Innovative transformation of China?s food production systems and agroecological landscapes

Part I: Project Information

Name of Parent Program
Food Systems, Land Use and Restoration (FOLUR) Impact Program

GEF ID
10246

Project Type
FSP

Type of Trust Fund
GET

CBIT/NGI
☐CBIT
☐NGI

Project Title
Innovative transformation of China?s food production systems and agroecological landscapes

Countries
China

Agency(ies)
FAO, World Bank

Other Executing Partner(s):
Ministry of Agriculture and Rural Affairs (MARA), Hubei Province Department of Agriculture and Rural Affairs

Executing Partner Type
Government

GEF Focal Area

Multi Focal Area

Taxonomy

Chemicals and Waste, Focal Areas, Pesticides, Climate Change, Climate Change Mitigation, Agriculture, Forestry, and Other Land Use, Climate Change Adaptation, Climate resilience, Land Degradation, Sustainable Land Management, Sustainable Agriculture, Restoration and Rehabilitation of Degraded Lands, Biodiversity, Mainstreaming, Agriculture and agrobiodiversity, Influencing models, Demonstrate innovative approache, Transform policy and regulatory environments, Strengthen institutional capacity and decision-making, Stakeholders, Local Communities, Indigenous Peoples, Private Sector, SMEs, Large corporations, Beneficiaries, Type of Engagement, Consultation, Participation, Partnership, Civil Society, Academia, Gender Equality, Gender Mainstreaming, Sex-disaggregated indicators, Women groups, Participation and leadership, Gender results areas, Access to benefits and services, Integrated Programs, Food Systems, Land Use and Restoration, Sustainable Food Systems, Comprehensive Land Use Planning, Food Value Chains, Capacity, Knowledge and Research, Knowledge Generation, Workshop, Seminar, Course, Training, Capacity Development, Learning, Adaptive management, Innovation, Convene multi-stakeholder alliances

Rio Markers

Climate Change Mitigation

Climate Change Mitigation 1

Climate Change Adaptation

Climate Change Adaptation 0

Submission Date

6/18/2019

Expected Implementation Start

4/12/2021

Expected Completion Date

10/12/2026

Duration

60In Months

Agency Fee($)

1,211,532.00

A. FOCAL/NON-FOCAL AREA ELEMENTS

Objectives/Programs	Focal Area Outcomes	Trust Fund	GEF Amount($)	Co-Fin Amount($)
IP FOLU	Transformation of food systems through sustainable production, reduced deforestation from commodity supply chains, and increased landscape restoration.	GET	13,461,468.00	402,190,000.00
		Total Project Cost($)	**13,461,468.00**	**402,190,000.00**

B. Project description summary

Project Objective

To support the innovative transformation of China?s agro-landscapes and agri-food value chains towards environmental and ecological sustainability at scale in support of the 2030 Sustainable Development Goals (SDGs), Rural Revitalization, and climate resilience.

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing ($)	Confirmed Co-Financing($)

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing ($)	Confirmed Co-Financing($)
1. Development of integrated landscape management (ILM) systems in agricultural landscapes	Technical Assistance	**Outcome 1.1:** Strengthened ILM policies, plans and capacities that promote participatory planning and enable national and provincial institutions across agricultural landscapes to meet their relevant sustainable agriculture, rural revitalization, land restoration and related climate and biodiversity targets. Indicators: ? Number of county-level ILM and restoration plans in place ? Number of decision-makers and technical staff of national, provincial and local governments with increased capacity to apply ILM ? Area under improved management plans ? Number of new or improved monitoring systems in place and operational beyond project ? Number of improved policies drafted and recommended for adoption	Output 1.1.1 Food and land use collaboration mechanisms established or existing mechanisms strengthened at national and provincial level. Output 1.1.2 County-level ILM and restoration plans developed and implemented in a participatory process bringing together public and private sectors and supporting cross-sectoral planning and scaling up, ensuring participation of women. Output 1.1.3 Gender-sensitive capacity building implemented for decision makers and technical staff of the local government on sustainable integrated land and water resources management, sustainable agriculture, biodiversity conservation and restoration. Output 1.1.4 Monitoring systems for sustainable food	GET	2,974,375.00	42,160,000.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing ($)	Confirmed Co-Financing($)
2. Promotion of sustainable food production practices and responsible agri-food value chains for the staple crops of rice, wheat and maize, selected cash crops, and livestock	Investment	**Outcome 2.1:** Sustainable agricultural practices deployed and scaled up that enhance ecological functions, improve soil quality and fertility, mitigate GHG emissions and establish resilient agricultural production models. Indicators: ? Number of newly developed or improved standards ? Area under improved practices/GAP ? Carbon sequestered or emissions avoided ? Chemical fertilizer and pesticide reduction ? Soil organic matter content ? Average yield per hectare productivity ? Number of improved livestock waste management investments supported [Hubei only] **Outcome 2.2:** Responsible, market-oriented agricultural value chains	Output 2.1.1 Sustainable and Climate Smart Agriculture (CSA) implemented and scaled up to promote carbon sequestration and emission reduction; demonstrate effective soil and water management; and optimize the agricultural environment. Output 2.1.2 Climate-smart and ecologically sound livestock production and management systems implemented and scaled up; livestock waste management technologies; and the implementation of circular agriculture technologies. [Hubei only] Output 2.1.3 Innovations to reduce the use and discharge of chemical fertilizers and pesticides implemented, such as precision agriculture, soil testing, integrated pest management (IPM), ecological interception	GET	5,643,694.00	227,840,000.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing ($)	Confirmed Co-Financing($)
3. Conservation and restoration of agroecosystems and biodiversity	Investment	**Outcome 3.1:** Enhanced conservation and restoration of agroecosystems and biodiversity. Indicators: ? Species and ecosystems indicators ? Carbon sequestered or emissions avoided ? Area of upland and farmland surrounding ecosystems under ecological restoration/ rehabilitation	Output 3.1.1 Interventions implemented and scaled up to maintain and increase biodiversity in production systems. Output 3.1.2 Ecological restoration/ rehabilitation implemented and scaled up (e.g., through revegetation of slopes, ecological corridors, trees on farm, vegetation buffers, hedgerows, nutrient interception) to enhance ecological functions of farmland boundaries and surrounding ecosystems. Output 3.1.3 Agroforestry interventions supported in upland agro-ecosystems to reduce water loss and soil erosion, enhance carbon sequestration, improve ecosystem service functions and increase farmers? incomes. [Hubei only]	GET	2,037,574.00	71,450,000.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing ($)	Confirmed Co-Financing($)
4. Knowledge management and M&E	Technical Assistance	**Outcome 4.1:** Effective knowledge management/information exchange and M&E. Indicators: ? Number of information dissemination platforms [2] established (or existing platforms improved) and operational ? Number of people [3] reached by information dissemination and knowledge exchange [2] National, provincial or county-level. [3] Farmers/ enterprises/ consumers.	Output 4.1.1 Project monitoring and evaluation, and reporting, as well as coordination with and participation in global Impact Program (IP) events and activities, conducted. Output 4.1.2 Establish diversified information dissemination platforms/mechanisms to share project achievements, knowledge, experiences, and expand environmental and social influence to support scaling and replication. Output 4.1.3 Knowledge effectively created and shared through national and provincial platforms, exchange visits, and global platforms such as the One Planet Network Sustainable Food Systems Programme to support replication at the global, regional, national and provincial levels.	GET	2,175,886.00	42,764,000.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing ($)	Confirmed Co-Financing($)
				Sub Total ($)	**12,831,529.00**	**384,214,000.00**
Project Management Cost (PMC)						
				GET	629,939.00	17,976,000.00
				Sub Total($)	**629,939.00**	**17,976,000.00**
				Total Project Cost($)	**13,461,468.00**	**402,190,000.00**

C. Sources of Co-financing for the Project by name and by type

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount($)
Recipient Country Government	Ministry of Agriculture and Rural Affairs	In-kind	Recurrent expenditures	6,000,000.00
Recipient Country Government	Shandong Provincial and District Governments	In-kind	Recurrent expenditures	10,000,000.00
Recipient Country Government	Jiangsu Provincial and District Governments	In-kind	Recurrent expenditures	10,000,000.00
Recipient Country Government	Jiangxi Provincial and District Governments	In-kind	Recurrent expenditures	10,000,000.00
Recipient Country Government	Guizhou Provincial and District Governments	In-kind	Recurrent expenditures	10,000,000.00
GEF Agency	Food and Agriculture Organization (FAO)	In-kind	Recurrent expenditures	300,000.00
Private Sector	Nanjing Hengcheng Agricultural Development Co., Ltd.	Grant	Investment mobilized	400,000.00
Private Sector	Nanjing Junsheng Ecological Agriculture Co., Ltd.	Grant	Investment mobilized	400,000.00
Private Sector	Nanjing Tianwei Agricultural Technology Co., Ltd.	Grant	Investment mobilized	400,000.00
Private Sector	Taicang City Donglin Village Farm Professional Cooperative	Grant	Investment mobilized	1,200,000.00
Private Sector	Fenyi Huayong Agricultural Machinery Specialized Cooperative	Grant	Investment mobilized	200,000.00

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount($)
Private Sector	Fenyi Qunyuan Agriculture and Animal Husbandry Development Co., Ltd.	Grant	Investment mobilized	200,000.00
Private Sector	Fenyi Quanfeng Breeding Professional Cooperative	Grant	Investment mobilized	200,000.00
Private Sector	Fenyi Guigen Grain Planting Professional Cooperative	Grant	Investment mobilized	200,000.00
Private Sector	Jiangxi Jiafu Agricultural Technology Co., Ltd.	Grant	Investment mobilized	400,000.00
Private Sector	Jiangxi Zhenghe Ecological Agriculture Co., Ltd.	Grant	Investment mobilized	1,200,000.00
Private Sector	Laizhou Chenggang Road Weisong Plant Protection Professional Cooperative	Grant	Investment mobilized	1,200,000.00
Private Sector	Shandong Changrun Ecological Agriculture Co., Ltd.	Grant	Investment mobilized	1,200,000.00
Private Sector	Guizhou Rongjiangshan Agricultural Development Co., Ltd	Grant	Investment mobilized	1,000,000.00
Private Sector	Guizhou Yueliangshan Agriculture Co., Ltd.	Grant	Investment mobilized	1,000,000.00
Private Sector	Guizhou Liping Dongxiang Rice Production Co., Ltd.	Grant	Investment mobilized	1,000,000.00
GEF Agency	World Bank (WB) ? International Bank for Reconstruction and Development (IBRD)	Loans	Investment mobilized	150,000,000.00
Recipient Country Government	Hubei Provincial and County Governments	In-kind	Recurrent expenditures	71,690,000.00

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount($)
Private Sector	Private sector in Hubei (to be selected during implementation under the framework approach)	Grant	Investment mobilized	124,000,000.00
			Total Co-Financing($)	**402,190,000.00**

Describe how any "Investment Mobilized" was identified

The investment mobilized was identified during the project formulation (September 2019-May 2020) through consultations with partners and key stakeholders. It includes, notably, a new IBRD-financed USD 150 million ?Hubei Smart and Sustainable Agriculture Project?, an estimated USD 124 private sector counterpart financing in Hubei, as well as USD 10.2 million in financing from local agricultural producers and agri-food enterprises in the four FAO-MARA provinces. Total investment mobilized is USD 284.2. These amounts do not include any recurrent expenditures.

D. Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount($)	Fee($)
FAO	GET	China	Biodiversity	BD STAR Allocation	1,914,520	172,307
FAO	GET	China	Climate Change	CC STAR Allocation	2,393,150	215,383
FAO	GET	China	Land Degradation	LD STAR Allocation	478,630	43,077
FAO	GET	China	Multi Focal Area	IP FOLU Set-Aside	2,393,150	215,383
World Bank	GET	China	Biodiversity	BD STAR Allocation	1,675,205	150,768
World Bank	GET	China	Climate Change	CC STAR Allocation	2,094,006	188,461
World Bank	GET	China	Land Degradation	LD STAR Allocation	418,801	37,692
World Bank	GET	China	Multi Focal Area	IP FOLU Set-Aside	2,094,006	188,461
				Total Grant Resources($)	**13,461,468.00**	**1,211,532.00**

E. Non Grant Instrument

NON-GRANT INSTRUMENT at CEO Endorsement

Includes Non grant instruments? **No**

Includes reflow to GEF? **No**

F. Project Preparation Grant (PPG)

PPG Required

☐

PPG Amount ($)

300,000

PPG Agency Fee ($)

27,000

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount($)	Fee($)
FAO	GET	China	Land Degradation	LD STAR Allocation	10,667	960
FAO	GET	China	Biodiversity	BD STAR Allocation	42,667	3,840
FAO	GET	China	Climate Change	CC STAR Allocation	53,333	4,800
FAO	GET	China	Multi Focal Area	IP FOLU Set-Aside	53,333	4,800
World Bank	GET	China	Land Degradation	LD STAR Allocation	9,333	840
World Bank	GET	China	Biodiversity	BD STAR Allocation	37,333	3,360
World Bank	GET	China	Climate Change	CC STAR Allocation	46,667	4,200
World Bank	GET	China	Multi Focal Area	IP FOLU Set-Aside	46,667	4,200
				Total Project Costs($)	**300,000.00**	**27,000.00**

Core Indicators

Indicator 3 Area of land restored

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
0.00	100000.00	0.00	0.00

Indicator 3.1 Area of degraded agricultural land restored

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
	100,000.00		

Indicator 3.2 Area of Forest and Forest Land restored

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 3.3 Area of natural grass and shrublands restored

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 3.4 Area of wetlands (incl. estuaries, mangroves) restored

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 4 Area of landscapes under improved practices (hectares; excluding protected areas)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
0.00	970000.00	0.00	0.00

Indicator 4.1 Area of landscapes under improved management to benefit biodiversity (hectares, qualitative assessment, non-certified)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
	130,000.00		

Indicator 4.2 Area of landscapes that meets national or international third party certification that incorporates biodiversity considerations (hectares)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Type/Name of Third Party Certification

Indicator 4.3 Area of landscapes under sustainable land management in production systems

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
	840,000.00		

Indicator 4.4 Area of High Conservation Value Forest (HCVF) loss avoided

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Documents (Please upload document(s) that justifies the HCVF)

Title	Submitted

Indicator 6 Greenhouse Gas Emissions Mitigated

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO?e (direct)	0	13300000	0	0
Expected metric tons of CO?e (indirect)	0	6860000	0	0

Indicator 6.1 Carbon Sequestered or Emissions Avoided in the AFOLU (Agriculture, Forestry and Other Land Use) sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO?e (direct)		13,300,000		

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO?e (indirect)		6,860,000		
Anticipated start year of accounting		2021		
Duration of accounting		20		

Indicator 6.2 Emissions Avoided Outside AFOLU (Agriculture, Forestry and Other Land Use) Sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO?e (direct)				
Expected metric tons of CO?e (indirect)				
Anticipated start year of accounting				
Duration of accounting				

Indicator 6.3 Energy Saved (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Total Target Benefit	Energy (MJ) (At PIF)	Energy (MJ) (At CEO Endorsement)	Energy (MJ) (Achieved at MTR)	Energy (MJ) (Achieved at TE)
Target Energy Saved (MJ)				

Indicator 6.4 Increase in Installed Renewable Energy Capacity per Technology (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Technology	Capacity (MW) (Expected at PIF)	Capacity (MW) (Expected at CEO Endorsement)	Capacity (MW) (Achieved at MTR)	Capacity (MW) (Achieved at TE)

Indicator 9 Reduction, disposal/destruction, phase out, elimination and avoidance of chemicals of global concern and their waste in the environment and in processes, materials and products (metric tons of toxic chemicals reduced)

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)
0.00	0.00	0.00	0.00

Indicator 9.1 Solid and liquid Persistent Organic Pollutants (POPs) removed or disposed (POPs type)

POPs type	Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)

Indicator 9.2 Quantity of mercury reduced (metric tons)

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)

Indicator 9.3 Hydrochloroflurocarbons (HCFC) Reduced/Phased out (metric tons)

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)

Indicator 9.4 Number of countries with legislation and policy implemented to control chemicals and waste (Use this sub-indicator in addition to one of the sub-indicators 9.1, 9.2 and 9.3 if applicable)

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)

Indicator 9.5 Number of low-chemical/non-chemical systems implemented, particularly in food production, manufacturing and cities (Use this sub-indicator in addition to one of the sub-indicators 9.1, 9.2 and 9.3 if applicable)

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
	8		

Indicator 9.6 Quantity of POPs/Mercury containing materials and products directly avoided

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)

Indicator 11 Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female		240,000		
Male		310,000		
Total	0	550000	0	0

Part II. Project Justification

1a. Project Description

Introduction

As reflected in the Program Framework Document (PFD), this GEF-7 Food Systems, Land Use and Restoration Impact Program (FOLUR IP) child project in China, entitled ?Innovative transformation of China?s food production systems and agro-ecological landscapes towards sustainability? is composed of two sub-projects. The first one is the USD 8 million sub-project implemented by FAO as the GEF Agency and executed by China?s Ministry of Agriculture and Rural Affairs (MARA). The second one is the USD 7 million sub-project implemented by the World Bank as the GEF Agency, and executed by Hubei Province Department of Agriculture and Rural Affairs (DARA). The World Bank sub-project is blended to an IBRD loan of USD 150 million in Hubei Province, under the ?Hubei Smart and Sustainable Agriculture Project?. The two sub-projects are, thus, financially and operationally independent projects. However, the design of the two sub-projects has been closely aligned and close consultations were held between the two GEF agencies and the two executing agencies during the project design phase. The coordination mechanisms between the two sub-projects are outlined in Section *6. Institutional Arrangement and Coordination* of this CEO Endorsement Request.

As explained in *Section 3) Proposed alternative scenario*, the two sub-projects have been joined with the aim of having a larger reach and impact, in order to support the project?s ambitious goal of transformation of the food production systems and agricultural landscapes in China through an integrated landscape and value chain approach. The two sub-projects combine two equally important approaches for national and provincial upscaling. The FAO-MARA sub-project has a more national reach covering several provinces in different agro-ecological regions, starting from the national level down to the provincial and county level; the WB-Hubei sub-project has a county/provincial focus enabling it to reach a larger coverage and transformation within a single province while also generating lessons and standards that can be applied at national scale. Combined, the two projects contribute to national and provincial upscaling through the development of standards and policies, sustainable value chains, national capacities, and by generating and exchanging best practices and establishing partnerships towards sustainability. All five target provinces are major areas for staple crops (rice, wheat and maize) and important strategic areas for the country?s rural revitalization, green agriculture development and innovation goals in line with China?s national priorities. They also present high potential and capacity to address negative externalities of the country?s food production systems and, thereby, generate global environmental benefits.

1) Global environmental and/or adaptation problems, root causes and barriers that need to be addressed (systems description)

China?s agriculture has undergone rapid transformation over the past four decades. Through institutional and market reforms as well as technological advances, China has been able to meet almost all of its own food demand primarily through increased domestic agricultural production in recent decades. China?s agricultural production has grown by nearly 5% per year since the late 1970s, and total factor productivity growth has accounted for around half of this expansion. This has enabled China to feed nearly 20% of the world?s population with only 5% of the world?s freshwater and 8% of global arable land. China is the world?s largest producer of rice and wheat, accounting for 30% of the world?s rice and 17.5% of the world?s wheat production. China is also the world?s second largest producer of maize; it is the world?s largest producer of pork and second largest producer of poultry. As

in other parts of the world, however, the rapid development of China?s modern agriculture, especially the development of intensive agriculture and its focus on high input and high yield, has led to a number of environmental challenges.

GHG emissions. China?s agriculture is a major emitter of greenhouse gases, accounting for about 14% of global agriculture related GHG emissions. The nitrogen fertilization emissions accounts for 30% of the total agriculture GHG emissions, followed by livestock production (27%), energy use (20%), and rice production (13%). The excessive use of synthetic fertilizers with low nitrogen use efficiency and the rapid expansion of livestock production with inadequate livestock waste management are the two key sources of China?s agricultural greenhouse gas emissions. Farm sector energy inefficiencies and the use of carbon-intensive fuels have exacerbated the problem of significant greenhouse gas emissions in the food supply chain. Total GHG emissions from the food system, from production to consumption, are estimated to represent about 20-25% of China?s total national emissions or 4-5% of total global emissions.[1] According to China?s Third National Communication to the UNFCCC in December 2018, the agriculture sector emits an estimated 828 million tons of CO2 equivalent (CO2e), or 7.9% of China?s total emissions. This includes emissions of methane and nitrous oxide from agricultural soils, livestock enteric fermentation, rice cultivation, manure management, and field burning of agricultural residues.[2] Synthetic fertilizers, enteric fermentation and rice cultivation are the three leading sources of agricultural GHG emissions in China. Additionally, soil organic carbon (SOC) in the typical cropland of China is about 30% lower than the world average. Overall, nutrient use efficiencies in China for wheat, rice and maize are significantly lower than in developed countries.

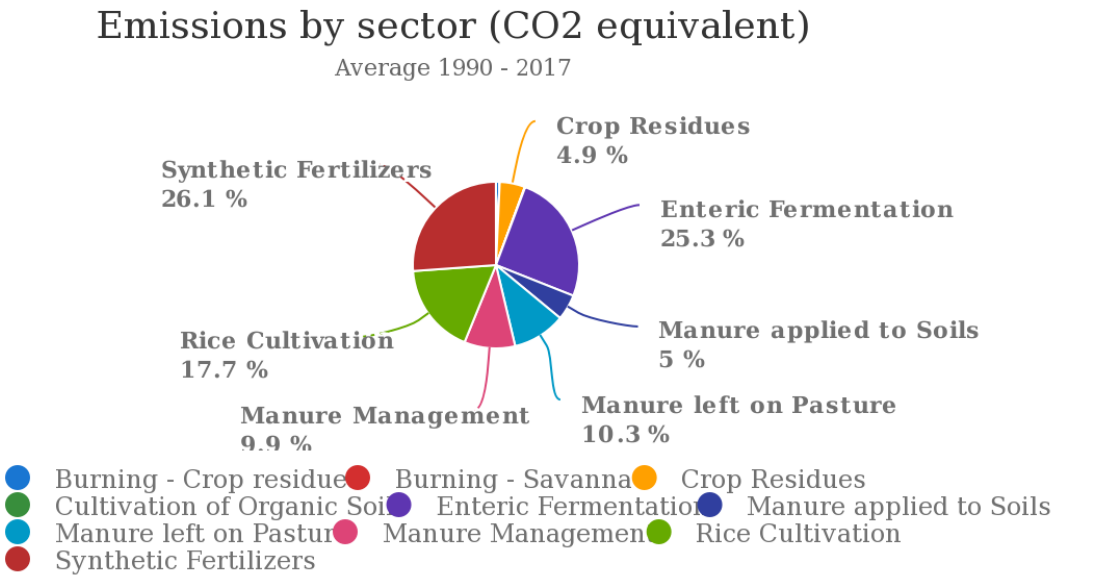

Figure 1: GHG emissions by sector (Source: FAOSTAT)

Land and environmental degradation. The high-yield-oriented intensive agricultural production results in high and wasteful resource consumption, environmental degradation, serious land degradation, and poor ecological service functions. Unsustainable agricultural practices in China have led to the degradation of soils, including soil erosion, compaction, acidification and salinization, and a decline in organic matter. Rapid urbanization and industrialization have led to the changes in land use, the disappearing of relatively fertile farmland and the reclamation of ecologically fragile marginal land including the reclamation of lakes and wetlands. The excessive use of chemical fertilizers and pesticides have caused soil and water pollution and adverse impacts on human health. Over 1.8 million

tons of agricultural pesticides are used every year in China, with an effective utilization rate of only about 37%, compared to up to 60-70% in developed countries.[3] This has not only resulted in soil and water pollution, but is also impacting surrounding and downstream ecosystems, in particular rivers, lakes and the Pacific Ocean, affecting water quality and food safety. Chinese agriculture is a major source of pollution to water bodies, drinking water supplies, and food, causing harm to human health and biodiversity. Improper disposal of pesticide packaging waste and plastic film further leads to environmental pollution. The extensive use of plastic micro-film to retain soil moisture and the practice of mulching the film into the soil during plowing is an important source of marine plastics pollution, an issue of growing global concern. In addition, cropland is affected by heavy metal pollution from mining and other industries. As the largest user of water resources in China, agriculture has also led to the depletion of groundwater and falling water tables, further aggravating trends of land degradation and desertification.

Decline in farmland biodiversity and ecosystem services. High-intensity fertilizer and pesticide inputs, single planting, and industrialized farmland construction have resulted in the loss of farmland natural habitat, a decline in farmland biodiversity (such as plants, birds, arthropods, soil microbes, natural enemies, and buffer vegetation), and the weakening of agricultural system stability and buffer capacity. This has led to more frequent floods and droughts, soil erosion, and increased occurrence of crop diseases and pests? outbreaks. A number of wildlife species, including globally significant avian species, have become dependent on farmland habitats, and the heavy use of pesticides puts their habitat at risk both within and downstream of agricultural land.[4] Agrobiodiversity is being eroded due to the rapid adoption of commercial crop varieties. As highlighted in China?s NBSAP (2011), the habitats of some wild crop relatives have been lost, and up to 70% of the original distribution sites of wild rice have disappeared or diminished.

Climate change impacts. China?s agricultural production systems are highly vulnerable to climate change impacts. According to China?s Third National Communication to the UNFCCC (2018), climate change is already significantly impacting agricultural production in China, most notably through the occurrence, development and damage caused by disease and pests, and by affecting the growth, development and yield of crops. Summer and autumn droughts, extreme temperatures, as well as floods, are becoming more frequent, leading to reduced output of major food crops by negatively affecting germination, flowering and pollination. Studies predict that due to climate change, the rice sowing period will be starting later while the growth period will be shortened.[5] During the 12th Five-Year Plan period, China invested 0.3 trillion yuan for climate change adaptation measures in the agricultural sector, such as water-saving irrigation, dry farming, soil moisture conservation, and conservation tillage.[6] Nonetheless, capacity among farmers and local institutions to prepare for and adapt to these changes, such as through drought- or flood-tolerant varieties, water management, or diversification of production systems, is still low.

Rising incomes and food consumption. Rapid urbanization in China has led to the loss of arable land. The migration of rural labour force to cities, in particular young men, has resulted in labour shortages, high labour cost, and abandonment of cultivated land in rural areas.[7] Farmers generate more income from non-agricultural wages and land transfers than from the agricultural business itself.[8] China?s population is estimated to peak at 1.44 billion in 2029, which represents an increase by 40 million by 2029. Demand for food is, thus, also expected to increase. With a rapidly rising middle class, meat and dairy consumption will rise further, likely resulting in increased resource use and GHG emissions from agriculture and livestock sectors. On the other hand, increasing consumer awareness has led to growing demand for ?cleaner and greener? quality food, and food safety has become an issue of public concern in China in recent years.[9] Agriculture in China has witnessed a general trend towards larger-scale production and land consolidation. As a result, there has been a sharp increase in various types of

business entities such as cooperatives, households operating in scale, and family farms over the past few years.

China?s agricultural practices and their negative environmental impacts have global implications, given the size of the country. The five project provinces (Guizhou, Hubei, Jiangsu, Jiangxi, and Shandong) are important producers of the staple crops rice, wheat and maize, cash crops such as tea, fruits and vegetables, as well as livestock. Through promoting policy change, innovations and enhancing capacity and knowledge exchange, the project will play an important catalyzing role in addressing barriers to scaling up sustainable agricultural practices, leading to global environmental benefits in China?s food systems.

Target provinces and counties

The China child project will be implemented in five key agricultural provinces of China, as well as at the national level. The target provinces include Shandong and Jiangsu in eastern-coastal China, Hubei and Jiangxi in central/southeast China, and Guizhou in the southwest. Two to four counties were selected in each province for implementation of project activities. The target provinces and counties were selected during project identification and preparation based on a set of criteria agreed by the key project partners. In line with the FOLUR Impact Program strategy, the selected target provinces are major areas for staple crops (rice, wheat and maize), with important negative externalities of the agricultural production system. They also present high potential and capacity to address these negative externalities through an integrated landscape and value chain approach and, thereby, generate global environmental benefits. They are important strategic areas for the country?s rural revitalization, green agriculture development and innovation goals in line with China?s national priorities. Furthermore, the leadership of the provinces, and presence of co-financing from the public and private sector, were also taken into account. The five provinces represent different agro-ecological systems within China, thereby allowing to generate lessons for different agro-ecological regions in the country. Additional counties may be added during implementation. The target areas are summarized below.

Province / County	Core Indicator 4 target area ? improved practices	Core Indicator 3 target area ? restoration
Shandong 1. Qihe City 2. Laizhou City 3. Laiyang City 4. Qingyun City	145,000 hectares	20,000 hectares
Jiangsu 5. Taicang City 6. Liuhe City 7. Jiangning District 8. Huaiyin District	115,000 hectares	20,000 hectares
Jiangxi 9. Fenyi County 10. Yushui County	80,000 hectares	20,000 hectares
Guizhou 11. Liping County 12. Rongjiang County 13. Congjiang County	110,000 hectares	20,000 hectares

Hubei 14. Honghu City 15. Tongcheng County 16. Nanzhang County 17. Jingshan City Additional 3 counties to be confirmed during implementation	520,000 hectares	20,000 hectares
Total area	**970,000 hectares**	**100,000 hectares**

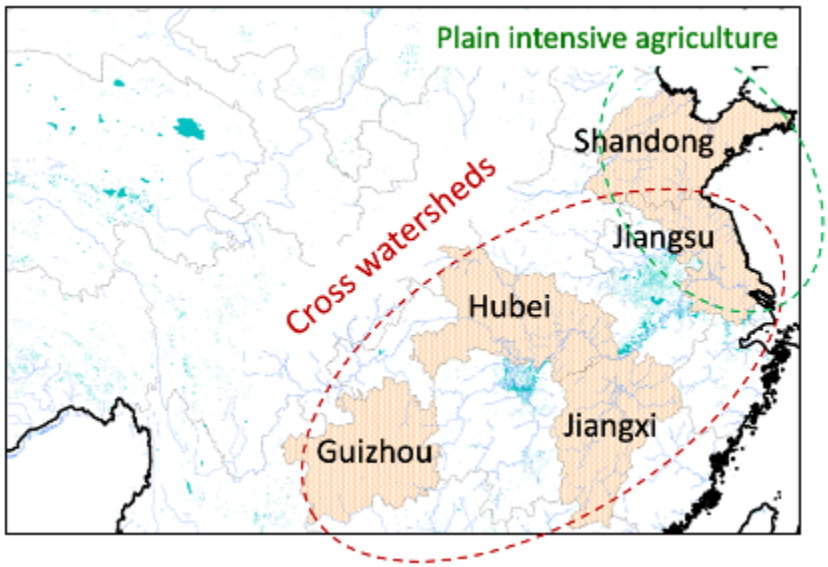

Figure 2: Agro-ecological regions of GEF-7 target provinces

As major staple crop producing areas, the five provinces have long been pursuing high agricultural productivity at the expense of biodiversity, the farmland environment and quality. Intensive agriculture and the overuse of chemical inputs have led to a decline in soil fertility, degradation of productive landscapes, and contamination of soil and water, the depletion of groundwater and falling water tables, loss of biodiversity and habitats, and decrease in agrobiodiversity. Agriculture is an important source of pollution of rivers and lakes, and GHG emissions. Representing different agro-ecological regions, the five provinces face similar threats and drivers and are representative of the main challenges that China needs to address in order to achieve a sustainable food production system and sustainable rural livelihoods. A holistic approach involving integrated planning, incentive systems, implementation of innovative, sustainable production practices, restoration and conservation is required in order to address the challenges that these provinces face.

The Huang-Huai-Hai River Basin, the midstream and downstream of the Yangtze River, and the source basin of Zhujiang River upstream, of which the five target provinces are part, have important strategic significance in the construction of ecological civilization and the sustainable protection of agricultural products in China.

Shandong. The main issue of intensive agriculture in Shandong is that long-term large-area single wheat-maize rotation has resulted in reduced biodiversity, frequent occurrence of pests and diseases increasing year by year, and increasing use of chemical pesticides, soil erosion, soil quality degradation, salinization and drought, as well as water shortages. The severe shortage of water resources is a key issue that constrains agricultural development in the region. The per capita water

volume in the North China Plain is only 29% of the national average. Moreover, 5% of the land area in Shandong is affected by desertification; and 5.45% is affected by soil and water erosion.

Jiangsu. In recent years, the environmental problems of excessive application of chemical fertilizers such as nitrogen and phosphorus in this area have attracted many concerns, such as eutrophication of water bodies, greenhouse gas emissions and soil acidification, biodiversity loss, and deterioration of farmland ecology. In addition, due to monocropping, winter rice fields are inundated for a long period of time, causing the soil layer to become hardened and shallow. Soil organic matter content is reduced, and physical and chemical properties are deteriorated. This has become a limiting factor for improving rice yields and enhancing the ecological service function of rice fields, which has seriously restricted the sustainable development of agriculture in the region.

Jiangxi. The province is affected by soil erosion, with almost 16% of the total land area affected. This is in part due to heavy rainfall leading to surface runoff. The problems of soil acidification, hardening, nutrient disequilibrium, and soil biodiversity decline, microbial diversity reduction, occur locally. In addition to crop farming, livestock and aquaculture are a source of agricultural non-point source pollution. Most forest areas in Jiangxi are secondary or artificial forests that are low in biodiversity.

Guizhou. The major issues of land and environmental degradation in Guizhou are biodiversity decline, soil fertility decrease, and nutrient losses of crop land, as well as water soil erosion of hill land (economic trees and/or fruit orchards). The province also experiences drought and abrupt drought-flood alternations in summer.[10] The farmland is very small in size and spatially fragmented, leading to small operation scale of farmer households and low market competitiveness. Due to the modern intensive rice production system development for higher-yield, the landraces conservation and global important agricultural heritage face serious challenges.

Hubei. Hubei?s agriculture has a significant environmental footprint in the province as well as in the country. With over 650 large scale pig farms with more than 10,000 pigs each ? ranking first in the country ? Hubei contributes a sizable share to the nation?s emissions. In 2015, the Chemical Oxygen Demand (COD) from agriculture sources in Hubei was 448,100 tons and that of ammonia nitrogen was 43,800 tons. Due to the overuse of fertilizer, nearly 30 million mu of soil is acidified. An estimated one million square kilometers of farmland have experienced soil contamination, including excessive levels of heavy metals, due to pesticide overuse. Heavy use of pesticides has been especially common in rice, vegetable, and tea production. The province?s straw production totaled 38 million tons, but more than 20% was wasted. For livestock manure, the utilization rate is less than 50%. Together, these represent important opportunities for circular agriculture that have not been realized. By some estimates, the Yangtze River, which flows through Hubei, is one of the biggest carriers of plastic pollution to the ocean in the world. Food packaging and plastic mulch from agriculture are important sources of this pollution. The high levels of agricultural and rural environmental pollution in Hubei have directly affected the quality and safety of agri-food products.

Shandong has a total cropland area of 7.6 million hectares, of which around 4 million hectares of winter wheat-summer maize planting area. Jiangsu?s total cropland area is 4.6 million hectares, with 2.2 million hectares of winter wheat-summer rice rotation. Jiangxi, in turn, has 3 million hectares of cropland; with rice planting area of 3.5 million hectares[1], mostly double-season rice or rice-rapeseed rotation. Hubei has a total cropland of 5.23 million hectares, of which 2.39 million hectares for rice production, 1.22 million for vegetables, 0.93 million for canola/rapeseed, 0.37 million for fruit, 0.32 million for tea, and 0.93 million hectares for freshwater aquafarm. Guizhou has a total cultivated land area of 4.5 million hectares; its rice planting area is 700,000 hectares, and its maize planting area 1 million hectares. A description of the target provinces and selected counties, and the specific challenges

they face with regard to the degradation of the natural environment as a result of targeted commodities production, can be found below.

Province	Basic information and specific challenges

Shandong	Shandong lies within the North China Plain, also known as the Huang-Huai-Hai Plain. The area of ??cultivated land in the North China Plain is 23 million hectares and accounts for 18.9% cultivated land of the country. The area is semi-arid and semi-humid, and the thermal resources can meet the requirements of two-year planting. The main planting mode is the winter wheat-summer maize rotation, and peanuts, cotton, soybeans and rice are also widely planted in this area. The North China Plain has a long history of farming. Shandong Province is located in the lower reaches of the Yellow River (Huang He), and represents an important commodity grain base of China. Shandong has a population of 100.9 million and is the second most populous province in the country. It is among the most developed provinces in China. Shandong is the second largest wheat-producing province (after neighbouring Henan Province), accounting for 19% of national production. Shandong is also the second largest maize-producing province, with 10.4% of the total national maize production. The territory of Shandong includes two parts: peninsula and inland. The mountains in the central part, the low-lying areas in the southwest and northwest, and the gentle hills in the East form a terrain of mountains and hills interlaced with plains. The climate of the province is warm temperate monsoon climate. Shandong has rich diversity of plant species, in particular wild fungi and medicinal plants. It also hosts the rich estuarine wetland ecosystem of the Yellow River Delta, offering important habitat for migratory birds such as the vulnerable Swan Goose, White-naped Crane, as well as hawks and falcons. Shandong has a forest cover rate of 17.95%. **Laizhou City** is a county-level city in Yantai Prefecture, located to the northwest of Jiaodong Peninsula[2]. The city covers an area of 192,700 hectares, of which 66,700 hectares are cultivated land, accounting for 34.6% of the total area. Laizhou has 43,000 hectares of wheat-maize rotation sections. The main challenges with regard to land and environmental degradation associated with wheat-maize rotation in Laizhou City are the large-scale use of chemical fertilizers and pesticides leading to soil and water pollution, inadequate agricultural practices causing soil compaction, and water shortages due to overexploitation of water resources. In addition, the single planting structure (monoculture) has led to poor agro-biodiversity and landscape diversity of farmland. Sustainable agriculture practices that have the potential to be scaled up are soil fertility cultivation, high standard farmland construction, fallow and crop rotation and reduced fertilizer and pesticide use. **Qihe County** is located to the south end of Dezhou Prefecture, facing Jinan across the Yellow River. The county covers an area of 141,100 hectares, including 84,000 hectares of cultivated land, accounting for 59.5% of the total area. The annual grain planting area of Qihe County is 77,300 hectares, of which 74,900 hectares of wheat-maize rotation area. Similar to Laizhou City above, the main challenges in Qihe include overuse of fertilizers and pesticides, single planting structure leading to a decline in biodiversity, unsustainable use of water resources, and a lack of more sustainable technologies due to the small scale of farmer households and the lack of incentives for technological upgrading.

Jiangsu	Jiangsu is located in the lower reaches of the Yangtze River, on the east coast of China. The province has a population of 80.3 million and, like Shandong, ranks among the most developed provinces in China. The middle and lower reaches of the Yangtze River is one of the three major plains in China, with dense river networks, and numerous lakes. It is also the most developed area of ??China?s economy. The area is not only a region with the most abundant water resources in China, but also one that faces serious water pollution. The main planting modes are rice-rape, rice-wheat, single-season rice, wheat-maize, etc. It is known as the ?land of fish and rice?. Jiangsu Province is a typical region with two harvests each year for rice and wheat in China. It is the largest japonica rice production province in the south, and also the national high-quality weak gluten wheat production advantage area. Maize, peanut, rapeseed and a variety of miscellaneous grains as well as other special grain and economic crops are grown all over the province. The terrain is mainly plain, covering an area of 70,000 km2, accounting for 70% of the total area of the province, and the low mountains and hills account for 14.3%. The province has a transitional climate from temperate zone to subtropical zone. Jiangsu has rich biodiversity, including 20 species of rare and endangered plants or key national protected plants. Jiangsu marine and coastal wetlands, in particular Yancheng Wetland, are a migration channel between East Asia and Australia. They provide an important breeding or wintering place for endangered birds such as Red-crowned Crane and Black-faced Spoonbill. Jiangsu has a forest cover rate of 22.9%. **Liuhe**, the northernmost district of Nanjing City, is located in the lower reaches of the north shore of the Yangtze River. The district covers an area of 129,500 hectares, including 59,400 hectares of cultivated land, accounting for 45.9% of the total area. Around 22.46% of the agricultural land is affected by reduced soil quality and fertility. The main challenges with regard to land and environmental degradation associated with rice-wheat production in Liuhe include (1) excessive use of chemical fertilizers and pesticides leading to soil and water pollution and declining soil fertility; (2) single planting structure causing biodiversity decline; and (3) lack of suitable production techniques. In addition, the ageing of farmers and small, fragmented farmland pose challenges to the introduction of new technologies. **Taicang**, a county-level city under the jurisdiction of Suzhou, is located on the South shore of the Yangtze River Estuary, bordering Shanghai to the south. The city covers an area of 81,000 hectares, including 25,300 hectares of cultivated land, accounting for 31.2% of the total area. The main challenges with regard to land and environmental degradation associated with rice-wheat production in Taicang are (1) the area of cultivated land is decreasing; (2) the fertility of farmland soil continues to decline; (3) excessive use of chemical fertilizers and pesticides.

Jiangxi	Jiangxi Province is an important water source in the Yangtze River and Zhujiang River Basins. Most of the province is located in the subtropical region, and the double-season rice cultivation is the main model. The province has a population of 46.5 million and ranks among the less developed provinces of China in terms of gross domestic product (GDP). The province is located in the southeast of China, to the South shore of the middle and lower reaches of the Yangtze River. The total area of the province is 166,900 km2. The province is surrounded by mountains on the southeast and west sides, with wide hills on the inner side and flat plain in the middle and north part. From the south to the north, it gradually inclines to Poyang Lake, forming a huge basin opening to the north. The province has a subtropical monsoon climate. Jiangxi has rich biodiversity and forest resources, with a forest cover rate of 65%. It has numerous rare and threatened plant and animal species, including the black bear, white necked pheasant, yellow bellied pheasant, etc. The wetland of Poyang Lake, the largest freshwater lake in China (where FAO is implementing a GEF-5 project in collaboration with the Forestry Department of Jiangxi Province[3]), provides important wetland habitat for biodiversity, including migratory birds such as Swan and wild goose, and white crane. **Yushui District** is one of two county-level divisions of Xinyu City and is located to the west of the central section of Jiangxi Province, along the Yuan River. It is part of the low mountain and hilly area. The district covers an area of 117,400 hectares, of which 28,800 hectares are the cultivated land, accounting for 24.5% of the total area. The main challenges with regard to land and environmental degradation associated with rice production in Yushui are the excessive use of chemical fertilizers and pesticides and soil erosion, acidification and compaction. Low yields and the low degree of mechanization pose challenges for farmers. In addition, the single planting structure leads to reduced agricultural biodiversity and increased occurrence of plant pests and diseases. **Fenyi County**, the other division of Xinyu City, is located in the middle reaches of the Yuanhe River. It is a low mountain and hilly area. The county covers an area of 138,900 hectares, including 19,300 hectares of cultivated land, accounting for 13.9% of the total area. The main challenges with regard to land and environmental degradation associated with rice production in Fenyi include: (1) the cultivated land is seriously polluted and the quality is low due to overuse of chemicals and single planting; (2) the degree of agricultural scale management is low; (3) the frequency of extreme weather events is increasing; (4) the agricultural production is low.

Guizhou	Guizhou Province is a typical mountainous province of China rich in biodiversity, and it is also a region of ethnic cultural diversity. It has a population of 36 million; its GDP per capita is among the lowest in China. Guizhou Province is very diverse in minority groups, with ethnic minority people representing approximately 30.7% of the total population. Guizhou is home to some of the largest primary forests remaining in Central China and provide habitat for many rare animal species. 61.9% of the area of Guizhou is karst landscape. The Guizhou Plateau has abundant mountainous areas, and is known as ?eight mountains, one water and one field?. The landforms of the province can be summarized into four basic types of plateau, mountains, hills and basins, in which 92.5% of the area is mountains and hills. The climate in most parts of the province is mild, with no severe cold in winter, no extreme heat in summer, and four distinct seasons. The project will involve the three counties of Liping, Rongjiang and Congjiang, located in Qiandongnan Miao and Dong Autonomous Prefecture in south-eastern Guizhou. The counties are home to the Dong, Miao as well as other ethnic minority groups. **Liping County** has a total land area of 444,100 ha and a cultivated land area of 44,800 ha, of which 20,300 ha of single-cropping rice. **Rongjiang County** has a total area of 329,600 ha, a cultivated land area of 23,100 ha, of which 10,793 ha of rice. Rongjiang county is a ?national key ecological functional zone transfer payment county? and a ?national ecological civilization demonstration county?. The percentage of poor farmers is 1.26% in Guizhou Province, 14.26% in Rongjiang County, and as high as 77.12% in Liping County. Nevertheless, in recent years, Liping County has achieved significant results in poverty alleviation. The main challenges with regard to land and environmental degradation associated with rice in the three target counties of Guizhou are farmland biodiversity decline, soil fertility decrease, and nutrient loss of cropland. Improper/excessive use of pesticides and herbicides is common due to a lack of knowledge and awareness among farmers of viable alternatives. Furthermore, due to a lack of technologies, land fragmentation and lack of knowledge and capacity to optimize water management, flooded rice production leads to significant GHG emissions. The rate of rice straw reutilization or incorporation into the soil is very low in the three counties compared to the provincial and national average (20% or lower). In addition, the counties face serious water and soil erosion of hill land where economic trees and/or orchards are planted. There is a need to reduce the use of chemical inputs in the cropland and increase vegetation cover of hilly land to conserve and restore land and biodiversity.

Hubei	Agriculture (including cropping, forestry, animal husbandry and fisheries) accounts for a fifth of the total provincial GDP and provides livelihoods or employment for some 15% of the province?s population. Hubei is home to 59 million people, covering a total land area of 185,900 km2. Hubei?s agriculture has a significant environmental footprint in the province as well as in the country. With over 650 large scale pig farms with more than 10,000 pigs each ? ranking first in the country ? Hubei contributes a sizable share to the nation?s emissions. In 2015, the Chemical Oxygen Demand (COD) from agriculture sources in Hubei was 448,100 tons and that of ammonia nitrogen was 43,800 tons. Hubei?s average fertilizer application rate of 400 kg per hectare is 74 kg more than the national average and third ranked in the country. Over the past three decades, the total amount of fertilizers applied in Hubei has increased by 55%. Due to the overuse of fertilizer, nearly 30 million mu of soil is acidified. Heavy use of pesticides has been especially common in rice, vegetable, and tea production. The province?s straw production totaled 38 million tons, but more than 20% was wasted. For livestock manure, the utilization rate is less than 50%. Together, these represent important opportunities for circular agriculture that have not been realized. By some estimates, the Yangtze River, which flows through Hubei, is one of the biggest carriers of plastic pollution to the ocean in the world. Food packaging and plastic mulch from agriculture are important sources of this pollution. The high levels of agricultural and rural environmental pollution in Hubei have directly affected the quality and safety of agri-food products. The concept of agricultural production aiming at ?3S? (Smart, Sustainable and Safe) has not yet been formed in the project area, which is mainly manifested in the lack of regional planning and design according to the goal of good agro-ecological landscapes and policies. In farmland (crops, tea gardens, orange gardens, etc.), deep plowing of the land, the absence of buffer zones, etc. lead to soil erosion; unreasonable application of pesticides and plastic waste (residual plastic bags, mulch film, etc. in the plantation area) result in chemical and plastic pollution. The quality of the ecological environment in rural areas has declined, landscape fragmentation is pronounced, and biodiversity has decreased. Agricultural technology extension departments, cooperatives, and farmers have yet to realize the importance of agricultural landscapes and biodiversity to agricultural production, and they lack corresponding knowledge and technologies. In **Honghu City**, the landscape tends to be fragmented and the soil stability is weakened. Excessive use of chemical fertilizers and pesticides has led to serious agricultural non-point source pollution; excessive development has led to a decline in biodiversity and deterioration of the ecological environment. The intensification of agriculture and simplification of farmland vegetation in **Jingshan City** have led to the degradation of natural resources and ecological functions. In **Nanzhang County**, the agricultural ecosystem is fragile and fragmented; overuse of chemicals causes agricultural non-point source pollution; some rice fields and tea gardens adopt deep tillage, resulting in erosion and loss of soil fertility. The agricultural landscape in **Tongcheng County** is characterized by monocultures and a lack of farmland biodiversity, the excessive hardening of farmland ditches and roads, and the degradation of animal and plant habitats.

[1] This number double-counts the area when several crops are grown each year (cropping area).
[2] Between the Bohai Sea to the north and the Yellow Sea to the south.
[3] The ?Piloting Provincial-level Wetland PA System in Jiangxi Province? project.

Target commodities

Wheat. Wheat is the second most important food grain crop in China after rice. In Shandong and Jiangsu, wheat is grown as double cropping of winter wheat-summer maize and winter wheat-rice. Wheat production has been traditionally focused on increasing yields and reducing costs of production, and less on resources and environmental issues. The main environmental problems associated with wheat production in China are soil degradation, non-point source pollution and greenhouse gas emissions (GHGs) from high chemicals inputs, and unsustainable use of water resources. Additionally, intensive agricultural practices have led to a decline in farmland biodiversity, such as buffer vegetation that provides habitat for pollinators and natural enemies to pests, and a decline in diversity of crop varieties. In order to maintain or increase wheat yields in the future and curb environmental impacts, it is critical to improve crop management practices to enhance soil fertility and preserve soil and water resources.

China is virtually self-sufficient in the production of wheat, although overall being a net importer. The minimum purchase price of wheat is set by the Government on an annual basis. China Grain Reserves Group is responsible for the purchase of grain nationwide at minimum guaranteed prices, but farmers can also sell their grain directly to enterprises if the price is higher. Farmers do not have wheat processing capacity; they sell wheat to enterprises by raw grain for flour processing and food processing. Certification agencies have standards for green/organic wheat and wheat flour. About 10-15% of wheat flour is green/organic certified, with green certification more common than organic. On the other hand, Good Agricultural Practices (GAP) standards for wheat production are not commonly applied by farmers. There is significant potential to introduce GAP and increase green/organic certification ratio in wheat production to address the environmental problems above. Wheat value can be improved by optimizing production management and processing, circulation and trade after harvest. As the value chain actors, the government, enterprises, cooperatives and farmers play an important role in building sustainable value chains.

Maize. Most of maize in China is produced for livestock feed, and maize represents the most important crop in China by total production. The consumption of maize as food has decreased sharply (representing about 10% of maize production), while utilization of maize as feed has risen rapidly.[11] Maize has played an important role in the rapid development of the poultry and livestock industries in China. In Shandong and Jiangsu, maize is grown as double cropping of winter wheat-summer maize. In addition to its own production, China is the world?s largest importer of maize. The environmental impacts of maize production are similar to those mentioned above for wheat. Maize represents an important source of income for farmers due to the rapid increase in yield and market demand. Although the Chinese government ended the minimum price policy for maize in 2015, the scale of maize production is not expected to be affected. For maize value chain improvements, the project can

promote new varieties and GAP to improve quality and efficiency. Fresh maize, in particular, has great development potential for GAP and green/organic certification, and the market price and benefits are high. Government technical extension organizations, enterprises, cooperatives and farmers play an important role as value chain actors.

Rice. Rice is the main food grain crop in China, and the major emitter of greenhouse gases in the cropping sector. In Jiangsu, Jiangxi and Guizhou, rice is grown as double-season rice, rice-wheat or rice-rapeseed, or single season rice with winter green manure or fallow. In rural areas of Guizhou, the rate of rice straw reutilization or incorporation into the soil is still low. Also, farmers often lack knowledge of improved management practices that would enable them to reduce the use of synthetic agricultural inputs, enhance the quality of soil and rice grain, increase yields, and reduce GHG emissions. The high use of chemicals and reduced vegetation in farmland and its boundaries lead to the pollution of streams and water bodies, a decline in farmland biodiversity and crop diversity, as well as degraded habitat and feeding place of wildlife such as birds and pollinators. Rice cultivation is one of the largest contributors to anthropogenic emissions of methane (CH_4), the second most important greenhouse gas in the world. However, rice farmers have limited knowledge and awareness of CH_4 mitigation. In some areas, in particular areas of rice-wheat cropping, the compaction of soil represents a serious challenge. Labour costs in rural areas are high, and despite the Government?s minimum price policy, farmers? income from rice is low. Due to the high market demand, the potential to develop organic and high quality rice brands for the Chinese internal market is very high. Like for wheat and maize, China is a net importer of rice, but is also nearly self-sufficient in rice production.

Together, wheat, maize and rice represent the main food crops by total production, as shown in the graph below. Generally, wheat and maize are consumed more in the northern part of China, while rice is consumed more in the South.

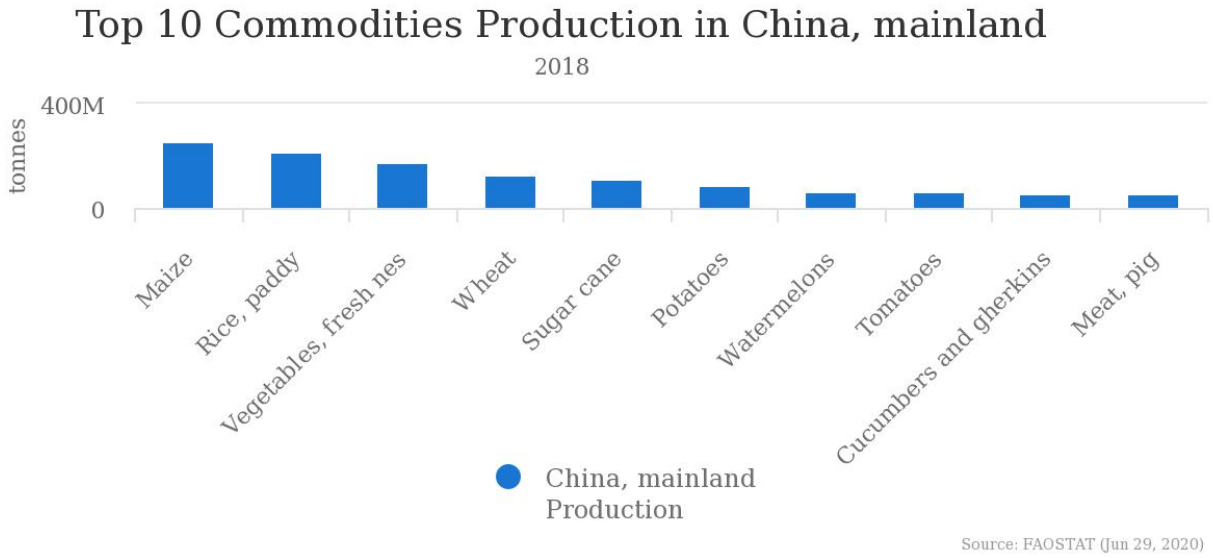

Figure 3: Top 10 Commodities Production in China (FAOSTAT, 2018)

Tea, fruits and vegetables. Tea and fruit production is an important source of chemical pollution, soil erosion and decline of ecosystem services in the uplands. Land reclamation in the hilly and sloped

areas for tea plantation and fruit orchard development has not only resulted in damaged biodiversity and ecosystem functions, but also resulted in soil erosion and land degradation. Improper application of pesticides brings great food safety concerns by consumers. As the tea plantations and fruit orchards age, the productivity and quality of the trees declines, resulting in excessive use of chemical fertilizers and pesticides, which exacerbates the problem of excessive application of chemical inputs, resulting in increased greenhouse gas emissions and nutrient runoff and leaching. In addition, vegetable production is not only an important source of pesticide pollution, but also one of the main sources of plastic mulch pollution. Similar to the economic trees, the excessive and sometimes high residue/high toxic pesticide application in vegetable production also brings great concern over food safety and soil/water pollution. Upgrading the economic tree varieties can not only increase productivity, increase farmer?s income who tend to live in the ecologically fragile areas, and improve food safety, but also restore biodiversity and ecosystem service functions. Moreover, piloting biodegradable plastic mulching can bring globally significant impact to the development of blue economy and reduce plastic pollution along the Yangtze River and Pacific Ocean. While these perennial crops are not among the target commodities of the FOLUR Impact Program, they represent important crops in the agricultural landscapes of Hubei and are critical to addressing challenges from food systems and land use, such as overuse of chemicals and soil erosion, within the target counties. They are also critical to the large-scale adoption of the 3S standards across the target landscapes in Hubei. Agroforestry systems built around these crops/commodities will be used as an important mechanism for restoring degraded land while providing incentives for smallholders to restore soil fertility and productivity.

Livestock. The release of animal manure and wastewater from the intensive livestock sector (in particular pigs) creates serious environmental stress, especially on water quality, while the intensification of animal rearing practices has exacerbated the risk of emerging infectious diseases (EIDs). Livestock waste is one of the biggest sources of greenhouse gas emissions from agriculture, thereby contributing to climate change. As mentioned above, the utilization rate of livestock manure in Hubei is less than 50%, representing important opportunities for circular agriculture, such as through organic fertilizer or biogas production.

While there are also environmental impacts during processing and distribution of these crops and livestock, in particular GHG emissions from transportation, the production aspect is most relevant to the FOLUR objectives of reducing land degradation, mitigating GHG emissions, sequestering carbon, while protecting and restoring biodiversity and ecosystems.

Overview of target commodities in the GEF-7 target counties

Shandong Province

The wheat and maize production in **Qihe County** is between 520,000-550,000 metric tons annually. About 30% of the production is consumed locally, about 40% is consumed in other regions of Shandong Province, and the other 30% is exported to other provinces. So far, there is no direct export to other countries. Individual farmers account for about 65% of agricultural production, and cooperatives or agricultural enterprises account for 35% (of which cooperative farmers account for about 75%). The average annual planting area of wheat in **Laizhou County** is about 43,000 hectares, and the yield is about 270,000 tons annually. About 40% is currently used for local consumption, about 10% is consumed in other places of Shandong Province, and the remaining 50% is processed into flour and sold to Heilongjiang, Jilin, Liaoning, Henan, Guangdong, and Yunnan. Laizhou wheat is currently not directly exported to other countries and regions. In Laizhou, individual farmers account for about 80% of production, and cooperatives, family farms and agricultural enterprises account for about 20%. (The total area of large grain farms in Laizhou is approx. 3,300 hectares). Wheat and maize are generally purchased by the grain purchase and storage centre, or purchased by flour processing enterprises. Most of the maize is used as feed.

Jiangsu Province

The rice yield in **Taicang County** generally reaches about 100,000 tons annually. The rice production in this county is mainly self-sufficient, and most is consumed locally. Some is sold to Shanghai, Suzhou etc., and purchased from other provinces and cities if production is insufficient. Taicang rice is not currently exported directly to other countries. The total scale of rice production in Taicang is 9,400 hectares, and the full scale operation is basically achieved. 91 cooperative farms have been registered and established, with planting area of 6,907 hectares; 207 large grain-growers with more than 3.3 hectares operate 2,467 hectares among them; and the area operated by family farms is only 26.7 hectares. A large-scale operation and management system has been established, mainly based on the independent cooperative farms and supplemented by large-scale individual farmers. The yield of rice in **Liuhe District** is about 280,000 tons, and rice consumption is roughly evaluated as follows: about 50% is used for local consumption, about 30% is consumed in other regions of Jiangsu Province, and about 20% is sold to other provinces. Liuhe rice is not currently exported directly to other countries. Individual farmers account for about 20% of production in Liuhe district, and cooperatives or agricultural enterprises account for about 80%.

Jiangxi Province

The total rice yield in **Fenyi County** is about 147,500 tons annually, approx. 45% of which is consumed locally, 5% consumed in other regions of the province, and 50% is exported to Guangdong and other provinces. The rice in Fenyi county is currently not directly exported to other countries. Individual farmers account for about 35% of production, and cooperatives or agricultural enterprises account for about 65% (of which contracted farmers account for about 35%). In 2016, the state-owned grain sector purchased 62,784 tons of rice, which accounted for 41.92% of rice yield. In 2017, it purchased 35,613 tons, accounting for 24.06%. In 2018, it purchased 28,824 tons of rice, accounting for 19.69%. The purchasing by non-state-owned grain sectors is the main channel. The rice yield in **Yushui County** is approx. 300,000 tons, approx. 40% of which is consumed locally, 10% consumed in other regions of the province, and 50% is exported to Guangdong and other provinces. The rice in Yushui county is currently not directly exported to other countries. Individual farmers account for about 40%, and cooperatives or agricultural enterprises account for about 60% (of which contracted farmers account for about 35%). In 2016, the state-owned grain sector purchased 19,160 tons of rice, which accounted for 8% of rice yield. In 2017, it purchased 18,570 tons and accounting for 7%. In 2018, it purchased 38,330 tons of rice, accounting for 13%. The purchasing by non-state-owned grain sectors is the main channel.

Guizhou Province

Rice is the most important food crop in Guizhou Province, with the total output and per hectare output ranking first and the planting area ranking second (after maize). The total output of rice in **Rongjiang County** is 76,900 tons, with 230 kilograms per person; the per capita net income and share of grain of farmers are lower than the average level of the country and Guizhou Province. Individual farmers are still the main force for the cultivation of rice in the county; over 80% of the county?s rice cultivation area is

Please refer to the FAO-MARA Project Document (ProDoc), Section *1.a.1) Project Description*, and the World Bank-Hubei Project Appraisal Document (PAD), *Section I. Strategic Context* for more details on the target counties and commodities.

Root causes and barriers

Among the main root causes of unsustainable production of wheat, maize and rice, as well as cash crops and livestock in China is the over four-decade long focus on high inputs/high yields, which is driven by the national policy of food self-sufficiency and the increase of food demand as population and incomes grow. Since the late 1970s, China?s efforts in agricultural production have been primarily centred on productivity at the expense of environmental sustainability. Moreover, the dominance of highly fragmented, small landholdings contributes to the inefficient or inadequate use of chemical inputs, with individual farmers lacking the skills and technologies to support more efficient application. The rapid urbanization and industrialization has absorbed over 100 million rural labours who are younger in age with middle- or high-school education, resulting in farmers of older ages with little or no education remaining in agricultural production. These farmers lack the skills and ability to adopt more efficient agricultural technology applications. Since the mid-2000s, the increase of agricultural labour cost driven by both the higher off-farm wages and the shortage of agricultural labour supply have emerged to become an important constraint for the growth of agricultural productivity. This further results in the inefficient use of chemicals over manual work such as weeding and the improper fertilization with the combination and overuse of base fertilizer and top dressing, one of the major reasons for the low nitrogen use efficiency and nutrient leaching and runoff. On the other hand, the dominance of highly fragmented, small landholdings contributes to the inefficient or inadequate use of chemical inputs. The fragmented landholdings prevent environmentally sustainable technology applications from being adopted by smallholder farmers due to low, sometimes negative, marginal benefit. Land abandonment becomes a widespread phenomenon in many regions. In some of the provinces with lower industrialization and lower levels of income per capita (such as Guizhou and, to a lesser extent, Hubei and Jiangxi), the degree of agricultural mechanization is still low. Related to these challenges is the fact that current value chains do not adequately internalize environmental costs, as existing market and government incentives are aimed at achieving high productivity and low consumer price for staple crops. Similarly, the intensive livestock sector has also primarily focused on high productivity, and technologies for reducing environmental pollution have not yet been widely adopted due to a lack of knowledge and incentives among producers and the high costs of initial investment.

The following barriers to a transformation towards sustainable food production systems have been identified.

Barrier 1: Gaps in the enabling policies and planning frameworks at the national and sub-national level (addressed by Component 1)

While there is a high-level commitment to the transformation towards sustainable agriculture, this is yet to be fully translated into national and sub-national level policies and implementable action plans with clear objectives and sufficient fiscal support. Sub-national policies and plans are still primarily focused on economic development, agricultural productivity and poverty reduction. There is a need for integrating these goals with improvement of ecological services and environmental sustainability. Current policies that link grain and other production subsidies with sustainable practices are still limited. For example, subsidy policies for the promotion and application of alternative fertilizers such as slow-release fertilizers, water-soluble fertilizers and microbial fertilizers are generally lacking. And although several policies and plans have been issued promoting sustainable agriculture at central and provincial levels, they still lack the scale and ambition required for a system transformation. Additionally, policies need to be adapted to the diverse socio-economic and agro-ecological conditions

at the local level, and investment plans need to be developed. Also, while there are ongoing efforts to promote integrated landscape-level planning in China (including through the ?Lake Chief? and ?River Chief? mechanisms for integrated watershed management), this is not yet fully implemented at the local level. Downstream effects of agricultural production as well as impacts on surrounding ecosystems are not yet addressed and managed in an integrated manner. Although most local governments have issued comprehensive conservation policies, there are almost no policies specifically for the conservation of farmland biodiversity and landscape diversity. Local institutions have limited capacity to incorporate biodiversity considerations into agricultural landscapes planning and management. Policy coordination needs to be improved across agencies. In addition, data to assess biodiversity in China?s farmlands is very limited.[12]

Also, China has undertaken reforms to allow farmers to transfer their land contracting rights in favour of more efficient, large-scale production. However, the expansion of farm scales through land transfers does not naturally transform the agricultural practices from unsustainable high inputs/high yields model to sustainable practices such as the model of higher efficiency and sustainable productivity with lower inputs. While China?s land tenure policies have evolved to support land transfers through the ?three-right separations?, i.e., the separation of the collective land ownership right of villages from land contracting right of farmer households, and the separation of land operating right of large family farms and agribusinesses from land contracting right of farmer households, an effective legal arbitration system over land dispute is yet to be established. Moreover, policy incentives to support environmentally friendly technology transfers and adoption by larger family farms and agribusinesses is still a key factor to the development of sustainable agricultural production systems. While the GEF FOLUR IP China child project does not intend to address the land related institutional issues, the expansion of farm scale does provide an important foundation for the project to pilot and demonstrate innovative, sustainable and high-efficient technologies which conserve natural resources and biodiversity with larger scale farms, farmer cooperatives and agribusinesses, and along the selected agricultural value chains.

Finally, there is also a lack of integrated monitoring systems to assess and monitor impacts from land use planning, sustainable agriculture and restoration activities at the local and central levels.

Barrier 2: Limited capacity and mechanisms at the local level to scale up innovative approaches for sustainable agriculture and restoration (addressed by Components 2 and 3)

While a wide array of technologies have been developed and tested in China to reduce fertilizer use and GHG emissions from crop and livestock production, optimize the use of land and water resources and address negative impacts of agriculture on biodiversity, there are limited mechanisms at the local level to adopt and scale up these practices. In particular, integrated systems have been developed that address environmental issues while enhancing productivity, such as circular agriculture, integrated rice-fish farming systems, conservation agriculture, and crop rotation. Government extension services, public and private sector efforts as well as Farmer Field Schools have had some success in promoting sustainable agricultural practices in agricultural production. Nevertheless, there is still limited capacity among local government and farmers to support the uptake of innovative practices, and to support low-risk alternatives to chemical fertilizers and pesticides. Funds allocated to sustainable agriculture programmes are insufficient and mainly used for conducting pilot demonstrations, without adequate technical support and sufficient coverage. In some of the more remote rural areas, mechanization levels for rice production are still low; small-scale mechanization would be a viable strategy to reduce the intense manual labour required for agricultural production. The farmers or farmer cooperatives also lack adequate equipment for new technologies such as smart fertilization. Although there are numerous existing technical standards for the production of crops and livestock, these do not yet fully incorporate best practices that would allow the country to generate significant benefits for the environment and

local livelihoods. There is also a lack of effective knowledge management platforms to share sustainable low input technologies.

There is still limited application of alternative pest management strategies that can reduce costs and enhance yields. Importantly also, there is limited knowledge at the local level of the role that agrobiodiversity and the selection of cultivars can play in reducing GHG emissions, enhancing resistance to pests and diseases, increasing yields, and increasing adaptability to climate change. Knowledge of traditional varieties, which are often better adapted to local growing conditions and can fetch higher prices in markets if a Geographical Indication certification scheme can be developed, is inadequate.

Furthermore, there is limited capacity among local government, private sector, farmers and farmer cooperatives to implement innovative approaches to restore the productivity of degraded agricultural land and increase biodiversity in agricultural landscapes. Systematic understanding of sustainable agriculture is insufficient.

Barrier 3: Limited market and policy incentives and engagement of smallholder farmers in value chains supportive of sustainable production and land management (addressed by Component 2)

In addition to the policy incentives mentioned under Barrier 1, without adequate market incentives, farmers especially smallholder farmers lack the motivation to adopt new practices. Due to the small production units and the limited role played by farmer cooperatives in organizing grain value chains, farmers do not benefit from access to value chains that would support environmental sustainability. There are insufficient pre- and post-production linkages of agricultural production, leading to suboptimal value chains. There is a large number of traders and agri-processors in China, 98% of which are small and medium enterprises (SMEs), which poses challenges for vertical coordination and integration of agricultural value chains. Most of these enterprises suffer from low profitability and low capacity to comply with environmental standards. Farmers and agricultural enterprises often lack access to affordable credit and financing required to modernize and improve their operations. Farmers, therefore, mostly rely on local government to organize their supply chains and purchase the grain at the minimum price set by government.

Local SMEs and cooperatives could play a key role in supporting family farms? and smallholder farmers? (and in particular women?s) access to green technologies, inputs, as well as processing and marketing of their products. For this, however, institutional arrangements for profit-sharing need to be established, and farmers? capacity needs to be strengthened. Large e-commerce companies such as Alibaba have recently entered the agriculture sector and support farmers in marketing and distribution of agricultural products. However, local institutions lack the capacity to fully develop and benefit from these opportunities. Financing costs are high. Further efforts need, thus, to be undertaken to increase capacity and access to market mechanisms and financing that incentivize sustainable production of wheat, maize and rice, cash crops, and livestock. In particular, there is an opportunity to engage and create benefits for women, who are increasingly left in charge of agricultural production as men seek employment in urban areas, by building their skills and access to value chains.

Barrier 4: Limited platforms and knowledge sharing and exchange mechanisms to support replication and scaling (addressed by Component 4)

One important barrier to scaling up successful approaches of sustainable and climate-smart agriculture is the absence of national and provincial collaboration mechanisms or platforms to promote knowledge sharing and exchange, including exchange with and between private sector entities. In addition, there is limited exchange with other countries in the region on sustainable production of crops and livestock.

Also, provincial and county governments have limited capacity to collect and assess information that would enable them to provide targeted support for sustainable agricultural systems. Improved information and knowledge exchange would allow to harness additional public and private investment to scale up priority actions in the agriculture and land-use sectors. Furthermore, there is still limited awareness among consumers of the negative externalities associated with cheap food production and the benefits of ecological agriculture and green certifications.[13]

In conclusion, there is a need to transform the food production system in China to a system that sustainably increases productivity and incomes, contributing to economic development while protecting biodiversity and ecosystems and reducing GHG emissions, in line with the country?s vision of ?ecological civilization?. This will require interventions across the entire food value chain, from policies, incentives and investments for sustainable food systems and land restoration, to promoting sustainable production systems, to developing value chains and market access that support environmental sustainability.

Please refer to the FAO-MARA Project Document (ProDoc), Section *1.a.1) Project Description*, and the World Bank-Hubei Project Appraisal Document (PAD), *Section I. Strategic Context* for more details.

COVID-19 impacts

As of September 22, 2020, a total of 85,307 confirmed COVID-19 cases have been reported in 31 provinces (autonomous regions and municipalities) in Mainland China. In the last month, only 20 new confirmed cases have been newly diagnosed every day, all of which were imported from abroad. China?s COVID-19 prevention and control work has achieved important results. Industries have been resuming work and production; schools and universities have reopened; and domestic tourism and hotel industries are also recovering. The impact of COVID-19 on the agricultural supply chain network is gradually diminishing, and the relevant suppliers of production materials, producers, processors and consumers are gradually returning to normal. Nevertheless, the impact of COVID-19 on China?s national and local economies has been significant. The epidemic has prompted national and local governments to pay more attention to agriculture, food security and environmental protection of natural resources, and corresponding financial support has been committed.

2) Baseline scenario and any associated baseline projects

National government policies and programmes

China has an ambitious vision for an Ecological Civilization and the transformation of its food and land use system. The country has made it a top priority to shift towards a sustainable food production system. China?s 13th Five-Year Plan (2016-2020) and its No. 1 Central Document 2018 include clear commitments to sustainable agricultural development to enhance productivity while preserving important ecosystem functions. The National Plan for Sustainable Development of Agriculture (2015-2030) includes commitments to treat or use 90% of animal waste, to use all crop straw, to increase nitrogen fertilizer efficiency to 40%, and to equip 75% of all irrigated farmland with water saving technologies by 2030. The plan also supports agricultural mechanization, modernization, and the use of technologies and innovation. It further stresses the need for agro-ecological restoration to improve ecological functions.

China is also increasingly playing a global leadership role on these issues. In its Nationally Determined Contribution (NDC), China has committed to promoting low-carbon development in agriculture, aiming to achieve zero growth of fertilizer and pesticide use by 2020. Under the NDC, the country aims to control methane emissions from rice fields and nitrous oxide emissions from farmland. In its NBSAP (2011-2030), China sets as a priority to incorporate biodiversity conservation into sectoral and regional

planning to promote sustainable use, and to reduce impacts of environment pollution on biodiversity. Most highly hazardous pesticides have been banned and are no longer in use.

Considerable government investments are targeted at alleviating poverty, and the Government of China has formulated a Strategy on Rural Vitalization in 2017 with the aim to eliminate poverty, promote the modernization of agriculture and increase prosperity in rural areas. In 2018, the Ministry of Agriculture and Rural Affairs issued the ?Implementation Plan for Science and Technology Supporting Actions for Rural Revitalization?, focusing on solving the key factors of cost-effectiveness, quality and safety, and environmental protection in accordance with the concept of coordinated development of production, ecology and life.

In line with these plans, national and provincial government is investing in several programmes on sustainable agricultural development. The establishment of the Ministry of Agriculture and Rural Affairs in 2018 provided institutional guarantee for the overall promotion of the comprehensive development of agriculture and rural areas and the revitalization of the countryside and proposed the goal of sustainable development of China?s agriculture by 2030.

Based on the general objective of ecological progress promotion, the Chinese government has formulated a comprehensive management plan of ?mountains, rivers, land, forest, grassland and lakes? by drawing ecological red lines, incorporating land degradation prevention and control into the overall strategy of national sustainable development, improving the safeguard mechanism of ecological security, and strengthening the ecological protection and restoration.[14] An example of a provincial red line plan is shown in the figure below.

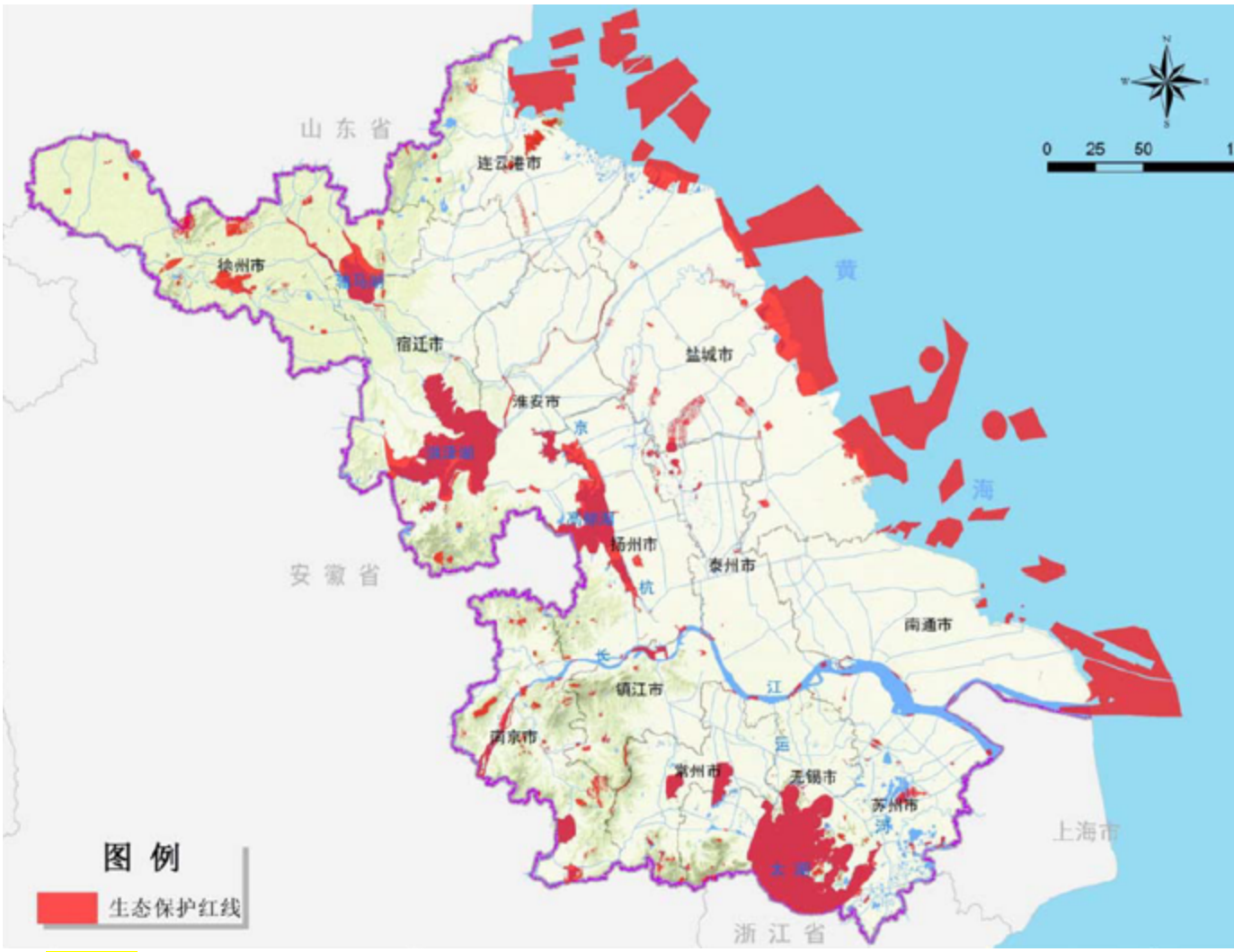

Figure 4: Distribution of ecological protection areas in the Red Line Plan of Jiangsu Province

In the agricultural sector, a range of technical measures have been deployed, such as high-yield rice varieties with lower emissions, intermittent paddy field irrigation, improved ruminant animal breeds, intensive livestock management, and biogas from treatment of livestock and poultry manures. Moreover, soil test-based fertilization has been practiced across the country.[15] The Chinese Academy of Agricultural Sciences is conducting applied research programmes adapted to the agro-ecological conditions of each province. The government has also established the Soil and Fertilizer Alliance of China under the Chinese Academy of Agricultural Sciences in order to promote efforts to improve soil quality and environmental protection. In 2017, the Ministry of Agriculture established a Farmland Quality Monitoring and Conservation Centre. Furthermore, the Ministry of Agriculture invests RMB 3.5 billion annually in agricultural biodiversity conservation, of which approximately RMB 15 million is used for the conservation of crop genetic resources.

The Chinese Government has taken effective action to combat soil erosion. In the middle reaches of the Yellow River, comprehensive control measures have been applied, such as building dams and turning slope land into terrace, with an annual reduction of about 400 million tons of sediment entering into the Yellow River. Key water and soil conservation control projects in the middle and upper reaches of the Yangtze River have controlled soil erosion area about 80,000 km2 and the soil water storage capacity has been increased by more than 2 billion m3. Land degradation trend assessment is carried out on a

regular basis by the Ministry of Ecology and Environment (MEE). National land degradation macro-monitoring is carried out using remote sensing and in the light of annual trends of desertification across the country.

Furthermore, the Government of China has set important restoration goals. By 2020, it aims to return 2.8 million hectares of the slope farmland and seriously sandy farmland to forest and grassland. Simultaneously, it aims to maintain arable land at 122 million hectares, build high standard farmland of 80 million hectares, and improve the national average arable land quality by 1.0 grade (level) compared to that of 2015, by 2030.[16]

Investments have also been made in the conservation and development of Globally Important Agricultural Heritage Systems (GIAHS).[17] Since most GIAHS sites in China are located in remote and poverty-stricken areas, the local governments have launched various agricultural poverty alleviation projects, such as promoting featured plantation and aquaculture/animal husbandry, ecological agriculture, partnerships with private sector on Internet cooperation, microfinance services etc., with a view of developing agricultural value chains and increasing farmers? income.

Financial mechanisms to support sustainable agriculture

Central and provincial government implement various agricultural funds and subsidies. In particular, the government has established subsidies for straw returning mechanization, green manure and pollution control to support implementation of the sustainable agricultural policies mentioned above. In some places, the government also subsidizes the application of organic fertilizer instead of chemical fertilizer for fruit, vegetable and tea, green fertilizer from the rotation and fallow cultivation, as well as formula fertilizer. A special fund for agro-ecological protection and resource utilization was established in 2019, in addition to the national and local agricultural industrialization funds and comprehensive agricultural comprehensive development funds. Moreover, agricultural enterprises enjoy various financial subsidies, such as interest rate subsidies and financial incentives, for investments such as technological transformations, construction of demonstration bases, purchase of seeds, purchase of agricultural machinery, as well as food production and marketing.

Nonetheless, the majority of government subsidies still goes to support agricultural production generally, not specifically to sustainable agriculture, including through grain target price subsidies and farmland protection subsidies, agricultural insurance, as well as subsidies for the supply of rice seeds, and agricultural machinery. Funding for green agriculture is insufficient, and mainly used for conducting pilot demonstration, while technical guidance is not in place. The coverage of support policies is small.

China has been one of the pioneering countries for eco-compensation mechanisms. The 2015 amendment of the Environmental Protection Law provides the legal basis for a national eco-compensation mechanism and the use of market mechanisms for eco-compensation. Eco-compensation in China is conceived as a public mechanism to promote environmental protection and restoration, including through the payment for ecological services.[18] However, eco-compensation projects in China have so far been primarily focused on grasslands, forests, and watersheds. Agricultural ecosystems are not currently covered by these eco-compensation schemes.

China?s Conversion of Cropland to Forest Program (or Grain for Green Program) is one of the world?s largest Payment for Ecosystem Services (PES) programs, paying farmers to plant trees on their land and providing degraded land to rural families for restoration. The Government of China has also issued a series of incentives and policies to encourage and guide the financial and social capital to be involved in land degradation control and development.[19]

Standards and certifications

Driven by the increasing consumer awareness and demand for ?cleaner and greener? food, China has introduced several certification systems aiming at certifying safe and environmentally sound food production. The three most common certifications include Green Food, Organic, and Hazard-free. The Green Food certification was introduced in the 1990s and requires certified foods to meet certain standards for the use of pesticides, production methods and residue testing. According to Garnett and Wilkes (2014), Green Foods may achieve a price premium of around 12% compared to conventional produce. Organic certification began in China in the late 1980s. Designated agencies (private companies, NGOs and others) are authorised to certify organic products in China. Around 2 million hectares of farmland are certified organic in China, the sixth largest area in the world. Hazard-free certification was introduced in 2001, in response to concerns over health incidents and contaminated food. It focuses on controlling illegal use of highly toxic agricultural chemicals and violations of pesticide residue standards. Around 21 million hectares are certified hazard-free.[20] Garnett and Wilkes (2014) note that ?certifications are increasingly important for access to export markets. Around 90% of China?s agricultural exports carry some form of eco-food label, either hazard free, green or organic. However, trust in these certifications is a major issue both domestically and in international markets.? Moreover, the China Standard Conformity Assessment Co. LTD (CSCA), a leading certification, testing and standardization company in China, has developed a new national standard on organic rice. In addition to these certifications, various technical standards are issued at provincial level to promote sustainable agricultural practices, such as on pest management and pollution control. Furthermore, Community-Supported Agriculture (CSA) has been developing rapidly in recent years in China.[21] This alternative production model applies principles of organic production and links producers to consumers to create trust in the safety of food products.

Provincial policies and programmes

All five target provinces have piloted Provincial Ecological Cycle Agriculture and Integrated Utilization of Crop Residues and Green Manure programmes, and are implementing national and regional policies and strategies with regard to agricultural development. The provinces also apply integrated pest management (IPM) measures for the three target grain crops and other crops such as fruits and vegetables, including agricultural measures based on disease-resistant varieties, physical and chemical prevention and control measures, as well as biological and ecological control measures. Green or non-chemical pest prevention and control technologies are applied in approximately 30% of the target areas. Most of the project?s target counties are key counties of agricultural production and have a good foundation and technical capacity in green prevention and control. The provinces also have issued numerous technical regulations and standards, including green and hazard-free certifications.

The Provincial Departments of Agriculture and Rural Affairs, the County Agriculture and Rural Affairs Bureaus and Township Agriculture Stations are in charge of implementing agricultural policies and programs. Agriculture technology stations at county and township levels are in charge of promoting the use of technology and providing technical training and guidance to local farmers. The Provincial Departments of Natural Resources are responsible for the land use planning process. At the county level, the county Bureau of Land and Resources is in charge of formulating or revising the land use plans, generally every 3-5 years. Due to rapid urbanization and development, the protection of farmland has become a priority in provinces such as Shandong and Jiangsu, as urban or industrial developments have been encroaching into agricultural land. Also, based on the Government?s strict enforcement of red line policies and allocation of farmland, encroachment of agricultural land into wetlands and forests does not generally occur. On the contrary, as mentioned above, some cropland has been converted into forest areas or woodlots to protect watersheds and address land degradation. An example of a district land use plan is shown below.

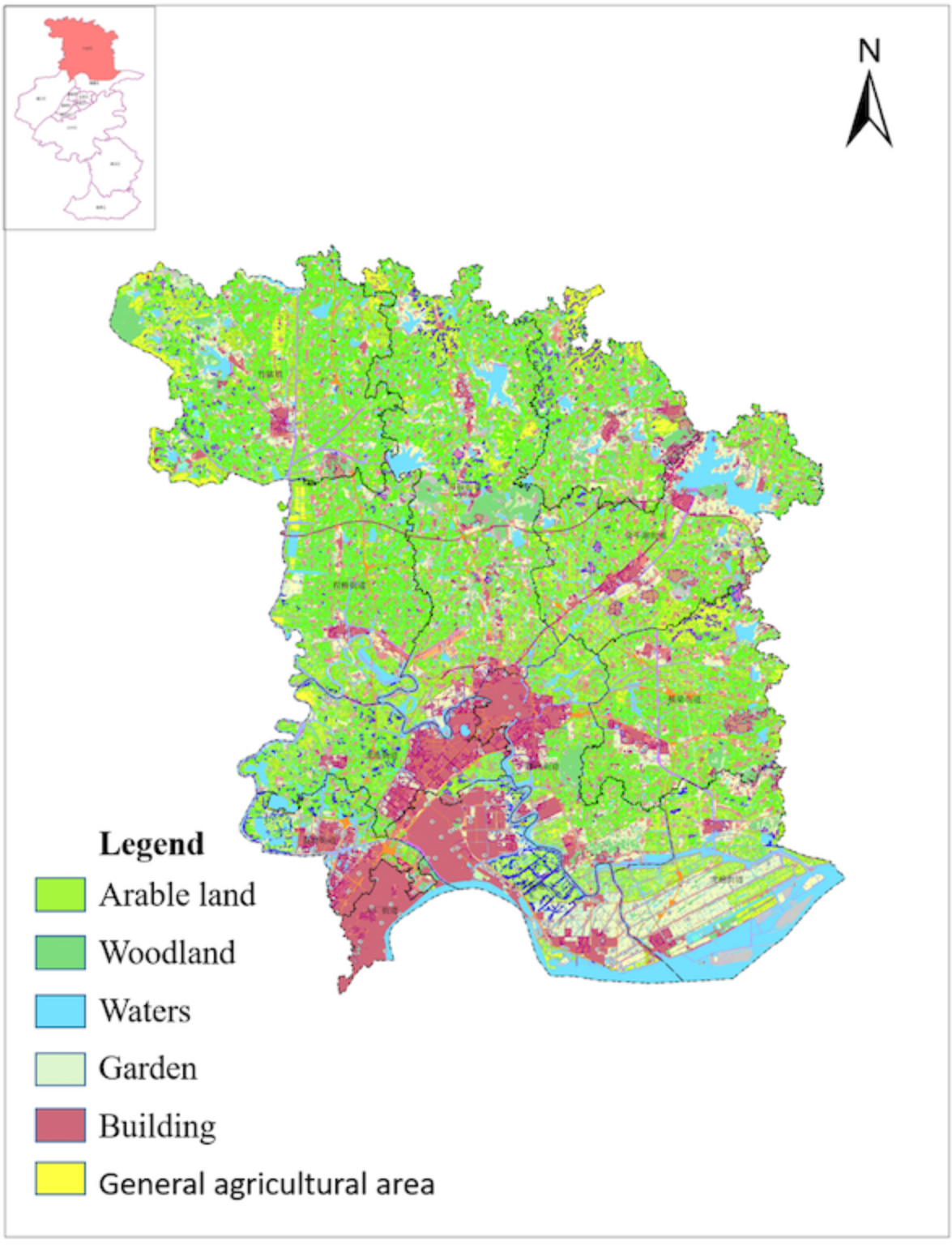

Figure 5: Overall Land Use Plan of Liuhe District (2006-2020)

The potential of climate-smart agriculture (CSA) to reduce emissions, improve soil productivity, promote adaptation, and improve the resilience of the agriculture sector to growing climate change risk has been acknowledged at national and provincial levels. Recognizing the importance of market mechanisms to address climate change risks, in 2011 China?s National Development and Reform Commission (NDRC) initiated a carbon emissions trading pilot that identified seven regional emissions trading pilots. It also issued the Interim Measures for the Management of Voluntary GHG Emission Reduction Transactions that allowed for the issuance of domestically produced offsets known as China Certified Emission Reductions (CCER) to be accepted as offset credits. The regional emissions trading scheme (ETS) pilots, which began in 2014-15 and which also included Hubei Province, helped to generate early experience in addressing GHG emissions through a market mechanism supported by regulation. Based on these experiences, the Chinese government recommended the establishment of a national carbon market to scale up climate mitigation actions, and prioritized development of a national ETS, with an expectation to operationalize it post-2020.

Hubei. Hubei has ambitious goals for agricultural development. As articulated in provincial development plans, including the Hubei 2018-2020 Specialty Agricultural Produce Development Plan, Hubei Province aspires to take advantage of an unmet national demand for high-quality food products from an increasingly urbanizing consumer base. In 2015, Hubei promoted the application of soil testing and formula fertilization for an area of 6.6 million hectares. The province aims to become a national leader in agricultural sustainability and climate change mitigation and adaptation. According to national government GHG emission reduction plans, by 2020 the CO2 emissions per unit of national GDP should be decreased by 18% compared to that of 2015, while the goal for Hubei province is an even more ambitious 19.5% reduction.

Hubei Province established a regional ETS pilot in April 2014. It was designed to address industrial emissions from power generation, cement, chemicals, metallurgy, manufacturing, and food and beverage industries, and enabled trading of emissions allowances. The allowances were traded in a range of CNY 10 to 30/ton CO2e with an average price of CNY 22/ton CO2e. The Hubei ETS allows companies in the covered industries to use voluntary offset projects that are verified as China Certified Emissions Reductions (CCERs) to cover up to 10% of their targets. In the pilot phase, CCER projects from renewable energy and forest carbon sinks were allowed. However, offsets from agriculture were not allowed. As the ETS is scaled up, establishing the preconditions for the inclusion of climate-smart agriculture investments as a candidate for offsets would create powerful incentives to the private sector.

Shandong. The current policies and plans of Shandong include the 13th Five-Year Plan for Ecological Environment Protection of Shandong Province, the Implementation Plan for Rural Revitalization Strategy, the Strategy and Action Plan for Biodiversity Protection of Shandong Province (2011-2030), as well as the Cultivated Land Quality Improvement Plan of Shandong Province (2014-2020). Shandong Province has formulated the Collectivity Plan for Land Use of Shandong Province (2006-2020). According to the land use planning, the proposed land degradation restoration measures include: 1) soil improvement and restoration; 2) pesticide residue treatment; 3) plastic film pollution control; 4) straw comprehensive utilization; 5) livestock manure comprehensive utilization and pollution treatment; 6) heavy metal pollution restoration. According to the Ecological Protection and Construction Plan of Shandong Province (2014-2020), the proposed biodiversity protection measures include: 1) building vegetation buffer zone on slope land and nearby waters; 2) building ecological ditches; 3) building agroforestry composite system; 4) diversified planting in farmland; 5) building flower and grass belts by the boundary of farmland.

Jiangsu. The main relevant policies and plans of Jiangsu include the Implementation Plan of Ecological Environment Protection in the Yangtze River Economic Belt of Jiangsu Province, the Implementation Plan of High Standard Farmland Construction of Comprehensive Agricultural

Development of Jiangsu Province (2013-2020), the Strategy and Action Plan of Biodiversity Protection in Jiangsu Province (2013-2030), the Priority Regional Plan of Biodiversity Protection, and the Protection Plan of Aquatic Biodiversity in Key Basins. The province has also issued an Implementation Plan for Promoting the Rotation and Fallow of Cultivated Land to Promote the Green Development of Agriculture in Southern Jiangsu, the 13th Five-Year Plan of Water Conservancy Development in Jiangsu Province, and is implementing the Special Action of Livestock and Poultry Breeding Pollution as well as Agricultural Non-Point Source Pollution Control in Jiangsu Province.

Jiangxi. Main relevant plans and programme of Jiangxi include the Implementation Plan for Promoting the Construction of High Standard Farmland with the Overall Integration of Funds in Jiangxi Province, the 13th Five-Year Plan of Water Conservancy Development, and the Water and Soil Conservation Plan of Jiangxi Province (2016-2030). In terms of reducing pesticide and fertilizer application, Jiangxi Province has implemented the ?four control and one reduction? project, the project of fruit-vegetable-tea organic fertilizer as alternative to chemical fertilizer, the project of improving the quality of cultivated land and increasing the efficiency of chemical fertilizer application. In addition, 12 counties of Jiangxi (not including the GEF-7 target counties) have implemented whole-county pilot projects of straw comprehensive utilization. In 2019, the province established 20 demonstration counties for reducing fertilizer and increasing efficiency. In terms of agrobiodiversity conservation, Dongxiang Wild Rice and Chongyi Wild Citrus in situ conservation sites have been established.

Guizhou. Relevant policies and plans in Guizhou include the Development Plan of Featured Grain Industry in Guizhou Province (2016-2020) and the Crop Production and Development Plan of Guizhou Province during the 13th Five-Year Plan (2016-2020). Guizhou has developed several technical standards and specifications for rice disease and insect pests control, including the ?technical specification for pollution-free and high quality rice production?. The Guizhou Province?s Regulations on the Promotion of Ecological Civilization Construction are aimed at promoting the construction of ecological civilization and advancing green, circular, and low-carbon economic and social development, ensuring the harmonious coexistence of human and nature, and maintaining ecological security.

The project will build on the experiences and lessons learned of these numerous government plans and programmes at the national and local levels. It will aim to scale up good practices and technologies that have been tested, and go beyond demonstration areas to achieve sustainable production at scale.

FAO

In line with the Country Programming Framework for China (2016-2020), FAO is supporting the Government of China in the following priority areas:

1) Fostering sustainable and climate resilient agricultural development;
2) Reducing rural poverty, food insecurity and malnutrition;
3) Promoting a one-health approach for sustainable agriculture trade, and improved Public Health; and
4) Facilitating China?s regional and international agricultural cooperation.

FAO is implementing a number of Technical Cooperation Programme (TCP) projects in China. In particular, FAO has supported MARA in improving agricultural extension services through Farmer Field Schools (FFSs). Over the past ten years, FAO has implemented more than 300 FFSs in eight provinces and autonomous regions in the fields of soil health, water resource management, crop/fruit/vegetable production, post-harvest, integrated pest management, and crop residue management. Featuring whole-season and highly participatory interactions, these FFSs have effectively extended agricultural technical packages and development concepts to over 8,500 farmers. Another 110,000 farmers also indirectly benefited from the related information and educational campaigns. The

FFS modality has great buy-in from not only the farming communities, but also government counterparts at all levels. In Guizhou, FAO has implemented two TCP projects on integrated pest management (IPM), one of which was implemented in Tianzhu County of Qiandongnan. FAO has also implemented the project ?Agricultural Technology Integration and Demonstration for Green Rice Development in Chongming Island, Shanghai?, under which a Green Rice Standard was developed. The GEF-7 project will directly build on the approaches and innovations applied in the FFSs across China, and use the model as a key mechanism to promote sustainable, climate-smart practices and IPM.

FAO, in collaboration with UN Environment, GIZ, IRRI, the Sustainable Rice Platform (SRP) and other partners, is preparing several projects under the umbrella of a regional Sustainable Rice Landscapes initiative. Linkages and exchange of knowledge with this initiative will be sought during project implementation, in particular with regard to sustainable rice standards and value chains.

FAO and MARA have been partnering with the private sector to bring solutions at scale and build on their innovation power to support poverty reduction. Among others, the project can build on existing partnerships with Alibaba and other e-commerce companies to enhance access to markets and rural finance for smallholder farmers while promoting sustainable agricultural practices. Moreover, FAO is partnering with Guangfa Securities to develop Sustainable Development Goals (SDG) villages in Sichuan, Hunan, Hubei and Hainan Provinces. The objective is to help farmers in 16 poverty-stricken villages to grow good quality agro-products, better link them to markets and thereby increase their income. The project will pilot the ?Internet + agriculture + finance? model, building on FAO and MARA?s network of Farmer Field Business Schools. Furthermore, FAO supports China?s efforts to preserve GIAHS sites, and to promote South-South cooperation, a mechanism that can be used to disseminate lessons learned from this project to other countries.

Discussions are ongoing between FAO and Alibaba Group at the global level to form a Memorandum of Understanding (MOU) between the two organizations on the promotion of information and communications technologies (ICT) and digital innovation in agriculture. The collaboration with FAO would involve China as well as other countries. It is envisioned that some demonstration activities on digital agriculture and e-commerce will be conducted in the GEF-7 target counties under the proposed project. Among the four proposed collaboration areas of the MOU, one is dedicated to ?Ecological conservation for sustainable agriculture development, contributing to climate change mitigation and adaptation?. It includes joint research and experience sharing of Ant Financial practices for forestry restoration, and collaboration through activities and projects to explore the impacts of ecological conservation through digital platforms on poverty reduction and greener lifestyle, and raise public awareness on ecological conservation.

World Bank

Under the World Bank Group Country Partnership Framework (CPF) for China (2020-2025), the World Bank aims to promote greener growth and to demonstrate sustainable agriculture practices and improving food system quality and safety. The GEF-7 project is in line with several of the CPF?s selectivity criteria, namely strengthening policies and institutions, delivering regional and global public goods, and strategic piloting of approaches that address development priorities, especially in areas relevant to other developing countries. The World Bank participates in key FOLUR initiatives globally, including as a founding member of the FOLU Coalition. It builds on a wealth of experience and knowledge from the implementation of climate-smart and sustainable agriculture projects globally and in China. Notably, World Bank in collaboration with the Rural Energy and Environment Agency (REEA) of MARA is implementing the GEF-5 ?Climate Smart Staple Crop Production Project? in Anhui and Henan Provinces (adjacent to the GEF-7 landscape, bordering Shandong, Jiangsu, Jiangxi, and Hubei). The project focuses on China?s three main staple crops under two major crop production systems: the wheat-rice system in Huaiyuan County of Anhui Province and the wheat-maize system in

Yexian County of Henan Province. The project is ending in 2020. Lessons and good practices, as well as policies and guidelines developed under this project have been, and will continue to be used to inform the GEF-7 project, in particular with regard to the Conservation Agriculture (CA) and fertigation approaches and technologies implemented under the project.

World Bank is also implementing an IBRD and GEF financed ?China Guangdong Agricultural Pollution Control? project, which ends in 2021. In order to reduce agricultural non-point source pollution, the project has worked on improving (a) soil nutrient management; (b) integrated pest management (IPM); (c) conservation agriculture (CA) pilots; and (d) implementation support to project farmers. The project has tested and implemented the ?Three Controls Technology?, which consists in controlling (i) the amount and timing of fertilizer application, (ii) unproductive tillers, and (iii) fungicide and pesticide application. The project has also implemented Alternate Wetting and Drying (AWD) to reduce water use and GHG emissions, while enhancing yields. Furthermore, the project has piloted certifications for Safe Agricultural Products and Green Agricultural Products.

The World Bank is also implementing an IBRD-financed ?Jiangxi Farm Produce Distribution System Development? project in eight counties/districts of Jiangxi Province, from 2018 to 2023. In addition, the World Bank Board has recently (in March 2020) approved the ?Henan Green Agriculture Fund Project?, which aims to demonstrate the viability of financing green agriculture investments and foster the innovation and adoption of green agriculture standards and technologies in Henan. The project will contribute to the development of a green agriculture financing mechanism for promoting green agriculture growth in Henan Province through market transformation and commercial sector engagement. Project-supported interventions will include green crop production expansion, livestock manure management, energy use efficiency, water use efficiency, wastewater treatment and knowledge-based services. This project can inform the GEF FOLUR IP China child project particularly in the innovation of providing financial support to the greening of the agricultural sector.

Ongoing GEF projects of relevance

As described in *Section 6. Institutional Arrangement and Coordination*, the China child project builds on important experiences and lessons learned from a number of GEF and other projects. In particular, the project will coordinate closely with the following ongoing GEF projects in the target provinces:

? UNDP-led GEF-6 ?PRC-GEF Partnership Program for Sustainable Agricultural Development? and its child project ?Conservation and sustainable use of indigenous agricultural genetic diversity in Hubei?. The project will strengthen incentive mechanisms for agricultural biodiversity, and will demonstrate, in particular, incentive mechanisms for rouge rice in Yunyan County, wild kiwi in Wudang Mountain City, and Matou goat in Yunxi County of Hubei. The GEF-7 project will collaborate with this project to capture lessons learned and exchange knowledge on agricultural biodiversity conservation.

? Furthermore, in Shandong, Hubei, Jiangsu and Jiangxi provinces, the GEF-7 project will exchange with the UNDP GEF-6 project ?Phase out of Endosulfan in China?. Although the GEF-6 project is focused on cotton and tobacco, the GEF-7 project can benefit from the systems and IPM mechanisms and practices established by this project in the target provinces.

? In Jiangxi Province, the GEF-7 project will exchange with FAO?s GEF-5 project ?Piloting Provincial-level Wetland Protected Area System in Jiangxi Province (Poyang Lake)?. Although not implemented in the same counties, the two projects have indirect linkages as the GEF-7 project aims to reduce agricultural pollution in river systems upstream of Poyang Lake. When developing biodiversity indicators, the project will seek inputs from the GEF-5 project.

? In Jiangxi and Guizhou, linkages will be established with IUCN?s GEF-6 project ?Building Climate Resilient Green Infrastructure: Enhancing Ecosystem Services of Planted Forests in China through Forest Landscape Restoration and Governance Innovation?, which is part of the global program The Restoration Initiative (TRI). Although not working in the same landscapes/counties, the

two projects can exchange lessons learned in particular with regard to technologies and species selection for ecological restoration and agroforestry.

Private sector

Local SMEs and cooperatives in the target landscapes support production, processing and marketing of the project?s target grain crops rice, wheat and maize. They support agricultural mechanization, supply of inputs, development of market linkages and supply chains. These local companies work closely with county and township governments and receive targeted support and subsidies from government to support agricultural production. Some companies help farmers to implement green policies such as green manure, crop straw reutilization, organic fertilizer production, and recycling of agricultural input waste. Others have established agricultural product supervision and traceability platforms to support information management on field, insects, seedlings, meteorology and farming operations. At the provincial and national level, private and state-owned enterprises support aggregation, distribution and wholesale. There is a great opportunity to expand these public-private partnerships and enhance capacity of these local companies to implement sustainable agricultural practices while linking farmers with value chains.

A detailed value chain analysis conducted during the project preparation phase (available as a separate report) shows that capacity for value addition and technological innovation is still low. High financing costs, lack of skilled human resources and lack of industry-wide organization is also a constraint for local companies.

As mentioned above, large e-commerce companies such as Alibaba and Jingdong Group have recently entered the agriculture sector. They provide access to affordable financing to farmers in rural areas, as well as marketing and distribution of agricultural products through their e-commerce channels. Alibaba has made it its mission to contribute to the Sustainable Development Goals (SDGs), and in particular to poverty reduction and sustainable agriculture development goals across China and globally. It has established a strategic partnership on poverty reduction with the government in line with the government?s ambitious goal on poverty alleviation. Among others, Alibaba provides digital solutions to smallholder farmers. Through its affiliate Ant Financial, Alibaba is working with local banks to provide access to rural finance for smallholder farmers. Alibaba has established Taobao Villages across China. Through its e-commerce platform Rural Taobao, Alibaba supports farmers in marketing of agricultural products. Moreover, Alibaba is developing digital tools aimed at boosting agricultural efficiency, crop yields and farmers? income using big data. Alibaba also provides technical support to collect data on farmland (e.g., residues of chemicals and fertilizer in the soil) in order to ensure the quality of products. Alibaba aims to export some of these solutions to smallholder farmers in other countries in the region and globally. As mentioned above, an MOU is currently under preparation between Alibaba and FAO to promote innovations in digital agriculture and e-commerce, among others, which would also involve this GEF-7 project.

Alibaba Group is committed to environmental sustainability in their corporate strategy. Freshhema, Alibaba?s subsidiary in the fresh grocery sector, in 2019, announced to work closely with 500 agriculture bases in China to provide agricultural products with good quality, and transform the production of food systems. According to ?A Letter Home 2019? published in Chinese, Alibaba Foundation established in 2011 is dedicated to water environment conservation and nature education. Cainiao, Alibaba?s logistic platform, is promoting environmental sustainability through various green initiatives such as a package recycling programme and the use of biodegradable package materials and digital invoices. Ant Forest, a green initiative on the Alipay mobile platform, planted about 122 million trees in China, and provided employment to 330,000 famers with the total salary increase of 50 million

yuan. Ant Forest received a 2019 Champions of the Earth award, the UN?s highest environmental honour, for turning the green good deeds of half a billion people into real trees planted in some of China?s most arid regions.

Universities and research institutions

National and provincial universities and research institutions play a key role in agricultural research and the development and implementation of agricultural technologies in China. These include, but are not limited to, the Chinese Academy of Agricultural Sciences (CAAS), Chinese Academy of Sciences (CAS), China Agriculture University (Beijing), Huazhong Agricultural University (Hubei), Renmin University of China (Beijing), and Beijing Institute of Technology. The project will closely involve experts from these research institutions for technical guidance as well as development of the monitoring protocols.

The Integrated Soil-Crop System Management (ISSM) program, initiated by the Ministry of Agriculture and the Ministry of Science and Technology, and led by a group of scientists at the China Agricultural University, achieved an average 11% increase in crop yield between 2005 and 2015 for millions of small household farms in China. This was achieved through the ISSM technology, in particular the implementation of better nutrient management practices. The program involved stakeholders from various sectors including government, academia, private sector such as seed and fertilizer suppliers, and farmers (Cui et al., 2018).

FOLU Coalition

The Food and Land Use (FOLU) Coalition is a global, public-private partnership dedicated to the transition toward a sustainable food and land-use system. In China, the FOLU Platform is coordinated by the World Resources Institute (WRI) China. It builds on the ongoing work of the Food, Agriculture, Biodiversity, Land Use and Energy (FABLE) Consortium, which is led by the Center for Agricultural Resources Research at the Chinese Academy of Sciences and brings together experts from Chinese Academy of Sciences, Nanjing Agricultural University, Peking University, China Agricultural University and Tsinghua University. The FABLE Consortium is a new knowledge network comprising research teams from 18 countries and that operates as part of the Food and Land-Use Coalition. It conducts research and modelling and analyses pathways towards sustainable land-use and food systems in China and globally.[22] The GEF-7 project has formed a partnership and will collaborate closely with these two platforms for knowledge exchange and strategies for scaling. It will also involve them closely in the development of the national and provincial food and land use collaboration mechanisms (Output 1.1.1). Through exchange of lessons learned and best practices under these platforms and under the annual FOLU Coalition partners meetings, best practices and opportunities for large-scale transformation will be identified, based on most recent research and applications from the field.

Consultative Group for International Agricultural Research (CGIAR)

CGIAR is a group of leading international agricultural research and training organizations, conducting interdisciplinary research on agriculture in the region and globally, from breeding to pest control to value chains. In particular, the International Rice Research Institute (IRRI) and the International Maize and Wheat Improvement Center (CIMMYT) have conducted research on rice, wheat and maize in China and globally. IRRI?s engagement with China, which began over 30 years ago, helped the country become a world leader in hybrid rice, which can yield 15-20% more than other rice. In the late 1970s, China was the first country to successfully produce hybrid rice for temperate-climate agriculture.[23] IRRI has offices in 17 rice-growing countries in Asia and Africa, including in China. IRRI is also one of the founding members of the Sustainable Rice Platform (SRP). IRRI is currently establishing three collaborative laboratories in China, notably in Beijing, Shenzhen (Guangdong) and Nanjing (Jiangsu).

Similarly, CIMMYT has supported the development and extension of wheat and maize varieties and the training of Chinese scientists for over 30 years. The GEF-7 project will continue to exchange with CGIAR, in particular IRRI and CIMMYT, during project implementation, at both national and regional levels.

More details can be found in the ProDoc Section *1.a.2) Project Description*, and the PAD Section *I. Strategic Context* and Section *G. Lessons Learned and Reflected in the Project Design*.

3) Proposed alternative scenario with a brief description of expected outcomes and components of the project and the project?s Theory of Change

Building on these baseline investments, the project will aim to tackle the important negative externalities in China?s food systems, addressing soil and water pollution, high GHG emissions, and fragmented, unsustainable land use in agriculture at scale by pursuing environmentally sustainable production approaches and value chains for the globally important staple crops of rice, wheat and maize, cash crops such as vegetables, fruit and tea, and livestock. The project is expected to have a large-scale transformational impact on food systems in the target landscapes (around 1.07 million ha) and beyond, aiming to transform the FOLUR target commodities/crops? production and value chains at a scale that is significant at the global level. The project provinces Shandong, Jiangsu, Jiangxi, and Hubei are all major grain producing areas in China. The rice, wheat, and maize planting areas in the four provinces account for 29.2%, 31.5%, and 14.6% of the country, respectively[1]. China is the largest producer of the targeted FOLUR IP grain crops in the world, ranking first in rice and wheat production, and second in maize production. It produces 30% of the world?s rice, 17.5% of wheat, and 25% of the world?s maize. It is the world?s largest producer of pork and second largest producer of poultry. The transformation of China?s crop and livestock production systems has a huge impact globally. China represents 14% of global agriculture related GHG emissions. According to the project estimates, the reduction of greenhouse gas emissions in the project area can reach an average of 0.6 ton per year per hectare, or 12 tons for the scale of 20 years per hectare; thus, the potential for carbon sequestration and emission reduction based on the project outcomes, along with land degradation and biodiversity benefits, is huge.

[1] Guizhou is less significant in terms of production area and is, thus, not included here. Nevertheless, Guizhou is important for quality/ecological rice production and sustainable rice-based livelihoods.

As shown in the project?s Theory of Change (see Figure 6 below), which reflects the Program?s Theory of Change, the project will apply a holistic approach involving integrated planning, incentive systems, implementation of innovative, sustainable agricultural practices and value chains, restoration and conservation in order to address the barriers mentioned above and achieve a more sustainable food production system in the target landscapes and beyond. First, the project will address gaps in the enabling policies and planning frameworks for sustainable agricultural practices (Barrier 1). This will be done by putting in place adequate policy and incentive mechanisms for sustainable agricultural practices and land restoration, as well as integrated landscape management (ILM) plans that enable national and local institutions to meet their relevant sustainable agriculture, ecological civilization and rural revitalization goals while also enhancing overall productivity. Monitoring systems will be improved to enable county, provincial and national stakeholders to monitor progress in achieving sustainable food systems and land use. In Hubei, this will also include establishing protocols for monitoring, reporting and verification (MRV) of GHG emissions and removals in agriculture in view of a future emissions trading scheme. In addition, the Hubei sub-project will introduce 3S (Smart, Sustainable and Safe) risk assessment systems, with the aim to develop quality and safety standards that improve environmental sustainability, food safety and climate change adaptation and mitigation.

Multi-stakeholder platforms, bringing together representatives from public and private sectors, will be established to advance and foster collaboration towards achieving sustainable food systems and land use goals. Second, the project will address the gaps in capacities and mechanisms at the local level to scale up innovative approaches for sustainable agriculture and restoration (Barrier 2). This will be achieved by moving from demonstration to the scaling up of innovative models and technologies to address issues of unsustainable production systems, aiming to sustainably increase productivity and incomes while protecting biodiversity and ecosystems. This will contribute not only to reducing GHG emissions and chemical/nutrient pollution, but also to restoring degraded land and conserving natural resources including water. The uptake and scaling of sustainable and climate-smart agriculture and livestock practices will be promoted by working with farmers, government, enterprises and cooperatives at the local level, as well as provincial and national value chain actors. Third, the project will address gaps in market incentives and engagement of smallholder farmers in value chains supportive of sustainable production and land management (Barrier 3). It will help to build the capacity of farmer cooperatives and enterprises across the supply chain to support sustainable value chains from input supply, to production, to processing and marketing. Public and private actors across the value chain, such as producers, distributors, and traders will be engaged to bring solutions at scale for developing value chains and access to markets for sustainably produced crops and livestock. Finally, the project will tackle the lack of platforms and knowledge sharing and exchange mechanisms at provincial, national, but also regional and global levels (Barrier 4) by fostering exchange of knowledge, technical standards and approaches that support replication and scaling of sustainable staple crop production. The project will foster cross-learning and cross-dissemination of the project interventions, in particular those related to climate-smart agriculture and ecological restoration and agroforestry. Interventions applied in the MARA provinces, including policy and technical project interventions, may also be taken up by Hubei, and vice-versa.

Accordingly, transformation of the food production system will be realized through the following entry points: (i) Policy change, leading to a transformation of incentive systems in staple crop production (such as by revisiting agricultural subsidies with a focus on sustainability); (ii) Integrated, landscape-level planning enabling stakeholders to reconcile objectives of production and resource conservation; (iii) Capacity and knowledge, improved technical standards (national, province and industry-wide), and innovative technologies, enabling farmers and other local stakeholders to switch from practices that degrade soil and biodiversity to practices that enhance and restore soil fertility while sustaining productivity; (iv) Increased private sector support and commitment to sustainability across the target commodities? value chains; and (v) Partnerships that support replication and scaling. These entry points will work together to generate capacities, policies/plans, industry-wide standards and partnerships that are important enabling conditions for further replication and scaling at provincial and national level.

The outcomes and outputs under the four components are interlinked and iterative. Outcomes under Components 2 and 3 will provide evidence and required experiences to inform the policy reform under Component 1. In turn, policy and planning outcomes as well as partnerships with private sector actors under Component 1 will support implementation and scaling of sustainable practices and restoration under Components 2 and 3. Knowledge sharing mechanisms and platforms under Component 4 will further enhance replication and scaling.

The project will have a significant impact on Chinese agricultural policy and private sector. This mainly includes:

1. Through the implementation of the project, a set of good agriculture practices will be elevated to industry standards by MARA or provincial DARA. These standards will promote technological transformation in the management of staple crop production, influence private sector production and

business practices, and contribute to China?s capacity for sustainable agricultural development in the target landscapes and beyond.

2. Project implementation will result in a number of Integrated Landscape Management (ILM) plans for agricultural production at the provincial, municipal and county levels, which have the potential to become legal documents for local governments that result in a long-term impact. The project will also aim to further scale good practices by incorporating them into the local Five-Year Plans and/or land use plans.

3. The supporting policies of the project for private sectors are also reflected in the development of value chains: attract private enterprises to participate in green organic brand building, and provide financial support and market incentives.

The two sub-projects share the same goal, outcomes and components. Jointly, they contribute to the achievement of the global environmental benefits. The FAO-MARA sub-project primarily builds on a baseline of existing investments by public and private sectors in sustainable agriculture technologies, which it aims to scale up and out through the project interventions; the WB-Hubei sub-project additionally builds on an IBRD loan that will enable the target counties in Hubei to make even greater investments in innovative technologies. The two sub-projects have been joined with the aim of having a larger reach and impact, in order to support the project?s ambitious goal of transformation of the food production systems and agricultural landscapes in China through an integrated landscape and value chain approach. The FAO-MARA sub-project has a more national reach covering several provinces in different agro-ecological regions, starting from the national level down to the provincial and county level; the WB-Hubei sub-project has a county/provincial focus enabling it to reach a larger coverage and transformation within a single province while also generating lessons and standards that can be applied at national scale. The FAO-MARA sub-project primarily focuses on the staple crops wheat, maize and rice; while Hubei focuses on rice, livestock and agroforestry. Combined, the two sub-projects have the necessary reach and influence to contribute to national and provincial upscaling through the development of standards and policies, sustainable value chains, national capacities, and by generating and exchanging best practices and establishing partnerships towards sustainability.

The Theory of Change is based on a number of assumptions. First, it assumes buy-in and commitment of public and private stakeholders across the selected value chains to participate in mechanisms for integrated planning towards productivity and sustainability, and to invest in sustainable production models. It also assumes that innovative production methods that combine biodiversity, sustainable land management and climate change benefits while enhancing/maintaining yield, can be effectively deployed at scale through more efficient utilization of agricultural policies and effective technical guidance. These production methods have been applied intensively in demonstration areas, but have yet to reach the scale required for a transformational impact. Importantly also, the project assumes that ecological restoration and circular agriculture models can be utilized to restore and enhance sustainability and productivity of agricultural landscapes. By reducing soil erosion, enhancing soil fertility and increasing farmland biodiversity, productivity on existing and marginal land can be improved. Finally, the project assumes that the knowledge that is created and shared through the various mechanisms of the project is effectively used and applied for replication and scaling by the project?s main stakeholders, including MARA, the provincial DARA, farmers, and enterprises, during and beyond the project?s lifetime.

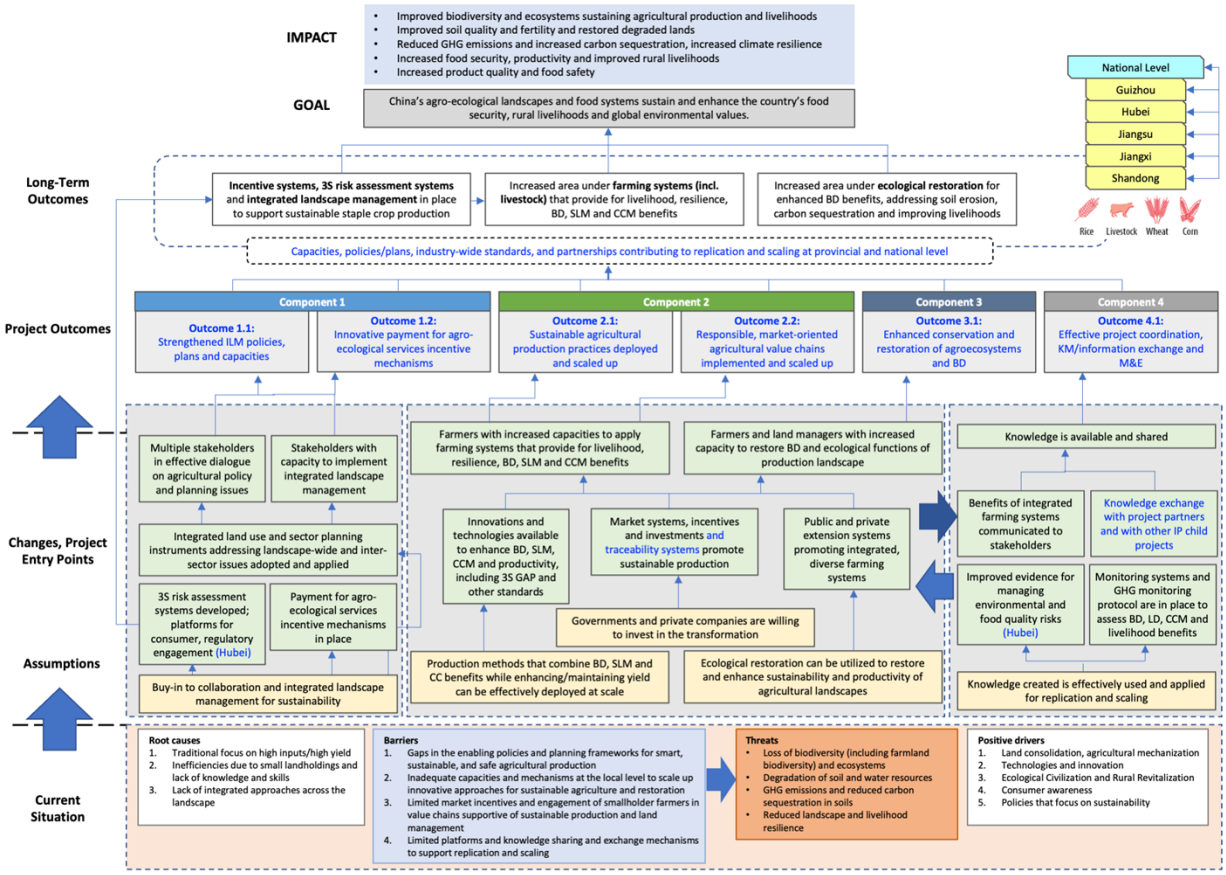

Figure 6: China FOLUR Theory of Change

In line with the above, the project?s objective is to support the innovative transformation of China?s agro-landscapes and agri-food value chains towards environmental and ecological sustainability at scale in support of the 2030 Sustainable Development Goals (SDGs), rural revitalization, ecological civilization, and climate resilience. It thereby contributes directly to the FOLUR Program objective, which is *to promote sustainable, integrated landscapes and efficient food value and supply chains at scale*. The project will promote the integrated management of agricultural ecological systems and the enhancement of agricultural value chains, implement new technologies and modes of agricultural green development, and establish eco-compensation incentive mechanisms and stakeholder partnerships. Thereby, it will achieve positive impacts for biodiversity, soil and water conservation, climate change mitigation, food security, and sustainable rural livelihoods. The project will be implemented through the following four components.

1. Component 1: Development of integrated landscape management (ILM) systems in agricultural landscapes.
2. Component 2: Promotion of sustainable food production practices and responsible agri-food value chains for the staple crops of rice, wheat and maize, selected cash crops, and livestock.
3. Component 3: Conservation and restoration of agroecosystems and biodiversity.
4. Component 4: Knowledge management and M&E.

The four components and respective outcomes are described below.

Component 1: Development of integrated landscape management (ILM) systems in agricultural landscapes (addressing Barrier 1)

Outcome 1.1: Strengthened ILM policies, plans and capacities that promote participatory planning and enable national and provincial institutions across agricultural landscapes to meet their relevant sustainable agriculture, rural revitalization, land restoration and related climate and biodiversity targets.

Under Outcome 1.1, the project will strengthen sustainable agriculture policies and integrated landscape management (ILM) plans as well as capacities for ILM at the national, province and county levels. First, the project will aim to establish (or strengthen existing) food and land use collaboration mechanisms at national and provincial level (Output 1.1.1). These mechanisms are aimed at bringing together public and private sectors to support cross-sectoral planning and scaling up of interventions aimed at optimizing land use and food systems in the target counties and beyond in view of enhancing environmental sustainability. The collaboration mechanisms will be involved in the subsequent development of ILM plans coupled with ILM investment plans, and will be convened regularly to discuss progress, opportunities for replication and scaling, and lessons learned.

The project will then develop county-level ILM and restoration plans which are supported by public and private investments in a participatory process involving public and private stakeholders as well as civil society (Output 1.1.2). The primary goal of the ILM plans is to identify opportunities for optimizing land use in the target counties, in order to address land and environmental degradation and enhance local livelihoods. The plans will review current agricultural practices and identify priority areas for interventions of sustainable land management (SLM) and climate-smart/ sustainable agriculture to be implemented under Component 2. They will also identify priority areas within the landscape that are important for biodiversity, areas where ecosystems should be restored, buffers established to enable ecological interception of nutrients, vegetation increased to stabilise slopes, and habitat enhanced for farmland biodiversity such as pollinators and natural enemies of crop pests (to be implemented under Component 3). Indicators to measure changes in biodiversity and land degradation will be identified, and targets for biodiversity (at the species, ecological community, or habitat/ecological system level) will be established for Output 3.1.1. In Hubei Province, this will also involve conducting agro-environmental risk, climate risk, and food quality and safety risk assessments.

A particular focus of the ILM plans will be on reducing negative externalities of crop and livestock production and enhancing diversity and resilience of agro-ecosystems while maintaining productivity. Thus, while the primary focus of the plans will be on agricultural land and surrounding areas, integration or alignment with other sectors (forests, wetlands, etc.) will be sought. The process will ensure participation of women and representation of vulnerable groups. Furthermore, the planning process will aim to address trade-offs in the landscapes. For instance, local stakeholders (farmers, private sector, and to some extent local governments) may be primarily interested in intensifying production and increasing incomes, while environmental benefits are a secondary goal. The project interventions will enable stakeholders to sustain or increase productivity, increase quality and value of their crops, while enhancing soil quality, restoring degraded land, reducing agricultural pollution, and safeguarding important ecosystems and biodiversity. Generally, local companies? interests in the target areas are closely aligned with government interests, and they directly contribute to the implementation of national and provincial policy. It is, thus, anticipated that trade-offs can be addressed through improved planning and policies that incorporate sustainability.

To support the implementation of the ILM/restoration plans, the project will organize (gender-sensitive) capacity building for decision makers and technical staff of the local government on sustainable integrated land and water resources management, sustainable agriculture, biodiversity

conservation and ecosystem restoration (Output 1.1.3). This will lay the foundation for integrated planning as well as implementation of project activities under the four components. Furthermore, the project will assist in establishing (or improving existing) monitoring systems for sustainable food systems and land use, and support their implementation (Output 1.1.4). Indicators and guidelines for farm- and landscape-level monitoring in agricultural land and surrounding areas will be developed in order to be able to monitor and assess (i) land use/land degradation/soil quality; (ii) biodiversity and ecosystems; (iii) GHG emissions and carbon sequestration; (iv) economic and social impacts on beneficiaries such as income growth and poverty reduction, and (v) integrated pest management measures. Links will be established with existing monitoring systems and reporting needs/requirements in the target counties, in order for the indicators to be relevant, realistic, and sustainable beyond the project period. In Hubei, this will also include establishing protocols for monitoring, reporting and verification (MRV) of GHG emissions and removals in agriculture, with a focus on major value chains. In Hubei also, integrated IT platforms will be used by farmers, agri-food enterprises and consumers to share information on food safety, agricultural risks, and environmental and climate threats. Provincial and county traceability platforms will be developed, linking up with enterprise/production base level food quality and safety traceability systems along the selected agri-food value chains.

Lastly, the project will help to develop innovative national and provincial policies to support sustainable food systems and land use, based on the experiences and lessons learned from its different components in all five project provinces (Output 1.1.5). Among others, the project will aim to strengthen/revise current subsidy policies in order to increase support for sustainable and biodiversity-friendly practices. It will also aim to further scale good practices by incorporating them into the local Five-Year Plans and/or land use plans. The project will, thus, help to mainstream sustainable land management, biodiversity conservation and climate change mitigation in China?s major agricultural production systems. When elaborating policy options, considerations on women and youth empowerment will be analysed and taken into account.

Outcome 1.2: Innovative payment for agro-ecological services incentive mechanisms in place for sustainable, safe, and smart agri-food systems.

Under Outcome 1.2, the project will conduct an analysis of payment for agro-ecological services mechanisms. As highlighted above, current eco-compensation schemes do not cover agricultural ecosystems, and there is potential to extend successful approaches to agriculture, in order to strengthen biodiversity in agro-production system and sustainability of land and soil resources, as well as the preservation of water quality and quantity. Based on the analysis, the project will support national/provincial incentive mechanisms and policy reform on payment for agriculture (Output 1.2.1).

Component 2: Promotion of sustainable food production practices and responsible agri-food value chains for the staple crops of rice, wheat and maize (addressing Barrier 2 and 3)

Outcome 2.1: Sustainable agricultural practices deployed and scaled up that enhance ecological functions, improve soil quality and fertility, mitigate GHG emissions and establish resilient agricultural production models.

In parallel and in line with the ILM plans developed under Component 1, Outcome 2.1 will aim to deploy and scale up sustainable agricultural practices in line with the specific agro-ecological context of each province and county, with the aim to enhance ecosystems and biodiversity, reduce GHG emissions, improve land quality, and livelihoods. Sustainable and Climate Smart Agriculture (CSA) practices[24] that have previously been tested and demonstrated will now been introduced and adopted at a wider scale (Output 2.1.1; see box below for detailed interventions). The project will build on ongoing efforts in all five provinces to promote sustainable practices, such as reduced use of chemicals,

rotation and fallow systems, and green agriculture pilots. Lessons learned on Conservation Agriculture (CA) from the World Bank GEF-5 ?Climate Smart Staple Crop Production Project?, implemented by MARA in Anhui and Henan Provinces for the two major crop production systems rice-wheat and wheat-maize rotation, as well as other relevant projects, have been, and will continue to be taken into account in the design of the project interventions. An important focus will be on ensuring that current yields are maintained or increased, a key criterion for sustainability.

In Shandong, the project will focus primarily on the winter wheat-summer maize rotation system. In Jiangsu, it will focus on winter wheat-summer rice rotation. In Jiangxi, the project will support sustainable practices in early rice-mid/late rice and rice-rapeseed rotation. In Guizhou, the project will focus on single-rice or double-rice cropping, as well as integrated models such as rice-fish. Finally, in Hubei, the project will focus on single and double cropping rice, tea, fruit and vegetable production, as well as livestock (pigs and poultry).

To deploy and scale up these innovations and sustainable practices, the project will first develop (or improve existing) technical guidelines and standards, including Good Agricultural Practices (GAP) standards. In Hubei, the project will develop innovative 3S (Smart, Sustainable and Safe) GAP standards, aiming to reduce GHG emissions, increase environmental sustainability and climate resilience, and increase product quality and food safety. The development of standards will be closely linked to the certifications to be developed under Outcome 2.2. When developing standards, the project will seek inputs from other FOLUR child projects such as India, Thailand, Vietnam, Kazakhstan or Uzbekistan, in particular with regard to the sustainability standards developed under the Sustainable Rice Platform (SRP) as well as relevant international wheat and maize standards. Lessons learned from the Green Rice Standard developed under FAO?s project ?Agricultural Technology Integration and Demonstration for Green Rice Development in Chongming Island, Shanghai? will also be taken into account. In parallel with the training and extension program to be carried out under Outcome 2.2, the project will then implement field activities to apply and replicate the new practices/technologies/standards. Community meetings will be held, involving consultations with vulnerable groups such as women, the poor, and ethnic minorities, to develop detailed implementation plans in each county and regularly assess progress. In Guizhou, this will also involve ensuring Free, Prior and Informed Consent (FPIC) for ethnic minority groups (see Annex J of the ProDoc). Once deployed in the project?s core areas, the project will support replication and adoption at scale through the wider application of standards, their elevation to industry or province wide standards, the investments/value chain linkages under Outcome 2.3, and the policies and incentive systems developed under Component 1.

In addition to implementing approaches that have already been tested, under this Output the project will experiment and demonstrate new technologies for farmland diversity planting and ecological landscape development, as well as for carbon sequestration and GHG reduction such as through farmland conservation and water management.

In Hubei, the project will promote climate-smart and ecologically sound livestock production and management systems through improved animal health and livestock waste management and circular agriculture technologies (Output 2.1.2).

In parallel with these interventions, the project will deploy innovations to reduce the use and discharge of chemical fertilizers and pesticides, such as precision agriculture, soil testing, integrated pest management (IPM), ecological interception systems, and digital technologies (Output 2.1.3). Detailed integrated pest management plans (IPMPs) will be developed in a consultative process, based on existing IPM plans in the target provinces and on the project?s Integrated Pest Management Plan, with

the overall aim to reduce the use of chemical control and increase biological and other alternative control measures.

In the deployment of sustainable practices and innovative technologies, it is important that the project take into account the high costs of labour and/or labour shortages that are prevalent in some areas. Where relevant, the project will provide opportunities for mechanization, in particular for women farmers, and develop management and organizational skills. The project will also aim to involve youth.

The private sector will have a key role in the implementation of the activities under Component 2. In addition to smallholder farmers, the project will engage cooperatives and local agribusinesses that enable investments and scaling through local organization. As mentioned earlier, the number of farmer cooperatives and agribusinesses have been rapidly increasing over the past few years. However, their capacity to operate at scale and their access to green technologies and sustainable financing is still limited. In particular, the project will engage with local agricultural producers, cooperatives and agri-food enterprises involved in the production and distribution of agricultural products, processing, storage, utilization of agricultural wastes, organic fertilizer production, agricultural service and trainings, agricultural product marketing and sales, procurement of agricultural machinery, etc. as well as providers of agricultural services to rural areas. These local companies are instrumental in the implementation of government policies such as reutilization of straw and livestock waste (e.g., for organic fertilizer production), and will be instrumental in organizing farmers to implement and sustain improved practices. They will also be instrumental in providing training and services to the farmers during and after the project period. In Hubei Province, project sub-loans and matching grants will be given to selected cooperatives and enterprises that fulfil the agreed selection criteria, to support implementation of the innovative 3S technologies.

Lastly, under Outcome 2.1, through provincial and county investments, the project will implement strengthened high-standard ecological farmland construction according to national standards promoting the six objectives of water conservation, mechanization, ecology, scenery, large-scale management and informatization (such as land consolidation, land levelling, improved irrigation and drainage, and improved field road accessibility) (Output 2.1.4). Where relevant, the project will aim to incorporate biodiversity considerations into the high-standard ecological farmland construction, such as for the preservation of biodiversity along canals and streams.

The sustainable and climate-smart practices are anticipated to include, but are not limited to, the following interventions.

Description of interventions (Core Indicator 4)

Good Agricultural Practices/Climate-Smart Agriculture

? Conservation Agriculture
o Minimum tillage and mulching, crop straw incorporation and manure application
o Crop rotation, diversified cropping and cover crop planting
? Contour farming to address soil and water erosion and improve soil fertility
? Water-saving irrigation in paddy fields; Alternate Wetting and Drying (AWD)
? Cultivar selection for climate-resilient, high-yield and low-emission varieties
? Rice-fish integrated systems or other comprehensive eco-agriculture models
? High-standard farmland building
? Small-scale ?green? mechanization and other labour-saving technologies, in particular for women farmers
? Improved livestock waste management and circular agriculture technologies

Innovations for chemical reduction

? IPM in line with the project?s Integrated Pest Management Plan, including pesticide discard
? Soil testing and precision agriculture
? Fertigation
? Ecological interception
? Organic fertilizer and green manure
? Digital technologies, including improvement of digital monitoring facilities (e.g., for pest early warning)

Outcome 2.2: Responsible, market-oriented agricultural value chains implemented and scaled up, including through government-private enterprise-farmer cooperative partnerships and capacity building for high-quality, sustainable and affordable agricultural products.

Under Outcome 2.2, farmers, farmer cooperatives and enterprises across the target landscapes will benefit from capacity building and enhanced access to value chains. A detailed capacity and awareness program will be developed and implemented to increase capacity among farmers (especially women), extension service providers, enterprises and cooperatives on sustainable production and agricultural value chains (Output 2.2.1). This will directly support implementation of activities under Outcome 2.1. The training may also incorporate aspects of farmland biodiversity and ecological restoration to support implementation of Component 3. Mechanisms for farmer education and training will be established (such as Farmer Field Schools), with close involvement of farmers, and farmer cooperatives.

Moreover, the project will work with farmers (women and men), farmer cooperatives, local/national private sector and Alibaba to develop access to markets and access to rural finance in support of sustainable agricultural value chains and farming systems (Output 2.2.2). This will be done, among others, through consumer-oriented Good Agricultural Practices (GAP) and environment-friendly agro-ecological brand standards, certification and traceability, and digital technologies. In addition, the project will support the establishment (or strengthening of existing) government-private enterprise-farmer cooperative partnerships, and promote investments to support scaling up of sustainable value chains from input supply, to production, to processing and marketing (Output 2.2.3). The project will aim to involve critical actors across the value chain, from grain producers, input suppliers, processors, distributors, traders, state-owned enterprises, commercial banks, and rural credit cooperatives, to address both the demand and the supply side of staple grain crops for greener production.

The market linkages/value chains and access to finance will be developed with the aim to incentivize sustainable agricultural practices and enhance farmers? incomes. Necessary market incentives will be

established, such as through standards, ecological product certifications and traceability systems. The project will ensure that local stakeholders, including women and vulnerable groups, are consulted throughout the implementation, and that they have equal opportunities to benefit from the enhanced market linkages/value chains and access to finance.

For wheat, maize, vegetables, fruits and tea, the value chain interventions are expected to be primarily focused around GAP and green standards, certification and traceability, as well as access to financing. Awareness and technical standards on sustainable production will be enhanced among value chain actors, both public and private. For rice, the project additionally plans to focus on integrated rice-fish system, traditional rice culture and brand, Geographical Indication or ecological product certification schemes, organic certifications and potentially the Green Rice Standard and the Sustainable Rice Platform (SRP) standard, made-to-order farming and access to markets through e-commerce. In Guizhou, these interventions are planned to be combined with rural eco-tourism and experiencing of traditional farming culture to further support rural livelihoods and conservation of traditional and diverse farming systems.

In Shandong, technical standards and traceability systems for sustainably produced wheat and maize will be introduced or improved. Value chain actors including producers, processors, and state-owned enterprises (such as aggregators and traders) will be engaged to raise their awareness on sustainability standards. Branding of sustainably produced wheat will also be used to raise awareness of consumers. This is expected to increase market incentive/demand for sustainably produced wheat. Combined with policy incentives and regulations, and payment for agro-ecological services incentive mechanisms, it is anticipated that this will lead to a large-scale shift in adoption of sustainable practices such as GAP, conservation agriculture, and restoration of soil fertility and farmland biodiversity.

In Jiangsu and other rice-producing provinces, in addition to the above, interventions under Outcome 2.2 will involve establishing local brands for sustainably produced local rice varieties through ecological product certification. The local government invests and organizes relevant public service agencies and the private sector to register regional agricultural product public brands, and establish corresponding agricultural product production specifications and brand quality standards, including environmental standards; private sectors engaged in the sale, production and marketing are encouraged to use the brand, and small subsidies are provided in the production and operation process. There is government funding to support private sectors to directly establish partnerships with individual farmers to help them produce and sell products in accordance with technical specifications and brand quality requirements. Once ecological product certification standards and related government incentives are in place, this model can be replicated by other private sector entities throughout the province.

Example: the ?Nanjing Good Rice? public brand in Jiangsu Province. Nanjing Department of Agriculture and Rural Affairs established the ?Nanjing Rice Industry Association? with the cooperation of more than 10 private sectors engaged in rice production, processing and sales, such as the government technology extension service department and the Nanliang Group, and jointly created the Nanjing rice regional public brand ?Nanjing Good Rice?. The ?Nanjing Rice Industry Association? is responsible for formulating standards for the environment of rice production bases, variety selection, planting management, harvesting, drying, and processing and other aspects to ensure green ecology and high quality. Farmers, farmer cooperatives, processing and sales companies willing to follow the standards of the association can apply to join. The government of Nanjing, Jiangsu Province provides financial subsidies for the operation of the association, construction of demonstration bases and brand marketing every year. This model helps ?Nanjing Rice Industry Association? to effectively organize Nanjing rice companies, brands, bases and production companies, etc. through standardization, ordering, brand integration, and complementary advantages jointly create a regional brand of Nanjing rice to meet public consumption demand and environmental standards, promote high quality and increased prices, and drive the village collective economic organizations and farmers to increase income.

In its interventions, the project will also focus on strengthening the resilience of agricultural supply chains in the face of COVID-19 and potential future similar crises.

Component 3: Conservation and restoration of agroecosystems and biodiversity (addressing Barrier 2)

Outcome 3.1: Enhanced conservation and restoration of agroecosystems and biodiversity.

Outcome 3.1 of the project will implement and scale up conservation, restoration and rehabilitation interventions of farmland and surrounding ecosystems in and around the productive landscapes of Component 2. Interventions under Component 3 will be focused on the landscape level, while interventions under Component 2 are primarily focused on the farm level. The project will support interventions to maintain and increase diversity of production systems in line with the ILM/restoration plans developed under Component 1, in close collaboration with all relevant stakeholders (Output 3.1.1). This will include, in particular, interventions to maintain or increase crop diversity in the landscape, and conserving important habitat and feeding space for farmland biodiversity and wildlife such as vegetation along streams and at the edge of farmland. Priority interventions and sites will be identified in close collaboration with stakeholders including local government, farmers, farmer cooperatives and enterprises.

Furthermore, the project will implement and scale up ecological restoration/rehabilitation to enhance ecological functions of farmland boundaries and surrounding ecosystems (Output 3.1.2). This will include, among others, the establishment of ecological corridors, trees on farm, vegetation buffers, hedgerows, nutrient interception, and revegetation of slopes/restoration of upstream ecosystems affected by soil erosion. To make these interventions more sustainable, the project will help farmers, farmer enterprises and local governments to fully utilize existing incentive mechanisms and subsidies for restoration (such as for planting trees on farm); as well as incentives newly developed under the project.

In Hubei Province, the project will support agroforestry interventions, in particular for tea plantations and fruit trees, in upland ecosystems to reduce water loss and soil erosion, enhance carbon sequestration, improve ecosystem service functions and increase farmers? incomes (Output 3.1.3). These interventions will be linked with sustainable value chain development for fruits and tea under Outcome 2.2.

Scaling under these three outputs will be achieved by (i) linking interventions from Component 3 to the policy outcomes under Component 1, such as by establishing payment for agro-ecological services incentive mechanisms and subsidy policies that incentivize restoration; (ii) the development of ILM and restoration plans under Component 1 which, coupled with the ILM investment plans, will lead to further investment in restoration; and (iii) the development of technical standards, best practices and guidelines for restoration that enable public and private stakeholders to realize environmental outcomes that also generate socio-economic benefits.

Throughout project implementation, the project will assess the effectiveness of interventions and provide recommendations for replication in the target counties and beyond, including on sustainable financing mechanisms for restoration.

The interventions under this outcome are described in more detail below. This will aim to scale up good practices and experiences from the Provincial Ecological Protection and Construction Plans (described in the baseline section).

Description of interventions (Core Indicator 3)

Interventions to maintain and increase diversity

? Increased crop diversity/crop varieties
? Identifying and conserving globally and nationally important plant and animal species in farmland boundaries and surrounding ecosystems.
? Integrated and diversified planting models (e.g., agroforestry for tea, oil tree, fruit trees)
? Identifying and conserving important habitat for farmland biodiversity (while increasing productivity on adjacent farmland)

Ecological restoration/rehabilitation (for improved farmland biodiversity and ecological landscapes)

? Revegetation of slopes to combat soil erosion and protect water sources upstream
? Prevention and control of invasive alien species
? Ecological corridors
? Trees on farm
? Vegetation buffers (on slopes and nearby waters)
? Hedgerows/wind breaks to reduce wind erosion
? Ecological ditches for nutrient interception (to reduce nitrogen loss), beetle dikes and three-dimensional ecological networks (arbor-shrub-grass compounds)
? Soil and water conservation and ecosystem rebuilding

Component 4: Knowledge management and M&E (addressing Barrier 4)

Outcome 4.1: Effective knowledge management/information exchange and M&E.

Outcome 4.1 will ensure effective monitoring and evaluation, including adaptive planning and management, reporting (Output 4.1.1). In particular, the project will ensure regular coordination among participating provinces. Technical Advisory and Coordination Committee meetings between the two sub-projects will be organized twice a year, including technical field missions. The project will also coordinate closely with the FOLUR Global Coordination Project in order to catalyse actions and partnerships for greater impact at the regional and global levels. Output 4.1.1 will also support and monitor implementation of the Gender Action Plan, FPIC and Integrated Pest Management Plan.

Furthermore, this outcome will ensure effective knowledge management and information dissemination to support implementation and scaling of project activities. An information dissemination and communication strategy will be developed at the beginning of the project to support implementation and replication of project activities at the county, provincial and national levels (including awareness raising of producers and consumers). Diversified information dissemination platforms/mechanisms will be established (or existing platforms improved) to share project achievements, knowledge, experiences, and expand environmental and social influence to support scaling and replication (Output 4.1.2). A particular focus will be on knowledge dissemination among farmers, public and private enterprises, local government and academia to increase knowledge and awareness on global environmental issues, responses to climate change, models for enhancing productivity, and value chains.

Finally, knowledge will be created and shared through national and provincial platforms, exchange visits, the FOLUR Global Coordination Project and other platforms such as the One Planet Network Sustainable Food Systems Programme and the Global Soil Partnership to support replication at the global, regional, national and provincial levels (Output 4.1.3). In particular, the project will participate in activities coordinated under the Global Coordination Project with regard to capacity building, regional/global exchange with commodity and value chain actors, and sharing of knowledge, technical standards, innovations and good practices. Regional workshops and forums targeting regionally significant commodities could be jointly held by country child projects and the Global Coordination Project for effective knowledge exchange. Experiences and lessons learned with regard to the development of GAP and sustainability standards will be shared with other countries. Within China, the project will organize regular forums/seminars with other projects and institutions working on similar issues in the country (such as the FOLU Coalition, IRRI, FAO, WB, etc.). Through exchange of lessons learned and best practices under the food systems and land use collaboration platforms and under the annual FOLU Coalition partners meetings, best practices and opportunities for large-scale transformation will be identified, based on most recent research and applications from the field. In addition, the project will seek to engage with provincial and national private sector associations, state-owned enterprises and chambers of commerce, to share knowledge and seek opportunities for scaling through the private sector not just at local, but at provincial and national levels. It will seek to engage with the National Development and Reform Commission (NDRC), the China Development Bank (CDB) and other similar institutions to increase their awareness and knowledge on sustainable agriculture and support their widespread adoption in China and globally.

Please refer to the ProDoc Section *1.a.3) Project Description*, and the PAD Section *II. Project Description* and Section *E. Results Chain* for a more detailed description of the alternative scenario of each sub-project. As described above, the two sub-projects will exchange and coordinate closely during implementation to ensure that the combined efforts of these projects lead to greater impact, that knowledge and lessons learned are shared between the two projects as well as with other child projects of the Impact Program, and that opportunities for scaling are realized. Jointly, the two sub-projects of the China child project will contribute to realizing the project outcomes and to achieving the project objective of supporting the innovative transformation of China?s agro-ecological landscapes and agri-food value chains towards environmental and ecological sustainability.

4) Alignment with GEF focal area and/or Impact Program strategies

The China child project is aligned with the GEF-7 Food Systems, Land Use, and Restoration Impact Program strategy and its Objectives 1 and 3, ?Promoting sustainable food systems to meet growing global demand? and ?Promoting restoration of degraded landscapes for sustainable production and to maintain ecosystem services?. In line with these objectives, the project will support smallholder farmers, farmer cooperatives, and agribusinesses to maintain or enhance sustainable productivity of major staple food crops (rice, wheat and maize), selected cash crops (vegetables and tea/fruit) and

livestock production systems in selected project provinces, and to benefit from enhanced agri-food value chains, while reducing the carbon footprint of agricultural production systems and mitigating their negative impacts on the environment, including on globally important ecosystems and biodiversity (such as wetlands and associated globally important species). It will also support local actors to design and implement integrated landscape management plans aimed at supporting sustainable agricultural practices and restoring degraded agricultural landscapes, thereby enhancing biodiversity and ecosystem services that underpin agricultural production. In line with the Impact Program?s strategy, engagement of the private sector will be a key mechanism to achieving the project?s objectives and its transformational impact. The project will also seek to establish innovative financing mechanisms, such as through payments for agro-ecological services and access to rural/digital finance. Furthermore, it will coalesce action at provincial, national, regional and global levels by leveraging existing platforms for enhanced knowledge exchange, learning and M&E.

Through these interventions, the project is also aligned with the Biodiversity focal area and its Objective 1, ?Mainstream biodiversity across sectors as well as landscapes and seascapes?. It will support biodiversity mainstreaming in the agriculture sector through improved land use planning and local capacity to incorporate biodiversity considerations in agricultural production and associated land and water management, including the implementation of ecological corridors for increased farmland biodiversity. Furthermore, improved agricultural and livestock management practices will contribute to reducing the negative impacts of agricultural pollution on globally important ecosystems and habitats such as watersheds, rivers, lakes and coastal wetlands.

Furthermore, the project is aligned with the focal area of Climate Change and its Objective 2, ?Demonstrate mitigation options with systemic impacts?. The project will introduce and scale up technologies and best practices in agriculture that enhance soil carbon sequestration and reduce methane and nitrous oxide emissions from agriculture and livestock, such as through improved water management, reduced use of chemical inputs, and improved livestock waste management.

The project will also contribute to the Land Degradation focal area and its Objective 1, ?Support on the ground implementation of SLM to achieve LDN?. Through its restoration interventions, the project will contribute to reversing soil degradation and enhancing ecosystem services from cropland and surrounding ecosystems. The project interventions will also prevent further degradation of farmland by promoting sustainable agriculture practices that reduce chemical use, reduce disturbance to soil, increase crop cover, and encourage rotation and fallow systems and circular agriculture (returning crop residues and livestock waste to the fields).

Finally, the project will generate co-benefits in the Chemicals and Waste focal area, namely its Program 2, ?Agriculture Chemicals Program?. This will be achieved by promoting integrated pest management (IPM) and low-chemical systems in food production in the target provinces and beyond; and in particular by supporting the elimination of highly hazardous pesticides and improved management of discarded pesticides and pesticide containers.

5) Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, and co-financing

The GEF financing will build on and complement ongoing investments by government and private sector at the national and local level. It will specifically support the incremental costs of interventions aimed at achieving a large-scale, transformational shift of agricultural production leading to global environmental benefits. These interventions include:

? Required innovative transformative policy and agricultural ecological system planning and incentive mechanisms.
? National and provincial food and land use collaboration mechanisms/platforms and integrated landscape management.
? Mainstreaming biodiversity conservation and climate change mitigation in the major intensive agricultural production systems.
? Leveraging the private sector for investments and sustainable, inclusive value chains, including through certifications, made-to-order farming, and landrace and traditional culture conservation.
? Capacity building, introducing technologies and innovations, and developing technical standards (including capacity building for farmers, local cooperatives and SMEs, and other value chain actors).
? Creation and sharing of knowledge, monitoring systems and protocols.
? Contributing to global knowledge creation and exchange.

As explained above, transformation of the food production system will be realized through the following entry points: (i) Policy change, leading to a transformation of incentive systems in staple crop production (such as by revisiting agricultural subsidies with a focus on sustainability); (ii) Integrated, landscape-level planning enabling stakeholders to reconcile objectives of production and resource conservation; (iii) Capacity and knowledge, improved technical standards (national, province and industry-wide), and innovative technologies, enabling farmers and other local stakeholders to switch from practices that degrade soil and biodiversity to practices that enhance and restore soil fertility while sustaining productivity; (iv) Increased private sector support and commitment to sustainability across the target commodities? value chains; and (v) Partnerships that support replication and scaling. These entry points will work together to generate capacities, policies/plans, industry-wide standards and partnerships that are important enabling conditions for further replication and scaling at provincial and national level.

The incremental cost reasoning and the expected contributions from the baseline, the GEF financing and co-financing for each component is summarized below.

Project component	Baseline scenario	With-project scenario

1. Development of integrated landscape management (ILM) systems in agricultural landscapes	Policies that support sustainable agriculture and ecological restoration are in place at both national and local levels. National targets have been set for GHG emission reduction and land quality restoration in agriculture. County land use plans are developed to regulate land use based on national policy. Significant investments are being made at local level in poverty reduction and rural revitalization. The government provides certain subsidies for organic fertilizers, straw reutilization, and green manure. In the baseline, however, policies still have limited reach and scope, and there is a lack of holistic, integrated approach for landscape level planning. There are no payments for agro-ecological services mechanisms in place. A regional Emissions Trading Scheme was established in Hubei Province, but offsets from agriculture were not allowed.	GEF funds will be invested in strengthening capacities for integrated landscape management (ILM) and restoration based on multi-stakeholder, science-based planning. Monitoring systems, including for biodiversity, land degradation and GHG emissions, will also be strengthened. Innovative policies, such as on payments for agro-ecological services or land consolidation, will be introduced to support scaling up of sustainable agriculture practices.

2. Promotion of sustainable food production practices and responsible agri-food value chains for the staple crops of rice, wheat and maize	Local government is investing in organic, low-chemical production, circular agriculture models, pest monitoring and management, and is supporting farmers through an extensive technical extension system. Private sector are investing in making grain production more efficient, and some companies support marketing, processing and supply chain aspects of production. Cooperatives provide some support to farmers in organizing production and supply chains. Nevertheless, in the baseline, sustainable production practices are still mostly limited to demonstrations, or to certain specific aspects such as crop straw reutilization. There is currently no holistic approach to addressing global environmental issues in farmland. In particular also, there is limited capacity and knowledge on climate change adaptation in agriculture, and the role that biodiversity and ecological restoration can play in strengthening resilience of farmland. There is also no systematic effort to strengthen value chains and access to rural finance, and strengthen local public-private partnerships and private sector engagement, in support of environmental sustainability.	First, GEF investments will support scaling of sustainable agriculture technologies that have been proven effective in addressing environmental issues while also maintaining or enhancing productivity. The project will also introduce innovations that will help reduce chemical use, thereby reducing impacts on biodiversity and ecosystems and reducing input cost. Furthermore, biodiversity considerations will be built into current strategies for high-quality farmland construction. The GEF financing will cover the incremental costs of building capacities among farmers (women and men), cooperatives, local government and private sector to implement and scale up improved practices while benefiting from enhanced value chains and access to finance. Current standards will be improved and Good Agricultural Practices (GAP) developed, and necessary market incentives established such as through certification and traceability systems. Government-private enterprise-farmer cooperative partnerships will be further developed to support investment in sustainable crop and livestock value chains. It is anticipated that the improved practices will generate significant biodiversity benefits, through physical improvements in the environment as well as reduced impact on globally important ecosystems and habitats, in particular rivers, lakes and coastal wetlands, and associated globally important species such as migratory birds and native animal species.

3. Conservation and restoration of agroecosystems and biodiversity	In the baseline, there are ongoing restoration efforts in the target provinces, mainly focused on forests, along with targeted interventions to address soil salinization, land quality, and desertification, as well as heavy metal pollution remediation. Provincial Ecological Protection and Construction Plans make reference to agroforestry, vegetation buffers on slopes and nearby waters, ecological ditches, diversified planting in farmland, and increasing vegetation in farmland boundaries, and existing experiences and best practices can be used by the project. In the baseline, however, these interventions are only implemented at a demonstration scale and knowledge and awareness of their benefits is limited. Also, there are limited interventions and policies/plans that support comprehensive eco-agriculture and ecological restoration that would enhance or restore ecological functions and diversity of production systems at scale. Farmland biodiversity is being eroded rapidly. Due to hard infrastructure development and lack of protection/maintenance, habitat for important insects and pollinators, as well as vegetation that provides a buffer along streams and	The GEF project will make targeted investments in planning and implementing ecological restoration at scale, such as through diversified planting models, ecological corridors, trees on farm, vegetation buffers, hedgerows, nutrient interception. These interventions will help to strengthen farmland biodiversity and resilience of the agricultural landscapes, while reducing soil and water erosion and land degradation. This will generate benefits to farmland biodiversity and agrobiodiversity, in particular. The GEF funding will ensure the integration of restoration targets into the ILM plans/investment plans, in order to be able to reach the required scale. Additionally, it is necessary to strengthen policy and market incentives for preserving farmland biodiversity and increasing vegetation in and near farmland, in order to make these interventions sustainable. The GEF financing will put in place incentive systems such as payment for agro-ecological services and agro-ecological brand standards that provide incentives for farmers, local companies and government to promote and scale ecological restoration and farmland biodiversity enhancement. Furthermore, through dissemination of innovative restoration models and best practices and by increasing knowledge and awareness, the GEF project will help stakeholders to realize opportunities for linking restoration, biodiversity and GHG mitigation goals with production objectives, helping to address trade-offs in the landscape. Experience, expertise and best practices from similar agro-ecological regions will be disseminated through the leading role of MARA and the provincial DARA, to be further taken up in future national and provincial investments and plans.

4. Knowledge management and M&E	In the baseline, MARA, universities and research organizations, FAO, WB, the FOLU Coalition, and other actors, are contributing to knowledge creation and exchange with regard to sustainable agriculture and food systems. There is, however, no systematic, large-scale effort to share knowledge and coalesce action through national or provincial platforms that would bring together public and private sector. There are also no platforms for systematic dissemination of information and best practices on sustainable and climate-smart agriculture, in particular at the sub-national level.	GEF investments will fund the incremental costs of systematic information and knowledge sharing at local, provincial, national and global levels. Furthermore, GEF funds will support global knowledge and capacity development under the FOLUR Global Coordination Project. Regular meetings and exchanges will be organized under the Technical Advisory and Coordination Committee between the FAO-MARA and the World Bank-Hubei sub-projects, to ensure that lessons learned are compiled, shared, and used to inform policies at the national and provincial level.

Please refer to the ProDoc Section *1.a.5) Project Description*, and the PAD Section *II. Project Description*, for further details.

6) Global environmental benefits (GEFTF)

The China child project is expected to have a large-scale transformational impact on food systems in the target landscapes (around **1,070,000 ha**, of which FAO 530,000 and WB 540,000) and beyond, by targeting a transformation of the intensified agriculture sector (notably rice, wheat, and maize), by supporting integrated production systems and restoration of degraded land, and value chains. In line with the Impact Program strategy, the project will generate global environmental benefits (GEBs) across multiple focal areas.

First, the project will bring approximately **970,000 ha** (FAO 450,000, WB 520,000) of agricultural landscapes under improved practices through sustainable land management as well as improved agricultural practices and integrated landscape management that benefit biodiversity. This will lead to reduced nutrient runoff, and improved biodiversity and ecosystem services, such as soil quality and soil carbon, reduced GHG emissions, and enhance water quality.

Second, the project will bring **100,000 ha** (FAO 80,000, WB 20,000) of farmland boundaries and surrounding ecosystems under restoration, leading to increased productivity of agricultural land, enhanced soil carbon stock, reduced soil erosion, and improved biodiversity and ecosystem services.

Through its interventions, the project will enhance and restore agro-ecological services and contribute to land degradation neutrality (LDN) in the target landscapes by preventing and reversing land degradation.

It is anticipated that the improved practices and restoration interventions will generate significant biodiversity benefits. In line with the FOLUR IP programming, this involves benefits to farmland biodiversity through physical improvements in the environment such as soil biodiversity, soil carbon, nutrient recycling, diversity and functionality of vegetation cover, micro-climates, and water (GEF-7 Sub-Indicator 4.3, *Area of landscapes under sustainable land management in production systems*) and Sub-Indicator 3.1 *Area of degraded agricultural lands restored*). Through interventions under Components 2 and 3, agricultural ecosystems that provide habitat for important wildlife such as insects, pollinators and bird species will be sustainably managed, conserved and restored. Since the project operates primarily in agricultural landscapes, these are the main biodiversity benefits of the project. As noted above, forests and wetlands in the target landscapes are generally well protected through the Government?s red line policies and national protected area system.

Nevertheless, the project also aims to generate benefits for globally important ecosystems and habitats, in particular by reducing negative impacts of agriculture on watersheds, rivers, lakes and coastal wetlands, and associated globally important species (GEF-7 Sub-Indicator 4.1, *Area of landscapes under improved management to benefit biodiversity*), through interventions from both Components 2 and 3. Non-point source pollution from agrochemical use and point source pollution from the livestock sector is a major threat to biodiversity in wetlands downstream of the project?s target areas. For example, Jiangsu marine and coastal wetlands are a migration channel between East Asia and Australia, and provide an important breeding or wintering place for endangered birds such as the endangered Red-crowned Crane (*Grus japonensis*) and Black-faced Spoonbill (*Platalea minor*). The wetland of Poyang Lake in Jiangxi Province provides important wetland habitat for migratory birds such as the vulnerable Swan Goose (*Anser cygnoid*) and White-naped Crane (*Antigone vipio*). Hubei is famous for being the ?province of a thousand lakes?, which provide habitat to globally important biodiversity including migratory birds. Environmental protection of the Yangtze River Economic Belt, which flows through Hubei, has become one of the top national strategies, with the designation of ecological redlines to protect ecologically important areas. Furthermore, through the interventions under Component 3 the project will generate benefits in terms of agrobiodiversity by increasing the number of crop varieties and by avoiding further loss in plant and crop species, including crop wild relatives. By protecting vegetation along rivers and streams and at the edge of farmland, the project will contribute to the conservation of crop wild relative (CWR) species of national importance such as wild buckwheat (also used for medicinal purposes) and wild soybean. A preliminary assessment of biodiversity and ecosystems was conducted during the project preparation phase. However, more detailed surveys are needed to assess farmland and associated biodiversity (including globally and nationally important plant and animal species) in more detail; these will be carried out under Output 1.1.2. Detailed biodiversity indicators for each county will be developed under Output 1.1.2. In Hubei, the project will also contribute to reducing plastics pollution in the agri-food system and their runoff into waterways, which ultimately ends up in the Pacific Ocean.

An overview of the area targets is provided below.

Intervention type (Note: areas under Components 2 and 3 have been deducted from ILM targets to avoid double-counting)	Shandong (ha)	Jiangsu (ha)	Jiangxi (ha)	Guizhou (ha)	Hubei (ha)	GEF Indicator
ILM plans (Component 1)						

1	Integrated landscape management a) Managed for sustainable land management b) Managed for conservation/biodiversity benefits	60,000 15,000	50,000 15,000	40,000 10,000	50,000 10,000	340,000 80,000	Sub-Indicator 4.3 Sub-Indicator 4.1
On farmland (Component 2)							
2	Good Agriculture Practices (GAP) / Climate-Smart Agriculture (CSA)/ Integrated Pest Management (IPM)	70,000	50,000	30,000	50,000	100,000	Sub-Indicator 4.3
Ecological restoration (Component 3)							
3	Land restoration / ecological restoration / agroforestry	20,000	20,000	20,000	20,000	20,000 [1]	Sub-Indicator 3.1
Total		**165,000**	**135,000**	**100,000**	**130,000**	**540,000**	

[1] Note: In order to avoid double-counting between Core Indicators 3 and 4, only 20,000 ha out of the total 25,954 ha of ?improved perennial systems? are counted towards Core Indicator 3. This was done based on expert assessments during PPG. These 20,000 ha are the areas where the main focus will be on reducing soil erosion and increasing soil fertility. The remaining 5,954 ha are counted towards Sub-Indicator 4.3 (included in the 100,000 ha under improved GAP).

An overview of the main anticipated benefits for globally significant biodiversity is provided below. As explained above, these are mostly benefits resulting from improved landscape management, reduced non-point source pollution and enhanced farmland ecosystems and biodiversity.

Province	Anticipated benefits for globally significant ecosystems and biodiversity
Shandong	**Qihe City** is located along the Yellow River (stretching 62.5 km), which hosts rich aquatic biodiversity of national and global importance. There are two main rivers in the county ? Yellow River and Tuhai River ? and a total of 17 river courses. Qihe has a total wetland area of 6,446 ha, including Qihe Huanghe National Wetland Park. These wetlands provide important habitat, among others for globally threatened migratory birds such as the Relict Gull (*Larus relictus*) and Chinese Egret (*Egretta eulophotes*) (both vulnerable on the IUCN Red List). **Laizhou City** is directly located on the Bohai Sea, which is characterized by high marine biodiversity. The city?s agricultural land is connected to Bohai Sea through a network of rivers and streams. Reduced non-point source pollution will, thus, have positive impacts on marine biodiversity, in particular the Ecological Protection Zone of Laizhou Shoal. Additionally, Laizhou has several traditional local crop varieties including wheat and millet.

Jiangsu	**Taicang City** is located along the Yangtze River (12,012 ha), bordering Shanghai where the Yangtze River flows into the East China Sea. The area is rich in aquatic and bird biodiversity. Among others, the city?s wetlands provide important habitat for bird species including the Amur Falcon, Oriental Scops Owl, Mandarin Duck, Lesser Coucal, and Common Buzzard. **Liuhe City and Jiangning District** of Nanjing City (Jiangsu?s capital) are also located along the Yangtze River, but further upstream. They host several wetland parks, including the Longpao Yangtze River Provincial Wetland Park and Qinhuai River Wetland Park. The Lanbowan-Qilihe Wetland key biodiversity area (KBA)[25] can be found in adjacent Pukou and Jianye districts. The districts? river and wetland systems host globally important biodiversity, including the vulnerable Swan Goose (*Anser cygnoid*). The Ecological and Environment Departments have set up ecological and environmental quality monitoring points in corresponding areas. **Huaiyin District** hosts important wetlands, including the Hongze Lake Nature Reserve. The district borders Baima Lake and Gaoyou Lake, and has a large network of rivers and canals. Bird species found in these wetlands include, among others, the vulnerable Great Bustard (*Otis tarda*), the endangered Red-crowned Crane (*Grus japonensis*), White Stork, Black Stork, Whooper Swan, Mandarin Duck, and Mute Swan. As in Shandong, reduced non-point source pollution and enhanced farmland ecosystems are expected to have positive impacts on aquatic and bird biodiversity of Jiangsu.
Jiangxi	**Yushui and Fenyi Counties** of Xinyu City are located along the Yuanshui River, a tributary of the Ganjiang River. The Ganjiang River flows into Poyang Lake in the northern part of the province and is, thus, a tributary of the Yangtze River. Yushui County hosts Kongmujiang National Wetland Park, covering an area of 1,125 ha. The wetlands of Fenyi County, including Yuanshui River and 115 wetland patches distributed in ten towns of the county, cover an area of 5,812 ha. The Ecological and Environment Department has set up ecological and environmental quality monitoring points in relevant areas of the two counties. Reduced non-point source pollution is the main expected benefit for globally significant biodiversity in Jiangxi.

Guizhou	In Qiandongnan Miao and Dong Autonomous Prefecture of Guizhou Province, a total of 18 species of wild plants and wild animals were confirmed to be important and threatened species. Among of them, 10 plant species including *Nuphar bornetii*, *Pinus kwangtungensis*, and the rare and endangered deciduous tree *Emmenopterys henryi*, and 8 animal species including the endangered Forest Musk Deer (*Moschus berezovskii*), the Large Indian Civet (*Viverra zibetha*), and Silver Pheasant (*Lophura nythemera*) were listed in the ?List of National Key Protected Wild Plants? and the ?List of National Key Protected Wild Animals?. **Rongjiang County** hosts Yueliangshan Forest KBA[26], which among others provides habitat to the near-threatened Elliot's Pheasant (*Syrmaticus ellioti*). Rongjiang has national first-level protected plants including *Ginkgo biloba* and Chinese yew (*Taxus chinensis* var. *mairei*) as well as second-level protected plants including *Alnus japonica*, *Cupressus chinensis*, Camphor tree and Hibiscus. The county also has local crop varieties such as Siligong rice and local soybean. **Congjiang County** hosts a globally important agricultural heritage (GIAHS) site, the Traditional Dong?s Rice-Fish-Duck Agroecosystem[27] (7,685 ha). The site has rich agricultural biodiversity, and is also famous for its high forest biological diversity. Its plant biodiversity includes 122 medicinal plants, 105 food plants, 23 forage plants, 17 building material plants, 9 dye plants, 7 paper making plants, 6 knit material, which respectively provide food, medicine, timber, textile material for the local people. The site also hosts 24 rare and endangered species. Furthermore, Congjiang County hosts Jiabang Terraces National Wetland Park (2,916 ha).

Hubei	**Tongcheng County** is located at the northern slope of Mufu mountain bordering with Hunan and Jiangxi. There are 29,975 ha of arable land, 1,422 ha of grassland and 5,795 ha of forest including orchard. The Jun river connects to Yangtze river. The main crop is paddy rice distributed at the wetland along the Jun river (9,000 ha). The globally threatened *Neofelis nebulosi* wandered at mountain area, 12 species of secondary protected birds and plants are scattered throughout the county such as *Syrmaticus ellioti, Platalea leucorodia, Cygnus Cygnus, Taxus wallichiana var. chinensis* etc. The native pig species (head and tail black) with high tolerance to many kinds of diseases and adapted to low protein feed will greatly contribute to antibiotic-free feeding and low carbon pig production. **Honghu City** is located along the northern bank of the Yangtze river as the important wetland and water buffer, with important wetland biological and genetic resources. It hosts Honghu lake (35,000 ha) with a total of 88,000 ha of wetlands. More than 40 species of migratory bird stay at the wetland to pass winter and 8 endangered animals (6 species of birds?*Mergus squamatus, Ciconia ciconia, Ciconia nigra, Heliaeetus albicilla, Aquila heliacal, Otis tarda* and 1 kind of fish?*Anguilla japonica*), and 6 secondary protection species (1 fish *Myxocyprinus asiatic*us, and 5 kinds of birds, *Platalea leucorodia, Anser albifrons, Cygnus spp, Aix galericulata, and Accipiter gentilis arrigonii*). In this city with over 60,000 ha of rice and 30,000 ha of water vegetable production, the GEF project implementation will greatly help to reduce non-point source pollution benefiting the agro-ecosystem and contributing to Yangtze river protection and biodiversity conservation. **Jingshan City** is on the northern border of Jianghan plain with arable land (54,200 ha), water bodies (20,000 ha) and forest land (16,0000 ha) located at one third of plain and two thirds of hilly area. Three rivers in Jingshan city flow downstream to Hanchuan city into Hanjiang River, the longest tributary of the Yangtze river. Qiaomi is a famous rice variety in China due to its geographic location and cultivation methods. The typical tree *Fraxinus hubeiensis* is the flag species of Jingshan city. Jingshan was named National Ecological City in 2016. Rice-fish agriculture is practised throughout the city. The demonstration of 3S agricultural practices will reduce non-point pollution in the rivers and decrease chemicals application which will benefit biodiversity conservation in the project area. **Nanzhang County** is located in the western mountain region of Hubei province with a total land area of 385,900 ha, of which 48,540 ha agricultural land. Main crops are rice, maize and tea with 25,500 ha, 15,000 ha and 6,000 ha respectively. Two main rivers (Man river and Zhang river) cross the county and flow into Hanjiang river. The Man river valley covers 229,300 ha of which 113,050 ha is in Nanzhang county. The Zhanghe headwaters natural ecological reserve region was established by Hubei province in 2011 to protect Hanjiang and Yangtze rivers and biodiversity. The number of national conserved species is 56 such as birds *Aix galericulata, Chrysolophus pistus, Platalea leucorodia, Anser albifrons, Cygnus spp,* and plants like *Gynostemma pentaphyllum, Gastrodia elata, Dioscorea zinglberensis, Comus officinalis, Phellodentron chinensis*. Organic valley policy has been issued by the county government to enhance ecological economic reform.

Third, it is estimated that the project interventions will result in direct GHG emissions mitigated (carbon sequestered or emissions avoided) of **13.3 million** tons of CO_2eq (FAO 4.82 million and WB 8.48 million, for a 20 years period in line with the IPCC methodology). The indirect GHG emissions mitigated resulting from the project interventions are estimated at **6.86 million** tons of CO_2eq (FAO 1.2 million, WB 5.66 million).

An overview of the GHG targets is provided below:

FAO-MARA Sub-Project GHG calculation

Category	GHG mitigated (tons CO2e)
1. Cropland ? annual	
- Wheat-maize improved management (Shandong)	-293,777
- Wheat-rice improved management (Jiangsu)	-207,082
- Double-rice improved management (Jiangxi)	-674,606
2. Cropland ? perennial / LUC / grassland	
- Ecological restoration / agroforestry	-3,301,429
3. Cropland ? flooded rice systems	
- Rice with water conservation, green manure, straw resource utilization (Guizhou)	-440,287
- Ecological cultivation (rice-fish) (Guizhou)	+108,026
4. Inputs	
- Reduced fertilizer and chemical use	-1,211,558
TOTAL	**-6,020,713**
Of which direct	-4,820,000
Of which indirect*	-1,200,000

*20% of the GHG mitigated are considered indirect, i.e. attributable to the long-term outcomes of GEF activities that remove barriers, such as capacity building, innovation, and catalytic action for replication.

WB-Hubei Sub-Project GHG calculation

Category	GHG mitigated (tons CO2e)
1. Cropland ? annual	
- GAP for annual crops	-1,202,180
2. Cropland ? perennial	
- GAP for perennial crops	-3,361,942
3. Cropland ? flooded rice systems	
- Improved flooded rice	-3,976,304
4. Inputs	
- Reduced fertilizer and chemical use	-4,057,496
5. Livestock (not in EX-ACT, separate calculation)	
- Improved livestock production and waste management	-1,542,240
TOTAL	**-14,140,162**
Of which direct	-8,480,000
Of which indirect*	-5,660,000

*40% of the GHG mitigated are considered indirect, i.e. attributable to the long-term outcomes of GEF activities that remove barriers, such as capacity building, innovation, and catalytic action for replication (this percentage is higher than in the FAO-MARA sub-project due to the specificities of the IBRD loan project and its focus on upscaling).

Fourth, the project will lead to a reduction in the use of GEF-relevant chemicals, namely highly hazardous pesticides (HHPs) including Isocarbophos, Omethoate and Carbosulfan, by promoting integrated pest management (IPM) and low-chemical systems in food production in the target provinces and beyond.[i]

Furthermore, the project will have significant adaptation co-benefits. It is expected that conservation and restoration of ecosystems in the agricultural landscapes will enhance the resilience of ecosystems by increasing farmland biodiversity, reducing soil erosion and moderating water flows, thereby ensuring that agricultural productivity increases can be sustained over time. The project also aims to increase the resilience of local farmer communities by strengthening capacity of farmers and farmer cooperatives for climate-resilient, sustainable production techniques, including access to cultivars, soil and water resources management, and disaster reduction and management.

Finally, the project will generate socio-economic benefits for an estimated **550,000 farmers** (women, men and youth), by strengthening individual, institutional and systemic capacity to benefit from value chains, ensuring stable and higher-quality agricultural production, maintaining or enhancing agricultural ecosystems and farmland biodiversity, and implementing adaptive measures that increase resilience of agricultural landscapes and livelihoods. In particular, the project will benefit poor farm households, in line with China?s national poverty alleviation strategy, especially the rural poor in ecologically fragile regions such as Guizhou and the mid-reaches of the Yangtze River. More indirectly, several million people living in the target landscapes will benefit from enhanced biodiversity and ecosystem services.

[i] Through the implementation of the Integrated Pest Management Plan and the 3S risk assessment systems, it is expected that the project will result in a reduction in the use of highly hazardous pesticides (HHPs), namely Isocarbophos, Omethoate and Carbosulfan, in particular in Fenyi County of Jiangxi. The project will also support a reduction in the use of chemical pesticides more generally, as well as improved management of discarded pesticides and pesticide containers. These chemicals do not classify as persistent organic pollutants (POPs) and are, thus, not captured under Sub-Indicator 9.1 of Core Indicator 9. The project will, however, contribute to Sub-Indicator 9.5, Number of low-chemical/non-chemical systems implemented particularly in food production, manufacturing and cities (see Core Indicator worksheet).

7) Innovativeness, sustainability, potential for scaling up and capacity development

Innovativeness

The project will introduce innovations at multiple levels. First, provincial and national collaboration mechanisms or platforms will have a major role in catalysing national, provincial and local action for sustainable food production and value chains. The unique collaboration between FAO, the World Bank, MARA and the project provinces under this project will be used to leverage existing platforms and partnerships. Second, the project introduces a comprehensive landscape planning approach, which combines complementary objectives of productivity and restoration at scale.

Third, the project will promote innovative practices and technologies for integrated soil-crop management, farmland ecological enhancement and integrated pest management (IPM) to be applied at scale. Innovative 3S good agricultural practice (GAP) standards will be introduced in Hubei. This will generate benefits to farmers such as by enhancing crop yields, reducing loss, reducing input costs, and reducing health risks. By linking these interventions with sustainable value chains and access to financing, the necessary incentive systems will be put in place for farmers to adopt these practices.

Fourth, innovative incentive mechanisms will be piloted, including the payment for agro-ecological services incentive mechanisms in all five provinces, as well as the development of a carbon offset protocol and carbon market mechanism for major agricultural value chains in Hubei.

Lastly, innovative digital technologies will be introduced, through existing partnerships with Alibaba and other private companies, that support sustainable production, such as for access to markets, linking

producers to consumers, monitoring of farmland for chemical residues and pest management, and digital finance. In Hubei, big-data analytics and IT platforms will be used by farmers to share information on production risks, including pests, crop and animal diseases, and environmental and climate threats.

Sustainability

The project execution of the FAO-MARA sub-project will be led by MARA at the national level, and by provincial and county agriculture departments at the local level. The WB-Hubei sub-project will be led by the Hubei Province Department of Agriculture and Rural Affairs in close collaboration with the county governments. In both sub-projects, the project interventions will be closely embedded in ongoing government and private sector efforts to enhance sustainability of agricultural production and land management, and eliminate poverty. In Hubei, the project is embedded in ongoing efforts of the province to become a national leader in agricultural sustainability and to scale up its emissions trading scheme (ETS) pilot. The project is embedded in the province?s commitment to the 3S approach and associated IBRD loan, which will be influencing government and private investments in the coming years. In other provinces such as Shandong, the project is embedded in existing provincial plans and policies that promote sustainability, including the Ecological Protection and Construction Plan of Shandong Province (as outlined in *Section 2) Baseline scenario*). The project is also closely linked with ongoing chemical fertilizer and pesticide reduction projects in Laizhou City and Qihe. Qihe county is a National Agricultural Green Development Pioneer Area, and good practices can be scaled up within the county and beyond. Project investments will be linked with ongoing and planned investments in ecological agriculture by companies such as Shandong Changrun Ecological Agriculture Co., Ltd. The project will enhance incentives and capacities to enable these stakeholders to scale up sustainable practices. In Jiangxi, the project builds on experiences from 20 demonstration counties for reducing fertilizer and increasing efficiency. In all five provinces, the project builds on the momentum of a rapidly increasing number of cooperatives and agricultural enterprises, which enables the adoption of standards and practices at greater scale.

Moreover, the project will build capacity of local stakeholders and institutions to support sustainable production by linking it with benefits for farmers. It will help to put in place relevant policies (such as linking agricultural subsidies to sustainable practices), incentive systems, ILM plans, GAPs and technical standards, which, once in place, will be sustained beyond the project period. Technical standards (national, province and industry-wide) and training programs developed by the project will be adopted and promoted by MARA beyond the project implementation. Collaboration mechanisms with provincial and national stakeholders will be strengthened, enabling exchange of knowledge, standards and best practices. Through this strong national and local ownership, close alignment with national and local priorities, and by establishing the necessary incentive systems, it is anticipated that the project interventions will be sustained, and even replicated and scaled up, after the project ends.

Potential for scaling up

The project interventions have been designed in a way that supports replication and scaling from the onset. First, the project will involve national, provincial and local decision and policy makers as well as private companies, who are responsible for investment and policy decisions. These stakeholders will be engaged in multi-stakeholder platforms and landscape-level planning processes that aim to seek transformational change at the landscape (horizontal) and value chain (vertical) scale. Awareness and commitment of national stakeholders to environmental sustainability of agricultural production landscapes and associated value chains will be increased. Second, the technical standards and training and extension programs developed by the project will be designed to be applied not only in the project area, but beyond. Guidelines, best practices, GAP standards and technologies implemented under the

project can be replicated in similar agro-ecological regions within the target provinces and beyond. The combined strengths of FAO, the World Bank, MARA and the project provinces will be leveraged to enhance project impact and influence at various levels. Scaling will be achieved, in particular, through the application of policies/incentives, industry and province wide standards and guidelines, partnerships as well as training modules, to areas beyond the project counties by the provincial Departments of Agriculture and Rural Affairs (DARA). Furthermore, MARA and the provincial DARA will use lessons learned of the project for their future policy setting and technical support at national and provincial level. Importantly also, under Component 4 the project will work to disseminate project achievements and influence policy and decision makers and value chain actors in order to support replication and scaling. As a result, good practices and lessons learned from this project are expected to be taken up by national and sub-national government, FAO and World Bank for future investments in China. Exchange with other relevant actors and partner projects in China, such as the FOLU Coalition, will be fostered by the project with a specific focus to identify opportunities for scaling, promote policy dialogue, and coalesce action of public and private sectors.

Capacity development

The project is applying a system-wide capacity development approach in line with GEF, FAO and World Bank principles. Please refer to the ProDoc Section *1.a.7) Project Description* and Annex P; as well as the PAD Section *II. Project Description* and Section *C. Sustainability*. The project aims to build systemic, organizational, institutional and individual capacity in the target counties and provinces throughout all its components.

8) Summary of changes in alignment with the project design with the original project concept at PFD stage

During the project preparation phase, the project interventions were elaborated in detail and information was collected on the baseline, co-financing and related initiatives. Some changes were made in close consultation with stakeholders, as described below.

Topic	Main changes from PFD project concept stage

1) Core indicator targets	The core indicator targets were clarified and revised/confirmed, as follows, based on the baseline assessment and consultation with stakeholders, including coordination between the FAO-MARA and the World Bank-Hubei sub-projects. The targets included in the PFD for the China child project were as follows: ? Core Indicator 3: 300,000 ha (50,000 for demonstration, 150,000 for replication, 100,000 of indirect impacted area, to be confirmed during PPG). ? Core Indicator 4: 1,200,000 ha (150,000 for demonstration, 600,000 for replication, 450,000 of indirect impacted area, to be confirmed during PPG) ? Core Indicator 6: 10,000,000 tons of CO_2eq (to be confirmed during PPG) ? Core Indicator 11: 500,000 direct beneficiaries (over 50% or 260,000 women) The revised targets at CEO Endorsement Request stage are as follows: ? Core Indicator 3: 150,000 ha (FAO 80,000, WB 20,000) ? Core Indicator 4: 920,000 ha (FAO 450,000, WB 520,000) ? Core Indicator 6: 13.3 million tons of CO_2eq direct, 6.86 million tons of CO_2eq indirect (FAO 4.82 million direct and 1.2 million indirect, WB 8.48 million direct and 5.66 million indirect) ? Core Indicator 11: 550,000 direct beneficiaries (at least 240,000 women) (FAO 250,000, WB 300,000) The total area under improved practices and restoration is, thus, reduced from the estimated 1.5 million hectares at PFD stage to a more realistic 1.07 million hectares at CEO Endorsement Request stage. This includes both the targets from GEF financing and from counterpart financing. The targets from the PFD stage were assessed as overly ambitious and not achievable within the project?s timeframe. The distinction between demonstration, replication and indirect impacted area has been removed, as it was confusing to stakeholders. The results frameworks of the two sub-projects, as well as the Core Indicator worksheet, include more details on the area-related targets. Explanations for the changes: 1) The new area targets are a reflection of the actual land use and potential for improvement in the target counties and provinces, based on the baseline assessments and detailed analysis of the GEF Core Indicator definitions undertaken during the project design phase. In line with the GEF-7 definitions, Core Indicator 4 has been divided into two categories: (1) integrated land management (ILM) plans to be develop under Component 1; and (2) areas under improved practices such as good agricultural practices (GAP), climate-smart agriculture (CSA), and integrated pest management (IPM) based on interventions from Component 2. 2) Due to the specificities of the IBRD loan, the World Bank targets in Hubei only include area targets achieved through concrete interventions and investments verifiable through the Bank project?s monitoring and evaluation activities. In addition, there are fewer project counties than those at PFD stage as some counties dropped off from participating in the IBRD/GEF blended project at the project appraisal

2) Target counties	The selection of target counties was confirmed based on the detailed baseline analysis and in consultation with the provincial and local partners. Most counties remain unchanged from the project concept at PFD stage. The main changes are: ? There will be only two main target counties in Jiangxi (Yushui and Fenyi). ? There will be only three target counties in Guizhou (Congjiang, Liping and Rongjiang). ? In Shandong, Qixia City has been replaced by Qingyun County. ? In Hubei, the target counties were reduced from an initial 12 to 4 counties at the project negotiation stage. However, additional three counties will be added based on detailed discussions with county stakeholders during the IBRD and GEF project implementation phase. The additional project counties must satisfy the following criteria: (i) willingness to implement all aspects of the 3S project design; (ii) willingness to draw lessons from successful 3S pilots and inform the domestic support programs; (ii) willingness to invest in institutional capacity development and systems for supporting 3S programs; (iii) agreeable to comply with social and environment safeguards management framework (ESMF) and fiduciary procedures agreed with the World Bank; and (iv) satisfies the debt sustainability parameters stipulated by Provincial Finance Bureau. Project concept at PFD: Shandong: Qihe County, Laiyang City, Qixia City, Laizhou City Jiangsu: Liuhe District, Jiangning District, Taicang District, Huaiyin District Jiangxi: Yushui District, Dingnan County, Yujiang County, Fenyi County Guizhou: Congjiang County, Liping County, Tianzhu County, Rongjiang County Hubei: 12 counties CEO Endorsement Request: Shandong: Qihe City, Laiyang City, Qingyun County, Laizhou City Jiangsu: Liuhe District, Jiangning District, Taicang District, Huaiyin District Jiangxi: Yushui District, Fenyi County Guizhou: Congjiang County, Liping County, Rongjiang County Hubei: Honghu City, Tongcheng County, Nanzhang County, Jingshan City, and three more counties that meet the criteria for selection as stated above.

3) Outputs and outcomes	The outputs and outcomes were made clearer and elaborated more in detail in consultation with stakeholders, and in coordination between the two sub-project. The main changes from the project concept at PFD stage are highlighted below. Component 1 ? Component wording: added ?agricultural? in ?Development of integrated landscape management (ILM) systems in agricultural landscapes?. Main focus of the ILM plans will be on agricultural land and surrounding areas, although integration and alignment with other sectors (forests, wetlands, etc.) will be sought. ? Accordingly, Outcome 1.1 has been adjusted as follows, ?Strengthened ILM policies, plans and capacities that promote participatory planning and enable national and provincial institutions across agricultural landscapes to meet their relevant sustainable agriculture, rural revitalization, land restoration and related climate and biodiversity targets. (instead of ?across landscape and land use management?). ? Output 1.1.1 ?Food and land use collaboration mechanisms established or existing mechanisms strengthened at national and provincial level.? was added. It was clarified that these mechanisms are meant to bring together public-private sectors to collaborate on food and land use issues, and can take the form of committees, platforms, etc. (to be decided by each province). ? Output 1.1.4 ?Monitoring systems for sustainable food systems and land use established (or existing systems improved) and implemented.? was added. ? Previous Output 1.1.1 on policy development was moved to new Output 1.1.5. Component 2 ? Wording of outputs was made clearer. ? Output 2.1.1 ?Sustainable intensified crop production systems? was reworded to ?Sustainable and Climate Smart Agriculture (CSA)?. ? Output 2.1.4 on ?Strengthened high-standard ecological farmland construction? was added (to be implemented through co-financing). ? Output 2.2.2, the aspect on ?awareness raising of consumers? was moved to Output 4.1.2. Component 3 ? Component 3 was reworded from ?Conservation and restoration of natural habitats in production landscapes? to ?Conservation and restoration of agroecosystems and biodiversity? to better reflect the context of the China child project. ? Outcome 3.1 was reworded from ?Enhanced conservation and restoration of natural habitats in production landscapes? to ?Enhanced conservation and restoration of agroecosystems and biodiversity in agricultural landscapes?. ? Former Outcome 3.2 ?Restoration of degraded landscapes for productive use? and its Outputs 3.2.1 and 3.2.2 were incorporated into Outcome 3.1. ? Output 3.1.1 wording was made clearer ?Interventions implemented to maintain and increase biodiversity in production systems?. Component 4 ? Outputs 4.1.4 and 4.1.5 on Monitoring Systems were moved to Component 1 (new Output 1.1.4).

4) Financing per component	The project concept at PFD stage included the following amounts of GEF financing per component (for both the FAO-MARA and World Bank-Hubei sub-projects). ? Component 1: USD 3,000,000 ? Component 2: USD 5,500,000 ? Component 3: USD 3,000,000 ? Component 4: USD 1,320,446 ? PMC: USD 641,022 The amounts were adjusted as follows after elaboration of the detailed project budget: ? Component 1: USD 1,423,375 (FAO), USD 1,551,000 (WB) ? Component 2: USD 2,443,125 (FAO), USD 3,200,569 (WB) ? Component 3: USD 1,436,125 (FAO), USD 601,449 (WB) ? Component 4: USD 1,538,640 (FAO), USD 637,246 (WB) PMC: USD 338,185 (FAO), USD 291,754 (WB)
5) Total co-financing	Total co-financing included in the project concept at PFD stage was **USD 155 million**. ? Ministry of Agriculture and Rural Affairs: USD 4.75 million ? Provincial and District Governments: USD 35 million ? FAO: USD 0.25 million ? WB-IBRD: USD 100 million ? Private sector in the target provinces: USD 15 million The amounts have been adjusted as follows, based on the detailed baseline analysis and consultation with partners, and a request from the government to increase the Hubei IBRD loan by $50 million. Total co-financing is **USD 402.2 million**. ? Ministry of Agriculture and Rural Affairs: USD 6 million. ? Shandong Provincial and District Governments: USD 10 million ? Jiangsu Provincial and District Governments: USD 10 million ? Jiangxi Provincial and District Governments: USD 10 million ? Guizhou Provincial and District Governments: USD 10 million ? FAO: USD 0.3 million ? Private sector in the target provinces: USD 10.2 million ? WB-IBRD: USD 150 million ? Hubei Provincial and County Governments: 71.7 million ? Hubei private sector counterpart financing: 124 million The project concept at PFD stage did not include Hubei counterpart financing (although this was already foreseen at that stage, but further consultations were needed). The details are described in Section C of this CEO Endorsement Request.

[1] Garnett and Wilkes (2014).

[2] The People?s Republic of China, Third National Communication on Climate Change, 2018.

[3] PAN, Xing-lu et al. (2019). Progress of the discovery, application, and control technologies of chemical pesticides in China. *Journal of Integrative Agriculture.* 18. 840-853. https://doi.org/10.1016/S2095-3119(18)61929-X.

[4] Li et al. (2020). A farmland biodiversity strategy is needed for China. *Nature Ecology and Evolution.* https://doi.org/10.1038/s41559-020-1161-2.

[5] Jun Ma et al. (2019). Impact of Climate Change on the Growth of Typical Crops in Karst Areas: A Case Study of Guizhou Province. https://doi.org/10.1155/2019/1401402.

[6] Third National Communication on Climate Change, 2018.

[7] Although, based on the socio-economic analysis in the target provinces, more recent trends show that, due to the slowing of economic development in urban areas, some young people choose to return to rural areas and resume farming activities.

[8] Wang, H. *et al.* (2019). ?Research on Farmers? Willingness of Land Transfer Behavior Based on Food Security?, *Sustainability* 2019, 11(8), 2338. https://doi.org/10.3390/su11082338

[9] Garnett and Wilkes (2014).

[10] Jun Ma et al. (2019).

[11] Meng, et al. (2006). Maize in China: Production Systems, Constraints, and Research Priorities. CIMMYT.

[12] Li et al. (2020).

[13] Zhenzhong Si (2019). Shifting from Industrial Agriculture to Diversified Agroecological Systems in China.
https://www.coventry.ac.uk/globalassets/media/documents/research-documents/coventry-china-agriculture-aw-new-style.pdf

[14] China?s Final National Report of the Voluntary Land Degradation Neutrality (LDN) Target Setting Programme, 2017.

[15] The People?s Republic of China, Second National Communication, 2012.

[16] China?s Final National Report of the Voluntary Land Degradation Neutrality (LDN) Target Setting Programme, 2017.

[17] The Chinese government has prioritized the conservation and development of traditional farming systems through the promotion of GIAHS. The concept was initially introduced by the global GEF-5 project ?Conservation and Adaptive Management of Globally Important Agricultural Heritage Systems (GIAHS)?, and China has played an important role in adopting and promoting the concept of GIAHS, with currently the largest number of GIAHS sites in the world (15 sites covering 13 provinces). In addition, in 2012 China introduced the concept of Nationally Important Agricultural Heritage Systems (NIAHS), and has designated 91 NIAHS sites so far, covering 28 provinces. Driven by China, the GIAHS work was written into the *Beijing Declaration on APEC Food Security* in 2014 and the *G20 Agriculture Ministers Meeting Communiqu?* in 2016.

[18] 2016 ADB Report: Toward a national eco-compensation regulation in the People?s Republic of China. In 2014, with support from the Asian Development Bank (ADB), the Western Development

Department of the National Development and Reform Commission (NDRC) and China Agricultural University (CAU), established a Knowledge Hub on Green Development and Eco-Compensation.

[19] China?s Final National Report of the Voluntary Land Degradation Neutrality (LDN) Target Setting Programme, 2017.

[20] Garnett and Wilkes (2014).

[21] Tang, H. et al. Current Status and Development Strategy for Community-Supported Agriculture (CSA) in China. *Sustainability* 2019, *11*, 3008.

[22] https://www.foodandlandusecoalition.org/global-initiatives/fable/

[23] https://www.irri.org/

[24] FAO defines the following 5 key principles of **Sustainable Food and Agriculture**:

Principle 1: Improving efficiency in the use of resources is crucial to sustainable agriculture;

Principle 2: Sustainability requires direct action to conserve, protect and enhance natural resources;

Principle 3: Agriculture that fails to protect and improve rural livelihoods and social well-being is unsustainable;

Principle 4: Sustainable agriculture must enhance the resilience of people, communities and ecosystems, especially to climate change and market volatility;

Principle 5: Good governance is essential for the sustainability of both the natural and human systems.

Conservation Agriculture, in turn, is a farming system that promotes maintenance of a permanent soil cover, minimum soil disturbance (i.e. no tillage), and diversification of plant species. It enhances biodiversity and natural biological processes above and below the ground surface, which contribute to increased water and nutrient use efficiency and to improved and sustained crop production. Complemented by other known good practices, including the use of quality seeds, and integrated pest, nutrient, weed and water management, etc., CA is a base for sustainable agricultural production intensification.

FAO describes **Climate-Smart Agriculture (CSA)** as an approach for developing agricultural strategies to secure sustainable food security under climate change. CSA aims to tackle three main objectives: (i) sustainably increasing agricultural productivity and incomes; (ii) adapting and building resilience to climate change; and (iii) reducing and/or removing greenhouse gas emissions, where possible.

[25] http://datazone.birdlife.org/site/factsheet/lanbowan%E2%80%93qilihe-wetland-iba-china-(mainland)

[26] http://datazone.birdlife.org/site/factsheet/yueliangshan-forest-iba-china-(mainland)

[27] http://www.fao.org/3/a-bp782e.pdf

1b. Project Map and Coordinates

Please provide geo-referenced information and map where the project interventions will take place.

The project interventions will take place in the following 17 counties, as shown in the map below. Additional counties may be added during project implementation.

FAO-MARA sub-project:

1. Shandong Province (4 counties): Qihe City, Laiyang City, Qingyun County, Laizhou City
2. Jiangsu Province (4 counties): Liuhe District, Jiangning District, Taicang District, Huaiyin District

3. Jiangxi Province (2 counties): Yushui District, Fenyi County
4. Guizhou Province (3 counties): Congjiang County, Liping County, Rongjiang County

World Bank-Hubei sub-project:

5. Hubei Province (4 counties): Honghu City, Tongcheng County, Nanzhang County and Jingshan City, and three additional counties that meet the selection criteria.

Detailed maps can be found in Annex E of the ProDoc and Annex 4 of the PAD.

The geo-coordinates of the target counties are summarized below.

Province	County	Geo-coordinates

Shandong	Qihe City	36?47'24.59" N 116?45'19.19" E
	Laiyang City	36?58'32.99" N 120?42'49.00" E
	Qingyun County	37?46'31.00" N 117?23'07.00" E
	Laizhou City	37?10'27.00" N 119?55'59.99" E
Jiangsu	Liuhe District	32?21'59.04" N 118?50'45.60" E
	Jiangning District	31?52'0.84" N 118?48'1.44" E
	Taicang District	31?26'31.19" N 121?05'22.80" E
	Huaiyin District	33?35'19.00" N 119?01'9.01" E
Jiangxi	Yushui District	27?50'20.3"N 114?56'16.6"E
	Fenyi County	27?51'29.39" N 114?39'23.39" E
Guizhou	Congjiang County	25?45'15.00" N 108?54'19.00" E
	Liping County	26?19'13.31" N 109?09'3.64" E
	Rongjiang County	25?55'55.00" N 108?31'19.00" E
Hubei	Honghu City	29?49?39.22?N 113?28?39.90?E
	Jingshan City	31?01?6.53?N 113?07?10.31?E
	Nanzhang County	31?46?28.96?N 111?50?20.47?E
	Tongcheng County	29?14?43.26?N 113?49?1.27?E

1c. Child Project?

If this is a child project under a program, describe how the components contribute to the overall program impact.

China?s participation in the IP will serve as a powerful catalyst for the transformation of the global food and land management systems. Through this unique partnership between FAO, World Bank, MARA, and the project provinces, the project will provide a model for other regions in China, and countries throughout the world on how to pursue a more sustainable food system. As the world?s largest producer of rice and wheat and second largest producer of maize, China is critical to the global agenda. China produces 30% of the world?s rice, 17.5% of wheat, and 25% of the world?s maize. It is the world?s largest producer of pork and second largest producer of poultry. China is the world?s biggest contributor of GHGs directly emitted from agriculture, accounting for 14% of total global agricultural emissions. How China manages its land and supply chains has a global impact, given its share of the global market, and the extent to which other countries look to China as an example. The project is expected to have a large-scale transformational impact on food systems in the target landscapes (around 1.07 million ha) and beyond, aiming to transform the FOLUR target commodities/crops? production and value chains at a scale that is significant at the global level. Furthermore, the project will foster exchange with other child projects globally and in the region, in particular with India, Thailand and Vietnam on sustainable wheat and rice production and value chains. The project will also collaborate with IP partners (such as the FOLU Coalition) working on similar issues in China and globally to achieve greater impact.

2. Stakeholders

Select the stakeholders that have participated in consultations during the project identification phase:

Civil Society Organizations Yes

Indigenous Peoples and Local Communities Yes

Private Sector Entities Yes

If none of the above, please explain why:

Please provide the Stakeholder Engagement Plan or equivalent assessment.

Please refer to Section *2. Stakeholders* and *Annex I2* of the ProDoc, and Section *IV. Project Appraisal Summary*, *C.(ii) Social safeguards* of the PAD, for a summary of the stakeholder consultations conducted during the project design phase, and the planned stakeholder engagement during the implementation.

In addition, provide a summary on how stakeholders will be consulted in project execution, the means and timing of engagement, how information will be disseminated, and an explanation of any resource requirements throughout the project/program cycle to ensure proper and meaningful stakeholder engagement.

In Hubei Province, citizen engagement has been done through the environmental and social assessment process, where local communities including farmers and agricultural businesses have been informed of the proposed project activities and consulted on their views and feedback on these activities. The consultations also included related project impact such as opportunities for increased income through agricultural investment and improved rural infrastructures, and negative impact including land acquisition/resettlement. There is wide support from local farmers in all project counties, and this is recorded in the Social Impact Assessment (SIA) report. A Grievance Redress Mechanism (GRM) was also established through information disclosure at project township level during the social assessment. Contact details of project management units at county and provincial levels has been included in the information. The consultative process will continue to be a key feature during project implementation, reaching out to stakeholders and citizens at large through targeted communication tools, consultative processes such as workshops and focus group discussions, and feedback mechanism to build ownership of project interventions and enhance sustainability of outcomes. Monitoring and evaluation include specific indicators to monitor continued citizen engagement for further guidance in adopting better citizen engagement practices in subsequent project years. Staff receiving feedback/complaints from affected people has been appointed and will be trained on how to manage the GRM.

For the FAO-MARA sub-project, stakeholders consulted during the project preparation phase include several agencies of the Ministry of Agriculture and Rural Affairs (MARA), the Ministry of Natural Resources, the Ministry of Finance, the Ministry of Ecology and Environment, the National Development and Reform Commission (NDRC), the Chinese Academy of Agricultural Sciences, and Provincial and District Government. In addition, consultations have been held with the World Bank, the Asian Development Bank (ADB), the International Fund for Agricultural Development (IFAD), GIZ (German Agency for International Cooperation), World Resources Institute (WRI), the International Rice Research Institute (IRRI), academic institutions, and Alibaba, as well as with local private sector, cooperatives, farmer associations, township and village governments, women?s groups and farmers. Detailed coordination took place between the FAO-MARA and World Bank-Hubei sub-projects to ensure alignment of project goals and components. A socio-economic analysis was conducted during project preparation and is available as a separate report. The Stakeholder Engagement Matrix in Annex I2 of the ProDoc includes information on how stakeholders have been consulted, and how they will be engaged in the project execution, including any disadvantaged or vulnerable

groups/individuals and ethnic minorities. A Grievance Redress Mechanism is also included in Annex I2. Due to the COVID-19 outbreak, the project validation was conducted remotely via email with provincial stakeholders. More detailed consultations, validation and planning with local communities will be conducted when feasible, and at the latest during the project inception phase.

The China child project will ensure meaningful engagement of key stakeholders from government, civil society such as NGOs, academia, private sector associations, and farmer cooperatives throughout project implementation. The National Project Management Office (NPMO) of MARA and the provincial and county-level PMOs of Hubei will be responsible for implementing the stakeholder engagement as outlined in the ProDoc and PAD. They will also be responsible for monitoring and reporting on stakeholder engagement through the annual project implementation reports (PIRs). Budget for stakeholder engagement has been allocated through the meeting, training and travel budget lines. Relevant activities have been included in the work plans.

In the annual PIRs, the NPMO/provincial PMO will report on the following indicators:

1) Number of government agencies, civil society organizations, private sector, vulnerable groups and other stakeholder groups that have been involved in the project implementation phase.
2) Number of engagements (such as meetings, workshops, official communications) with stakeholders during the project implementation phase.
3) Number of grievances received and responded to/resolved.

Select what role civil society will play in the project:

Consulted only;

Member of Advisory Body; Contractor;

Co-financier;

Member of project steering committee or equivalent decision-making body;

Executor or co-executor;

Other (Please explain) Yes

Civil society such as members from academia and local associations, NGOs and women?s groups will be involved as partners, beneficiaries and technical experts throughout project implementation.

3. Gender Equality and Women's Empowerment

Provide the gender analysis or equivalent socio-economic assesment.

China has made substantial progress on gender equality; nevertheless, inequalities remain across livelihoods sectors, especially in the agriculture sector. Women play an important role in agricultural production systems in China as men increasingly seek employment in urban areas. Women make a

considerable contribution to household income through farm and non-farm activities. However, their contribution to household food security and income generation in rural areas is often underestimated and undervalued. The project will, therefore, place a particular emphasis on involving women in the shift towards sustainable agricultural production systems and enhancing women?s access to rural finance and agricultural value chains. It will also ensure the adequate participation of women in planning, capacity building and decision-making activities under the project.

Generally, women farmers are more exposed to climate change risks compared to men, as they depend more on natural resources for their livelihoods, have fewer endowments and entitlements to help them absorb shocks, and may not equally benefit from agriculture technologies and practices. A gender-responsive approach is, thus, required that aims to reduce gender inequalities and ensures equal benefit from the project?s interventions and practices, thus achieving more sustainable and equitable results.[1]

FAO-MARA Gender Analysis and Action Plan

A Gender Analysis was conducted during the project preparation phase and a Gender Action Plan prepared (Annex N). The Gender Analysis points out that the Chinese constitution emphasizes that ?women have equal rights with men in political, economic, cultural, social and family life.? Women?s rights and interests relating to land are well protected in the target counties, in line with the Law on Land Contract in Rural Areas. The transfer of rural labour force and agricultural mechanization has greatly promoted the contribution of women to agriculture. However, some differences persist. For instance, women in the target counties have generally lower education levels than men. They have fewer choices with regard to local employment opportunities, and women?s wages are lower than men?s. Also, women?s representation in local decision-making is still lower as compared to their male counterparts. On the other hand, although there are not enough system statistics on the financial services for rural women, the microcredit programs in rural areas are principally designed for rural women, playing an important role in female poverty alleviation and self-development.

The Gender Action Plan incorporates actions along the following principles:

? Awareness and capacities among the project staff on gender mainstreaming, as well as socio-economic aspects in general, are considered as a basic requirement of gender mainstreaming. A gender focal point will be designated in the National Project Management Office (NPMO), and project local coordinators will support implementation of the gender equality measures and gender action plan at the county/local level. The project will also ensure adequate representation of women among project staff, including consultants and other service providers.

? Consultation with women and women?s groups on needs and requirements associated with project interventions will promote equitable representation of women in project activities and in any mechanisms or platforms established and/or strengthened by the project. In particular, the project will ensure that its training programs are gender-sensitive, i.e. that they take into account the specific needs and priorities of women. The project executing partners will establish and strengthen networks with partners that have substantive experience working on gender issues, such as the All-China Women?s Federation, and utilize their expertise to implement the project.

? The project will give special focus to ensuring adequate participation, and sharing of benefits, by all social groups ? men and women, rich and poor, youth and the elderly ? and to involving the most vulnerable people in the community in decision-making, including female-headed agricultural households. Importantly also, the project will implement sustainable agriculture approaches that specifically benefit women farmers, such as small-scale ?green? mechanization, or the safe discarding of pesticides. It will organize value chain activities specifically targeting women, such as business development support for women?s enterprises.

? Detailed gender specific data on the project beneficiaries will be collected in each target province/county during the first year of the project implementation. The Project Manager will work

closely with the provincial and county counterparts and the Safeguards and Gender Specialist (gender focal point) to develop gender-disaggregated data of the selected target landscapes.

? With regard to the knowledge management component, the project will develop case studies or success stories related to women farmers and/or women?s enterprises; and will organize exchange visits specifically for women to support exchange on women farmers and/or women?s enterprises promoting sustainable agriculture practices.

Hubei Gender Analysis and Action Plan

In Hubei Province, a gender analysis was conducted as part of the project?s Social Impact Assessment (SIA), which includes demographic information, social and economic status of women, and employment status. The SIA report indicates that, in project areas, women are the main farming workforce while men are mostly doing migrant work. Other evidence shows that gender is the single most important circumstance determining incomes in China. The nationwide female to male earnings ratio is only 0.64. This gender gap in income earnings is even wider in the central part of the country (which includes Hubei) and for those in rural areas, where men earn nearly twice that of women.[2] Food safety risks, which have disproportionately negative impacts on women, also reduce women?s labor productivity, thereby worsening income gaps. Membership in farmer cooperatives can be instrumental to closing the gender gap in income earnings as studies have shown that the average income of farmer cooperative members was 20% higher than non-members. However, Chinese men are more likely to be members of farmer cooperatives than women. They are also more likely to manage cooperatives than women.

To address the gap in funding that exists between male and female-owned cooperatives, the project will prioritize investing in women-led cooperatives and enterprises, or those with a defined significant share of women members. This will be done by prioritizing applications from these cooperatives/enterprises, supported by an outreach effort to women-led cooperatives and their female members, and providing additional assistance during the application process. The project will monitor the progress in reducing the gender gap by ensuring at least 21 of the 50 farmer cooperatives that the project will support are managed by women or have a significant share of female members. This represents 42% of cooperatives receiving funding, a large improvement over the 27% of women-led enterprises receiving funding on average. To address the other abovementioned constraints to women farmers, the project will (i) enhance women?s skills and awareness of environmental, climate, and food quality and safety risks with trainings and capacity building activities in a specific platform; and (ii) ensure that where ICT innovations are promoted by the project, they are optimized for accessibility by women. Specific actions under the project include (a) setting a quota/target that 55% of the total users engaged in 3S food quality and safety platforms (and in all other trainings and capacity-building events) are women. The project will have extensive outreach to potential women participants, provide assistance in their applications, and give a preferential treatment for women applications to participate in these project activities. The associated indicator for this action is that 2,750 of the 5,000 users that are targeted to benefit from the food quality and safety platform are women.

Please refer to the ProDoc Section *3. Gender Equality and Women?s Empowerment* and Annex N *Gender Action Plan*, as well as to the PAD Section *C. Safeguards, (iii) Gender* for further details.

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[1] FAO and CARE (2019). Good Practices for Integrating Gender Equality and Women?s Empowerment in Climate-Smart Agriculture Programmes.

[2] Inequality of Opportunity in China?s Labor Earnings: The Gender Dimension, *China & World Economy*, 2019.

Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment?

Yes

Closing gender gaps in access to and control over natural resources;

Improving women's participation and decision making Yes

Generating socio-economic benefits or services or women Yes

Does the project?s results framework or logical framework include gender-sensitive indicators?

Yes

4. Private sector engagement

Elaborate on the private sector's engagement in the project, if any.

Private sector will be engaged across all components of the China child project. Both sub-projects will promote the participation of cooperatives and agro-enterprises and will leverage private sector investments through co-financing of investments that are linked to the project. Private sector will have a key role in helping farmers to adopt new technologies, and in developing market linkages and supply chains. Mechanisms such as certifications and traceability platforms, eco-labelling, and value adding will be developed in collaboration with local SMEs, farmer enterprises and cooperatives. Investment commitments from the private sector are expected to provide an important indication for a clear business rationale and longer-term sustainability of the commodity value chain. In Hubei Province, private sector cooperatives/enterprises have committed to providing substantial self-financing of approximately 35% of Component 2 sub-project costs for the first year of investments. Lead local enterprises will be selected during the investment proposal preparation based on clear criteria, for example, strong business and financial record, experience in the sector, strong management and business planning.

Provincial and county-level companies will be an important stakeholder for the food systems and land use collaboration mechanisms established under Component 1. This will involve public and private actors across the value chains, including local government, agricultural producers, input suppliers, processors, distributors, traders, commercial banks and rural credit cooperatives, state-owned enterprises, as well as civil society. As mentioned earlier, the number of farmer cooperatives and agribusinesses have been rapidly increasing over the past few years. However, their capacity to operate at scale and their access to green technologies and sustainable financing is still limited. Under Component 2, private sector will have a key role in helping farmers to adopt new technologies, and in developing market linkages and supply chains. Mechanisms such as certifications and traceability platforms, eco-labelling, and value adding will be developed in collaboration with local SMEs, farmer enterprises and cooperatives. Additionally, the project will expand and strengthen existing public-private partnerships to foster increased investments in sustainable value chains from input supply, to production, to processing and marketing; and access to affordable financing.

Furthermore, also under Component 2, Alibaba and other large e-commerce companies will be engaged for digital solutions that support sustainable production, including access to markets, monitoring of farmland for chemical residues and pest management, linking producers to consumers, and digital

finance. E-commerce solutions will be piloted in Guizhou Province to support access to markets for poorer farming communities. Engagement with Alibaba and potentially other e-commerce companies will generate global environmental benefits in several ways. First, in Guizhou mostly, the project will create market incentives for farmers (through e-commerce, local branding and access to rural finance) to preserve or restore less intensive, low-chemical and biodiversity-friendly agricultural systems and landscapes through the promotion of local products such as red rice. Second, under its Output 2.1.3, the project will explore innovative digital solutions, including those developed by e-commerce companies, that would help farmers reduce chemical fertilizer and pesticide inputs, including through improved pest early warning and precision agriculture. Third, when developing technical standards, the project will seek to incorporate lessons learned from Alibaba on ensuring quality and safety of agricultural products. Lastly, the project will seek to engage Alibaba and potentially other e-commerce companies in global forums and exchange under FOLUR IP, in order to encourage them to further expand elements of environmental sustainability in their agriculture related business, in particular the rural finance and e-commerce activities, and inspire other key supply chain actors to do the same.

Private sector will also be engaged in the planning and implementation of ecological restoration under Component 3; as well as in platforms for knowledge creation and sharing of lessons learned under Component 4.

A value chain analysis was conducted during the project preparation phase and is available as separate report. The analysis has identified the following key public and private sector actors in the target counties for the staple crops of wheat, maize and rice: grain producers (including individual farmers, large grain farmers, family farms, professional cooperatives and enterprises); input suppliers (for seeds, fertilizers, pesticides, and machinery); processors (such as grain factories), and distributors. In some of the target counties, individual farmers still account for the majority of agricultural production, but cooperatives and agricultural enterprises represent an increasing and significant share of production in all counties. Cooperatives and local enterprises play a key role in agricultural mechanization, efficiency improvements, the introduction of new methods and technologies, and distribution and marketing. While state-owned enterprises still have a share of the market, in particular for the storage, aggregation and distribution of grains, private sector actors involved in the production, wholesale, trade and e-commerce play an increasingly important role. In addition, the analysis shows that most of the grain production is either consumed locally within the county or province, or exported to other provinces. There is no significant export market to other countries for the target grain crops; the internal market is predominant. It is considered that the biggest opportunity for value added lies in the internal Chinese market for high-quality, green, organic and geographic indication products. The key actors identified along the value chain of the target crops in the project counties are shown in *Figure 7* below.

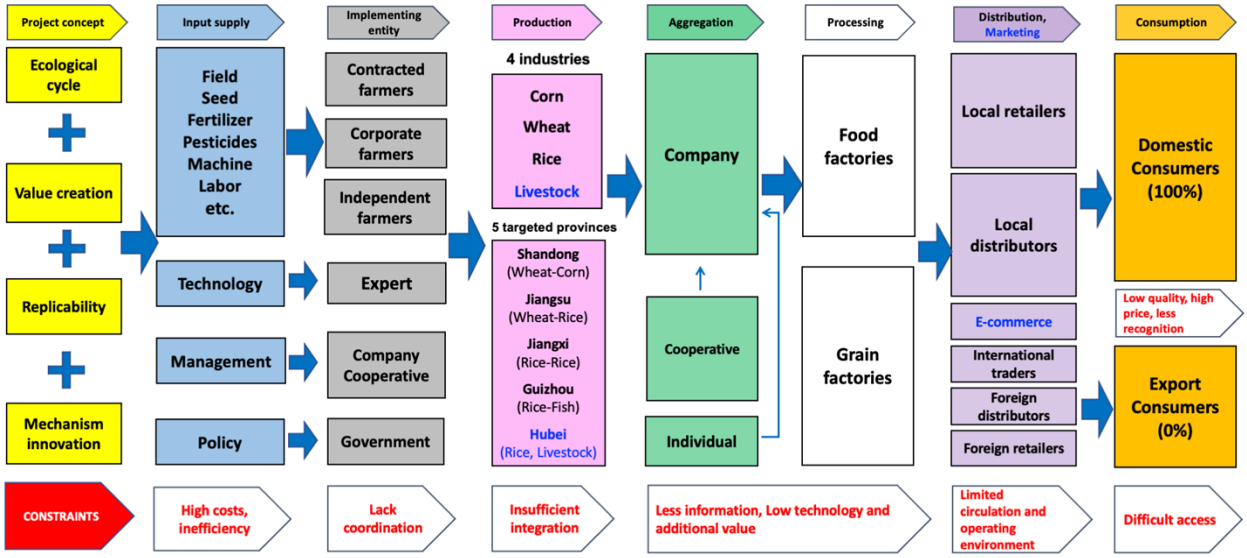

Figure 7: Value chain analysis of the target crops in the project counties

Several constraints were identified that limit the development of sustainable value chains at scale. The main constraints include inadequate access to financing, the lack of adequate marketing channels including e-commerce, lack of awareness and standards, and insufficient skills and technologies. The following recommendations were formulated and have been incorporated into Component 2 of the project.

Inputs:

1. Explore more strategic use of government subsidies and improve policies in order to increase the scale of sustainable agricultural production and rural revitalization. Expand the scale of green and organic grain cultivation, and expand the proportion of certified organic production areas for pollution-free green agricultural products.
2. Strengthen access to high-quality, climate-resilient, and diverse grain varieties.
3. Strengthen the mechanism of benefit sharing of increased value between small farmers, cooperatives and enterprises, establish made-to-order farming (contract farming) model to ensure high-quality products and high-price in the value chain.
4. Strengthen existing policies to facilitate access to credit and financing for farmers and agricultural enterprises, especially for women and vulnerable groups.
5. Help farmers to reduce input costs through optimization of fertilizer and pesticide use and integrated pest management (IPM) approaches.

Production:

1. Strengthen capacity of local cooperatives, enterprises and industry associations to support adoption of new technologies, standards and practices, and develop market value and local brands, while ensuring that individual farmers and workers, in particular women and vulnerable groups, also benefit from the innovations.
2. Guide farmers, enterprises, and cooperatives to standardize production, and promote the upgrading of the grain industry value chain with quality improvement and brand leadership.
3. Strengthen existing standards and certifications for sustainable agricultural production.
4. Improve production levels by reducing occurrence and impacts of pests and diseases, optimizing fertilizer use and enhancing the quality of arable land.

5. Promote the replication of successful models based on local conditions, such as the ?rice + fish, duck, frog, etc.? model, so as to improve the ecology and improve the efficiency, as well as the market value.
6. Promote the use of innovations and technologies of green agriculture models that have been successfully tested, in line with local specificities.

Marketing and distribution:

1. Support the development of value added for farmers through high-quality grain production, green and organic certifications, Good Agricultural Practices (GAP) standards, local brand development, and geographic indication schemes.
2. Enhance access to markets by improving e-commerce and other distribution channels, including through partnerships with Alibaba and other e-commerce companies.

Relevant local enterprises include, among others, local agricultural producers, cooperatives and agri-food enterprises involved in the production and distribution of agricultural products, processing, storage, utilization of agricultural wastes, organic fertilizer production, agricultural service and trainings, agricultural product marketing and sales, procurement of agricultural machinery, etc. as well as providers of agricultural services to rural areas. These local companies are instrumental in the implementation of government policies such as reutilization of straw and livestock waste (for biogas generation or organic fertilizer production). Companies and cooperatives that have been identified as partners and/or co-financiers under the FAO-MARA sub-project project are listed below. Most of these companies sign contracts with farmers and support mechanization and industrialization of operations. They operate land through lease contracts and land transfers. Generally, they operate land in the order of 100 to 250 hectares, and have an annual turnover of between USD 0.5-12 million. Their profits are shared among cooperative members or owners, and/or reinvested in scaling operations. Additional companies will be identified and engaged during implementation. The project will also seek to engage with and strengthen provincial and national private sector associations, state-owned enterprises and chambers of commerce.

Province	Partner companies / cooperatives	Primary location within the value chain
Shandong	1) Qihe Shuanfeng Flour Co., Ltd. 2) Shandong Wankang Food Co., Ltd. 3) Shandong Changrun Ecological Agriculture Co., Ltd. 4) Laizhou Chenggang Road Weisong Plant Protection Professional Cooperative	? Input supply, production ? Processing, distribution ? Production, aggregation ? Input supply, production

Jiangsu	1) Jiangsu AiJin Agricultural Science and Technology Service Co., Ltd. 2) Nanjing Hengcheng Agricultural Development Co., Ltd. 3) Nanjing Junsheng Ecological Agriculture Co., Ltd. 4) Nanjing Tianwei Agricultural Technology Co., Ltd. 5) Taicang City Donglin Village Farm Professional Cooperative	? Input supply ? Production, aggregation ? Production, processing ? Production ? Production, aggregation
Jiangxi	1) Fenyi Huayong Agricultural Machinery Specialized Cooperative 2) Fenyi Qunyuan Agriculture and Animal Husbandry Development Co. LTD 3) Fenyi Guigen Grain Planting Professional Cooperative 4) Fenyi Quanfeng Breeding Professional Cooperative 5) Jiangxi Jiafu Agricultural Technology Co., Ltd. 6) Jiangxi Zhenghe Ecological Agriculture Co., Ltd.	? Input supply, production ? Production, distribution ? Input supply, production ? Production, aggregation ? Input supply, production ? Production, distribution
Guizhou	1) Guizhou Rongjiangshan Agricultural Development Co., Ltd. 2) Guizhou Yueliangshan Agriculture Co., Ltd. 3) Guizhou Liping Dongxiang Rice Production Co., Ltd.	? Production, distribution ? Production, distribution ? Production, distribution
Hubei	Private sector entities will be selected during implementation under the framework approach. For the first year, the following four companies have been agreed to in principle. 1) Tongcheng County Tianjian Pig Industry Specialized Cooperative 2) Honghu City Chunlu Crop Planting Specialized Cooperative Association, and Rice planting farmers in Honghu City 3) Jingshan County Yinong Rice Planting Specialized Cooperative, Hubei Guobao Qiaomi Co., Ltd. 4) Nanzhang County Xiangming Tea Specialized Cooperative, Hubei Shuijing Tea Industry Development Co., Ltd.	All stages

Please refer to the ProDoc Section *4. Private Sector Engagement*, and PAD Section *II. Project Description* and Section *C. Sustainability* for more details.

5. Risks to Achieving Project Objectives

Elaborate on indicated risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, the proposed measures that address these risks at the time of project implementation.(table format acceptable):

The following risks to and from the project, and relevant mitigation measures, have been identified.

Section A: Risks to the project

Description of risk	Impact	Probability of occurrence	Mitigation actions	Responsible party
1) Lack of inter-sectoral collaboration among agencies at the local, provincial and national level.	Moderate	Low	Through the leadership of MARA and the participating provinces and counties, different sectors will be engaged and their interests taken into account. The project supports national and local priorities in various sectors by contributing to sustainable agriculture, restoration, poverty alleviation and rural revitalization goals. In addition, the project will bring together different agencies and stakeholders through the integrated landscape management (ILM) approach and the national and provincial food and land use collaboration mechanisms.	MARA, Hubei DARA

2) Demographic changes lead to farmers abandoning farmland in the project target areas.	Moderate	Moderate	The project is aimed at increasing incentives for sustainable agricultural production through enhanced value chains and access to finance. It is, therefore, anticipated that the project will address some of the causes of abandonment of cropland. The project will also aim to strengthen implementation of efficient land transfers. Moreover, recent trends show that, due to the slowing of economic development in urban areas, young people in some areas choose to return to rural areas and resume farming activities. Nevertheless, the project will carefully monitor demographic trends and changes and periodically review its intervention strategy.	MARA, Hubei DARA
3) Market and other incentives are insufficient to support the long-term shift towards sustainable practices.	High	Moderate	Close attention will be paid to the socio-economic benefits of project interventions, as these are a prerequisite for the adoption and sustainability of improved practices. The project interventions will aim to reduce input costs for farmers, reduce occurrence of pests and diseases, increase yields, introduce payments for agro-ecological services, and increase the value and quality of agricultural products, and thus should provide sufficient incentives for the adoption of sustainable practices and restoration of degraded lands.	MARA, Hubei DARA
4) Further shift towards high-value crops cancels out the benefits gained in the project?s target crops (rice, wheat and maize). (specific to FAO-MARA sub-project)	Moderate	Low	Through its landscape approach, the project will look not only at the main staple crops, but at sustainable land use and restoration of degraded land holistically. Strategies to reduce chemical inputs can be replicated in other crop areas, such as vegetables and fruit, and economic plantations such as oil trees. Also, based on current government policies, it is unlikely that there will be a significant reduction in grain crop areas.	MARA

5) Impacts of climate change on crop production during or after project implementation lead to a decrease in yields or crop losses and thus reduce the positive impact of the project. In June-July 2020, the project provinces of Hubei, Jiangxi, Jiangsu and Guizhou were affected by severe floods caused by torrential rains, affecting the livelihoods of millions of people.	High	Moderate	The innovative and climate-smart approaches to crop production and restoration to be scaled up under the project are aimed at increasing the resilience of production systems and farmer livelihoods. The project will build on ongoing efforts by government and research institutions in China to promote climate change adaptation in farming systems. It will aim to promote climate-resilient crop varieties and climate-resilient production techniques such as for pest control, water management, diversified cropping and establishing vegetation buffers. An analysis of climate change impacts and projected crop suitability in the GEF-7 target provinces was conducted during the project design phase (see ProDoc Section *5. Risks*). This will be further discussed and refined with local stakeholders during the preparation of ILM plans during implementation (as part of Output 1.1.2). Impacts of climate change on crop production will be carefully monitored during the project implementation, and capacity will be developed among local institutions and stakeholders to implement adaptive measures. The project will apply adaptive management to adjust to new developments in the target counties.	MARA, Hubei DARA

6) (i) Impacts of COVID-19 may lead to a delay in implementation, and/or reduced ability to conduct face-to-face interactions with stakeholders. Furthermore, national technical experts may not be able to travel to the project sites if COVID-19 restrictions are reinstated. (ii) Impacts of COVID-19 may delay or negatively affect the realization of co-financing. (iii) COVID-19 may lead to negative impacts on the poor and vulnerable groups. (iv) Potential migration to rural areas due to economic crisis may increase pressure on natural resources. (v) Opportunity to support green agricultural development, as well as improvement of agricultural supply chains, as part of the COVID-19 recovery.	High	Moderate	(i) Impact on project implementation At present, the office works, transportation, meetings, training, etc. have all returned to ordinary work. According to the national epidemic prevention regulations, areas with sudden outbreaks will be blocked, but with the continuous improvement of epidemic monitoring and prevention and control measures, the range of blocked areas are expected to become smaller and smaller. If an epidemic occurs in individual areas of the project, activities such as conference and technical training can be carried out through online networks. The virtual communication systems have been popularized by grassroots governments and farmers. During the project design phase, remote communication via email, video conference and phone was used increasingly to adjust to the new situation. The co-financing letters that were issued already reflect the new situation based on COVID-19. During implementation, the project will apply adaptive management. The work plan and stakeholder engagement plan would be adjusted, if necessary, and submitted to the Project Steering Committees for approval. In case of travel restrictions, local facilitators or officials would be briefed remotely, and would be in charge of ensuring adequate engagement of local stakeholders (including implementation of FPIC and the gender action plan). (ii) Impact on project co-financing The impact of COVID-19 on China?s national and local economies has been significant, but the situation is gradually improving. As the province most affected by COVID-19, the Chinese Government has established a special fund for Hubei to help it resume economic development as soon as possible. In other regions, economic growth has been affected, but there has been no significant reduction in investment in agriculture and the ecological environment.	MARA, Hubei DARA

7) From a technical perspective, there are very few projects that have tried to address the challenges of food quality and safety, sustainable agriculture and climate smart agriculture with interlinked interventions in one operation posing design challenges in the initial period. The technical design risk of the proposed project is therefore rated Substantial. (specific to WB-Hubei sub-project)	High	Moderate	The planned investments supported under the proposed project draw on experiences from a variety of World-Bank supported projects, such as the Guangdong Agricultural Pollution Control Project, Integrated Modern Agriculture Development Project, and the Climate Smart Staple Crops Production Project. The project will largely invest in technologies that have already been piloted, while also aiming to introduce new technologies, to be identified during the preparation, where feasible, and combine them in new and innovative ways. Investments in agricultural production would be subject to 3S GAP standards.	Hubei DARA
8) Macroeconomic risks are rated substantial given the particularly severe economic costs expected for Hubei province as a result of the COVID-19 outbreak. (specific to WB-Hubei sub-project)	High	Moderate	Careful due diligence will be required, and the financing parameters may need to be adjusted during project implementation to take these risks into account. At the same time, if the baseline macroeconomic expectation for a rapid recovery of the Chinese economy holds, this together with the substantial fiscal support provided by the central government should alleviate economic and fiscal constraints in Hubei by the second half of 2020 and thus prior to the implementation of most project activities. The financing provided by the project should also help beneficiary cooperatives/ enterprises, and local government implementing agents, who may be strapped for cash as a result of the economic fallout of COVID-19.	Hubei DARA

Please refer to the ProDoc Section *5. Risks*, and to the PAD Section *V. Key Risks* for more details.

Section B: Environmental and Social risks <u>from the project</u> ? ESM Plan

Risk identified	Risk Classification	Mitigation Action (s)	Indicator / Mean(s) of Verification	Progress on mitigation action

FAO-MARA sub-project				
1) Pesticide Management 5.1 ? Would this project procure, supply and/or result in the use of pesticides on crops, livestock, aquaculture or forestry? Yes 5.2 ? Would this project provide seeds or other materials treated with pesticides (in the field and/or in storage)? Yes	Moderate	An Integrated Pest Management Plan has been prepared in line with the concept of Integrated Pest Management (IPM) and is included as Annex O of the ProDoc. Activities to reduce the use of chemical pesticides have been incorporated into the project design. GEF-7 project funds will not be used to purchase chemical inputs. However, the project may issue technical guidelines and recommendations for improved, low-impact chemical use and application, in line with the overall aim of reducing the use of chemical pesticides.	? Amount of chemical pesticides reduced through the project interventions (in tons). ? Area of cropland under improved management with reduced chemical use.	To be assessed semi-annually through the project progress reports. Responsible: NPMO, Environmental Safeguards Specialist

2) Ethnic Minorities/ Indigenous Peoples (Guizhou only) 9.1 ? Are there indigenous peoples living outside the project area where activities will take place? Yes. However, the project activates will not influence any facets of their life. 9.2 ? Are there indigenous peoples living in the project area where activities will take place? Yes	Moderate	Ethnic minorities are present in the target counties of Guizhou Province. Consequently, a Free, Prior and Informed Consent (FPIC) procedure was prepared during the project preparation phase in line with FAO Environmental and Social Management Guidelines and GEF Indigenous Peoples Principles and Guidelines. Measures to mitigate risks and enhance opportunities were also elaborated as part of the FPIC report. The FPIC process is described in Annex J of the ProDoc.	? Reports of community meetings / FPIC consultations providing evidence of consent and satisfaction rate.	To be assessed semi-annually through the project progress reports. Responsible: NPMO, Gender and Social Safeguards Specialist
WB-Hubei sub-project				

The following WB safeguard policies are triggered by the project: - Environmental Assessment - Natural Habitats - Pest Management - Involuntary Resettlement	Moderate	Regarding safeguards related risks in Hubei, as the location of investments are to be identified in the implementation stage, an Environmental and Social Management Framework (ESMF), including a set of generic Environmental Code of Practice (ECOP) for different physical activities, and Pest Management Plan (PMP), was developed during the project preparation. During the development of the ESMF, surveys on ecological and social baselines were carried out through desk review, consultation, and field visits. Public consultation with key project stakeholders from the private and public sectors as well as information disclosure were done during the project preparation. The project environmental and social consultants carried out consultation through	?	As per ESMF.	As per ESMF. Responsible: Hubei PPMO

6. Institutional Arrangement and Coordination

Describe the institutional arrangement for project implementation. Elaborate on the planned coordination with other relevant GEF-financed projects and other initiatives.

FAO as the Lead Implementing Agency will be responsible for the overall oversight and coordination of the project implementation and the sole party responsible for reporting to the GEF Secretariat. The World Bank as the GEF Implementing Agency for the WB-Hubei sub-project will be responsible for oversight of project implementation of the WB-Hubei sub-project. It will provide annual Project Implementation Reports (PIRs) to FAO for consolidation.

The **Ministry of Agriculture and Rural Affairs (MARA)** will have the overall executing and technical responsibility for the FAO-MARA sub-project, including overall coordinating role for the China child project, with FAO providing oversight as GEF Agency. MARA will act as the lead executing agency and will be responsible for the day-to-day management of project results entrusted to it in full compliance with all terms and conditions of the Operational Partnership Agreement (OPA) signed with FAO. As Operational Partner (OP) of the project, MARA is responsible and accountable to FAO for the timely implementation of the agreed project results, operational oversight of implementation activities, timely reporting, and for effective use of GEF resources for the intended purposes and in line with FAO and GEF policy requirements.

The **Hubei Provincial Department of Agriculture and Rural Affairs (DARA)** will be the executing agency of the WB-Hubei sub-project. Institutional arrangements for project implementation have been established at the provincial level and at the four project counties, and will be further detailed in the Project Operations Manual (POM). Project Leading Groups (PLGs) of high-level decision-makers from relevant key agencies are established to provide oversight, strategic guidance, and inter-agency coordination for the project at province and county levels. In addition to DARA and its relevant departments, they would comprise representatives from the development and reform commissions, finance bureaus, water departments, environment departments, food safety agencies (SAMR), poverty reduction offices, auditor?s offices, civil affairs bureaus, ethnic affairs commissions, women?s federation. These will provide leadership, policy guidance, and strategic direction to the PMOs within their respective jurisdiction.

The implementation arrangements are shown in the diagram below.

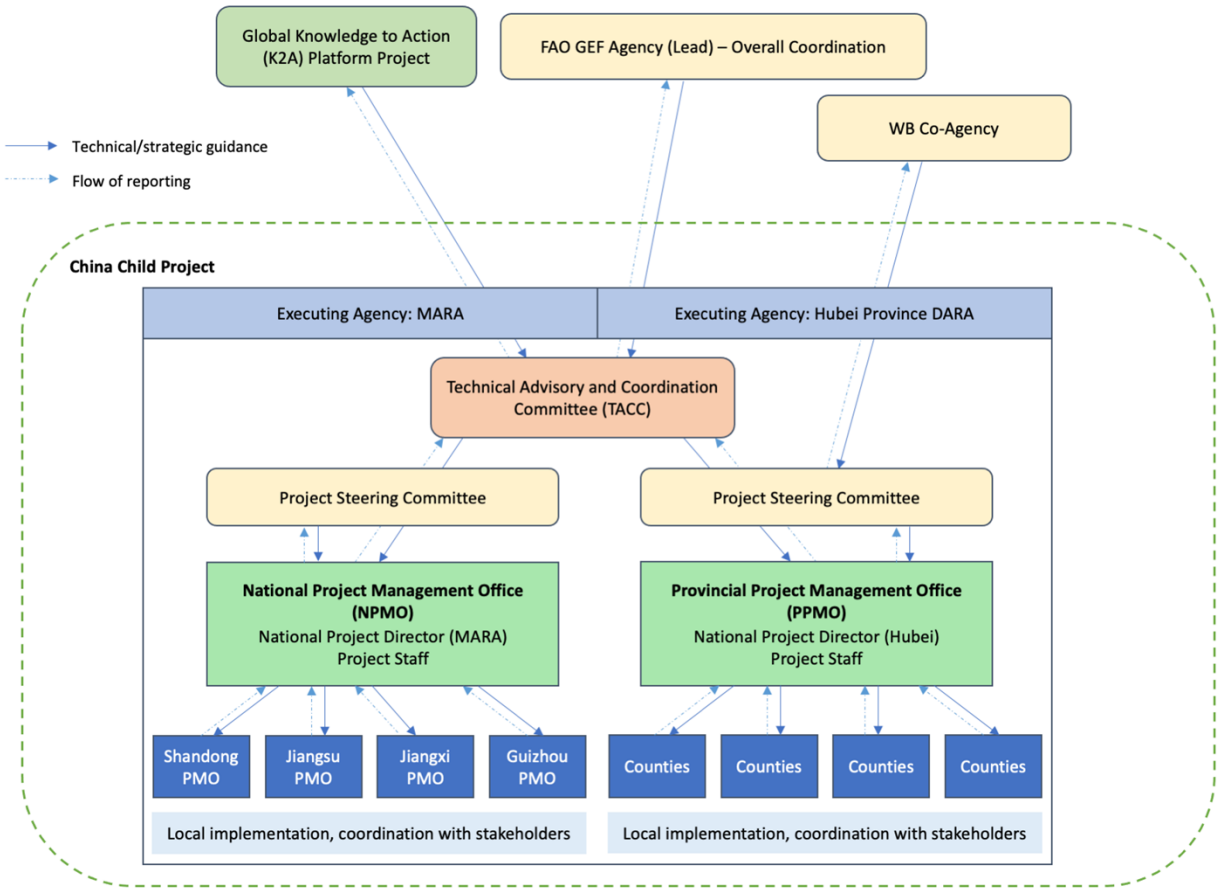

Figure 8: Project organization structure of the China child project

A Technical Advisory and Coordination Committee (TACC) will be established to oversee the implementation of the China child project and to foster coherence and consistency. As shown in Figure 8 above, the TACC will function as an intermediate group to provide inter-disciplinary technical guidance and coordination to the project to ensure that the project interventions are technically sound and that there is coordination among the relevant technical sectors/agencies for a holistic approach to project implementation. Furthermore, it will provide strategic guidance, in particular for the development of national policies and strategies for scaling. It will be co-chaired by the two Executing Agencies (MARA and Hubei Provincial DARA), with representation from FAO, WB and other relevant stakeholders and experts at national and provincial levels. The TACC will meet twice a year before the PSC meetings and/or technical support missions so that all key technical issues relevant to project implementation are deliberated in advance and are ready for presentation at the PSC meetings. In particular, the TACC will have the following responsibilities:

? Review planned activities and ensure that they are technically sound that, wherever necessary, there is integration and synergy between the various project components and sub-projects during planning and implementation;

? Ensure that project interventions are planned and implemented in a coordinated and holistic manner at central as well as provincial levels;

? Ensure coordination towards meeting the objectives of FOLUR Impact Program;

? Link the project to the Global K2A platform project and serve as anchor for linking the project to other relevant initiatives in the country;

? Promote technical coordination between institutions, where such coordination is necessary and where opportunities for synergy and sharing of lessons exist;

? Provide guidance, and/or clarifications, where technical issues are confronted;
? Ensure that the project activities are carried out in accordance with the desired policy/technical standards and norms of the Government of the People?s Republic of China, GEF, FAO and World Bank, including the social and environmental standards.

Additionally, each sub-project will establish a Project Steering Committee (PSC). With technical guidance and advice from the TACC, the PSCs will approve annual work plans and budgets on a yearly basis and will provide strategic guidance to the project management teams and to all executing partners. In Hubei, the PSC will encompass both the GEF grant and the IBRD loan. A National Project Management Office (NPMO) will be established within MARA in Beijing. The main functions of the NPMO, following the guidance of the PSC, are to ensure overall efficient management, coordination, implementation and monitoring of the project through the effective implementation of the annual work plans and budgets (AWP/Bs). In Hubei, the Provincial Project Management Office (PPMO) will ensure implementation of the GEF grant and IBRD loan. MARA as the leading ministry on agriculture and REEA as the leading national agency for agriculture environment protection will ensure national coordination of policies developed at the provincial level, and will ensure that national policy is based on experiences from the field.

In addition, online and face-to-face meetings as well as exchange visits between the two sub-projects will be organized regularly by the NPMO of MARA and the Hubei Provincial PMO, in collaboration with FAO and the World Bank. During the project design phase, detailed technical discussions were held between the two project design teams on issues such as climate-smart and sustainable agriculture interventions, innovations, private sector engagement, monitoring and evaluation, and the EX-ACT calculation of GHG emission reductions. Where feasible, project approaches and technical definitions were aligned. This exchange and strong coordination will continue throughout implementation, to ensure that the China child project achieves greater impact within China, and also contributes to the impact of the global FOLUR program by sharing technical approaches, best practices and innovations. The work plan in Annex H of the ProDoc includes details on coordination and exchange between the two sub-projects, including among others (i) collaboration on food and land use collaboration mechanisms; (ii) meetings/site visits to exchange on sustainable agriculture practices and CSA; (iii) exchange of best practices on innovations to reduce chemical use; (iv) monitoring systems and policy innovations; (v) coordination and exchange with global IP. Through the involvement of World Bank as the global IP lead, FAO as a key IP partner, MARA and the project provinces, the project will be well placed to exchange and promote technical and policy innovations within China and globally.

Coordination with FOLUR Global Platform

MARA in collaboration with FAO, World Bank and Hubei Province, will ensure coordination and exchange with the FOLUR Global Platform as well as other FOLUR child projects. Project stakeholders will participate in key global and regional FOLUR events. As integral part of Component 4, the project will actively promote exchange with other child project countries, in particular with India, Thailand and Vietnam on sustainable wheat and rice production and value chains. Cross-site visits and regional meetings will be organized in close collaboration with the FOLUR Global Platform and the FAO Regional Office for Asia and the Pacific (RAP).

Coordination with other relevant GEF-financed projects and other initiatives will be ensured through the leadership of MARA, Hubei Province, and with support from FAO and the World Bank. As described in the ProDoc and in the PAD, the China child project builds on important experiences and lessons learned from a number of GEF and other projects; and will coordinate with those that are being implemented in the same target provinces. The main relevant GEF-financed projects and other initiatives are described below.

UNDP GEF-6	Two UNDP-led programmes are under implementation under GEF-6 in China. The USD 12.3 million programme ?PRC-GEF Partnership Program for Sustainable Agricultural Development? aims to support the implementation of the Sustainable Development Goals and China?s National Plan for Sustainable Development of Agriculture (2015-2030) by a) piloting and scaling up effective policy and investment measures to mainstream in-situ conservation and sustainable use of globally important genetic resources for food and agriculture (GRFA), b) improving the prevention, control and management of invasive alien species (IAS), c) conserving and enhancing carbon stock and promoting evidence-based and climate-smart conservation of grassland ecosystems, and d) collaborative innovation in climate change and biodiversity from the aspects of policy, mechanism, knowledge sharing and partnerships. Target provinces across the five child projects are Fujian, Gansu, Hainan, Hebei, Hubei, Heilongjiang, Liaoning, Qinghai and Yunnan. The second programme is the USD 18.6 million ?China?s Protected Area System Reform (C-PAR)?. The programme aims to transform China?s national protected area system through systematic legal and institutional reform and innovation for conservation of globally significant biodiversity. In addition to the national level, child projects will include interventions in Qinghai, Gansu and Sichuan Provinces. Another GEF-6 project under implementation by UNDP is entitled ?Phase out of Endosulfan in China?. The project is addressing the phasing out of endosulfan by biological control and alternative technologies in cotton and tobacco pest management in China. Its geographical focus is on the main cotton producing provinces Shandong, Hebei, Henan, Hubei, Anhui, Jiangsu, Hunan, Jiangxi, Shanxi and Xinjiang Uygur Autonomous Region.

World Bank	The World Bank participates in key FOLUR initiatives globally, including as a founding member of the FOLU Coalition. It builds on a wealth of experience and knowledge from the implementation of climate-smart and sustainable agriculture projects globally and in China. Notably, World Bank in collaboration with REEA of MARA is implementing the GEF-5 ?Climate Smart Staple Crop Production Project? in Anhui and Henan Provinces.[1] The project focuses on China?s three main staple crops under two major crop production systems: the rice-wheat system in Huaiyuan County of Anhui Province and the wheat-maize system in Yexian County of Henan Province. The project is ending in 2020. Lessons and good practices, as well as policies and guidelines developed under this project have been, and will continue to be used to inform the GEF-7 project, in particular with regard to the Conservation Agriculture (CA) and fertigation approaches and technologies implemented under the project. The World Bank has implemented an IBRD-financed ?Integrated Modern Agriculture Development Project? in selected areas of Gansu, Hunan, Jiangxi, and Liaoning provinces, Xinjiang Uygur Autonomous region, and Chongqing municipality. The project has funded new and improved irrigation systems, showcased farming practices that enrich the soil without the use of chemicals, introduced new crop varieties, and helped train farmers on how to increase crop yields while also protecting the environment. Yushui District in Jiangxi was among the target counties. The project ended in 2019. World Bank is also implementing an IBRD and GEF financed ?China Guangdong Agricultural Pollution Control? project, which ends in 2021. In order to reduce agricultural non-point source pollution, the project worked on improving (a) soil nutrient management; (b) integrated pest management (IPM); (c) conservation agriculture (CA) pilots; and (d) implementation support to project farmers. The project tested and implemented the ?Three Controls Technology?, which consists in controlling (i) the amount and timing of fertilizer application, (ii) unproductive tillers, and (iii) fungicide and pesticide application. The project also implemented Alternate Wetting and Drying (AWD) to reduce water use and GHG emissions, while enhancing yields. Furthermore, the project piloted certifications for Safe Agricultural Products and Green Agricultural Products. The World Bank is also implementing an IBRD-financed ?Jiangxi Farm Produce Distribution System Development? project in eight counties/districts of Jiangxi Province, from 2018 to 2023. From 2005-2010, World Bank implemented the IBRD/GEF-4 Special Climate Change Fund (SCCD) Irrigated Agriculture Intensification Loan III Project/Mainstreaming adaptation to climate change into water resources management and rural development. The project was implemented in Hebei, Jiangsu, Anhui, Shandong and Henan Provinces. The project introduced climate-resilient agriculture practices (such as drought and pest-resilient crop varieties); as well as agro-ecological environmental protection and management (such as the establishment of shelterbelt forest networks around farmlands and environment and soil and water conservation).[2] In addition, the GEF-7 project will draw on experiences from a variety of other World-Bank supported projects, such as the China Food Safety Improvement Project in Jilin Province (closed in 2017). The aim of the project was to (i) improve agricultural product quality; and (ii) reduce agricultural product safety risks. Among others, over 100 technical standards for the quality of agricultural products were developed and adopted; over 200 demonstration sites for certified agricultural production were established; and 42,000 farmers visited demonstration sites, 91% of whom subsequently adopted ?good agricultural practices? primarily covering product standards, production processes, testing and environmental testing

FAO	GEF projects Under the above-mentioned GEF-6 ?PRC-GEF Partnership Program for Sustainable Agricultural Development?, FAO in collaboration with MARA is implementing a project on ?On-farm conservation and sustainable use of genetic diversity of crops originated in China?, aiming to mainstream the on-farm conservation and sustainable use of globally important local varieties of crops originated in China for food and agriculture. Target provinces for interventions at the sub-national level include Yunnan for rice, Hebei for millet and oat, and Heilongjiang and Liaoning for soybean. GEF-5 projects under implementation by FAO are: o Securing Biodiversity Conservation and Sustainable use in China?s Dongting Lake Protected Area (Hunan Province). o Securing Biodiversity Conservation and Sustainable Use in Huangshan Municipality (Anhui Province). o A New Green Line: Mainstreaming Biodiversity Conservation Objectives and Practices into China?s Water Resources Management Policy and Planning Practice (Chongqing and Yunnan Provinces). o Sustainable Forest Management to Enhance the Resilience of Forests to Climate Change (Hainan, Fujian, Guangxi and Henan). o Piloting Provincial-level Wetland Protected Area System in Jiangxi Province (Poyang Lake). o Biodiversity Conservation and Sustainable Land Management in the Soda Saline-alkaline Wetlands Agro Pastoral Landscapes in the Western Area of Jilin Province. Sustainable Rice Landscapes FAO, in collaboration with UN Environment, GIZ, IRRI, the Sustainable Rice Platform (SRP) and other partners, is preparing several projects under the umbrella of a regional Sustainable Rice Landscapes initiative. Linkages and exchange of knowledge with this initiative will be sought during project implementation, in particular with regard to sustainable rice standards and value chains. GIAHS 15 Globally Important Agricultural Heritage Systems (GIAHS) and 62 Nationally Important Agricultural Heritage Systems (NIAHS) have been established in China. The GIAHS and NIAHS projects aim not only to conserve genetic diversity and traditional production systems, but also to promote local economic development and improve livelihoods in a sustainable manner. For instance, under the GIAHS project of Hani rice terraces system in Honghe of Yunnan, a collaborative initiative of FAO and the Ministry of Agriculture, activities were undertaken to maintain the unique irrigation system and traditional methods of agricultural production. It was found that many local varieties, such as the red rice cultivated by Hani people, can survive at more than 1,400 meters above sea level, and are resilient to environmental change. These varieties with stable genetic characteristics were not only conserved on-farm but also delivered benefits to farmers. Other FAO initiatives In 2019, FAO launched a new Australia-funded project ?Modernizing irrigated agriculture to protect and restore aquatic biodiversity and ecosystem services in South-East Asia? in partnership with Charles Sturt University. The aim of the project is to build biodiversity considerations into irrigation modernization programs. FAO in collaboration with partners has also worked on Water Accounting and has developed evapotranspiration (ET)-based Water Management Guidelines. An Expert Consultation on Consumption Based Water Management was held in Beijing in 2019. Emerging guidelines and best practices will be shared with the GEF-7 project partners and potential linkages will be explored.

ADB	The Asian Development Bank (ADB) is currently preparing the ?Yangtze River Green Ecological Corridor Comprehensive Agriculture Development Project?, which aims to strengthen rural livelihoods to modernize their agriculture production systems and minimize environmental degradation and non-point source pollution. The project will be implemented in five provinces and one municipality in the upper and middle reaches of the Yangtze River Basin, notably Yunnan, Sichuan, Guizhou, Chongqing, Hunan, and Hubei. The GEF-7 project will seek to collaborate closely with this project to exchange knowledge and lessons learned and coalesce action for scaling up sustainable production. ADB has recently approved a USD 300 million loan, co-financed by the Green Climate Fund (GCF), Agence Fran?aise de D?veloppement and the German Development Bank KfW, for the Shandong Green Development Fund project. The project will pilot an innovative leveraging mechanism to catalyse private, institutional and commercial capital for the development of climate positive infrastructure and business in Shandong Province. The project will support a portfolio of mitigation and adaptation sub-projects assessed against both climate and financial eligibility criteria. Mitigation priorities are mainly in the energy, green building and low carbon transport sectors. Adaptation priorities include, among others, agricultural water supply infrastructures. ADB?s GEF-2 project ?Efficient Utilization of Agricultural Wastes?, was implemented in Henan, Hubei, Jiangxi, and Shanxi Provinces from 2003 to 2009.
IUCN GEF-6	IUCN is implementing a GEF-6 child project of The Restoration Initiative (TRI), entitled ?Building Climate Resilient Green Infrastructure: Enhancing Ecosystem Services of Planted Forests in China through Forest Landscape Restoration and Governance Innovation?. The project is working in seven State Forest Farms across three municipalities across three provinces in China, notably Chengde in Hebei Province, Ganzhou in Jiangxi Province and Bijie in Guizhou.
UN Environment	UN Environment is implementing the GEF-5 project ?Expansion and Improvement of Biodiversity Conservation and Sustainable Use of Natural Resources in the Greater Shennongjia Area, Hubei Province?. The project goal is to enhance conservation management effectiveness of National Nature Reserves in Hubei province, as well as the mainstreaming of biodiversity conservation and value of ecosystem services in economic development plans and sectors.

IFAD	IFAD is implementing several projects in China, with the aim to: ? Contribute to the country?s efforts to eradicate rural poverty by 2020; ? Ensure that smallholders in poor and marginalized areas are not left out from the process of rural transformation and agriculture modernization, and increase smallholders? capacity and opportunities to access markets; ? Strengthen the environmental sustainability and climate resilience of agricultural development. In particular, IFAD has been implementing the Jiangxi Mountainous Areas Agribusiness Promotion Project (2014-2020). The project aims to increase farmers? production bases and improve the efficiency of agricultural production. It also aims to enhance product quality and improve margins along value chains, especially at the farm level. The project targets poor rural people, especially women. The project involves ten counties in three prefectures, namely Jian, Suichuan, Jinggangshan, Yongxin and Wanan in Jian; Huichang, Anyuan, Chongyi and Ruijing in Ganzhou; and Lianhua in Pingxiang.

[1] The detailed title of the project is ?Energy Conservation, Greenhouse Gas Mitigation and Soil Carbon Sequestration in Staple Crop Production?. Anhui and Henan Provinces are adjacent to the GEF-7 landscape.

[2] See also Global Environment Facility (GEF), 2013. Two Decades of Experience: Investing in Ecosystem Services and Adaptation for Food Security.

Please refer to the ProDoc Section *6. Institutional Arrangements and Coordination*, and to the PAD Section *III. Implementation Arrangements* for more details.

7. Consistency with National Priorities

Describe the consistency of the project with national strategies and plans or reports and assesments under relevant conventions from below:

NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc.

The China child project is aligned with China?s 13th Five-Year Plan, its National Plan for Sustainable Development of Agriculture, its No. 1 Central Document, and its Strategy on Rural Revitalization. The project will also contribute to sub-national (provincial, district) strategies and plans, including the Provincial and District Five-Year Plans. In addition, the project is aligned with the following national strategies and reports under the relevant conventions.

Sustainable Development Goals (SDGs)	The project will contribute primarily to the following SDGs: ? SDG 2: End Hunger, achieve food security and improved nutrition and promote sustainable agriculture. The project will particularly contribute to SDG 2, Target 2.4: By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality. ? SDG 13: Take urgent action to combat climate change and its impacts. ? SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss. ? Furthermore, the project will make secondary contributions towards SDG 1 (end poverty), SDG 5 (gender equality), SDG 10 (reduce inequality), and SDG 17 (global partnerships for sustainable development)
China?s National Biodiversity Conservation Strategy and Action Plan (2011-2030)	The project supports the following priority area and actions of the National Biodiversity Conservation Strategy and Action Plan (NBSAP) 2011-2030: *Priority Area 2:* Incorporate biodiversity conservation into sectoral and regional planning to promote sustainable use *Action 4:* Incorporate biodiversity conservation into relevant sectoral and regional planning and programmes ? Develop sectoral strategies and action plans for biodiversity conservation in the field of forestry, agriculture, construction, water conservancy, oceanic administration and management of traditional Chinese medicine. *Action 5:* Ensure sustainable use of biodiversity ? Disseminate concepts and codes of conduct favourable to biodiversity conservation in the sectors of agriculture, forestry, water conservancy, industry and energy, transportation, tourism and trade, etc. ? Promote consumption patterns and food culture favourable to biodiversity conservation. *Action 6:* Reduce impacts of environment pollution on biodiversity ? Continue to implement water pollution control projects in three rivers (Huai, Hai, and Liao) and three lakes (Tai, Chaohu, and Dianchi), Three Gorges Reservoir area, the upper reaches of the Yangtse River, the upper and middle reaches of the Yellow River, Songhua River, Zhujiang River, and sources of water and canals of Water Transfer Project from South to North China.

Nationally Determined Contribution (NDC) under the Paris Agreement (2015)	The project supports the following objectives under the NDC: Building Energy Efficient and Low-Carbon Industrial System ? To promote the *low-carbon development in agriculture*, making efforts to achieve zero growth of fertilizer and pesticide utilization by 2020; ? To control methane emissions from rice fields and nitrous oxide emissions from farmland; ? To construct a recyclable agriculture system, promoting comprehensive utilization of straw, reutilization of agricultural and forestry wastes and comprehensive utilization of animal waste. Increasing Carbon Sinks ? To vigorously enhance afforestation, promoting voluntary tree planting by all citizens, continuing the implementation of key ecological programs, including protecting natural forests, restoring forest and grassland from farmland, conducting sandification control for areas in vicinity of Beijing and Tianjin, planting shelter belt, controlling rocky desertification, *conserving water and soil*, strengthening forest tending and management and increasing the forest carbon sink. Enhancing Support in terms of Science and Technology ? To develop technologies on biological nitrogen fixation, *green pest and disease prevention and control* and protected agriculture.
Third National Communication under UNFCCC (2018)	Mitigation: ?In *China?s National Climate Change Program* published in 2007, Chinese government stated that, by 2010, the emissions of N_2O from industrial processes would remain stable as that in 2005, and a number of measures would be taken to control the growth rate of CH_4 emissions from the agriculture. [?] In the 12^{th} FYP period, China stated that a work focus would be on popularizing the technology for the efficient application of fertilizers, and such approaches as the application of fewer fertilizers, reuse, and recovery of resources were to be adopted to reduce energy consumption, pollution, and emission, and improve the sustainability of agriculture. [?] In 2015, China devoted great effort to the development of water-saving agriculture, implemented the action for the zero growth in the use of chemical fertilizers and pesticides, promoted the control of pollution from farming, furthered such series of actions for the recovery of resources from stalks in order to control both pollution from non-point sources and GHG emissions.? Adaptation: According to the *National Climate Change Adaptation Strategy (2013-2020)*, ?by 2020, the proportion of crops under comprehensive crop protection to prevent and control major crop diseases and insect pests will exceed 40%, water use efficiency for arable land irrigation will increase to over 0.55, water use efficiency of crops will increase to over 1.1 kg/m^3, and the effectively irrigated arable land area will exceed 1 billion ha, and the penetration rate of practical adaptation technologies among the rural labour force will reach 70%.?

China Final National Report of the Voluntary Land Degradation Neutrality (LDN) Target Setting Programme (2017) under the UNCCD	Relevant objectives and actions of China?s Land Degradation Control targets 2030 are cited below. ?*Objectives:* **Soil and water conservation** By 2030, comprehensive prevention and conservation system on soil and water adapt to the China?s economic and social development will be established to achieve overall prevention and protection. Soil erosion in key areas will be completely managed, and ecology realizes a virtuous circle. The newly increased soil and water conservation area will reach 940,000 km2, of which the new soil erosion treatment area will be 860,000 km2, moderate to severe erosion area will be significantly reduced, the wind erosion area will be effectively reduced, man-made soil erosion will be fully controlled; forest vegetation will be fully protected and restored; An annual reduction of soil loss will reach 1.5 billion tons, the sediment into the rivers and lakes will be significantly reduced. **Arable land protection/conservation** To ensure that the arable land retaining quantity is above 120 million hectares or more, and the basic farmland is no less than 104 million hectares, permanent basic farmland of 103 million hectares is positioned. *By 2020*, arable land red line of 124 million hectares will be strictly protected. Soil environment safety for arable land will be basically guaranteed. *The quality of arable land in China will be improved by 0.5 grade (level), the use of fertilizer and pesticide achieves zero growth*. *By 2030*, the arable land retaining quantity will maintain at 122 million hectares, high standard farmland of 80 million hectares will be built, the national average arable land quality will be improved by 1.0 grade (level) compared to that of 2015, arable quality and situation will be significantly improved. Land that is not suitable for farming will be converted to forest. *Reasonable rotation system and fallow system will be established, the overall pattern of efficient use of arable land, stable quality and environmental safety will be basically formed*. *Action Plan:* **Soil and water conservation** [?] **(2) Comprehensive management**. Include engineering, forest, grass and tillage measures. Engineering measures include slope control, channel and gully management, land remediation, collapse and landslide control; forest and grass measures include the establishment of soil and water conservation forest, economic trees, and other plant hedgerows (belt), shelterbelt and grid forest, establishment artificial grassland, development of complex agroforestry, and development and utilization of efficient soil and water conservation plants, etc.; tillage/farming measures include ridge to the terraced fields, contour farming, ridge farming, no tillage, grassland rotation, intercropping and so on. **Farmland conservation** **(1) Strictly controlling farmland occupied by construction works.** Control the occupancy of farmland by strengthening land use planning, strictly implementing delimitation and conservation for permanent basic farmland, and relieving the pressure caused by farmland occupancy for construction purpose by upholding economical and intensive use of land. [?] **(3) Promoting farmland quality upgrade and conservation**. By taking the actions such as building high standard farmland in large scale, *farmland quality protection and upgrade, implementing national chemical fertilizer and pesticides zero growth strategic action plan, promote by planning as a whole the recuperation of land*, strengthen farmland quality investigation, evaluation and monitoring, etc., promote the quality enhancement of farmland.

8. Knowledge Management

Elaborate the "Knowledge Management Approach" for the project, including a budget, key deliverables and a timeline, and explain how it will contribute to the project's overall impact.

Knowledge sharing and learning is a key component to achieving the expected transformative impact of the project in China and beyond. National and provincial food and land use collaboration mechanisms/platforms will be established, under which the project will regularly convene leaders and public and private stakeholders of target and other key agricultural counties and provinces to exchange knowledge and lessons learned and inspire others. An information dissemination and communication strategy will be developed at the beginning of the project to support implementation and replication of project activities. In addition, a Technical Advisory and Coordination Committee will be established between the FAO-MARA and World Bank-Hubei sub-projects, to ensure exchange of knowledge, technologies, and best practices. Partnerships with the FOLU Coalition, WRI, IRRI, and the FABLE Consortium will allow for sharing and dissemination of knowledge with provincial, national and global stakeholders.

Furthermore, the project will ensure effective knowledge management and information dissemination to support implementation and scaling of project activities. An information dissemination and communication strategy will be developed at the beginning of the project to support implementation and replication of project activities at the county, provincial and national levels (including awareness raising of producers and consumers). Diversified information dissemination platforms/mechanisms will be established (or existing platforms improved) to share project achievements, knowledge, experiences, and expand environmental and social influence to support scaling and replication (Output 4.1.2). A particular focus will be on knowledge dissemination among farmers, private sector, local government and academia to increase knowledge and awareness on global environmental issues, responses to climate change, models for enhancing productivity, and value chains.

Under Outcome 4.1, knowledge will be created and shared through national and provincial platforms, exchange visits, and regular forums/seminars with other projects and institutions working on similar issues in China (such as the FOLU Coalition, IRRI, FAO, WB, etc.). Through exchange of lessons learned and best practices under the food systems and land use collaboration platforms and under the annual FOLU Platform partner meetings, best practices and opportunities for large-scale transformation will be identified, based on most recent research and applications from the field. The project will seek to engage with provincial and national private sector associations, state-owned enterprises and chambers of commerce, to share knowledge and seek opportunities for scaling through the private sector not just at local, but at provincial and national levels. The private sector will be an important catalyst for scaling and technology transfer in the target counties and within China.

In addition, it will be possible to ensure wider scale-up nationwide of the innovations to be implemented under the project, by demonstrating to the provincial/national government and to other counties/provinces how to achieve more sustainable outcomes, and by ensuring that knowledge from the project are transferred into the provincial/national government?s action plans, such as the next Five-Year Plan and provincial land use plans. The value chains (for rice, wheat, maize) included in the project span several counties and provinces, requiring close coordination between the counties, and at the provincial and national level. Innovative landscape planning approaches, restoration of degraded land, sustainable agriculture practices, digital technologies and GHG monitoring systems will be shared across counties, provinces and nationwide.

Through the FOLUR Global Coordination Project and existing global and regional platforms, knowledge and lessons learned will be shared at the regional and global level. In particular, the project will participate in activities coordinated under the Global Coordination Project, with regard to capacity building, regional/global exchange with commodity and value chain actors, and sharing of knowledge, innovations and good practices. China has extensive collaboration on agriculture across the globe, including on agricultural research and sustainable agriculture development, which will be leveraged to disseminate good practices from the Impact Program. Companies such as Alibaba are set out to export solutions on sustainable agriculture, access to markets and rural finance to other countries in Asia and globally. FAO and the World Bank will also play an important role in knowledge transfer to other countries and regions through existing platforms, working groups and engagements under the relevant conventions. In particular, the project will share knowledge and lessons with the One Planet Network (10YFP) Sustainable Food Systems (SFS) Programme, an important global multi-stakeholder partnership recognized by SDG 12, Target 12.1. It will also explore collaboration with other child projects related to the sustainability standards developed under the Sustainable Rice Platform (SRP), a multi-stakeholder platform established to promote resource efficiency and sustainability in trade flows, production and consumption operations, and supply chains in the global rice sector.

China has itself become a major financier of overseas investments, particularly in developing countries. The project will seek to engage with the National Development and Reform Commission (NDRC), the China Development Bank (CDB) and other similar institutions, in order for these institutions to gain knowledge on sustainable approaches to food systems and land use, which they can in turn use to increase the sustainability of their growing agriculture portfolio.

More details can be found in the ProDoc Section *8. Knowledge Management*, and the PAD Section *Component 3: Project and Knowledge Management*.

9. Monitoring and Evaluation

Describe the budgeted M and E plan

Please refer to the ProDoc Section *9. Monitoring and Evaluation*, and to the PAD Section *B. Results Monitoring and Evaluation Arrangements* for detailed information on each sub-project?s M&E.

FAO-MARA sub-project, and overall project oversight: Project oversight will be carried out by the PSC, FAO GEF Coordination Unit and relevant technical units in FAO headquarters. Oversight will ensure that: (i) project outputs are produced in accordance with the project results framework and leading to the achievement of project outcomes; (ii) project outcomes are leading to the achievement of the project objective; (iii) risks are continuously identified and monitored and appropriate mitigation strategies are applied; and (iv) agreed project global environmental benefits/adaptation benefits are being delivered. The FAO GEF Coordination Unit and HQ Technical Units will provide oversight of GEF financed activities, outputs and outcomes largely through the annual Project Implementation Reports (PIRs), which cover both sub-projects, as well as periodic backstopping and supervision missions.

Project monitoring will be carried out by the National Project Management Office (NPMO) and the FAO Budget Holder. Project performance will be monitored using the project results matrix, including indicators (baseline and targets) and annual work plans and budgets. At project inception, the results matrix will be reviewed to finalize identification of: i) outputs; ii) indicators; and iii) any missing baseline information and targets. A detailed M&E plan, which builds on the results matrix and defines specific requirements for each indicator (data collection methods, frequency, responsibilities for data collection and analysis, etc.) will also be developed during project inception by the Knowledge Management/M&E Officer appointed at the NPMO.

FAO-MARA Project Monitoring and Evaluation Plan

M&E Activity	**Responsible Parties**	**Timeframe**	**GEF Budget (USD)**
Inception Workshop at national and provincial levels	National Project Management Office (NPMO)	Within two months of project document signature	75,000
Project Inception Report	NPMO	Within two weeks of inception workshop	None
Annual PSC meetings	NPMO	Annually	50,000
Project Progress Reports	NPMO	Annually	95,000 (Project Coordinator and M&E Officer staff time)
Project Implementation Review report (PIR)	NPMO	Annually in July	As above
Co-financing Reports	FAO China Representation Office	Annually	Co-financing
Mid-term Review	NPMO and FAO China Representation Office	In the 3rd quarter of the 3rd year of the project	57,828
Final evaluation including Terminal Report	FAO Office of Evaluation	At least three months before operational closure	56,550
Total Budget	-	-	**334,378**

WB-Hubei sub-project: The Results Framework describes the Project Development Objective (PDO)-level outcome indicators and the component specific intermediate indicators, including core sector indicators, and respective baselines and targets. The monitoring and evaluation (M&E) arrangements and responsibilities are described in detail in the Project Operations Manual (POM). Project M&E will be the responsibility of the provincial and county PMOs. A designated M&E officer will be appointed at the provincial PMO and in each of the four county PMOs for compiling M&E data for consolidation into the semi-annual and annual project progress reports. A simple Management information System (MIS) will be set-up at the county and provincial PMO levels to help track and document physical, institutional, and financial project progress. The provincial PMO will engage qualified institutions or experts to conduct independent impact assessments at project mid-term and at the end of the project. To monitor and evaluate the performance of climate smart agriculture interventions and to report on the PDO indicator of GHG emissions reduction, a robust M&E system with a component on monitoring, reporting and verification (MRV) of climate smart interventions will be implemented as part of the Component 1. The monitoring

methodologies, reporting and verification systems to be supported under the project are expected to meet the rigorous and internationally accepted methodologies and monitoring requirements of carbon emission trading.

WB-Hubei Project Monitoring and Evaluation Plan

M&E Activity	**Responsible Parties**	**Timeframe**	**GEF Budget (USD)**
Inception Workshop	Provincial Project Management Office (PPMO)	Within two months of project document signature	7,246
Project Inception Report	PPMO	Within two weeks of inception workshop	None (co-financed)
Annual PSC meetings	PPMO	Annually	None (co-financed)
Project Progress Reports	PPMO	Annually	None (co-financed)
Project Implementation Review report (PIR)	PPMO	Annually in July	None (co-financed)
Co-financing Reports	PPMO	Annually	None (co-financed)
Mid-term Review	PPMO	In the 3rd quarter of the 3rd year of the project	None (co-financed)
Final evaluation	PPMO	At least three months before operational closure	None (co-financed)
M&E - Environmental and social safeguards monitoring	PPMO	Throughout project implementation	130'435
M&E - Community-based monitoring	PPMO	Throughout project implementation	86'956
M&E - Outcome performance monitoring[1][1]	PPMO	Throughout project implementation	392'609
Total Budget	-	-	**617,246**

[1] Food safety/pesticide residue monitoring; GHG emission reduction monitoring; agricultural product value chain environmental monitoring (such as soil and agricultural water source pollution monitoring); carbon sequestration monitoring; comprehensive land use in agricultural and forestry production systems and biodiversity monitoring, etc.

The alignment between the World Bank PAD and the GEF/CEO Endorsement Request indicators is described in detail in Annex A to this document. The World Bank will report on the relevant outputs and indicators to FAO through the annual Project Implementation Reports (PIRs). Moreover, progress towards achievement of the project indicators, outputs and outcomes will be discussed and reviewed at the Technical Advisory and Coordination Committee (TACC) meetings. The TACC will then recommend any necessary corrective actions to the MARA NPMO and Hubei PPMO of both sub-projects. The NPMO and the TACC will also link the project to the Global K2A platform project for monitoring of the global level impact.

10. Benefits

Describe the socioeconomic benefits to be delivered by the project at the national and local levels, as appropriate. How do these benefits translate in supporting the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCF/SCCF)?

Both sub-projects will pay close attention to the socio-economic benefits of project interventions, as these are a prerequisite for the adoption and sustainability of improved practices leading to global environmental benefits. As described above, the China child project is expected to generate socio-economic benefits for an estimated **550,000 farmers** (women, men and youth), by strengthening individual, institutional and systemic capacity to benefit from value chains, ensuring stable agricultural production, maintaining or enhancing agricultural ecosystems and farmland biodiversity, and implementing adaptive measures that increase resilience of agricultural landscapes and livelihoods. The project will also improve farmer incomes and profitability of farmer cooperatives and enterprises through improved productivity and efficiency of farming systems, value-addition, and market opportunities. These benefits are expected to result in increased incomes and long-term local employment opportunities for the beneficiary population. These socio-economic benefits and increased capacities will enable stakeholders to adopt and sustain agricultural technologies and practices that involve reduced chemical inputs, enhanced soil and water management, restore degraded land, and increase vegetation and farmland biodiversity, thereby supporting the achievement of global environmental benefits. Furthermore, as explained above, the project will realize opportunities for linking restoration, biodiversity and GHG mitigation goals with production objectives, helping to address trade-offs in the landscape.

More indirectly, several million people living in the target landscapes will benefit from enhanced biodiversity and ecosystem services.

Please refer to the ProDoc Section *10. Benefits*, and to the PAD Section *A. Technical, Economic and Financial Analysis* for more details.

11. Environmental and Social Safeguard (ESS) Risks

Provide information on the identified environmental and social risks and potential impacts associated with the project/program based on your organization's ESS systems and procedures

Overall Project/Program Risk Classification*

PIF	CEO Endorsement/Approval	MTR	TE
	Medium/Moderate		

Measures to address identified risks and impacts

Elaborate on the types and risk classifications/ratings of any identified environmental and social risks and impacts (considering the GEF ESS Minimum Standards) and any measures undertaken as well as planned management measures to address these risks during implementation.

Please refer to the ProDoc Section *5. Risks*, and to the PAD Section *V. Key Risks* for more details.

Risk identified	Risk Classification	Mitigation Action (s)	Indicator / Mean(s) of Verification	Progress on mitigation action
FAO-MARA sub-project				

1) Pesticide Management 5.1 ? Would this project procure, supply and/or result in the use of pesticides on crops, livestock, aquaculture or forestry? Yes 5.2 ? Would this project provide seeds or other materials treated with pesticides (in the field and/or in storage)? Yes	Moderate	An Integrated Pest Management Plan has been prepared in line with the concept of Integrated Pest Management (IPM) and is included as Annex O of the ProDoc. Activities to reduce the use of chemical pesticides have been incorporated into the project design. GEF-7 project funds will not be used to purchase chemical inputs. However, the project may issue technical guidelines and recommendations for improved, low-impact chemical use and application, in line with the overall aim of reducing the use of chemical pesticides.	? Amount of chemical pesticides reduced through the project interventions (in tons). ? Area of cropland under improved management with reduced chemical use.	To be assessed semi-annually through the project progress reports. Responsible: NPMO, Environmental Safeguards Specialist

2) Ethnic Minorities/ Indigenous Peoples (Guizhou only) 9.1 ? Are there indigenous peoples living outside the project area where activities will take place? Yes. However, the project activates will not influence any facets of their life. 9.2 ? Are there indigenous peoples living in the project area where activities will take place? Yes	Moderate	Ethnic minorities are present in the target counties of Guizhou Province. Consequently, a Free, Prior and Informed Consent (FPIC) procedure was prepared during the project preparation phase in line with FAO Environmental and Social Management Guidelines and GEF Indigenous Peoples Principles and Guidelines. Measures to mitigate risks and enhance opportunities were also elaborated as part of the FPIC report. The FPIC process is described in Annex J of the ProDoc.	? Reports of community meetings / FPIC consultations providing evidence of consent and satisfaction rate.	To be assessed semi-annually through the project progress reports. Responsible: NPMO, Gender and Social Safeguards Specialist
WB-Hubei sub-project				

The following WB safeguard policies are triggered by the project: - Environmental Assessment - Natural Habitats - Pest Management - Involuntary Resettlement	Moderate	Regarding safeguards related risks in Hubei, as the location of investments are to be identified in the implementation stage, an Environmental and Social Management Framework (ESMF), including a set of generic Environmental Code of Practice (ECOP) for different physical activities, and Pest Management Plan (PMP), was developed during the project preparation. During the development of the ESMF, surveys on ecological and social baselines were carried out through desk review, consultation, and field visits. Public consultation with key project stakeholders from the private and public sectors as well as information disclosure were done during the project preparation. The project environmental and social consultants carried out consultation through	?	As per ESMF.	As per ESMF. Responsible: Hubei PPMO

Supporting Documents

Upload available ESS supporting documents.

Title	Module	Submitted
WB-Hubei ESMF	**CEO Endorsement ESS**	
Annex O Pest Management Plan (FAO-MARA)	**CEO Endorsement ESS**	
Annex J FPIC for Guizhou (FAO-MARA)	**CEO Endorsement ESS**	

ANNEX A: PROJECT RESULTS FRAMEWORK (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

Please refer to the following documents for the detailed results frameworks and indicators:

- Annex A1 of the FAO-MARA Project Document (ProDoc)
- Section VI of the World Bank-Hubei Project Appraisal Document (PAD)

World Bank-Hubei Sub-Project Results Indicators: The correspondence between the World Bank PAD and the GEF/CEO ER indicators is shown in the table below.

PAD indicator	GEF/CEO ER indicator	Target
Project Development Objective Indicators		
1. Area under 3S GAP production practices (area of landscapes under improved practices) (Hectare(Ha))	Area under improved practices/GAP (contributing to Core Indicator 4: Area of landscapes under improved practices and Core Indicator 3: Area of land restored)	120,000
2. GHG emission mitigated (Metric tons/year)	Carbon sequestered or emissions avoided (contributing to Core Indicator 6 Greenhouse Gas Emissions Mitigated)	600,000 / year (includes direct and indirect)
3. Reduced pesticide and veterinary drug residue levels in the select value chains (Percentage)	n/a	20
Intermediate Results Indicators: 1. Agricultural Risk Assessment, Management, and Communications		
4. 3S risk assessment systems developed (Number)	GEF Core Indicator 9, Sub-Indicator 9.5 (Number of low-chemical/non-chemical systems implemented particularly in food production, manufacturing and cities)	5
5. 3S GAP standards developed (Number)	Number of newly developed or improved standards	5
6. Pre-conditions in place for agriculture as offset for emissions trading scheme (newly established incentive mechanism) (Number)	Number of improved/newly established payment for agro-ecological services incentive mechanisms	4
7. Number of 3S analytical platforms fully integrated with big data systems (Number)	Number of new or improved monitoring systems in place and operational beyond project	5
8. 3S risk communication programs in place (Number)	Number of information dissemination platforms established (or existing platforms improved) and operational	5

9. Number of users engaged in 3S food quality and safety platforms (Number)	Number of people reached by information dissemination and knowledge exchange	5,000 (2,750 women)
Intermediate Results Indicators: 2. Demonstration and Replication of Safe and Sustainable Agricultural Practices		
10. New area under Integrated Pest Management (Hectare(Ha))	Area under improved practices/GAP (contributing to Core Indicator 4: Area of landscapes under improved practices)	35,000 (overlapping with 120,000 above, thus not counted separately under Core Indicator 4)
11. Area under Integrated Landscape Management Plans (Hectare(Ha))	Area under improved management plans (contributing to Core Indicator 4: Area of landscapes under improved practices)	280,000 (4 initial target counties) + 140,000 (3 replication counties) (additional GEF target, not in PAD) = Total 420,000 under ILM
12. Reduction in quantity of fertilizers applied (Percentage)	Chemical fertilizer and pesticide reduction	20%
13. Increased soil organic matter (soil organic carbon) (Metric tons/year)	Soil organic matter content	200,000
14. Improved livestock waste management investments supported (Number)	Number of improved livestock waste management investments supported	11
15. Proportion of production in project assisted areas covered by traceability platform (Percentage)	n/a	30%
16. Newly certified products (Number)	Number of green/organic/climate-smart agri-food brands certified	25
17. Number of farmer cooperatives strengthened/supported (Number)	Number of farmer cooperatives with increased capacity to support responsible value chains	50 (of which 21 managed by women or have a significant share of female members)
Intermediate Results Indicators: 3. Project and Knowledge Management		
18. Farmers reached with agricultural assets or services (CRI, Number)	- Number of farmers (women and men) participating in capacity building activities AND - Core Indicator 11 Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment	300,000 (115,000 women)
19. Grievances registered related to delivery of project benefits addressed (Percentage)	n/a	100%
20. Citizen?s feedback received on services provided by Project (Percentage)	n/a	80%

FAO-MARA Sub-Project Results Indicators (Annex A1 of ProDoc)

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Objective-level indicators/GEBs							
GEF-7 Core Indicators	a) **Core Indicator 3:** Area of land restored (hectares) **Sub-Indicator 3.1:** Area of degraded agricultural land restored Note: This indicator results from interventions under Component 3 (restoration).	0	Total: 63,000	Total: 80,000, of which: - Shandong: 20,000 - Jiangsu: 20,000 - Jiangxi: 20,000 - Guizhou: 20,000	Project progress reports Monitoring systems put in place under Component 1 Project maps	Project interventions to support scaling and replication are successful. Project interventions in target areas lead to measurable results on the ground.	NPMO, local-level PMOs

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
	b) **Core Indicator 4:** Area of landscapes under improved practices (hectares) **Sub-Indicator 4.3:** Area of landscapes under sustainable land management in production systems Note: This indicator results from interventions under Components 1 (ILM plans) and 2 (SLM).	0	Total: 156,000	Total: 440,000, of which: (i) GAP/IPM (200,000): - Shandong: 70,000 - Jiangsu: 50,000 - Jiangxi: 30,000 - Guizhou: 50,0000 (ii) ILM plans (250,000)*: - Shandong: 75,000 - Jiangsu: 65,000 - Jiangxi: 50,000 - Guizhou: 60,0000 *Note: Other area targets have been deducted from this number to avoid double-counting.	Project progress reports Monitoring systems put in place under Component 1 Project maps	Project interventions to support scaling and replication are successful. Project interventions in target areas lead to measurable results on the ground.	NPMO, local level PMOs

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
	c) **Core Indicator 6:** Greenhouse Gas Emissions Mitigated (metric tons of CO2e) **Sub-indicator 6.1:** Carbon sequestered or emissions avoided in the AFOLU sector	0		Direct: 4.82 million Indirect: 1.2 million	EX-ACT calculation Monitoring systems put in place under Component 1	Project interventions to support scaling and replication are successful. Project interventions in target areas lead to measurable results on the ground.	NPMO, local-level PMOs
	d) **Core Indicator 9:** Reduction, disposal/destruction, phase out, elimination and avoidance of chemicals of global concern and their waste in the environment and in processes, materials and products **Sub-indicator 9.5:** Number of low-chemical/non-chemical systems implemented particularly in food production, manufacturing and cities	0		4 (1 per province)	Project progress reports on the implementation of the Integrated Pest Management Plans See also indicator on Pesticide reduction under Outcome 2.1 below.	Implementation of the IPM plans leads to a sustained reduction in the use of harmful chemical pesticides.	NPMO, local-level PMOs

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
	e) **Core Indicator 11:** Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment	0	75,000 (at least 50% women)	250,000 (at least 50% women) This number includes individuals benefiting from capacity building, assets or services provided by the project, and/or who use the specific resources that the project maintains or enhances (in line with GEF definition, see footnote 2).	Project progress reports. Training attendance, extension service and beneficiary list (disaggregated by gender). Review of county data on farmers/resource users in the target areas.	Project interventions in target areas lead to measurable benefits for farmers.	NPMO, local-level PMOs
<u>Capacity Scorecard results</u>	a) Capacity development scores	Baseline score (average): 51% See Capacity Development report for detailed scores per county.	Mid-term target: 56% Increase of at least 5 percentage points per county.	End-of-project target: 61% Increase of at least 10 percentage points per county.	Capacity Development Scorecard (mid-term and end score)	Project interventions lead to measurable increases in capacity.	NPMO, local-level PMOs
Component 1: Development of integrated landscape management (ILM) systems in agricultural landscapes							

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
<u>Outcome 1.1:</u> Strengthened ILM policies, plans and capacities that promote participatory planning and enable national and provincial institutions across agricultural landscapes to meet their relevant sustainable agriculture, rural revitalization, land restoration and related climate and biodiversity targets.	a) Number of county-level ILM and restoration plans in place.	0 Counties have general land use plans, but these do not incorporate integrated, landscape-level planning focused on SLM and restoration.	6 - Shandong: 2 - Jiangsu: 1 - Jiangxi: 1 - Guizhou: 2	12 - Shandong: 4 - Jiangsu: 3 - Jiangxi: 2 - Guizhou: 3	Project progress reports ILM and restoration plans		NPMO, local-level PMOs
	b) Area under improved management plans: See Core Indicator 4.	- *See Core Indicator 4 above* -					
	c) Number of decision-makers and technical staff of national, provincial and local governments with increased capacity to apply ILM.	0	150 (at least 50% women), of which: - Shandong: 40 - Jiangsu: 40 - Jiangxi: 30 - Guizhou: 30 - National: 10	300 (at least 50% women), of which: - Shandong: 80 - Jiangsu: 80 - Jiangxi: 60 - Guizhou: 60 - National: 20	Project progress reports. Training reports, including qualitative assessment.	Training and activities to develop ILM plans lead to increased capacity that can be sustained beyond the project period.	NPMO, local-level PMOs

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
	d) Number of new or improved monitoring systems in place and operational beyond project. (on land use, biodiversity, GHG emissions, climate change impacts)	0 Some monitoring is conducted at the local level, but not systematic and not integrated.	4 (at least one per province)	8 (at least two per province)	Project progress reports.	County and province governments have sufficient interest in monitoring systems to sustain them beyond the project period.	NPMO, local-level PMOs
	e) Number of improved policies drafted and recommended for adoption.	0	0	5 (1 national and 4 provincial)			NPMO, local-level PMOs
Outcome 1.2: Innovative payment for agro-ecological services incentive mechanisms in place for sustainable, safe, and smart agri-food systems.	f) Number of improved/newly established payment for agro-ecological services incentive mechanisms.	0	0	4 (1 per province)			NPMO, local-level PMOs
Component 2: Promotion of sustainable food production practices and responsible agri-food value chains for the staple crops of rice, wheat and maize							
Outcome 2.1: Sustainable agricultural practices deployed and scaled up that enhance ecological functions, improve soil quality and fertility, mitigate GHG emissions and establish resilient	a) Area under improved practices/under GAP: See Core Indicator 4.	- *See Core Indicator 4 above* -					
	b) Carbon sequestered or emissions avoided: See Core Indicator 6.	- *See Core Indicator 6 above* -					

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
agricultural production models.	c) Number of newly developed or improved standards (GAP/ climate-smart/organic/ green/sustainable agriculture)	0	At least 2.	At least 4.	Project progress reports. New or revised standards.		NPMO, local-level PMOs
	d) Chemical fertilizer reduction in the project intervention area	Some general baseline data available in the agriculture report, but not specific for the project intervention area. Monitoring system, with detailed baseline, to be put in place at the beginning of project implementation.	Reduce by 5%	Reduce by 10%	Monitoring system/ app.	Project interventions lead to measurable changes in chemical use by farmers.	NPMO, local-level PMOs

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
	e) Pesticide reduction in the project intervention area	Some general baseline data available in the agriculture report, but not specific for the project intervention area. Monitoring system, with detailed baseline, to be put in place at the beginning of project implementation.	Reduce by 5%	Reduce by 10%	Monitoring system/ app.	Project interventions lead to measurable changes in chemical use by farmers.	NPMO, local-level PMOs
	f) Soil organic matter content in the project intervention area	Monitoring system, with detailed baseline, to be put in place at the beginning of project implementation.	Increase by 3%	Increase by 6%	Monitoring system/ app.	Project interventions in target areas lead to measurable results in soil organic matter.	NPMO, local-level PMOs
	g) Average yield per hectare in the project intervention area	Monitoring system, with detailed baseline, to be put in place at the beginning of project implementation.	Increase by 3%	Increase by 6%	Monitoring system/ app.	Project interventions in target areas lead to measurable results in yields.	NPMO, local-level PMOs

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Outcome 2.2: Responsible, market-oriented agricultural value chains implemented and scaled up, including through government-private enterprise-farmer cooperative partnerships and capacity building.	a) Number of person-time (women and men) trained.	0	15,000 (at least 50% women), of which: - Shandong: 5,000 - Jiangsu: 3,500 - Jiangxi: 3,000 - Guizhou: 3,500	50,000 (at least 50% women), of which: - Shandong: 17,000 - Jiangsu: 12,000 - Jiangxi: 9,000 - Guizhou: 12,000	Project progress reports. Training / Farmer Field School / online modules training reports.		NPMO, local-level PMOs

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
	b) Increased farmer incomes from project supported agri-food value chains[2], disaggregated by gender.	Detailed baseline for participating farmers to be established at the start of value chain activities.	5% increase in income for farmers benefiting from price premium and/or additional sales Estimated number of farmers: 500 (50% women) - Shandong: 150 - Jiangsu: 100 - Jiangxi: 100 - Guizhou: 150	10% increase in income for farmers benefiting from price premium and/or additional sales Estimated number of farmers: 5,000 (50% women) - Shandong: 1,700 - Jiangsu: 1,200 - Jiangxi: 900 - Guizhou: 1,200	Survey among participating farmers.	Project supported agri-food value chains and capacity will be sustained beyond the project period.	NPMO, local-level PMOs

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
	c) Number of green/ organic/ecological agri-food brands certified.	0	5, of which - Shandong: 1 - Jiangsu: 1 - Jiangxi: 1 - Guizhou: 2	15, of which - Shandong: 4 - Jiangsu: 4 - Jiangxi: 3 - Guizhou: 4	Project progress reports.	The project interventions will develop sufficient capacity among farmers, local cooperatives and companies to implement agri-food brands and certifications.	NPMO, local-level PMOs
	d) Number of farmer cooperatives with increased capacity to support responsible value chains.	0	10, of which - Shandong: 3 - Jiangsu: 2 - Jiangxi: 2 - Guizhou: 3	20, of which - Shandong: 5 - Jiangsu: 5 - Jiangxi: 4 - Guizhou: 6	Project progress reports. Qualitative assessment of business support / value chain activities.		NPMO, local-level PMOs
Component 3: Conservation and restoration of agroecosystems and biodiversity							
<u>Outcome 3.1:</u> Enhanced conservation and restoration of agroecosystems and biodiversity	a) Species and ecosystems indicators (details to be determined as part of Output 1.1.2)	Some general baseline data available in the biodiversity / ecosystems report, but detailed baseline for each county is yet to be compiled.	No reduction in plant and animal species Crop varieties increased by 2%	No reduction in plant and animal species Crop varieties increased by 5%	Monitoring system, with detailed baseline and indicators, to be put in place at the beginning of project implementation based on survey under Output 1.1.2.	Species and crop diversity are not significantly negatively affected by climate change or other factors during the project period.	NPMO, local-level PMOs

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
	b) Carbon sequestered or emissions avoided: See Core Indicator 6	*- See Core Indicator 6 above -*					
	c) Area of upland and farmland surrounding ecosystems under ecological restoration/ rehabilitation: See Core Indicator 3.	*- See Core Indicator 3 above -*					
Component 4: Knowledge management and M&E							
<u>Outcome 4.1:</u> Effective knowledge management/information exchange and M&E.	a) Number of information dissemination platforms (smart-phone based app, internet portal, etc.) established (or existing platforms improved) and operational.	0	At least 1	At least 2			NPMO, local-level PMOs
	b) Number of people reached by information dissemination and knowledge exchange.	0	100,000	250,000 This may, in part, overlap with the 250,000 beneficiaries above (Core Indicator 11).			NPMO, local-level PMOs

[1] This indicator captures the number of individual people who receive targeted support from a given GEF project/activity and/or who use the specific resources that the project maintains or enhances.

https://www.thegef.org/sites/default/files/council-meeting-documents/EN_GEF.C.54.11.Rev_.02_Results.pdf (p. 35).

[2] Such as from yield increase, crop diversification, and agri-food value chain development.

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

Council comment (on PFD)	**Responses** (specific to China child project)
Germany Comments 1) The [PFD] text systematically narrows landscape ecosystem challenges down to forest resources. Consequently, the lack of conclusive regulatory frameworks on soils and targeted incentives for sustainable soil management are not addressed in the [PFD]. Germany would like to suggest, that the vital role of soil ecosystem services are more specifically spelled out in the program description and analysis of root causes, and to include GSP/FAO in the list of relevant stakeholders. 2) Furthermore, Germany would like to suggest stronger reference to Land Degradation Neutrality (SDG 15.3) targets and policies. The link of [the PFD] to the LDN conceptual framework (SPI/UNCCD) needs more systematic elaboration and should include an explicit reference to UNCCD as the custodian agency for SDG 15.3.	1) Sustainable soil management (including associated incentive systems) is an important element of the China child project design, in line with the FOLUR IP strategy, as expressed explicitly in the Theory of Change, in Outputs 1.2.1, 2.1.1, 2.1.3, and 3.1.3, and in *Section 3) Proposed alternative scenario*. Furthermore, soil and water conservation is an important objective of China?s LDN targets, as explained in *Section 7. Consistency with National Priorities*. Reference to the Global Soil Partnership has been added in Component 4 description. 2) Reference to and alignment with China?s LDN targets is included in the CEO ER. Through its interventions, the project will enhance and restore agro-ecological services and contribute to land degradation neutrality (LDN) in the target landscapes by preventing and reversing land degradation. In particular, the project contributes to the following objectives of China?s LDN targets: Soil and water conservation, and Arable land protection/conservation.
Norway-Denmark Comments 1) In our view this program seems to be a series of individual projects or activities which have been put together under one program. It is unclear how this is a program which has been built with the intention to tackle a specific issue or problem. The program tries to convert all the individual project activities into higher level outcomes.	Close alignment with the Global Knowledge to Action (K2A) platform project was sought during the China child project development, including alignment of outcomes, outputs and indicators where relevant. Project M&E will be closely coordinated with the program M&E.

United States Comments 1) Gender. It is insufficiently clear how the program will incorporate actions that will address the institutional constraints on gender equity and women?s economic empowerment on the part of implementing partners (government agencies) and key stakeholders (non-gender oriented CSOs). For example, although the program expresses an interest in providing greater training of women and in increasing their number in leadership roles within groups supported by FOLUR, there is no mention of how government policies and practices (at the national or decentralized levels) will continue to support these initiatives upon the completion of the program cycle. There is also no mention of promoting gender sensitive procurement to encourage economic empowerment of women. Another concern is the gendered rates of literacy; if literacy rates are low, how will female small holder farmers be guided on how to read the labels of agro-chemical inputs so that applications can be applied in a safe and environmentally friendly manner? The issue of gendered literacy also extends to access to credit and land tenure (e.g. title deeds). What strategies are being considered to encourage best practices for measures to increase access to credit for female smallholder farmers and gender sensitive procurement? Finally, the sustainability/durability of interventions to incorporate gender equity and economic empowerment of women at the conclusion of the program cycle could be made clearer. 2) Additional questions. Given the demographic changes in much of Africa and Asia, how will the program address the various constraints (financial, legal, etc.) that impede the ability of youth (18-25 years) to access productive inputs such as land?	1) A detailed gender analysis was conducted for the China child project and gender actions incorporated into the project design. Please refer to CEO ER *Section 3. Gender Equality and Women?s Empowerment* for details. Among others, the Gender Action Plan explicitly includes reference to mainstreaming gender into national and provincial policy formulation, as well as into the ILM planning process, in line with Government of China policies and priorities. There are no significant gender differences in the target provinces with regard to access to education, land property rights and access to microcredit. In fact, microcredit programs in rural areas are mainly designed for rural women, playing an important role in female poverty alleviation and self-development. However, there are still gender gaps with regard to funding between male and female-owned cooperatives. The project will, therefore, prioritize investing in women-led cooperatives and enterprises, or those with a defined significant share of women members, which will contribute to women?s economic empowerment in the long term. 2) Women and youth empowerment is an important consideration in the China child project and has been included as integral part of the project design (please refer to *Section 3) Proposed alternative scenario*, and *Gender Action Plan*). In the China child project context, one of the main challenges is the ageing of farmers and how to create incentives for young farmers to remain engaged in agriculture.
STAP comment (on PFD)	**Responses** (specific to China child project)

1) The STAP encourages additional quantification of key trends during the next phase of program preparation as a baseline from which to measure change, and further specification of the change mechanisms indicated in the theory of change, especially those essential to achieve scaling. The scale of outcomes is difficult to predict and highly dependent upon quality of stakeholder engagement processes at multiple levels. Given the geographic and commodity coverage of this IP, scaling up beyond country-level outcomes is integral to planned program-level outcomes, targeting fundamental transformation in food systems.	Detailed baseline information was collected for the China child project on the policies, production and value chains of the target crops (rice, wheat and maize) in the target provinces and counties, and at the national level. Mechanisms for implementation and scaling were identified through consultation with stakeholders and embedded in the project design and Theory of Change. In addition, China will play a key role in transferring knowledge to other countries in the region and globally through the FOLUR Global Platform as well as other, existing platforms and mechanisms.
2) More detail should be provided during full program development regarding systematic risk identification and assessment of risk management options and strategies. [?] The PFD notes potential social and environmental risks posed by the country projects but does not specify these. While generic policy and governance risks are noted, there is inadequate explicit attention to political and economic interests that could (and are likely to) oppose desired changes.	A detailed analysis of risks was conducted during the project preparation phase (including climate risks), and mitigation actions identified. Details can be found in Section *5. Risks* of the ProDoc, and Section *V. Key Risks* of the PAD. Conflicting political and economic interests were not identified, given the close alignment of the project strategy with political and socio-economic priorities in China.
3) Gender equality aspects merit deeper analysis during full program preparation, particularly regarding barriers to gender-equitable resource access and tenure rights, and to inclusive decision-making in landscape-level planning and policy formulation.	A detailed gender analysis was conducted during the project preparation phase, and a Gender Action Plan was elaborated for the FAO-MARA sub-project. See Section *3. Gender Equality and Women?s Empowerment* of the ProDoc. In particular, the project will ensure women?s participation in landscape-level planning and policy formulation; and will aim to generate socio-economic benefits for women. Gender-specific actions have also been incorporated into the World Bank-Hubei sub-project. Please refer to Section *C. Safeguards, (iii) Gender*.

4) Climate mitigation and adaptation goals are well integrated in the high-level program description, and climate-smart agriculture (CSA) practices and technologies are integral to the planned landscape-level responses. Yet, assessment of program-level sensitivity to climate impacts is not presented; more detail is expected in development of country projects and in program-level monitoring and targeted capacity support functions.	An assessment of climate impacts was conducted during the project preparation phase. Interventions aimed at enhancing the resilience of agricultural production systems and livelihoods to climate change have been incorporated into the project design of both sub-projects. See Section *5. Risks* and Section *1.a.1) Climate change impacts* of the ProDoc, and Section *V Key Risks of the PAD*. In addition, the World Bank-Hubei project will include climate risk assessments/studies to assess current and future climate change impacts on major agricultural value chains. Such impacts will also be taken into account in the FAO-MARA project implementation. Best practices and lessons learned will be shared between the two sub-projects.

ANNEX C: Status of Utilization of Project Preparation Grant (PPG). (Provide detailed funding amount of the PPG activities financing status in the table below:

PPG Grant Approved at PIF: **$300,000 (FAO 160,000, WB 140,000)**			
Project Preparation Activities Implemented	GETF/LDCF/SCCF Amount ($)		
	Budgeted Amount	Amount Spent To date	Amount Committed
FAO PPG activities	160,000	147,911	12,089
WB PPG activities	140,000	-	140,000
Total	**300,000**	**147,911**	**152,089**

ANNEX D: CALENDAR OF EXPECTED REFLOWS (if non-grant instrument is used)

Provide a calendar of expected reflows to the GEF/LDCF/SCCF/CBIT Trust Funds or to your Agency (and/or revolving fund that will be set up)

n/a

ANNEX E: Project Map(s) and Coordinates

Please attach the geographical location of the project area, if possible.

Please refer to Annex E of the ProDoc and Annex 4 of the PAD for detailed maps.

The geo-coordinates of the target counties are summarized below.

Province	County	Geo-coordinates
Shandong	Qihe City	36?47'24.59" N 116?45'19.19" E
	Laiyang City	36?58'32.99" N 120?42'49.00" E
	Qingyun County	37?46'31.00" N 117?23'07.00" E
	Laizhou City	37?10'27.00" N 119?55'59.99" E
Jiangsu	Liuhe District	32?21'59.04" N 118?50'45.60" E
	Jiangning District	31?52'0.84" N 118?48'1.44" E
	Taicang District	31?26'31.19" N 121?05'22.80" E
	Huaiyin District	33?35'19.00" N 119?01'9.01" E
Jiangxi	Yushui District	27?50'20.3"N 114?56'16.6"E
	Fenyi County	27?51'29.39" N 114?39'23.39" E

Guizhou	Congjiang County	25?45'15.00" N 108?54'19.00" E
	Liping County	26?19'13.31" N 109?09'3.64" E
	Rongjiang County	25?55'55.00" N 108?31'19.00" E

ANNEX F: Project Budget Table

Please attach a project budget table.

For more detail, please refer to the uploaded Excel budget files.

FAO-MARA budget (revised)

	FAO Cost Categories	Operated by	Component 1	Component 2	Component 3	Component 4	PMC	M&E	Total
5011	Professional Salaries								
	Sub-total Professional Salaries	MARA	113,500	66,000	66,000	213,500	250,000	95,000	**804,000**
5013	Consultants								
	National Consultants								
	Sub-total Consultants	MARA	56,250	237,500	112,500	26,250	-	-	**432,500**
5014	Contracts								
	Sub-contracted by MARA (see budget file for details)	Sub-contracts	1,080,000	1,826,000	1,084,000	370,000	-	-	4,360,000
	FAO, independent evaluations (MTR and FE including terminal report)	FAO	-	-	-	-	-	114,378	114,378
	FAO, annual financial audits/spot checks	FAO	-	-	-	-	50,000	-	50,000
	Sub-total Contracts		*1,080,000*	*1,826,000*	*1,084,000*	*370,000*	*50,000*	*114,378*	**4,524,378**
5021	Travel								
	Sub-total Travel	MARA	33,625	33,625	33,625	33,625	-	-	**134,500**
5023	Training								
	Sub-total Training	MARA	140,000	280,000	140,000	514,000	-	125,000	**1,199,000**
5024	Expendable Procurement								
	Sub-total Expendable Procurement	MARA	-	-	-	30,000	-	-	**30,000**
5025	Non-expendable Procurement								
	Sub-total Non-expendable Procurement	MARA	-	-	-	16,887	15,000	-	**31,887**
5028	General Operating Expenses (GOE)								
	MARA GOE (see budget file for details)	MARA	-	-	-	-	23,185	-	23,185
	Sub-total GOE		-	-	-	-	*23,185*	-	**23,185**
	Grand Total		**1,423,375**	**2,443,125**	**1,436,125**	**1,204,262**	**338,185**	**334,378**	**7,179,450**

WB-Hubei budget (revised)

Cost Categories	Operated by 运营方	Budget per Component (USD) 每部分预算（美元）						Total 总数 (USD)
		Comp 1	Comp 2	Comp 3	Comp 4	M&E 监评	PMC 项目管理成本	
Consultants 咨询服务	Hubei DARA	-	-	-	-	-	199,290	**199,290**
Contracts/Sub-grants 合同	Hubei DARA	1,340,855	3,200,569	601,449	20,000	610,000	-	**5,772,873**
Travel 差旅	Hubei DARA	-	-	-	-	-	20,000	**20,000**
Training / meetings 培训/研讨会/会议	Hubei DARA	210,145	-	-	-	7,246	52,464	**269,855**
General Operating Expenses (GOE) 一般运营费用	Hubei DARA	-	-	-	-	-	20,000	**20,000**
Grand Total 总数		**1,551,000**	**3,200,569**	**601,449**	**20,000**	**617,246**	**291,754**	**6,282,018**