

With support from
Federal Ministry
of Food
and Agriculture
by decision of the
German Bundestag



Harvest · 丰收

Sino-German Agricultural Magazine

Issue 01 · Nov 2022

Harvest · 丰收
Sino-German Agricultural Magazine
Issue 01 · Nov 2022

Telephone
+86 (0) 10 6500 0958

E-mail:
info-dcz@iakleipzig.de



Contact:
Sino-German Agricultural Centre (DCZ)
Room 201, Foreign Economic Cooperation Centre (FECC) of MARA
55 Nongzhan Beilu, Chaoyang District
100125 Beijing, China
Tel: +86 (0) 10 6500 0958
E-mail: info-dcz@iakleipzig.de

Cover Topic
Seeding the Future: How China is Modernizing its Seed Sector



■ About the DCZ

The Sino-German Agricultural Centre (DCZ) is a joint initiative of the German Federal Ministry of Food and Agriculture (BMEL) and the Ministry of Agriculture and Rural Affairs (MARA) of the People's Republic of China. The DCZ was established in March 2015 as a central contact and information platform in charge of coordinating the bilateral cooperation between Germany and China in the agriculture and food sector. In April 2022, the project entered its third phase.

China is one of the world's largest food producers and consumers. Therefore, its agricultural development and transformation process is of significant importance for its German partners. By bringing together stakeholders from politics, business, and academia, the DCZ promotes the exchange of experience and knowledge to tackle shared challenges and support the sustainable development of the agriculture and food sector in both countries.

Contact:

Sino-German Agricultural Centre (DCZ)

Room 201, Foreign Economic Cooperation Centre (FECC)
of MARA

55 Nongzhan Beilu, Chaoyang District

100125 Beijing, China

Tel.: +86 (0) 10 6500 0958

E-mail: info-dcz@iakleipzig.de

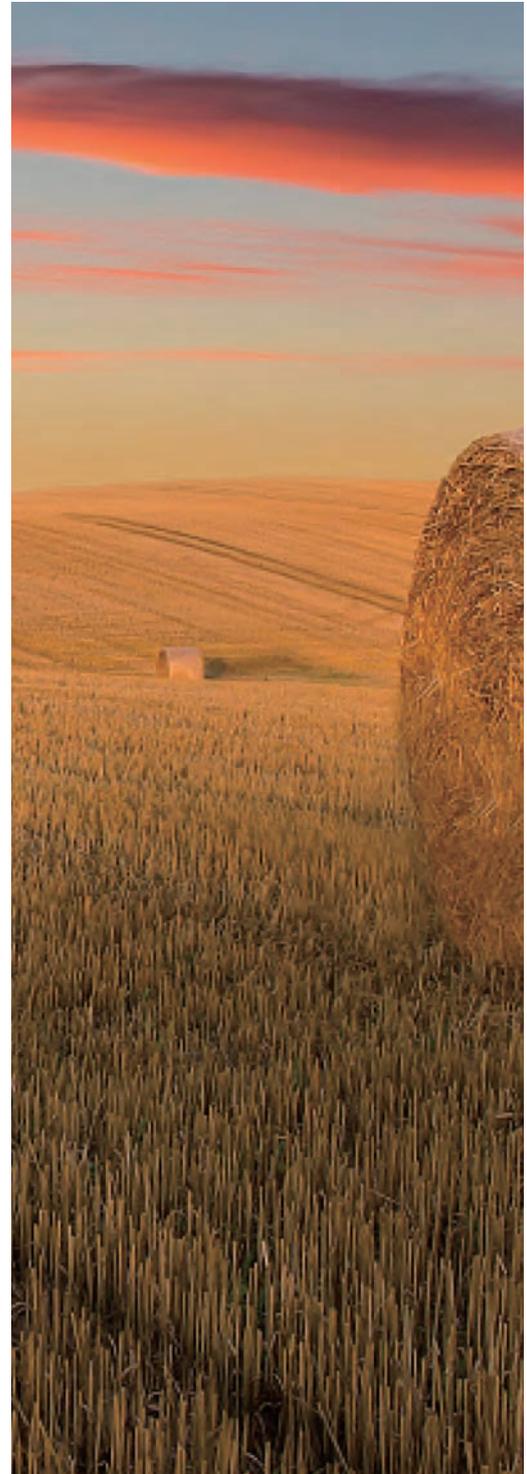


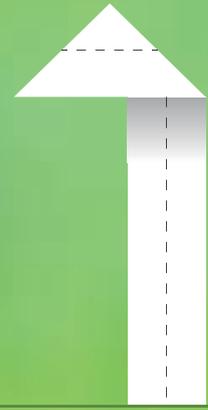


TABLE OF CONTENTS





01	EDITORIAL -----	01
02	COVER TOPIC: HOW CHINA IS MODERNIZING ITS SEED SECTOR -----	03
	REALIZING NANFAN'S DESTINY AS ASIA'S SEED AND BREEDING R&D CENTER, BY XIAOFENG LI AND STEVEN LAYNE	
	SEEDS IN FARMERS' HANDS: COMMUNITY SEED BANKING IN CHINA, BY GUANQI LI, RONNIE VERNOOY, AND YICHING SONG	
03	WINDOW ON GERMAN AGRICULTURE 德国农业之窗 -----	17
	POLICY FOR A BRIGHT FUTURE: THE EUROPEAN COMMISSION'S GREEN DEAL STRATEGY AND ITS IMPACT ON THE AGRI-FOOD SECTOR, BY THOMAS TANNEBERGER	
	制定政策, 开创美好未来: 欧盟委员会的绿色协议战略及其对农业和食品行业的影响	
	THE NEW GERMAN GOVERNMENT: A TURNING POINT FOR AGRICULTURAL POLICY? BY ALFONS BALMANN	
	德国新政府: 农业政策的转折点?	
	ORGANIC FIELD DAYS 2022: ORGANIC AGRICULTURE ON THE RISE, BY EVA STERNFELD	
	2022年有机农场日——德国的有机农业正在崛起	
04	EXPERTS IN DIALOGUE -----	45
	INTERVIEW WITH ALFONSO ALBA ORDONEZ, BAYER CROP SCIENCE, ON CHINA'S SEED SECTOR DEVELOPMENT	
05	WHO'S WHO IN SINO-GERMAN AGRICULTURAL COLLABORATION -----	48
	COMPETENCE CENTER CHINA HELPS GERMAN FOOD MANUFACTURERS TO ENTER THE E-COMMERCE BUSINESS, BY YING LI AND JULIA KLEIN	
06	VIEW FROM RURAL CHINA -----	51
	DIGITALIZING THE COUNTRYSIDE: PERSPECTIVES FROM SHUANGSHI VILLAGE IN SICHUAN PROVINCE, BY ANUSHA VENKATACHALAM	
07	BOOK REVIEWS -----	58
	REVIEW OF "GMO CHINA: HOW GLOBAL DEBATES TRANSFORMED CHINA'S AGRICULTURAL BIOTECHNOLOGY POLICIES" BY CONG CAO, REVIEW BY EVA STERNFELD	
	REVIEW OF "INVISIBLE CHINA: HOW THE URBAN-RURAL DIVIDE THREATENS CHINA'S RISE", BY SCOTT ROZELLE AND NATALIE HELL, REVIEW BY AIHEMATIJIANG (AHMATJAN) ROUZI	
08	NEWS FROM THE DCZ -----	63



EDITORIAL



Dear partners and friends of the Sino-German Agricultural Centre (DCZ),

A new project phase also brings a new face: what used to be a bimonthly newsletter, you now receive as a biannual magazine – in a new look and with contributions from top Chinese and international experts:

- A cover story provides in-depth information and analyses of selected topics.
- A separate section is dedicated to German agriculture with information in English and Chinese.
- Interviews with experts and decision-makers allow us to see the developments through their eyes.
- Reviews present relevant publications.
- And last but not least, the magazine will provide information about our own activities as well as about Sino-German cooperation in the field of agriculture in general.

In the first issue of the magazine, you will find a highly interesting and much needed description and analysis of Nanfan – “breeding in the south”, referring to the seed research centers on Hainan Island, more specifically Sanya. Two experts of the Asia and Pacific Seed Alliance (APSA) explain in detail how “China’s Silicon Valley for Seeds” strives to become “the gateway for the national seed industry to the world” and which restrictions international industries still face, even though Hainan has been a free trade port since 2020 and offers many privileges and incentives. In an interview with DCZ, Mr. Alba Ordonez from Bayer Crop Science explains what developments in Nanfan will mean for international seed technology companies, while an article on community seed banking provides a bottom-up perspective on seed development in China.

As further background to the topic of seeds you may also refer to previous DCZ publications which can be found and downloaded on our website <https://dcz-china.org/download/>.

Our Chinese readers might be particularly interested in our new section “Window on German agriculture 德国农业之窗”. Two articles by German experts shed light on the EU Green Deal and assess the potential changes in German agricultural policy under the new governing coalition. These articles are complemented by a short contribution on the latest trends in organic farming in Germany.

This biannual magazine is accompanied by our monthly “DCZ News Digest”. If you are not yet a subscriber, you can register on our website at <https://www.dcz-china.org/>.

We hope you enjoy reading this first issue of our “Sino-German Agricultural Magazine” and look forward to your suggestions and feedback at info-dcz@iakleipzig.de.

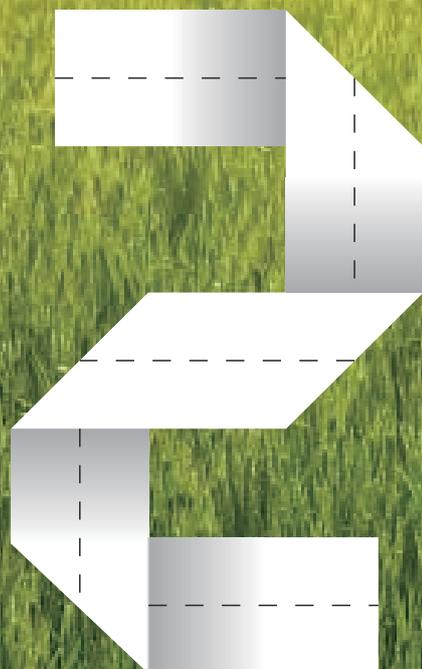


Jürgen Ritter
Managing Director
Sino-German Agricultural Centre (DCZ)

COVER TOPIC

REALIZING NANFAN'S DESTINY AS ASIA'S SEED AND BREEDING R&D CENTER

SEEDS IN FARMERS' HANDS: COMMUNITY SEED BANKING IN CHINA

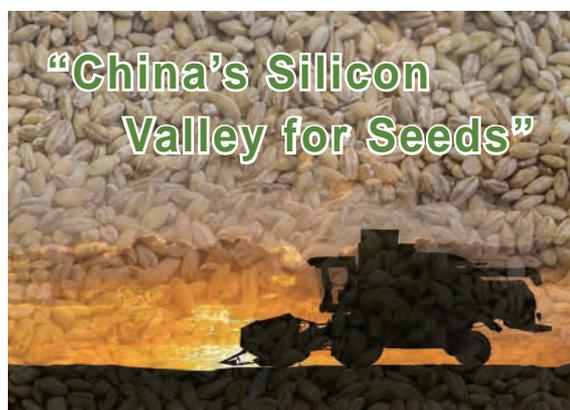


Realizing Nanfan's destiny as Asia's seed and breeding R&D center

Xiaofeng Li and Steven Layne

Abundant sunshine, plentiful precipitation, and year-round warm weather are among the factors that make Hainan a cropping paradise and plant breeding base of growing national and international importance. Since the early 1950s, Chinese seedsmen and scientists have been taking advantage of the semi-tropical island's enabling natural conditions to carry out productive "off season" breeding R&D from November to May.

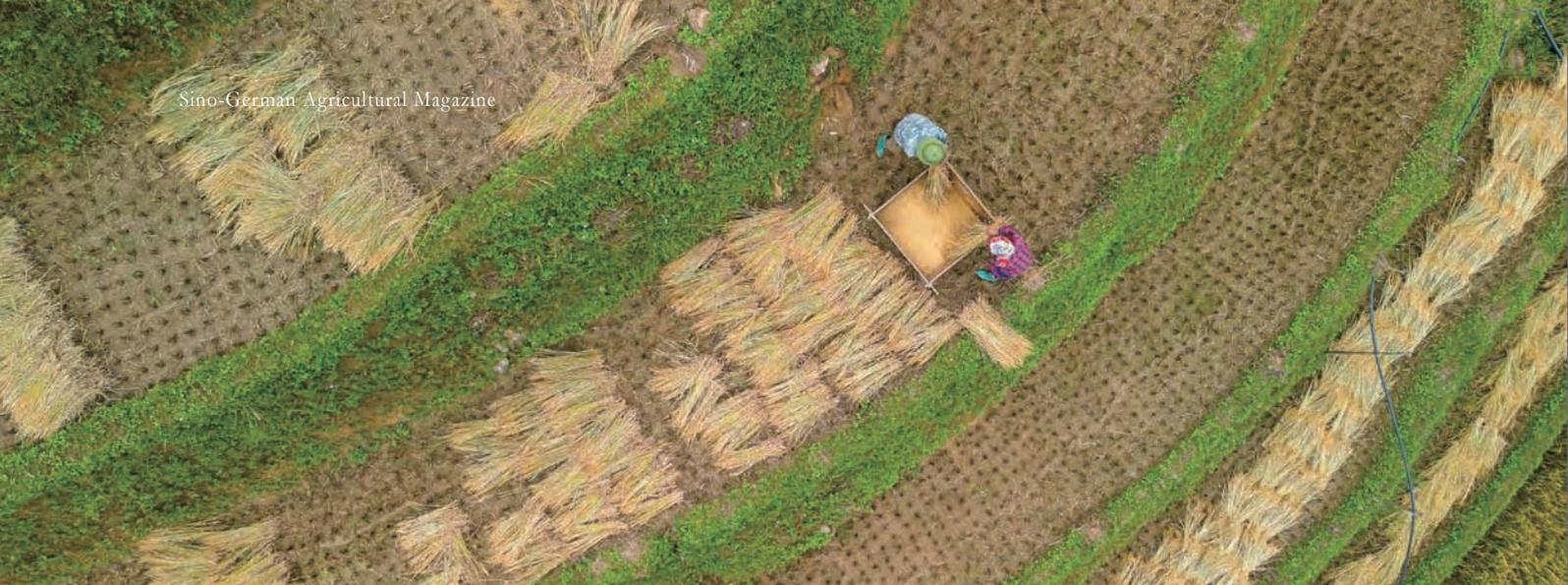
In Chinese R&D and breeding circles, Hainan is referred to as "Nanfan" – Nan means south, and Fan means multiplication or breeding. Seed R&D in China's southern breeding base is concentrated in the areas of Ledong, Lingshui, and the southernmost city of Sanya, where shortened breeding cycles have enabled breeders to dramatically improve yields from hybrid rice, cotton, and soybeans to melons, and numerous types of vegetable and horticultural crops. Today, more than 70% of the approximately 30,000 seed varieties propagated in China are said to have benefited from breeding R&D initiated in Nanfan, which is why it is also referred to "China's Silicon Valley for Seeds".



Hopes and expectations for the budding breeding base continue to grow. When the government announced its masterplan in June 2020 to establish the entire island – spanning some 32,900 km² – as a Free Trade Port (FTP), China's smallest province effectively stood to become the country's largest special economic zone. Promises abound as the Hainan FTP aims to liberalize cross-border flows of trade, investment, capital, personnel, transport, and data, serving as a springboard for international investment in, and thus access to the greater China market.

“Sanya will become the gateway for the national seed industry to the world.”

The strategic importance of Nanfan, and Sanya in particular, was reiterated during the China Seed Congress, held in conjunction with the Nanfan Agricultural Silicon Valley Forum in Sanya from 28 July to 1 August 2022. On 28 July 2022, representatives of the China Seed Association (CSA) and Hainan Province signed a framework agreement to establish Sanya as the permanent venue for the China Seed Congress and Nanfan Agricultural Silicon Valley Forum. CSA vice president Mr. Deng Guanglian explained that the framework would not only bring more technological advancement to Sanya but would also “attract the scientific research and breeding expertise, enterprises, and foreign counterparts to engage in the seed industry,” thus ensuring “Sanya will become the gateway for the national seed industry to the world.”



Luo Dong, deputy mayor of Sanya city, affirmed that the government is doing its utmost to ensure the development of Nanfan, including through preferential policies, schemes, and incentives that maximize utility of its location, resources, and infrastructure. “Sanya gives full play to entities looking to tap into the island’s potential and advantages as an off-season seed multiplication and breeding base,” he said. “We are expediting transformation from basic seed production to a diversified seed industry innovation through chain, integrating centralized perennial crop seed research and development and cluster coordination,” he added.

The key, Luo Dong stressed, is to emphasize the rule of law, internationalization, and providing convenience, guidance, and facilitation of access to resources, innovation, technology, talent, and capital that will allow seed companies to be more competitive internationally.

Today, much of Nanfan’s seed multiplication and breeding R&D activity is concentrated in science and technology industrial parks around Sanya, where new construction is a constant on the southern Hainan landscape. One of them is the Yazhou Bay Science and Technology City (YZBSTC). Located on the western part of Sanya, it serves as an R&D base for about 138 entities, including both Chinese and international enterprises.

Mr. Bai Peng, Director of Investment Promotion of Nanfan Science and Technology City Co., Ltd. (which belongs to YZBSTC), explained that there are three types of enterprises investing in Sanya. First, there are companies that focus exclusively on R&D activities. They use off-season propagation conditions to develop new varieties. Second, there are companies that are mainly engaged in seed production and have been licensed by the Ministry of Agriculture and Rural Affairs (MARA) to operate in Sanya. Most foreign entities fall into the third category, which includes both value-added and conventional companies that want to use the Hainan FTP to support business activities.

Mr. Bai Peng went on to divulge some of the main projects and policies to attract seed industry investment. Under construction is a national isolation center in the YZBSTC. Scheduled for completion in December 2022, the USD 55 million (CNY 372 million) 30,600 m² facility will serve as a global transfer base facilitating the rapid and effective introduction of both animal and plant germplasm resources into Sanya.

Other noteworthy facilities in the Nanfan Science and Technology City include the Intellectual Property Protection Center, the Hainan Free Trade Port Agricultural Plant New Variety Examination and Cooperation Center, and an Intellectual Property Court, which, Mr. Bai Peng explained, “serve to meet the needs of seed industry innovation and ensuring IPR protection for business entities.”

“We aim to gradually establish an intellectual property protection system in line with international standards and explore the formation of a ‘five-in-one’ administrative management system, covering patents, trademarks, copyrights, geographical indications, and new plant varieties, as well as providing ‘one-stop’ facilitation services for seed enterprises,” he said.

One of the most attractive incentives drawing foreign investment to the Hainan FTP is the “double 15% income tax” policy which caps the personal income tax rate for talented personnel at 15%, from 45% normally. Likewise, seed enterprises are incentivized with a maximum corporate tax rate of 15% from 25% normally.

The Contract Research Office (CRO), part of the YazhouBay Seed Laboratory, is another important resource for off-season breeding R&D in Sanya. Inaugurated in May 2021, the facility coordinates the integration of public scientific research platforms to facilitate seed industry innovation and technology collaboration. “The laboratory has professional R&D teams specialized in gene editing as well as conventional and hybridization breeding techniques, ready to support enterprises in their breeding programs,” said Mr. Bai Peng.

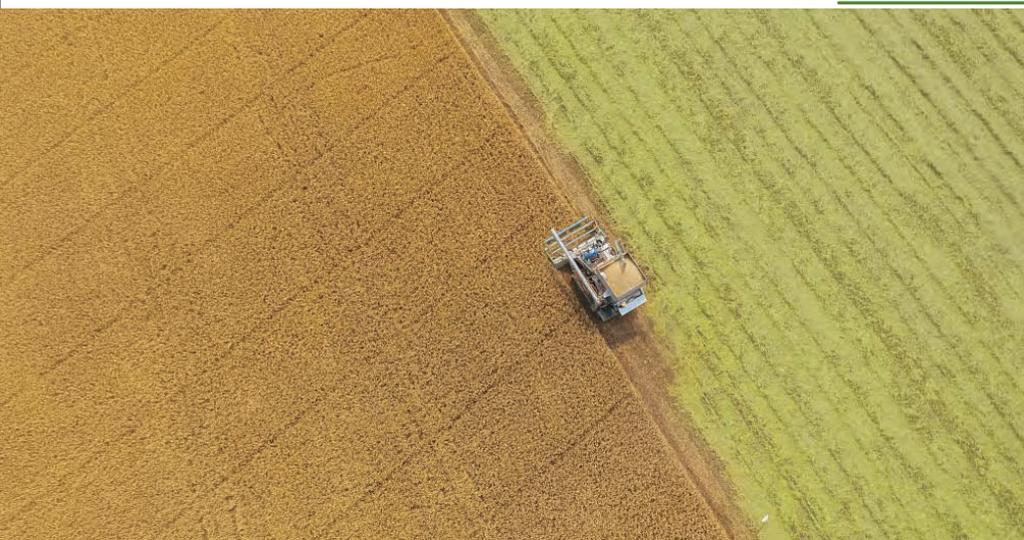
“With minimal costs for the laboratory, enterprises are responsible for providing germplasm resources and market-oriented breeding objectives. The laboratory’s R&D team is responsible for the relevant research, and the varieties developed by both parties will belong to the enterprise,” he clarified.

Investment draw

Hainan FTP’s facilitation of free movement for international employees and access to public facilities was “the logical basis to make this strategic decision to invest in Sanya,” confirmed Mr. Zhou Wei, Country Manager of KWS China. This EUR 3.18 million investment was made earlier this year through the registration of KWS Agricultural Technology Research and Development (Hainan) Co., Ltd. “Our breeding objectives were devised around the parameters of the seed law and negative list, which restrict foreign entities in breeding of certain crops like corn, though open up sunflower and other vegetable varieties,” he said. Though the Sanya-based entity’s current focus is on R&D and breeding, Mr. Zhou said they would consider expanding their scope in the future: “The main crops we are working on include corn and sugar beet, and we plan to include some vegetables, sunflowers, and other crops targeting mainland China markets. Our germplasm resources are suitable for the northern market,” he said, explaining that the Sanya market itself was not its target.

Bayer is another leading seed industry multinational corporation weighing the prospect to expand its investment in China through Sanya. Ms. Cynthia Wei, Public Affairs Lead of Bayer China, affirmed that Sanya’s vision and policies are in line with Bayer’s overall mission to focus on farmers, and with the company’s strategy in China to serve farmers through innovation. Her company is also attracted by the promise of Hainan FTP’s preferential policies to facilitate

efficient flows of human resources and germplasm, and foster collaboration in R&D and innovation. Complimenting the YZBSTC, Ms. Wei said, “They are willing to communicate with enterpris



es, and understand our problems. If we could make full use of the advantages of Sanya's resources and infrastructure, it would enable us to accelerate business growth of the company." Likewise, Bayer sees much potential to enhance investments in breeding by utilizing the services of the Contract Research Office, which could help enterprises reduce overheads in terms of fixed assets and operating costs through outsourcing.

Obstacle = opportunity

Although Bayer's market interests in China are not limited exclusively to Sanya, Ms. Wei said that Hainan's advantageous climate combined with the preferential policies of the Hainan FTP make a strong case for making Nanfan a regional base and stepping stone to and from the world's largest seed market. "If policy in the free trade port proves flexible enough and there are smoother connections with the mainland, Sanya could be a key center for Bayer in Asia. As a potential vegetable seed springboard for distribution into the [mainland] provinces, Bayer would be keen to bring into China more high-quality germplasm through Sanya," she said.

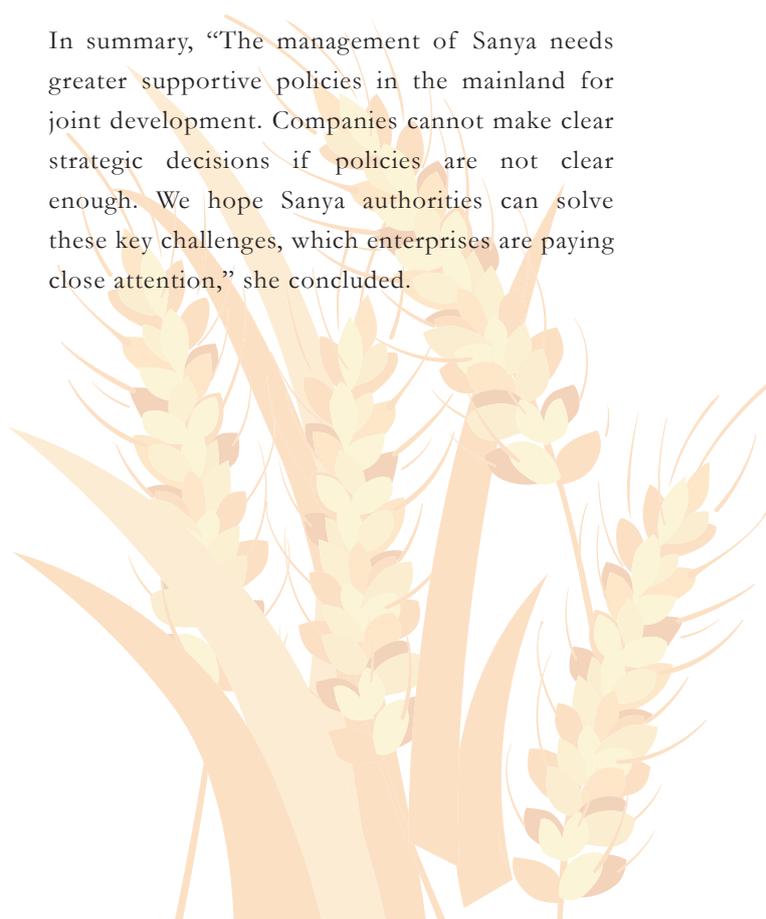
Nonetheless, Ms. Wei reiterated that there remain significant gaps between the goals of the preferential policies and the seed sector management policies in practice, especially the restrictions on foreign investment, germplasm outflow (complications in export and re-export clearance), and a lack of assurance of IPR protections beyond Hainan.

Expressing reservation, Ms. Wei said that even though Bayer is partnering with SinoChem – a leading Chinese integrated agriculture company – in a joint venture dedicated to corn R&D, the full potential of their partnership could not be realized due to restrictions on foreign entities

investing in GMO maize R&D. "Removing [these] restrictions on the negative list would provide a good opportunity for seed companies to develop field crops in Sanya, especially corn." While Bayer has no immediate plans to invest in vegetable seed R&D in Sanya, as it already has a mature portfolio in this segment, Ms. Wei said the company would consider further if there were a breakthrough in export and import policies.

Although much progress has been made in facilitating germplasm inflows, the same could not be said for the outflow of germplasm resources. "Prioritizing germplasm inflows to and outflows from China should not be exclusive to Hainan, which ought to be considered part of the greater China market, which should be further opened up to multinational companies through Sanya." Asked to elaborate on her company's concerns about IPR, she said: "Though Sanya has an advanced PVP system, it is not clear how IPR can be protected from IP infringement in seed production on the mainland, which begs the question on how protection and enforcement of these rights can be strengthened for those enterprises making use of Hainan FTP."

In summary, "The management of Sanya needs greater supportive policies in the mainland for joint development. Companies cannot make clear strategic decisions if policies are not clear enough. We hope Sanya authorities can solve these key challenges, which enterprises are paying close attention," she concluded.





Likewise, KWS, as a multinational company whose investments are mainly engaged in corn R&D using both conventional and advanced breeding techniques, has high expectations and requirements in the FTP. Mr. Zhou expressed hope that the authorities will allow solely foreign-owned enterprises to carry out corn breeding by themselves and allow foreign-invested companies to breed genetically modified corn, which would ultimately be in China's best interest as it would give it more access to cutting-edge innovation and germplasm. "Unlike wheat and rice, corn germplasm resources in China are not adequate, accounting for only 40% of the global corn germplasm resources. And most of these quality germplasm resources belong to top seed companies [...] By allowing foreign-owned companies to carry out corn breeding, it would encourage these companies to bring more germplasm into China, which would enrich the germplasm in China," he said. Besides, Mr. Zhou suggested that the Sanya government should located more multinational banks in Sanya to serve the multinational companies.

Forward momentum

During the recent China Seed Congress, stakeholders reiterated these concerns at a special investment promotion meeting held on 28 July 2022 during this year's China Seed Conference and Nanfan Silicon Valley Forum in Sanya. The meeting was attended by concerned government officials and representatives from leading Chinese and international seed companies such

as BASF, Bayer, Corteva, Syngenta, as well as the China National Seed Trade Association, the APSA, and the American Seed Trade Association. It served as a sounding board for stakeholders to voice the concerns and seek solutions.

"The concerns of companies are well noted, and we are working on them. Efforts are ongoing to solve issues with the re-export of germplasm resources that were imported to Sanya for R&D," Mr. Peng said. Likewise, "the PVP system in Sanya will gradually be aligned with UPOV 1991, and thus a pilot project to implement the identification and protection of Essentially Derived Varieties (EDVs) will commence with emphasis on high-value cash crops," he assured. How quickly Sanya turns these obstacles into opportunity will determine how soon Nanfan can fulfill its destiny as a regional center for seed R&D.

Considering current trends in global supply chain and food insecurity, Asia and the greater globe will increasingly count on China for its leadership to ensure the unhindered diffusion of technology and innovation, which implies sustained liberalization of its seed sector. In his address to the Sanya delegation on 28 July 2022, Mr. Wichai Laocharoenpornkul, president of APSA, the world's largest regional seed association in terms of territory, reiterated this point. "President Xi made it clear to the world in his famous words and stance that China would continue to open the door wider and wider, facilitating the strengthening of strong international relations and friend

ships [...] This has duly been reflected in your progressive policy for foreign direct investment, advancing science and technology by emphasizing innovation and the protection of intellectual property and other such initiatives that have accompanied the reform and strengthening of your seed sector.”

And as China’s door continues to open wider and wider to the global seed industry via Hainan, anything short of a win-win will not suffice.



Xiaofeng Li is a Partnership Program Manager at the Asia and Pacific Seed Alliance (APSA). She works closely with the APSA technical team on project monitoring and implementation.



Steven W. Layne is Communications Manager at the Asia and Pacific Seed Alliance (APSA) and the editor of Asian Seed and Planting Material, a quarterly-published trade journal focused on regional news and trends in seed trade, technology, and regulatory affairs.



Seeds in farmers' hands: community seed banking in China¹

Guanqi Li, Ronnie Vernooy, and Yiching Song

What is a community seedbank and why it matters

Although China is experiencing a rapid and massive urbanization process, it is still a country with 260 million smallholder farmers of which 97% are farming households, with an average landholding of 0.6 ha (National Bureau of Statistics [NBS], 2017).

In recent decades, the rural communities and farming systems in China have suffered from the loss of agrobiodiversity and the erosion of farmer seed systems as local crops and varieties are replaced by modern cultivars. According to the Ministry of Agriculture and Rural Affairs (MARA), 11,590 grain crop varieties were planted in China in 1956, but only 3,271 varieties remained in 2014, representing a loss rate of 71.8% (Xinhua News, 2018).

To control the decrease in crop variety diversity and quantity of agricultural germplasm resources, the MARA has invested in the enlargement of the national genebank system. China's ex-situ conservation systems will be able to conserve 1.5 million accessions (Xinhua News, 2019). However, despite this impressive number, the formal genebank system still faces many challenges to address the loss and lack of sustainable use of agrobiodiversity.

In addition to the formal genebank system, there is a farmer seed system for the in-situ conservation and sustainable use of agrobiodiversity. In this system, smallholder farmers are not only seed savers, but also provide very important evolutionary (crop) services, which are a public

good and upon which plant breeding depends (Bellon et al., 2018). This community-based seed system has largely remained unrecognized and unsupported by the formal system.

In the farmer seed systems, community seed banks can play a key role in complementing the conservation activities of the formal genebank system and providing other important collective goods, such as historical and cultural treasures and values. A community seed bank is defined as a locally governed and administered institution whose core function is to conserve seed for local use (Development Fund, 2011). In the bank, seed is stored in a shared facility for a short time (usually one to three years) and then regenerated by members of the community seed bank, collectively (e.g., on a piece of land owned by the community seed bank) or individually. Beyond this core conservation function, community seed banks have a broad range of additional purposes and vary significantly in scope, size, governance and management models, infrastructure, and technical aspects.

Although community seed banks have existed in various parts of the world for about 35 years (Vernooy et al., 2019b; Shrestha et al., 2020), the concept is still relatively young in China. Nevertheless, their number has increased in recent years to 42 in the first half of 2022.

¹This short article is adapted from: Song, X.; Li, G.; Vernooy, R.; and Song, Y. (2021) Community Seed Banks in China: Achievements, Challenges and Prospects. *Frontiers in Sustainable Food Systems* 5: 630400. doi: 10.3389/fsufs.2021.630400



The Chinese way of community seed banking

Chinese community seed banks have developed in three phases: emerging phase, pilot phase, and mainstreaming phase.

In the emerging phase, the first formal community seed bank was the Xiding Crop Germplasm Resource Bank, established in Xiding township, Menghai county, Xishuangbanna prefecture of Yunnan province, in 2010. The local gene bank was supported by international, national, and local research institutes, with the main goals of conserving local crop varieties, organizing local farmers, to exchange them (mainly of rice and maize) and to showcase the local crop diversity (Yang et al., 2015). At the same time, Professor Yunyue Wang at the Yunnan Agricultural University supported Hani villagers to collect local traditional rice varieties and build seed banks based on scientific research (Li et al., 2009). Significant changes began in August 2015, when Farmers' Seed Network (FSN)² staff visited the Xiding genebank to meet with local farmers and researchers to learn from the operational experiences. In November 2015, the FSN participated in an international workshop on community seed banks organized by Bioversity International in New Delhi, India, and thereafter, integrated community seed banks into FSN's action agenda.

The pilot phase started from the establishment of a community seed bank in Stone Village in Lijiang City, Yunnan Province. The FSN facilitated farmers to do Participatory Plant Breeding (PPB) trials

since 2013 and the local seed bank is the result of collective efforts in seed conservation and utilization. Since then, the pilot work has been supported by Brot für die Welt and Oxfam Hong Kong (Beijing office) and more community seed banks have been established in Jiangsu, Guangxi, Yunnan, Inner Mongolia, Hebei, and Beijing. Meanwhile, FSN translated and published the book *Community Seed Banks: Origins, Evolution, and Prospects* (Vernooy et al., 2015) and the manual *How to Develop and Manage Your Own Community Seed Bank: Farmers' Handbook* (Vernooy et al., 2020 a, b, c). The two books provide facilitators and farmers with a practical tool for establishing and managing community seed banks.

²The FSN was founded in 2013 and is based on the participatory action research of the Center for Chinese Agricultural Policy (CCAP) of the Chinese Academy of Sciences (CAS) and the Guangxi Maize Research Institute (GMRI), Chinese Academy of Agricultural Sciences (CAAS), in the Southwest of China. It brings together over 40 communities as action pilots and living laboratories from 17 provinces across China and works closely with the United Nations Environment Programme – International Ecosystem Management Partnership (UNEP-IEMP) of CAS, GMRI, Institute of Crop Science of the Chinese Academy of Agricultural Sciences (ICS-CAAS), China Agricultural University, Yunnan Agricultural University, Kunming Institute of Botany (KIB), and some civil society organizations, such as the Beijing Farmer Market and the Food Think. The FSN aims to enhance the farmer seed system through community-based participatory action and capacity building and by linking the formal system and civil society for collaboration and support.

Since 2020, a training course has been developed and a series of trainings organized by FSN. The training course has quickly become an important platform to scale out and mainstream the concept as well as practical experiences of community seed banks across the country. At COP 15 held in Kunming 2021, representatives of Chinese community seed banks gathered to demonstrate the vibrant experiences to scientists and policy makers. Inspired by the remarkable results of community seed banks with a great development prospect, FSN and Food Think, a non-profit social media platform, which promotes sustainable agri-food systems in China, co-launched a project to promote community seed banks in 12 local communities and family farms.

By June 2022, there were 43 community seed banks in 17 provinces across the country, and their number is increasing steadily. More importantly, a national CSB network has been established to organize a large variety of events, including an annual meeting, seed fairs, and trainings for consolidating and mainstreaming community seed banks and the national network, and to share innovative ideas on in-situ and on-farm seed conservation.

Three examples of community seed banks in China

Women-led cooperative for the conservation and utilization of farmer's varieties in Guzhai Village, Guangxi, southwest China

In 2001, a group of women farmers from Guzhai Village in the karst mountains of Guangxi province joined the Participatory Action Research program initiated by the Center for Chinese Agricultural Policy (CCAP). The program focused on PPB, community-based natural resource management, and biodiversity enhancement. In 2012, Guzhai Village formed a women-led farmers' cooperative, producing a PPB variety, Guinuo 2006, as well as conserving high-quality local maize, soybean, and chayote shoots. At the end of 2019, the village formally established a community seed bank conserving 63 crop varieties, e.g., maize, bean and pea, squash and melon, vegetables, and wild medicinal plants. Of the total collection, 37 are landraces. Currently, 89 villagers use the seed bank, of which 21 are young men and women, the rest are women over 50 years old. The Guzhai seed bank is linked to the formal genebank. In 2019, breeders of the GMRI collected three landraces, namely Mexican white maize, local yellow maize, and local glutinous maize, from the Guzhai seed bank and put them into the National Genebank and the Guangxi Academy of Agricultural Sciences Germplasm Bank for conservation.



Valuing “old” seeds for dynamic conservation of agricultural heritage in Wangjinzhuang Village, Hebei, North China

Wangjinzhuang Village is located within the famous Dryland Terrace System of Hebei province, which was designated as a China Nationally Important Agricultural Heritage System (China-NIAHS) in 2014 and a Globally Important Agricultural Heritage System (GIAHS) in 2022. Agrobiodiversity is a living source for local farmers and the key source of their traditional agricultural heritage. With the abundance of traditional varieties, the local Dryland Terrace Conservation and Utilization Association decided to set up a community seed bank. In November 2019, the local seed bank was established with 171 preserved crop varieties, including 82 landraces. The farmers’ seed bank is open to all villagers who can use the seeds with the consent of the Association. It quickly became a public space to showcase agrobiodiversity and remind villagers that “old” seeds are quietly dwindling, and everyone must work together to preserve them for today and the future.

The seed bank is currently managed by the members of the Association based on a management charter. It maintains a diversity block and seed register, contributing to the dynamic conservation of agrobiodiversity and biocultural heritage. In 2020, the Association started to set up farmer-led seed multiplication fields for maintaining viable seeds and adapting them to the local climate. Compared to the alarming loss of local seed diversity in North China, Wangjinzhuang Village still retains many varieties of vegetable, bean, legume, and especially millet, the main staple food.

Banking seeds for organic farming and healthy nutrition in Kunshan, Jiangsu, East China

Yuefengdao Organic Farm is located west of Kunshan City near the Yangcheng Lake, Jiangsu province, and covers an area of 32 acre. In 2015, Yuefengdao and the FSN organized a baseline survey of the local seed system. This survey revealed that the rice landraces had almost disappeared while the dominant cultivars, in particular Nanjing 46, were promoted by local agricultural extension agents and seed companies. Moreover, some local aquatic vegetables were at risk of extinction due to the habitat loss. On a positive note, local farmers still maintain some soybean landraces as part of the seasonal diets. To address the challenges, Yuefengdao established a seed bank in 2017 to preserve the important varieties collected in the communities. The seed bank is used to access and use organic farming seeds to meet market demand and consumer preferences. The seed bank preserves 165 crop varieties and has been supported by the local government since 2020.

Among the abundant rice varieties conserved in seed bank, Suyunuo stands out. It is a local sticky rice variety with special color, aroma, and taste. In 2015, Yuefengdao obtained a small amount of rice seed from the genebank of the Jiangsu Academy of Agricultural Sciences to examine the local adaptability and market response of this “lost” variety. After seven years of improvement by Yuefengdao and the local community, the sowing area of Suyunuo has enlarged to 0.82 acre. On the consumer end, this “lost” variety needs time to reappear on the table. Currently, the local agricultural extensionists are interested in improving Suyunuo to be more resistant to lodging and pesticide. This case demonstrates that organic farms can benefit greatly from support by public research institutes, when repatriating seed from the genebank to farmers’ fields.



Challenges, prospects, and the way forward

These three examples clearly demonstrate the diversity and versatility of community seed banks. Not only can they conserve seed and provide smallholder farmers with low-cost, high-quality seed, but they also play a significant role in sustaining the livelihoods of farming communities and China's food security as well as in building long-term resilient agri-food systems. Farmer's growing demand for available and adaptive seeds and consumers' needs for healthy, diverse, and local food have created space for local crops and seeds. These are the main reasons and drivers for the rapid growth of community seed banks in China.

However, the formal system has a strong top-down approach to modernization that has neglected the role of smallholder farmers and their practices. The national genebank system has not yet actively collaborated with community seed banks, and accessions from community seed banks have yet to be incorporated into the national genebank system.

Currently, community seed banks in China face two challenges: first, keeping seed healthy and qualified for inspection and quarantine, and second, having effective participation and management mechanisms. Both challenges can be addressed through targeted technical and management training. NGOs such as the FSN are indispensable in bringing community seed banks to the attention of scientists and policy makers and providing them with resources (technology, finance, training, and supportive policies). We have two suggestions to promote and consolidate community seed banks as an indispensable mechanism of farmer management of seeds:

1. Establish a mechanism for safeguarding and exchanging genetic resources between national and local germplasm banks and community seed banks to effectively conserve and utilize local seed varieties
2. Use the national and international policy framework to explore new mechanisms for benefit sharing among community seed banks and to protect and motivate farmers to participate in seed selection and conservation.

Acknowledgements

We acknowledge the valuable collaboration of the members of the community seed banks included in the examples and networks, and the inputs provided by our colleagues from the supporting institutions involved. The work on community seed banks has benefited from the financial and network support of Oxfam Hong Kong (Beijing office), Brot für die Welt, and Food Think, and the technical support of the Alliance of Bioversity International and CIAT.

References

- [1] Bellon, M. R., Mastretta-Yanes, M., Ponce-Mendoza, A., Ortiz-Santamaría, D., Oliveros-Galindo, D., Perales, H., et al. (2018). Evolutionary and food supply implications of ongoing maize domestication by Mexican campesinos. *Proc. R. Soc. B* 285:20181049. doi: 10.1098/rspb.2018.1049
- [2] Development Fund (2011). *Banking for the Future: Savings, Security and Seeds. A Short Study of Community Seed Banks in Bangladesh, Costa Rica, Ethiopia, Honduras, India, Nepal, Thailand, Zambia and Zimbabwe*. Oslo: Development Fund. Available online at: https://www.utviklingsfondet.no/files/uf/documents/Rapporter/-Banking_for_the_future.pdf (accessed 16 November 2020)



[3] Li, C., He, X., Zhu, S., Zhou, H., Wang, Y., Li, Y., et al. (2009). Crop diversity for yield increase. *PLoS ONE* 4: p.e8049. doi:10.1371/journal.pone.0008049

[4] National Bureau of Statistics [NBS]. (2017). Main Data Bulletin of the Third National Agricultural Census (No. 1). Beijing: NBS. Available online at: http://www.stats.gov.cn/tjsj/tjgb/nypcgb/qgnypcgb/201712/t20171214_1562740.html (accessed 16 November 2020).

[5] Shrestha, P., Clancy, E., and Vernooy, R. (2020). A Level Up: Community Seed Banks in Nepal Join Forces. Rome: Bioversity International, Rome; Pokhara: LI-BIRD. Available online at: <https://hdl.handle.net/10568/108049> (accessed 16 November 2020)

[6] Song, X., Li, G., Vernooy, R., and Song, Y. (2021) Community Seed Banks in China: Achievements, Challenges and Prospects. *Frontiers in Sustainable Food Systems* 5:630400. doi: 10.3389/fsufs.2021.630400

[7] Vernooy, R., Bessette, G., and Otieno, G. (eds.). (2019a). *Resilient Seed Systems: Handbook*, 2nd Edn. Rome: Bioversity International. Available online at: <https://hdl.handle.net/10568/103498>

[8] Vernooy, R., Shrestha, P., and Sthapit, B. (eds.). (2015). *Community Seed Banks: Origins, Evolution and Prospects*. London: Routledge. doi: 10.4324/9781315886329

[9] Vernooy, R., Bessette, G., Sthapit, B., Dibiloane, A., Lettie Maluleke, N., Abner Matelele, L., et al. (2020a). *How to Develop and Manage Your Own Community Seed Bank: Farmers' Handbook (Updated Version)*. Establishing a Community Seed Bank: Booklet 1 of 3. Rome: Bioversity International. Available online at: <https://hdl.handle.net/10568/92000>

[11] Vernooy, R., Bessette, G., Sthapit, B., and Porcuna Ferrer, A. (2020c). *How to Develop and Manage Your Own Community Seed Bank: Farmers' Handbook (Updated Version)*. Management, Networking, Policies and a Final Checklist: Booklet 3 of 3. Rome: Bioversity International. Available online at: <https://hdl.handle.net/10568/92002> (accessed 16 November 2020)

[12] Xinhua News (2018). "China is facing the dilemma of seed conservation." October 9, 2018. Available online at: http://www.xinhuanet.com/fortune/2018-10/09/c_1123530826.html (accessed 16 November 2020)

[13] Xinhua News (2019). "National Bank of Crop Germplasm Resources to be built in March with capacity of 1.5 million accessions." January 17, 2019. Available online at: http://www.xinhuanet.com/politics/2019-01/17/c_1124000762.html (accessed 16 November 2020)

[14] Yang, Y., Zhang, E., Jarvis, D.I., Bai, K., Dong, C. A. Xinxiang, Tang, C., et al. (2015). "China: the Xiding gene bank in Yunnan," in *Community Seed Banks: Origins, Evolution and Prospects*, eds R. Vernooy, P. Shrestha and B. Sthapit (London: Routledge), pp. 94-98.

[15] Yiching Song, Xiaoting Hou-Jones, Xin Song (2022). *Community-based network: How organizing farmers can channel finance for nature and climate to locally led EbA*. Available online at: <https://storymaps.arcgis.com/stories/fb90a8e1ef6d44e89e61ae9b937268fa>



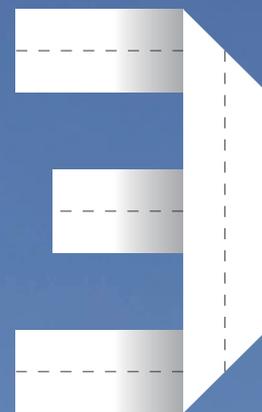
Guanqi Li works as a program specialist in projects focused on farmers' seed systems enhancement and agrobiodiversity conservation and utilization that enhances food security and sustainable food systems, Farmers' Seed Network in China, Nanning, China.



Ronnie Vernooy is a senior scientist focusing on the conservation and sustainable use of agrobiodiversity, resilient seed systems, and seed policies, the Alliance of Biodiversity International and CIAT, Wageningen, the Netherlands.



Yiching Song is a program leader focusing on biodiversity, sustainable livelihood, integrating community, and ecosystem-based climate change adaptations for natural based solutions, UNEP-IEMP (International Ecosystem Management Partnership) in the Chinese Academy of Sciences (CAS), Beijing, China, and the Founder and Adviser of Farmers' Seed Network in China.



德国农业之窗 WINDOW ON GERMAN AGRICULTURE

POLICY FOR A BRIGHT FUTURE: THE EUROPEAN COMMISSION'S GREEN DEAL STRATEGY AND ITS IMPACT ON THE AGRI-FOOD SECTOR

制定政策, 开创美好未来: 欧盟委员会的绿色协议战略及其对农业和食品行业的影响

THE NEW GERMAN GOVERNMENT: A TURNING POINT FOR AGRICULTURAL POLICY?

德国新政府: 农业政策的转折点?

ORGANIC FIELD DAYS 2022: ORGANIC AGRICULTURE ON THE RISE
2022年有机农场日——德国的有机农业正在崛起

Policy for a bright future: The European Commission's Green Deal strategy and its impact on the agri-food sector

Thomas Tanneberger

Frans Timmermans is more certain than almost any other politician in the European Union (EU): All policies for the agricultural and food sector must be geared toward climate protection. To this end, he and the other European Commissioners have taken far-reaching initiatives. The basic idea: Europe should become the world's first climate-neutral continent – intelligently and as quickly as possible. This is the idea that drives Frans Timmermans, and the Dutchman has become Europe's leading figure on climate protection issues in recent years. The EU Council decision to achieve climate neutrality by 2050 was one of his first official acts as European Commissioner in 2019. On this basis, a conceptual framework was developed by the European Commission in 2020, called the “European Green Deal”. However, this framework program has little to do with a deal. Rather, it is a kind of guide to action, a “roadmap for a sustainable and climate-neutral EU economy”.

Ambitious goals, overarching values

The core of the concept is to halt climate change and environmental destruction and to transform the European economy in such a way that by 2050 no more net emissions of greenhouse gases occur, economic growth is decoupled from the intensity of resource use and no one, neither people nor regions, will be left behind in this development. In addition, the European Commission hopes for other collateral benefits such as:

- Clean air and water, healthy soil, and preservation of biodiversity
- Renovated, energy-efficient buildings
- Healthy and affordable food
- Extended public transportation
- Cleaner energy and low-polluting manufacturing technologies

- Durable products that can be repaired, recycled, and reused
- Future-proof jobs and people who are educated to support an ecologically sustainable future
- A competitive and crisis-resilient industry.

Considering that about 75% of the EU's greenhouse gas emissions are caused by the generation and use of energy, it is evidently clear that the Green Deal must address not only environmental policy, but also industry, transportation, agriculture, and housing. In all these areas, the Green Deal envisages targeted measures:

- Investing in new, environmentally friendly technologies
- Supporting industry in innovation
- Introducing greener, cheaper, and healthier forms of transport
- Decarbonization of the energy sector
- Increasing the energy efficiency of buildings
- Working with international partners to improve global environmental standards.

The EU Council “Economy and Finance” (ECOFIN) decided on 21 January 2020 to mobilize at least EUR 1 trillion in investments for this program. To this end, the European Commission intends to allocate funds from the EU budget, establish a “fund for a just transition to a climate-friendly economy” and involve private funds through guarantees under the “InvestEU” program. The plan also calls for strengthening the role of the European Investment Bank in financing sustainable projects. As a result of the Corona pandemic, there has been a further increase in funding commitments, so that a total of EUR 1.8 trillion is now planned.

Measures across all sectors of the economy

The European Commission intends to achieve its set goals through a wide range of measures. These cover eight areas:

Climate protection | The European Climate-Act, which EU Parliament and EU Council have already adopted in 2021, is at the core of the EU's climate protection efforts. It will intervene in all sectors – from industry to energy and transport to agriculture – and legally enshrines the intention to make Europe climate-neutral by 2050. The near-term goal is to reduce net greenhouse gas emissions by at least 55% from 1990 levels by 2030 (the “Fit for 55” strategy). It is complemented by the European Climate Change Adaptation Strategy, which the Commission has firmly set out for itself in 2021. It aims to prepare Europe in a progressive way for the climate changes which will inevitably occur.

Environment and oceans | Core elements here are the biodiversity strategy, the zero-pollutant action plan, the circular economy action plan, a sustainability strategy for the use of chemicals, the organic farming action plan, a waste prevention and recycling strategy, the “Blue Economy” marine protection strategy, a guideline for dealing with scrap batteries, the Farm-to-Fork strategy, and the EU's common fisheries policy and 8th environmental action program.

Energy | A strategy for modernizing the integration of the energy system is planned. In addition, the plan includes an innovation drive to push forward energy-efficient construction, a strategy to reduce methane emissions, a strategy for the installation of offshore energy plants, a strategy for the construction of trans-European energy networks and a strategy to promote the transition to hydrogen.

Transport | The focus of the EU transport strategy presented by the Commission in December 2020 is on greening and digitalization of mobility. In addition, the strategy focuses on improving the resilience of the sector. It comprises 82 measures. Announced measures include the expansion of emissions trading, a change in European burden sharing, and higher CO2 reduction targets for passenger cars and light commercial vehicles.

Industry | With respect to this sector, the Green Deal includes an industry strategy to support the transition to a green and digital economy, aiming to improve the competitiveness of EU industrial sector, and to strengthen Europe's strategic autonomy. Ever since the Corona crisis, particular attention has been paid to the long-term stability and resilience of the industrial and commercial framework as whole.

What does “Fit for 55” mean?

The “Fit for 55” strategy framework was discussed by the EU Council in July 2021. It comprises a series of proposals to revise and update EU legislation with the aim of reducing net greenhouse gas emissions by at least 55% by 2030. The proposals included in the “Fit for 55” package will first be discussed in the relevant Council working groups. They will then be presented to the Committee of Ambassadors of the EU member states. Their deliberations pave the way for an agreement between EU Parliament and EU Council. The components of the package include a reform of the emissions trading system, targets for emissions reductions in the member states, the reduction of greenhouse gas emissions from land use, increasing the share of energy from renewable sources in the overall energy mix to at least 40% by 2030, and the development of a charging and refuelling infrastructure for vehicles powered by non-fossil fuels.

Agriculture | The core element here is the EU’s new agricultural policy, and its goals integrate seamlessly with the Green Deal. It is implemented in practice via the strategic plans of the individual EU member states. In addition, there is, among other things, a strategy for the sustainable use of pesticides, an action plan to promote organic production, an animal welfare strategy, and a plan for nutrition labelling.



Animal husbandry in Europe is facing major challenges.
Photo: Thomas Tanneberger

Finance and regional development | Here, preparations are underway for a “NextGenerationEU” program, the establishment of a crisis reserve (resilience facility) and a “Compensation Fund to support the Just Transition to a Climate-Neutral Economy.” Loans for the development of climate-friendly technologies (“green bonds”), a regulatory framework for sustainable finance and support for reforms with a view to ecological change are also in the pipeline.

Research and innovation | The “Horizon Europe” research and innovation program plays the central role here. At least 35% of it is to be dedicated to projects that serve climate protection. It includes so-called “Green Partnerships” between research institutions, which are designed to investigate topics relevant to climate protection. Four of the five Green Missions, which are intended to introduce scientific findings into practice, are also committed to the Green Deal.

Focus on agriculture

Anyone who got the impression from reading this catalogue of measures that the agricultural and food sector will be particularly affected by the changes is exactly right. No less than three packages of measures are designed to help EU farmers and fishermen do their part to combat climate change, contribute to environmental protection, and preserve biodiversity: the Farm-to-Fork strategy, the Biodiversity Strategy, and the Common Agricultural Policy (CAP).

In this context, the Farm-to-Fork strategy understands itself as a cross-sectoral action plan for the EU food industry: It currently ensures food security for more than 400 million citizens, but at the same time causes about one third of global greenhouse gas emissions from food systems and is responsible for many negative changes in natural environments. Therefore, the Farm-to-Fork strategy pursues the following objectives:

- Ensuring the supply of sufficient, affordable, and nutritious food within the capacity limits of the planet
- Cutting in half the use of pesticides and antimicrobial agents while reducing the use of fertilizers by 20%
- Increasing the amount of land used for organic/organic agriculture
- Promoting more sustainable food consumption patterns and healthier diets
- Reducing food loss and waste
- Combating fraudulent practices along the food supply chain
- Improving animal welfare.

The EU Council adopted conclusions on the strategy in October 2020, supporting the goal of developing a European sustainable food system from production to consumption. Last but not least, the strategy includes an action plan for organic farming, which the Commission presented

in March 2021. Essentially, the aim is to increase the share of agricultural land used for organic farming in the EU to 25% by 2030.

Another milestone in the genesis of the Green Deal was the adoption of the Biodiversity Strategy by the European Commission on 20 May 2020. Based on the findings that the global wildlife population has declined by 60% over the last 40 years and that around 1 million species are threatened with extinction, the European Commission decided to set up a special strategy to address this issue. It pursues the legally binding creation of protection zones on at least 30% of Europe's land and marine areas and the restoration of degraded terrestrial and marine ecosystems throughout Europe by

- Strengthening organic agriculture and biodiversity-rich landscape elements
- Halting the loss of insects
- Reducing pesticide use and their harmful effects by 50% by 2030
- Planting 3 billion trees by 2030
- Returning river systems to a freely meandering course covering at least 25,000 km.

Annual investments of EUR 20 billion (EU, member states, private sector) are earmarked to achieve these goals.

The third building block of the Green Deal's agricultural policy implementation is the new concept of the EU's Common Agricultural Policy for the period 2023 to 2027. Its motto is "Away from regulations and control, towards results and performance". To this end, the EU has defined nine goals that are aligned with the overall objectives of the Green Deal. To achieve them, the Commission provides a set of tools that EU countries can adapt to their own needs and capabilities in the implementation of individual strategic plans. The Green Deal targets are implemented via three components:

What does "climate neutral" mean?

The term does not imply that a country or a company no longer emits any harmful greenhouse gases at all. Rather, it means that the net balance of an economic entity is balanced, i.e., the amount of unavoidably emitted climate-relevant gases is equal to the amount of pollutants bound by other measures. In this context, both carbon sequestration measures can be carried out locally, but certificates can be purchased from other units.

- A new set of funding eligibility criteria (conditionality) geared towards environmental goals
- Rewarding management models that are particularly environmentally oriented
- Various agri-environmental and climate protection measures.

Broad impacts at all levels

The possible effects of the Green Deal on the individual economic sectors have been the subject of very intensive discussions since 2020. They have been characterized by pros and cons from the very beginning.

- For example, agriculture ministers already welcomed the biodiversity strategy and the Farm-to-Fork strategy on 8 June 2020, but at the same time already emphasized that the ambitious targets must be accompanied by an ambitious budget.
- Energy ministers agreed on 15 June 2020 that innovative energy technologies will be very important for job creation, competitiveness, and decarbonization of Europe. However, much of the additional investment needed is already included in member states' national energy and climate plans, they said.
- Environment ministers at a meeting held on 23 June 2020 stressed that the Green Deal must rebuild the economy after the corona pandemic, but at the same time aim for green growth and a more resilient EU.

All parties involved now see that the Green Deal will quite predictably have, and already has, many positive effects. For example, the European Commission expects that the implementation of the biodiversity strategy will prevent a lot of damage to the environment and thus prevent crop and yield losses, land degradation, ecosystem collapse, and loss of pollinators. As the Commission's calculations show, these benefits certainly add up to billions of Euros. The insurance industry could also save tens of billions of Euros through reduced flood and coastal damage if nature remains intact. According to the Commission, nature conservation can also create jobs. The Natura 2000 network alone would result in about EUR 200-300 billion in benefits per year.

In the meantime, however, we also see a shift towards a very open attitude regarding the recognition of problems that can result from the implementation of the Green Deal. It has become clear very early on that certain regions that until now were thriving on the extraction and use of coal, lignite, peat and oil shale, or regions with CO₂-intensive industries, are going to experience major structural shifts. Therefore, early on in these plans, a “Fund for a just transition to a climate-friendly economy” was earmarked in the amount of EUR 17.5 billion.

For agriculture, too, some of the regulations emerging as part of the Green Deal are not without problems. The legislators' intention to prevent the emission of climate-relevant gases through peatland rewetting is laudable, but in Germany, for example, it will lead to the loss of large areas of arable land and forage. If the halving of pesticide use envisaged by the biodiversity strategy really comes to fruition, it will lead to even more dramatic reductions in production, as many crops can no longer be grown profitably without pesticides. Currently, a draft European Commission regulation is being



High water levels reduce emissions: Restoring peatlands is a core component of European climate protection. Photo: Thomas Tanneberger

discussed that would categorically ban the use of chemical pesticides in protected areas of all kinds. Since Germany has a very high proportion of landscape, water, bird, and nature conservation areas, this would lead to an extraordinarily severe restriction compared to other countries. The German Farmers' Association has calculated that this would result in a reduction of grain production of up to 7.5 million tons each year.

Which of these positive or negative effects predominates also differs in the individual countries of the EU – depending on the progress of development of the specific countries, on their economic structures and on the specific local natural conditions. Consequently, Poland, for example, did not initially support the EU Council decision from December 12/13, 2019, on climate neutrality and could not be brought to changes its mind, even by promises of billions of Euros from the EU.

Further development and outlook

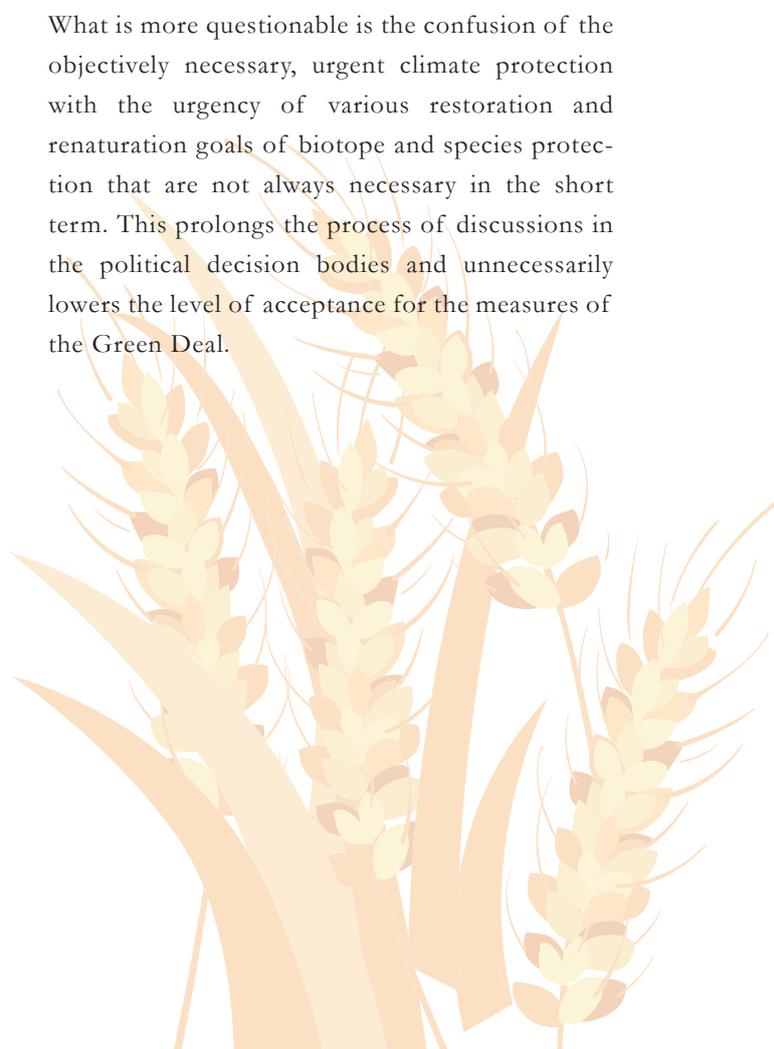
Since the presentation of the Green Deal at the end of 2019 and the first discussions in the following spring, talks and decisions have continued. Here are some key points:

- In December 2020, the EU Council established the EU's binding climate target – greenhouse gas reductions of 55% by 2030 compared to 1990. The compromise text on the EU climate law was approved by the EU ambassadors on 5 May 2021. The “Fit for 55” strategy (info box), which was signed in mid-2021 serves as the legal anchoring of the climate protection targets.
- At its June 2021 meeting, the sectoral council endorsed the strategy of renovation drives with the aim of at least doubling the rate of renovation in the energy sector in the EU by 2030.
- In July 2021, the Council adopted conclusions on the Action Plan for Organic Agriculture proposed by the European Commission.
- In September 2021, the relevant EU ministers discussed the impact of the new package of measures concerning climate and energy on business and industry.
- In October 2021, the Environment Council discussed the “Fit for 55” package, focusing on burden sharing and the impact of the proposals on citizens.
- In November 2021, the Council of Industry Ministers considered the “Fit for 55” package, followed by the Energy Council in December. Environment ministers, economy ministers and transport ministers also met on the issue.
- In early 2022, the Agriculture and Fisheries Council adopted conclusions on climate-efficient agriculture.
- Since mid-2022, the first strategic plans of member states for agricultural policy have been confirmed.

Critical assessment

To correctly assess the knowledge in the context of the strategy of the Green Deal, it is important to understand that this is not a democratically legitimized statute, but merely a working concept by which the European Commission influences and shapes legislative processes in Europe. The lack of a legitimized democratic basis for the numerous and far-reaching changes is admittedly seen as a shortcoming by critics and is therefore the subject of intense debate. However, it is also a reality that the detailed regulations initiated within the framework of the Green Deal are or will be decided by the EU Council and EU Parliament as a rule. In this respect, the argument of a lack of democratic legitimacy is more a sign of ignorance rather than wisdom. Moreover, there is currently no viable alternative to this approach in sight: Climate protection is necessary, climate protection is urgent, and climate protection cannot therefore actually be the object of protracted political intrigues.

What is more questionable is the confusion of the objectively necessary, urgent climate protection with the urgency of various restoration and renaturation goals of biotope and species protection that are not always necessary in the short term. This prolongs the process of discussions in the political decision bodies and unnecessarily lowers the level of acceptance for the measures of the Green Deal.



Conclusion

The EU is firmly committed to become the world's first climate-neutral continent. With this goal in mind, the European Commission has adopted a strategy that has become known as the European Green Deal. This is not in itself a democratically legitimized law, but a roadmap for the restructuring of the European economy that acknowledges the urgency of climate protection. It is being put into practice through many specific laws and regulations that are themselves democratically legitimized. This ensures that the implementation of the ecological measures will be optimally secured in the future security and thus ensures the future well-being of the population of the member states. The EU seeks to mitigate the inevitable negative side effects of these changes, which are objectively necessary, by providing compensatory financial support and training measures. Last but not least, it is indicative of the characteristic for the positive approach of the Green Deal that the EU explicitly extends its hand to all other states and peoples to jointly implement climate protection in order to ensure our survival.



Dr. Thomas Tanneberger is a farmer and agricultural economist by profession. The former editor-in-chief of the German agricultural weekly “Bauernzeitung” has been advising agricultural companies and professional organizations on agricultural policy since 2020.

制定政策, 开创美好未来: 欧盟委员会的绿色协议 战略及其对农业和食品行业的影响

Thomas Tanneberger

欧盟委员会副主席弗朗斯·蒂默曼斯(Frans Timmermans)比欧盟几乎其他任何官员都更确定: 农业和食品行业整体政策的制定必须以气候保护为导向。为此, 他和其他欧盟委员采取了广泛的举措。其基本观点是: 欧洲应该以明智的方式尽快成为世界上第一个气候中和的大陆。受此观念鼓舞, 这位荷兰人近年来已成为欧洲在气候保护问题上的领军人物。他于2019年任职欧盟委员, 上任以来的“第一把火”就是推动欧盟理事会通过到2050年实现气候中和的决议。在此基础上, 欧盟委员会在2020年提出了名为“欧洲绿色协议”(European Green Deal)的概念。然而, 这个计划与“交易”的关系不大, 而是一份行动指南, 是“可持续和气候中立的欧盟经济路线图”。

大目标, 高价值

“欧洲绿色协议”的核心是阻止气候变化和环境破坏, 重塑欧洲经济, 即到2050年不再有温室气体净排放, 经济增长不再与资源利用强度挂钩, 任何人或地区都不会被落下。此外, 欧盟委员会还希望获得更多好处:

- 清洁的空气和水, 健康的土壤和完整的生物多样性
- 翻新的节能建筑
- 健康和负担得起的食物
- 更多的公共交通
- 更清洁的能源和低污染的制造技术

- 可以维修、回收和再利用的耐用产品
- 可持续的工作和适合生态可持续未来的人
- 具有竞争力和抗危机能力的工业

现在已知欧盟约75%的温室气体排放是由能源的生产和使用造成的, 因此, “绿色协议”不仅涉及环境政策, 还涉及工业、交通、农业和住房问题。针对上述领域, “绿色协议”提出以下措施:

- 投资新型环境友好型技术
- 支持工业创新
- 引入更环保、更便宜和更健康的交通方式
- 能源部门去碳化
- 提高建筑物的能源效率
- 与国际伙伴合作, 提高全球环境标准

2020年1月21日, 欧盟理事会经济和金融事务委员会决定为绿色协议计划筹集至少一万亿欧元的投资。为此, 欧盟委员会希望从欧盟预算中拨出资金, 设立“公正过渡到气候友好型经济基金”, 并以“投资欧盟”计划作为担保让私人资金参与进来。此外还要加强欧洲投资银行在资助可持续项目方面的作用。由于新冠疫情的影响, 资金承诺再次增加, 因此目前计划总额为1.8万亿欧元。

面向总体经济的措施

欧盟委员会计划通过一系列措施来实现其既定目标。这些措施共涉及八个领域。

气候保护。欧洲议会和理事会在2021年通过的《欧洲气候法》，是欧盟气候保护的核心内容。《欧洲气候法》涉及所有行业——从工业到能源，从交通到农业，并从法律上体现了到2050年实现欧洲气候中和的意图。近期目标是到2030年将温室气体净排放量在1990年的基础上至少减少55%（“减排55”计划）。此外，欧盟委员会还在2021年制定了欧洲气候变化适应战略，目的是帮助欧洲逐步做好准备，应对无法逃避的气候变化。

环境和海洋。核心要素是生物多样性战略、零污染行动计划、循环经济行动计划、化学品可持续战略、有机农业行动计划、废弃物预防和回收战略、“蓝色经济”海洋保护战略、废旧电池处理准则、“从农场到餐桌”战略、欧盟的共同渔业政策以及第八个环境行动计划。

能源。这里规划了一个能源系统现代化整合战略。此外还将有节能建筑改造浪潮、甲烷战略、海上能源工厂战略、跨欧洲能源网络战略和氢能战略。

交通。欧盟委员会2020年12月提出欧盟交通战略，重点是交通的绿色化和数字化。此外，该战略还致力于增强交通行业的弹性。它包括82项措施，已公布的措施包括扩大排放交易、调整欧洲的（排放）负担分摊以及提高客车和轻型商用车的二氧化碳减排目标。

工业。“绿色协议”包含一项工业战略，支持向绿色经济和数字经济过渡，以提高欧盟工业部门的竞争力，加强欧洲的战略自主性。自新冠疫

情爆发以来，人们更加关注工业和贸易结构的长期稳定性和复原力。☑农业。这里的核心要素是欧盟的新农业政策，其目标与“绿色协议”完美契合，它通过欧盟各成员国的战略计划来实施。此外还有农药可持续使用战略、促进有机生产的行动计划、动物福利战略和营养标签计划。

金融和区域发展。“下一代欧盟”计划、建立危机储备（弹性设施）和“向气候中和经济公正过渡补偿基金”的筹备工作正在进行中。用于开发气候友好型技术的贷款（“绿色债券”）、可持续金融框架以及对生态转型改革的支持措施也在规划中。

研究和创新。“欧洲地平线”研究和创新计划在此发挥关键作用。至少35%的项目是气候保护项目。研究机构之间所谓的“绿色伙伴关系”项目，就是研究与气候保护相关的议题。旨在将科学知识付诸实践的五项“绿色使命”中，有四项也致力于“绿色协议”。

“减排55”（Fit for 55）是什么意思？

欧盟理事会于2021年7月讨论了“减排55”一揽子计划，包含修订和更新欧盟立法的一系列建议，旨在到2030年将温室气体净排放量至少减少55%。“减排55”一揽子计划的提案先由理事会相关工作组讨论，然后提交给欧盟成员国大使委员会审议。大使委员会的审议为议会和理事会之间达成协议铺平了道路。一揽子计划的内容包括排放交易体系的改革，成员国的减排目标，减少土地使用造成的温室气体排放，到2030年将可再生能源在整个能源结构中的比例至少提高到40%，以及为以非化石燃料为动力的车辆建设充电和燃料补给基础设施。



欧洲畜牧业正面临重大挑战。

照片:托马斯·坦能博格

农业部门的重点

在阅读这份措施目录时,如果你的印象是农业和食品行业将特别受到变化的影响,这完全正确。三套措施旨在帮助欧盟农民和渔民为应对气候变化、保护环境和维护生物多样性做出贡献:“从农场到餐桌”战略、生物多样性战略和共同农业政策(CAP)。

“从农场到餐桌”战略将自己定位为欧盟食品行业的跨部门行动计划:该战略确保4亿多公民的粮食安全,同时也产生了全球食品系统约三分之一的温室气体排放,给自然环境带来许多负面变化。因此,“从农场到餐桌”战略追求以下目标:

- 在地球的承载能力范围内,确保供应足够的、负担得起的和有营养的食物
- 将杀虫剂和抗菌剂的使用量减半,并将化肥的使用量减少20%
- 增加用于有机耕种的面积
- 倡导更加可持续的食品消费模式和更健康的饮食

- 减少食物损失和浪费
- 打击食品供应链上的欺诈行为
- 改善动物福利

欧盟理事会于2020年10月通过了“从农场到餐桌”战略的决定,支持建立从生产到消费的欧洲可持续食品体系。该战略包括一个有机农业行动计划,于2021年3月由欧盟委员会提出,其核心目的是到2030年将欧盟有机耕作的比例提高到农业用地的25%。

“绿色协议”诞生的另一个里程碑是欧盟委员会于2020年5月20日通过了生物多样性战略。全球野生动物的数量在过去40年里减少了60%,约有100万个物种面临灭绝的威胁。基于这一发现,欧盟委员会决定制定一项特殊战略来应对这一问题。该战略意图在欧洲至少30%的陆地和海域建立具有法律约束力的保护区,并通过以下方式恢复整个欧洲退化的陆地和海洋生态系统:

- 加强有机农业和生物多样性丰富的景观元素

“气候中和”是什么意思？

“气候中和”一词并不意味着一个国家或一家公司不再排放任何对气候有害的气体，而是指一个经济组织的排放净平衡，即与气候相关的气体不可避免的排放量与采取措施减少的污染物数量相等。您既可以自行执行碳约束措施，也可以从其他单位购买证书。

一致，认为创新能源技术对于创造就业机会、提高竞争力和欧洲的去碳化非常重要。但是，很大一部分额外投资需求已经包含在成员国的国家能源和气候计划中。

- 欧盟各国环境部长在2020年6月23日举行的会议上强调，“绿色协议”必须在新冠疫情之后重建经济，但同时也要以绿色增长和更有弹性的欧盟为目标。

所有相关方都看到，“绿色协议”将会产生并且已经产生了许多可预见的积极影响。例如，欧盟委员会预计生物多样性战略的实施能防止对自然的大量破坏，从而使人们免受收成和产量损失、土地退化、生态系统崩溃和动物授粉者的损失。根据欧盟委员会的推算，这相当于数十亿欧元。如果自然界没有受到损坏，洪涝灾害和海岸的破坏将减少，保险业因此可以节省数百亿欧元。欧盟委员会认为，保护自然也可以创造就业机会。仅仅“欧盟自然2000网络”(Natura 2000)每年就能带来约2000至3000亿欧元的收益。

与此同时，对于实施“绿色协议”可能产生的问题，人们也持非常开放的态度。很早就清楚，某些迄今为止依靠煤炭、褐煤、泥炭和油页岩的开采和使用，或是拥有二氧化碳密集型产业的地区，正面临重大的结构转变。这就是为什么在早期阶段就计划设立一个 175 亿欧元的“向气候友好型经济公正过渡基金”。

- 阻止昆虫的消亡
- 到2030年将杀虫剂的使用和有害影响减少
- 50%
- 到2030年种植30亿棵树
- 使河流恢复自然流动的路线，至少25000公里。

为实现这些目标，预计每年投资200亿欧元(欧盟、成员国、私营部门)。

“绿色协议”中农业政策实施的第三个组成部分是2023年至2027年的欧盟共同农业政策新概念，其口号是“摆脱规则和控制，走向成果和绩效”。为此，欧盟确定了面向“绿色协议”总体目标的九个目标。为了实现这些目标，欧盟委员会提供了一套工具，欧盟成员国在实施自己的战略计划时可根据各自的需要和可能性进行调整。欧盟的“绿色协议”目标通过以下三个部分来实施：

- 一套针对环境目标的新的资助条件(条件性)，
- 奖励特别注重环境的经营模式，以及
- 各种农业环境保护和气候保护措施。

在各个层面产生广泛影响

自2020年以来，“绿色协议”对各个经济部门可能产生的影响一直是激烈讨论的主题。讨论从一开始就分为正反两个方面。

- 例如，欧盟各国农业部长在2020年6月8日就对生物多样性战略和“从农场到餐桌”战略表示欢迎，但同时也强调，雄心勃勃的目标必须与雄心勃勃的预算齐头并进。
- 欧盟各国能源部长于2020年6月15日达成



高水位减少排放:恢复沼泽地是欧洲气候保护的一个核心组成部分。

照片:托马斯·坦能博格

就农业而言,“绿色协议”产生的一些规定也不是没有问题。立法者意图通过复湿沼泽地来防止气候相关气体的排放,值得称赞,但在一些国家如德国,这将导致大面积的耕地和饲料损失。如果生物多样性战略将农药使用量减半的目标真的实现,将导致更大幅度的生产限制,因为许多作物若不使用农药则种植没有收益。目前,欧盟委员会正在讨论一项法规草案,该草案将普遍禁止在各类保护区使用化学植保产品。由于德国拥有非常高比例的景观、水体、鸟类和自然保护区,与其他国家相比,其限制会异常严格。根据德国农民协会的计算,该规定将导致每年粮食减产多达750万吨。

这些影响是正面还是负面对欧盟各国有所不同——取决于具体国家的发展程度、经济结构以及当地的自然条件。因此,一些国家例如波兰最初并不支持欧盟理事会2019年12月12/13日关于气候中和的决议,即使欧盟承诺数十亿欧元资金也无法使其改变想法

发展与展望

自2019年底提出“绿色协议”和次年春天进行首次讨论以来,相关会谈和讨论一直在持续。以下是部分要点:

- 2020年12月,欧盟理事会确定了欧盟具有约束力的气候目标——到2030年温室气体排放比1990年减少55%。2021年5月5日,欧盟各国大使批准了欧盟气候法的妥协文本。2021年年中签署的“减排55”计划(详见信息框)有助于将气候保护目标法律化。
- 2021年6月,欧盟行业部长理事会批准了“翻新浪潮战略”,目标是到2030年将欧盟节能改造率至少提高一倍。
- 2021年7月,欧盟理事会通过了委员会提出的有机农业行动计划。
- 2021年9月21日,欧盟相关部长讨论了新的气候和能源一揽子计划对商业和工业的影响。
- 2021年10月21日,欧盟环境委员会讨论了“减排55”一揽子计划,重点是负担分摊和减排提议对公民的影响。
- 2021年11月21日,欧盟工业部长理事会就“减排55”一揽子计划会晤,随后能源理事会于12月审议该议题。环境部长、经济部长和交通部长也就该议题召开了会议。
- 2022年初,欧盟农业和渔业理事会通过了关于气候高效农业的决议。
- 2022年年中,欧盟各成员国第一批农业政策战略规划获得确认。



批判性评价

要正确评价“绿色协议”战略的内容,重要的是要明白,这不是一份民主立法文件,而只是欧盟委员会影响和塑造欧洲立法进程的一个工作方案。批评者认为众多重大的变革缺乏民主基础,这是不足之处,也是激烈辩论的主题。而实际情况是,在“绿色协议”框架内启动的具体法规通常都是由并将由理事会和议会来决定。因此,缺乏民主的说法与其说是智慧,不如说是无知的表现。况且目前还没有看到明显的替代方法:气候保护是必要的,气候保护是紧迫的,因此气候保护不能成为旷日持久的政治纷争的主题。

而更应该质疑的是,将客观上必要的、紧迫的气候保护与群落生境和物种保护的各种恢复和复原的目标混为一谈,而这些目标在短期内并不总是必要的。这使得决策机构的讨论过程更加漫长,不必要地降低了对“绿色协议”措施的接受度。

总结

欧盟决心成为世界上第一个气候中和的大陆,立场十分坚定。为实现这一目标,欧盟委员会通过了一项名为“欧洲绿色协议”的战略。这本身并不是一个民主合法化的行为,而是欧洲经济的气候友好型重组的路线图。它通过众多有针对性的、自身又是民主合法化的法律和法规来付诸实施。这确保了未来最大限度的生态安全,从而确保了成员国人民的福祉。欧盟提供相应的财政支持和培训措施,以减轻这些客观上必要的变革所带来的不可避免的负面影响。最后值得一提的是,欧盟明确向所有其他国家和人

民伸出援手,共同实施拯救生命的气候保护,这是“绿色协议”积极的基本特征。

参考文献

欧盟理事会,关于欧盟气候中和目标的五项事实

<https://www.consilium.europa.eu/en/5-facts-eu-climate-neutrality/>

欧盟委员会,欧洲绿色协议,成为第一个气候中和大陆。https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_de

欧盟理事会:时间线—欧洲绿色协议和“减排55”

[https://www.consilium.europa.eu/de/policies/green-deal/time-](https://www.consilium.europa.eu/de/policies/green-deal/time-line-european-green-deal-and-fit-for-55/)

[line-european-green-deal-and-fit-for-55/](https://www.consilium.europa.eu/de/policies/green-deal/time-line-european-green-deal-and-fit-for-55/)

欧盟理事会:欧盟委员会致欧洲议会、欧洲理事会、理事会、欧洲经济与社会委员会及地区委员会的通知—欧洲绿色协议。布鲁塞尔,2019年12月11日

<https://data.consilium.europa.eu/doc/document/ST-15051-2019-INIT/de/pdf>

欧盟理事会:“从农场到餐桌”战略。为欧洲提供更健康、更可持续的食品。

<https://www.consilium.europa.eu/de/policies/from-farm-to-fork/>



Thomas Tanneberger博士的职业是农民和农业经济学家。他曾任德国农业周报《Bauernzeitung》的主编,自2020年以来一直为农业企业和专业组织提供农业政策咨询。

The new German government: A turning point for agricultural policy?

Alfons Balmann

German society expects the agricultural sector to become more sustainable. However, German farms suffer from a lack of profitability and are concerned about their future. The new German government aims to address both problems. In addition, the war in Ukraine has led to increased awareness of the importance of food security, consumers concern about rising food prices, and limited government budgets with no room for further subsidies. Addressing all these challenges requires policy makers and civil society to re-evaluate traditional concerns about structural change and modern biotechnology. A stronger focus on efficiency and technological solutions may be necessary if agriculture is to become more sustainable while accommodating the interests of different stakeholder groups.

Since 8 December 2021, Germany has had a new government based on a coalition of Social Democrats, Greens, and Liberals, the so-called traffic light coalition. The new government led by Bundeskanzler Olaf Scholz replaces 16 years of Merkel-led governments. Relatively radical changes are widely expected and promised. In the wake of these changes, Cem Özdemir has been appointed as the Minister of Food and Agriculture. Cem Özdemir is a member of The Green Party, an environmental party which is strongly supported by many environmental civil society organizations. Key elements of the coalition agreement on the future agricultural policy are the establishment of higher animal welfare standards, a reduction of emissions from animal husbandry and crop production, fighting biodiversity loss by increasing the share of organic farming to 30% by 2030, and the promise to tackle unfair competition in the food chain to increase farmers' incomes. While these proposals were applauded by environmental groups, many farmers and their organiza-

tions raised concerns. Farmers pointed out that the new government did not allocate extra government funding to compensate farmers for cost-intensive higher animal-welfare and environmental standards. Instead, higher animal-welfare standards are supposed to be financed by the market participants, i.e., farmers, processors, and consumers, without saying how this may happen.

Just two and a half months later, the war in Ukraine sent international agricultural markets into shock with skyrocketing food, feed, and fertilizer prices as Russia and Ukraine have become major exporters of grains, oilseeds, and fertilizers to international markets in recent years. Increasing food prices all over the world affect particularly poorer households and especially those in developing countries. Farmers and farmers' organizations across the EU took this as an opportunity to speak out against the new requirements of the EU's Common Agricultural Policy (CAP) to mitigate biodiversity loss and climate change. The EU CAP pays around EUR 41 billion per year to support farmers' incomes but requires farmers to set aside approximately 4% of their farmland for ecological functions from 2023. Like farmers in many other EU countries, German farmers urged the European Commission and the German Minister Özdemir to suspend these requirements, and after lengthy debates and increasing pressure, both finally agreed.

Clearly, agricultural policy priorities may need to be adjusted as a result of the war and disrupted food systems. However, hitherto unsolved and pressing problems of German agriculture regarding animal welfare as well as climate, environmental, and biodiversity protection remain. Moreover,

most German farms show low profitability and are afraid of higher production costs due to higher environmental standards. In view of the already great political and sectoral challenges, this raises the question of what this means for agricultural policy and political actors in Germany, and where solutions or compromises might be found. To answer these questions, four theses are discussed below.

1. Agriculture is supposed to change, but there are enormous trade-offs.

German society expects the agricultural sector to change. There are considerable, scientifically well-documented problems and challenges regarding animal welfare as well as climate, environmental and biodiversity protection. Many of these problems have been known for a long time, such as nitrate pollution of groundwater and species extinction. More recent topics are animal welfare issues such as requesting that an animal should have a “life worth living”, e.g., by providing more space in stables and to avoid amputations such as of pig tails. The political pressure for action is correspondingly high. The war in Ukraine has now brought renewed awareness to the fact that food security is the fundamental social function of agriculture. This inevitably raises the question of conflicting goals, such as between animal welfare and climate protection (because more feed is needed for the same amount of meat) or between biodiversity conservation and food security. However, there are very different views both within German agriculture and within German society as to whether the conflicting goals and trade-offs can be managed better within the framework of an ecologically oriented agricultural turnaround or rather through sustainable intensification. The arguments of each view are accompanied by different ideas about the extent to which the processing and consumption of agricultural products can be made more ecologically sustainable. Looking at past trends and the current food crisis, the goal of a substantially

expanding organic farming raises significant questions about its sustainability if organic agriculture does not succeed in dramatically increasing land productivity.

2. Agriculture will change, because there are many simultaneous drivers.

Agriculture is changing worldwide, driven by digitalization, biotechnology (e.g., genetic engineering), climate change, changing consumption patterns etc. These developments even seem to be accelerating in recent times, as evidenced by the emergence of entirely new technological opportunities from ever-increasing computing capacity, big data, and artificial intelligence methods or by heat waves and droughts. At the same time, agriculture finds itself in a global competition for scarce resources and sales markets that it cannot escape. In some cases, innovations in the agricultural sector currently seem to be spreading faster in emerging markets in South America and Eastern Europe than in the EU. Global technology competition is becoming an increasingly significant factor in the competitiveness of future agriculture and value chains.

In addition to global drivers, there are local drivers of change such as the low profitability of most German farms which achieve average profits per family worker that are far below the incomes of other sectors. The cause is only partly to be found in low product prices, as farmers often claim. Farm size is at least as important, which is reflected above all in the particularly pronounced income deficits of the numerically dominant small and medium-sized farms. Although about 2% of German farms give up each year, many of the existing farms are part-time farms, usually less than 20 ha, and most full-time farms farm less than 50 ha. In addition to the low income in agriculture, demographic change will also bring about changes. In many rural regions, only a fraction of the workforce retiring due to age will be able to be replaced by younger workers in the future. Agriculture will have to compete for this

increasingly scarce workforce not only with other industries, but also with prospering urban regions. Possible solutions for agriculture include rationalization through digitalization, reducing labor-intensive production and recruiting skilled workers from abroad.

3. Sustainable change needs coherence, because agriculture can only change as part of society.

Civil society actors and the mass media shape public debates on agricultural policies in Germany. Their constant calls for an agricultural turnaround towards organic farming give the impression that sustainable and socially accepted agriculture must be guided by principles such as self-sufficiency and regionality. However, agriculture is surrounded by a German society that remains focused on economic growth, innovation, and globalization. Demands for more regionality in food production and consumption are not only at odds with the ongoing globalization of the economy and society. They also raise the question of the extent to which these demands are compatible with the requirements of climate and environmental protection. For example, German civil society's strong opposition to the use of genetic engineering and pesticides contradicts the scientific findings about the nutritional needs of a growing and more affluent world population while natural resources are globally limited. The rejection of new technologies such as genetic engineering in agriculture contradicts the fact that these methods are used as a matter of course in other areas of the German economy, such as in food processing and in medicine.

4. Discourse failure requires new solutions.

The above-mentioned political debates are not a new phenomenon but have existed for decades without a generally accepted political compromise. Obviously, there has been a discourse failure for some time, with farmers and civil society organizations blocking each other. However, there also seems to be a discourse failure within agriculture and within society. The recent discussion about the

The above-mentioned political debates are not a new phenomenon but have existed for decades without a generally accepted political compromise. Obviously, there has been a discourse failure for some time, with farmers and civil society organizations blocking each other. However, there also seems to be a discourse failure within agriculture and within society. The recent discussion about the suspension of the EU's set-aside scheme, which requires farmers to leave a proportion of their land out of intensive production, can be seen as evidence of the ongoing blame game. On the one hand, the suspension of the set-aside scheme demanded by farmers' organizations will have only a very limited effect on the current food crisis. Nor was it accompanied by proposals from agricultural representatives on what alternative contributions to species conservation might look like. On the other hand, the environmental groups' fundamental concern about food security could hardly be convincingly rebutted with the argument that instead of bringing set-aside farmland back into production, one could simply eat less meat, as Minister Özdemir recently argued.

One explanation for the mutual recriminations could be that the actors on the various sides are less concerned with critics of their own position than with not alienating their own supporters. Within agriculture, a key problem is likely to be that many farms, particularly smaller ones, see no prospect of being able to manage the necessary change economically. Instead of openly discussing issues of structural change towards more efficient farms, market partners and governments are expected to solve the problems. This might explain why farmers' organizations hesitate to seek compromises. Conversely, within society there is hardly any differentiated discussion of possible inconsistencies regarding the diverse expectations on agriculture and the associated conflicts of objectives, as well as populist solutions' compatibility with general technological and social developments. This lack of public discussions

on the huge trade-offs between environmental objectives and food security or between animal welfare and environmental objectives may explain why many civil society organizations just oppose any technological solution for agricultural challenges. In this respect, it is not surprising that the discourse between agriculture and society has been smoldering for some time and that responsibilities continue to be shifted back and forth, even though the problems are pressing.

What does this mean for the future German agricultural policy?

Against the backdrop of the shock waves of war, awareness has returned to the fact that food security and affordable food prices cannot be taken for granted. However, this does not mean that environmental and animal protection problems will disappear into thin air. The shock waves of the war, overlaid with the consequences of the Corona pandemic, are likely to result in considerable additional burdens for consumers, taxpayers, and government budgets. Accordingly, further funding to compensate

farms for additional costs of necessary environmental, climate, biodiversity, and animal protection is likely to be very limited. Therefore, the question of efficiency reserves within the agricultural system that open up win-win opportunities for agriculture, food security, and the environment beyond additional government payments for agriculture arises more than ever. While not a popular opinion, policy makers should recognize that many animal welfare and environmental problems are related to management. Moreover, they should recognize that low farm incomes are often a result of management and small farm sizes – which is also not a popular opinion. However, both of these problems need to be addressed. In addition, the external drivers of change mentioned above offer new perspectives. Digitalization and biotechnology are particularly worthy of mention here. These technologies require social acceptance, which must be promoted as well as corresponding infrastructures that enable farms to benefit from their use.



Prof. Dr. Alfons Balmann is Director at the Leibniz Institute of Agricultural Development in Transition Economies (IAMO). His main fields of research are structural change, large-scale agriculture, societal acceptance of modern agriculture, and agricultural policies.

德国新政府：农业政策的转折点？

Alfons Balmann

德国社会期望农业部门变得更加可持续。然而，德国的农场缺乏盈利能力，对未来感到担忧。德国新政府的目标是解决这两个问题。然而，乌克兰战争使人们对粮食安全重要性的认识提高，使消费者对食品价格上涨感到担忧，同时也使国家预算有限，没有进一步补贴的空间。应对所有这些挑战需要批判性地反思他们对结构变化和现代生物技术的传统担忧。相反，可能需要更多地关注效率和技术解决方案，以应对可持续性问题和寻求妥协。

自2021年12月8日起，德国产生了由社会民主党、绿党和自由主义者联盟为基础的新政府，即所谓的“红绿灯联盟”。由联邦总理朔尔茨(Olaf Scholz)领导的新政府取代了执政16年的默克尔政府。相对激进的变化是人们普遍预期和得到承诺的。作为变化的一部分，Cem Özdemir成为新任食品和农业部部长。Cem Özdemir是环保党派绿党的成员，该党受到许多环保民间社会组织的大力支持。联盟协议关于未来农业政策的关键要素是建立更高的动物福利标准，减少畜牧业和作物生产的排放，通过到2030年将有机农业的份额提高到30%来对抗生物多样性的丧失，以及承诺反对食物链中的不公平竞争，以增加农民收入。虽然这些提议受到了环保组织的欢迎，但许多农民及其组织提出了担忧。农民们指出，新政府没有分配额外的政府资金来补偿农民提高动物福利和环境标准的成本。相反，更高的动物福利标准需要由市场参与者，

即农民、加工商和消费者来承担费用，但没有说明如何可行。

仅仅两个半月后，乌克兰战争就给国际农业市场带来了冲击，粮食、饲料和化肥价格飙升，因为俄罗斯和乌克兰近年来成为国际市场上粮食、油籽和化肥的主要出口国。世界各地不断上涨的食品价格对较贫困家庭的影响尤其严重，特别是发展中国家的家庭。欧盟的农民和农民组织以此为理由，反对欧盟共同农业政策(EU CAP)新制定的减缓生物多样性损失和气候变化的要求。欧盟共同农业政策每年支付约410亿欧元来支持农民的收入，但要求农民从2023年起留出约4%的农田休耕用于生态功能。和许多其他欧盟国家的农民一样，德国农民也敦促欧盟委员会和德国部长 Özdemir暂停这些要求。经过长时间的辩论和越来越大的压力，最终双方都同意了。

由于战争和粮食系统的破坏，很显然农业政策的优先顺序可能需要调整。然而，德国农业在动物福利以及气候、环境和生物多样性保护方面迄今尚未解决的紧迫问题仍然存在。此外，大多数德国农场的盈利能力较低，担心更高的环境标准导致更高的生产成本。鉴于已经存在的巨大的政治和部门挑战，这就提出了一个问题，即这对德国的农业政策和政治行为者意味着什么，以及在哪里可以找到解决方案或折衷方案。为了回答这些问题，下面讨论四个命题。

1. 农业应该改变,但这需要巨大的权衡!

德国社会期望农业部门改变。在动物福利以及气候、环境和生物多样性保护方面,存在着大量科学证据充分的问题和挑战。其中许多问题早已为人所知,比如地下水的硝酸盐污染和物种灭绝。最近的话题是动物福利问题,比如要求给动物“值得过的生活”,如在厩棚中提供更多的空间,不给猪断尾等等。要求采取行动的政治压力也相应很高。乌克兰战争使人们现在重新认识到粮食安全是农业的基本社会功能这一事实。这不可避免地引发了目标冲突的问题,例如动物福利和气候保护之间(因为同样数量的肉类需要更多的饲料),或者生物多样性保护和粮食安全之间。然而,在德国农业内部和德国社会内部,对于是在以生态为导向的农业转型框架内还是通过可持续集约化能够更好地管理相互冲突的目标和权衡取舍,存在着截然不同的观点。每种观点的争论都伴随着对农产品加工和消费在多大程度上能够更具生态可持续性的不同看法。回顾过去的趋势和当前的粮食危机,如果有有机农业不能成功地实现土地生产力的大幅提高,那么有机农业大幅扩展的目标就会引发其可持续性的重大问题。

2. 农业将会改变,因为有许多同时驱动的因素!

在数字化、生物技术发展(例如基因工程)、气候变化和消费模式变化等因素的推动下,全球农业正在发生变化。最近这些变化看起来甚至在加速,不断增长的计算能力、大数据和人工智能方法等全新技术机会的出现以及热浪和干旱就是证明。与此同时,农业发现自己陷入了无法逃

脱的争夺稀缺资源和销售市场的全球竞争。在某些情况下,农业部门的创新目前在南美和东欧新兴市场的传播速度似乎快于欧盟。全球技术竞争正日益成为未来农业和价值链竞争力的重要因素。

除了全球驱动因素外,还存在的本地的变化驱动因素,比如大多数德国农场的低盈利能力。大多数德国农场每个家庭工人的平均利润远低于其他部门的收入。正如农民经常争论的那样,产品价格低只是部分原因。农场规模至少同样重要,这首先反映在数量上占主导地位的中小型农场特别明显的收入赤字上。尽管每年约有 2% 的德国农场退出,但许多现有的农场都是兼职农场,通常面积不足 20 公顷,而大多数全职农场的面积不足 50 公顷。除了农业收入低之外,人口变化也会带来变化。在许多农村地区,未来只有一小部分因年龄而退休的劳动力能够被年轻工人取代。农业不仅要与其他部门争夺日益稀缺的劳动力,还要与繁荣的城市地区竞争。农业部门的解决方案包括通过数字化实现合理化、减少劳动密集型生产和从国外招聘技术工人。

3. 可持续变革需要连贯性,因为农业只能作为社会的一部分而改变!

在德国,民间社会行动者和大众媒体塑造了关于农业政策的公共辩论。他们对农业转向有机生产的稳定要求给人的印象是,可持续和社会接受的农业必须以自给自足和地域性等原则为导向。然而,农业被一个仍然继续关注经济增长、创新和全球化的德国社会所包围。对粮食生产和消费的更多地域性要求不仅与正在进行

的经济和社会全球化背道而驰,它们还引发了关于这些要求在多大程度上符合气候和环境保护要求的问题。例如,德国民间社会强烈反对使用基因工程和杀虫剂,这与不断增长和日益繁荣的世界人口对营养的需求而全球自然资源有限的科学证据相矛盾。拒绝在农业领域使用基因工程等新技术,与这些方法在德国经济的其他领域(如食品加工和医药)被理所当然使用的事实相矛盾。

4. 话语失败需要新的解决方案

上述政治辩论不是新现象,而是几十年来一直存在,但没有找到被广泛接受的政治妥协。显然,一段时间以来,农民和民间社会组织之间存在着相互阻碍的话语失败。然而,在农业内部和社会内部似乎也存在话语失败。最近关于在欧盟未来农业政策下暂停4%的耕地休耕,以应对乌克兰战争的讨论可以被视为持续的相互指责的证据。一方面,暂停农业休耕的要求对当前粮食危机的影响非常有限。农业代表也没有就对物种保护的替代贡献可能是什么提出任何建议。另一方面,环保团体对粮食安全的根本关切难以信服地被这样的论点否定,即人们可以像农业部长 Özdemir所说的那样简单地少吃肉,而不是暂停休耕。

对这种双方互相指责的一种解释可能是,各方的参与者更关心的是不激怒自己的支持者,而不是对自己立场的批评。在农业内部,一个核心问题可能是,许多农场,特别是小型农场,看不到在经济上有能力应对变革需求的任何前景。人们期望市场伙伴和政府来解决问题,而不是

公开讨论如何实现更高效农场的结构改革。这也许可以解释为什么农民组织不愿寻求妥协。相反,在社会内部,对于农业的不同期望和相关的目标冲突,以及民粹主义解决方案与一般技术和社会发展的兼容性,几乎没有对可能的不一致进行任何有区别的讨论。缺乏对环境目标和粮食安全之间,或者动物福利和环境目标之间巨大权衡的公开讨论,也许可以解释为什么许多民间社会组织只是反对应对农业挑战的任何技术解决方案。在这方面,农业和社会之间的讨论已经酝酿了一段时间而责任继续来回推移也就不足为奇了,尽管问题很紧迫。



这对德国未来的农业政策意味着什么？

在战争冲击波背景下，人们重新认识到粮食安全和负担得起的食品价格并非理所当然。然而，这并不意味着环境和动物保护问题将凭空消失。战争冲击波加上新冠疫情的后果，可能会给消费者、纳税人和国家预算带来相当大的额外负担。相应地，用于补偿农场在必要的环境、气候、生物多样性和动物保护方面的额外成本的进一步资金可能非常有限。因此，农业系统内的效率储备问题比以往任何时候都更加突出，这为农业、粮食安全和环境带来了除政府为农

业支付额外费用之外的双赢机会。尽管这不是一个流行的观点，但政策制定者应该认识到，许多动物福利和环境问题与管理有关。此外，他们应该认识到，农场收入低往往是管理和农场规模小的结果——这也不是流行的观点。然而，这两个问题都需要解决。此外，上述变化的外部驱动因素提供了新的视角。尤其值得一提的是数字化和生物技术。这些技术需要社会认可，必须加以推动，并且需要相应的基础设施，使农场能够从这些技术的使用中受益。



Alfons Balmann博士、教授是德国莱布尼茨转型经济农业发展研究所（IAMO）所长。他的主要研究领域是结构变化、大规模农业、现代农业的社会接受度和农业政策。

Organic Field Days 2022: Germany's organic farming sector on the rise

Eva Sternfeld

Organic farming is already an important sector of German agriculture. At the end of 2021, 36,300 organic farms were cultivating around 1.8 million ha, accounting for almost 11% of Germany's agricultural area. And these numbers are expected to increase. The coalition agreement of the current federal government of Germany envisages to expand organic cultivation to 30% of the total agricultural area by 2030.

The Organic Field Days have been held since 2017. The biggest convention of organic farmers in Germany takes place every other year at a state-owned research farm and is organized by the Research Institute of Organic Agriculture (FiBL). In 2019, a DCZ study tour took a group of Chinese agricultural scientists to the Organic Field Days in Frankenhausen. This year, Eva Sternfeld, Head of Scientific Dialogue at DCZ, visited the 2022 Organic Field Days at Gladbacher Hof in Villmar-Aumenau in the federal state of Hesse. Below is her report.

Organic agriculture the "right answer" to tackle climate change

After a one-year break caused by Covid-19, the Organic Field Days 2022 could finally take place again. Over the course of three days, 11,500 visitors found their way to Villmar-Aumenau in Hesse to learn about the latest trends and innovations on a 20-ha exhibition area at the Hessian

state domain Gladbacherhof and to exchange ideas with researchers and practitioners in lecture events. Gladbacherhof is a 190-ha farm in a low mountain landscape that specializes in seed (cereal) and dairy production. At the same time, the farm is also a research site for the University of Giessen.

The Federal Minister of Food and Agriculture, Cem Özdemir, and the Hessian Minister of Agriculture, Priska Hinz, opened the event. At the opening, Hinz warned, "Even though global attention is focused on the current food crisis, we must not forget the biodiversity and climate crisis ... organic farming is the right answer".

Climate change was also a key topic at this year's Organic Field Days. On a designed climate tour, visitors could learn about climate resilience strategies and emission reduction measures in agriculture. The "Insect Biology" station showed how aphids and reed leafhoppers – "winners of the climate crisis" that are endangering sugar beet production in Germany – can be controlled by using biological and mechanical plant protection measures.

In a long-term field trial at the Gladbacherhof, the effects of organic crop rotation and tillage strategies have been compared for 24 years. The influence of different cultivation methods on carbon

storage and the emission of greenhouse gases is measured. Another station showed the importance of using compost for climate resilience, humus formation and carbon storage in soils. Furthermore, the importance of agroforestry systems for carbon storage, microclimate improvement, and erosion control was demonstrated.

Balancing climate protection and productivity in the dairy sector

The demonstration of the Green Dairy research project was equally impressive. The project is funded by the Hessian excellence research program LOEWE, which deals with the evaluation of the environmental effects of different intensive dairy cattle production systems. In the Gladbacherhof research barn, which was completed just in time for the convention, the effects of different feeding intensities on emission levels and milk yield are being studied in two genetically related Holstein-Friesian herds of 38 cows each. In the high-input herd, the cows are fed high-raw-protein and high-energy feed (maize silage), while the cows in the low-input herd are fed mainly grass.

The barn is fully automated with two feeding robots that allocate the feed and two milking robots that measure the milk yield and the milk components of each cow. The milking robots also measure CO₂ and methane emissions during each milking process. Finally, the barn is cleaned auto-

matically and the liquid manure is collected separately as well as checked for greenhouse gas and ammonia emissions.

The project, which has just started, is intended to help answer the question of which feeding intensity can succeed in balancing climate protection and productivity.

Carbon farming not a panacea

How can policy promote climate protection in agriculture? In a panel discussion, Dr. Ophelia Nick, Jan Plagge, and Prof. Dr. Andreas Gatting discussed whether carbon farming with emission certificates is an opportunity for organic agriculture. The jam-packed machine hall testified to the great interest of participants in the topic. The European Commission favors a scheme that includes agricultural practices in emission trading. However, Ophelia Nick, Parliamentary State Secretary at the Federal Ministry of Food and Agriculture (BMEL), dampened possible expectations. In contrast to the EU, the BMEL has so far been very skeptical about the instrument as it “lacks maturity”, Dr. Nick argued. She prefers to reward good land-use practices instead of measuring CO₂ stored in the ground. Jan Plagge, President of the Bioland producer association and IFOAM Europe President, also shared this view. He called for a scientifically recognized standard that also takes into account the preliminary work that has already been done by organic farmers, such as building up humus. Otherwise, he said, there is a risk that those last involved in



Green Dairy project, automated barn
Photo: © Marzena Seidel, FiBL GmbH



Ophelia Nick on carbon farming
 Photo: © Marzena Seidel, FiBL GmbH

improving soil health in the past would benefit most from the scheme.

Other criticism revolved around the potentially outsized role of consulting firms needed to help farmers with the complicated carbon-accounting procedures as well as the possibility of greenwashing. “We advise the farms organized in our association”, said Plagge, “currently not to engage with carbon farming with emission certificates”. Scientific director of Gladbacher Hof and professor at the University of Giessen, Andreas Gatting, expressed similar concerns.

This was just a small glimpse of the wide range of offers at the Organic Field Days. Further information can be found at www.oeko-feldtage.de. The location of the next event has also already been determined. It will take place from 13-15 June

2023 at Biolandhof Grieshaber & Schmidt, 25 km2 southwest of Stuttgart in Baden-Württemberg. Hopefully, visitors from China will then have the opportunity to find out more about the latest trends in German organic farming.



Dr. Eva Sternfeld specializes in Chinese environmental policy and resource management issues. She heads the Science Dialogue and S&T Platform at the DCZ.



Cem Özdemir, German Federal Minister of Food and Agriculture
 Photo: © Marzena Seidel, FiBL GmbH

2022年有机农场日---德国的有机农业正在崛起

Eva Sternfeld

有机农业已经是德国农业的一个重要部门。截至2021年底,德国有3.63万个有机农场,种植面积约180万公顷,约占德国农业面积的11%。预计这些数字还会增长。根据现任德国联邦政府的联合协议,至2030年有机种植将扩大到农业总面积的30%。

有机农场日自2017年开始举办。德国有机农业研究所(FIBL)每隔一年在一家国有研究农场举办一次德国最大的有机农民大会。2019年,中德农业中心(DCZ)组织的考察团带领中国农业科学家参观了弗兰肯豪森(Frankenhausen)的有机农场日。今年,中德农业中心科学对话负责人Eva Sternfeld参加了在德国黑森州Villmar-Aumenau的Gladbacherhof农场举行的2022年有机农场日活动。

以下是她的报告。

有机农业是应对气候变化的“正确答案”

在因新冠肺炎疫情中断一年之后,2022年有机农场日终于可以再次举办。在三天的时间里,11,500名访客来到黑森州的Villmar-Aumenau,在州属Gladbacherhof农场20公顷的展区了解最新趋势和创新,并在讲座活动中与研究人员和从业者交流想法。Gladbacherhof

是一个占地190公顷的农场,位于低山区,专门生产种子(谷物)和奶制品。同时,该农场也是吉森大学(University of Giessen)的研究场地。德国联邦食品和农业部长Cem Özdemir和黑森州农业部长Priska Hinz为活动开幕。在开幕式上,Hinz警告说:“即使全球注意力都集中在当前的粮食危机上,我们也不能忘记生物多样性和气候危机……有机农业是这一问题的正确答案”。

气候变化也是今年有机农场日的一个关键议题。在设计好的气候之旅中,参观者能够了解气候适应战略和减少农业排放的措施。“昆虫生物学”站点展示了如何通过使用生物和机械植物保护措施来控制蚜虫和芦苇叶蝉——它们是危害德国甜菜生产的“气候危机的赢家”。

Gladbacherhof的长期田间试验已经比较了24年来生态轮作和耕作策略的效果,测量了不同栽培方法对碳储存和温室气体排放的影响。另一个站点展示了使用堆肥对气候适应力、腐殖质形成和土壤碳储存的重要性。此外,还展示了农林系统对碳储存、小气候改善和控制水土流失的重要性。

平衡奶业的气候保护和生产力

“绿色乳业”研究项目的展示也同样令人印象深刻。该项目由黑森州卓越研究计划LOEWE资助,评估不同强度的奶牛生产系统对环境的影响。在大会前刚刚完工的Gladbacherhof研究仓里,有两个单独的但基因相关的荷尔斯坦-弗里西亚奶牛群,每群38头奶牛,用于研究不同喂养强度对排放水平和产奶量的影响。在高投入牛群中,饲喂富含粗蛋白和能量的饲料(青贮玉米);在低投入牛群中,饲料以草为主。

舍是完全自动化的,有两台饲喂机器人分配饲料,两台挤奶机器人测量每头奶牛的产奶量和牛奶成分。挤奶机器人还会测量每次挤奶过程中的二氧化碳和甲烷排放量。最后会自动清洁牛舍,单独收集液体粪肥,并检查温室气体排放和氨排放。

该项目刚刚启动,目的是帮助回答一个问题,即通过何种喂养强度来实现气候保护和生产力之间的平衡。

碳农业不是灵丹妙药

政策如何促进农业的气候保护?在专题讨论中,Ophelia Nick博士、Jan Plagge和Andreas Gatting教授讨论了有排放证书的碳农业是否是有机农业的机会。拥挤的机器大厅证明了与会者对这个话题的极大兴趣。欧盟委员会倾向

于将农业实践纳入排放交易的计划。然而,德国联邦食品和农业部(BMEL)议会国务秘书Ophelia Nick打消了人们可能抱有的期望。Nick博士认为,与欧盟相比,德国联邦食品和农业部迄今对该工具持非常怀疑的态度,因为它“不够成熟”。她更喜欢奖励良好的土地使用实践,而不是测量储存在地下的二氧化碳。

碳农业不是灵丹妙药

政策如何促进农业的气候保护?在专题讨论中,Ophelia Nick博士、Jan Plagge和Andreas Gatting教授讨论了有排放证书的碳农业是否是有机农业的机会。拥挤的机器大厅证明了与会者对这个话题的极大兴趣。欧盟委员会倾向Bioland生产者协会主席兼国际有机农业运动联盟(IFOAM)欧洲主席Jan Plagge也同意这一观点。他呼吁制定一个科学认可的标准,同时兼顾有机农民已经完成的初步工作,例如积累腐殖质。他说,否则,那些过去最后参与改善土壤健康的人就有可能从该计划中受益最多。其他批评围绕着咨询公司在帮助农民完成复杂的碳核算程序方面可能发挥的过大作用,以及洗绿的可能性。“我们建议在我们协会组织中的农场”,Plagge说,“目前不要从事有排放证书的碳农业”。Gladbacherhof的科学主任,吉森大学教授Andreas Gatting表达了类似的担忧。



“绿色乳业”研究项目
摄影师 Marzena Seidel, FiBL GmbH



德国联邦食品和农业部议会国务秘书Ophelia Nick
摄影师 Marzena Seidel, FiBL GmbH

这只是有机农场日众多活动中的一小部分。更多信息请访问www.oeko-feldtage.de。下一次活动的地点也已经确定，将于2023年6月13日至15日在巴登-符腾堡州斯图加特西南25公里的Grieshaber & Schmidt有机农场举行。希望届时来自中国的访客有机会更多地了解德国有机农业的最新趋势。



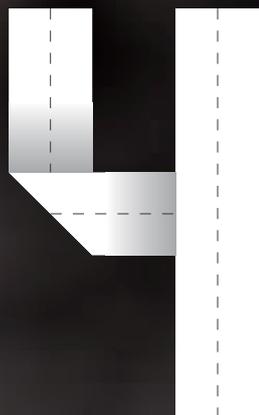
Eva Sternfeld博士专门研究中国的环境政策和资源经济相关问题。她在中德农业中心(DCZ)负责科学对话和科技平台。



德国联邦食品和农业部长 Cem Özdemir
摄影师 Marzena Seidel, FiBL GmbH

EXPERTS IN DIALOGUE

INTERVIEW WITH ALFONSO ALBA ORDONEZ, BAYER CROP SCIENCE, ON CHINA'S SEED SECTOR DEVELOPMENT



Interview with Alfonso Alba Ordonez, Bayer Crop Science, on China's seed sector development

Interview conducted by Michaela Boehme, DCZ

DCZ: *Over the past decades, China has been remarkably successful in developing its agriculture sector, but its agricultural productivity is still below that of developed countries. What potential do you see for advanced seed technology to address China's agricultural challenges?*

Alba Ordonez: Indeed, China is a global player in agricultural production. However, this summer has also shown how vulnerable the production system is to extreme weather conditions. Many regions in China were hit by extreme heat and water scarcity. Just recently, in September, regions were hit by heavy rainfall. And although some of the main crop growing regions were less directly affected, pressure from pests and diseases is rising due to warmer temperatures. This shows how important it will be in the future to balance agricultural production while transforming the sector to be more resilient and climate friendly.

Advanced seed varieties hold enormous potential regarding greater resilience to drought, higher resistance to diseases and pests, and better plant nutrition management. Good quality seeds with best suitable traits are indeed the basis for everything. Yet, production efficiency, improved farmer income, and better resource efficiency cannot be achieved by focusing only on seeds. It is equally important to take a holistic approach which considers both the application of a wide range of modern agricultural technologies and the use of sustainable good agricultural practices. We need productivity and sustainability.

DCZ: *Developing the domestic seed industry has risen to the top of China's political agenda. Since 2021, China has implemented a series of policies aimed at strengthening domestic innovation capacity while reducing reliance on imported seeds and traits. What are the most important developments you have been observing? What challenges, but also opportunities, do you see for international seed tech companies operating in*

China as the domestic seed sector is becoming a priority for policy makers?

Alba Ordonez: When it comes to the seed sector, we have indeed seen promising steps which the Chinese government has taken since 2020. A range of supportive policies has been initiated to revitalize the seed industry in China, first and foremost the enhanced protection of seed Intellectual Property Rights (IPR), with the "Seed Law" at the center. This is important, because stronger variety protection ensures that many years of investment into seed innovation pay off.

And there is so much more potential. The government is acknowledging that technology is fundamental to feeding China's population. This is reflected in the 14th five-year plan for agriculture and rural technology development, issued this year. The plan emphasizes the importance of modern technologies for raising production efficiency. But it is also clear that China's agriculture sector needs more investment in research and technologies. A real boost in seed R&D will only be possible if publicly funded research goes along with private investment into commercial breeding. This includes facilitating research cooperation between domestic and foreign entities, technical exchanges, information sharing, and research and development of new varieties.

DCZ: *Commercial cultivation of genetically modified (GM) crops was taboo in China for a long time due to public resistance. While China allows the import of some GM crops as animal feed, domestic production is prohibited. But growing concerns over the stable supply of key agricultural commodities is changing the equation, with several recent regulations now paving the way towards GMO commercialization. What does that mean for international companies that have developed their own GM traits?*

Alba Ordonez: Since 2021, several policies have been adopted to accelerate the commercialization of GM crops. The approval procedure for GMO biosecurity assessment and production license as well as national standards for reviewing GM corn and soybean varieties were approved. However, even though all approval steps before rolling out GM varieties have been clarified, foreign-invested companies cannot leverage their R&D capacity in GM crop breeding.

Germany is home to some of the strongest global seed breeding companies. Those companies have a long history of collaborating with local seed industry partners in China, providing farmers in the country with highest-value seeds – adapted to local conditions. Though we do see greater openness in seed industry to a certain extent, the current regulations continue to restrict foreign direct investment in the transgenic seed business, denying millions of farmers in China access to numerous agricultural biotech products.

DCZ: *Chinese policy makers are working on turning the Nanfan breeding bases in Sanya, Hainan province, into a “Silicon Valley” for seed tech innovation. Foreign companies investing in Nanfan can expect policy incentives. What is your view on the developments in Nanfan? What benefits do you see for international companies and the seed sector more broadly?*

Alba Ordonez: Already during the past couple of years, serving as a platform for breeders nationwide, the ag-tech experimental zone in Hainan has contributed over 70% of China’s new crop varieties. We now see that the agricultural sector and especially the seed and sector further benefits from relaxed market access in Hainan. Approval procedures for seed trade and R&D was streamlined to encourage international cooperation and introduce high-quality seeds. numerous agricultural biotech products.

By enabling the clustering of capital, research and industry, national breeding centers and also ag-tech parks across the country have shown promising results in attracting both international and domestic enterprises as well as research institutions.

The three and soon four national breeding centers – Hainan, Gansu, Sichuan, and soon, Heilongjiang

– are positive examples of continuous support to the seed industry, with both public and private engagement. And Hainan, once established as a Free Trade Port with a focus on seed R&D, can be a frontrunner in seed IPR protection. Providing protection measures is central for building an R&D-friendly environment and attracting breeding companies – including international companies. To further incentivize green production across the country, both public subsidies and investment from the private sector are needed.

DCZ: *Looking at Germany: The new coalition government is working on a “China strategy”. What do you expect from the strategy?*

Alba Ordonez: China has been and will remain an important market for German business. Companies have the capacity to develop much needed technological solutions and innovations – and bring them to the market. Yet, to do so, business needs to rely on predictable and reliable framework conditions. Challenges on this way need to be addressed in a continuous dialogue between policy makers on all levels. We are currently facing multiple crises. For two years, supply chains have been under pressure, industries face shortages of energy supplies, and we need to cope with the impact of the climate crisis. None of these crises can be solved by anyone alone, neither by one state nor by governments or businesses alone. Given China’s importance both for agricultural production and trade, it is important for all parties to address responsibilities and some of the most pressuring challenges and to work towards solutions.

For further questions, please contact:
Ms. Alina Gumpert
Director
German Agribusiness Alliance
E-mail: a.gumpert@apa.bdi.eu

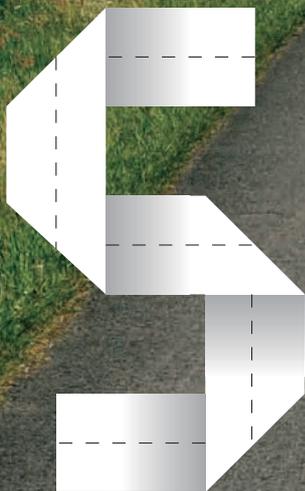


Mr. Alfonso Alba Ordonez, China Chair of the German Agribusiness Alliance and Country Division Head Greater China at Bayer Crop Science (China) Co., Ltd.

(photo copyright: Bayer AG)

WHO'S WHO IN SINO-GERMAN AGRICULTURAL COLLABORATION

CHINA COMPETENCE CENTRE HELPS GERMAN FOOD MANU-
FACTURERS TO ENTER THE E-COMMERCE BUSINESS



China Competence Centre helps German food manufacturers to enter the e-commerce business

Ying Li and Julia Klein

In September 2021, the German Federal Ministry of Agriculture and Food (BMEL) commissioned the AHK Greater China to establish the Competence Centre for the Food and Agriculture Industry. General objective of the center is to promote the export of German agricultural commodities and food as well as to support German companies in initiating business in China by providing selected services. All subsidies for German companies are awarded within the framework of De-Minimis services. In addition to the Competence Centre in China, the first Competence Centre in Japan was established in 2019, followed by the Competence Centres in South Africa, Vietnam, China, and the UAE in 2021, each of which is operated by the local German Chambers of Commerce.

With selected services, the Competence Centre for the Food and Agriculture Industry mainly supports food manufacturers in initiating business with Chinese companies. At its core, the center has four tasks:

Collect and process current market information

To be able to inform German companies about the Chinese market, the Competence Centre monitors the economic situation in China as well as current trends. The information is published quarterly in a newsletter and can be downloaded from the AHK Greater China website.

Establish and expand the local contact network

To expand the network of the Competence Centre, meetings are held regularly with important Chinese and German market mediators such as associations and public authorities. The Competence Centre also wants to make a name for itself among German companies.

Organize and support events

Together with the German Chambers of Industry and Commerce (IHKs) and associations of the food industry in Germany, the center regularly holds events for German SMEs interested in exporting to China. Due to China's ongoing zero-Covid policy, these are currently still taking place online.

Search for business partners

If a company has decided to enter the Chinese market, the Competence Centre can support the project with consultations, some of which are free of charge, individual business partner searches, address research, company credit reports, and specific market studies.

China's dynamic food market offers growth opportunities for German businesses

The Chinese market holds great potential for the German economy. A growing middle class has formed in China, which has developed a need for safe, innovative, and traditional food and agricultural goods of the famous brand "Made in Germany". China's increased disposable incomes in recent years have also resulted in an increased demand for high-quality and imported food. E-commerce is also picking up speed and offers an additional sales channel for German quality products such as food. Chinese customers consciously check the product compositions: quality features such as "without additives" and "organic" are particularly respected.

Before the Covid-19 pandemic, China already showed an increasing demand for German products and this demand will continue to grow in the future. China is an exciting market and there is

significant growth potential here. However, due to the ongoing zero-Covid policy in China, there is also increasing resentment within the business community due to interrupted supply chains and sudden lockdowns, which are slowing down global trade. The Ukraine crisis also plays a role here.

Despite the circumstances, the Chinese demand for German goods will not stop, as China still shows very high economic growth compared to most countries. An increasingly internationally and e-commerce-oriented middle class is very interested in new and innovative products from Germany, as it is considered a status symbol in China if you can afford them. Moreover, several food scandals have weakened confidence in the food safety of domestic products. This is where the image of the “Made in Germany” brand comes into play, which is regarded as particularly safe and of very high quality, not least due to the strict food controls in Germany.

Chinese food manufacturers are very innovative and are always pushing new ideas onto the market. Farmers in China, especially smallholder farmers, have joined the e-commerce trend and offer their goods directly online. They sell fresh food such as vegetables, fruits, meat, and eggs directly online without intermediaries, thus meeting the high-income middle class’ demand for fresh food directly from the farm.

This competition is a great opportunity for Germany because the diverse sales channels and changing consumer habits open innovative import and sales opportunities for German companies.

Cross-border e-commerce offers a good alternative, especially for pre-packaged food and beverages from Germany, which can be sold online in China without much effort and then delivered directly to the end consumer. Via various online platforms and social media channels, influencers often reach millions of end consumers and thus promote a wide variety of products. AHK Greater



China also offers e-commerce services for companies in Germany.

Contact the Competence Centre for the Food and Agriculture Industry:

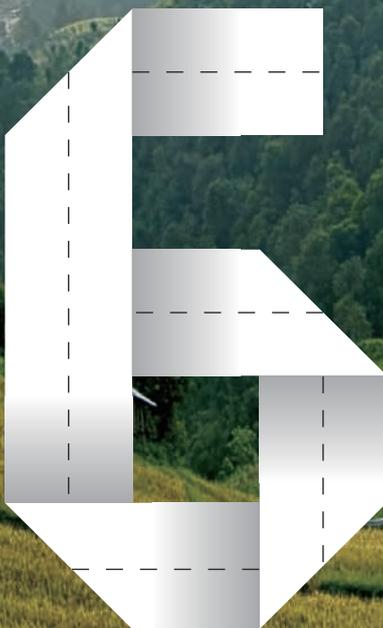
If you have any questions about the Chinese market and need support to enter the market or are interested in the individual services of the Competence Centre, please feel free to contact us at any time.



Ms. Ying Li and Ms. Julia Klein
AHK Greater China
E-mail: agri-and-food@china.ahk.de
Website: <https://china.ahk.de/services/food-and-agriculture-industry>

VIEW FROM RURAL CHINA

DIGITALIZING THE COUNTRYSIDE: PERSPECTIVES FROM SHUANGSHI VILLAGE IN SICHUAN PROVINCE



The village committee of Shuangshi

Anusha Venkatachalam



The area of Shuangshi Village is 8.7 km².

Photo: © Anusha Venkatachalam

The rural village of Shuangshi is part of Jiangyou County, which lies North of Chengdu in Sichuan Province. The village is governed by a committee of five core members, who are elected after two rounds of elections – first by Party members, and then by the villagers. These rural elections are conducted every five years. In addition to the core members, the village is divided into seven sections – each with its representatives.



3012 people live in Shuangshi Village.
Photo: © Anusha Venkatachalam

In November 2021, the city government of Jiangyou funded the construction of a new Village Committee building at Shuangshi. The new building doubles in size and offers villagers new amenities such as a basketball court, playground, youth center, and library.



The new Village Committee building is double in size and features new amenities for villagers.



Locals visit the Village Committee to process documentation and paper-work.



The youth center was established in the hope of inviting young Chinese to work in the countryside. Every Spring, thousands of city dwellers return to their villages to celebrate Chinese New Year. The committee takes this opportunity to organize exchanges and talks with the youth.

双石村数字化管理平台

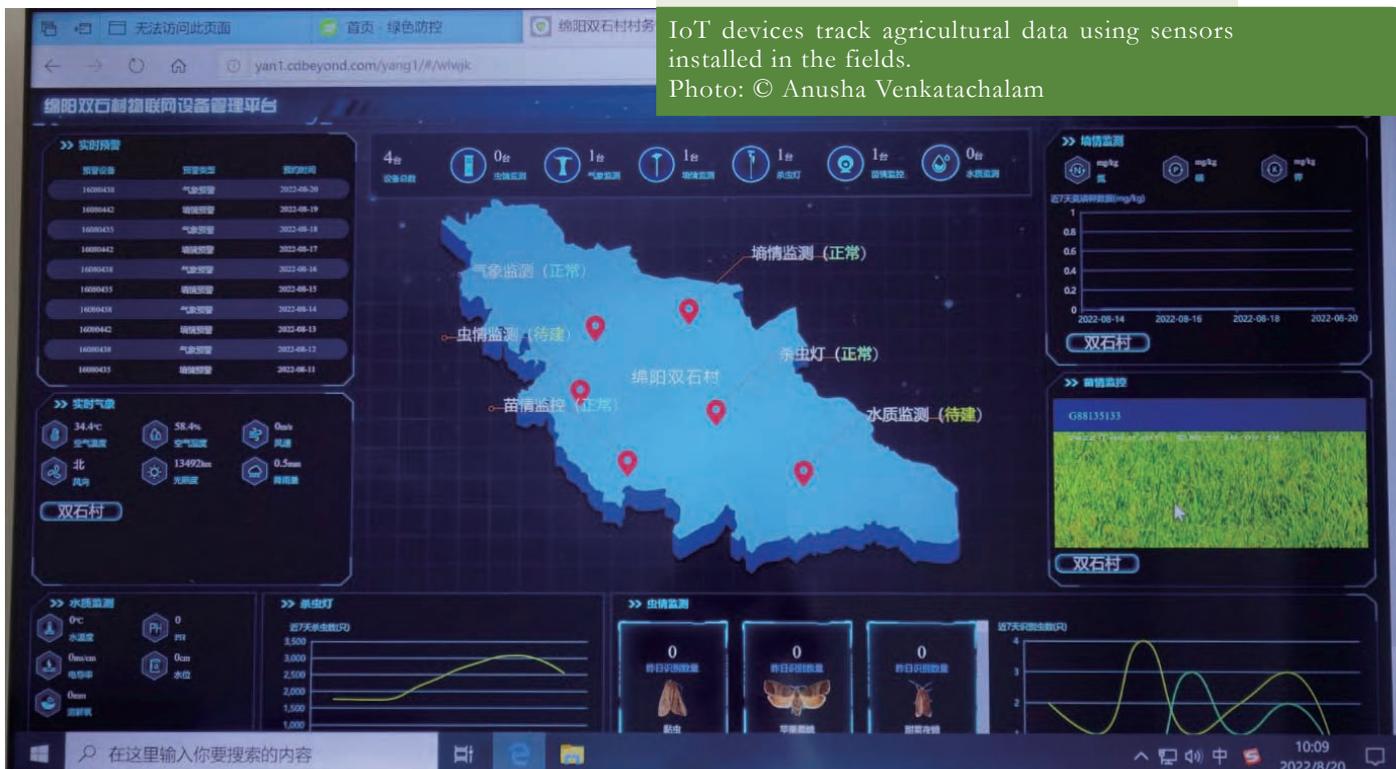
THE DIGITAL GOVERNANCE UNIT OF SHUANGSHI VILLAGE



The Digital Governance Unit of Shuangshi Village.
Photo: © Anusha Venkatachalam

The most significant feature of the new premises of the Village Committee premises is the Digital Governance Unit. Its aim is to increase efficiency of governance using upgraded surveillance systems and big data. The unit also uses smart IoT (Internet of Things) devices to monitor agricultural data such as weather conditions, pests, air pressure, flood risk, landslides, etc.

Sensors are installed in the fields and the data is subsequently stored in the cloud. This allows agriculture experts to access the data from anywhere and provide information to improve the efficiency of agricultural production.



IoT devices track agricultural data using sensors installed in the fields.
Photo: © Anusha Venkatachalam



Researchers scan tomatoes to access its data.
Photo: © Anusha Venkatachalam

The Rural Revitalization Scheme has not only helped digitize rural areas but has also improved funding and investment. For instance, local farmers were previously offered crops insurance of only RMB 8 per acre of land. Today, that number has increased to RMB 300 per acre of land.



Agricultural data obtained through sensors.
Photo: © Anusha Venkatachalam



China Telecom workers install 5G at the Village Committee.
Photo: © Anusha Venkatachalam



Anusha Venkatachalam Iyer is an independent filmmaker based in the countryside of Sichuan Province and is currently filming a documentary about governance in rural China.

BOOK REVIEWS

CONG CAO, *GMO CHINA. HOW GLOBAL DEBATES TRANSFORMED CHINA'S AGRICULTURAL BIOTECHNOLOGY POLICIES.*

SCOTT ROZELLE AND NATALIE HELL, *INVISIBLE CHINA. HOW THE URBAN-RURAL DIVIDE THREATENS CHINA'S RISE.*

“GMO China. How global debates transformed China’s agricultural biotechnology policies” by Cong Cao

Reviewed by Eva Sternfeld

In times of global conflicts and a worsening climate crisis, the Chinese leadership is increasingly concerned about food security and, in particular, overdependence on global markets. To increase productivity of limited agricultural resources, the government is particularly hoping for technological innovations. The ambitious five-year plan for bioeconomy, published in May 2022, places a strong focus on the development of biotechnology for agriculture and the food sector. The goal is food security from largely domestic production, improving nutritional values and reducing the use of agrochemicals. At the same time, the aim is also to play a leading international role in the field of genetic engineering. The focus is on the development of internationally competitive “microchips of agriculture”, as plant and animal genetics are often referred to in recent Chinese publications. After years of hesitation in approving genetically modified seeds for food production, the market approval of genetically modified forage plants should soon be possible. In April 2022, several Chinese and international companies received biosafety certificates for genetically modified corn and soybean varieties.

This book published already back in 2018, traces the path that China has taken in research and the commercialization of genetic engineered crops over the past three decades. Cong Cao, Professor of Science and Technology Policy at Nottingham University Business School China and renowned author of numerous articles on Chinese innovation and technology policy, presents with this publication the essence of his many years of research on trends in agricultural biotechnology inside and outside China.

Cao shows that while GMO research in plant cultivation has been ongoing in China since the mid-1980s, and China was the first country in the world to approve a genetically modified (GM) tobacco plant for commercial use in 1992, development has slowed down in the following years. To date, China appears to be more cautious in approving genetically modified plants for market, particularly food crops. Other countries have now surpassed China in the cultivation of GM crops. Of the 185 million ha cultivated with GM crops in 2016, only 2.8 million ha were in China, while the largest share was in the USA, Brazil, and Argentina (see table p.7).

Biosafety certificates for GM rice and corn have been issued in 2009 but have repeatedly expired after a five-year period or had to be renewed without the expected market approval occurring. So, the situation is contradictory: Although large sums are being invested in genetic research, commercial use has so far been delayed. As Cao shows, the delay was caused by a discourse about the safety of genetic engineering, especially when used in staple foods. Political decisions abroad, such as the EU’s cautious approach, as well as anti-GMO campaigns of international NGOs such as Greenpeace, played an important role in the decision-making process. GMO skeptics had in mind possible dependencies on international agricultural corporations, as well as incalculable effects on human health and biodiversity. The controversial debate over GMOs and consumers’ “right to know” in the early 2000s, and the significant role – according to Cao – that Greenpeace played in promoting the anti-GMO movement with the support of China’s environmental

authority, is unthinkable in today's political climate. However, it should be noted that reluctance to market approval in China was limited to food crops. So-called BT cotton, which makes the cotton inedible for the cotton bollworm due to the transplanted *Bacillus Thuringensis*, was approved as early as 1998 and is now used most of China's cotton plantations.

On 200 pages, Cao's research provides a systematic and deep insight into Chinese biotechnology. The book is supplemented by a very extensive bibliography, which lists both Western and Chinese publications on the subject.



Dr. Eva Sternfeld specializes in issues related to China's environmental policies and resource economy. She heads the Science Dialogue and S&T Platform at the DCZ.

Cong Cao, *GMO China. How global debates transformed China's agricultural biotechnology policies.* Columbia University Press, New York, 2018, 288 pp.



“Invisible China. How the urban-rural divide threatens China’s rise” by Scott Rozelle and Natalie Hell

Reviewed by Aihemaitijiang (Ahmatjan) Rouzi

Mr. Scott Rozelle is a distinguished Stanford professor who has dedicated his tireless academic work and countless field trips to understanding rural China. Ms. Natalie Hell is an equally accomplished author and researcher who is also a preeminent expert on China’s rural development. Their joint book, “Invisible China”, is a timely read for understanding recent developments in rural China, masterfully combining the author’s personal stories with thoroughly researched academic themes.

The authors wanted to know if China can escape the so called “middle-income trap” that many developing countries fall into when their rapid development stalls and they fail to make the transition to a successful high-income country, as was the case with Mexico, Brazil, Malaysia, and many other countries. Human capital has been the main reason for the successful transition and “graduation” from middle-income to high-income status, as exemplified by South Korea, Singapore, and Israel. With only 30% of the population having a high school or higher education diploma according to 2015 statistics, which is lower than most “ungraduated” middle-income countries, China faces major challenges in transitioning to a high-income knowledge-based economy.

In each of the book’s seven chapters, the authors gradually built their case for how the urban-rural divide could derail China’s rise. Although the modern glass skylines of Shanghai and Shenzhen dazzle outsiders with their glamour and economic success, there is also another China where most rural residents live in the shadows. The authors started the book with a personal story of how it was impossible to find any young men in rural villages during the boom years of China’s economic growth. On their most recent visit in 2016, however, they were suddenly able to find them, as many of them returned to their home villages after being laid off or running out of opportunities in the cities. They correctly described rural China as invisible and backward amidst the stark industrialization and urbanization

of coastal areas over the past thirty years.

Creating jobs and opportunities for the less-skilled population, most of whom live in rural areas, would be key to China’s continued success. However, the authors offer the bleak assessment that China may be running out of options. Although the Belt & Road Initiative (BRI) offers some opportunities for construction jobs in the neighboring countries, the slowdown in China’s economy and backlash against the BRI have led to the cancelation or scaling back of some projects, raising doubts of the viability of the BRI as a driver of job creation for China’s large unskilled labor force. Rising wages are driving labor-intensive manufacturing to cheaper locations in Vietnam and South Asia, thus further limiting opportunities for rural and unskilled people. The authors tested the feasibility of the Universal Basic Income (UBI) to help the transition and concluded that China, with its current limited financial resources, cannot provide free money to 300 million people for an extended period until they learn new job skills. Even in the advanced economies in North America and Europe, basic income has yet to be introduced to address the severe socio-economic inequalities in their countries.

The authors blame unequal and decentralized funding for education and health, misplaced-priorities for short-term growth, and discriminatory hukou policy for the large gap in educational attainment of rural residents. Furthermore, lacking medical resources left many children in rural areas with undetected or untreated physical ailments like myopia and other diseases or developmental disabilities. The authors recommended some workable solutions to these health issues based on their Rural Education Action Program (REAP) project’s randomized control trials. The book rightly points out that children from rural areas are already behind when they start the race to succeed in China’s hypercompetitive education system.

Despite all the doom and gloom in the book, the authors also offer a glimmer of hope by presenting some local initiatives that are helping rural children get a good education. To avoid the worst-case scenario, they suggest that China should invest in the health and primary and secondary education of its children, expand schools for practical vocational training and apprenticeships, further relax the hukou system, and offer universal free 12-year education. The authors outline three scenarios in which China could raise its human capital by varying degrees; in two of the scenarios, if China did not raise the education levels of its workforce, it would be stuck in middle-income country status or economically stagnant. The authors humbly acknowledge that their predictions may not come to pass because of the many moving crosscurrents in the national and global economy. They argue that failure to avert the catastrophic scenario would not only hamper China but could also shake the global economy.

Scott Rozelle and Natalie Hell, *Invisible China*. How the urban-rural divide threatens China's rise. The University of Chicago Press, 2020. Chicago & London. Hardcover, 248 pp.

Some of the author's predictions are prescient, as demonstrated by the rapid population decline and the government's subsequent actions to revive it by announcing the "three-child policy" recently. However, permanently reversing the rural-urban divide would require more than window dressing of these problems. China's policy makers would be better off if they heeded the warning in the book and explored the feasibility of the suggestions. In some ways, policy makers already realized the problem and started to address it. Double reduction in education (a policy which reduces school homework and afterschool tutoring), relaxation of the discriminatory hukou policy, and various rural revitalization initiatives which would give much needed reprieve to rural areas battered by the inequality are part of that effort. Although the book has only recently gone to press, in 2020, it has been revealed that recent events such as rising geopolitical tensions and the Covid-19

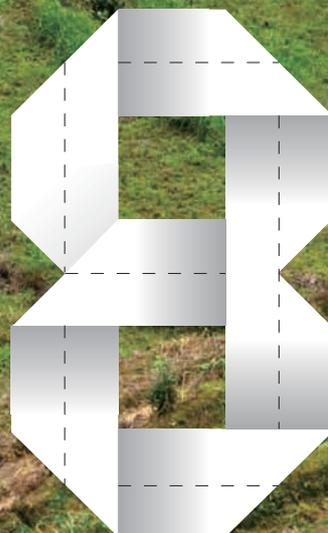
pandemic will have a far-reaching effects on the Chinese economy in general and rural development of China in particular.

China is grappling with the same socio-economic inequalities and dislocations resulting from globalization and rapid economic growth that plague many high-income Western countries. The authors neglect the dynamic nature of rural development in China and the system's ability to adapt and change, which has often defied the doom-and-gloom prophecies of the naysayers. One might also question whether it is useful to compare China's transition with mid-sized countries in Asia and Latin America. Given the huge size of the country at many levels, the coastal areas may already have achieved high-income status, while the vast interior and western regions are still far behind. China's centralized government structure remains effective in mobilizing socio-economic resources to address the issues of concern. Its renewed focus on poverty eradication, rural revitalization, and digital village initiatives could help tackle many underlying factors of inequality. Therefore, this book is not an ultimate verdict on China's rural development, which the authors also concede. Rural transformation in China is an ongoing story for both insiders and onlookers alike. This book offers a glimpse of how the future might unfold from one angle. Thanks to the work of Mr. Rozelle and Ms. Hell, we are on our way to witness this momentous event with a little more understanding.



Dr. Aihemaitijiang (Ahmatjan) Rouzi is an expert on Chinese agricultural policy monitoring at the DCZ. He earned his master's and doctoral degrees in the field of Geography from the University of Greifswald, the Catholic University of Eichstätt-Ingolstadt, and the Technische Universität Berlin, all in Germany.

NEWS FROM THE DCZ



News from the DCZ

EVENTS

SEP

DCZ kick-off event in Beijing

With the whole team now back in China, the DCZ held a kick-off meeting to officially launch its third phase. Organized as a hybrid event from Beijing, stakeholders from politics, science, and business highlighted the importance of further cooperation between Germany and China as food security and climate change affect the agricultural sectors of both countries. Zhenglin Wei from China's Ministry of Agricultural and Rural Affairs, Cornelia Berns from the Federal Ministry of Food and Agriculture, and other high-level representatives from our partner organizations attended the event.



Speaker engagements at German-Chinese Economic Conference and WEF Beijing office

Our rich experience in the field of Sino-German agricultural cooperation makes us welcome guests at international conferences. In September, DCZ expert Eva Sternfeld presented insights on health and nutrition trends in China at the 9th German-Chinese Economic Conference and contributed to an expert session on integrated land-use practices organized by the World Economic Forum Beijing office.

AUG

“Global Field” meeting in Berlin

The Weltacker (“Global Field”) project is an international initiative that educates urbanites on what a fair and equitable global food system would look like. DCZ expert Eva Sternfeld joined an international get-together of Global Field projects in Berlin, where she shared insights from a 2019 DCZ project that had facilitated the launch of China’s first “Global Field” initiative in Shanghai and produced a “Global Fields” manual in Chinese language.

“Open Door Day” at Germany’s Federal Ministry of Food and Agriculture

Eva Sternfeld represented the DCZ at the 2022 “Open Door Day” at the German Federal Ministry of Food and Agriculture in Berlin. The event provided insights into the priorities of German agricultural policy, with key themes ranging from biodiversity to animal welfare, organic farming, and climate adaption and mitigation.

Agricultural Policy Dialogue

The DCZ team joined this year’s Agricultural Policy Dialogue (APD) event held in Berlin. Within the context of the Bilateral Cooperation Programme of the German Federal Ministry of Food and Agriculture (BMEL), we exchanged experiences on agricultural cooperation and dialogue with project teams from Brazil, Kazakhstan, Mongolia, the Western Balkans, and Ukraine. Together, we identified key themes such as climate change, sustainability, and digitalization that will shape bilateral cooperation in agriculture and food in the years to come.

JUN



APR

DCZ at IAMO Forum 2022

Rural areas have been hit hard by the impacts of the Covid-19 pandemic. How digitalization can help enhance the resilience of food systems and rural communities was one of the questions tackled at the annual conference of the Leibniz Institute of Agricultural Development in Transition Economies (IAMO). DCZ experts Eva Sternfeld and Michaela Boehme joined the conference with a paper on “Digital Village Initiatives in China” authored by our colleague Ahmatjan Rouzi.

Third Exchange Forum on agricultural science collaboration

The S&T Platform of the DCZ held its third Exchange Forum on Sino-German Collaboration in Agricultural Sciences. The forum was organized as a hybrid event and hosted by the Agricultural Genomics Institute Shenzhen (AGIS) of the Chinese Academy of Agricultural Sciences (CAAS). Providing agricultural scientists from Germany and China with a platform for exchange, the forum explored opportunities for Sino-German cooperation in agricultural genomics and biotechnology and their application for improved plant and animal breeding.

PUBLICATIONS**Agricultural priorities in Germany and the EU**

A policy brief by Jens-Peter Loy from Kiel University entitled “Germany’s agricultural policy within the EU context” gives an overview of the goals shaping agricultural policy in Germany and Europe as the EU’s ambitious Green Deal and Farm-to-Fork strategy seek to transform the agri-food system towards more sustainable, climate-friendly practices.

China’s grain security

China is the world’s largest producer and consumer of agricultural goods. Therefore, its food production and trade strategies have an outsized influence on international markets. In this study, DCZ expert Ahmatjan Rouzi analyzes the current challenges facing China’s grain security, the measures taken to address them, and the possible impacts China’s policies may have on global food security.

Soil contamination in China

Soil degradation caused by erosion, pollution, and the overuse of pesticides has been long recognized as a serious threat to China's food production. But how severe is the degradation of China's agricultural soils and how does the quality of its farmland compare to that of Germany and Europe? China analyst Lea Siebert takes a closer look at the status quo of China's soils and the implications for the country's ambitious food security goals.

Terminology papers

Our terminology paper series "Making sense of ..." analyzes key agricultural policy terms used by the Chinese leadership to help Western readers understand their meaning and implications. While Yuelai Lu explores what "common prosperity" means for agriculture and rural areas, DCZ expert Michaela Boehme unpacks the "greater food" concept and how it is reshaping Beijing's view of the food supply.

In Chinese / 中文版

An article on Germany's Digital Experimental Fields (数字试验田) by Antje Fiebig presents the demonstration projects at the forefront agricultural digitalization in Germany.

Thomas Tanneberger's policy brief on the LEADER funding program (为自己思考, 为自己计划, 为自己设计) shows how the EU provides support for rural development in Germany.

In the media



In an analysis for the German Federal Agency for Civic Education, DCZ expert Eva Sternfeld takes a look at the historical significance of food security in China and the current domestic and international challenges facing the nation's food supply.

<https://www.bpb.de/themen/asien/china/513234/ernaehrungssicherung-in-china/>



In an opinion piece in China.Table, DCZ expert Michaela Boehme analyzes the short- and medium-term consequences of China's summer drought on food production and agricultural policy.

<https://table.media/china/standpunkt/die-duerre-zeigt-die-gefahren-des-klimawandels-fuer-die-landwirtschaft/>



DCZ experts Juergen Ritter and Eva Sternfeld spoke with German agricultural journal agrarheute about China's food security strategy as the country intensifies its push for self-reliance and agricultural modernization.

<https://www.agrarheute.com/markt/analysen/digitale-grafiken-china-weltweiten-agrarmaerkte-beeinflusst-593628>

DCZ WEBSITE RELAUNCH

We are pleased to announce the launch of our new website. It features a fresh, intuitive design and keyword filters that make it easy to find the content you are looking for. A separate Science area keeps you updated on what is happening in the DCZ Science Dialogue. Also check out our Chinese content section 中德农业之窗.



Published and edited by:

Sino-German Agricultural Centre (DCZ)

E-mail: info-dcz@iakleipzig.de

Publication as PDF:

This publication is available free of charge from the DCZ website at

<https://www.dcz-china.org/home.html>

Reprints or reproduction of any kind only with permission of the publisher.