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# Geographical Indications Environment & Sustainability (GIES) Provides an Innovative Solution and Business Model on Digital Agriculture for FAO

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In October 2021, Geographical Indications Environment and Sustainability (GIES) project team participated the Global AgriInno Challenge 2021 (GAC 2021), which was co-organized by the United Nations Food and Agriculture Organization (FAO) and Zhejiang University (ZJU), with the support from the Ministry of Agriculture and Rural Affairs of China (MARA) and Pinduoduo Inc. In GAC 2021, GIES has shared ideas, knowledge, and practice as an innovative solution and business model for digital agriculture which will contribute to the achievements of the United Nations 2030 Sustainable Development Goals (SDGs) (Figure 1).

GAC 2021 is a post-pandemic global on-line event on digital and innovative agri-food sector attracting participants from all over the world and has successfully collected 157 applications



**Figure 1** Certification for GIES (jointly issued by FAO and ZJU)

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from 37 countries. It aims to encourage youth and women to become involved in innovation, technologies, and entrepreneurship that address challenges related to the transformation of rural villages into “Digital Villages”, thus contributing to the Four Betters: better production, better nutrition, a better environment, and a better life, while leaving no one behind.

GIES was initiated by the Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences (IGSNRR/CAS), and was jointly launched by The Big Data Working Committee of Geographical Society of China (GSC\_BigData), and World Data System on Global Change Research Data Publishing & Repository (WDS-GCdataPR) (Editorial Office of *Journal of Global Change Data & Discovery*). As an innovative case-based solution on digital agriculture, GIES has proposed an environment-focusing, geographic, multi-stakeholder, and digital-driven pathway through scientific evaluation and certification, continuously monitoring (Internet of Things based), reliable digital data and knowledge publishment on the ecological environment related to habitat of geographical products (including Geographical Indications, Geographical Specific Products, and Geographical Traditional Products) and their development. Guaranteed by multi-disciplinary integration, multi-participation system, scientific implementation, technology and engineering implementation, and reliable science communication, promoting GIES can protect the ecological environment of geographical products, improve the quality of the products by preserving the original habitats, boost the local economy by effectively connecting high-quality products and lucrative markets, accelerate the transformation of rural areas into digital ones, and finally contribute to Four Betters and SDGs.

Five team members of the GIES project participated in GAC 2021 (Figure 2). They are Dr. Li, K. X., Assistant Researcher of IGSNRR/CAS, Dr. Fu, J. Y., Associate Professor of IGSNRR/CAS, Dr. Wang, Z. B., Director of Foreign Cooperation Department of IGSNRR/CAS, Mr. Yan, S., CEO of the Lanjia Village Rice Planting Cooperative of Panshi, and Dr. Liu, C., Professor of IGSNRR/CAS, Secretary-General of GSC\_BigData, Director of WDS-GCdataPR, and Under the leadership of Dr. Liu, C., the founder of GIES which she proposed and launched in January 2021, the young team members have all contributed their superb skills in their fields of expertise, respectively.



**Figure 2** The homepage of the GIES solution for GAC 2021

Dr. Li, K. X. has focused on applying Geography to practice. Based on her research background, she has been involved in methodology establishment, field sampling work, laboratory analysis, data acquisition, case evaluation and certification. The main focus of her work is identifying the quality of products, exploring and recognizing the relationship between products and their habitat from the sight of Geography, and providing technical and data support for each case study of GIES. Dr. Fu, J. Y., the head of the third GIES case “Permanent basic farmland for rice cultivation in Lanjia village, Panshi city”, has helped get scientific certification for the rice crops from her hometown as a high-quality geographic product with unique geographical features and successfully made this product known to the wider public. By leading this GIES case, she not only promoted the territorial research of geography, contributed geographers’ knowledge and expertise to her hometowns, but also enabled people of her hometown to benefit from the high-quality geographical products. Today, the story named “The case lights up the city” has been widely spread in her hometown. Mr. Yan, S. has engaged in exploring innovative business models, and successfully established a professional planting cooperative for the GIES case “Permanent basic farmland for rice cultivation in Lanjia village, Panshi city”, which effectively and efficiently linked producers, products, and markets, directly contributing to the local economy and facilitating rural revitalization. Dr. Wang, Z. B. has provided a good platform for the smooth implementation and promotion of GIES and also played an important role in advocating and coordinating multi-stakeholder unions (including producers, universities and colleges, R&D institutions, local government, academic societies, consumers, and publishers) for each GIES case.

In addition, more young people such as Mr. Wu, G. H. from Tan Sheep Industry Group, Yanchi county, Ningxia., Miss Fu, C. L. from Yunnan Baoshan College, Mrs. Yao, L. P. from Baoshan county, Panshi, Jilin, Mr. Zhu, X. G. from Beijing Aerospace Huachuang Technology Co., Ltd., Miss Luo, Y. Y. from Guangzhou University, etc. joined the team. In many cases, they played a critical role also in promoting the GIES. Dr. Fu, J. Y., as the Chairman of Youth Innovation Promotion Association of IGSNRR, CAS, led the youth forum on Opportunities and Challenges in the Geographical Big Data Era at the 2021 Annual Meeting of GSC\_BigData and Conference in September 2021, in Yanchi, Ningxia, China. Dr. Li, K. X. provided services and discussions with other young scholars on geographic big data production, data analysis, data quality control, and data application. Mrs. Yao, L. P. co-organized the Big Data Application for GIES in Baoshan county, etc. In December 2021, at the 1<sup>st</sup> Workshop of Asian Young Geographers, Dr. Fu, J. Y. and Dr. Li, K. X. jointly convened and chaired the session on GIES, enabling more people to know and understand GIES, which also allowed everyone to witness the power and capabilities of young female scientific and technological workers.

Many thanks to Prof. Gong, K., President of the World Federation of Engineering Organizations (WFEO), Dr. He, C. C., former FAO Deputy Director-General, and Professor Zhang, G. Y., Vice-President and Secretary-General of Geographical Society of China (GSC) for their supports and guidance.

For more information, please visit the official website of the GAC 2021 at: <http://f6.wjxit.com/> or GIES project at: [www.geodoi.ac.cn](http://www.geodoi.ac.cn).