TERMS OF REFERENCE FOR CONSULTANTS

1.   The outline terms of reference for consultants describe the main tasks under the knowledge and support technical assistance (TA) aimed at developing pilot innovative technologies in flash flood early warning system and promote a community-based approach in flood risk management in selected river basins of the People's Republic of China (PRC). The Asian Development Bank (ADB) will engage individual consultants to assist the Ministry of Water Resources in implementing the TA. All consultants will be engaged according to ADB's Procurement Policy (2017, as amended from time to time) and its associated project administration instruction and/or staff instructions. The consultants will be deployed on an intermittent basis.

2.   **Flood disaster risk mitigation specialist/team leader** (national, 6.5 person-months). The specialist will be responsible for the overall coordination and supervision of TA activities and outputs, and day-to-day liaison with the executing agency as well as with other relevant agencies. The specialist will ideally have (i) at least a bachelor degree in disaster prevention, hydrology or hydraulic engineering; (ii) knowledge and experience in national flash flood prevention projects, flash flood monitoring, national flood forecasting and early warning system, and flood risk assessment; (iii) sound understanding and experience in flood risk management, as well as disaster prevention related principles and processes; (iv) demonstrated experience in leading multidisciplinary teams; (v) demonstrated knowledge and at least 10 years working experience in the PRC on flash flood prevention issues. The specialist will undertake the following:

(i)   develop the overall detailed project framework, and prepare the TA inception, interim, and final reports along with inputs from other consultants;

(ii)   review related national policies and plans, including the review of ongoing practices in the Xinyu City in Jiangxi Province and Xixia County in Henan Province; Yangtze River Economic Belt (YREB); and PRC particularly in flash flood monitoring and warning;

(iii)   conduct a thorough review of existing practices and develop a methodology to establish a benchmark for flash flood forecasting and early warning in Xinyu City and Xixia County;

(iv)   develop a real-time decision support system for emergency response;

(v)   help form the community-based flash flood early warning and emergency response organizations in pilot villages;

(vi)   organize to conduct awareness campaign and flash flood evacuation drills in each pilot community;

(vii)   prepare a draft strategic plan, investment plan and management recommendations for the monitoring, forecasting and early warning, and community-based prevention strategies in the YREB with details for highly flash flood prone provinces in YREB in close consultation with the provincial governments;

(viii) support the executing agency in preparing and implementing an effective communication and participation strategy to ensure appropriate participation from key stakeholders and agencies concerned, including strategies for inputs from the concerned provinces and ministries;

(ix)   supervise the national and international consultants in their respective components, and consolidate all their reports;

(x)   organize and deliver presentations and training during training-workshops and seminars;

(xi)   coordinate and ensure comprehensive review and feedback from key stakeholders are received on all TA outputs and reports;

(xii)   manage and ensure timely implementation of TA activities; and

(xiii)   assist the executing agency in communicating with local governments in community-based flash flood activities, warning message delivery, and evacuation.

3.   **Flood forecasting and early warning specialist** (national, 6.0 person-months). The specialist will ideally have (i) a post-graduate degree in hydrology, hydraulic engineering or related field, with at least 8 years of relevant experience in the PRC; (ii) demonstrated experience in leading multidisciplinary teams in flash flood forecasting and early warning field or work as a project leader in national flash flood prevention project; (iii) sound understanding and experience in applying and developing hydrological models, especially the distributed ones based on multi-source data; and (iv) demonstrated flash flood risk management knowledge in the PRC. The specialist will undertake the following:

(i)   support the team leader in preparing and finalizing the detailed TA methodology and work plan;

(ii)   collect and analyze necessary hydro-meteorological, geological, and land use/land cover data;

(iii)   provide recommendations on the development of hydrological monitoring systems and relevant supporting information systems;

(iv)   work closely with hydrological monitoring device and warning device manufacturer to set up the threshold and message texting features of the devices;

(v)   in collaboration with other national specialists, develop suitable monitoring, evaluation, forecast, and warning mechanism with indicators and indices;

(vi)   work closely with the local communities and reflect their needs and requirements in the early warning system;

(vii)   pilot the innovative forecast and warning method in selected basins;

(viii)   organize consultations on the development and dissemination of outputs, arrange training and study tours, and deliver training; and

(ix)   provide inputs in other related technical tasks as requested by the team leader.

4.   **Community-based disaster mitigation specialist (A)** (national, 3.0 person-months). The specialist will support the team leader and will ideally have (i) at least a bachelor degree in hydraulic engineering with at least 8 years of relevant experience in flash flood warning and community-based disaster prevention in the PRC; (ii) experience in flash flood prevention and community-based approach; (iii) a sound understanding of approaches in flash flood warning and emergency response; (iv) experience in developing strategic disaster prevention management plans, especially in local communities; and (v) demonstrated experience in similar assignments. The specialist will undertake the following:

(i)   provide inputs to the reports in terms of the scope, schedule, assessments, activities, progress, recommendations, and plans to achieve the intended TA outputs and outcome;

(ii)   in collaboration with the team leader, identify key issues affecting community-based prevention, through literature review, field trips, and consultations with residents and provincial governments;

(iii)   in collaboration with other national experts, evaluate the real-time flood forecasting ad early warning system, monitoring stations' location and effectiveness, and address any feedback from community regarding the system;

(iv)   provide recommendations on the development of hydrological monitoring systems for flash flood early warning, relevant supporting information systems, and emergency management;

(v)	prepare the training materials for community-based prevention and know-how of flash flood emergency approaches in the form of recommendations in the TA report;
(vi)	give presentations at workshops and seminars as needed; and
(vii)	provide inputs in other related technical tasks as requested by the team leader.

5. **Community-based disaster mitigation specialist (B)** (national, 2.0 person-months). The specialist will support the team leader and will ideally have (i) at least a bachelor degree in social science or fields related to disaster risk management with at least 5 years of relevant experience in community-based disaster prevention in the PRC; (ii) experience in community-based approach and stakeholders communication; (iii) a sound understanding of approaches in flash flood warning, knowledge dissemination and communication, and emergency response; (iv) experience in developing strategic disaster prevention management plans, especially in local communities; and (v) demonstrated experience in similar assignments. The specialist will undertake the following:

(i)	provide inputs to the reports in terms of the scope, schedule, assessments, activities, progress, recommendations, and plans to achieve the intended TA outputs and outcome;
(ii)	work closely with local volunteers to promote community-based flash flood early warning system and response capacity development activities, including conducting evacuation drills and other training activities;
(iii)	in collaboration with the team leader, identify key issues affecting community-based prevention, through literature review, field trips, and consultations with residents and provincial governments;
(iv)	in collaboration with other national experts, evaluate the real-time flood forecasting and early warning system, monitoring stations' location and effectiveness, and address any feedback from community regarding the system;
(v)	prepare the training materials for community-based prevention and know-how of flash flood emergency approaches in the form of recommendations in the TA report;
(vi)	give presentations at workshops and seminars as needed; and
(vii)	provide inputs in other related technical tasks as requested by the team leader.

6. **Flash flood management specialist** (international, 1.5 person-months). The specialist will ideally have a doctoral degree and served in a senior position dealing with hydrological modelling, emergency management, flood prevention or related field, and familiar with PRC flash flood prevention activities. He/she should have experience in disaster prevention, especially flash flood prevention. The specialist will support the team leader, and work closely with the national consultants in pilot communities in the promotion of community-based flash flood early warning. The specialist will undertake the following:

(i)	review international experience in flash flood prevention, especially in flash flood early warning system and decision-support system;
(ii)	review and suggest any potential conflicts or synergies with development activities and management from different agencies in the study area, and help establish real-time early warning system and real-time decision support system for emergency response;
(iii)	help develop innovative warning models, warning message delivery methods, and community-based prevention activities;
(iv)	integrate the results of the public/institutional consultation into the overall assessment and recommend policy options;

(v)   help prepare technical note and policy recommendation on flash flood early warning as needed;

(vi)   give presentations at workshops and seminars as needed;

(vii)   draft a knowledge product based on the learning from the project;

(viii)   provide inputs in other related technical tasks as requested by the team leader; and

(ix)   provide inputs to the reports in terms of the scope, schedule, assessments, activities, progress, recommendations, and plans to achieve the intended TA outputs and outcome.