Daniel Müller

Acknowledgement

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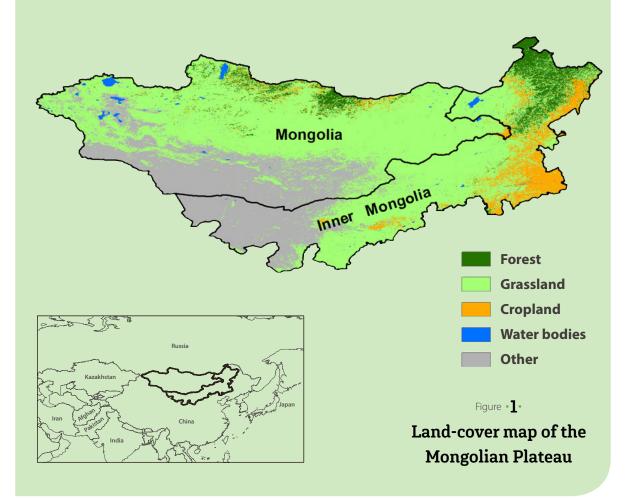
This study was supported by the Alexander von Humboldt Foundation with an International Climate Protection Fellowship. Similarly, support was also provided by the European Union's Framework Programme for Research and Innovation Horizon 2020 (2014–2020) under the Marie Skłodowska-Curie Agreement (No. 795179).

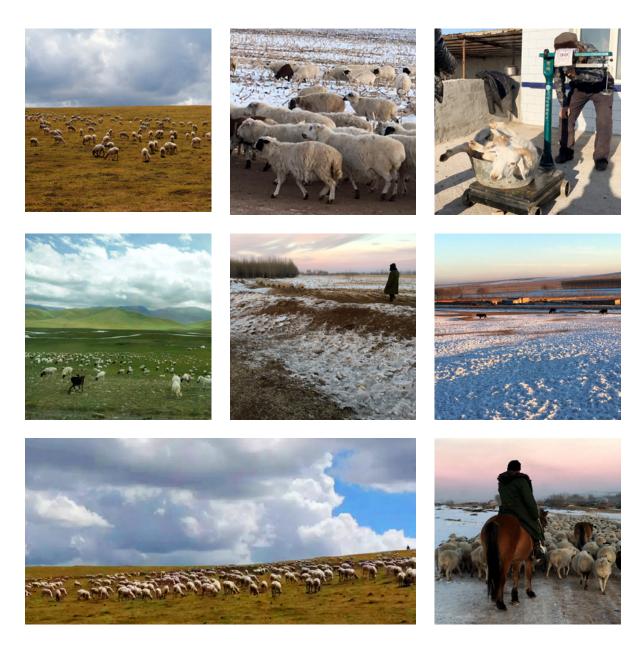
rassland ecosystems provide precious goods and services for humanity. They mitigate greenhouse gas emissions, sequester soil carbon, provide feed and fodder for livestock and sustain biodiversity (HERRERO et al., 2013). Grasslands cover approximately 30% of the Earth's ice-free land, occupy 70% of the agricultural land, and contribute to the livelihoods of over 800 million people. However, in particular in the global drylands where most grasslands are found (RAVI et al., 2010), the ecological and economic sustainability is threatened by degradation. In the grass-dominated drylands, the livelihoods of a large share of the rural population hinge on livestock production. Widespread grassland degradation in these drylands is therefore especially worrisome because it jeopardises food security for many of the often poor rural population, for example through deterioration in the grassland biomass and thus a reduction in grazing potential (GOMIERO, 2016).

The Mongolian Plateau is famous for its huge area of grasslands. These have enabled unique nomadic cultures and lifestyles (HUMPHREY et al., 1999). However, the grassland ecosystem of the Mongolian Plateau is only suitable for agricultural production to a limited extent and grassland biomass only grows slowly there, mainly due to the low precipitation including frequent droughts (WANG et al., 2013). Protecting the livelihoods of the rural inhabitants of this region calls for targeted policy measures and improved grazing management. A prerequisite for this is a better understanding of the dynamics of grassland biomass and its driving forces. However, to date significant research gaps remain in this area. For example, it remains unclear how the intensity of livestock grazing and recent trends in climatic conditions affect the grassland biomass of the Mongolian Plateau. To shed light on these knowledge gaps, we have quantified the changes in grassland biomass using data sourced from satellite imagery over the entire Mongolian Plateau from 1982 to 2015. We also assessed the influence of the observed changes in the intensity of grazing and in climatic patterns on the satellite measurements of grassland biomass.

#### The Mongolian Plateau

The Mongolian Plateau  $(87^{\circ}-122^{\circ}N)$  and  $37^{\circ}-53^{\circ}E)$  is a typical dryland region in the eastern part of the Eurasian steppes. The region covers approximately 2.75 million km² and includes the country of Mongolia and the province of Inner Mongolia in China (**Figure \*1\***). Livestock production is the major source of income for rural households in the region, mainly through ruminants such as cattle, sheep and goats that graze on the vast grasslands, which cover over 60% of the area. The continental climate of the Mongolian Plateau is characterised by extremely cold winters and dry, hot summers, with annual temperatures of between  $-45^{\circ}C$  and  $35^{\circ}C$  (MIAO et al., 2018). Annual precipitation averages 200 mm but recurring droughts regularly jeopardise the livelihoods of livestock herders (STERNBERG et al., 2017).





One characteristic of Mongolia is the extreme winter weather conditions, known as dzuds, that make it impossible for animals to find food beneath the snow. Climate change is exacerbating the situation further.

A comparison of Mongolia with Inner Mongolia provides interesting insights about the effect of changes in land-use policies on the grassland resources. Livestock producers in China mainly graze pastures that were allocated to them under the policy of the household responsibility system, which was initiated in the early 1980s. In contrast, the majority of herders in Mongolia continue to follow nomadic and semi-nomadic lifestyles with open access to the pasture areas (SNEATH, 1998). A number of studies have suggested that overgrazing has caused biomass decline in parts of the openly accessible Mongolian steppes (HILKER et al., 2014). In contrast, anthropologists claim that reduced livestock mobility as a result of the individualisation of landuse rights has caused grassland degradation in Chinese Inner Mongolia because herders cannot transfer their animals to the regions where fertile pastures remain plentiful (SNEATH, 1998).

We capture the extent of the grassland in the region using land-cover data from satellite imagery at a spatial resolution of 0.05 degrees (approximately 5 km at the equator). To calculate the biomass on the grassland, we use a satellite-derived vegetation index that captures the green part of the vegetation on the ground every two weeks. For this purpose we have aggregated the bi-weekly vegetation indices into annual averages during the growing season of the vegetation for each year from 1982 to 2015.

Climate variations over the same period are quantified with average temperature and cumulative precipitation, both during the growing period of the vegetation. Finally, we have used annual livestock statistics for all major ruminants that rely on the grassland resources for their nutrition. We obtained these data at district level from the National Statistical Office of Mongolia and the China Agriculture Yearbooks. The density of ruminants per area of grassland serves as our measure of the intensity of grazing.

Increase in grassland biomass on the Mongolian Plateau

Our findings show that from 1982 to 2015 approximately 66% of the Mongolian Plateau grassland area experienced an increase in

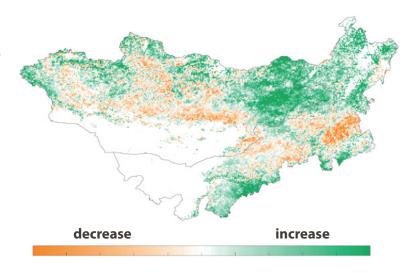
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Figure •2• Change in grassland biomass between 1982 and 2015



vegetation biomass during the growing season. Focal points of this increase were mainly located in northern and eastern Mongolia as well as in western and eastern Inner Mongolia (**Figure •2\***) The increase in the grassland biomass was slightly higher in Inner Mongolia (+68%) compared to Mongolia (+64%). The vegetation biomass on the remaining 34% of the grassland decreased.

The Mongolian Plateau experienced average temperature increase as well as decreasing precipitation between 1982 and 2015 (**Figure •3•**). Temperatures during the growing season of the vegetation were substantially higher in Inner Mongolia than in Mongolia while the ten-year average increase in temperature was larger in Mongolia with +0.56°C than in Inner Mongolia with +0.42°C. The temperature increase for the region studied (around +0.49°C) from 1982 to 2015 was considerably larger than the increase in average global temperature, which was around +0.2°C during the same period (STOCKER et al., 2013).

Precipitation declined slightly from 1982 to 2015, by -18 mm per ten years in Mongolia and by -13 mm per ten years in Inner Mongolia (**Figure \*3\***). Significant for agricultural production, including for livestock herding, are the considerable interannual variations in precip-

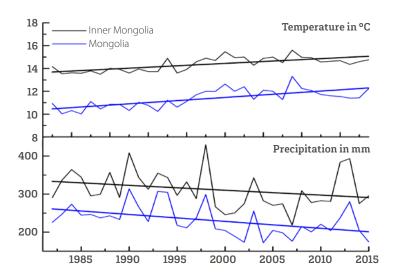


Figure •3•

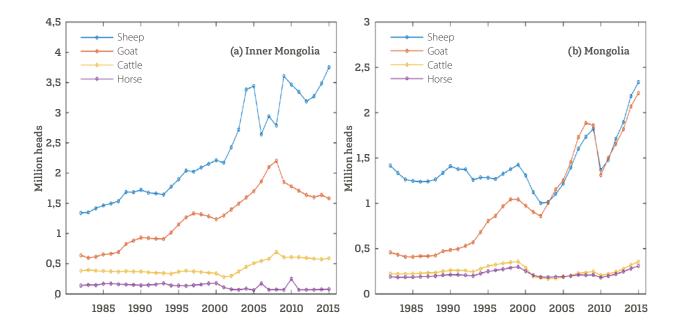
Average temperature and total precipitation during the growing season of vegetation in Inner Mongolia and Mongolia from 1982 to 2015

itation in the study area, with frequently recurring droughts that are clearly visible in **Figure •3•**.

Over the past decades, grazing pressure has increased throughout the study region, with starker increases observed in Inner Mongolia (Figure \*4\*). The absolute increase in ruminant numbers was smaller in Mongolia compared with Inner Mongolia. The sheep population in Inner Mongolia increased from 14 million in 1982 to 38 million in 2015, while in Mongolia the number of sheep only increased from 14 to 23 million over the same period. The average yearly increase in numbers of sheep was 0.71 million in Inner Mongolia, about three times larger than in Mongolia.

### Impact of grazing animals on biomass less than expected

In view of the growing intensity of grazing, the increase in vegetation on around two thirds of the Mongolian Plateau is surprising. Grazing was long suspected of being the cause of increasing land degradation, especially in Inner Mongolia. The stronger increase in grassland biomass in Inner Mongolia (Figure •2•) indicates that grazing has less of an impact on the development of grassland biomass than was previously thought to be the case. In addition, the data suggests that the



Ruminants stocks in Inner Mongolia and Mongolia from 1982 to 2015

lower mobility of livestock in Inner Mongolia due to the fencing policy did not lead to the excessive degradation that someone feared.

Our statistical analysis of the determinants for the grassland biomass dynamics confirmed these findings. Moreover, the results revealed that biomass dynamics were mainly driven by the precipitation patterns, and to a lesser extent also by the enhanced temperatures. The latter stimulate the photosynthesis of the plants. The interruptions to the growth in grassland biomass were mainly due to the occurrence of droughts, where it should be noted that the effects of a drought endure for at least three years.

Our results therefore challenge the conventional wisdom regarding the patterns and determinants of grasslands dynamics in one of the world's largest grassland biomes. While such insights are important sources of information for science and policy, many questions remain unanswered. A more in-depth investigation of the interrelations between man, climate and land use is desirable. Controlled experiments regarding grazing pressure with and without fencing in selected sample plots spread across different types of grassland could

deliver interesting results, for example. In addition, remotely-sensed satellite data with finer spatial resolution could render the subtle footprint that low-intensity grazing may have on grassland vegetation more visible.

Lastly, the effects of weather deserve increased attention, as climate change will very likely lead to a further increase in temperature, decrease in precipitation and to more frequently recurring droughts, with an effect on degradation. In view of the importance of the region for local livelihoods and for global commons such as emissions mitigation and biodiversity, more attention is required to strengthen the understanding of the intertwining effects of climate change and human activities on the integrity of the grasslands in the global drylands.

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Lena Kuhn und Clemens Haufe im Gespräch © Markus Scholz

**Dr Lena Kuhn** co-ordinates the IAMO 'China Group', an interdisciplinary association of researchers working on various projects regarding the agricultural sector in China. We met her to discuss Sino-German co-operation in agricultural research.

## W hat are the fundamental differences between agriculture in China and in Germany?

The Chinese population makes up one fifth of the global population and needs to be fed primarily from the country's own land. China's agricultural land is more than eight times larger than that of Germany, but its population is around seventeen times bigger. The ratio of fertile farmland to population is therefore much smaller in China than in Germany. In contrast to Germany, the proportion of people working in agriculture is still very high. At the same time, agricultural plots are often tiny, making efficient, modern agriculture difficult. Beyond this, the size of the country means that China has different, more diverse climatic conditions, ranging from extremely arid desert climates to a coniferous climate with cold winters and on to tropical climates.

### What are the reasons for the differences in farm sizes?

Following the victory of the Communists in the Chinese civil war of 1927–1949, the 1950s saw the estates of large landowners divided up amongst the rural population. As a consequence, most farms operate on a small area, in some cases even as subsistence farming. With the exception of larger operations in

north-eastern China, agriculture in the country is therefore usually still a manual undertaking. In China, land is also either collective or state property, never privately owned. The idea behind this is that all rural inhabitants have access to land and should be able to resort to this, particularly in cases of crisis. So far, this has also prevented the accumulation of plots by commercial enterprises.

### IAMO focuses not only on agriculture, but also on rural development. What are the trends here? ...

From the viewpoint of economic development, progress over the past decades has been thoroughly positive. On the one hand, employment opportunities in the towns and cities are also leading to rising incomes in the countryside. In addition, the Chinese government is making efforts to support marginalised regions via investment programmes and social policies. One motivating factor behind this is no doubt to improve living conditions in rural regions to such an extent that the migration pressure on towns and cities is eased. As a consequence, average incomes have risen significantly in the past decades. The Chinese government plans to eradicate absolute income poverty completely by 2020 at the latest.

### What is the flip side of this? No doubt there are also problems.

Even though tackling poverty has been very successful in comparison to other countries, there is obviously still a lot of catching up to do. Living standards in the countryside are still lower than in towns and cities. The majority of young people continue to see little future for themselves in agriculture. The goal must therefore be, on the one hand, to adapt infrastructure and social systems to the urban model and create more jobs in rural areas. On the other hand, adjustments are also required in the agricultural sector to enable producers to make an adequate living.

A further problem is the degradation and overuse of natural resources. One example is land resources: towns and cities are expanding into rural areas, farmland is being built on and is no longer available for agriculture. Desertification is also a major problem in the west of the country. Further, extensive soil loss is occurring through the over-use of fertilisers and pesticides. In global comparison, China applies much more fertiliser and insecticides per hectare than other countries. Around one fifth of farmland is already regarded as contaminated. The subject of sustainable agriculture is therefore of essential importance for China.

Further pressure is also arising from changes in demand: the Chinese are increasingly adopting the consumer habits of western industrialised nations. Amongst other things, this means increasing consumption of protein in the form of meat. Per capita consumption of pork doubled between 1985 and 2015 and this trend is not likely to slow to a significant extent. Chinese farmers already keep nearly half a billion pigs, around half of the global figure. Regarding nitrate in the soil and groundwater, this is another significant challenge that China is faced with.

IAMO specialises in observing socially and politically driven processes of change in agriculture. How does China stand in comparison to other transition economies, such as those of the former Soviet Union?

China is not only the first of all transition economies, it is also one whose economic transformation was not accompanied by major changes to the political system. This distinguishes China clearly from the states of the former USSR. In contrast to many other emerging countries, in China we have been observing relatively constant economic growth over the past decades. However, China also has problems that are characteristic of many emerging economies,

Lena Kuhn is a research assistant at the Leibniz Institute of Agricultural Development in Transition Economies in Halle (Saale). The focus of her work: the resilience of Chinese agriculture in the face of structural, environmental-related and demographic changes.



such as comparatively low production efficiency, strong seasonal, respectively permanent labour migration and a high climate risk.

Nevertheless, there is often talk of the particularity of China. What role do cultural factors play?

That is difficult to assess, in all honesty. What I have noted is this: entrepreneurship is very strongly rooted in Chinese culture and business ideas are swiftly realised. The high degree of willingness to take business risks faces very real obstacles, however. To put it another way: not everyone has the opportunity to realise their ideas. For example, smallholders generally find it very difficult to secure private loans. We also need to bear in mind that the current average age of farmers is over 50; the level of education is also low amongst older farmers in particular. Both the willingness and the ability to achieve feasible entrepreneurial innovations and modernisations are subsequently lower.

In response to the particular status of the country, IAMO established a research group focused wholly on China as early as 2008, which you now co-ordinate together with a colleague. What is it that makes China so interesting for IAMO? .....

There are a number of reasons why China is interesting as a research region. Firstly, statistical data are available at high quality. At the same time, we are dealing with highly heterogeneous circumstances, which enable us to investigate the effects of various climatic, geographical and social differences. The numerous pilot projects of the Chinese government are also interesting from a scientific viewpoint. Model projects are initiated in small regions, with these transferred to other parts of the country if they prove successful.

Another important aspect: the Chinese culture places great emphasis on education and science; this has not only produced excellent academic structures, but also influences our field research. As researchers, we encounter a great deal of curiosity and a lot of respect, which naturally makes our work easier.

Since last year IAMO has been co-implementer of the German-Sino Agricultural Center, DCZ for short. What is this exactly?

The DCZ was initially an initiative of the German and Chinese agricultural ministries. However, it is not a classic research project in which funds are distributed for individual causes under an overarching organization. Instead, the centre is conceived as a dialogue platform between the two countries, on

Ms Kuhn has been a co-ordinator of the China research group at the institute since 2016 (see also page 117). Since 2018 she has co-ordinated the scientific dialogue in the scope of the German-Sino Agricultural Center.



which knowledge and interests can be exchanged. The dialogue covers the three areas of agricultural policy, the agricultural and food economy and agricultural research.

#### What is the role of IAMO in this project? ......

Following the successful conception of the second project phase and the application, IAMO coordinates the agricultural science dialogue. We propose themes, appoint experts and support the initiation of research co-operation. My task as backstopper is to check the extent to which the goals we have set are met and where changes may prove necessary.

### What does IAMO gain from being involved in such an initiative?

At first glance, a project like this does not look like classic research activity. However, successful research in our target countries requires outstanding research collaboration, which we are naturally able to support via a platform such as this. The DCZ also helps us to gain a better impression of current problems and focal points of interest in politics and the agricultural sector. Finally, the DCZ also facilitates the communication of our research findings to the relevant decision makers.

The initiator of the centre is the Federal Ministry of Food and Agriculture. What does the federal government expect from the dialogue with China?

At a political level, the relationship with China obviously has a high priority. In addition, China has long been one of Germany's most important economic partners. There is not only demand for German cars and machinery, but also for agricultural products such as milk, pork, hops and beer.

In view of the highly-developed research sector, the federal government naturally also has a strong interest in co-operation in the area of agriculture. Collaboration here has long been on an equal footing. We are competing here with the US and other European countries for PhD students and collaborations with the best Chinese research establishments. Conversely, Germany has a great deal of valuable experience and expertise in the field of agricultural research, for example in the area of ecological farming, and sustainable agriculture in general, as well as issues such as the dual training system.

### What does such a dialogue entail, specifically?

One example is rural development. For a number of years now, 'rural rejuvenation' has been a buzzword

The German-Sino Agricultural Center (DCZ) is a joint initiative of the Federal Ministry of Food and Agriculture (BMEL) and the Ministry of Agriculture and Rural Affairs of the People's Republic of China (MARA). Since the beginning of the 2nd phase in April 2018 IAMO has been joint organiser of the DCZ, in a consortium led by IAK Agrar Consulting GmbH. The particular task of IAMO in this is to co-ordinate agricultural science dialogue. Responsibility for administering and monitoring of the bilateral co-operation programme lies with GFA Consulting Group GmbH.

in China. Last summer, one of the leading drafters of the official Chinese agricultural strategy visited Germany, where he also stopped at IAMO to discuss issues including rural development in Germany. There was a very productive discussion of how rural areas can remain attractive and active. We were able to report on the requirements of rural development in industrialised countries, for example demographic developments, broadband internet and mobility, for older people in particular. In conclusion, a number of flagship projects and farms were visited. In the winter there was then a larger meeting in China in the scope of the Sino-German Agricultural Week between German and Chinese researchers. practitioners and politicians, where the impressions gained were reported on and discussed. We hope very much that these activities will now give rise to specific research co-operation.

# What is it that predestines IAMO for the realisation of such a project, and what role does the China Group play in this?

Firstly, the years of experience in transition economies mean that the institute has numerous research contacts. Without these, the long-term, sustainable establishment of scientific capacity, which is a vital part of our work, would not be possible. The knowledge that we have gathered in our projects can also

generally be applied effectively to China, in spite of its distinctive role.

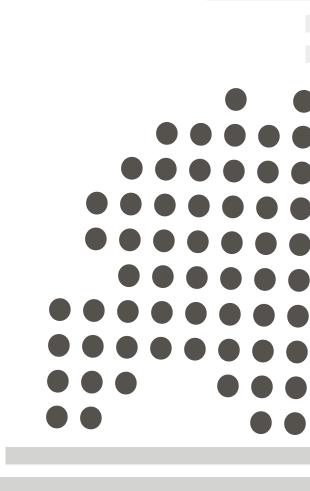
As a Leibniz institute we take a multidisciplinary approach and are able to add many new perspectives to such projects. In my view, it is this broadness that makes the dialogue within the DCZ possible in the first place. Lastly, to my knowledge we are the only Leibniz institute with a dedicated China group, which obviously makes many things easier. Young researchers from China enable us to continuously extend our network further.

### Finally, I would like to know what your personal motivation is. What is it that drives you? ......

I find it exciting that research can succeed in bringing together the different perspectives of the scientific, economic and political spheres. Today, research does not only culminate in the production of publishable research findings, we also expect orientation regarding how to apply those findings. I consider the close contact and interaction with affected farmers to be of special importance in testing assumptions and discussing findings. This may occur via field research, but also via dialogue platforms such as the DCZ.

Ms Kuhn, thank you for the interesting discussion.

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Siranush Ghukasyan Thomas Herzfeld The formation of agricultural policy by central government and the regions in the Russian Federation. Problems and perspectives

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Siranush Ghukasyan Thomas Herzfeld

FEDAGRIPOL – Political economy of agricultural policies in federal systems

The most recent developments in Russian agricultural policy making have shown a growing role of the central government in setting the structure of agricultural development processes. This applies to goals and strategies, as well as to instruments. Post-independence, regional policy making was predominant, with the consequence that trends towards de-centralisation of agricultural policy making and implementation were apparent. For instance, due to the enormous decline of federal government's subsidies, budgets of regional governments became the most important source of funding for agricultural subsidies and regional programmes in the mid-1990s (FREINKMAN and HANEY, 1997).

The goal of the IAMO **FEDAGRIPOL** project acquired in the scope of the Leibniz Competition of the Leibniz Association is to undertake an in-depth investigation of the relations between the regional and federal governments in the development and implementation of Russian agricultural policy.

- What role do regional governments play in the development of agricultural policy today?
- To what extent have the recent efforts of re-centralisation been reflected in the setting and realisation of Russian agricultural policy as well as the sources of financing it?

This article aims at providing an overview of the interactions between Russian regions and the federal government in the agricultural policy setting. Firstly, we will summarise the transition from a centralised planned agricultural policy to the current constitutional setting. Following this, we will describe the agricultural political agenda and, finally, provide some key figures of the policy implementation in recent years in relation to financing the support to agriculture.

#### Transition of Russian agricultural policy

Like other transition economies, in the early nineties Russia faced the problem of adapting the agricultural sector to completely different conditions. In the 1980s, government policy was centralised and aimed at heavily subsidising producers as well as consumers (see **Table •1•**). The state maintained low prices for agricultural products for consumers, whilst at the same time supporting high prices for producers. As a result, government spending for food and agriculture was very high, contributing to the severe economic and fiscal problems which were common to all centrally planned economies during the 1980s.

Following the dissolution of the Soviet Union, Russian agricultural policy underwent a period of far-reaching decentralisation. The central government had neither the means nor the political agenda to maintain the highly subsidised agricultural policy. According to OECD calculations (Figure •1•) government expenditures measured in per cent of Gross Value Added of agriculture (Producer Support Estimate, PSE) fluctuated widely or slumped significantly throughout the 1990s, up until the beginning of the 2000s. From the early 2000s support stabilised at between 15 and 22%. At the same time, the power of the federal government weakened following the break-up of the Soviet Union. Competencies were redistributed between regional and federal governments. The degree of price liberalisation, which differed substantially across regions, is a reliable indicator of the new influence of regional governments. Despite the reforms after the early 1990s to replace

Table ·1·
State support of agriculture, 1988–1991

Source: World Bank (1992)

Type of subsidy	Unit	1988	1989	1990	1991
Food subsidies (consumers)	Rub, billion	27.5	28.6	39.5	80.0
Agricultural subsidies (producers)	Rub, billion	35.8	38.0	31.5	34.1
Total	Rub, billion	63.3	66.6	71.0	104.1
As percent of GDP	%	11.7	11.9	11.8	10.0



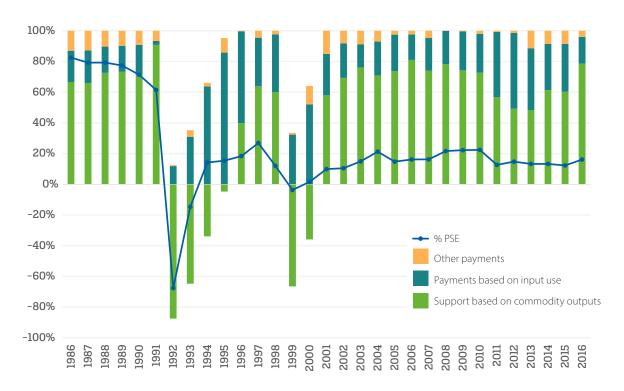


Figure •1•

PSE level and composition by support categories, 1986–2016 Source: OECD PSE database

the fixed price system with a more flexible and market orientated one, until the late 1990s there were still striking price differences for the same products across Russian regions. These could also not be explained by market factors (BERKOWITZ and DE JONG, 1999). For example, the oblast Ulyanovsk (Volga region) implemented economic reforms in the 1990s comparatively slowly and sugar prices were three times lower than in its neighbouring city Samara, which was more open to pro-market reforms.

#### The current state of agriculture

The Russian Federation comprises 89 regions or federal subjects. Depending on the type, the federal subjects enjoy different levels of autonomy, though all share equal federal rights by having two delegates in the Federation Council. There are six types of federal subjects: 21 republics, 9 krais, 46 oblasts, 2 federal cities with subject status, 1 autonomous oblast and 4 autonomous okrugs. Each of the subjects is further divided into rural rayons and urban municipalities.

The governing structure of the Russian Federation (RF) is therefore on three levels:

- central government -
  - federal subjects -
- rayons and municipalities.

Furthermore, Russia is also divided into nine federal okrugs (FO), but this classification has neither constitutional nor legal power.

The economic importance of agriculture varies significantly across the regions. While its share in regional GDP is between 10 and 25% in the Siberia, Volga, Southern, and Northern Caucasus federal okrugs, agriculture contributes only minor shares to the regional economy in oil rich regions (e.g. Tyumen oblast) or close to the capital (e.g. Moscow oblast). Nevertheless, the Central federal okrug accounts for more than one quarter of Russia's total agricultural production (Figure •2•), despite of agricul-

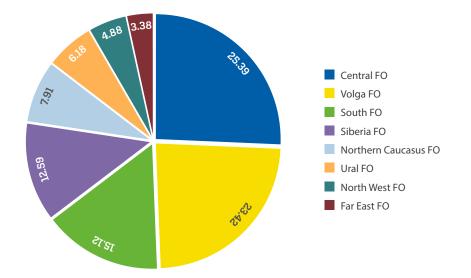
ture having a rather small share of 6% in the okrug's overall economy.

In the international grain markets the Russian Federation has seen a return to its position of global player over the past decade and is currently a key producer and exporter. The Russian government follows various strategies in order to increase production and reduce imports across agricultural sectors such as beef, dairy, fruit and vegetables, pork, and poultry (SEDIK et al., 2017). However, as a federal state the regions and federal subjects have a substantial influence on the development and implementation of policies, whereby the various republics, oblasts and autonomous krais have different rights and duties. Most prominently, the regional influence can be observed in their agricultural policy programs and the funding of policy instruments from regional budgets.

Figure  $\cdot 2 \cdot$ 

### Regional shares in agricultural production in 2015

Source: Federal State Statistics
Service of the Russian Federation



# Policy framework of Russian agricultural policy

In 2008 Russia revitalised its 'National Food Security Doctrine'. However, this was not officially ratified until 2010, when Russia perceived the threat posed by the world food crisis. The same year saw Russia impose a 12-month export embargo on agricultural produce. The doctrine set the following goals for domestic food production:





### 95% self-sufficiency in grain and potatoes, 90% in milk and dairy products, 85% in meat and meat products and 80% in sugar, vegetable oil, and fish products.

This Doctrine also underlined the necessity of guaranteeing food safety through the production of high-quality foods. However, it did not address funding or provide any concrete government measures for reaching its targets.

In addition to addressing the external volatilities by ratifying the Food Security Doctrine, Russia also joined the World Trade Organization in 2012 and has since committed itself to bringing its national support strategies in line with WTO rules and negotiated terms.

A further step of formalising the agricultural policy agenda came with









the 'State Program for Development of Agriculture for 2008–2012' (MINISTRY OF AGRICULTURE OF RUSSIA, 2007). With this, for the first time since the dissolution of the Soviet Union Russia adopted an overarching programme with the proclaimed goals of regulating agricultural markets and boosting rural development. The programme envisaged total expenditures of 41 billion US dollars (2007 exchange rate), with half

financed from the federal and the other half from

the regional budgets. This cost-sharing approach of

the programme resulted in an uneven distribution

of financing, since the richer regions would be able

to afford this, while poorer regions would be disad-

vantaged or even left out.

One of the main criticisms levelled at the 2008–2012 State Programme was that it failed to set target indicators for agricultural production or provide a detailed implementation strategy that would achieve the envisaged boost in production. To address this criticism as well as incorporating the indicators of the Food Doctrine and the WTO commitments, in

2011 the Ministry of Agriculture drafted a new pro-

gramme for the development of agriculture, which was adopted in 2012 and runs from 2013 until 2020.

The 2013–2020 State Programme foresees a total budget of 76 billion US dollars, broken down into annual amounts. Regions are required to provide their own additional funding in order to benefit from federal support. The development of the livestock industry continues to have a high priority in this programme. With respect to instruments applied, support has shifted from the subsidisation of interest rates on loans to more direct payments for farms.

# Implementation of the agricultural support policy

However, analysing the full extent of financial transfers into agriculture from federal and regional budgets is no easy task, due to still rather opaque reporting of public spending on agriculture. Despite the fact that the most recent State Programme has brought more formality into how the state funds reach the agricultural producers by introducing formulas, the lack of data availability combined with non-transparent political processes still make it difficult to conduct a comprehensive analysis.

In addition, support for the agricultural sector not only comes via direct subsidies that are documented and recorded in annual reports. There are also agriculture-related expenses in other non-farm budget forms such as education, social programmes, training etc. Since these costs are not included in the 'Agriculture and fisheries' budget item, the picture of total state support to agriculture remains incomplete.

Budget support for agriculture is a reflection of the federal and regional agricultural policies. The implementation of the support policy follows several steps on different levels: firstly, the federal funds are distributed by the central government to the budgets of the regions. After the funds are received, they are combined with the regional contribution and distributed to the recipients of the subsidies. It should be noted here that according to the new State Programme the regional governments carry responsibility for the distribution of the subsidies, while the role of the federal government is to co-finance the regional budget funds.

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As illustrated in **Figure \*3\*** the financing of the subsidies for agriculture from both regional and, to a greater extent, federal sources fluctuated substantially from 2008–2015. Annual subsidies were lowest in 2010 and then doubled by 2012. In addition, there were also far-reaching changes in the sources of funding. Over the period concerned all regions together funded between 35% and 60% of the total subsidies. With the implementation of the new State Programme the role of federal funds in total support grew in significance, however.

Despite this, by itself, the amount of expenditure on agriculture does not say anything about the agrarian policy of the Government. It is important to consider the structure of budget support and the programmes on which funds are spent.

Figure •4• shows the main directions for which total state support was used during 2008–2015. These funds include both regional and federal subsidies. Throughout this period the composition of support changed perceptibly, reflecting the updated goals of the agrarian policy. The subsidies for crop production and livestock development increased steadily. While only 13% of total subsidies in 2008 was spent on crop production, in 2015 this share increased to 20%. Livestock development was a priority in both State Programmes and the funding for this sector also increased. In 2015 43% of all state support payments for agriculture went directly to livestock production.

It is important to note that the contribution of regions differs for the various sectors. **Figure •5•** illustrates the regional share in the sectoral subsidies. It is apparent here that regional funds were the source of the majority of subsidies for crop production

between 2008 and 2012. From 2013 regional budgets amounted to approximately 40%, with the majority of funding coming from the federal budget. Funding sources of subsidies for livestock development appear to vary substantially over time. Whereas regions contributed more than 80% to these payments in 2010 and 2012, their share dropped to slightly more than 50% in 2013. Regarding subsidised loans, the federal budget represents the major funding source. Here the region's share declined from roughly 30% in 2008 to 18% in 2015, whilst the share of federal funds increased from 70% to 82%.

# Role of regional federal subjects remains important

Despite an increasing centralisation of Russian politics over the last two decades, the regions still play an important role in providing financial resources for agricultural policy instruments. Whilst the regional funds are more concentrated on crop and livestock development programmes, subsidisation of investment and other types of credit has been mainly carried out through federal funds.

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#### **Data sources**

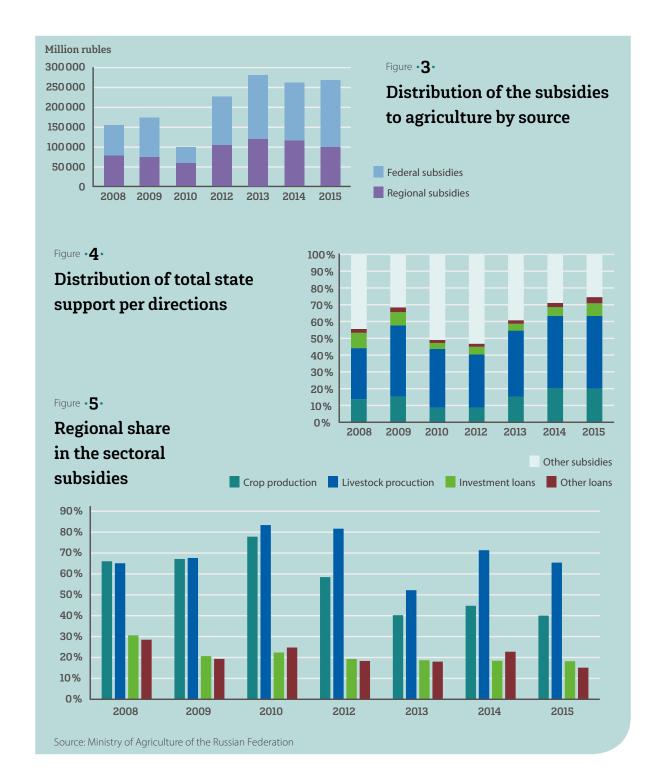
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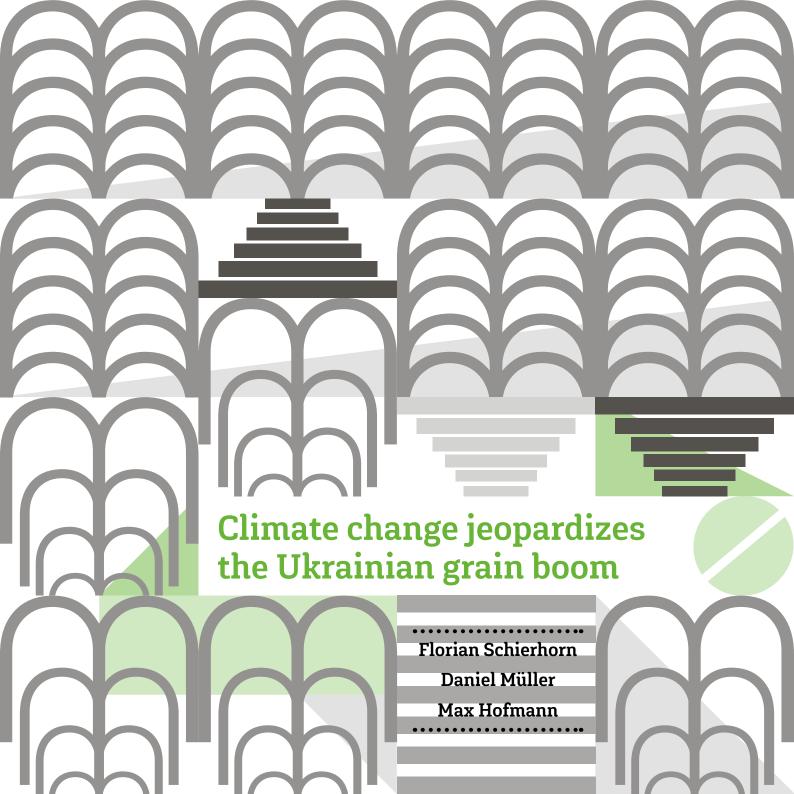
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### Climate change jeopardizes the Ukrainian grain boom

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Florian Schierhorn Daniel Müller Max Hofmann

#### The Ukrainian grain sector

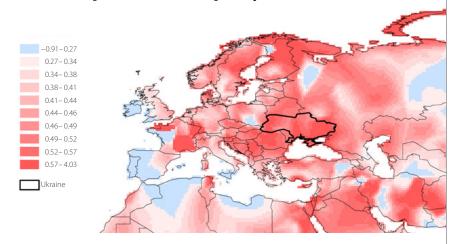
The recent development of the Ukrainian agricultural sector is a success story: since the turn of the millennium grain production has doubled to around 60 million tonnes per year and the country emerged as one of the world's leading exporters of cereals. In 2014 and 2015 Ukraine was also the world's third largest exporter of corn and in 2012 the country was ranked seven for exports of wheat. According to statistics of the Food and Agriculture Organization of the United Nations (FAO), an average of 10% of total wheat exports between 2014 and 2016 went to the EU. The agricultural sector, which currently employs around 17% of the workforce, contributes around 10% of the total gross domestic product of Ukraine. Of the current 100 richest people in Ukraine, 22 are involved in agriculture.

However, in spite of these successes, current yields are still considerably below the EU average. This is despite the fact that fertile, black earth covers over half of Ukraine. The greatest potential for increasing yields therefore lies in improved cultivation conditions. In particular, increased use of fertiliser and better grain varieties could increase yields by up to 100%. In addition to realising yield potential, the expansion of land under cultivation could further increase agricultural production. 2.6 million hectares of abandoned land are available for this. However, many of these former arable fields have poorer soil fertility and low market access. Furthermore, the fallow land stores considerable quantities of carbon. This would be released with renewed cultivation, contributing to climate change. However, the shift in climatic growing conditions as a result of climate change represents a major obstacle to Ukraine exploiting its enormous agricultural potential.

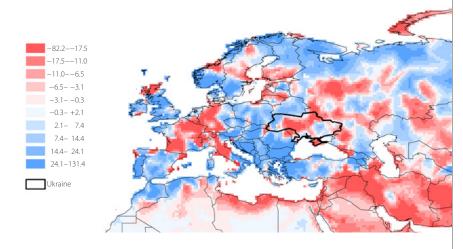
### Year-round linear temperature and precipitation trends from 1980 to 2015 in Europe

Data source: CRU TS3.10, dataset: https://crudata.uea.ac.uk/cru/data/hrg/

#### Temperature trend in °C per 10 years



#### Precipitation trend in mm per 10 years



### Climate change in Ukraine

The concentration of green-house gases in the atmosphere has been rising since the beginning of industrialisation. The intensity of climate change has increased strongly in recent decades, but has varied greatly from region to region. As a rule, the temperatures in the continental regions far from the coasts are rising fastest, as clearly illustrated in the climate data in Figure °1°.

In Ukraine average temperatures increased by 1.1 °C between 1961 and 2017, whilst the worldwide increase during this period was just 0.8 °C. Since 1991, temperatures in spring and early summer —a very important period for cereal growth and therefore yield—have risen strongly in Ukraine. In addition, the climate data indicates that large areas of Ukraine, in particular the important arable region south of Kiev, have recorded slightly negative rainfall trends since 1980 (Figure •2•).

## Is climate change beneficial for Ukrainian grain production?

Higher temperatures can extend the growing period for crops such as corn or wheat and have a favourable effect on cereal growth. Increased concentrations of carbon dioxide in the atmosphere also favour plant growth. As long as adequate amounts of water are available for plant growth, climate change can have a positive effect on agricultural yields. For example, due to these effects farmers in northern Europe and northern parts of Russia can expect higher yields as a consequence of climate change. At first glance, arable farming in Ukraine also appears to benefit from climate change, with the yields of all key crops increasing strongly since the turn of the millennium (Figure •3•). However, these trends cannot be explained by improved weather conditions as a result of climate change. The sharp increase followed a slump in yields at the end of the 90s. This

was due to the massive structural problems in the agricultural sector following the collapse of the Soviet Union. Many farms were not competitive on the international markets. State subsidies were almost completely halted, necessary investments for modernisation went largely unmade and elementary inputs such as mineral fertilisers were not affordable for many farmers. The subsequent increases in yields in the majority of the countries of the former Soviet Union have been proven not to be arisen as a consequence of changing climatic conditions. Instead, the numerous structural improvements following the collapse of the Soviet Union began to improve yields.

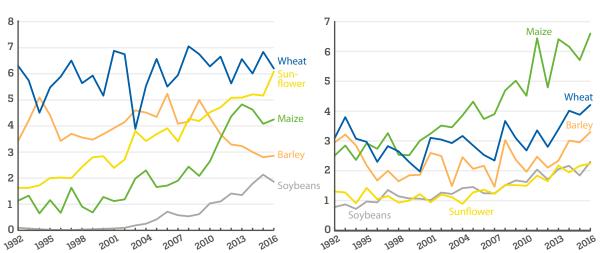
In Ukraine yields also fluctuated, falling again dramatically in the years 2007, 2010 and 2012 (**Figure °3°**). The strong fluctuations in wheat yields in these years largely correlate with extreme weather conditions. When daytime temperatures exceed specific lim-

Figure •3•

Area under cultivation and yields in Ukraine Data source: FAOSTAT (2018)

### Area under cultivation in million hectares

#### Yield in tonnes/hectare



its, they inhibit crop growth. However, these limits not only vary from crop to crop, but also between different varieties of the same crop. The different growth periods of crops also influence the temperature thresholds. Essentially, the following applies: yields fall with the increasing number of days on which temperature thresholds are exceeded. A few extremely hot nights can already result in strong decreases in yield. High temperatures also lead to increased evaporation, with the consequence that crops also have less water available even where rainfall levels remain constant. The correlation between extreme temperatures and yields in Ukraine is also confirmed by our data evaluation (Figure •4•): In the

south and east in particular wheat yields collapsed in the years in which the number of very hot days was high. **Figure •4** • also shows that the num-

A few extremely hot nights can already result in strong decreases in yield.

winter. Furthermore, they also forecast the highest temperature increases for the steppe zone of southern and south-eastern Ukraine, where the rise in summer temperatures could be as high as 4 °C. For the steppe zone the models also predict a slight fall in annual rainfall levels, whilst rainfall in the majority of other regions, in particular the west of Ukraine, will most likely rise. With the exception of the west, Ukraine is expected to see a significant decrease in the spring and summer rainfall that is important for wheat production. As a result of higher temperatures, evaporation levels will rise throughout Ukraine, with the result that there will be less water available for crops in many regions, in spite of increasing rainfall.

How will wheat yields in Ukraine develop, depending on the future climate conditions?

ber of days with maximum temperatures over 31 °C and 33 °C has risen strongly since 1985. Due to the continental location of Ukraine, temperature fluctuations were always very marked, but climate change is evidently resulting in an increase in the frequency of very hot days and therefore the likelihood of a collapse in yields.

#### Harvest losses of over 20% possible

Information regarding the future climate and the effects on yields is of central importance not only to farmers, but also to investors and policy makers. Depending on greenhouse gas emissions, climate scientists expect Ukraine to see an increase in average annual temperatures of 1.65 °C to 3 °C by 2070. All models also forecast warming to be strongest in

To enable a precise statement for Ukraine as a whole we have investigated average wheat yield data from the period 2005 to 2012 for around 13,000 commercial agricultural operations. This data was subsequently combined with high-resolution weather data for the same period for statistical comparison. Using this model, we have developed two climate scenarios, with which we forecast the future wheat yields in various regions of Ukraine.

The first scenario is based on a rise in the global mean temperature slightly above the goal of no more than two degrees in comparison to the pre-industrial age, as agreed in Paris. The second scenario assumes considerably higher greenhouse gas emissions and global warming of over four degrees. This corresponds approximately to the current emissions

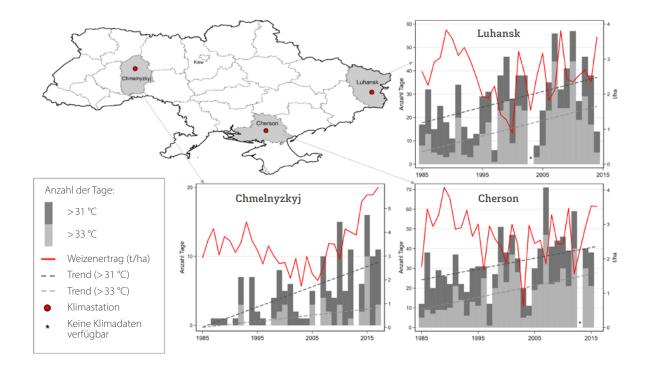


Figure •4•

# The link between extreme temperatures and wheat yields in three districts of Ukraine

The red lines illustrate the strong fluctuations in wheat yields, particularly in the south and east of Ukraine. The bars show the number of days in the growth periods with maximum temperatures higher than 31 °C (dark grey) and 33 °C (light grey). The corresponding linear trends are indicated with the dashed lines. Temperature measurement values are missing for 2003 in Luhansk and 2013 for Carson. The Y axis (number of days) has different scales for the three districts.

This illustration does not provide sufficient statistical evidence, but merely an indication that wheat yields are influenced by maximum temperatures.

trajectory. Both scenarios assume that technical cultivation conditions such as fertiliser use, selection of wheat varieties and cultivation periods remain unchanged.

For the first scenario with lower emissions the future wheat yields fall only slightly compared to the current average yields. In this scenario total wheat production in Ukraine with unchanged area of cultivation would decrease by just 6.5% by 2070. The geographical contrast is remarkable: in the north yields would probably rise, whilst in the south they would fall. This north-south contrast is significantly more marked in the second scenario with higher emissions. In the southern steppe zone the average wheat yield would fall from the current 3.0 to 2.5 tonnes per hectare. Despite falling yields in a number of regions of the west and north, in this scenario total wheat production in Ukraine falls by 11%. This is due in particular to the fact that the areas of the north and west, which are less disadvantaged by climate change, have less suitable arable land. In the large areas of wetland located there difficult weather conditions prevail in winter and spring in particular. Frost damage in winter and spring, caused by the lack of protective snow cover, would probably occur less often as a result of climate change.

Our calculations deliver average values, without taking adaptation measures to climate change in arable farming into consideration. In addition, we have also not included extreme weather conditions such as heavy frost or extreme heat, which are highly likely to occur more frequently in the future. However, TIGCHELAAR et al. suggest that the frequency of these weather-related yield fluctuations will continue to rise with climate change. According to this study, in Ukraine a 4 °C warming will see a rise to 85% in the



Scenarios of climate change in Ukraine—north-south contrast—



1 Wheat and sunflower fields, Ukraine © Mykola/fotolia.
2 Drought © rostyle/fotolia.





The manner in which Ukrainian agriculture adapts to climate change is of great global significance. The country is one of the world's largest grain exporters.









The port of Odessa: grain dryers and bulk freighters © Swetlana Renner, 2013

likelihood that the corn yield will decrease by over 20% compared to current average levels. In other words: Ukrainian farmers need to anticipate significant falls in corn yields in the near future 8 out of 10 years if greenhouse gases continue to decrease. Wheat is not accounted for in their study. Wheat has different climatic requirements to corn, but more frequent falls in yield are also to be expected here if warming develops as strongly as forecast. Extreme conditions will then become normal in Ukraine.

### Adaptation strategies in agriculture

Against this background, we see a strong requirement for Ukrainian agriculture to adapt to climate change. Adaptation mechanisms need to be developed and employed at various levels. The most important aspect here is surely the Ukrainian farmers themselves, who can and must change their cultivation methods individually and adapt to climate change. These can include measures such as working the land with reduced tillage (e.g. no-till farming), the irrigation of fields, the adaptation of cultivation periods, changes in the use of intermediate resources (e.g. mineral fertiliser) and the change to alternative cultures and varieties that are better adapted to climate change. According to the FAO, only around 4% of the Ukrainian grain cultivation area are under conservation tillage. Only 2-3% of the arable land in use today is irrigated, although the FAO puts the irrigation potential at over 15%. The areas planted with soy, corn and sunflowers have increased significantly since the turn of the millennium, whilst the areas used to grow wheat fell slightly and barley strongly (Figure •3•). However, it is not yet clear whether and to what extent these changes in the use of arable land are due to climate change.

The transition from conventional to organic agriculture represents a more complex adaptation strategy. The avoidance of mineral fertilisers and chemical-synthetic crop protection products, more complex crop rotation, the planting of catch crops and pulses and the use of natural fertilisers could deliver improved soil structures and higher humus content. In turn, this would enable the soil to store water more effectively and make it available to plants in the case of drought. Moreover, organic farming can help to tackle the rampant problem of soil degradation. Alongside these benefits, Ukrainian organic products are also increasingly finding markets in Ukrainian cities and abroad. Domestic sales in this market, in particular to young families with high purchasing power, are already growing. The EU is also seeing a rise in demand for organic produce, which will increasingly be served by cheaper imports from Eastern Europe. However, just 300 farms with less than 1% of farming land operate organically. It was only as recently as 10 July 2018 that the Ukrainian parliament passed a law on organic farming and the certification system still requires further improvement. In addition, the government also needs to further strengthen existing funding projects for the development of organic farming in Ukraine, such as those of the Federal Ministry of Food and Agriculture (BMEL) in Germany, the Swiss government and the Research Institute of Organic Agriculture (Fibl).

Another level responsible for farmers should cover the adaptation of crops to climate change. Information regarding the historical and future climate and yield trends, as detailed in this article, are of essential significance for plant breeding programmes. Plant cultivators require reliable information on climate developments in the various growth periods. One of the greatest challenges facing cultivators in Ukraine is the strong rise in spring temperatures. They accelerate plant growth and mean that ear emergence begins and ends earlier in the year. The increasing evaporation as a result of warming may result in higher water stress where rainfall levels remain unchanged. Together, these processes may result in considerable yield losses. Research into heat and drought resistant grain varieties can help here. These could assist to adapt to climate change in the south and south east of Ukraine in particular. Winter wheat currently dominates in Ukraine. However, it is possible that in future summer cultures will be favoured, as they are better placed to deal with warming in the winter. However, their use still needs to be investigated in further research projects.

### Summary and recommended action

The boom in the Ukrainian grain sector is endangered by climate change. Although yields are rising, the expected increase in frequency of extreme weather conditions will likely result in increased fluctuation of these yields. Particularly worrying are the climate forecasts that indicate that grain yields in the key southern areas could decline significantly if no effective adaptation to climate change is undertaken. Although Ukrainian farmers have the ability to adapt to altered climate conditions in numerous different ways, this requires extensive investment in training and extension. Since the collapse of the Soviet Union the Ukrainian government has directed insufficient funding to agricultural vocational training. Key progress in the area of agricultural training has been delivered by projects such as the agricultural demonstration and training centre (ADFZ) and the BMEL project 'Promoting agricultural training in Ukraine'. It is our view that these should be extended further with a stronger focus on climate change.

At a political level, the actors also need to develop comprehensive measures to promote sustainable production methods adapted to climate change. Thus far the current economic situation means that few large farming enterprises see the incentive to adapt, whilst small farmers lack the knowledge and financial means. Furthermore, there is also a great need for action in the area of risk management, as the farmers cannot resort to affordable and innovative insurance products that would protect them against drops in yield. In addition, there should also be increased support of organic farming with a view to the high potential for adapting to climate change and the favourable market outlook. In turn, the EU could improve market access conditions for organic produce. We also recommend increased discussion of the subject of land reform, as the lack of a market for arable land means that the necessary investments in modernisation of agriculture are not made. On the other hand, higher land prices could result in farmers investing less money in agricultural machinery adapted to climate change.

The state, but also the financially strong large enterprises, need to invest in research and development in the area of plant breeding. Many farms use seed material that has not been adapted to the altered climatic conditions. In the field of plant cultivation we see great potential for adapting grain production to the new climatic conditions. Heat or dryness resistant grain varieties are able to compensate yield fluctuations, even though they may produce a lower yield in climatically favourable years. It is necessary for agricultural researchers to investigate precisely and in a spatially differentiated manner which strategies secure the highest yields in the long term. The government should also overhaul the obsolete irrigation infrastructure and find out what water po-

tential exists and can be sustainably utilised at a regional level. In this area, too, Ukraine is in need of internationally-funded development and construction projects, as the manner in which Ukrainian agriculture adapts to climate change is not only of regional interest, but also of great global importance.

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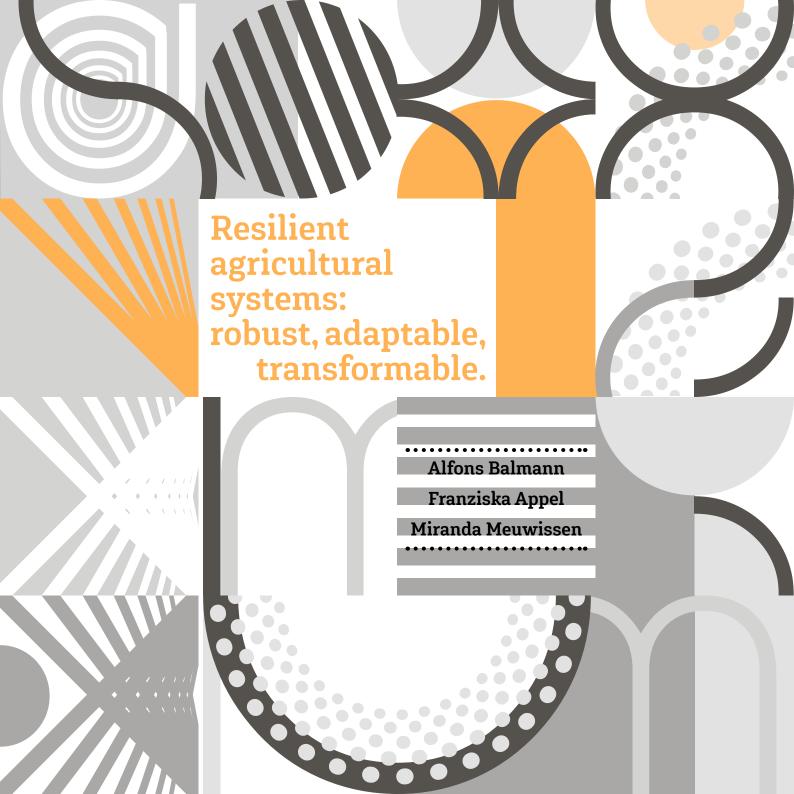
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Resilient agricultural systems: robust, adaptable, transformable.

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Alfons Balmann Franziska Appel Miranda Meuwissen and pork production in 2015 and 2016 have once again posed the question of how crisis-resistant European farming actually is. Not least as a result of multiple such occurrences in recent years, the European Commission has formulated corresponding goals in its legislative proposals of 1 June 2018 for the EU Common Agricultural Policy (CAP) after 2020. Accordingly, sustainable agricultural incomes and the stress resistance of farming throughout the EU to improve food security are paramount (EU COMMISSION, 2018). To achieve these goals, in addition to direct support for farmers, the EU also intends to promote insurance cover and mutual funds.

Essentially, options for the financial support of insurance cover already exist in the current CAP, but few member states make use of this instrument. One reason is that this support can only be provided to the detriment of other measures. In addition, discussions within agriculture, such as regarding the German federal and state aid programme of approximately 340 million euros as a consequence of the drought of summer 2018, illustrate that such aid is not without controversy even within the farming sector itself. Even farmers affected by the drought complain that this support was primarily directed at farms that had failed to take suitable risk prevention measures.

As justification for its support for the resilience of the agricultural sector, the European Commission points to the goal of food security. That food provision and food security are fundamental functions of farming and agricultural policy is beyond dispute. However, it remains unclear what resilience specifically means. On the one hand, there is the question of whether the resilience of a sector can be equated with the



https://surefarmproject.eu

resilience of all of its enterprises and companies. On the other hand, there is the question of what specific crises need to be overcome and when this becomes the responsibility of the state.

With regard to the first question whether the resilience of individual producers can be equated to that of the sector as a whole, a simple argument would be that the sector can be seen as resilient if all of its producers were. However, the vast majority of agricultural producers represent each an insignificant portion of total production when taken individually. Consequently sectoral resilience does not require that each single producer must be resilient. In accordance with this view, resilience should be regarded rather from a sectoral or farming system level than that of the individual enterprises, whereby sectoral crises naturally imply crises at the level of many individual producers.

The question then is what forms of crises justify the state support of agriculture? And what sort of support would be helpful? Two aspects in particular could be significant in answering this. The first aspect concerns the crisis-prone functions of agriculture within the economy and society. The second concerns the management of crises. In the following article we address these two issues in more detail and refer to findings of the SURE-Farm project, which deals with sustainability and resilience in agriculture. The European Commission funds this project in the scope of Horizon 2020.

### Social function of agriculture

Agriculture fulfils numerous functions. For example, markets satisfy economic requirements, such as the provision of food and other renewable resources.

Indirectly, these functions also comprise the remuneration of the production factors utilised. In addition to this, agriculture also creates by-products that are not remunerated via markets, such as the creation and maintenance of cultural landscapes or biodiversity arising from production. These agricultural functions constitute public goods. If society, respectively politicians or the state wish to promote or secure these public services, then the use of public funding may be justified. To employ these funds in a targeted manner, the public services need to be assessed and it needs to be clarified if agriculture would not provide the services to the desired extent in any case.

Alongside the differentiation of public and private goods, examining the various social functions of agriculture presents a good opportunity to take a closer look at the three dimensions of sustainability: economy, social aspects and ecology. However, sustainability does not refer primarily to the consideration of the current state, but rather of the ongoing, simultaneous evolution along these dimensions. Sustainability may be impaired in a variety of ways. A unilateral focus on one dimension, such as profitability, may lead to the neglect of another dimension. In addition, current generations may make excessive use of existing resources, with the result that insufficient resources remain for future generations.

Although sustainability is an inherently dynamic concept, the scientific and public discussion overlooks further key characteristics of sustainability. On the one hand, this includes the fact that the significance of a system and its functions can alter over time. This occurs, for example, where the services are no longer required, or no longer required to the same extent. Conversely, the importance of system

services may increase, resulting in enhanced sustainability problems. On the other hand, technical prerequisites and scarcity parameters change over time. Technical advances may result in existing resources being used more effectively or efficiently. In contrast, the transformation of framework conditions may give rise to new challenges. This is the case, for example, where complementary production factors become more expensive, such as labour as complement to the factor land, or when wage demands rise as a consequence of increasing income levels.

### Sustainability and resilience

When framework conditions alter, risks may emerge which go significantly beyond those of short-term fluctuations in yields or prices. In such cases, a crisis resistant or resilient system requires the ability to adapt or even transform itself (CABELL and OELOFSE, 2012). Figure 1 illustrates the concept. Short term and typically unexpected shocks require a system that is sufficiently robust to recover swiftly after the slump and return to delivering full performance once again. Transferred to agricultural enterprises, insurance or capital reserves can increase robustness in the case of falls in revenues or increases in costs. However, such a buffer fails to be sufficient if the framework conditions shift permanently following a shock, with the result that the system's functions can no longer be sustainably delivered or only on a reduced level.

Resilience requires that the system can adapt to an extent that the loss of performance is stopped or limited and the system can recover to deliver its key performance sustainably and to a sufficient extent. If the shocks are so extensive that the system is unable to recover even after adaptation, the question arises as to whether the system can be transformed

to enable again the key functions or perhaps even other functions.

According to these various cause categories of crises, we need to differentiate systematically between robustness, adaptability and transformability (MEUWISSEN et al. 2018).

# Resilience requirements of agriculture and agriculture jolicy

In the following we aim to transfer the concepts of robustness, adaptability and transformability to key challenges of the agricultural sector, using some examples to illustrate various causes of crises.

Typical causes of crises in which robustness is required are fluctuations in revenues and costs. These may in turn be triggered by changeable weather, epidemics or short-term changes in supply or demand. Traditional risk management instruments such as insurance, diversification, plant protection measures or liquidity reserves can ensure robustness in such situations. Modern approaches include weather derivatives and futures contracts. Although policies may be able to support instruments such as these, it is primarily the individual farmers that are responsible for risk management in such situations. In the case of vertical co-operation relationships, also the partners in the value chain may take responsibility (GRETHE et al. 2018).

The aforementioned risk management instruments come up against their limits when the fluctuations in prices, costs or yields cumulate or where it is not foreseeable when the causes of the shocks will disappear. In the case of climatic shifts with increased yield uncertainty or long-lasting epidemics, such



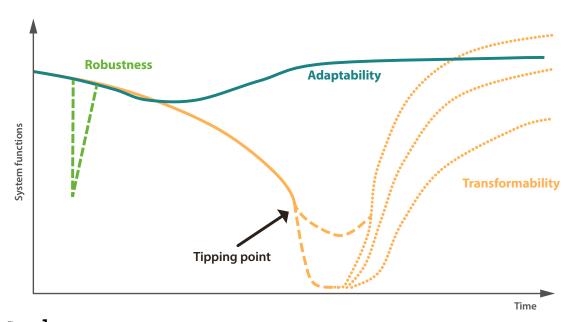


Figure · 1 · Characteristics of resilience: robustness, adaptability and transformability

Source: in accordance with Meuwissen et al. 2018

as African swine fever, insurance solutions are often scarcely affordable and liquidity reserves are finite. At this point, adjustments in the production structure or the corporate strategy are often unavoidable.

Technical advancements and the continuous rise of wage costs represent fundamental changes in agricultural conditions. These also display mutual interdependencies, as investments in labour-saving technological developments become more attractive if labour becomes more expensive. Conversely, wage costs or the opportunity costs of the factor labour rise as a result of productivity increases in other sectors. Within the agricultural sector itself, technological advances are continuously driving change, as innovative entrepreneurs seek to gain competitive advantages over their competitors,

forcing them to adapt or leave the market (COCHRANE 1958). Known as the 'technological treadmill', this interrelation corresponds to Schumpeter's concept of creative destruction, which can be seen as the basis for our prosperity (SCHUMPETER 1912). The technological treadmill regularly triggers numerous business crises, which lead to businesses adapting or leaving the market (and therefore transform), but also to the growth of businesses (adaptation). At sectoral level this process results in slow adjustment with changes in the private and public services in the form of a structural change.

The role of policy in this process appears to be double edged. Since the Treaty of Rome, the Common Agricultural Policy of the EU has applied various approaches to improve the living standards of the rural population and farmers in particular. However, these efforts have not been able to prevent the persistent coexistence of a large number of less profitable agricultural operations with rather few, mostly above averagely large, profitable enterprises. Another factor is that the policy thus far has brought with it high consequential costs. In the 1970s market and price policies led to significant over production, which could ultimately only be controlled with the aid of expensive export subsidies. The production quotas for milk and sugar kept inefficient structures alive. The decoupled direct payments linked to land passed funds on to landowners and created de-

pendencies, with enterprises reliant on the continued provision of these payments.

In addition to shifting framework conditions triggering sectoral adjust-

ments, changes are also occurring that require structural rupture and transformation. One particular example is undoubtedly the collapse of the centrally planned economy in the former socialist states of Central and Eastern Europe. Here it has been apparent that transition processes require significant periods of time before the performance of a sector such as agriculture can recover and develop positively again. Far-reaching changes to the framework conditions may have a variety of causes, including social upheaval or political changes. The former category includes, in particular, the growing public criticism of modern agriculture. Some critics call for a fundamental change of direction in farming, others for higher animal welfare standards or a reduction

of chemical plant protection measures. The consequences of altered political framework conditions are manifested, e.g., in the stocks of pigs in countries such as Sweden and Hungary, which each fell by around one third after joining the EU, whilst imports of pork to these countries increased. However, political pressure does not necessary result in collapse. The ban on conventional cages for laying hens in 2010 in Germany and 2012 in the EU led to a process of transformation in Germany. In the few years between 2005 and 2010 new rearing systems and operational structures were established, with almost unchanged levels of production.

The collapse of the centrally planned economy shows that transition processes require significant periods of time before the performance of a sector such as agriculture can develop positively again.

In the coming ten to twenty years, far-reaching changes to framework conditions could also arise from other directions. On the one hand, many rural

regions are characterised by a marked demographic transition, which may result in an increasing scarcity of labour. On the other hand, robotics in association with digitalisation, big data and artificial intelligence processes are opening up new opportunities to overcome these shortages. However, a prerequisite for their use is the acceptance of these processes.

The political implications of such upheaval are diverse. A distinction needs to be made here between change processes where a sector can prepare for altered framework conditions in good time and those that it fails to recognise soon enough. This chronological aspect comes on the one hand from long-lasting investment cycles, which result in limited flexibility

and openness for change processes. Conversely, transition processes sometimes require a lot of time because it is first necessary to acquire knowledge of alternatives or to establish a new institutional framework, without which a transformed system cannot function. Path dependencies and ways to overcome them play an important role.

With a view to the current CAP and legislative proposals for the new CAP after 2020, the focus of the measures lies upon direct payments, rural development measures, risk management and market influence. These focus on the aspect of robustness. However, with regard to the underlying social, institutional and technological change processes, robustness alone will not be sufficient. Instead, the ability to adapt and transform are equally important characteristics deserving support, for example by facilitating innovation processes and institutional adaptation. A balanced weighting of the capabilities for robustness, adaptation and transition is the task of enterprises, value chains and policy.

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# Corporate social responsibility in German agriculture

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Franziska Schaft Stephan Brosig Taras Gagalyuk

iodiversity loss in agricultural landscapes, animal welfare, the ecological condition of agricultural land or the sustainability of production systems in light of declining natural resources—agriculture has to face critical questions on these issues in recent years. This criticism can be seen as an indication of a general change in societal values, which increasingly requires agricultural enterprises to provide services for the well-being of the society and to consider social and environmental concerns in their business activities. Numerous economic sectors are currently affected by this transition, but agriculture has a particular societal significance: as a producer of food, it not only covers basic existential needs, but also interacts directly with increasingly scarce natural resources respectively public goods.

#### What is 'good' agriculture?

What can and should modern agriculture do for society? What constitutes 'good' or 'bad' agriculture? Answers to these questions are controversial in the public discourse. The discrepancy between what is expected from agriculture and its operational practice is often explained by increasing alienation of society from the production realities of modern agriculture (LUHMANN und THEUVSEN 2017). Agriculture is thus facing a twofold challenge: it must reduce information deficits and justify itself, whilst at the same time addressing justified criticism and changing its practices accordingly. A major problem is that there is a considerable heterogeneity in the perception of problems and in expectations, both within agricultural practice and within society. There is no such person as the typical farmer or the typical citizen or consumer.

To address the increasing discrepancy between agricultural practice and the expectations of society, to mitigate future risks and to manage structural change in a self-determined manner, farmers are increasingly required to proactively deal with society's demands and to communicate their own performance more precisely. One option for tackling these challenges is the explicit integration of social concern into farming operations for the benefit of society. Management literature has coined the term corporate social responsibility (CSR) to refer to this approach. One well known typology of possible forms of CSR was developed by A.B. Carroll (CARROLL 1991). His CSR pyramid distinguishes between economic, legal, ethical and philanthropic responsibility. One conclusion for Carroll is that voluntary commitment in particular brings societal recognition. Initially prevalent in the Anglo-American realm, the CSR approach was also increasingly discussed in Europe in the past two decades.

Philantropic
connent
(SR)

Ethical
responsibilities
(Values, norms, expectations)

Legal responsibilities
(Legal compliance)

Economic responsibilities
(Profitability)

Although economic sciences have been dealing with the CSR approach for quite some time and the term has become an integral part of management literature, there is no commonly accepted definition (CARROLL 1999, DAHLSRUD 2008). CSR is essentially regarded as a concept in which companies take responsibility for their impact on society, beyond the pure strive for profit within the limits of legal norms. This also includes the integration of social and ecological demands of society into the company's corporate activities in order to maintain its societal legitimacy in the long term and to strengthen its own reputation. So far, little scientific consideration has been given to voluntary services provided by agricultural enterprises for the benefit of societal interests. We refer to such services as CSR measures. By 'voluntary services' we refer to measures that agricultural enterprises implement without being legally obliged to do so and without their implementation forming a condition for the receipt of single farm payments under of the first pillar of the Common Agricultural Policy (CAP). This article describes the pervasiveness of different types of CSR measures, sketches farmers' motivation for their implementation and analyses modes of operational embedding of CSR in farm management.

Figure •1•

# CSR pyramid of A.B. Carroll

Source: Figure based on Carroll 1991

# Analysis of the variety of CSR measures in German agriculture

The explorative empirical analysis is based on an online survey conducted in Germany in 2017. In this survey, employees and owners of agricultural enterprises (hereinafter 'farmers') were asked to detail the CSR measures of their enterprises. The resulting dataset covers 206 farming enterprises in all branches of agriculture, although their composition is not representative with regard to farm- and occupational structure.

As an indicator of the extent of societal commitment we use the number of CSR measures that a farm carries out. We refer to this measure as CSR variety, which can either refer to a farming enterprise as a whole (hereinafter 'farm') or to specific activity fields. We distinguish between the following activity fields:

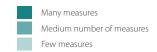
Employee interests
Community
Maintenance of landscape elements
Biodiversity arable land
Biodiversity grassland
Animal welfare
Product and process transparency, own production
Product and process transparency, suppliers

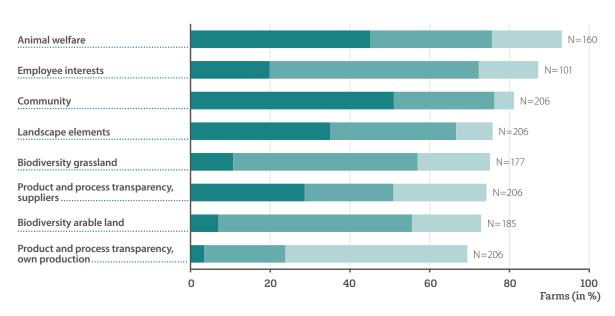
For example, the activity field 'Biodiversity arable land' is represented by seven CSR measures: Creation of field margins, buffer- and flowering strips; creation of larch windows; non-harvesting in grain; creation of fallow land; double seed row spacing; cultivation of more than three crops simultaneously and a crop rotation cycle of at least three years. The measures included are exemplary with no claim to be exhaustive. They are based on measures discussed in practice which farmers can implement voluntarily, i.e. beyond agricultural legislation, cross-compliance and CAP greening requirements. Statements regarding extensiveness, quality and beneficial effects of the activities cannot be derived from the presented results.

For each CSR activity field we have defined the categories 'few measures', 'medium number of measures' and 'many measures'. The distribution of these commitment levels in the sample is illustrated in Figure •2•. The percentages always refer to the number of farms for which the measures in the respective activity field are basically applicable at all. For example, measures in the activity field 'animal welfare' are limited to the 160 livestock keeping farms out of the total of 206 farms.

In all activity fields a clear majority of respondents state that their farms implement CSR measures. Proportionally, the majority of farms (with livestock husbandry) are involved in the field of 'animal welfare': 93% (149) of livestock keeping farms state that they do more for animal welfare than required at the time of the survey. The types of commitment here are particularly diverse. 45% of the farms active in this area implement three or more activities (corresponding to 'many measures'), with the majority focusing on husbandry conditions. The high level of participation and variety of the measures implemented can be linked to the critical discourses on livestock farming. These appear to motivate farmers to recognise an increased need for action and to act accordingly. According to the majority opinion of the farmers surveyed, improvements in animal welfare are a question of

CSR variety by activity fields





personal commitment, also from a financial point of view: the vast majority of livestock farmers (90%) state that public funds, if received at all, do only partially cover the additional costs of voluntary animal welfare measures, and only 16% believe that higher sales prices fully compensate the additional cost. Also in the activity field 'employee interests', the majority of enterprises surveyed consider additional responsibility to be relevant and are committed: 88 farms, i.e. 87% of farms with non-family labour, state that they are involved to a large or very large extent in at least one of the CSR measures surveyed. Most frequently cited measures are the promotion of further training measures for employees, payments above the general pay scale or vocational training. In the 'community' activity field, 81% of the surveyed farms are involved in the region or local community. The most frequently mentioned activities here include volunteering, involvement in local clubs and associations as well as maintenance of paths and road clearing services.

CSR measures in the activity field 'biodiversity' are funded to a large extent, whereas in other fields—such as maintenance of landscape elements or regional social commitment (community)—the farmers are primarily involved at their own expense. Important motivations for their commitment are enhancing the corporate image and professional ethics, which are reflected in careful and economical use of resources in production.

Considering the commitment of agriculture across all activity fields, it becomes evident that almost all farms implement CSR measures. Only two respondents stated that none of the total of 53 CSR measures covered by the survey was implemented. It can therefore be noted that almost all farmers surveyed believe that their enterprises are exercising their societal responsibility. However, the variety of activity varies considerably over farms.

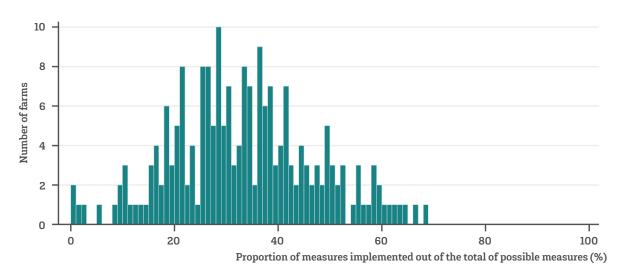
To illustrate the pervasiveness of CSR commitment on average across all activity fields, we assign an index of CSR variety to each farm, the distribution of which can subsequently be examined in the sample. To achieve this, we first calculate the implementation rate for each activity field. This is the quotient of the number of CSR measures

implemented and the maximum number of CSR measures possible, taking account of the operational orientation of the farm. Our index of CSR commitment is then calculated as the arithmetic mean of these implementation rates. It can take values between zero (no CSR measure implemented in any activity field) and 100 (all CSR measures implemented in all activity fields). The distribution of this index in the sample is depicted in **Figure \*3\***.

The distribution among the farms of CSR variety expressed by the index shows that, on average across all activity fields, farms realise between zero and 70% of the possible variety. In theory, it is possible for each farm to achieve 100% regardless of its operational orientation or degree of specialisation. When evaluating this index, however, it should be acknowledged that the individual measures surveyed are very different and, depending on the circumstances of an individual farm, hardly all measures can be considered at the same time. As illustrated in **Figure \*3\***, one quarter of the index values lies below 24 and one quarter above 42 respectively; within these limits (interquartile range) is the range of the most frequent index values.

Survey participants made statements on the organisation and implementation management of the CSR measures. Only a small portion (17%) states that specific structures and processes for implementing and measuring societal performance have already been established,

Index of CSR variety:
Distribution of index
values



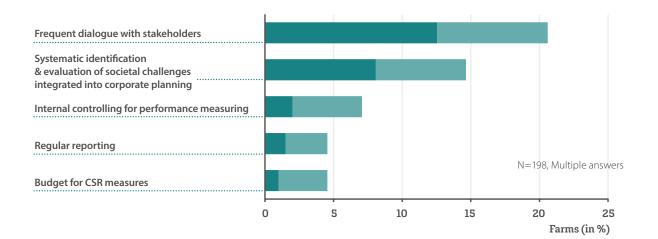
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whilst a further share of 15% plans to introduce such measures. Figure •4• shows how frequently certain forms of operational CSR anchoring occur or are planned in the future. Regular dialogue with stakeholders is the most frequently mentioned measure in this respect. Overall, however, it is apparent that CSR is not formalised to any great extent in farm management practice. This may be an indication that the activities here are primarily intuitive and less strategic in their realisation. In the majority of cases CSR is regarded a management task, to be realised by the manager, who is often also the owner of the farm.

The comparatively low level of formalisation is also evident in the fact that only around 3% of respondents state that their farm has formulated a concept or guidelines for corporate social responsibility. Weak points are apparent in the external communications of CSR performance which is, if at all, situative rather than systematic: 79% respectively 162 of the farmers claim that they do not communicate their societal commitment publicly at all (27%) or only to a low degree (52%). Where details of the type of public relations work were provided (143 farms), the majority of activities occur primarily at an informal level via personal conversations (93%) and much less frequently through organisation of events (34%) or via media that can have a reach beyond the region, such as social media (32%), press (29%) or internet (21%) (Figure •5•).

Operational anchoring
of CSR

Yes Planned

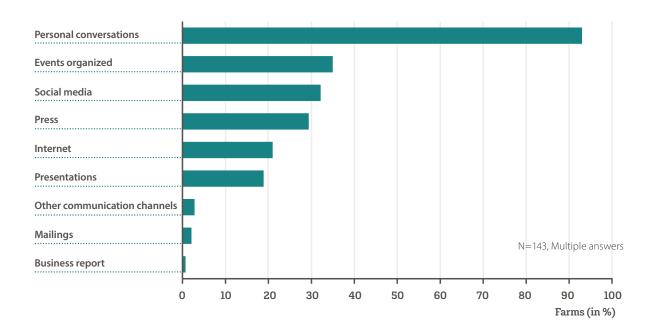


Especially—but not only—when reputation management is an important motivation for CSR, farms should proactively present their commitment to the public. The importance of this communicative task can also be seen in **Figure •6•**. The vast majority of both, farmers and non-farmers state that agriculture provides relevant additional services for society beyond its core business, although both groups doubt that the general public is actually aware of this.

# Conclusion

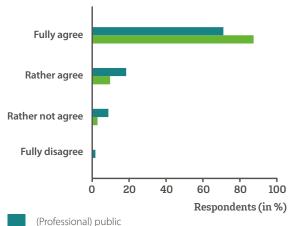
Our explorative investigation has shown that farmers provide voluntary societal services, whereby the extent of these services—here assessed by the CSR variety—varies greatly between farms and between surveyed activity fields. More precise examination and detailed analysis of the findings require further investigations through representative surveys and with a more differentiated indicator set that goes beyond mere variety of activities. To ensure that the realisation of CSR measures has a long-term future in enterprises and can achieve maximum benefit, a systematic embedding of these activities in the corporate culture and business processes is helpful.

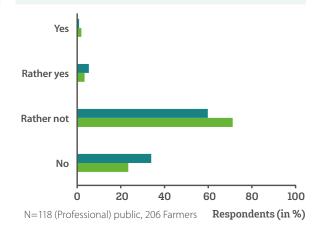
Communication of CSR activities to public



Beyond the production of agricultural products, farmers voluntarily provide additional services that are important for society.

Do you believe that the general public is aware of additional services provided?





Farmers

Figure •6•

# Perception of societal services delivered by agriculture

This firstly includes the systematic identification of societal challenges directly related to agriculture and the integration of appropriate activities in the operational strategy. This subsequently includes budgeting for CSR measures, controlling, continuous stakeholder dialogue and, last but not least the communication of the values and performance both internally and externally. Here is an evident need for action, which must, however, be adapted to the personnel, financial and time resources of farms.

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#### **Further Literature**

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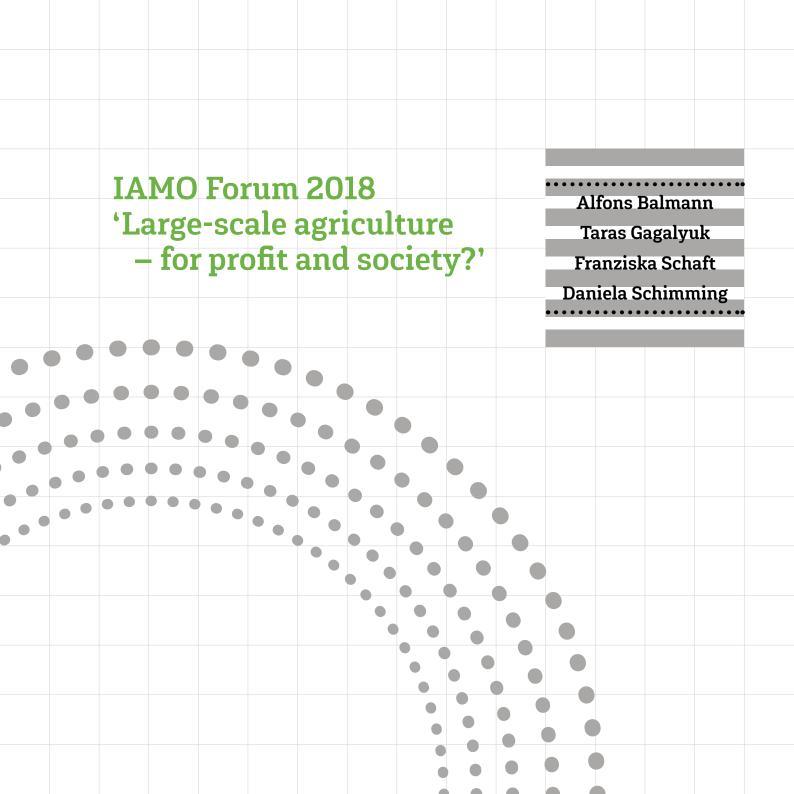
92

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IAMO Forum 2018
'Large-scale agriculture
- for profit and society?'

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Alfons Balmann Taras Gagalyuk Franziska Schaft Daniela Schimming he worldwide increase in very large agricultural enterprises is setting new standards in farming and leading to diverse, in some cases highly controversial discussions. These include those conducted amongst the 160 international guests from the fields of agricultural research, practice and policies at the sixteenth IAMO Forum in Halle (Saale). From 27 to 29 June 2018 they debated the framework conditions, perspectives and challenges of large-scale agriculture, as well as the associated social expectations.

In Russia alone, the 100 largest enterprises in the agricultural sector farm over 12 million hectares of land. Of this land, around 600,000 hectares are accounted for by just four of these *agroholdings*. The entrepreneurial challenges, opportunities and social impacts associated with these developments in agricultural and rural areas were discussed by participants at the Forum in three plenary sessions, 15 parallel sessions and two moderated panel discussions. The geographical focus was primarily on the transition economies of Eastern Europe, East Asia and the former Soviet Union, as well as on the emerging market economies and developed countries in Europe, America and Australia.

### Opening

The official opening of the IAMO Forum was undertaken by IAMO Director Alfons Balmann. He pointed out that large-scale agricultural enterprises with in part group-like business structures manage significant areas of agricultural land in many parts of the world, particularly Eastern Europe and South America. However, these companies face considerable challenges with regard to their ecological, social and economic sustainability. In turn, high profit mar-

gins cannot be achieved consistently in agriculture. This is a consequence of the 'agricultural treadmill', with enhanced competition and structural transformation. Balmann added that fluctuations in yields and prices place high demands on risk management, particularly in the case of large-scale agricultural enterprises. With their mostly high share of external production factors such as wage labourers, leased land and loans, regular compensation in cases of hardship would be difficult to achieve. At the same time, large agricultural enterprises are particularly visible to the public and therefore need to work actively to counter often-critical social attention.

An overview of the development and perspectives of the major agroholdings was offered by **Eugenia** 

Serova, Director of the FAO liaison office for the Russian Federation in Moscow. With, in some cases, several hundred thousands of hectares

# Driving forces of the (re)creation of large-scale agriculture

in Russia and other parts of the world, she nonetheless described these as too small in comparison to the corporate groups in the upstream and downstream areas of the agricultural value chain. Agricultural enterprises as investments, the shortage of skilled labour, the institutional environment, the political relations of the actors and the Soviet legacy of the large enterprises were named as reasons for the increasing significance of agroholdings in the post-Soviet sphere. As strengths of the companies she pointed to the competitive advantages on the world market, effective administrative structures and improved negotiating positions compared to market partners. However, Serova also mentioned the sustainability risks of an agricultural structure consisting of a comparatively small number of large

enterprises. She called for a balanced relationship between different farm sizes to reduce risks and stimulate market competition.

Richard J. Sexton, Professor at the University of California, Davis (USA), delivered an overview of the challenges facing agriculture in view of the shifting social perception. He addressed the conflict of interests between feeding a growing global population under productivity-limiting conditions such as climate change and the desire of society for an animal welfare-oriented, fair, regional and sustainable production. As a possible response to these challenges Sexton took a critical look at what he called the 'naturalistic paradigm', which strives for ecological, local and GM-free production in particular. He point-

ed out that the production forms proposed by this naturalistic paradigm carry with them numerous unresolved conflicting goals. In par-

ticular, he warned of the negative environmental effects of the regionalisation and extensification of agriculture and the shunning of technological developments such as biotechnology, if the major challenges facing agriculture are to be addressed.

### Can large-scale agriculture satisfy the requirements placed on it?

Professor Philipp Schreck of University of Halle-Wittenberg spoke in his presentation of the potential and requirements of voluntary reporting from companies on the subject of sustainability. In the process he highlighted the conflicting interests of companies and society with regard to transparency and the use of sustainability reporting as a modern

instrument of regulation that serves the interests of profit-orientated companies in particular. At the same time, he also pointed out that good sustainability reporting depends on quality assurance.

Mila Kletsky, President and Scientific Director of the investment consultancy Picking Alpha (Belgium), presented an overview of global trends in the financing of agricultural groups, such as the significance of pension funds, direct investment and bank loans. Using real cases, she illustrated the highly mixed experiences that agricultural companies have had with stock market flotations as a source of fund raising. Investors placed high requirements on the possible returns, which stands in contradiction to the agricultural sector, which is characterised by intense competition, low profit margins and high levels of uncertainty. Professional management of agricultural companies is a key factor in access to funding.

A debate moderated by Professor Ingo Pies of University of Halle-Wittenberg bore the title 'Moral challenges of modern agriculture'. In the debate it was firstly unanimously agreed that all discussion participants pursue the same goal of ensuring longterm food security. Silvia Bender, Team Leader Biodiversity at the Bund für Umwelt und Naturschutz Deutschland e.V. (BUND), saw the best means of achieving this in helping the many millions of small farmers worldwide to increase their productivity. Carl-Albrecht Bartmer, Chairman of the Supervisory Board of DLG e.V. (Germany), countered that size and sustainable farming do not correlate. The idea of primarily looking to support smallholders in developing and emerging countries by enabling small gains in productivity runs contrary to the development successes in economically developed regions. The migration of the rural population was primarily

the result of economic developments, whilst the enterprises that remained could subsequently benefit from growth and access to innovations. With a view to international commerce, Bartmer spoke expressly in favour of free trade. Trade is a prerequisite for collaborative international agriculture and multilateral international agreements are indispensable. Despite being essentially in favour of free trade, Bender stated that she found the current process of developing trade agreements too undemocratic. Regarding the subject of protecting and retaining biodiversity, Bender pointed out that it is not enough to secure biodiversity in one part of the world in order to increase the intensity of monocultures in another area. Instead, it is important to promote biodiversity worldwide. Bartmer highlighted that state programmes to promote biodiversity should utilise the existing creativity and local knowledge of individual farmers to a greater extent. Biological diversity is of decisive importance for agricultural production and farmers would therefore have strong incentives to help secure biological diversity.

# Opportunities and challenges of large-scale agriculture

On the final day of the conference the heads of large agricultural enterprises from Eastern Europe and South America gave their view of the subject 'Fit for the future: prospects and challenges facing large-scale agriculture'. Alex Lissitsa, Chief Executive Officer of IMC SA (Ukraine), which farms 126,000 hectares of arable land in Ukraine, provided an insight into the past and present of Ukrainian agriculture and presented the milestones in the development of IMC agroholding since it was founded in 2007. He sees the future of agriculture as tied closely to digitalisation. As a consequence, for years now IMC has

























1 Alfons Balmann opens the IAMO Forum 2018. 2 Plenary session, Mila Kletsky. 3 Panel discussion; Silvia Bender, Ingo Pies, Carl-Albrecht Bartmer. 4 Plenary session, Aurélio Pavinato. 5 Plenary session, Eugenia Serova. 6 Plenary session, Alex Lissitsa. 7 IAMO staff Zhanli Sun and Michel Kabirigi in conversation. 8 The conference dinner.

FORUM 2018

LARGE-SCALE AGRICULTURE

invested increasingly in digital tools such as E-portals, mobile agronomists, geoportals and GPS monitoring. With a view to the social responsibility of IMC, a large portion of expenditure on corporate social responsibility goes towards the direct support of individual landowners. These measures include personal financial assistance, medical care and domestic services as well as improving living conditions in the villages. Key challenges facing Ukrainian agriculture include increasing weather volatility, land market regulation, corruption problems and the increasing difficulty in finding qualified young employees willing to live and work in rural areas.

Aurélio Pavinato, Chief Executive Officer of SLC Agrícola SA (Brazil), explained the development of Brazilian agriculture parallel to the development of SLC Agrícola, which was established in 1945, also providing further insights into the future potential of Brazilian agriculture. Digital expertise, big data and sustainable technologies are the future focal points of development at SLC Agrícola, which now cultivates 400,000 hectares of soya, corn and cotton a year. He sees sustainability successes in the fact that in the scope of crop rotation with typically two harvests a year it was possible to continuously increase the level of carbon bound by the soil. In addition, the company could also reduce fuel consumption in the period from 2012/13 and 2017/18 alone from 76 to 48 l/ha. SLC Agricola also plays an active role in the development and utilisation of sustainability certification and conducts corresponding reporting. At the same time, Pavinato pointed out that Brazil has now developed its own capable technologies for tropical regions and that in the savannah there is subsequently enormous potential for agricultural expansion, despite the self-imposed

commitment to earmark a large area for long-term nature conservation.

In the concluding panel discussion on the subject of 'Large-scale agriculture – for profit and society?' Anna Catharina Voges, General Partner at Saat-Gut Plaußig Voges KG (Germany) with 2,500 hectares of arable land in the direct vicinity of the city of Leipzig, pointed to the challenges of advancing urbanisation. To keep pace with social requirements in this environment her company is focusing on precision agriculture as well as the establishment of niche and regional produce, including in some cases organic farming. As German society now often regards food and nutrition as a lifestyle rather than a necessity, agriculture should be prepared to serve these lifestyle requirements.

Ruud Huirne, Director of Food and Agriculture at Rabobank (Netherlands), stressed the importance of agriculture in preserving rural areas as the starting point for the work of internationally-active Rabobank. He also pointed to the increasing significance of digitalisation. In future, a bank will ultimately be an information and communication technology company with a banking licence. Digital data, largescale data analysis, data security and data protection will also become increasingly important for family-run operations. Here Rabobank is striving to make access to this easier for smaller enterprises. With regard to the customer types that Rabobank supports, he emphasised that size is important for success, but that ethical aspects are also becoming more significant. Huirne also pointed out that weather volatility as a result of climate change is set to increase and that this will have a considerable effect on the decision-making and risk behaviour of farmers.

In the view of Taras Vysotskyi, Director General of the Ukrainian Agribusiness Club (Ukraine), it is not possible to talk of profit-oriented sustainable agriculture without including the needs of society and communication with the stakeholders of agricultural enterprises. Agricultural companies naturally have close links to the rural area and its population. Vysotskyi doubts that large-scale agriculture harms the rural area. On the contrary, without agroholdings there would be no rural development at all in Ukraine in many cases. These provide considerable financial support for rural communities. Their strategic goal is also to create attractive living conditions for future employees. In contrast, state programmes for developing rural areas are extremely underfunded in Ukraine and offer few opportunities for longterm sustainability.

Oane Visser, professor at the International Institute of Social Studies (Netherlands), pointed to different academic studies of agroholdings in Russia, Ukraine and Kazakhstan. These studies often show low productivity and efficiency for the early years of the agroholdings compared to independent large agricultural operations. However, over the course of time agroholdings have increased their productivity significantly. Nevertheless, Visser warned against interpreting the growth of agroholdings solely with regard to their number as an indication of the 'superiority' of this form of production. Longitudinal studies would be required to justify this optimism. It should not be forgotten that around half of the large agroholdings in these countries struggle with financial and economic problems including delisting, insolvency or the sale of investments.

As moderator of the panel discussion – IAMO Director Alfons Balmann, summarised that the IAMO

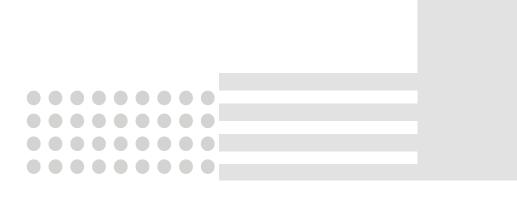
Forum 2018 had shown that large-scale agricultural enterprises need to document their profitability and economic stability as well as their social added value. This is all the more relevant as the number of groups that have failed economically is considerable. Economic success and corresponding progress alone are not enough, however. The enduring debate on modern agriculture requires that large agricultural enterprises in particular engage in public discussion. In this respect scientists also face considerable challenges, as so far little research has been conducted into the requirements towards agricultural management amidst societal concerns, with correspondingly scarce findings. Similarly, there are so far insufficient reliable research findings on the economic, social and ecological effects of business group-like structures in agriculture. Against this background, he sees one key contribution of the IAMO Forum 2018 as lying in the dialogue that took place between science, business, civil society and political actors.

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#### www.iamo.de/forum/2018

The IAMO Forum 2018 was organised by the Department of Structural Development of Farms and Rural Areas at the IAMO in co-operation with DLG e.V. and the Ukrainian Agribusiness Club (UCAB). The conference received financial support from the German Research Foundation (DFG), the Federal German State of Saxony-Anhalt, Rentenbank, Leibniz ScienceCampus 'Eastern Europe – Global Area' (EEGA) and the city of Halle (Saale).







he Leibniz Institute of Agricultural Development in Transition Economies (IAMO) has been analysing the major economic, social and political processes of change in the agriculture and food sector as well as in rural areas of its geographical area of research for 25 years now. This covers Central, Eastern and South Eastern Europe. It also covers the transition countries of Central and Eastern Asia, especially China. The level of research has been markedly increased over the last few years, especially in relation to Central Asia.

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**About IAMO** 

Michael Kopsidis

#### Goals and tasks

Despite great efforts and many successes, agricultural and food industry development in many of these regions still lags well behind the western industrialised nations, and in some instances, they are embarking on their own, very specific development paths. In addition, an enormous development gap between successful and stagnant regions within individual countries and between states can be seen. Different courses of transition, which still have an effect until today, are of great significance in explaining divergence in addition to structural factors of the most diverse kinds.

Large emerging nations such as Russia and China have risen to become 'global players' on world agricultural markets. We need to determine what needs to happen in these key economies to promote environmentally sustainable economic growth in agriculture and the food sector, and ensure long-term national and global food security despite the growing demands being placed on agricultural resources. At the same time, in the countries we cover, but not only in these, adapting agriculture and land use to climate change in a globalising economy also represents a major undertaking. Because of this, IAMO faces a very broad research challenge, both thematically and regionally.

IAMO has succeeded in significantly increasing the impact of its research on agricultural policy, administrative, commercial and scientific decision-makers in its partner countries. In its target regions IAMO is increasingly no longer focusing solely on science-based policy advice, a classic area of activity of application-oriented agrarian-economic research, but is instead guiding development in its diverse

facets with accompanying research closely embedded in practice. The institute is increasingly focusing its attention on sustainable academic capacity building in Eurasian transition economies, with an impact of this felt in practice. Developing efficient strategies for successful rural development that counteract uncontrolled poverty-driven migration from rural areas is also gaining increasing significance at the institute.

With its thematic and geographical focus, IAMO is a unique global research institution. Since its establishment in 1994 it has been a member of the Leibniz Association as a non-university research centre. The Leibniz Association includes research institutes which are scientifically, legally and commercially independent, together with service institutions. These are jointly funded by the federal administration and the Länder to address current problems of national interest.

www.leibniz-gemeinschaft.de/en

The aim of IAMO's work is not just to help understand, but also manage the far-reaching processes of change to reduce ongoing develop-

ment deficits in the agricultural and food sector, as well as in the rural areas of the institute's geographical area of research.

The institute sees itself as a driving force of international research into agricultural economics. Outstanding research is the engine of the institute's development, and creates the

# This goal gives rise to the three core tasks of the institute:

- Internationally oriented research into agricultural and food economics including the development of rural areas,
- Exchange of ideas between the academic, business and political communities,
- Support for young academics.

conditions in which the other two core tasks can be performed. For instance, IAMO acts as a forum for exchange, and in this way supports the crosslinking of German research and dialogue between decision-makers from academic, political and business communities. In view of the unprecedented major challenges, delivering scientifically based policy advice for the agricultural sector and political community in our partner countries is becoming an important part of IAMO's work. The institute also uses its expertise and capacities to help academic scholars become fully qualified. Here there is a particular focus on supporting young academics from partner countries.

Through its international orientation and co-operation with other teaching and research institutes, IAMO is helping to strengthen Halle's profile as a centre of science and research in Central Germany. Our close co-operation with Martin Luther University of Halle-Wittenberg (MLU) – especially with the Institute of Agricultural and Food Sciences at the Faculty of Natural Sciences III, and the Economic Sciences Department at the Faculty of Law and Economic Sciences – is an important factor here.

### Academic departments, research fields and key topic areas

IAMO's threefold research structure with the departments Agricultural Policy, Agricultural Markets and Structural Development (these are abbreviated descriptions) is derived from the orientation of its research. The basic conditions of agricultural policy and opportunities for shaping policy, markets in the agricultural and food sector, and the development of farms and structures in rural areas are all analysed by the institute. Developments at the individual farm level and in rural areas, the creation of functioning agricultural markets, and the shaping of agricultural policy are all closely interlinked. Decisions relating to farm development and agricultural policy, as well as market processes similarly have an impact on human-environment interaction in rural areas. In addition, they also have an effect on the two key issues of the future: food security and food safety.

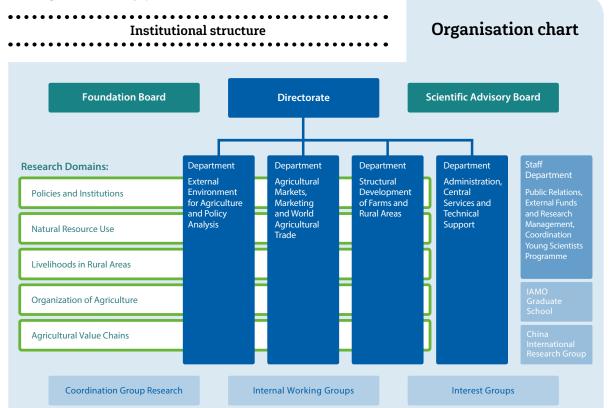
IAMO's academic work is organised interdepartmentally into five key research areas, which focus on major problem areas of agricultural development in Eurasian transition countries and emerging nations. The more intensive level of communication in key research groups counteracts any possible fragmentation of research. Besides positive bundling effects, greater individual responsibility of the key research groups allows efficient, result-oriented research management.

#### These five research domains are:

- I. Policy and institutions
- II. Natural resource use
- III. Livelihoods in rural areas
- IV. Organisation of agriculture
- V. Agricultural value chains

In the current medium-term agenda 2016–2022 the following aspects are given more consideration than was previously the case:

- The impact of global processes on the economy and environment of the study region,
- Developments in Central Asia, the Caucasus region, Russia and Ukraine,
- · Comparative analyses between countries,
- · Interdisciplinary nature of research,
- Dialogue with society, politics and business.



#### Institutional structure

IAMO is a public foundation. Its bodies are the Board of Trustees, the Directorate and the Scientific Advisory Board.

The institute is divided into three academic departments:

- External Environment for Agriculture and Policy Analysis
   —head of department is Professor Thomas Herzfeld,
- Agricultural Markets, Marketing and World Agricultural Trade
   —head of department is Professor Dr. h.c. Thomas Glauben,
- $\bullet \ \, {\sf Structural\ Development\ of\ Farms\ and\ Rural\ Areas}$ 
  - —head of department is Professor Alfons Balmann.

The heads of the academic departments, together with the head of

 Administration and Central Services/Technical Support, Katja Guhr,

form the **Directorate** of the institute.

Since January 2013, all four directors of the institute have been on an equal footing as managing directors with collective responsibility. In co-ordination with the Board of Trustees, this collegiate body manages the institute's business and directs the long-term research and development planning at IAMO.

The Scientific Advisory Board advises the Directorate and the Board of Trustees on scientific matters and regularly evaluates the institute's work.









#### **Foundation Board**

As of 1/1/2019, the following were members of the Foundation Board:

- Ministerialrat (Undersecretary)
   Thomas Reitmann, Chairman,
   Ministry of Economy, Science and Digitization of Saxony-Anhalt
- Ministerialdirigent (Head of Section)
   Friedrich Wacker, Deputy Chairman,
   Federal Ministry of Food and Agriculture
- State Secretary Dr Ralf-Peter Weber,
   Ministry of the Environment, Agriculture and Energy of Saxony-Anhalt
- Ministerialrat (Undersecretary)
   Jobst Jungehülsing,
   Federal Ministry of Food and Agriculture
- Professor Wolfgang Paul,
   Martin Luther University of Halle-Wittenberg
- Dr Lothar Hövelmann,
   DLG centre of expertise for agriculture
- Professor Sebastian Lentz,
   Leibniz Institute for Regional Geography Leipzig,
   IfL
- Professor Martin Odening, Humboldt University of Berlin

#### Scientific Advisory Board

As of 1/1/2019, the following were members of the Scientific Advisory Board:

- Professor Martin Banse, Chairman,
   Johann Heinrich von Thünen Institute (TI)
- Professor Hermann Lotze-Campen,
   Deputy Chairman,
   Potsdam Institute for Climate Impact Research (PIK)
- Professor Silke Hüttel,
   Rheinische Friedrich-Wilhelms University of Bonn
- Dr Ekaterina Krivonos,
   Food and Agriculture Organization (FAO)
- Professor Laure Latruffe,
   French Institute for Research in Agriculture (INRA)
   Rennes
- Professor Miranda Meuwissen,
   Wageningen University and Research Center (WUR)
- Professor Ada Wossink,
   University of Manchester
- Professor Katarzyna Zawalińska, Polish Academy of Science
- Professor Olaf Christen,
   Martin Luther University of Halle-Wittenberg (MLU)
- Professor Imre Fertö,
   Corvinus University of Budapest
- Professor Sebastian Hess,
   Christian Albrechts University of Kiel
- Professor William H. Meyers,
   University of Missouri

## Co-operation with university institutions

Since February 1998 IAMO and MLU have been working together under a comprehensive co-operation agreement, which includes joint appointments. IAMO's work is especially closely linked with the Institute of Agricultural and Food Sciences, which is part of the Faculty of Natural Sciences III, and the Economic Sciences Department at the Faculty of Law and Economic Sciences at MLU. The heads of IAMO's academic departments take part in MLU's teaching and committee work. Many academic members of staff from IAMO with post-doctoral and doctoral qualifications are also involved in university teaching, and in the running of a nationwide PhD student programme. Staff links between MLU and IAMO are also strengthened by the fact that MLU's Prorector of Research, Professor Wolfgang Paul, sits on IAMO's Foundation Board. Co-operation between MLU and IAMO assumed a new dimension when the ScienceCampus - Plant-based bioeconomy (WCH) was opened in Halle in June 2012. The Science Campus aims to strengthen the interdisciplinary collaboration between the Hallebased Leibniz institutes and the corresponding academic departments at Martin Luther University of Halle-Wittenberg in the sphere of plant-based bioeconomy. It will also advance higher education in the Halle (Saale) region, as well as supporting knowledge and technology transfer in politics, business and public life.

IAMO also works in close conjunction with many other universities, chiefly with faculties of agriculture and economics. Depending on the requirements of interdisciplinary research, other social science and humanities subjects may be brought in, e.g. human geography and history. As far as our partners in Germany are concerned, we have strong links with Berlin, Bonn, Göttingen, Hohenheim, Kiel, Munich and Münster. Alongside Martin Luther University of Halle-Wittenberg, a comprehensive co-operation agreement has been in place with the Humboldt University of Berlin since 2010. Close relationships also exist with chairs of agricultural economics and institutes at agricultural and economics colleges and universities in our partner countries.



# Amongst our partner universities abroad, we should give special mention to:

in China

- · Peking University,
- the Sichuan Agricultural University and
- the China Agricultural University of Beijing,

#### in Russia

- the Higher School of Economics (HSE) and
- the New Economic School Moscow (NES), both in Moscow,

#### in Ukraine

- the Kyiv School of Economics (KSE),
- the National University of Life and Environmental Sciences of Ukraine – Kyiv,
- the Taras Shevchenko National University of Kyiv and
- the Zhytomir National Agro-Ecological University (ZhNAEU),

#### in Uzbekistan

- the Samarkand Agricultural Institute (SamAI),
- the Samarkand Veterinary Medicine Institute (SamVMI),
- the Tashkent State Agrarian University and
- the Tashkent State Economic University,

#### in Kazakhstan

• the Kazakh National Agrarian University (KazNAU),

#### in Kyrgyzstan

• the University of Central Asia,

#### in Slovenia

• the University of Primorska, Koper,

#### in Serbia

the University of Belgrade,

#### in Romania

 the University of Agronomic Sciences and Veterinary Medicine of Bucharest (UASMV),

#### in Kosovo

• the University of Prishtina,

#### in the Czech Republic

- the Czech University of Life Sciences (CULS) Prague and
- Masaryk University.

In addition, IAMO maintains a wide range of scientific exchanges with Wageningen University and the Erasmus University Rotterdam, both in the Netherlands; in Denmark, the University of Copenhagen; in Sweden, the Swedish University of Agricultural Sciences in Uppsala. These are joined by the Catholic University of Leuven, the University of Kent in the United Kingdom and in France the La Rochelle School of Business. In the USA we have close contacts with Stanford University, Ohio State University, University of Missouri and University of Wisconsin-Madison. In addition to the University of British Columbia in Vancouver, Canada, there are also close contacts with South American universities. These include in Argentina the University of Buenos Aires and University Mar del Plata and in Brazil the University of Sao Paolo.

#### Co-operation

#### with non-university institutions

The numerous contacts with non-university institutions are also very important for IAMO's work. We collaborate with the Johann Heinrich von Thünen Institutes of Farm Economics, Rural Studies, and Market Analysis and Agricultural Trade Policy in Brunswick-Völkenrode (TI); the Leipzig-based Leibniz Institute for Regional Geography (IfL); the Leibniz Institute for the History and Culture of Eastern Europe (GWZO); the Halle Institute for Economic Research (IWH) in Halle; the Potsdam Institute for Climate Impact Research (PIK) and the German Committee on Eastern European Relations.

There are close relations with many non-university research institutions abroad, especially in Central and Eastern Europe, Southeast Europe, Central and Eastern Asia. We have excellent and regular professional contact with institutes in academies of sciences or agricultural sciences, regional research institutes and advisory boards, as well as agricultural economics research institutes that are subordinate to the corresponding ministries of agriculture.

#### Of note here are:

- the Center for Chinese Agricultural Policy (CCAP) and
- the Institute of Geographical Sciences and Natural Resources Research.

both in Beijing at the **Chinese** Academy of Sciences, in **Ukraine** 

- the Ukrainian Agribusiness Club (UCAB),
- the Ukrainian Agrarian Confederation and the Ukrainian Agricultural Council,

#### in Russia

- the All-Russian Institute for Agrarian Problems and Information Theory (VIAPI) in Moscow and
- the North-Western Research Institute of Economy and Organization of Agriculture, Saint-Petersburg-Pushkin,

#### in Kazakhstan

- the Kazakh Analytical Center of Economic Policy in the Agricultural Sector (ACEPAS)/Astana,
- the Public Fund Center of Applied Research TALAP, also in Astana,
- the Kazakh Scientific-Research Institute of Cattle Breeding and Fodder Production (KAZNIIZHiK) and
- the Regional Environmental Centre for Central Asia.

#### in Uzbekistan

- the Tashkent Institute of Irrigation and Agricultural Mechanization Engineers (TIIAME) and
- NBT Consulting,
- the National Statistical Committee of the Republic of Kyrgyzstan,
- the International Center for Agribusiness Research and Education (ICARE) in Armenia,
- the Georgian Center for Agribusiness Development (GCAD) in Georgia,
- the Agro Information Centre of Azerbajian (AIM),

- the Ministry of Agriculture, Forestry and Rural Development of the Republic of Kosovo,
- the Institute of Agricultural Economics and Information, Prague (UZEI) in the Czech Republic and
- the Institute of Agricultural Economics, Belgrade,
   Serbia.

In addition, there is also the National Agricultural Technology Institute (INTA) in **Argentina**.

Regarding **international organisations**, the following in particular should be noted

- the Food and Agriculture Organization of the United Nations (FAO), in particular the FAO Regional Office for Europe and Central Asia in Budapest,
- · the World Bank,
- the International Food Policy Research Institute (IFPRI) and
- the International Water Management Institute (IWMI-CGIAR) as well as
- the International Center for Agricultural Research in the Dry Areas (ICARDA).

### New Leibniz ScienceCampus 'Eastern Europe – Global Area'

The Leibniz ScienceCampuses offer completely new opportunities for academic co-operation with university and non-university research institutes. In Central Germany a new 'Eastern Europe - Global Area' (EEGA) Leibniz ScienceCampus was officially opened on 26 January 2017, which will be ground-breaking in the context of global challenges for research on and into the countries of Eastern Europe. In co-operation with universities and non-university institutes in Leipzig, Halle (Saale) and Jena, IAMO investigates the globalisation of Eastern European and Central Asian regions through economic ties, geopolitical changes, cultural exchange and migration movements. The Leibniz ScienceCampus 'Eastern Europe - Global Area' offers all participating institutions excellent interdisciplinary co-operation possibilities for their research and transfer activities as well as in further academic education and training of researchers with particular focus on communication of research results to the media and wider public. The ScienceCampus 'Eastern Europe – Global Area' will be supported by the Leibniz Association for a period of four years. Under the auspices of the Leibniz Institute for Regional Geography (IfL), the IAMO, the universities of Leipzig, Halle-Wittenberg and Jena, the Max Planck In-



### Supporting young academics

stitute for Social Anthropology in Halle, the Fraunhofer Center for In-

One of IAMO's three core tasks is to help develop the next generation of researchers, the institute therefore supports the implementation of doctoral and habilitation projects. A large number of dissertation topics are also assigned for master's, diploma and bachelor degrees. At the end of 2018, 44 theses, 21 of them written by women, were supervised at IAMO. The majority of the PhD students originated in partner countries of IAMO. Numerous employees are preparing their habilitation.

In 2018 four long-serving staff members at IAMO successfully submitted and defended their **dissertations** at Martin Luther University:

- Between path dependence and path creation: The impact of farmers' behavior on structural change in agriculture (Franziska Appel)
- Oligopsony Power in the Kazakh Grain Supply Chain (Giorgi Chezia)
- Price discrimination and market power in the international wheat market: The case of Kazakhstan, Russia and Ukraine (Gulmira Gafarova)
- Analysis of impediments to grain export from Russia, Ukraine and Kazakhstan: Three essays (Iryna Kulyk)

Two **external dissertations** supervised by IAMO staff also reached a successful conclusion:

- Essays on Competition and Cost Pass-Through in Food Retailing (Thomas Bittmann/Christian-Albrechts-Universität zu Kiel)
- Urbanization and food systems
   (Christopher Bren d'Amour/TU Berlin)

### **Equal opportunities at IAMO**

In 2016 IAMO received the TOTAL E-QUALITY award for equal opportunities for the second time, after successfully winning it in 2013. IAMO received the award due to its successful, long-term commitment to equal work opportunities for men and women. TOTAL E-QUALITY stands for Total Quality Management (TQM), supplemented by the gender component of equality. With the retaining of this predicate, the institute enters into an individual self-obligation to continually monitor its equal opportunities and ensure they are permanently anchored. The award acknowledges the institute's successful equal opportunities policy. Besides equal career opportunities based on talent, potential and skills, the institute also places great importance

on guaranteeing and enhancing the compatibility of family and career. In the period from autumn 2016 to April 2018 IAMO joined with the Leibniz Institute of Plant Biochemistry (IPB) in assuming responsibility for the organisation and implementation of the forthcoming work of the Dual-Career Network.

IAMO has successfully raised funds for the position of an Equal Opportunity Officer via the 'Promoting Equal Opportunities between Women and Men in Science and Research (FEM-Power)' programme funded by the European Social Fund (ESF) of the State of Saxony-Anhalt, in order to promote and institutionalise gender equality activities at IAMO. The project is intended to run for five years. The focus of the FEM-Power programme is on job-related pro-

motion of women in the so-called MINT area (mathematics, information technology, natural sciences and technology), in which women are under-represented. Mr Fabian Baier was appointed Co-ordinator for Gender Equality and Diversity at IAMO from October 2017 to February 2019. In May 2019, Dr Miao-ling Hasenkamp joined IAMO and is now responsible for this task ever since.

The IAMO Equal Opportunities Officer, **Franziska Appel**, is involved in the Equal Opportunities and Diversity working group of the Lei-



Visitor to the IAMO Forum 2018 @ Markus Scholz

The anchoring of
equal opportunities and the
promotion of reconciliation of
work and family life is undertaken
via conscious personnel
management, career and junior
talent support and the Central
German Dual-Career Network.

bniz Association. She was elected to the speakers' Council of Equal Opportunities Officers of the Leibniz Association on 8 March 2018.

IAMO is prominently represented in the MLU mentoring programme for young scientists in the 2018 year. Four outstanding researchers were included in the programme. Franziska Appel, Johanna Jauernig, Yuzhe Yang and Gabi Waldhof.

#### Prizes and awards

Johanna Jauernig was awarded the Max Weber Prize (science prize) for her dissertation completed at the TUM School of Management of Munich Technical University: 'Using Experiments in Ethics: An Inquiry of the Dark Side of Competition'. The Max Weber Prize for Economic Ethics is a prize that has been awarded by the German Economic Institute (IdW) since 1992. Her dissertation was also distinguished as one of the best dissertations at Munich Technical University by the organisation Bund der Freunde der TU München.

Researcher **Lijuan Miao** received approval for an EU Marie Curie Fellowship in January 2018. Here she will carry out research on the subject 'CROSSGRASS: Cross-border analysis of grassland greenness in Asia: Climate variations, grazing pressure, and land policy change' in the Structural Change department at IAMO, with three months at the Geographical Institute of the Humboldt University of Berlin.

**Catalina Munteanu** also received an EU Marie Curie Fellowship in February 2018. The project is entitled 'EcoSpy: Leveraging the potential of historical spy satellite photography for ecology and conservation' and will be carried out in co-operation with the Humboldt University of Berlin.

**Lena Kuhn** was awarded the Luther Certificate in February 2018 by University of Halle-Wittenberg for her outstanding research work. She completed her dissertation on the subject 'The Brink of Poverty – Efficiency and effectiveness of targeted social assistance for poverty reduction in rural China' in the summer of 2017 with the maximum grade of *summa cum laude*.



Johanna Jauernig



Lijuan Miao



Catalina Munteanu



Lena Juhn

# Training for doctoral students: IAMO Graduate School, seminars and Doctoral Certificate Programme

In October 2018, 44 researchers were completing their PhDs at IAMO. Their education meets international standards. As part of the 'Pact for Innovation and Development', which corresponds to the excellence initiative of the German government and the Länder to promote science and research at German universities, the institute established the IAMO Graduate School in 2007. Starting out for four years as a pilot measure, since 2011 the Graduate School has become a fixed and permanent component of PhD training at IAMO. All doctoral students at IAMO are automatically members of the Graduate School, which is also IAMO's contribution to the Doctoral Certificate Programme in Agricultural Economics.

The Doctoral Certificate Programme in Agricultural Economics was established in 2005 by IAMO, the Johann Heinrich von Thünen Institute (TI) and institutes of agricultural economics at several German universities. The Doctoral Certificate Programme offers the first structured training in Germany, and now also in Austria, for doctoral students in the areas of agricultural and food economics and rural development. The systematic teaching of essential theory and methods aims to increase the quality of students' education and improve efficiency when working on dissertation topics. Doctoral study is the third stage of a consecutive study programme, following bachelor's and master's degrees in agriculture, food and the environment.

www.agraroekonomik.de

#### The Doctoral Certificate Programme is jointly run by:

the Agricultural and Food Economics Faculty at Christian Albrechts University of Kiel, the Faculty of Agriculture at the Rheinische Friedrich-Wilhelms-University of Bonn, the Institute of Agriculture and Horticulture at the Humboldt University of Berlin, the departments of Agricultural Sciences, Ecotrophology and Environmental Management at Justus Liebig University Giessen, IAMO, the Faculty of Agricultural Sciences at Hohenheim University, the Institute of Agricultural and Food Sciences at Martin Luther University of Halle-Wittenberg, the Department of Ecological Agricultural Sciences at Kassel University, the Faculty of Agricultural Sciences at Georg August University in Göttingen, die Faculty of Economic Sciences and the School of Life Sciences Weihenstephan at Munich Technical University, the Faculty of Agricultural and Environmental Sciences at the University of Rostock, the University of Natural Resources and Life Sciences in Vienna, and the Thünen Institute, Brunswick.

The PhD course is based on a modular system. From October 2017 to September 2018 IAMO professors and staff helped organise academic events relating to the following modules:

- The Political Economy of Agriculture in High-Income Countries
- Agent-Based Modelling in Agricultural and Resource Economics
- Foundations of Agricultural Economics
- Introduction to Geographic Information Systems and Spatial Data Analysis
- Efficiency and Productivity Analysis I Deterministic Approaches
- Household Behavior: Theory and Applications

In close co-operation with the PhD students, the IAMO Graduate School also offers specific further education seminars at the institute, for which IAMO invites outside speakers.

Besides structured training for doctoral students, the IAMO Graduate School specifically involves IAMO academics who already have PhDs, giving them the opportunity to develop further their fields of research and gain experience in research management. The IAMO Graduate School also serves as a point of contact for all PhD students. Since March 2012 the IAMO Graduate School has also been a full member of the International Graduate Academy (InGrA) of Martin Luther University of Halle-Wittenberg. InGrA supports the setting up of all forms of structured doctoral programmes, coordinates the existing programmes and helps create a productive research environment, while taking into account the university's internationalisation and equal opportunities strategies.

In conjunction with the agricultural economics professors of business, agricultural market theory, agricultural business management, and agricultural, food and environmental policy at MLU's Institute of Agricultural and Food Sciences, IAMO also runs a PhD student seminar. This seminar acts as a forum for scientific exchange about research questions, methodological approaches and results.

www.ingra.uni-halle.de

## China International Research Group at IAMO

In 2008 the International China Research Group was set up at IAMO on a fixed-term basis to work on the topic 'Economic Development and Rural Equilibrium in Rural China'. The international research group works towards the structural and sustained international cross-linking of IAMO's research activities into economic and social processes in rural areas of the People's Republic of China. In the beginning the group consisted of IAMO staff only and was later joined by academic colleagues from Göttingen, Wageningen and Beijing. In 2011 the Centre's future was secured by a permanent partial funding from the Pact for Research and Innovation.

In 2018 the research group was working on eleven projects, which covered a wide range of different topics, mainly in the key research areas of 'Livelihoods in Rural Areas', 'Natural Resource Use' and 'Agricultural Value Chains'.

On 15 October 2018 six PhD projects were underway within the China Research Group. An example of some of the research findings is detailed here: the latest productivity analysis indicates the comparatively low allocative and technical efficiency of Chinese agricultural enterprises. The majority of farms have major problems in closing the gap with the leading enterprises with the technology available. In addition, reasons for the increase in flash floods in specific regions and possible counter strategies were discussed.

Repeated visits by IAMO researchers to China have proven to be essential to their successful research work. Likewise, guest visits to IAMO by foreign colleagues, especially Chinese, are important for orienting research adequately in line with current developments. For example, the group is working jointly with colleagues from Sichuan Agricultural University in Chengdu.

On 31 May 2018 the second phase of the German-Sino Agricultural Centre (DCZ) was ceremoniously opened at the German Embassy in Beijing, China. The event, which was attended by around 90 delegates from the fields of science, politics and business, saw the signing



#### https://china.iamo.de/research/ current-research-projects

Amongst other aspects, the research themes deal with the productivity of Chinese agriculture, the effects of land market liberalisation, with social, health and educational policies as well as the impact of Chinese environmental policy programmes on environmental resources and rural living conditions. In addition, it also deals with the complex relationships between land use and environment as well as trade issues and aspects of food security. The individual projects contribute to finding solutions for economic, social and ecological problems in rural China. It deals primarily with issues regarding the objective design of political and economic framework conditions.

of an implementation agreement between the Chinese Academy of Agricultural Sciences (CAAS) and the IAK-IAMO working group. Prior to this, in an initial meeting of the steering group activities until mid-2019 were planned. The German-Sino Agricultural Centre (DCZ), which was founded in 2015, is a joint initiative of the Federal Ministry of Food and Agriculture (BMEL) and the Chinese Ministry of Agriculture and Rural Affairs (MARA). The goal of the DCZ is to intensify political and economic relations and promote scientific co-operation and interaction between experts. The second phase of the DCZ is to be implemented on the German side by a consortium of IAK Agrar Consulting GmbH and IAMO. The start of the second phase of the German-Sino Agricultural Centre (DCZ) has further strengthened the practical aspect of the research work of the China Research Group.

#### Guests and fellowships at IAMO

The further training and education of academic scholars is one of IA-MO's core tasks. IAMO focuses mainly on supporting young academics from its partner countries. In this regard, a great importance lies on study visits by researchers, which usually range from a few weeks up to two years. Besides being involved in joint publications, those who come for long-term visits also concentrate on their doctoral studies, financed by external and IAMO grants, and third-party funded projects. On 31 December 2018 there were 25 fellows working at IAMO, concentrating mostly on their theses. At the same time, 29 predominantly young visiting academics were conducting research at the institute. Researchers from over 25 countries carried out research at IAMO in 2018.

By working together closely on international, third-party funded research projects, young researchers from partner countries integrated themselves into the international academic community. Former IAMO staff, both from Germany and partner countries, are now working in international organisations such as the EU and World Bank, or they have acquired management positions in their respective national agricultural administrations. An even larger number of them are continuing their academic careers back in their home countries.



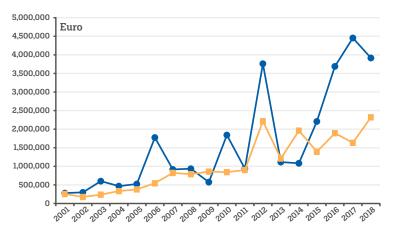
Project title		Funding source	
I. Newly approved research projects with third-party funding			
Sustainability of research software AgriPoliS	AgriPoliS2020	German Research Foundation (DFG)	
Social comparisons and inequality – Perceptions of inequality through social comparisons and transference on subjective wellbeing: a micro perspective on reference groups	Wahrnehmungen_Bu and Wahrnehmungen_JM	German Research Foundation (DFG)	
An Innovative Pilot Program on the Re-Integration of Scientists to Central Asia: Research and Capacity Building on Food Chains under Climate Change	VW IPReS	Volkswagen Foundation	
Sustainable Agricultural Development in Central Asia	VW SUSADICA	Volkswagen Foundation	
Capacity development to the MAFRD to improve commercialization between small farmers and family farmers	CommerceSFF	Food and Agriculture Organization of the United Nations (FAO)	
SDG national awareness raising workshop	FAO Workshop 2017 _Usbekistan_SDG aware- ness	Food and Agriculture Organization of the United Nations (FAO)	
Pilot project for the sustainable internationalization of Ukrainian research structures in the context of the globalization of the Ukrainian food sector	UaFoodTrade	Federal Ministry of Education and Research (BMBF)	
Increasing climate resilience via agricultural insurance – Innovation transfer for sustainable rural develop- ment in Central Asia	KlimALEZ	Federal Ministry of Education and Research (BMBF)	
Review of a priori dietary quality indices regarding their construction	Post-Grant-Fund Brosig	Federal Ministry of Education and Research (BMBF)	
German-Sino Agricultural Center (DCZ) Phase II	DCZ	Federal Ministry of Food and Agriculture (BMEL)	
Cross-border analysis of grassland greenness in Asia: Climate variations, grazing pressure and land policy change	CROSSGRASS	EU (MSCA)	
Doctoral Studies in GeoInformation Sciences	DSinGIS	EU Erasmus+	
Digital early-warning technologies for climate crisis management and agricultural transition in Central Asia	DETECCT	Leibniz Research Alliance 'Crises in a Globalised World'	
Agriculture Trade and European Partnership for Sustainable Development in Central Asia	WGL_EEGA_Workshop Bobojonov	Leibniz ScienceCampus 'Eastern Europe – Global Area' (EEGA)	

Sustainable Regional Integration in Caucasus and Central Asia	SARICCA	German Academic Exchange Service (DAAD)
Food 4.0 and globalization: Chances and challenges for Western Balkan-Consumers' role in changing global food supply chains	WGL_EEGA_Workshop Duric	Leibniz ScienceCampus 'Eastern Europe – Global Area' (EEGA)
Global sharing of agricultural risk: Stimulating the dialogue and promoting cooperation between Central Asia and Germany	WGL_EEGA_Workshop Bobojonov_Kuhn	Leibniz ScienceCampus 'Eastern Europe – Global Area' (EEGA)
Innovations for increasing income of smallholders and resilience of the wheat supply chain in MENA countries	Workshop SMARTCHAIN	Leibniz ScienceCampus 'Eastern Europe – Global Area' (EEGA)
Home Gardens as a Coping Strategy in Crises and Humanitarian Emergencies	WGL_LFV Krisen_Home Gardens	Leibniz Research Alliance 'Crises in a Globalised World'
Scientific monitoring of the ERP system	ERPIAMO	Merseburg University of Applied Sciences
Citizen Science and ICT for Advancing the prevention and control of Banana Xanthomonas Wilt (BXW) in East and Central Africa	GIZ Banana Wilt	Gesellschaft für Internationale Zusammenarbeit (GIZ)
Towards Rural Inclusive Growth and Economic Resilience	GIZ TRIGGER	Gesellschaft für Internationale Zusammenarbeit (GIZ)
Large-scale agriculture – for profit and society?	IAMO Forum 2018	German Research Foundation (DFG) Leibniz ScienceCampus 'Eastern Europe – Global Area' (EEGA) Federal German State of Saxony-Anhalt (LSA) Rentenbank City of Halle (Saale)
Market power on agricultural land markets – meaning, measuring, and definition	Marktmacht Bodenmärkte	German Federal Office for Agriculture and Food (BLE)
Modeling individual decisions to support the European policies related to agriculture	MIND STEP	EU Horizon 2020
AgriDigital	PPP Serbien 2019 AgriDigital	German Academic Exchange Service (DAAD)

II. Ongoing projects with third-party funding			
A spatial-dynamic approach to land rental markets	LandPM_MG and LandPM_AB	DFG Research Grants	
Research group 'Agricultural Land Markets – Efficiency and Regulation' • Subproject SP 6 • Can agricultural land market regulations fulfill their promises? Agent-based simulation studies for selected German regions	ALM_Balmann	German Research Foundation (DFG)	
Research group 'Agricultural Land Markets – Efficiency and Regulation' • Subproject SP 7 • Spatiotemporal analysis of farm-level and environ- mental outcomes of land markets	ALM_Müller	German Research Foundation (DFG)	
Research group 'Agricultural Land Markets – Efficiency and Regulation' • Subproject SP 3 • Ethical issues in agricultural land markets	ALM_Valentinov	German Research Foundation (DFG)	
Political economy of agricultural policies in federal systems	FEDAGRIPOL	Leibniz Association (Leibniz Competition)	
International Competence Center on Large Scale Agriculture	LaScalA	Leibniz Association (Leibniz Competition)	
Establishment of a junior research group in the field of 'Economics and Institutions of the Bioeconomy'	WCH Nachwuchsgruppe	Leibniz Association	
Balancing trade-offs between agriculture and biodiversity in the steppes of Kazakhstan	VW BALTRAK	Volkswagen Foundation	
Institutional Change in Land and Labour Relations of Central Asia's Irrigated Agriculture	VW AGRICHANGE	Volkswagen Foundation	
Understanding food value chains and network dynamics	VALUMICS	EU Horizon 2020	
Towards sustainable and resilient EU farming systems	SURE-Farm	EU Horizon 2020	
German-Ukrainian Agricultural Policy Dialogue	APD Ukraine	Federal Ministry of Food and Agriculture (BMEL)	
Pathways to sustainable land management in Northern Argentina	PASANOA	Federal Ministry of Education and Research (BMBF)	
'Bioökonomie als gesellschaftlicher Wandel' The role and functions of bioclusters in the transition to a bioeconomy	TRAFOBIT	Federal Ministry of Education and Research (BMBF)	

Revitalising animal husbandry in Central Asia: A five-country analysis	ANICANET	Federal Ministry of Education and Research (BMBF)
Professionals from abroad in Saxon agriculture	Sachsen 2017	Free State of Saxony
Editor-in-chief of Dr Daniel Müller for the Journal of Land Use Science	Journal Müller	Journal of Land Use Science
Assessment of Common Agricultural Policy (CAP), Pillar II measures upon on-farm	PPP Slowenien 2017	German Academic Exchange Service (DAAD)
Promotion of gender equality for female scientists at Leibniz Institute of Agricultural Development in Transition Economies (IAMO) – Creating the position of equality and diversity coordinator	FEM Power	Investitionsbank Sachsen-Anhalt
The Ethics and Economics of Modern Agricultural Myths	WCH AgriMyths	Investitionsbank Sachsen-Anhalt
Project title		Funding source
III. Projects with third-party funding that have finished		
III. Projects with thi	ira-party funding that ha	ive Illistica
New Institutionalism and Bayesian Networks: Establishing an analytical framework to model migration decision making in rural Kazakhstan	SoNeoBaN I+II	DFG Research Grants
New Institutionalism and Bayesian Networks: Establishing an analytical framework to model		
New Institutionalism and Bayesian Networks: Establishing an analytical framework to model migration decision making in rural Kazakhstan  Preparation of a structured doctoral programme on	SoNeoBaN I+II	DFG Research Grants
New Institutionalism and Bayesian Networks: Establishing an analytical framework to model migration decision making in rural Kazakhstan  Preparation of a structured doctoral programme on sustainable agricultural development in Central Asia	SoNeoBaN I+II  VW PREP	DFG Research Grants  Volkswagen Foundation
New Institutionalism and Bayesian Networks: Establishing an analytical framework to model migration decision making in rural Kazakhstan  Preparation of a structured doctoral programme on sustainable agricultural development in Central Asia  Uzbekistan agricultural sector review  Analysis of the strategy of the Russian Federation	SoNeoBaN I+II  VW PREP  Uzbekistan Review	DFG Research Grants  Volkswagen Foundation  World Bank  Federal Ministry of Education and
New Institutionalism and Bayesian Networks: Establishing an analytical framework to model migration decision making in rural Kazakhstan  Preparation of a structured doctoral programme on sustainable agricultural development in Central Asia  Uzbekistan agricultural sector review  Analysis of the strategy of the Russian Federation for the expansion of agricultural production  Competence Management to Promote Skilled	SoNeoBaN I+II  VW PREP  Uzbekistan Review  STARLAP	DFG Research Grants  Volkswagen Foundation  World Bank  Federal Ministry of Education and Research (BMBF)  Federal Ministry of Education and
New Institutionalism and Bayesian Networks: Establishing an analytical framework to model migration decision making in rural Kazakhstan  Preparation of a structured doctoral programme on sustainable agricultural development in Central Asia  Uzbekistan agricultural sector review  Analysis of the strategy of the Russian Federation for the expansion of agricultural production  Competence Management to Promote Skilled Foreign Workers in Agriculture  Research on the influence of ethnic migration on the	SoNeoBaN I+II  VW PREP  Uzbekistan Review  STARLAP  Alfa Agrar	DFG Research Grants  Volkswagen Foundation  World Bank  Federal Ministry of Education and Research (BMBF)  Federal Ministry of Education and Research (BMBF)  Ministry of Science and Education

Eurasian Food Economy between Globalization and Geopolitics	IAMO Forum 2017	Food and Agricultural Organization of the United Nations (FAO) German Research Foundation (DFG) Leibniz Research Alliance 'Crises in a Globalised World' Leibniz ScienceCampus 'Eastern Europe – Global Area' (EEGA) City of Halle (Saale)
Building an Excellency Network for Heightening Agri- cultural economic research and education in Romania	ENHANCE	EU Horizon 2020
Assessment of Common Agricultural Policy (CAP), Pillar II measures upon on-farm	PPP Slowenien 2017	German Academic Exchange Service (DAAD)
Sustainable Regional Integration in Caucasus and Central Asia	SARICCA	German Academic Exchange Service (DAAD)
Review of a priori dietary quality indices regarding their construction criteria	Post-Grant-Fund_Brosig	Federal Ministry of Education and Research (BMBF)
Innovations for increasing income of smallholders and resilience of the wheat supply chain in MENA countries	Workshop SMARTCHAIN	Leibniz ScienceCampus 'Eastern Europe – Global Area' (EEGA)
Food 4.0 and globalization: Chances and challenges for Western Balkan – Consumers' role in changing global food supply chains	WGL_EEGA_Workshop Duric	Leibniz ScienceCampus 'Eastern Europe – Global Area' (EEGA)
Agriculture Trade and European Partnership for Sustainable Development in Central Asia	WGL_EEGA_Workshop Bobojonov	Leibniz ScienceCampus 'Eastern Europe – Global Area' (EEGA)
Global sharing of agricultural risk: Stimulating the dialogue and promoting cooperation between Central Asia and Germany	WGL_EEGA_Workshop Bobbojonov_Kuhn	Leibniz ScienceCampus 'Eastern Europe – Global Area' (EEGA)



# Development of third-party funding

Source: Institute's own statistics

- Funding aquired

--- Funding awarded

In 2006, 1.775 million euros were approved, 601,000 of which went to project partners. In 2012, 3.763 million euros were approved, 2.008 million of which went to project partners. In 2012, 2.211 million euros were given out, 1.104 million of which went to project partners.

#### Selected third-party funded projects

Below is an outline of the most important projects for which new third-party funding has been obtained. It is demonstrated that, with regard to both basic research and scientifically based policy advice, IAMO's expertise is highly valued and that the institute is exploring new ways of research cooperation to permanently establish Halle as a centre of science and research.

#### **Agricultural Land Markets**

- Efficiency and Regulation (FORLand)

The Agricultural Land Markets – Efficiency and Regulation (FORLand) research group, sponsored by the German Research Foundation (DFG) together with the Austrian Science Fund (FWF), was launched on 1 August 2017. The three-year project is co-ordinated by Martin Odening of Humboldt University of Berlin and Silke Hüttel of the University of Bonn. The IAMO researchers Alfons Balmann, Daniel Müller and Vladislav Valentinov head three work packages or sub-projects of the research group:

- Can agricultural land market regulations fulfil their promise?
   Agent-based simulation studies for selected German regions (Alfons Balmann, sub-project SP 6)
- 2 Spatio-temporal analysis of the effects of land markets on agricultural enterprises and the environment (Daniel Müller, sub-project SP 7)
- 3 Ethical issues in agricultural land markets (Vladislav Valentinov, sub-project SP 3)

The funding for the three sub-projects co-ordinated by IAMO staff totals 689,399 euros.

The background of the project is the continuous rise, over years, of lease and purchase prices for agricultural land. FORLand consequently addresses the function, efficiency and social acceptance of agricultural land markets and land market regulation. The goals of the project are to gain a better understanding of the formation of purchase and lease prices of agricultural land, to assess the effects of market



mechanisms and rising prices on society and the environment and to better estimate the impact of state intervention in the land market. In addition to IAMO, project partners are Humboldt University of Berlin, Technical University of Berlin, Georg August University of Göttingen, the University of Natural Resources and Life Sciences, Vienna (BOKU) and the Agricultural Faculty of the University of Bonn.

#### UaFoodTrade -

pilot project for the sustainable internationalisation of Ukrainian research structures in the context of the globalisation of the Ukrainian food sector



A joint research group forms the first component, as core of the project. This deals with issues regarding the embedding of the Ukrainian food sector in regional and international markets. Alongside this, the second component of the project comprises the realisation of capacityforming measures at the Kyiv School of Economics (KSE) in Kiev – such as summer schools, various seminars and workshops, with these also open to students and lecturers of other Ukrainian research establishments and universities. Research activities and capacity-forming measures are embedded in a project office at the KSE, the third element of the project. The project office co-ordinates the co-operation between the project sites, respectively between Germany (IAMO) and Ukraine (KSE), maintains relations to other Ukrainian universities and co-ordinates the fourth component, the conceptual preparation of the consolidation of the project. For this project, which extends beyond the project funding itself, the establishment of a chair for 'International Agricultural and Food Economy' is foreseen at the KSE.



The chair could also give rise to a future 'International Agricultural and Food Economy' research centre.

In addition to the KSE, IAMO project partners are the Ukrainian Agribusiness Club (UCAB), Martin Luther University of Halle-Wittenberg (MLU), Christian Albrechts University of Kiel (CAU) and the University of Missouri, USA.

Perceptions of inequality through social comparisons and their transfer to subjective wellbeing: A micro study of reference groups

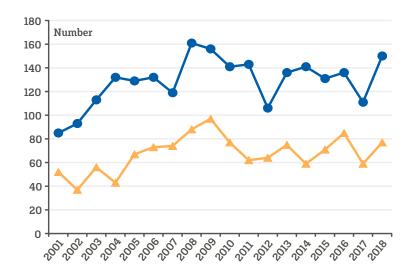
The three-year project is funded by the German Research Foundation (DFG) with a total amount of 404,142 euros and began in January 2019. **Judith Möllers** of IAMO and Gertrud Buchenrieder of Bundeswehr University Munich (UniBW) and Martin Luther University of Halle-Wittenberg (MLU) jointly lead the project.

In social comparison, inequality is perceived individually and relative to other people. The goal of the research project is to investigate the development of reference groups for such social comparisons and develop a methodical framework for recording them. Thailand acts as a case study for examining the composition of individual reference groups within the subjective wellbeing-inequality nexus. The emerging country has a significant level of inequality and is also characterised by a collectivist society, in which all actions are judged by the reference groups. Further partners in this research project are Kasetsart University in Bangkok, Thailand, and the University of East Anglia, UK.

#### IAMO lecture activity

Besides publishing their work in journals, another important activity of IAMO staff is the presentation and discussion of research results at national and international conferences, forums and workshops. A large proportion of lectures by IAMO staff are delivered at international events. In the period of 1 January 2018–31 December 2018 the costs of 150 lectures given were fully covered by the organisers (22), third parties (47), or other sources (6). There was mixed funding for

23 lectures, while expenses for 47 lectures were entirely covered by IAMO's budget. Five lectures were covered by in-house funding.



# Development of IAMO lectures

Source: Institute's own statistics

All lectures

Those delivered abroad

#### Conferences and seminars

Conferences and seminars are essential for IAMO to be able to fulfil its third core task, which is to act as a forum for the exchange of scientific ideas in all questions of agricultural development in transition countries. The events organised by the institute represent an important platform for scientific exchange, both on a national and international scale. Besides greater academic collaboration, the meeting of academics with decision-makers from the food industry and politics often provides an impetus for restructuring in the agricultural and food sectors in partner countries. Here we should also highlight the fact that in the field of agricultural economics IAMO makes an important contribution to a so-called scientific 'capacity building' in research and teaching in our partner countries, and has a crucial role in developing long-term viable networks. Apart from the IAMO Forum, we outline the most important conferences, symposia and workshops held at the institute in 2018.

# Tashkent Conference »Social science knowledge and sustainable agricultural development along the Silk Road«

From 30 October to 1 November 2018 IAMO joined the Tashkent Institute of Irrigation and Agricultural Mechanization Engineers (TIIAME) in Tashkent, Uzbekistan, in organising an international conference entitled 'Social science knowledge and sustainable agricultural development along the Silk Road'. Around 180 participants from around 25 countries, the majority from Uzbekistan and other Central Asian countries, held discussions in three plenary meetings and 16 parallel meetings. The aim was to invigorate the academic environment for the social sciences that work on agricultural development in Central Asia, as well as presenting the findings of a series of ongoing research projects. The objective is to put research and teaching in Central Asia in a position to catch up internationally. The three-day event offered regional and international experts a platform for scientific exchange, thereby strengthening the future research activities of the region.

In the plenary and parallel sessions on the first day of the conference the focus was upon central aspects of agricultural development and the role of agricultural research. Themes were collective decision-making processes, e.g. for irrigation management, non-agricultural employment options in rural areas, the development of resilient value chains in the agriculture and food economy, perspectives for livestock production and development patterns in Central Asian agriculture. The presentations of the main speakers and the papers presented on the second and third days of the conference covered a wide range of subjects. The focus was upon issues concerning university development and climate change, particularly its effects on agricultural irrigation. Gender issues of food security and other aspects of agricultural development also played a key role.

The conference was sponsored by the Volkswagen Foundation and organised by IAMO in close co-operation with TIIAME. There was intensive media coverage in Uzbekistan, for example on national television, as well as internationally. Further information can be found at:



© TIIAME

https://www.iamo.de/en/events/details/ conference-social-science-knowledge-andsustainable-agricultural-development-alongthe-silk-road/

# Conference in Baku on the subject 'Agriculture Trade and Foreign Investments for Sustainable Regional Integration in Caucasus and Central Asia'

In co-operation with the Institute of Scientific Research on Economic Reforms (ISRER) of the Azerbaijan Ministry of Economics, IAMO organised an international conference in Baku from 6 to 7 September 2018 on the subject 'Agriculture Trade and Foreign Investments for Sustainable Regional Integration in Caucasus and Central Asia'. In three plenary sessions and nine parallel sessions the over 60 researchers from twelve countries – primarily in the two regions – discussed the sustainable regional integration of Central Asia and the Caucasus through trade and foreign direct investment (FDI). The event was financed by the German Academic Exchange Service (DAAD).

During the two-day event the participants were offered a platform for scientific exchange, thereby strengthening future research activities in the region. Together with experts from the fields of business and politics, there was a discussion of opportunities to make investing in the agricultural sector more attractive and increase agricultural exports from the Caucasus and Central Asian countries. Particular focal points of the conference were issues of regional co-operation with regard to joint infrastructure projects and the integration of the countries in the global markets.

IAMO researcher Ihtiyor Bobojonov, the organiser of the event, emphasised the significance of scientific interaction in identifying opportunities for regional integration in the Caucasus and Central Asia, as well as options and developments concerning international investments in the agricultural and food sector. Professor Vilayat Valiyev, Director of the ISRER, reported on the latest measures to define a strategic roadmap for the production and processing of agricultural produce. The conference is part of a series of events organised by IAMO in the Caucasus and Central Asia to promote co-operation between researchers in the regions.



© Rustam Imanov, 2018

In the scope of the International Green Week, on 19 January 2018 IAMO joined with the German Agribusiness Alliance, the German Asia-Pacific Business Association (OAV), German Committee on Eastern European Economic Relations (OA), Association of German Livestock (BRS) and the German-Sino Agricultural Center (DCZ) at the Global Forum for Food and Agriculture (GFFA) in Berlin to organise an agricultural policy panel discussion entitled 'How can livestock production contribute to global food security? Smallholding structures and industrialisation in Asia and Eastern Europe'. This event saw some 130 international guests from the fields of politics, science and civil society come together in Berlin. The title of the GFFA in 2018 was 'Guiding the future of livestock production – sustainable, responsible, capable', with the event overseen by the Federal Ministry of Food and Agriculture (BMEL).

Increasing demand for animal source foods is posing particular challenges for the agricultural sector. An intensification of production of animal source foods and their trading is required in order to satisfy the rise in demand from global population growth and increasing prosperity. In addition to efficient animal husbandry, environmental and climate-friendly aspects as well as animal welfare need to be considered. The associated opportunities and risks were investigated in the panel discussion.

In the welcome address Dr Arnd Nenstiel, Chairman of the Agricultural Industry working group at the German Asia-Pacific Business Association (OAV), pointed to the increasing demand for animal source foods in Asia. As a consequence, Chinese and international companies are investing heavily in livestock production in China, at this time above all the dairy production and processing sector. Numerous issues regarding political and economic framework conditions and perspectives are yet to be clarified. In his subsequent opening address State Secretary Dr Hermann Onko Aeikens, Federal Ministry of Food and Agriculture (BMEL), spoke of the current bilateral co-operation projects with China and Ukraine. The goal of the project is to recognise the potential of these countries in the field of livestock pro-

The panel discussion at the GFFA 2018, here Shenggen Fan, Martin Petrick, Olga Trofimtseva, Ralf Strassemeyer. © BMEL/Inga Kjer/photothek.net

duction and to provide support in avoiding mistakes and promoting further development.

In the panel discussion that followed Dr Olga Trofimtseva, Deputy

Minister for Agricultural Policy and Food in Ukraine, declared that Ukraine has achieved great success in the field of organic and ecological agriculture in recent years. In contrast, animal husbandry has declined considerably since the collapse of the Soviet Union. Today, half of all Ukrainian meat products still come from private households and smallholders. Migration from rural areas and low domestic purchasing power, particularly for beef, pose an additional problem for the further development of the sector. Dr Shenggen Fan, Director General of the International Food Policy Research Institute (IFPRI), addressed the negative consequences of increasing livestock production. In his estimation there is a need above all for politicians to influence the practices of livestock production and promote healthy nutrition in the population through low meat consumption. Targeted measures, such as the taxing of emissions-intensive foodstuffs, are required to reduce the drastic greenhouse emissions. Dr Jean-Louis Peyraud, President Animal Task Force (atf) and Deputy Scientific Director for Agriculture at the French National Institute for Agricultural Research (INRA), discussed how livestock production could be rendered more efficient through a circulatory, organic-based approach. In this cycle plant and animal products are linked more closely to one another. Ralf Strassemeyer, Managing Director of Masterrind GmbH, an international leader in the field of cattle rearing, the marketing of breeding cattle and artificial insemination, was invited as a representative of the world of business. In the scope of his experiences in co-operation with over 8,500 member operations he reported on the high level of influence exerted by modern technologies, the size of operations, qualified management and training programmes on the productivity of a company in the livestock farming sector. Smallholders are mostly unable to withstand this intense competitive pressure. In conclusion, Strassemeyer stressed that supportive and co-operative projects are particularly important in this area. Professor Martin Petrick, professor of agricultural, food and environmental policy at Justus Liebig University Giessen, Germany, and a Visiting Researcher at IAMO, moderated the panel discussion.

#### **Publications**

The scientific staff at IAMO publish their research results in academic journals, monographs, anthologies and discussion papers. Increasingly, they are also communicating them in Policy Briefs. A complete publication list is available on IAMO's homepage.

During the reporting period, the publication activities have developed in an encouragingly stable manner. This applies in particular to referenced articles with an impact factor, which are listed on the Science Citation Index (SCI) and the Social Science Citation Index (SSCI). The internal IAMO quality management of publications shows a lasting effect.

#### **IAMO Policy Briefs**

www.iamo.de/en/publications/ iamo-policy-briefs

Since 2011, IAMO's socially relevant research results have been published in a loose sequence in our IAMO Policy Briefs, in a short and general manner. They are aimed in particular at politics, business and the media as well as members of the public with an interest in the area.

The IAMO Policy Briefs were continued in 2018 with the following issues listed on the right, which can be downloaded free of charge from the IAMO homepage as a pdf file:

- Kuhn, L.; Bobojonov, I.; Glauben, T. (2018):
- Landwirtschaft in Zeiten der Dürre: Wie Digitalisierung ein nachhaltiges Risikomanagement unterstützen kann. IAMO Policy Brief No. 35, Halle (Saale).
- Koester, U.; Loy, J.-P.; Ren, Y. (2018):

Measurement and Reduction of Food Loss and Waste – Reconsidered. *IAMO Policy Brief No.* 34, Halle (Saale).

The series of IAMO Discussion Papers was continued in 2018 with the following issues listed on the right, which can be downloaded free of charge from the IAMO homepage as a pdf file:

• Koester, U.; von Cramon-Taubadel, S. (2018):

Ableitung optimaler Preisrelationen in einer geschlossenen und offenen Volkswirtschaft: Der neoklassische Ansatz. IAMO Discussion Paper No. 180, Halle (Saale): IAMO.

• Ganiev, I.; Sanaev, G.; Pardaev, K. (2018):

Career expectations of undergraduate and graduate students at agricultural universities in Uzbekistan. IAMO Discussion Paper No. 179, Halle (Saale): IAMO.

Murtazaev, O. (2018):

История развития кооперативов в Узбекистане и их преобразование на современном этапе. IAMO Discussion Paper No. 178, Halle (Saale): IAMO.

• Koester, U.; von Cramon-Taubadel, S. (2018):

Die Bedeutung von Institutionen für die Agrarpreisbildung. IAMO Discussion Paper No. 177, Halle (Saale): IAMO.

• Hasanov, S.; Sanaev, G. (2018):

Non-farm employment trends and policy in rural areas of Samarkand region (Uzbekistan). *IAMO Discussion Paper No. 176*, Halle (Saale): IAMO.

• Petrick, M. (2018):

A microeconomic model of worker motivation based on monetary and non-monetary incentives. *IAMO Discussion Paper No. 175*, Halle (Saale): IAMO.

Kloss, M.; Petrick, M. (2018):

The productivity of family and hired labour in EU arable farming. *IAMO Discussion Paper No. 174*, Halle (Saale): IAMO.

• Appel, F.; Balmann, A.; Dong, C.; Rommel, J. (2018):

FarmAgriPoliS – An agricultural business management game for behavioral experiments, teaching, and gaming. *IAMO Discussion Paper No.* 173, Halle (Saale): IAMO.

Oshakbayev, D.; Taitukova, R.; Petrick, M.; Djanibekow, M. (2018):
 Kazakhstan's cotton sector reforms since independence. IAMO Discussion Paper No. 172, Halle (Saale): IAMO.

• Petrick, M.; Kloss, M. (2018):

Identifying factor productivity from micro-data: the case of EU agriculture. *IAMO Discussion Paper No. 171*, Halle (Saale): IAMO.

In the Studies on the Agricultural and Food Sector in Central and Eastern Europe series IAMO publishes monographs and proceedings focusing on agricultural economy issues concerning the states of Central and Eastern Europe as well as other transition countries. All publications from volume 22 can also be downloaded from the internet free of charge as pdf file. So far, 32 volumes of proceedings and anthologies as well as 59 monographs have been published in the series.

Publications 2018:

• Kuhn, Lena (2018):

The brink of poverty: efficiency and effectiveness of targeted social assistance for poverty reduction in rural China. *Studies on the Agricultural and Food Sector in Transition Economies*, Vol. 92, Halle (Saale): IAMO.

• Belyaeva, M. (2018):

A comprehensive analysis of current state and development perspectives of Russian grain sector: Production efficiency and climate change impact. Studies on the Agricultural and Food Sector in Transition Economies, Vol. 91, Halle (Saale): IAMO.

• Grau, A. (2018):

Market power in the German dairy supply chain. Studies on the Agricultural and Food Sector in Transition Economies, Vol. 90, Halle (Saale): IAMO.

#### Research communication

IAMO not only presents its work for discussion in the scientific community, but also informs policy makers and business decision-makers as well as the general public about research results and current trends in the agricultural and food industry. In addition to media work, the IAMO press office carries out the publication of the IAMO Policy Briefs and the newsletter, as well as supervising the internet presence and the social media channels of the institute. IAMO organises high-ranking scientific and public relations events in Germany and abroad itself or participates in them.

One special highlight is the IAMO Forum, which is held every year. In 2018 the topic of the three-day conference was: 'Large-scale agriculture - for profit and society?'. Over 160 international guests from research, the agricultural economy and international institutions came to Halle (Saale) from 27 to 29 June 2018 to discuss the framework conditions, perspectives and challenges of large-scale agriculture and the significance of the associated social expectations. The geographical focus lay on the transformation economies of Eastern Europe, the former Soviet Union and East Asia, as well as developed market economies in Europe, America and Australia. The IAMO Forum 2018 was organised by the Structural Change department at IAMO in co-operation with DLG e.V. and the Ukrainian Agribusiness Club (UCAB). The conference received financial support from the German Research Foundation (DFG), the state of Saxony-Anhalt, Rentenbank, the Leibniz ScienceCampus 'Eastern Europe - Global Area' (EEGA) and the city of Halle (Saale). A detailed report on the contributions of the renowned plenary speakers can be found in this issue.

In the scope of the International Green Week 2018 in Berlin IAMO joined with the German Agribusiness Alliance, the German Asia-Pacific Business Association (OAV), German Committee on Eastern European Economic Relations (OA), Association of German Livestock (BRS) and the German-Sino Agricultural Center (DCZ) to stage a panel discussion. The event took place on 19 January 2018 at the Global Forum for Food and Agriculture (GFFA) and was entitled 'How can livestock production contribute to global food security? Smallholding

IAMO Press Office





structures and industrialisation in Asia and Eastern Europe'. The panel discussion enabled representatives from the fields of politics, science, business and civil society to enter into dialogue regarding the opportunities and challenges of animal source foods and trade from various perspectives.

In 2018 IAMO once again acted as partner to the Large Farm Management (LFM) Conference in Kiev, Ukraine. The international conference entitled 'Agribusiness 2018: AGRO or BUSINESS?' took place from 19 to 20 September 2018. The event was attended by top managers, proprietors of agricultural enterprises, investors and representatives of related economic sectors, with discussion of developments in practice and the basics of management for agricultural enterprises and the agricultural industry. The conference was organised by the Ukrainian Agribusiness Club and the UCAB event agency together with IAMO, International Competence Center on Large Scale Agriculture (LaScalA) and further partners from the fields of science, business and the media.

In co-operation with the Institute of Scientific Research on Economic Reforms (ISRER), from 6 to 7 September 2018 IAMO organised a conference in Baku, Azerbaijan, on the subject 'Agriculture Trade and Foreign Investments for Sustainable Regional Integration in Caucasus and Central Asia'. At the event over 60 researchers discussed the latest developments in the area of trade and foreign direct investment in the countries of Central Asia and the Caucasus, as well as their contribution to sustainable regional integration. The event received financial support from the German Academic Exchange Service (DAAD).

On 6 July 2018 the institute presented itself to the public with a comprehensive programme at the **Long Night of the Sciences in Halle (Saale).** In addition to various presentations from the agricultural and food sector and an information stand, visitors could also view a historical exhibition of farming machinery and join in baking bread and fermenting foods.



Long Night of sciences © Markus Scholz, 2018

Besides events, our press releases and publications in various formats, as well as our website and social media presence are of great importance for research communication.

Papers and articles about current research results, events and partnerships at IAMO were published in various print and online media as well as broadcast over the radio.

Issues of particular attention in the reporting of 2018 were: the impact of direct payments on the agricultural sector, developments in rural areas, factors regarding the competitiveness of agroholdings, measures for sustainable risk management in agriculture and challenges in livestock production.

Media reporting is based in part on the institute's own press releases. IAMO press releases have been distributed in German and in English via IAMO's own mailing list to representatives from the media and published on the website and the Science Information Service portal. Under the 'IAMO in the Media' section of the institute's website, selected contributions from the public and industry press can be viewed.

Media reporting www.iamo.de/en/press/

ledia reporting www.iamo.de/en/press/ iamo-in-the-media

With its series of IAMO Policy Briefs, the institute draws on important agricultural policy questions based on its own research position. Socially relevant topics are presented briefly and in a general manner in the Policy Briefs and made accessible to different target groups such as political decision-makers, media representatives and the interested public. In 2018 the Policy Briefs addressed subjects such as the costs and risks of reducing food wastage and opportuni-

ties via innovative technologies and digitalisation that contribute to sustainable climate risk management. The IAMO Policy Briefs are published in German, English and partly in other languages and can be downloaded free of charge under the heading 'Publications' on the institute's website.

www.iamo.de/en/publications/iamo-policy-briefs

The **electronic IAMO Newsletter** is released quarterly in German and English. Sent by e-mail, it informs almost 2,000 recipients about the institute's news, covering subjects such as new IAMO research projects, IAMO staff research visits, events, awards and current publications. The Newsletter is available on our website, and can also be subscribed to free of charge.

Our internet presence www.iamo.de/en provides easy access to information on research and project results, events, support for young academics, job advertisements and IAMO staff members. The content of the website is regularly updated and expanded. The website is also compatible with smartphones and tablets. On the mobile version, the content is optimised in screen size and suitable design on different devices. The latest news from the IAMO is also available via the social media channels Facebook and Twitter.

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If you have any questions, please contact IAMO's press office at **presse@iamo.de**.

#### How to find us

# by car

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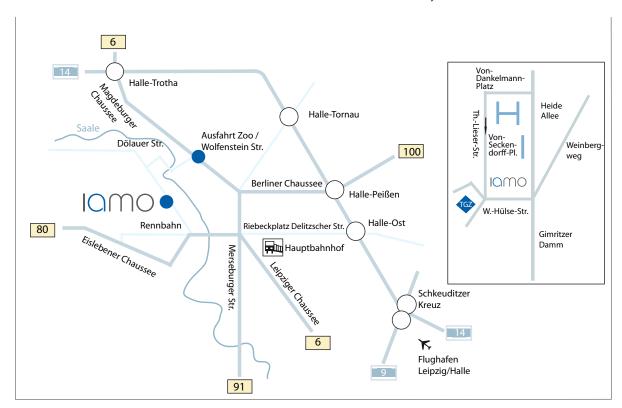
# by train

Leave the station by the main exit and follow signs to the tram stop 'Riebeckplatz/Hauptbahnhof'. From here take tram number 4 towards Kröllwitz. Alight at the Weinberg Campus stop (about 15 minutes from the station). The Institute is on the left-hand side of the road as you get out.

Alternatively you can also take to tram number 5.

# by plane

Leipzig-Halle airport is 20 km from Halle. A regular shuttle train takes you to the main station. See 'by train' to find the way from there.



# Imprint

In addition to this publication series, IAMO's publications include the Discussion Paper series, the Studies on the Agricultural and Food Sector in Transition Economies series, the Institute's Annual Reports and the Policy Briefs.

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