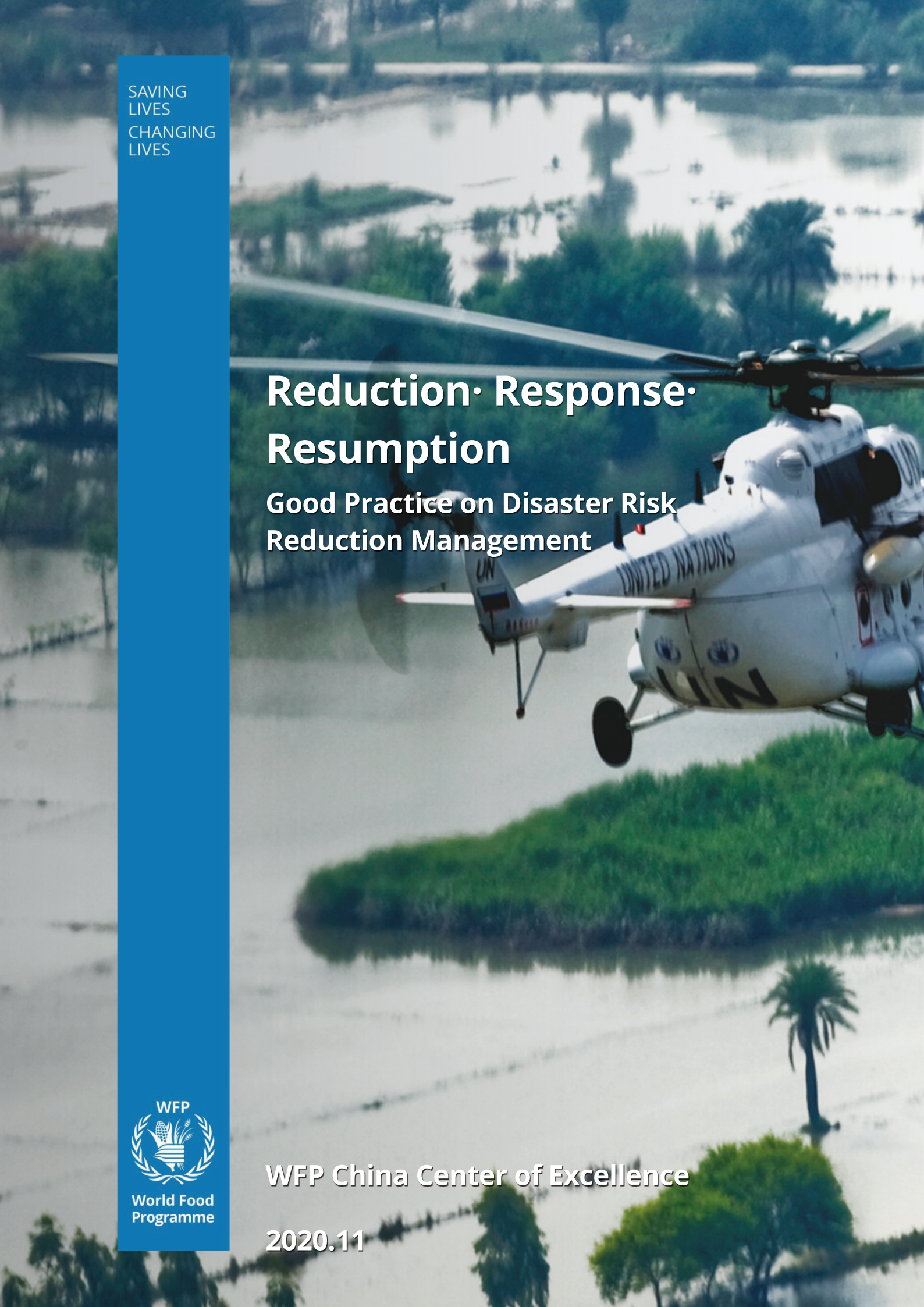
SAVING LIVES
CHANGING LIVES



Reduction· Response· Resumption

Good Practice on Disaster Risk Reduction Management

WFP
World Food Programme

WFP China Center of Excellence

2020.11

CONTENT

FOREWORD

About DRR

[1]Disasters hurt the poor and vulnerable the most. Since 1980, more than two million people and over $3 trillion have been lost to disasters caused by natural hazards, with total damages increasing by more than 600% from $23 billion a year in the 1980s to $150 billion a year in the last decade. From 1998 through 2018, 91% of storm-related fatalities were in low- and middle-income countries, even though these countries experienced just 32% of storms. In 2020, the COVID-19 pandemic is disrupting the world with a heavy toll on human lives and economic activities. Its rapid global spread is threatening to affect millions of people already made vulnerable by food insecurity, malnutrition and the effects of conflict and other disasters, and has caused global disruptions to the transport systems and links that health and humanitarian responders would normally rely upon to reach affected areas in a crisis. Meanwhile, many developing countries are still facing a variety of disaster risk such as earthquake, drought, etc. Specifically, nowadays China is experiencing the flood season and focus on flood prevention and relief with high level emergency response. Disaster is the common challenge for economic and social development of developing countries around the world. Disaster risk reduction management would also play a significant role during this process and contribute to resilience building for emergencies from both theoretical and operational perspectives.

Over one billion Asians still live under the international poverty line of $3.20 per day and the coronavirus may drive an addition $100 million over the threshold. These are the people without savings, land or assets, who make their living from casual day labour and seasonal agriculture work and barely scrape by in normal times but are particularly affected when disasters strike. The Asia Pacific region is home to half of the world's undernourished and half of the world's chronically malnourished children under 5 years of age. Add to that widespread micronutrient deficiencies and a growing problem of obesity and the risks of disasters suddenly become higher.

[1] WFP China Center of Execllence complies this documentation from webinar discussion on Disaster Risk Reduction Management on 22 and 29 September 2020, and contributing experts are referred in Acknowledgement.

China is prone to a range of disasters induced by natural hazards, such as earthquakes, floods, droughts and typhoons. In the past decade in China, on average 400 million people per year have been affected by such disasters. A strategic management of the disaster risk reduction, disaster mitigation, early warning, preparedness, recovery and support to livelihood is of vital importance for a nation to achieve food security and food safety in need for many countries. Tremendous efforts have been taken by the Chinese Government on the management of natural hazard-induced disasters. In the past dozens of years, China's evolving disaster management system, which focused on agriculture, economic development, government and professional capacity building, and disaster governance, has been greatly contributing to the national economic development and people's livelihood improvement, particularly, regarding capacities related to planning, organization, human resources, financial resources, logistics and communications in emergencies. The experience, policy support and technical measures that China drew on disaster reduction can be well shared with other needed countries.

Under COVID-19

When the COVID-19 crisis started to unfold at the beginning of the year, 135 million were estimated to be acutely food insecure due to man-made conflicts, climate change and economic downturn. The number was alarming and indicated a 70% increase over the past four years. Six months later, the spill-over effects of COVID-19 are compounding already dire situations across many fragile contexts, further increasing the number of people facing acute hunger as well as longer term vulnerabilities.

In April WFP announced that if no action is taken, the number of acutely food insecure in countries with WFP presence could well reach 270 million people by end of the year 2020 – an 82% increase. WFP estimates 20 million more people in Asian Pacific region will face extreme hunger in the coming year on account of COVID-19, and malnutrition rates will increase dramatically. But it's the endemic underlying hunger problem, which makes Asia vulnerable to shocks and makes their impact so serious. Six months later, based on FAO-WFP joint analysis which highlights 25 countries of concern, it is seeing a significant food security

deterioration, including pockets of famine. In these countries we cannot afford to fail.

In this context, it is vital to maintain and strengthen programmes which help countries manage the risk of compound disasters and integrate these with national disaster and climate risk management policies.

Disaster Risk Reduction & WFP

In 2019, WFP has actively supported 19 countries in integrating disaster and climate risk information in national development strategies. Additionally, 17 countries have developed or updated national Disaster Risk Reduction (DRR) strategies & plans with WFP support. WFP has also been raising targeted awareness on the value of DRR and climate change adaptation at all levels, by multiple means -- through communications, international advocacy, and integrated climate and disaster programming. These efforts, amongst others, will continue towards achievement of the Sendai Framework. In WFP, Disaster Risk Reduction implementation is focused on the following activities:

-Analysis of disaster risks and vulnerabilities, including the detection, monitoring and forecasting of disaster hazards and their consequences;
-Institutional capacity assessments for disaster risk reduction, based on engagement with United Nations Sustainable Development Cooperation Framework and inter-agency processes;
-Facilitation of stakeholder consultations, capacity strengthening workshops, publications and social media campaigns on disaster risk reduction and related relevant themes;
-Development of national disaster preparedness frameworks and implementation and/or enhancement of the Inter-Agency Standing Committee (IASC) Emergency Preparedness Response approach;
-Facilitation of preventive and anticipatory action through climate risk insurance schemes and forecast-based financing programmes;

-Food Assistance for Assets (FFA) interventions focused on nature-based solutions.

In WFP, the most effective risk management systems at country-level integrate risk absorption with risk reduction and risk transfer. For example: nature-based solutions to restore degraded lands, stabilize slopes and protect riverbanks, in combination with climate risk insurance and early warning systems to trigger preventive cash transfers whenever people are about to get hit by new shocks.

PART I. STRATEGIC DISASTER RISK MITIGATION & EMERGENCY RESPONSE

Region Case: Asia Pacific

Governments across the Asia Pacific region are using social protection schemes as a platform for response of COVID-19. 'Social protection' is defined as the set of public actions that address the absolute deprivation and vulnerabilities of the population – be they chronically poor or just plunged temporarily into poverty during disasters, shocks or lifecycle events. Social protection programmes maintain people's standards of living and act as a safety net to catch the most vulnerable before they slip into destitution. They can also equip communities with the resources needed to escape the poverty and hunger trap, providing financial support or facilitating access to nutritious food and essential services like healthcare. Specifically, there are several kinds of social protection programmes:

1) Large-scale welfare programmes, like Pakistan's Benazir Income Support Programme, which provides cash payments to 5.7 million women-headed households, who also receive a specialised nutritious food as part of a package of interventions designed to directly address malnutrition and help break the intergenerational cycle of hunger. 2) Subsidized food programmes, such as India's Targeted Public Distribution System, which provides highly subsidized food grains to more than 800 million people, severely affected by under-nutrition. 3) School feeding programmes, many of them supported by WFP, which provide critical health and nutrition for millions of children across the region and which have been adapted and continued by governments during the COVID-19 period, despite the closure of schools. 4) Others such as universal child support grants, pensions, disability benefits, unemployment benefits, etc.

Social protection programmes should be a key component of any DRR strategy and on the radar of every DRR practitioner, but critical social protection coverage gaps exist here too, despite the Asia Pacific region have gained remarkable economic progress. Even before the pandemic, more than half of the world's population – some four billion people - had either inadequate or no access to social protection. This includes two out of every three of the world's children. There are policy gaps, problems with the structure of labour markets,

cultural and gender-related constraints and gaps in knowledge. All of these add complexity and mean that not every country in the region will be able, in a short space of time, to exploit the full potential of social protection schemes as a powerful tool for disaster risk reduction and management, but the social protection schemes could be a backbone of disaster risk management.

Social protection systems can expand as a first-line response to shock, which can adapt quickly to respond to disasters if designed appropriately: expanding their coverage to rapidly include a larger number of people, increasing the size of their cash or food transfer in line with the severity of the shock and its impact on the population, using their delivery infrastructure and existing beneficiary information registries and allowing new emergency schemes to piggy-back on them. When we give shock-responsive social protection systems a front-line role in disaster response, we see efficiency gains from faster action, pooling of financial and programmatic resources, and faster decision making. The second reason why social protection systems are an excellent tool for DRR is that they can be the most effective channel for anticipatory finance. It is recognised that it's cheaper to respond to disasters before they strike than once the damage has been done, but how challenging it is to get cash to people before the disaster strikes – in that critical window when the cyclone is heading towards you, when river levels are rising and the flood waters approaching. In that window, in which people need to move but simply don't have the means, social protection could support them. Social protection schemes of governments are that channel. They are a platform, which is already set up and can be used – with very few adjustments - to provide anticipatory financing to populations which are about to be hit.

Country Case: China

China is a country prone to natural disasters. The wide variety and coverage of natural disasters in China caused heavy casualties and huge economic losses. More than 70% of cities, more than 50% of the population, and more than 75% of industrial and agricultural economic value in China is under risk. Since 2000, direct economic losses have been increasing year by year, but the proportion of direct economic losses in GDP has been decreasing. The number of disaster-related deaths and people missing show a steady downward trend throughout the country. China is at a critical stage of accelerated urbanization, with

urbanization rate reaching nearly 60% in 2018. With the development of urbanization, the continuous expansion of "high-risk cities" and the rapid accumulation of urban disaster risk place higher demand on the operation and management of metropolitan areas in China.

In April 2018, the central government of China integrated disaster-related functions of 13 ministries or administration to establish Ministry of Emergency Management (MEM) that is responsible for coordinating and managing efforts related to disaster prevention and emergency rescue. In order to actively respond to the risks and challenges surrounding natural disasters, establish an efficient and calculated natural disaster prevention system, and improve the public's ability to prevent natural disasters, there are three main aspects of strategic disaster risk mitigation measures, and the MEM was placed in charge of their specific implementation.

Nine key natural disaster prevention and control projects

1) Disaster risk investigation and hidden risk investigation project. It aims at examining clearly the full extent of hidden natural disaster risks in China by carrying out a comprehensive risk assessment and compiling risk zone maps integrating the hazardous factors with issues most at risk from disasters, through organizing China's first nationwide natural disaster risk survey. 2) Ecological restoration projects in key ecological function areas, including restoring the ecological function of forests, grasslands, rivers and lakes, wetlands, deserts, and oceans. 3) Coastal protection and restoration projects. This means constructing ecological seawalls and improving the ability to withstand marine disasters such as typhoons and storm surges. 4) Housing facility reinforcement projects in areas prone to earthquakes, improving the earthquake-resistant capabilities of housing. 5) Flood control, drought relief and water conservation project, improving the system of flood control and drought relief engineering. 6) Comprehensive geological disasters management,

evacuation and relocation project, to advance the completion of geological disaster relocation and evacuation tasks. 7) Emergency rescue center construction project, building emergency rescue centers in several regions across China. 8) Natural disaster monitoring and early warning informatization project, which aims to improve capabilities for integrated monitoring of multiple types of hazard and disaster chains, as well as early risk identification, predictions and warnings. 9) Modernization of the equipment and technology used for natural disaster prevention and control project, which will intensify research on key technologies and upgrade the professional technical equipment used by rescue teams.

China's central government and governments at all levels have already contributed funds of around CNY 320 billion (USD 47.84 billion) to these construction projects in past two years. These nine projects targeted at key fields and problem areas are all well underway. This year, China suffered from severe rainstorms and floods. Compared with the same period in the past 5 years, the number of people listed as dead or missing due to disasters has declined by 40%. Within this figure, the number of deaths or disappearances caused by flooding is down by over 50%. It can clearly see that all the engineering-based and non-engineering-based projects implemented by Chinese government have played a crucial role in our work towards disaster prevention, reduction and rescue.

Monitoring and early warning system for disaster risks

Ministry of Emergency Management (MEM) is responsible for all work related to overall monitoring and early warnings for natural disasters, and a monitoring and early warning system for natural disasters has been established. A robust mechanism for sharing and retrieving natural disaster information has been put in place, and the emergency contact system between departments, including the

meteorological, water resources, natural resources, forestry and grassland, and public security departments, has been strengthened. Governments at provincial, municipal and county levels are responsible for the monitoring and early warnings of disaster risks in their respective regions, and provide solutions for disaster prevention, reduction and rescue.

Governments at all levels must work with dozens of other departments such as meteorological, water resources and natural resources departments, as well as supporting scientific research institutions, in a bid to figure out annual flood seasons and key time periods, on which topic they will establish a daily consultation mechanism. Disaster risk monitoring work should be carried out across China.

Teams of disaster information personnel have been set up across the country to report disaster related information as quickly as possible. The construction of civil infrastructure has been speeded up, and space technology has been utilized in order to improve the monitoring and early warnings system for natural disasters. Building a global disaster database, and Global Natural Disaster Assessment Reports should be compiled.

Capacity building for disaster risk reduction in community

Establishing an emergency management system at the community level, putting in place the *Measures of Building National Comprehensive Disaster Reduction Demonstration Community*. It helps to coordinate material and staff resources for disaster reduction among various counties. The average population of a Chinese county ranges from 500,000 to 1,000,000. The explicit working standards was formulated for risk assessment, hidden risk investigation, infrastructure construction, emergency supplies logistics and contingency plans. In townships and subdistricts with a population ranging from 10,000 to 100,000, emergency management stations were set up in all these administrative areas. Existing mechanisms surrounding information reports, operation coordination, joint emergency responses, comprehensive support, law enforcement inspections, and evaluation and supervision, also have been improved.

Strengthening the emergency capacity building at the community level and guiding all localities to form cohesion rescue team development, including the government-funded full-time rescue teams, enterprise-funded full-time fire brigades, micro fire stations and voluntary fire fighters. Constructing more emergency shelters and support the establishment of a repository for relief materials in disaster-prone regions, especially in China's central and western regions. Supporting communities who are at a higher risk of possible disasters to set up stockpiles of materials.

The *Measures of Building National Comprehensive Disaster Reduction Demonstration Community* was formulated and distributed nationwide. There are compulsory measures to be included among the standards for the establishment of demonstration communities, such as hidden risk investigation, infrastructure construction, emergency supplies logistics and emergency response capacity building, which fully demonstrates the need to integrate all the emergency response resources and capabilities at grassroots communities. Also, raising residents' awareness of disaster prevention and reduction as well as the skills needed in order to rescue themselves and others. Additionally, MEM has been formulating emergency management guidebooks and family emergency survival guides and disseminating them to communities.

Each year's May 12 is dedicated to China's "Disaster prevention and reduction day," and various related activities will be held across China. Communities are encouraged to engage in the publicity and demonstration of disaster prevention and reduction, the popularization of related knowledge, skill training, hidden risk investigation and emergency drills. Since the outbreak of COVID-19, the Chinese government has offered anti-epidemic emergency humanitarian aid to over 150 countries and international organizations around the world. The provision of this aid has been achieved in the shortest period and with the widest coverage of any humanitarian aid given since 1949. China has been actively engaged in international cooperative action against the pandemic.

Country Case: Timor-Leste

Statistically, based on the data record from the National Directorate of Natural Disaster Management under the Secretary of State for Civil Protection of Timor-Leste, the total victims as a result of the natural disaster occurrence in the

territory of TL from January – July 2020 is 7,343 household. Consequently, only 1,317 households have received an emergency support and recovery. As such, the National Directorate of Natural Disaster Management under the Secretary of State for Civil Protection will set a budget plan of approximately USD 3 Million for next year 2021 state budget proposal in order to respond to the emergency assistance and recovery of the victims as a result of the natural disasters. Based on the experience of the natural disaster occurred in the territory of TL, the government of Democratic Republic of Timor-Leste under the Secretary of State for Civil Protection strongly proposes to implement the priority focus on several programs:

1. Development of legal framework and its implementation, which is composed of the Civil Protection Law that was approved last month (July 2020) by the parliament, Organic Law of Civil Protection, National Policy of Natural Disaster Management, and Statutory Framework of Fire Fighting.

2. Human Capital Development (e.g. Training and Capacity Building).
3. Full set of equipment and Infrastructure development.
4. Multilateral Cooperation

The Secretary of State of Civil Protection is highly committed to implementing the proposed strategic plan of Disaster Risk Reduction Management and Emergency Response Plan (ERP) in order to achieve the expected outcome of informing climate resilient small scale rural infrastructure planning and management and implementing climate risk reduction and mitigation measures to build community resilience. Also, the Government of Timor-Leste approved earlier this year a stimulus package of US$ 250 Million to mitigate the economic and financial risks of COVID-19.

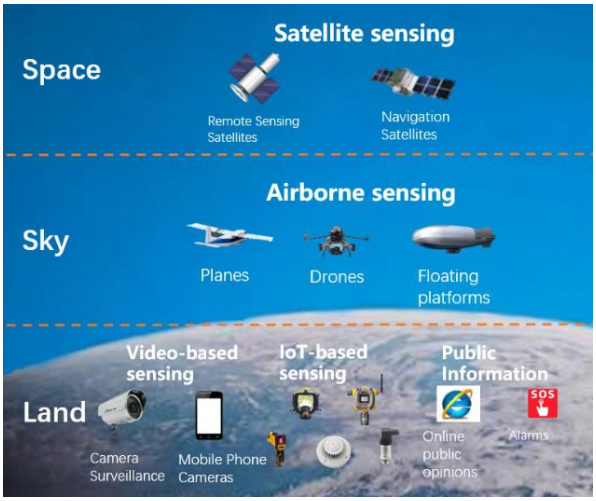
PART II. DIGITALIZED RISK SURVEILLANCE

Country Case: China

The Chinese government has promoted the application of information technology in its emergency management, including disaster perception network, emergency communication network, application of information technology in emergency command, disaster monitoring and early warning, workplace safety monitoring and early warning, and risk investigation and hidden danger investigation.

Big Data Applications for Disaster Prevention and Reduction

Framework Design

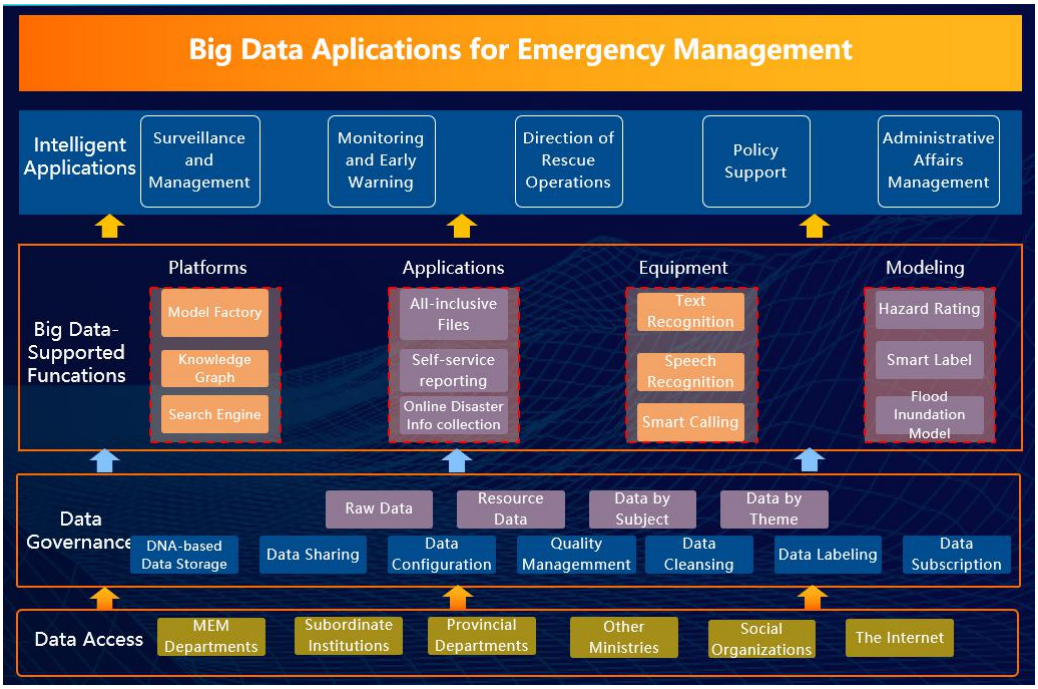


There is a framework consisted of a monitoring and early warning sensing network integrating space, sky and land and big data system for emergency management for digitalized risk surveillance in China. The system for emergency management information and resources governing system has been established basically, enabling data governance characterized by full data access, efficient data processing, fine management, and multiple services.

A Monitoring and Early Warning Sensing Network Integrating Space, Sky and Land. To offer comprehensive natural disaster monitoring and early warning services, sensing techniques have been adopted, including intelligent sensors, video imagery, satellite remote sensing, airborne remote sensing, and public sensing (disaster information reported by the public), which form an integrated, full-coverage “space-sky-land” monitoring and early warning sensing network that enables full awareness of all hidden risks and disaster information.

Big Data System for Emergency Management. Data accessed from MEM departments and subordinate units, provincial departments, other ministries, social organizations and internet. Then data will be dealt with series of procedures and to be categorized by raw data, resource data, subject data and

theme data. There also are big data-supported functions to further deal with these four kinds of data through platform, application, equipment and model. Finally, big data could be for intelligent applications, including Surveillance Management, Monitoring and Early Warning, Guidance for Rescue Operation, Policy Support, and Administrative Affairs Management.



Big Data Application

1) Satellite Remote Sensing Monitoring of Disaster Risk. There are two kinds of remote sensing monitoring: regular monitoring of major elements and risk of disasters, as well as post-disaster recovery and reconstruction; completing regular monitoring reports, and emergency monitoring of the background, scope, damage and secondary risk of major natural disasters as well as completing emergency monitoring reports. Also, the SkyEye Satellite Monitoring System precisely predicts satellite passes and the imaging plan, allows for the checking and comparison of the developments of disaster supported by disaster information and satellite data, analyses the disaster using AI technology, and produces thematic maps automatically.

2) Flood and Drought Monitoring and Early Warning, including disaster scenarios model, early warning information, integrated query, and rescue analysis.

3) *One Map* system for Disaster Prevention and Early Warning. The *One Map* system is an “Internet +” model of intelligent disaster early warning, functioning

as a national center of national disaster risk early warning and analysis, as well as a "portal" serving the public in this regard.

4) Analysis for the Evacuation of Disaster-affected Population. To verify disaster information based on population data, we would analyse the location data provided by telecom operators and Internet companies, to figure out the number of specific people affected and those to be evacuated, as well as the relocation sites.

5) Recognition and Extraction of Remote Sensing Imagery. The flooded houses and the area covered by affected crops in specific disaster-hit areas will be analysed, which is enabled by the recognition of high-resolution remote sensing imagery.

6) Rapid Disaster-information Acquisition Based on Big Data. There are multiple channels for collecting real-time images of disaster/accident sites. Big Data Based on Mobile Communication means that China Unicom uses the real-time cellar signalling data of 31 provinces in the whole network to analyse the distribution, flow, transfer and resettlement of the population in various disaster-stricken areas in China. Big Data Based on Social Media. Use big data provided by social media to analyse the disaster information needs of various users in disaster-hit areas and provide accurate disaster information services to users.

7) UAV Monitoring of Disaster Risk. UAV cooperation mechanism for emergency monitoring of major natural disasters, with UAV companies across the country engaged in, provides technical support for UAV data acquisition and post--disaster evaluation of the monitoring.

8) Collecting and Reporting Disaster Information on Site. National natural disaster information management system (NNDIMS) provides natural disaster reporting service by ground wired internet and mobile internet, which supports disaster reporting at provincial, municipal, county, township and village level. NNDIMS receives more than 100,000 disaster reports every year. Sudden disasters are basically reported to emergency departments within 12 hours after they occur. More than 50% of the reports are submitted within 6 hours after disasters. Single disaster is reported more than 4 times on an average basis. More than 700,000 disaster information reporters are responsible for collection

and reporting of disaster information. The information reported by them is dynamically managed and updated by database. *Bei Dou* system realizes that once the ground communication is interrupted, the disaster situation can be directly reported to NDRCC by *Bei Dou* SMS, and automatically decoded and translated into NNDIMS database.

Country Case: Zambia

The Zambian government and WFP have been implementing the R4 Rural Resilience Initiative since 2014, to enable vulnerable rural households to increase their food and income security in the face of increasing climate risks. An Integrated Risk Management Strategy incorporating 4 components.

1. Risk Reduction through Climate Smart Agriculture. Activities, selected in consultation and agreement with local stakeholders, enable communities to reduce vulnerability to climate shocks and increase natural asset base and productivity by building or rehabilitating tangible community/household level assets, improving resource management through asset creation. Conservation agriculture is one of activities, which builds on FAO's Conservation Agriculture Scale Up (CASU) in 2015, to address issues of land degradation, soil fertility and poor farming practices. Activities also assists vulnerable smallholders to access insurance under the Insurance for Conservation Agriculture (IFCA).

2. Risk Transfer: Weather Index-based Insurance. Under the risk transfer component, Weather Index-based Insurance (WII) is mainly offered to smallholders to cover major shocks that affect the entire community – droughts and extensive dry spells. Participants pay for premiums with their labour on risk reduction assets. In future when farmers have been used to the idea of insurance and trust the system, they will be asked to pay for premiums in cash to make the program sustainable. When a severe drought hits, compensation for weather-related losses enable farmers to avoid selling productive assets

(such as cows, farm equipment etc.) and to get back on their feet much quicker. Since the income during a drought period is strengthened with a pay-out from insurance, it reduces the negative coping strategies, encourages them to invest in farming for higher productivity and serves as a collateral to obtain credit at better terms.

Successfully developed a digital payment platform (with the national insurance company and telecoms provider *MTN Zambia*) for enabling insurance pay-outs and premium payments in an effective and efficient manner through a short code. Working with relevant Government Departments through a recently formulated Technical Working Group (consisting of the Ministry of Agriculture (MoA), the Zambia Statistical Agency (ZSA), the Zambia Meteorological Department (ZMD), and the National Remote Sensing Centre, and the Smart Zambia Institute), to enhance technical knowhow for key government staff. The purpose is increase confidence and/or technical skills for index insurance product management, including product verifications (spatial representativeness of the product), increasing awareness of the government extension staff, and farmers at community-level (district and field level) on index insurance.

3. Prudent Risk Taking. With the savings buffer and assurance of protection during drought years, farmers can avail loans at better terms and use the credit towards income generating activities. Investing in good inputs or other productive assets such as cows, enables participants to become more productive in the long term. Psychologically as well, farmers are more confident of taking calculated risks by willingness to take loans for farming/small businesses, trying out crops besides the traditional maize/sweet potatoes etc. that have the potential to over higher profitability etc. R4 has partnered with Vision Fund (VFZ) to develop an adequate credit product to be marketed to farmers commercially, meaning that they will have the option to apply for it and be selected based on eligibility. The credit product has been developed specifically for R4 farmers, tailored to their landholding size and type of crop production. Depending on preference and capacity, farmers will select an input loan package from a select agro-dealer that will provide them with an invoice for the order. VFZ will then receive the invoice and pay the supplier, after due diligence. Upon harvest, when the farmer markets their surplus through P4P, WFP will make payment for the supply which is then offset against the outstanding loan the farmer owes. This is an initial approach while farmers gain

the capacity to access and repay commercial loans. The loan product will be offered to all R4 participants but will not be compulsory.

After successfully piloting the MAANO Virtual Farmers Market (VFM) – an e-commerce android mobile application/platform that connects smallholder farmers (SHF) and buyers through a bid business model – WFP is enhancing features on the app, based on a user interface survey recommendation conducted in 2018. To make the application sustainable, WFP/MOA has partnered with Zambia National Commercial Bank (Zanaco) and Musika, to rebuild VFM with enhanced features that provide additional value to smallholder farmers but also to various value chain players. The application will also be private sector driven to guarantee scale and sustainability, with WFP providing market mobilization services to ensure smallholder farmers benefit the most. The new features will include an automated payment system, farmer registration, farmer profile management, seller profile functionality, buyer profile functionality, and electronic extension messaging. Other features will include price and weather information, bulk SMS, and USSD functionality.

WFP/MOA is supporting the Zambia Meteorological Department to develop a robust Agriculture Meteorology (AGRO-MET) extension service, that will enhance smallholder's decision-making during the agricultural season. Plans include strengthening dissemination channels of digital agro-met information through community radios, SMS, television, extension services and others. The MOA/WFP partnership has also launched a series of radio programmes raising awareness on activities like insurance, market access and soon to come savings. E-extension is being supported by using bulk messaging and videos to farmers on insurance and market access activities.

4. Risk Reserves: Cash and in-kind savings. R4 strongly encourages its participants to save regularly via community-based savings groups or other mechanisms. Savings can also be accumulated in-kind, i.e. save products rather

than saving cash. For example, in R4 Senegal farmers store their surplus yield in cereal banks and sell them later in time when the market price is higher.

In Zambia, most savings groups are created and work under the Village Savings and Loans (VLS) model. The basic principle of the VSL system is that members self-select each other into groups of 15 to 30 people for the purposes of saving and lending. They are trained and set up their own savings group rules (e.g. amount and frequency for savings, interest rate, etc.). When the amount of money saved by the group is enough, members are encouraged to borrow from the funding pool at the mutually agreed upon loan terms and monthly interest rates. This allows the fund to grow and after one cycle (usually 12 months) the total amount is shared between the group members.

The purpose of a VSLA is to provide simple savings and loan facilities in a community that does not have easy access to formal financial services. The groups have matured and are now being linked to various formal financial institutions offering business development services such as digital savings wallets, access to additional capital through the savings-credit linked products. These products are being offered by partners such as Vision Fund, Zambia National Commercial Bank (Zanaco), and Madison finance (MFinance), amongst others.

ABBREVIATION

AGRO-MET	Agriculture Meteorology
CASU	Conservation Agriculture Scale Up
DRR	Disaster Risk Reduction
ERP	Emergency Response Plan
FAO	Food and Agriculture Organization
FFA	Food Assistance for Asset
IASC	Inter-Agency Standing Committee
IFCA	Insurance for Conservation Agriculture
MEM	Ministry of Emergency Management of People's Republic of China
MFinance	Madison Finance
MoA	Ministry of Agriculture of Zambia
NNDIMS	National Natural Disaster Information Management System
P4P	Purchase for Progress Unit, World Food Programme
SHF	Smallholder Farmers
SMS	Satellite Monitoring System
TL	Timor-Leste
VFZ	Vision Fund
VFM	MAANO Virtual Farmers Market
VLS	Village Savings and Loans
WFP	World Food Programme
WII	Weather Index-based Insurance
Zanaco	Zambia National Commercial Bank
ZMD	Zambia Meteorological Department
ZSA	Zambia Statistical Agency

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