Technical Assistance Report

Project Number: 47073
Capacity Development Technical Assistance (CDTA)
March 2014

People's Republic of China: Natural Disaster Risk Management in the Southern Mountain Area in Jiangxi

Asian Development Bank

CURRENCY EQUIVALENTS
(as of 19 March 2014)

Currency unit	–	yuan (CNY)
CNY1.00	=	$0.1917
$1.00	=	CNY6.1615

ABBREVIATIONS

ADB	–	Asian Development Bank
DRM	–	disaster risk management
IDRM	–	integrated disaster risk management
MRLDO	–	Office of the Mountain-River-Lake Development Committee of Jiangxi Province
PRC	–	People's Republic of China
TA	–	technical assistance
TMO	–	technical assistance management office

TECHNICAL ASSISTANCE CLASSIFICATION

Type	–	Capacity development technical assistance (CDTA)
Targeting classification	–	General intervention
Sector (subsectors)	–	Agriculture and natural resources (land-based natural resources management; water-based natural resources management; irrigation, drainage, and flood protection)
Themes (subthemes)	–	**Social development** (disaster risk management), environmental sustainability (natural resources conservation), economic growth (knowledge, science, and technological capacities)
Climate change	–	Mitigation and adaptation
Location (impact)	–	Rural (high), urban (medium), national (low), regional (low)

NOTE

In this report, "$" refers to US dollars.

Vice-President	S. Groff, Operations 2
Director General	A. Konishi, East Asia Department (EARD)
Director	Y. L. Feng, Environment, Natural Resources, and Agriculture Division, EARD
Team leader	C. Yeager, Climate Change Specialist, EARD
Team members	H. Luna, Senior Operations Assistant, EARD
	S. Kawazu, Senior Counsel, Office of the General Counsel
	F. Yu, Natural Resources Economist, EARD

CONTENTS

I. INTRODUCTION

1. The Government of the People's Republic of China (PRC) through the Office of the Mountain-River-Lake Development Committee of Jiangxi Province (MRLDO) requested capacity development technical assistance (TA) from the Asian Development Bank (ADB) for Natural Disaster Risk Management in the Southern Mountain Area in Jiangxi.[1] The TA was included in ADB's country operations business plan, 2013–2015 for the PRC.[2] A TA reconnaissance mission was conducted during 21–24 October 2013. Government concurrence with the impact, outcome, outputs, implementation arrangements, cost, financing arrangements, and terms of reference was obtained in an email dated 16 January 2014. The design and monitoring framework is in Appendix 1.[3]

II. ISSUES

2. ADB's Draft Operational Plan for Integrated Disaster Risk Management, 2014–2020 states that disaster risk now presents one of the most serious threats to inclusive and sustainable socioeconomic development in Asia and the Pacific.[4] ADB is preparing the operational plan to help its developing member countries strengthen their disaster resilience through (i) the integration of disaster risk reduction into development, (ii) addressing the intersection between disaster risk management (DRM) and climate change adaptation, and (iii) developing disaster risk financing capability. In the southern mountain area of Jiangxi Province (hereafter referred to as the Gannan Mountain area), climate change and agricultural conversion, among others, are putting significant pressure on the environment and natural resource base. Jiangxi Province is one of the poorest provinces in the PRC; and livelihoods and sustainable development are at risk from natural and anthropogenic hazards, including floods, droughts, severe storms, and landslides. Environmental and anthropogenic hazards interact and require an integrated approach to reduce disaster risk.

3. The Gannan Mountain area of Jiangxi Province has 8.4 million inhabitants, with an average household size of 3.8 people; and a rural per capita net income of CNY4,182.[5] Poverty rates in the Gannan Mountain area are quite high; rural per capita annual incomes are 28% lower than the provincial rural average of CNY5,789, and only 27% of the provincial urban average of CNY15,481. The regional domestic product for this area is CNY112 billion, and was increasing at an annual rate of 13.8% as of 2011. The headwaters of the Ganjiang River are located in the Gannan Mountain area, and the river supports agriculture, fisheries, local transportation, local ecosystems, and freshwater needs. The river feeds into the PRC's largest freshwater lake (Poyang Lake), which is an area of global importance for migratory birds. The region is biologically diverse, an important source of tungsten and other rare earth metals, and a globally important production area for navel oranges. Navel orange plantations cover 110,993 hectares in the Gannan Mountain area, and are an important part of the local economy.

4. Recent disasters have had enormous impacts on the local economy, infrastructure, and environmental quality, and on people's wellbeing. Landslides in 2009 destroyed more than 10,000 buildings, and 600,000 people were directly affected. In 2010, there were 28 heavy snow

---

[1] The MRLDO is a government think tank for the Development Committee of the Jiangxi provincial government, and responsible for strategic research and demonstration of sustainable development.
[2] ADB. 2013. *Country Operations Business Plan: People's Republic of China, 2013–2015*. Manila.
[3] The TA first appeared in the business opportunities section of the ADB website on 14 March 2014.
[4] ADB. 2014. *Draft Operational Plan for Integrated Disaster Risk Management, 2014–2020*. Manila. The draft operational plan specifically considers hazards to physical assets in assessing disaster risk.
[5] Data provided by the MRLDO from local government statistics, and the Jiangxi Statistical Yearbook 2011.

events, a hailstorm, and numerous severe storms. According to local government experts, the agriculture sector, particularly navel orange plantations, are highly vulnerable to natural hazards such as severe storms, drought, and freezing. About 10% of the navel orange crop is lost each year due to natural hazards, with economic losses of approximately CNY4 billion. Crop failures due to freezing are the most costly. Although no current data are available, local communities are at high risk from landslides and flooding in addition to economic losses from crops. Earthquakes are also a risk, based on work conducted previously by the MRLDO under a United Nations Development Program project.[6]

5. The Twelfth Five-Year Plan of the Mountain-River-Lake Development Program lists disaster prevention and reduction in the drainage basin as a priority. The PRC has developed a comprehensive system of DRM, including prevention, reduction, preparation, relief, and reconstruction. However, DRM currently emphasizes generalities, strategies, and procedures rather than case studies, practical applications, and operations. DRM is very compartmentalized, with knowledge concentrated at the top levels of provincial and central government; and focused on institutional and/or organizational aspects of DRM and recovery following disasters. Disaster warnings from the central and/or provincial governments are transmitted through cell phone calls to specific individuals in the villages considered to be at risk. The MRLDO seeks to address these issues in part through (i) an expansion of community involvement in DRM, (ii) policy recommendations to improve DRM, and (iii) the development of specific technical solutions to reduce risks and mitigate the impacts of disasters on agriculture-based livelihoods in the Gannan Mountain area. The TA will provide a framework to identify and select effective, sustainable, and feasible actions to mitigate risks to local communities.

6. The TA will build on recommendations and lessons from previous experiences with the *Deutsche Gesellschaft für Internationale Zusammenarbeit*, the ProVention Consortium, the United Nations, the PRC's early warning systems for agricultural freezing in Gannan, and ADB studies. Lessons include the importance of stakeholder participation in operationalization and disaster prevention, and the role of early warning in reducing economic losses. Preliminary experience with a pilot forest insurance initiative for natural risk mitigation in the ongoing Jiangxi Sustainable Forest Ecosystem Development Project will be used as a foundation for the assessment of potential disaster insurance.[7] The TA will complement community activities piloted in one village in 2008 by the MRLDO. The pilot focused on increasing the capacity of farmers to acquire, understand, and apply meteorological information to disaster management. Activities included participatory rural appraisals, socioeconomic and environmental surveys, and capability building. In cooperation with the village council, an information transfer network was enhanced by setting up an information assistance group. The scope of the pilot was limited, but is nevertheless relevant. The policy and technical recommendations from this TA will be used by local communities, state-owned enterprises, farmers' cooperatives, and the private sector to reduce disaster risk; and will support decision making by the MRLDO. The findings may be used to develop a potential project proposal.

[6] G. Wu. 1998. *Exploration of Mountain-River-Lake Regional Sustainable Development.* Nanchang: Jiangxi Science and Technology Press.

[7] ADB. 2010. *Report and Recommendation of the President to the Board of Directors: Proposed Loan and Grant to the People's Republic of China for the Jiangxi Sustainable Forest Ecosystem Development Project.* Manila.

III. THE TECHNICAL ASSISTANCE

A. Impact and Outcome

7. The impact of the TA will be reductions in disaster risks to sustainable development in the Gannan Mountain area. The outcome of the TA will be improved policies and increased local capacity in the Gannan Mountain area to manage disaster risk and adapt to climate change.

B. Methodology and Key Activities

8. The expected outputs of the TA will include the following: (i) natural disaster risk assessment of the Gannan Mountain area; (ii) an integrated DRM (IDRM) plan prepared for the Gannan Mountain area; and (iii) training and capacity development for IDRM in the Gannan Mountain area. The TA will specifically develop an IDRM policy brief as a knowledge product.

9. **Output 1: Natural disaster risk assessment in the Gannan Mountain area.** This will include (i) review and analyze current environmental and socioeconomic data and reports available for the Gannan Mountain area; (ii) identify environmental hazards and their impacts, including projected climate change impacts, landslides, earthquakes, droughts, and floods; (iii) review the spatial distribution of disaster risks given locations of communities and economic activities, particularly navel orange agricultural crops; (iv) prioritize disaster risks based on technical criteria, including magnitude of impacts and potential for mitigation; (v) review current land use management practices that increase or decrease disaster risks; and (vi) (vii) conduct field studies and assess current vulnerability to disaster risks.

10. **Output 2: An IDRM plan prepared for the Gannan Mountain area.** Activities will include (i) review the past effectiveness of DRM, and the current DRM policy framework and procedures, identifying gaps in response plans and overlapping responsibilities or authority; and identify issues and constraints and/or barriers; (ii) identify appropriate mitigation activities and specific best land use management practices to reduce disaster risks, particularly in the agriculture sector; (iii) identification of effective IDRM practices, policies, and regulations; (iv) conduct a participatory strengths, weaknesses, opportunities, and threats (SWOT) analysis of IDRM capacity; (v) conduct financial analyses to determine potential implementation costs for IDRM, including disaster risk reduction insurance in the agriculture sector; (vi) prioritize IDRM practices, policies, and regulations based on the financial analyses, surveys, and data inputs from Output 1; (vii) conduct consultations and a workshop to discuss preliminary results, and finalize identification of priority activities; and (viii) prepare a community-based IDRM plan, including identifying adaptation measures to reduce risks in the agriculture sector; recommendations for changes in specific management practices and IDRM practices, policies, and regulations; a detailed work plan; and a budget.

11. **Output 3: Training and capacity development for IDRM in the Gannan Mountain area.** This will include (i) development of IDRM training materials; (ii) conduct of training in disaster risk prevention, preparedness, and risk management to develop the capacity of local communities and government staff; (iii) provincial study tour for community members to see participatory DRM in the PRC; (iv) development of an IDRM policy knowledge product that addresses gaps and opportunities and issues identified in Outputs 1 and 2; (v) conduct workshops to inform and jointly review TA results; and (vi) preparation of a final report summarizing key results.

12. The major assumptions considered include the following: (i) communities will adopt recommendations from the community-based IDRM plan, (ii) there is sufficient understanding and willingness to cooperate between community members and local government institutions, and (iii) local communities are interested in participating in IDRM.

13. The major key risks considered include the following: (i) funding is insufficient to fully implement the recommendations; (ii) there are competing priorities and conflicts regarding natural resource use; and (iii) turnover of staff and participants delay TA implementation.

C. Cost and Financing

14. The TA is estimated to cost $420,000, of which $350,000 will be financed on a grant basis by ADB's Technical Assistance Special Fund (TASF-other sources).

15. The government will provide counterpart support in the form of (i) remuneration and per diem for counterpart staff, including secretarial assistance and translation services; (ii) office accommodation and supplies; (ii) domestic transportation; (iii) relevant government data and studies for the consultants' use; (iv) meeting and/or office facilities (including support for local phone calls, fax, internet, computers and printing), geographical information system maps, and other support to the consultants, as required; and (v) other in-kind contributions.

D. Implementation Arrangements

16. The MRLDO will be the executing agency for the TA. A TA management office (TMO) will be established in the MRLDO's International Cooperation Division to carry out day-to-day TA operations. The director of the MRLDO's International Cooperation Division will serve as the TMO executive director and will be responsible for coordinating operational matters and technical collaboration with the consultants. The MRLDO will provide office space, access to communications and copiers, and logistical support for TA implementation. The TMO executive director will also be responsible for submitting reimbursement claims for approved expenditures for equipment, data, maps, technical translation, and logistical support for training (including local study tour), seminars, and conferences.

17. The MRLDO will ensure relevant offices and departments—including the departments of agriculture, forestry, land resources, mining, and water resources; the meteorology bureau; and others at city and provincial levels—participate in meetings and workshops during the inception, interim, midterm, and final stages of TA implementation.

18. The TA has a tentative starting date of 1 July 2014 and end date of 30 September 2015. The consultants will submit an inception report to ADB within 6 weeks of TA commencement, and an interim report 7 months after TA commencement. A draft final report will be submitted to ADB 12 months after TA commencement, and a final report at TA conclusion. The inception, interim, and draft final reports will be subject to review by ADB and the government. All reports will be written in English and translated into Chinese. The outline terms of reference for consultants are in Appendix 3.

19. The TA will be carried out by a team of consultants to be engaged through a firm, which will provide 6.75 person-months of international and 11 person-months of national consulting services. Two international specialists (team leader and DRM specialist, and a climate-smart agriculture specialist) and three national specialists (deputy team leader and DRM specialist, a hydrology and climate change specialist, and a finance specialist) will be required for TA

implementation (Appendix 3). ADB will engage the consultants following its Guidelines on the Use of Consultants (2013, as amended from time to time). The consulting firm will be selected using biodata technical proposals and the quality- and cost-based selection, with a quality–cost weighting ratio of 90:10 given the high technical complexity. Procurement under the TA will follow ADB's Procurement Guidelines (2013, as amended from time to time) and equipment purchased will be turned over to the executing agency upon TA completion. Disbursements under the TA will be in line with ADB's *Technical Assistance Disbursement Handbook* (2010, as amended from time to time). ADB will reimburse the TMO for approved logistical support costs for equipment, data, maps, technical translation, training, seminars, and conferences. ADB will undertake intensive review and supervision by fielding missions at critical stages of TA implementation—particularly inception, midterm, and final reviews; and by extending regular support from the ADB headquarters and the PRC Resident Mission.

20. The TA results will be disseminated through project reports, TA workshops, and media releases by ADB and the MRLDO. An IDRM policy brief will be developed and disseminated in hard copy by ADB, the PRC Resident Mission, and the MRLDO; and will be posted on the ADB website. An outcome evaluation will follow ADB guidelines, and will be provided to the MRLDO.

IV. THE PRESIDENT'S DECISION

21. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of $350,000 on a grant basis to the Government of the People's Republic of China for Natural Disaster Risk Management in the Southern Mountain Area in Jiangxi, and hereby reports this action to the Board.

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
Impact Reductions in disaster risks to sustainable development in the Gannan Mountain area	By 2021: Increased average per capita household income due in part to reduced economic losses from disasters (Baseline 2011: CNY4,182; Target: 10% increase)	District statistics	**Assumption** Communities adopt recommendations from the IDRM plan. **Risk** Funding is insufficient to fully implement the recommendations.
Outcome Improved policies and increased local capacity in the Gannan Mountain area to manage disaster risk and adapt to climate change	By 2016: A community-based IDRM plan fully supported by stakeholders (Baseline 2013: 0, Target: 1)	Letters of support for DRM from community members and local governments DRM plan	**Assumption** There is sufficient understanding and willingness to cooperate between community members and local government institutions. **Risk** There are competing priorities and conflicts regarding natural resource use.
Outputs 1. Natural disaster risk assessment in the Gannan Mountain area 2. An IDRM plan prepared for the Gannan Mountain area 3. Training and capacity development in IDRM in the Gannan Mountain area	By 2016: Quantitative results of hydrological, financial, socioeconomic, and environmental analyses achieved (Baseline 2013: 0, Target: 1) Identification of five IDRM priorities and risk reduction and/or adaptation activities based on participatory consultations (Baseline 2013: 0, Target: 5) An IDRM policy brief developed (Baseline 2013: 0, Target: 1) At least 40 government officials and 80 local community members (at least 40% female) have increased knowledge of integrated DRM and sustainable use of natural resources (Baseline 2013: 0, Target: 120)	Interim and final progress reports of the technical assistance project Meeting minutes Policy brief Pre-training and post-training assessment	**Assumption** Local communities are interested in participating in DRM. **Risk** Staff and participant turnover delays technical assistance implementation.

Activities with Milestones[a]	Input
1. Natural disaster risk assessment in the Gannan Mountain area	**ADB: $350,000.00** Financed by the Asian Development Bank's Technical Assistance Special Fund (TASF-other sources)
1.1 Mobilize consulting firm, develop study framework, and organize inception workshop, by month 1 1.2 Prepare inception report with detailed approach and implementation arrangements for the project, by month 1 1.3 Review and analyze current environmental and socioeconomic data and reports available for the Gannan Mountain area, by month 2 1.4 Identify environmental hazards and their impacts, including projected climate change impacts, landslides, earthquakes, droughts, and floods , by month 2 1.5 Review spatial distribution of disaster risks given locations of communities and economic activities, by month 2 1.6 Prioritize disaster risks based on technical criteria, by month 3 1.7 Review current land use management practices that increase or decrease disaster risk, by month 4 1.8 Conduct field studies and assess current vulnerability to disaster risks by month 6	Note: The government will provide counterpart support in the form of remuneration and per diem for counterpart staff, including secretarial assistance and translation services; office accommodation and supplies; domestic transportation; relevant government data and studies for the consultants' use; meeting and/or office facilities (including local phone calls, fax, internet, computers and printing), geographical information system maps, and other support to the consultants, as required; and other in-kind contributions.
2. An IDRM plan prepared for the Gannan Mountain area	
2.1 Review past effectiveness of DRM and current DRM policy framework and procedures, identifying gaps in response plans and overlapping responsibilities or authority; and identify issues and constraints and/or barriers, by month 1 2.2 Identify appropriate mitigation activities and specific best management practices to reduce risk based on a literature review, by month 1 2.3 Identify effective IDRM practices, policies, and regulations, by month 1 2.4 Conduct a participatory "strengths, weaknesses, opportunities, and threats" analysis of DRM capacity, by month 1 2.5 Conduct financial analyses to determine potential implementation costs for DRM and risk-reducing activities, by month 2 2.6 Prioritize IDRM and risk-reducing practices, policies, and regulations based on the financial analyses, surveys, and data inputs from output 1, by month 2 2.7 Conduct consultations and a workshop to discuss preliminary results and identify priorities, by month 7 2.8 Prepare a community-based IDRM plan, including identification of adaptation measures to reduce risks in the agriculture sector; recommendations for changes in specific management practices and IDRM practices, policies, and regulations; a detailed work plan; and budget, by month 8	
3. Training and capacity development in the Gannan Mountain area	
3.1 Develop training materials, by month 2 3.2 Begin training, by month 3 3.3 Develop a draft IDRM policy brief, by month 6 3.4 Conduct a provincial study tour for community members to see participatory DRM in the People's Republic of China, by month 7 3.5 Conduct workshops to inform and jointly review technical assistance results, by month 7 3.6 Prepare a draft final report summarizing key results, by month 8 3.7 Complete the revised final report, including the community-based IDRM plan, by month 12 3.8 Publish the final IDRM policy brief, by month 15	

ADB = Asian Development Bank, DRM = disaster risk management, IDRM = integrated disaster risk management.

[a] The starting point of all references to "by month xx" in this section is the estimated TA commencement of 1 July 2014.

Source: Asian Development Bank estimates.

COST ESTIMATES AND FINANCING PLAN
($'000)

Item	Amount
Asian Development Bank[a]	
1. Consultants	
a. Remuneration and per diem	
i. International consultants	166.50
ii. National consultants	82.25
b. International and local travel	18.80
c. Reports and communications	10.00
2. Equipment[b]	11.75
3. Training, seminars, and conferences	
a. Facilitators	5.25
b. Training program	15.00
4. Surveys	14.00
5. Miscellaneous administration and support costs	8.95
6. Contingencies	17.50
Total	**350.00**

Note: The technical assistance (TA) is estimated to cost $420,000, of which contributions from the Asian Development Bank are presented in the table above. The government will provide counterpart support in the form of remuneration and per diem for counterpart staff, including secretarial assistance and translation services; office accommodation and supplies; domestic transportation; relevant government data and studies for the consultants' use; meeting and/or office facilities (including local phone calls, fax, internet, computers, and printing), geographical information system maps, and other support to the consultants, as required; and other in-kind contributions. The value of government contribution is estimated to account for 17% of the total TA cost.

[a] Financed by the Asian Development Bank's Technical Assistance Special Fund (TASF-other sources).

[b] Survey equipment such as the global positioning systems, commercial data, and maps, will be turned over to the executing agency upon TA completion. Procurement will be done following the Asian Development Bank's Procurement Guidelines (2013, as amended from time to time).

Source: Asian Development Bank estimates.

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

A. Implementation Arrangements

1. A consulting firm will be engaged for the technical assistance (TA) following the Guidelines on the Use of Consultants (2013, as amended from time to time) of the Asian Development Bank (ADB). The consulting firm will be selected using biodata technical proposals and quality- and cost-based selection, with a quality–cost weighting ratio of 90:10 because of the high technical complexity. The successful firm will have prior experience and demonstrated expertise in disaster risk management (DRM), developing environmentally and economically sustainable natural resources and land use recommendations, integrated watershed management, and agriculture. Experience working in the People's Republic of China is preferred. Under the supervision of ADB and the Office of the Mountain-River-Lake Development Committee of Jiangxi Province (MRLDO), the firm will (i) lead TA implementation; (ii) assemble and support the specialists; (iii) facilitate and promote the involvement of civil society organizations; (iv) support the active involvement of local resource personnel; and (v) use the firm's pool of national and/or international expertise, as necessary, to achieve the TA outputs. All international and national staff must be fluent in spoken and written English, and hold graduate degrees or have equivalent experience. It is preferred that the international staff be able to speak and read Chinese, and that the national staff will have provincial-level experience. All consultants will provide inputs to the reports. It is estimated that the TA will require 6.75 person-months of international and 11 person-months of national consulting services. The geographic focus is the Gannan Mountain area in Jiangxi Province. Table A3.1 provides details of the required expertise.

Table A3.1: Summary of Consulting Services Requirement

International	Person-month	National	Person-month
Team leader and disaster risk management specialist	4.75	Deputy team leader and disaster risk management specialist	6.00
Climate-smart agriculture specialist	2.00	Hydrology and climate change specialist	2.00
		Finance specialist	3.00
Total	**6.75**	**Total**	**11.00**

Source: Asian Development Bank estimates.

B. Terms of Reference

2. **Team leader and disaster risk management specialist** (international, 4.75 person-months). The team leader will be responsible for the overall coordination and supervision of the TA activities and outputs, and for ensuring the technical quality of key deliverables. The team leader will have (i) at least 10 years of experience in DRM in the natural resources sector, sustainable watershed management, and hydrology; (ii) prior experience conducting quantitative, hydrological, and environmental analyses; (iii) a graduate degree in environmental planning, hydrology, or the equivalent; and (iv) demonstrated ability to manage a team, prepare reports, lead meetings, and work with civil society organizations, the government, and local communities. Working closely with team members, the MRLDO, and other stakeholders, the team leader will

(i) prepare the detailed TA methodology and work plan;
(ii) lead the TA implementation, including coordination of team inputs and timely delivery of the TA outputs;
(iii) maintain communication with the MRLDO and the project team;

(iv) review, edit, and compile the inputs of the other team members;
(v) support the other team members in their assigned tasks, and oversee the quality of deliverables;
(vi) provide a summary of international best practices in DRM and sustainable watershed management practices for local communities;
(vii) oversee the design of the MRLDO field survey;
(viii) oversee data collection regarding the Gannan Mountain area hydrology and agriculture;
(ix) oversee modeling of scenarios of likely hydrological responses to changes in climate and land use;
(x) lead the development of the draft integrated DRM (IDRM) policy brief and the community-based IDRM plan, and provide substantive inputs;
(xi) facilitate stakeholder meetings, TA planning workshops, and team meetings;
(xii) assemble brief training materials in IDRM planning (including organizational response) and sustainable watershed management practices; and
(xiii) prepare and submit progress reports to ADB and the MRLDO, including inception, midterm, and final reports.

3. **Climate-smart agriculture specialist** (international, 2 person-months). The specialist will collect and analyze information related to the agriculture sector in the Gannan Mountain watershed. The specialist will have (i) at least 10 years of experience in agriculture, with at least 5 years working on climate-smart agricultural practices; (ii) demonstrated expertise in evaluating potential risks and making recommendations for prevention or mitigation, particularly for navel oranges; and (iii) a graduate degree in agriculture, horticulture, or equivalent. The specialist will

(i) gather data regarding the total area and location of primary agricultural crops in the Gannan Mountain area of Jiangxi Province;
(ii) identify the severity of risks to primary agricultural crops from climate change, floods, droughts, severe storms, landslides, and earthquakes;
(iii) make recommendations for climate proofing, adaptation, and mitigation actions and/or activities in agriculture sector based on international best practices and new technologies; and
(iv) provide inputs for the reports and the draft IDRM policy brief.

4. **Deputy team leader and disaster risk management specialist** (national, 6 person-months). The specialist will lead development of the community-based IDRM plan; and assist the team leader, as requested. The specialist will have (i) at least 10 years of experience in developing and implementing IDRM plans; (ii) demonstrated expertise in strategic planning, policy formulation, community-based development, and outreach; (iii) a graduate degree in environmental policy or environment, or the equivalent; and (iv) demonstrated ability to manage a team, prepare reports, facilitate workshops, and work with civil society organizations, the government, and local communities. The specialist will

(i) help coordinate team inputs and timely delivery of the TA outputs;
(ii) serve as the primary liaison between the MRLDO and the project team;
(iii) help review, edit, and compile the inputs of the other team members; and help support the other team members in their assigned tasks;
(iv) organize and facilitate stakeholder meetings, TA planning workshops, and team meetings;
(v) contribute to the development of the survey; and oversee survey data collection, data input, and analysis;
(vi) develop a draft community-based IDRM plan in collaboration with the MRLDO and stakeholders;

(vii) make recommendations and/or provide inputs for actions and/or activities in reports, the community-based IDRM plan, and the draft IDRM policy brief; and
(viii) provide training to the MRLDO staff and other government entities, and to communities on DRM and sustainable watershed management practices.

5. **Hydrology and climate change specialist** (national, 2 person-months). The specialist will collect and analyze information related to the hydrology of the Gannan Mountain area, including projected climate change impacts. The specialist will use hydrological models to make projections if data are not available. The specialist will help identify opportunities for actions and/or activities in integrated watershed management, and provide inputs for the community-based DRM plan. The specialist will have (i) at least 10 years of experience and demonstrated expertise in evaluating watershed hydrology and risk of flooding, droughts, and severe storms; (ii) prior experience incorporating climate change impacts into models; (iii) demonstrated expertise in sustainable watershed management; and (iv) a graduate degree in hydrology, or the equivalent. The specialist will

(i) collect existing data regarding the Gannan Mountain area hydrology, and model scenarios of likely hydrological responses to changes in climate (based on available projections) and land use;
(ii) assist in the analysis of the current environmental status and hazards, and their inter-relationship with sustainable watershed use;
(iii) make recommendations and/or provide inputs for actions and/or activities in reports, the community-based IDRM plan, and the draft IDRM policy brief; and
(iv) assemble brief training materials on hydrological, climate, and watershed management aspects of DRM.

6. **Finance specialist** (national, 3 person-months). The specialist will collect and analyze information related to the assessment of the cost (and cost to mitigate) of different types of disasters (e.g., floods, droughts, landslides, and earthquakes), including the potential use of disaster risk reduction insurance. The specialist will have (i) at least 10 years of experience in finance; (ii) demonstrated expertise in financial evaluation and understanding of disaster insurance; and (iii) a graduate degree in finance, business administration, or the equivalent. The specialist will

(i) gather data on the economic costs of disasters and their mitigation for local communities in the Gannan Mountain area;
(ii) assess potential economic risk for local communities, and how these might be offset through disaster insurance;
(iii) make recommendations regarding financial aspects, including disaster insurance, based on cost–benefit analyses of potential proposed actions of the community-based IDRM plan;
(iv) provide draft budgets for implementation of the community-based IDRM plan; and
(v) provide inputs for the community-based IDRM plan reports, and the draft IDRM policy brief.