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Foreword

Dear DCZ friends and readers,

Welcome back if you had a summer vacation, and welcome to the 2nd edition of our DCZ Newsletter.

This edition is mainly dedicated to one of the key topics in this year's DCZ Agricultural Policy Dialogue component – the “Environmentally-friendly sustainable livestock development”.

In preparation of a study visit of Chinese experts and officials to Germany scheduled for late September, the DCZ organized a workshop in Beijing at which a German expert, Prof. Thomas Blaha, gave an introduction to German and EU policies and practices.

For our newsletter Prof. Blaha further selected a specific issue related to livestock development to discuss the growing threat of “antimicrobial resistance” in the cover story.

We will also follow up on this subject of environmentally-friendly sustainable livestock development in this year's Sino-German Agricultural Week which is scheduled for 26 to 30 November. Valuable conclusions and policy recommendations are expected to be elaborated as results of the cooperation in this field.

More information on DZC and other relevant activities are included in this newsletter, as well as agricultural news from Germany and China which we hope you will find informative and helpful.

Dr. Jürgen Ritter

Managing Director

Sino-German Agricultural Centre (DCZ)

Cover Story

Antimicrobial resistance – a globally growing threat to human health: Animal husbandry plays a decisive role

Thomas Blaha, *Prof. em. of Veterinary Epidemiology at the Veterinary University of Hanover, Germany, and President of the German Veterinary Association of Animal Welfare*

The development of the chemical family of sulphonamides by G. Domagk and the discovery of penicillin by A. Fleming that have the ability to stop the growth of bacteria and/or even kill them was a tremendous milestone in the battle against bacterial disease first in humans, then also in animals. In the 1950s and 60s, there was euphoric rhetoric about the beginning of a post-infection era, since new antimicrobial substances became available, giving the impression that nearly all bacterial infection could be treated and cured. Non-infectious disease and viral infections seemed to be the only remaining threats to human and animal health. There was – although the phenomenon of bacterial resistance against certain antimicrobial resistance was known – little awareness towards the need of a cautious, restrictive and judicious use of antibiotics. Problems with antimicrobial resistance were seen as single events that could be circumvented by changing the antimicrobial substance during the treatment.

However, in 1969 the UK government's "Swann Report", formally the Joint Committee on the Use of Antibiotics in Animal Husbandry and Veterinary Medicine (headed by Dr M. M. Swann), proposed that rising rates of multi-drug resistant bacteria are due to agricultural use. Thus, the growing magnitude of antimicrobial resistance was slowly, but increasingly recognised by more and more physicians and public health as well as animal health professionals. In 1992, the American Institute of Medicine (IOM) published a consensus study focussed on threats to the United States posed by emerging infections that included antimicrobial resistance (Lederberg et al., 1992). In the mid-1990s, the World Health Organisation (WHO) hosted two international workshops in Geneva on the "Impact of the Veterinary Use of Antibiotics on Human Medicine". The result of these publications and scientific congresses was the development of the concept of prudent use of antibiotics both in human and veterinary medicine, which focusses on using antibiotics in humans and animals in a way that provides maximum efficacy against the target pathogen while minimally provoking the development and spread of resistant bacteria. For several years it was thought that prudent use principles were able to curb the problem of antimicrobial resistance (see Figure 1).

The world without and with antibiotics

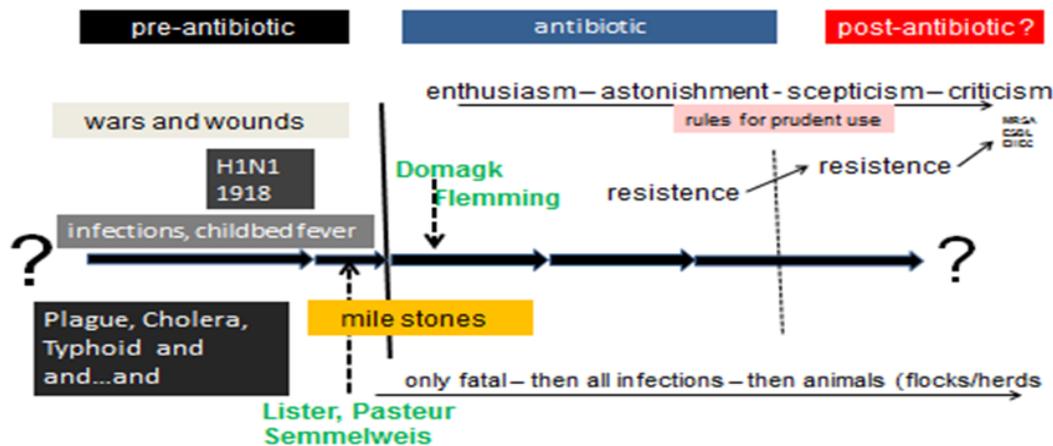


Figure 1: The human health situation “before”, “during” and presumably “after” the antibiotic era

Source: Blaha, Presentation 2017

However, despite worldwide attempts to implement the principles of prudent use of antimicrobial substances, the magnitude of the overall problem has grown steadily. With the emergence of MRSA (Methicillin resistant *Staphylococcus aureus*) and ESBL (extended-spectrum beta-lactamase) producing *Enterobacteriaceae* and other multidrug-resistant bacteria, antimicrobial resistance has become a complex, multifaceted, urgent global problem. There is increasing concern about the possibility that multidrug-resistant bacteria become so-called “superbugs” causing infections responsive to treatment with only few, if any, currently available antimicrobial agents, which harkens back to a pre-antibiotic era. Any use of antibiotics provokes mutations in bacteria that makes them resistant, exerts selective pressure on pathogens as well

as on commensal organisms, which favours the emergence of further resistant strains. The selective pressure by the use of antimicrobial substances is caused by suppressing sensitive bacteria, which, in turn, gives existing resistant bacteria an advantage for growing excessively. Interactions between humans, animals, and the environment promote the spread of resistant bacteria and of resistance genes and plasmids (that can infect other microorganisms, including other bacterial species). Especially in the case of ESBL, the food chain is involved in the spread of antimicrobial resistance between animals and humans. And as in the case of zoonotic pathogens, worldwide tourism and worldwide trade with animals and food and other products of animal origin can contribute enormously to the global spread of resistant bacteria

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and resistance genes (see Fig. 2).

In Europe, about 40,000 deaths yearly are attributed to infections with multi-drug-resistant bacteria. In the USA, this figure is estimated at 23,000. There is a consensus that the number of unreported cases may even be higher. In 2017, the UN released a memorandum, which states that, if no actions against antimicrobial resistance are taken, the worldwide death toll due to untreatable bacterial infections in humans will be more than 10 million humans per year in 2050.

Whereas Europe and North America have started to implement antibiotic monitoring programmes and strategies to reduce the use of antibiotics in food animals, Asia is regarded a hot spot of excessive usage of antibiotics, and any reduction strategy in Asia will be highly appreciated.

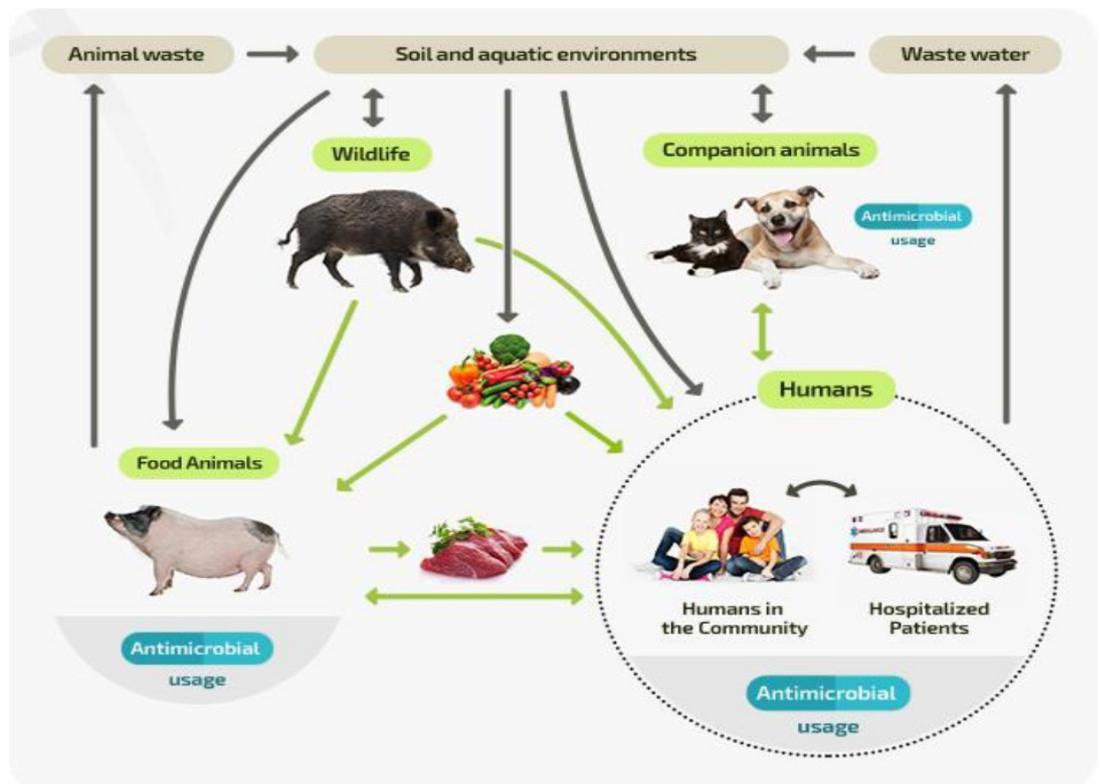


Figure 2: The complex distribution patterns of antimicrobial resistance in the food chain
Source: Summary of the EU project EFFORT

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DCZ Activities

2-6 August, Visit by short-term expert Thomas Blaha and workshop on environmentally-friendly sustainable livestock development (3 August)



“Environmentally-friendly sustainable livestock development” is one of the key topics within the DCZ’s component *Agricultural Policy Dialogue* in this year.

In preparation of a study tour on this subject, the DCZ invited Prof. Thomas Blaha to introduce policies and practices in Germany and Europe, as well as to better understand the Chinese situation and the specific interests and requests of Chinese experts and decision-makers in this field.

Professor Blaha used to teach at the Veterinary University of Hanover, Germany, and is President of the German Veterinary Association of Animal Welfare. In his presentation “Environment-friendly Livestock Production” he addressed issues of Sustainability, Environmental Impact Assessment (EIA) (including emissions and air filtration, livestock manure land application, livestock manure

treatment and utilization), Animal Welfare and Antibiotic use in livestock production.

He highlighted that the sustainability and the acceptance of the livestock production methods consist of several elements, not only of environmental protection: besides reducing and controlling emissions (climate gases in the air and livestock manure in the soil), the quality of animal welfare and the mitigation of antimicrobial resistance are as important components of a sustainable livestock husbandry as protecting the environment. In this context, he elaborated the legal regulations in the EU and in Germany on reducing the emissions and the major threshold values for the gaseous ammonia and methane emissions in the air and for the nitrate and phosphorus input into the soil via liquid livestock manure.



Prof. Blaha further emphasized the globally increasing concern with antimicrobial resistance as a major threat to human health. He pointed out that if livestock production is not able to considerably reduce its use of antibiotics, it will be very difficult to maintain the societal “license to pro-

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duce” for the livestock production as it is right now. He discussed the EU regulations and the German national regulations for monitoring and reducing the use of antibiotics in food animals and reported that in Germany the antibiotic use for food animals has been reduced by 56 % between 2014 and 2017.

The subsequent discussion with the participants from different departments of the Chinese Ministry of Agriculture and Rural Affairs (MARA), the Foreign Economic Cooperation Center (FECC) and the Chinese Academy of Agricultural Studies (CAAS) focussed on the German governance structure for the implementation and the state control of the regulations (EU and German) that regulate and guide the farmers’ attitude for complying with the legal demands for good management practices for the environmental protection, for the improvement of animal welfare and the reduction of the antimicrobial use in livestock production.

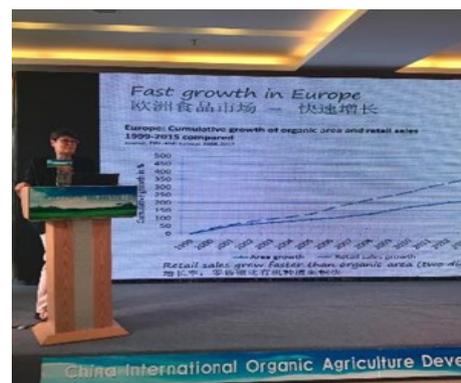
In a follow-up meeting on the next day at the Institute of Environment and Sustainable Development in Agriculture of CAAS these issues were further discussed and deepened. Based on the discussion results, Prof. Blaha was in a position to propose concrete ideas for the study visit which is scheduled for late September.

2-3 August, China International Organic Product Development and Market Promotion Conference



Axel Wildner, German Embassy

On invitation of the China Organic Food Certification Center (COFCC) DCZ science advisor Eva Sternfeld participated in the China International Organic Product Development and Market Promotion Conference held in Fengning (丰宁) Manchu Autonomous County, Chengde City, Hebei Province.



Dr. Eva Sternfeld, DCZ

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Huangqihuang organic millet farm

The conference was intended to inform the international participants about the impressive efforts of the former poverty county Fengning to develop organic farming and ecotourism as well as inform Chinese officials and entrepreneurs about the international organic food development. For Germany, Mr. Axel Wildner, Counselor for Food and Agriculture, German Embassy gave a presentation on “Organic Agriculture in Germany. Significance and Promotion”. In her presentation Eva Sternfeld added information about the long history of organic farming in Germany and recent chances and challenges for the fast-growing market.



Eva Sternfeld (DCZ), organic millet farmer, and Axel Wildner (German embassy)



On the first day of the event the international participants had the opportunity to visit an organic millet production site. The Huangqihuang (黄旗皇) millet farm produces high end organic millet and is part of the county’s efforts to develop a national organic farming demonstration base in Huangqi. According to County Magistrate Mr. Yang Xianjun at present about 5000 ha agricultural land as well as 36 farms and processing enterprises are certified organic. About 30,000 people managed to escape from poverty by engaging in organic farming, food processing and ecotourism.



Organic millet products

(Photos: Sternfeld, Golebiowska)

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In the past 18 years large areas in Fengning have been afforested and grassland rehabilitated to curtail dust storms and protect the headwaters of Chao and Luan River, major water supplies of the mega-cities Beijing and Tianjin. These efforts now pay out: Fengning has developed into a flourishing site for eco-tourism, offering a wide range of activities such as horseback riding and hiking. Conference participants had the opportunity to visit a recently opened forest recreation path in Qiansongba Forest Park (千松坝森林公园).



Qiansongba Forest Park

(Photos: Sternfeld)

Upcoming DCZ events

5-8 September, Beijing

Representatives of the Federal Plant Variety Office and the German Plant Breeders' Association will visit Beijing for meetings with the China National Seeds Association (CNSA) and the China National Seeds Trade Association (CNSTA).

15-16 September, Wuhan

In the context of the 7th National Conference on Veterinary Medicine (15 September) the "Sino-German Seminar on Veterinary Medicine" will be held on 16th of September in Wuhan. Four representatives of the German Federal Office of Consumer Protection and Food Safety (BVL) will attend the seminar and meet with high-level experts from relevant Chinese associations and research institutes as well as with officials from the Chinese Ministry of Agriculture and Rural Affairs (MARA). This seminar which is organized with the support of the Foreign Economic Cooperation Center (FECC) and the DCZ is also expected to contribute to deepening the dialogue on issues related to the production of veterinary medicine and related topics.

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24 September 2018, Berlin, China

Round-table der deutschen Agrar- und Ernährungswirtschaft

(China Round-table of German Agri- and Food Business).

Dr. Jürgen Ritter, Managing Director of the DCZ will attend this round-table event which explores recent trends in China's agriculture and food sector such as digitalization and the implementation of the China's high-tech strategy "Made in China 2025" in the field of agricultural technologies and discusses the chances and challenges for German companies. The event is jointly organized by German Agrobusiness Alliance (GAA) and DCZ.

September/October 2018, Study Tour

As mentioned above, "Environment-friendly sustainable livestock development" is one of the key topics within the DCZ's component *Agricultural Policy Dialogue* in this year. The visit by the short-term expert Prof. Blaha served the purpose to prepare a study visit of Chinese officials and experts to Germany and the Netherlands on this subject. The visit is planned for late September/early October. More details will be reported in our next newsletter.

26-30 November 2018, Beijing and Harbin, Sino-German Agricultural Week. More details soon in our next newsletter.

Other events

8-11 September 2018, Xiamen International Fruit and Vegetable Industry and Urban Agriculture

Exhibition, Xiamen International Conference and Exhibition Center.

More information:

<http://xmhexpo.com/en/index.htm>

10-12 September 2018, Harbin Global Symposium on Black Soils (ISBS18)

The Symposium aims to promote the sustainable use and management of black soils and identify relevant research gaps within countries with black soils. For more information and registration please refer to

<http://www.fao.org/global-soil-partnership/resources/events/detail/en/c/1069384/>

or contact Yuxin.tong@fao.org

17-19 September 2018, Nanjing, VIV China 2018, the international trade show from Feed to Food for China. Nanjing International Expo Centre

More: <http://www.vivchina.nl/en/Exposant.aspx>

19-20 September 2018, Shanghai, PAS 2018, 5th China International Precision Agriculture and High-Efficiency Utilization Summit

<http://www.passummit.com/en/>

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21-23 October 2018, Yinchuan, The Rural Turning point: China in a Global Perspective.

14th International Conference on Agriculture and Rural Development in China (ICARDC XIV), hosted by Ningxia University

For more information please check:
<http://www.icardc.org/>

7-9 December 2018, Xiamen International Organic Food Exhi- bition

For more information (in Chinese):
http://www.ofcc.org.cn/index.php?optionid=673&auto_id=1401

3 September 2019, Hong Kong, 12th International FRUTIC Sympo- sium 2019: Innovations in Pre- and Post-harvest Supply Chain of Fresh Produce

FRUTIC provides the platform for research network on emerging technologies or current issues in the industry. Topics capture technology advancement in production, harvest, post-harvest, distribution and quality control of fruit, nut, and vegetables.
<https://frutic.atb-potsdam.de/frutic/welcome.html>

Good to know

Sino-German inter-governmental consultations: German agriculture minister Julia Klöckner meets her Chinese colleague Han Changfu

On July 8, newly appointed German agriculture minister Julia Klöckner met her Chinese colleague Han Changfu in Berlin. The two ministers agreed on closer cooperation in the field of research and rural development, as well as exchange in the field of digitalisation in agriculture and food industry. They agreed that the Chinese market will be opened for imports of German poultry. They further discussed possible impacts of the African Swine Fever.

During their conversation the two ministers also spoke about the Sino-German Agricultural Centre (DCZ), which according to Klöckner is a proof of the close and successful cooperation of the two countries in the field of agriculture.

At the 5th German-Chinese inter-governmental consultations the two ministers signed an agreement on the exchange of young agriculture experts
[Click for detailed press release in German](#)

On July 10, Minister Han Changfu, Xie Jianmin, Director-General of the department of International Cooperation of MARA, and Shen Liping, counselor for economy and trade at

the Chinese embassy in Germany, accompanied by Friedrich Wacker, head of the Department of International Corporation, BMEL, visited the Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB) in Potsdam near Berlin. They were informed about ATB's research on animal welfare and sustainable livestock management, visited the freshness lab, where they learnt about ATB's recent projects targeting quality and safety of food and feed along the post-harvest value chains and as well about ATB's projects in processing bioplastics. [More](#)

Outbreak of African Swine Fever in China

On August 3, 2018 Chinese authorities reported the first outbreak of African Swine Fever (ASF) in China to the World Organisation for Animal Health (OIE). ASF was confirmed in Shenbei district of Shenyang City, Liaoning province, about 200 km from the border to North Korea. In a smaller backyard farm 47 pigs had perished. According to a report by the China Animal Disease Control Centre submitted to OIE on August 4, an epidemic zone within 3 km radius around the affected farm has been designated and more than 8,000 pigs in the zone were preventively culled and disposed of in the outbreak site. Around the epidemic zone eight disinfection checkpoints have been established and all farms and vehicles in the zone have been disinfected. In addition, the Chinese Ministry of Agriculture and Rural Affairs ordered a

swine transporting ban from the area and prohibited feeding of untreated food waste. Meanwhile, until late August three more outbreaks have been confirmed in Henan, Jiangsu and Zhejiang province and experts believe that the virus had gone around in China unnoticed at least since June. While in Europe the virus travels relatively slowly, in China within three weeks outbreaks have been reported in a distance from about 2,100 km.



Poster explaining the ASF outbreak

Source: <https://new.qq.com/>

omn/20180806/20180806A12X90.html

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The highly contagious disease may have disastrous impacts on China's pork production. In China, more than 400 million pigs, half of the world's pig population are raised. Concerns have also been expressed that it could spread to the Korean peninsula and Japan. Stock exchanges reported a slump for Chinese companies involved in meat processing such as the WH Group. According to news reports Japan temporarily suspended the import of heat treated pork. In order to avoid consumer's panic Chinese Media repeatedly assured that the ASF is no threat to human health. Sources: SCMP 3.8.2018, Pig Progress 3.8.2018, 27.8.2018 Bloomberg.com 6.8.2018 [more](#)

Impacts of trade war on swine and soybean production

This PigProgress article looks at the impacts the US-China trade war may have on the global markets for pork and soybean. China as well as Mexico recently introduced import tariffs to pork and soy in reaction to the import tariffs introduced by the US. By targeting the US agriculture, the measures aim at president Trump's supporters in the US countryside. [more](#)

Chinese perception of EU court decision on gene editing

On July 25, 2018 the European Court of Justice decided that gene editing techniques including CRISPR-Cas9 developed after 2001 are subject to the same strict safety regulation with regard to genetically modified organisms. Chinese media have reported about the court verdict and quote undisclosed scientists and entrepreneurs, who call the decision a drawback rather than a breakthrough. The reports compared the EU regulation with Chinese policies and US regulations and conclude that EU has installed by far the strictest regulations that may hinder technological progress in Europe. In China, research in gene editing is given a high priority as it is included in the "13th 5-Year Plan for Biotechnology Innovation". In the area of agriculture and food several research projects related to CRISPR-Cas9 have been conducted, such as targeted gene editing in soybeans, a project by researchers of the Northwest Agriculture and Forestry University, the Crop Research Institute of the Chinese Academy of Agricultural Sciences and the Tianjin Academy of Agricultural Sciences. However, Chinese media also point out that in China the use of gene editing so far is largely unregulated.

[For more information \(in Chinese\)](#)

Publications

Securing the ‘Rice Bowl’. China and Global Food Security. Hongzhou Zhang. Palgrave Macmillian, Singapore 2018. 304 pages.

Policy distortions, farm size, and the overuse of agricultural chemicals in China. Yiyun Wu, Xican Xi, Xin Tang, Deming Luo, Baojing, Shu Kee Lam, Peter M. Vitousek and Deli Chen, PNAS (June 2018)

This study suggests a direct correlation between China’s relatively small farm sizes and the heavily overuse of agricultural chemicals. While economic growth has been associated with increasing farm size in many other countries, in China this relationship has been distorted by land and migration policies, leading to the persistence of small farm size in China. The authors argue that removing these distortions would decrease agricultural chemical use by 30-50 % and the environmental impact of those chemicals by 50 % while doubling the total income of all farmers including those who moved to urban areas. Removing policy distortions is also likely to complement other remedies to the overuse problem, such as easing farmer’s access to modern technologies and knowledge and improving environmental regulation and enforcement. [Download PDF](#)

Special Issue “Food Safety in China”, *Journal of Resources and Ecology*, January 2018, vol. 9

This special issue focusses on a problem that has been of great concern to the Chinese public for many years and has resulted in several new laws and reforms of the Chinese food system. It presents scientific papers by researchers affiliated to the interdisciplinary Forum on Health, Environment and Development (FORHEAD) and their cooperation with the Center for Food Safety at Renmin University. (For more information about FORHEAD please check their website <http://www.forhead.org>). The volume includes articles that are exploring the multi-dimensional aspects of the food safety issues related to natural and social sphere and the ability of political response. Several pieces focus on recent developments in food safety governance including interpretations of the key features of the revised Food Safety Law (2015). A contribution by Jin Shuqin and Zhou Fang discusses the impact of the Ministry of Agriculture’s actions to achieve zero growth in use of chemical fertilizers and pesticides by 2020. Please find for more detailed reviews of selected articles mentioned above in one of our forthcoming issues.

[Download the issue](#)

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Emissions impossible. How big meat and dairy are heating up the planet. Institute for Agriculture and Trade Policy and GRAIN. The results of this study show that agro industry contributes far more to global warming than previously assumed. Researchers have calculated the emissions of the 35 world's biggest meat and dairy companies and conclude that they will soon surpass ExxonMobil, Shell and BP as the world's biggest climate polluters. Four companies with headquarters in China (China Yurun Food Group, Guangdong Wens Foodstuff, New Hope Group and Smithfield Foods/WH Group) as well as two German companies (DMK Deutsches Milchkontor, Tönnies Lebensmittel) are represented in this study. [Download the PDF](#)

Useful Links and Social Media

ChinaFoodWatch. This is a project by the US based Institute for Agriculture and Trade Policy. It provides a platform for NGOs and foundations promoting fair and sustainable food systems in China. In addition to providing contact information about Chinese and international NGOs involved in promoting sustainable agriculture and food, the website provides first-hand information on the challenges China food sector is facing such as industrial animal farming, diets and health, global climate impacts, declining land and water quality, increasing concentration of China's food system under control of large corporations. Furthermore, the

website provides a resource library where you can access recent research reports relevant to the topic. Access to website www.chinafoodwatch.com

SAIN UK China knowledge sharing and mutual learning platform. This website run by the UK-China Sustainable Agriculture Innovation Network (SAIN) is a great source of information for policy papers such as documents related to 13th 5-year plan as well as other long-term plans. In addition, the resource centre collects documents produced by the AgriTT programme (working in partnership for Agricultural Technology Transfer) as well as publications produced by the SAIN program.

<http://knowledgeshare.sainonline.org/>

Imprint

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