Strengthening resilient food and agriculture systems – Implementing the Sendai Framework for DRR in the Agriculture Sector in Asia and the Pacific

Report of the Regional Conference

15-16 March 2018

Hanoi, Viet Nam

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Suggestions for Nga and designer:

1. Do we assume that the **foreword and overall report contents has been approved** by MARD including the Vice Minister?
2. The comment on page 9 is unclear to me. The 11 ministries / departments are mentioned in the adjacent visual.
3. Photos:
    a. Overall, the photos used are fine… Once the overall photo and layout design is ready then will provide final suggestions.
    b. I would suggest to change the title from 'picture' to 'photo' everywhere.
    c. No need to have the list of photos in the Table of contents.
    d. May be replace picture 1 by another picture where there are more participants around the registration table?
    e. I would suggest to drop picture 6 because it is not a complete picture in terms of all the key speakers.
    f. The pictures 18 (forestry session panel) and 23 (urbanization session panel) are not accurate… as in these do not capture all the panellists. I know that the layout of the panellists (3 + screen + 3) was such that a single photo might not have captured it. However, it may be useful to try to collage two photos where all panellists are visible / cropping and merging two photos to cover all the panellists.
    g. The 2 photos under picture 26 are good but the title has to be "participants" only since some of the participants from that photo are also included as panellists in picture no. 25 for the same session! Further, it would be also good to include 1-2 photos from day 1 opening plenary to depict the overall participants of the conference. *Just that there were more participants in the opening plenary than on day 2 closing plenary…*
4. An overall suggestion to the designer would be to try and include the various actions listed under the 4 priorities in each of the sessions in some box / design / colour / layout.
5. Could the final list of participants (actual who registered at the venue) be provided? We would need it for the online link and FAO records as well.

Foreword

More than 2.2 billion people in Asia rely solely on agriculture for their livelihoods. The agriculture sector, encompassing crop, livestock, fisheries-aquaculture and forestry, provides food security, is the largest employer and contributes significantly to trade and economic growth in the region.

Heavily dependent on climate, natural resources and globalizing trade, agriculture is highly exposed to multiple risks. Between 2005 and 2015, natural hazard induced disasters such as flood, drought, and typhoon caused USD 48 billion economic loss to agriculture. Much less is known about losses due to pests, animal diseases as well as conflicts. Climate change will intensify these risks. In developing countries, agriculture accounts for 23 percent of total disaster loss but 26 percent of losses caused by climate related disasters.

Beyond direct loss, disasters have long lasting impacts because of the way they reduce income, deplete savings, erode livelihoods, and exacerbate the risk of food insecurity and malnutrition, particularly for vulnerable women and children.

Unless this trend is reverted and agriculture becomes more resilient, the 2030 Goals to end hunger and poverty and achieve sustainable development will not be possible.

This report provides a summary of rich deliberations at the Regional Conference *"Strengthening resilient food and agriculture systems – Implementing the Sendai Framework for Disaster Risk Reduction in the Agriculture Sector in Asia and the Pacific*", which was organized by the Food and Agriculture Organization of the United Nation, in collaboration with the Governments of Viet Nam and Mongolia on 15-16 March 2018 in Hanoi, Viet Nam.

The Conference articulated the readiness and commitment of the agriculture sector in the region to take a strong role in delivering disaster risk reduction, climate change adaptation and strengthening resilience. Analysing evolving risks facing food and agriculture, participants of the Conference reviewed progress and challenges in addressing these risks and recommended ambitious but vital actions for each agricultural sub-sector to move towards resilience more progressively through the implementation of the four Priorities for Action of the Sendai Framework for DRR, in its coherence with the Paris Agreement and the SDGs.

The report provides important input for the development of an Agriculture Sector Action Plan to implement the Sendai Framework (AgriSendai ASAP) for Asia.

Kundhavi Kadiresan	H.E. Le Quoc Doanh	H.E. Saule Janimkhan
Assistant Director General and Regional Representative	Vice Minister	Vice Minister
Food and Agriculture Organization of the UN	Ministry of Agriculture and Rural Development	Ministry of Food, Agriculture and Light Industries
	Government of Viet Nam	Government of Mongolia

Executive Summary

Observing severe impacts of disasters on agriculture and food security and recognizing the increasing risks to the sector, the Food and Agriculture Organization of the United Nations (FAO) Regional Office for Asia and the Pacific (RAP), in collaboration with the Ministry of Agriculture and Rural Development (MARD), Government of Viet Nam, and the Ministry of Food Agriculture and Light Industry (MoFALI), Government of Mongolia, organized a regional conference titled "Strengthening resilient food and agriculture systems – Implementing the Sendai Framework for Disaster Risk Reduction in the Agriculture Sector in Asia and the Pacific" on 15-16 March 2018 in Hanoi, Viet Nam.

An activity of FAO Regional Initiative on Climate Change, the Conference aimed to identify pathways in the region to achieve FAO's vision for "more resilient food and agriculture systems and dependent livelihoods", as stipulated in the FAO Strategy on Climate Change, adopted in March 2017. In line with the 2030 Agenda for Sustainable Development, notably the Sendai Framework for Disaster Risk Reduction, the Conference addressed resilience to multiple risks: of natural hazard-induced disasters (such as flood, drought, typhoon and earthquake), of food chain crisis (such as pests, animal health diseases) as well as touched upon the cascading nature and impacts of disasters in case of conflicts.

More than 200 participants from 26 countries participated in the Conference. The Conference programme included the global launch of the FAO report '2017 Impacts of disasters on agriculture and food security', four plenary and seven parallel sessions, covering all agriculture sub-sectors (crop, fisheries, livestock, forestry) and important issues of Science and Technology, disaster risk financing and the interrelation of rural, urban and agriculture risks to assess investments needs in agriculture also in the context in urban resilience.

Deliberations at the Conference resulted in the following **outcomes**:

- **Increased understanding of the vulnerability to and impacts** of natural disasters, food chain crisis and conflict on agriculture, as evidenced in the FAO report "2017 impacts of disaster and crisis on agriculture and food security", particularly the impacts on vulnerable and smallholders that push them into vicious debt cycles, negative coping strategies and poverty.

- **Recognition of the urgent need** to improve disaster damage and loss data-information management in agriculture sectors, especially in fisheries/aquaculture and forestry where disaster losses are under-accounted for, to inform sector planning and to contribute to the monitoring of the Sendai Framework and related SDGs.

- **Shared understanding** among agriculture, disaster management, climate change and other sectors that the Sendai Framework for DRR, Paris Agreement and 2030 Agenda provide new opportunities for the agriculture sectors to accelerate actions in building resilience for sustainable agriculture and poverty reduction; and that the agriculture sector provides a good entry point to demonstrate a coherent implementation of the 2030 Agenda as well as of the importance of investing more in disaster risk reduction (DRR) and Climate Change Adaptation (CCA) actions within in the agriculture sector.

- **Reinforced commitments by the agriculture sector and related stakeholders** for effective implementation and monitoring of the Sendai Framework in coherence with the Paris Agreement and the SDGs. In line with the four priorities of the Sendai Framework, following priorities for actions by the agriculture sector were identified:

    - **Priority 1***:* Improve the understanding of risks, especially risks to smallholders, in recognition of the changing nature and cascading risks deriving from transboundary, climate change and development processes, and the intertwining risks at the interface of urban, rural and agricultural food systems. Develop standards and tools for risk assessment, risk awareness and the use of risk information. Strengthen data/information management systems and promote participatory risk assessment.

    - **Priority 2:** Develop and implement, policies, strategies and action plans to proactively address risks in agricultural sub-sectors, while mainstreaming agriculture DRR into community/local and national development planning. Forge institutional linkages and reinforce regulatory and incentive mechanisms to invest in DRR.

    - **Priority 3:** Invest in livelihoods diversification and local capacity building. Strengthen access, particularly of smallholders to credit and innovative risk financing and risk transfer instruments. Create enabling environment for the private sector engagement.

    - **Priority 4:** Improve seasonal forecast and early warning, including for transboundary threats and disasters, ensuring tailor made information is accessible and understandable for its intended recipients. Strengthen national and local capacity for preparedness and response in agriculture sector.

- **Agreed key messages** for FAO 34th APRC and 2018 Asian Ministerial Conference on DRR (AMCDRR).

- **Proposed the development and implementation of a regional agriculture sector implementation plan of the Sendai Framework** (AgriSendai ASAP) to facilitate regional collaboration, joint learning and partnerships to advance the agenda and complement plans and actions at the national level.

Partner organizations (ADPC, CGIAR- CCAFS, CIAT, GIZ, GEAG, and UNISDR) who worked with FAO Regional office for Asia and the Pacific (RAP) in organizing this Conference, are committed to continue working with countries in the region and FAO in developing the AgriSendai ASAP and its anticipated implementation.

Introduction

Conference background and objectives

Disasters including natural hazard-induced, plant and animal diseases, food chain crises as well as protracted conflicts severely impact agriculture and food security. Between 2005-2016 natural hazard-induced disasters (such as flood, drought, typhoon) alone caused the Asia and the Pacific region USD 48 billion in crop and livestock production loss – more than double of the loss in Latin Americas and almost double compared to Africa.

With more than 2.2 billion people in Asia rely on agriculture alone for their livelihoods[i], disasters have caused food and nutrition insecurity, loss of income and pushed millions of vulnerable smallholder farmers into vicious debt cycles, negative coping strategies and poverty.

The agriculture sector (encompassing crop, livestock, fisheries and forestry sub-sectors) along with agro-based activities along the food chain is facing continuously ever increasing risks, driven not only by enhanced exposure to extreme events but also by degrading soils, water and other natural resources, changing land use, rapid urbanization, market volatility, as well as unsustainable practices in the sector itself to meet the high demands. 'Greying' and 'feminization'[ii] of agriculture contribute to the sector's vulnerabilities.

In addition, climate change impacts will cause shifting of agriculture zones due to decline in freshwater availability, declining yields, limiting of livestock numbers, significant fall in volume and mass of fish, degradation of ecosystems and natural water flows, and extinction of many forest species coupled with increased frequency of invasive pests and diseases[iii]. Climate variability and change will increase the frequency and intensity of hazards, which coupled with unmatched vulnerability reduction, exacerbates disaster risks.

Strengthening resilience of food and agriculture systems to disasters and climate change is fundamental for achieving a number of the Sustainable Development Goals (SDGs)[1]. The 2030 Agenda (SDGs, Sendai Framework for DRR, Paris Agreement and the New Urban Agenda amongst others) provides a unique opportunity for reducing risks and enhancing resilience in the agriculture sector. The agriculture sector also features prominently in nearly all 34 Nationally Determined Contributions to the Paris Agreement from Asia and the Pacific, and in national plans to implement the SDGs and the Sendai Framework for DRR. However, practical examples of how this will trigger enhanced local action for DRR are still scattered or not well documented/disseminated. Further, there appear to be few bottlenecks and stumbling blocks not only in the nuanced understanding of risks but also in the priority and pitch of policy and programmatic actions on DRR and CCA in the agriculture sector due to divergent viewpoints and competing priorities of concerned key stakeholders. A better common understanding of how the implementation of the Sendai Framework will support resilient food and agriculture systems, what the agriculture sector can offer to the implementation process, and how the agriculture sector can take a more proactive role in delivering the SFDRR at regional, national and subnational levels will facilitate more concerted and collaborative actions.

[1] SDG1 – No poverty, SDG2 - Zero hunger, SDG11 - Resilient communities, SDG13 - Climate actions, SDG 15 – Life below Water, SDG 16 - Life on Land

In this context, the FAO in collaboration with the MARD, Government of Viet Nam decided to organize a two-day regional conference to facilitate multi-stakeholder deliberations to identify workable pathways for the agriculture sector to play a proactive role in implementing the Sendai Framework for DRR. Entitled "*Strengthening resilient food and agriculture systems – Implementing the Sendai Framework for DRR in the Agriculture Sector in Asia and the Pacific*" the conference aims to:

1) Raise awareness on the ample, yet largely untapped opportunities that the agriculture sector provides to reduce risks and promote resilience and reinforce commitments of the sectors to implementing the Sendai Framework for DRR and related global frameworks.
2) Strengthen the understanding of existing and emerging disaster and climate risks to food and agriculture in light of rapid urbanisation and the intertwined urban and rural risks' context, particularly through the experiential narratives of at-risk population (primary producers, extension workers, post-production process entrepreneurs, forest dependent communities, etc.) from the region.
3) Take stock of on-going efforts in Asian countries to reduce disaster risk and strengthen resilience of food and agriculture systems and dependent livelihoods.
4) Identify, through a multi-stakeholder dialogue, required policies, programmes and actions for the agriculture sector to proactively contribute to the implementation of the Sendai Framework for DRR and to strengthen its resilience against disaster and climate change.

Conference programme at a glance

Following the opening ceremony, four plenary and seven Thematic Sessions were held over the two-day conference. At the closing ceremony, the key messages for FAO 34th APRC and 2018-AMCDRR were delivered by the by Vice-Minister of MARD, Government of Viet Nam and Vice-Minister, MoFALI, Government of Mongolia. The snapshot of the conference programme is provided below:

Day 1:

Opening Ceremony:

- Welcome and Opening Remarks
- Global Launch of FAO 2017 Report

First Plenary: From Loss to Resilience

Parallel Sessions (4): Unpacking Risks and Pathways to Resilience in Light of the 2030 Agenda by Agriculture sub-sectors

Day 2:

Plenary 2: Common Priorities of Agriculture sub-sectors

Parallel Sessions (3): Innovations for DRR and CCA: Science & Technology, Risk Finance, Resilient Urbanization

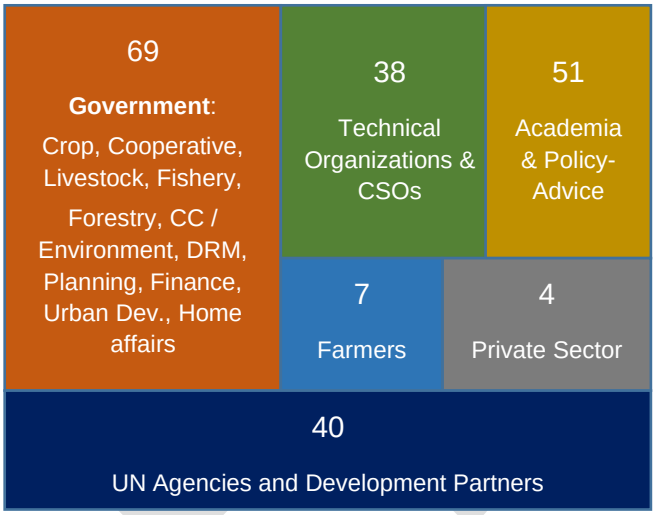
Reporting back

Final Plenary: The Ways Ahead

Closing ceremony: Co-Chair Summary - Messages for FAO 34th APRC & 2018-AMCDRR

Participant-profile

More than 200 delegates from 26[iv] Asia-Pacific countries representing 11 ministries and departments, UN Agencies and development partners, technical and civil society organizations, academia, think-tanks/ policy advice organizations participated in the conference along with farmers and private sector representatives. See adjacent figure for profile of participants.



A mix of senior government officials comprising Vice Ministers, Secretary, Deputy Secretary, Director General and technical officers, and local government officials representing agriculture sector (crop, livestock, cooperative, fishery, aquaculture, and forest), disaster risk management (National Disaster Management Organization), climate change, environment, planning, finance, urban development, home/internal affairs were present. The combination of a wide range of government officials and diverse stakeholders provided a comprehensive and open dialogue - including among those with divergent viewpoints – to arrive at shared understanding and recommendations for concerted actions.

Picture 1. Registration session

Picture 2. Over 200 participants from 26 Asia Pacific countries

Opening Ceremony

Picture 3. Kundhavi Kadiresan - ADG/RR of FAO RAP delivered the opening speech at the Regional AgriSendai Conference 2018

In her welcome remarks, Ms. Kundhavi Kadiresan, ADG/RR of FAO RAP highlighted the importance of identifying pathways towards more resilient food and agriculture systems in the region and the for the agriculture sector to play its much needed role in disaster risk reduction (DRR) and climate change adaptation (CCA) agenda. She reminded the conference of the devastating impacts of disasters on agriculture and how climate change will exacerbate disaster risks. The presence of many sectors and stakeholders at the conference reiterated that resilience of agriculture and dependent livelihoods, mainly of smallholders, is a shared concern in the region. Ms. Kadiresan highlighted some opportunities emerging from the 2030 Agenda for addressing risks and building resilience in the agriculture sector and suggested specific actions in line with the four priorities of the Sendai Framework on DRR. She concluded by urging the delegates to identifying concerted actions, evolving an action plan for implementing the Sendai Framework in the agriculture sector in the region. Such an action plan will complement national actions while facilitating the sharing of knowledge, technologies and promoting regional collaboration across countries. She assured countries and stakeholders of FAO technical support for the development and implementation of the action plan in a joint journey toward resilience in the agriculture sector.

H.E. Le Quoc Doanh - Vice Minister of MARD, Viet Nam, congratulated FAO on this vital initiative given the high level of disaster vulnerabilities of the region including Viet Nam. He emphasized the importance of agriculture and food security for political and social stability and socio-economic development of developing countries in Asia-Pacific. The Vice Minister highlighted that agriculture, especially food production has helped Viet Nam stand firmly during regional and global economic crises, maintain high economic growth, social stability and reduce poverty. Considering disaster losses and future risks, he called for more actions to support farmers, particularly the poor and vulnerable smallholders to access information, appropriate technologies, markets and resources to adapt to climate change. He concluded by reiterating that in the context of climate change and urbanization, poverty cannot be reduced without strengthening resilience for food and agriculture systems and indicating the strong support from the Government for a regional action plan in this regard.

Picture 4. H.E. Le Quoc Doanh - Vice Minister of Agriculture and Rural Development of Vietnam delivered the opening speech at the Regional AgriSendai Conference 2018

In her remarks, Her Excellency Ms. Saulye Janimkhan, Vice Minister, Ministry of Food, Agriculture and Light Industry (MoFALI) of the Government of Mongolia, congratulated the Government of Viet Nam and FAO on this important initiative. She shared the concerns on disaster impacts on agriculture, especially on livestock, which is a critical sector in Mongolia. She expressed commitment from MOFALI to take forward the key recommendations of this conference at the 2018 Asian Ministerial Conference on DRR to be hosted by Government of Mongolia in July 2018 and to champion the implementation of the recommendations in Mongolia.

Picture 5. H.E. Saulye Janimkhan - Vice Minister of Food, Agriculture and Light Industry of Mongolia delivered the opening speech at the Regional AgriSendai Conference 2018

The keynote speech "Strengthening Food Security and Resilient Livelihoods – the Daunting Task of Agriculture Sectors" by Mofazzal Hossain Chowdhury, Maya, Bir Bikram, MP, Honourable Minister for Disaster Management and Relief, People's Republic of Bangladesh was delivered by Dr. Md. Atikur Rahman, Additional Secretary, Ministry of Disaster Management and Relief, Bangladesh. Honorable Minister Maya, Bir Bikram sent his congratulations to the Government of Viet Nam and FAO. The criticality of this conference in Asia was highlighted given the deep transformations in the agriculture sector and multiple risks to it in the context of climate and rapid urbanization in the region. Important lessons emerging from Bangladesh's experiences in disaster risk management including in the agriculture sector were shared. The key note speech concluded by urging the delegates to renew their commitment and intensify efforts in reducing risks to agriculture sector and thereby strengthening overall societal resilience.

Picture 6. Key speakers of the at the Regional AgriSendai Conference 2018 – March 2018 – Hanoi, Vietnam

Global launch: FAO Report '2017 – The Impact of Disasters on Agriculture and Food Security'

Picture 7. Inauguration of FAO report 2017: Impacts of disaster and crisis on agriculture and food security

FAO new report "2017: Impacts of disaster and crisis on agriculture and food security"[v] was inaugurated by the Vice Ministers, co-chairing the Conference, along with the Asia-Pacific Regional Representatives of FAO and UNISDR. This report, part of FAO's commitment to take forward the implementation of the Sendai Framework for DRR, analyses the impact of natural hazards' induced disasters, food chain crises and conflicts on the agriculture sectors (crop, livestock, fishery-aquaculture, and forestry) and provides an insight into the changing nature of risks to the same. The report was prepared and coordinated by FAO's Strategic Programme Team on Resilience in close collaboration with Headquarters Statistics Division, and received inputs from all technical departments. Key messages of the report include:

1) Building on the FAO 2015 report, which analysed the impact of disasters and crisis on agriculture, this 2017 report presents a more holistic, improved and updated method and analysis in terms of: (a) more precise estimation of damage and losses; (b) lower thresholds, taking into account smaller-scale disasters; (c) all agricultural commodities considered; and (d) bringing in analyses of forestry, fishery and aquaculture in addition to crop and livestock sub-sectors.

2) This 2017 report, leveraging FAO sectoral expertise, covered new ground by analysing impact of: (a) Transboundary animal and plant diseases on agro-based livelihoods and food security; and (b) Conflicts and protracted crises on agriculture sector and food security.

3) The report concludes that between 2005 and 2015 natural disasters cost the agricultural sectors of developing country economies a staggering $96 billion alone in damaged or lost crop and livestock production; half of that damage -- $48 billion worth – occurred in Asia.

4) The comparison of losses across sectors revealed that agriculture sector accounted for 23 percent of total disaster losses and 26 percent of losses caused by climate-related disasters in developing countries. All told, nearly a quarter of all financial losses caused by natural disasters between 2005 and 2015 were borne by the agricultural sector.

5) The report also warns that this is not yet the full picture as more needs to be known about damage and loss to fisheries, aquaculture and forestry sub-sectors. It also highlights the need for: (a) improved data and database, data collection at local level, information management system, and knowledge on impact of disasters on agriculture sub-sectors; (b) giving voices to 'silent' / local disasters; (c) strengthening capacities at national and sub-national levels on improved mechanisms for data collection, management and analysis as well as improved partnerships between the National Statistics Offices, Agriculture Ministries and Disaster Management Organizations for enabling a coordinated and coherent application of FAO's enhanced assessment method, which - as indicator C2 – has become part of the new SFDRR monitoring system.

Picture 8. Mr. Shukri Ahmed, Deputy Strategic Programme Leader, FAO presented findings from report "Impacts of disaster and crisis on agriculture and food security"

From Loss to Resilience – Progress, Challenges and Priorities for Agriculture Sector

Picture 9. High-level panellists of Plenary session "From Loss to Resilience – Progress, Challenges and Priorities for Agriculture Sector"

This first plenary session, was chaired by H.E. Mr. Le Quoc Doanh, Vice Minister, MARD, Viet Nam and co-chaired by Mr. Shukri Ahmed, Deputy Strategic Programme Leader, FAO. Ms. Galimira Markova, Disaster Impact Assessment Statistician FAO and Mr. Piero Confroti, Deputy Director ad interim, FAO Statistics Division presented the findings of the FAO 2017 report. The high level panel included: (i) Mr. Jagath P Wijeweera, Secretary, Ministry of Fisheries and Aquatic Resources Development, Sri Lanka; (ii) H.E. Ty Sokhun, Secretary of State, Ministry of Agriculture, Forestry and Fisheries, Cambodia; (iii) Dr. Bui Ba Bong, former Vice Minister of MARD, Viet Nam; (iv) Ms. Loretta Hieber Girardet, Chief, UNISDR Regional Office for Asia-Pacific; and (v) Dr. Nguyen Van Tinh, Director General, MARD, Viet Nam.

Discussion delved into the findings of the FAO 2017 report as a basis for a better understanding of risks and vulnerabilities facing food and agriculture and highlighted the progress and challenges in managing risk and building resilience in the sector and identified priority actions and investments for the agriculture sector to play a bigger role in implementing the Sendai Framework for DRR, the Paris Agreement and the SDGs to revert current disaster loss trend, reduce vulnerabilities, particularly of smallholders farmers and contribute to food security and poverty reduction.

Picture 10. Ms.Galimira Markova - presented the findings from FAO report 2017 – Impacts of disaster and crisis on agriculture and food security

Key messages – priorities and recommendations – emerging from this session are:

1) Impact of disasters on agriculture sector varies regionally, within countries and across boundaries. Impacts are cross-sectoral and often cascade beyond the agriculture sector. Preventive actions need to be planned taking into consideration regional, transboundary and local context-specific risks.

2) The risks to the agriculture sector are real and to be addressed now. There is an urgent need to be equipped for the 'new normal' of disasters that are driven by the evolving nature of risks.

3) Disaster risks to the agriculture sector are often enhanced by factors outside the sector. The increasing pressures on the agriculture sector - climate change, rapid urbanization, globally connected economies and market forces, transforming consumption / demand patterns, as well as changing priorities of rural youth and producer families – must be addressed through a comprehensive approach for risk-sensitive agriculture.

4) Disaster damage and loss data enables a 'confrontation with reality'. As resources become more scare, evidence will become more important. The need to build capacities for agencies for statistical analysis and monitoring of disaster impact was highlighted. In this regard, data discrepancies between different ministries – water resources development, agriculture, fisheries, DRM and CCA, all have different data on same data points - require concrete ways for reconciliation and coordination of data and information management.

5) A number of Sustainable Development Goals (SDGs) and their targets cannot be reached unless agriculture sector is made resilient. For this to happen there is a need for greater political support reflected in earmarked budgets and policy and institutional changes. Further, viable vehicles of risk sensitive agriculture like climate smart agriculture, risk-informed post-harvest management and safety nets need to be widely adopted by Asia-Pacific countries.

6) Agriculture sector specific DRR strategies/action plans contribute to Target E of the Sendai Framework that should be achieved by 2020. Experiences from countries that have developed these sector strategies and plan show challenges in translating them into actions. The need to embed these sectoral plans also into the wider national DRR agenda or regional DRR platforms was highlighted. Coordinated and coherent actions of the UN system such a through the UN Plan of Action for Resilience are instrumental.

7) Countries review of their implementation of the 'Asia Implementation Plan of the Sendai Framework' would identify gaps including in the agriculture sector. The next Asia Implementation Plan of the Sendai Framework is expected to be endorsed at the 2018 Asian Ministerial Conference for DRR (AMCDRR) which could integrate agriculture priorities more explicitly.

8) There is a clear willingness to break free of the repeated annual cycle of response and recovery from disaster until the next disaster occurs. Continuous actions at policy, institutions and production sites' level are necessary in the immediate, medium and long term.

9) Some questions emerged during the discussion include:
    a. what about risks created by the agriculture sector and how they can be quantified;
    b. how to better use forecast analysis for the agriculture sector for risk reduction as well as for better preparedness and early actions;

c. how to better use the existing regional mechanisms for furthering the transboundary actions on DRR in agriculture sector;
d. what are the concrete ways of aligning local resilience strategies with national ones;
e. how to overcome gaps in institutional coordination that is at the heart of dissonance between sub-sectors and what would be the specific mechanisms for it?

The discussion ended by highlighting that the agriculture sector provides a unique opportunity to address disaster and climate risks in a concerted manner and to coherently implement the 2030 Agenda. It is vital to ensure that the national and sub-national strategies on DRR recognise the role of the agriculture sector.

Unpacking Risks and Pathways for Resilience in Agriculture Sub-sectors in Light of the 2030 Agenda

Four parallel sessions on Day 1 of the Conference were devoted to identifying priority actions for agriculture sub-sectors – crop, fisheries and aquaculture, livestock and forestry in implementing the Sendai Framework for DRR, in line with its four Priorities for Actions. For each sub-sector, discussion focused on:

a) analysing the existing and evolving risks to the sub-sector;
b) taking stock of ongoing actions to manage risks to and build resilience of the sub-sector in light of the 2030 Agenda;
c) identifying priority actions at policy, institution and programmatic level for strengthening the resilience of the sub-sector to further the implementation of the SFDRR and the overall 2030 Agenda. The SFDRR four Priorities for Action, namely (i) Understand disaster risk; (ii) Strengthen disaster risk governance; (iii) Invest in DRR for resilience and (iv) Strengthen disaster preparedness for effective response and to build back better in recovery, served as the framework for identifying priority actions in the agriculture sector.

The Chair and/or Moderator of these four parallel sessions presented the sessions' outcomes and recommendations at the Second Plenary, chaired by Mr. Anura Sathurusinghe, Conservator General of Forests, Department of Forest, Ministry of Mahaweli Development & Environment, Government of Sri Lanka. Following plenary discussion identified and built consensus on the common critical actions across the sub-sectors to implement the Sendai Framework. Discussion was also focused on the vital importance of and experience in addressing gender equalities, which was stimulated by a presentation by Dr. Ha Thuy Hanh, Deputy Director General, National Agricultural Extension Centre (NAEC), Ministry of Agriculture and Rural Development (MARD), Viet Nam.

Key messages - actions and recommendations – emerging across all agricultural sub-sectors include:

1) In Asia and the Pacific, agriculture plays a vital role in providing food and nutrition security, employment, economic growth and livelihoods. The sector is also hardest hit by disasters that impact people, assets as well as natural resources.

2) There is an urgent need to improve agriculture disaster damage and loss data-information management to capture the disproportionately burdens of disasters on vulnerable smallholder farmers, fishers, herders and foresters, to inform planning and contribute to the monitoring of the Sendai Framework and related SDGs. This is particularly important for fisheries-aquaculture and forestry where disaster losses are under-accounted for.

3) All agricultural sub-sectors are going through unprecedented changes, facing challenges of growing and changing food demand, urbanization, youth out-migration as well as rapid degradation of natural resources such as forests, marine, coastal and inland water bodies. These also drive increasing risks of disaster and climate change, worsening vulnerabilities of agriculture dependent communities. Enhancing the understanding of risks facing agriculture, especially risks to smallholders is urgently required. For this, it is important to:

- Build technical capacity for sub-sector specific risk assessment, in recognition of the changing nature and cascading risks including transboundary, from climate change and development processes, and the intertwining risks to the urban, rural and agriculture;
- Strengthen national and sub-sectors' information management systems, database on vulnerabilities, risks and impacts of disasters and ensure access to these;
- Develop standards and tools for risk assessment, use of risk information, measurement of impact, and other decision support tools;
- Develop and disseminate technology advisory for specific disaster risk in a specific geographical area;
- Compile and disseminate in local languages knowledge and good practices in risk assessments, enhancing risk understanding and communication as well as measures to mitigate impacts of various disasters and climate change in sub-sectors;
- Include risk and DRM-CCA knowledge and data in the formal and informal education programs and use public media campaigns, both for general public and tailored for focus groups to raise awareness amongst risk-prone communities; and
- Promote multi-stakeholder participatory risk assessments and risk communications.

4) Strengthening disaster risk governance in agriculture sector is fundamental to reduce risk and build resilience. This requires urgent actions to:

- Develop and implement coherent strategies and action plans to address risks across sub-sectors while mainstreaming DRR and CCA in overall agriculture development as well as agriculture resilience building in community/local and national development planning.
- Enhance coordination amongst the four sub-sectors to address risks and resilience building in a concerted manner, adopting proven approaches like ecosystem-based, sustainable watershed, natural resources and territorial management that involve all or parts of the sub-sectors.
- Look beyond a single sector, department and country to ensure that DRM policies empower sub-sectors - fisheries, livestock / animal husbandry, extension, and such - to coordinate among and with other departments;
- Forge institutional linkages and reinforce regulatory and incentive mechanisms for risk reduction and management and especially for preventing risk creation;
- Leverage existing transboundary NRM platforms for development of sub-sector specific risk management actions;
- Strengthen local institutions and capacities especially for agriculture, disaster risk management and local stakeholders.

5) Promote DRR and CCA investments in the agriculture sector in areas such as livelihoods diversification, building capacity of local communities, developing tools and practices. This would require:

- Create policy enabling environment at national and local level to encourage private sector investment in DRR and CCA (e.g. tax incentives, supportive infrastructure, conducive departmental procedures, and such);
- Deepen engagement with the private sector, promote public private partnership for DRR-CCA in sub-sectors, for instance, establishment of social enterprise/business model or

shock-proofed post-harvest infrastructure and value chains. Develop concrete guidelines for private sector involvement in DRR;

- Build capacity of local officials and communities on approaches, tools and practices to integrate DRR and CCA actions;
- Use modern technologies for timely exchange and sharing of DRR information and data within and across countries;
- Identify measures to maintain connectivity and flows of inland water bodies across different habitats to reduce the impact of hydrological and meteorological hazards;
- Develop risk finance mechanisms including insurance in sub-sectors especially fishery-aquaculture and forestry. Document lessons learned especially on how to deal with local political economy factors to increase risk insurance coverage for smallholders;
- Improve availability and access of data and information to facilitate investment in DRR-CCA. Build capacity to make data use and dissemination more efficient including promoting sharing of knowledge, skills, technologies and materials, preferably through regional cooperation;
- Increase government investments in education and technical support for producers especially smallholders across the sub-sectors to promote adoption of climate resilient technologies.

6) Strengthening preparedness for effective response to and recovery from disasters and shocks that affect food security and agriculture dependent livelihoods will continue to be a priority of the agriculture sector. This would require:

- Improve seasonal forecasting and early warning, including early warning of transboundary disasters, ensuring the information/advisory is accessible and understandable by everyone especially smallholder producers so that they can act upon;
- For this, reliable and accessible weather and climate data, especially, data accuracy and availability at downscale level and location specific will be instrumental, thereby enabling farmers, fishers, herders, forest-dwellers to make better decisions and planning of the upcoming seasons;
- Strengthen transboundary collaboration and facilitate agreements on sharing information and early warning of disasters, impacting sub-sectors, between neighbouring countries, involving regional and international organizations;
- Strengthen national and local capacity for preparedness, early actions and response based on long term predictions, seasonal forecasts and early warnings;
- Promote indigenous knowledge and building synergy of science and local wisdom for effective early actions, response and recovery;
- Scale out successful pilots (climate advisory systems, Early Warning Early Actions, Emergency Response System);
- Establish community based reserves of sub-sector specific inputs (seeds, fodder, fish-food, saplings, etc.) in the form of Community Banks;
- Strengthen risk informed recovery planning and develop guidelines for build back better / regeneration of sub-sectors after disasters;
- Establish feedback mechanisms for documenting lesson learnt and local knowledge in recovery, rehabilitation and reconstruction planning and implementation.

7) There is enough evidence of the vital role that women empowerment, capacity building and participation plan in DRR and climate response, both CCA and climate mitigation. Documentation of experiences in Viet Nam and other Asian countries have also pointed to the efficient ways of engaging women and ensuring gender equalities.

<Note for designer – the following four parallel sessions belong to this Chapter, need to find a good way to present them)

Crop

Picture 11. Panellists of session: "Unpacking risks and pathways for resilient crop sector in light of the 2030 Agenda"

The first parallel session on crop comprised a panel discussion chaired by Mr. Kyaw Swe Lin, Deputy Director General, Department of Planning, Ministry of Agriculture, Livestock and Irrigation (MOALI), Government of Myanmar. Mr. Koos Neefjes, Senior Climate Change Expert provided the keynote presentation while the panel discussion was moderated by Dr. Godefroy Grosjean, Climate Policy Expert, CIAT. The panellists comprised of (i) Dr. Mak Soeun, Deputy Director General, Directorate of Agriculture, MAFF, Cambodia; (ii) Mr. Yiyi Sulaeman, Deputy Director for Research Collaboration and Dissemination, ICALRD, Ministry of Agriculture, Indonesia; (iii) Mr. Nguyen Quang Vinh, Secretary General of Vietnam Chamber of Commerce and Industry (VCCI), Vice President cum General Secretary of Vietnam Business Council for Sustainable Development (VBCSD); (iv) Mr. Bir Mandal, Deputy FAO Representative to DPRK; and (v) Prof. Nguyễn Thị Lang, High Agricultural Technology Research Institute for the Mekong Delta, Vietnam.

Key messages – actions and recommendations – emerging from this session are:

1) Agriculture sector overall and crop sub-sector is one of the most-affected sector due to disasters and climate change.

2) The crop sub-sector is facing many challenges, resulting among others from growing and changing food demand, lack of market access and information, youth out-migration, weak irrigation and drainage infrastructure, to name just a few. Development processes including urbanization and market-led agriculture policies further exacerbate the climate and hazards related risks to crop sector.

3) The need to – (i) understand the causes of potential crop losses and failures, (ii) strengthen crop resilience policies and institutions, (iii) invest in the resilience of crop-based livelihoods, and (iv) reduce exposure and vulnerability of crops, farms, businesses, supply chains, women and children, was highlighted. Further, farmers and private sector companies need to embrace the "new normal" (for e.g. living with the floods instead of living against the floods) and think out of the box. There are opportunities in adversity where farmers can take advantage of the changing condition to engage in more profitable livelihoods (for e.g. substitute fresh water crops for saline aquaculture). Reducing risks to crops can be achieved through complementary approaches: exposure reduction (e.g. improvement of infrastructure such as dykes, drainage and irrigation canals…); vulnerability reduction (e.g. adoption of suitable varieties, application of high technology); and risk transfer through crop insurance. Addressing the challenges in the crops sub-sector cannot be done in isolation of livelihood systems and it needs an integrated approach addressing the needs of climate change, food security and agriculture development.

4) Research has played a great role in supporting CCA and DRR. Progress in technology developments has significantly improved crop resilience and food security. Improved weather information and climate data have enabled better risk forecasting.

Picture 12. Group discussion - Session "Unpacking risks and pathways for resilient crop sector in light of the 2030 Agenda"

5) Examples from Cambodia and DPRK highlighted the need for technical capacity building among stakeholders to conduct context-specific risk assessments and better risk understanding. Even if available data and information may have some degree of uncertainty, this should not prevent from taking action. Improving availability and access to data and information, through capacity building and cross-country cooperation and information sharing, was suggested as a key priority for better understanding and managing disaster and climate risks. Further, the importance of scientific research, improved technology as well as greater support from private sector companies was also highlighted.

6) Climate smart agriculture, including conservation agriculture, emerges as an important approach to address risks to crop sector. For e.g. Vietnam has successfully introduced several types of stress-tolerant (short duration, saline-intrusion tolerant, pest and disease resistant) rice varieties. Need for additional resources and efforts to be directed towards the fields of genomics research was highlighted, while special efforts should also be placed on training of young scientists to prepare a new generation that can effectively tackle these problems in a team approach. Further, crop varieties and cultivation practices that take into consideration the climate variability and other hazards need to be promoted.

7) Market volatility is also a risk for farmers and we need to understand how this coincides and influences disaster risks. The need to support the integration of smallholders in the global value chain and advocating a sectoral approach for sustainable value chains was highlighted along with the criticality of partnerships with the private sector in addressing risks to the crop sector. In this context, Public Private Partnerships (PPPs) were brought forwards as a promising approach to mobilize funds and transfer/spread technologies. Further, temporality is more important for agri sector (than others) when thinking about impact and risks – for example logistics planning is very different for EW in crop sector than in other sectors – providing seeds takes time! Similarly, value chains are impacted over long term.

8) Critical actions recommended for implementing Priority 1 of the Sendai Framework in crop sector are:

    a. Produce disaster risk maps especially in risk-prone crop sector areas.
    b. Increase efforts towards assessment of risks and damage and loss to the crop sector and use this information for sector planning.
    c. Promote multi-stakeholder participatory risk assessment in the crop sector.
    d. Capacity building on climate information systems, crop modelling, weather forecasting, agricultural mapping.
    e. Capacity building at all levels in better understanding, analysis and communication of risks to the crop sector.

9) Critical actions recommended for implementing Priority 2 of the Sendai Framework are:

    a. Establish or improve existing DRR mechanism at national level whereby crop sector risk management is made integral to the same.
    b. Enhance information/database on vulnerabilities, risks, suitable varieties, seeds and cultivation practices.
    c. Put a highly responsive structured mechanism to address transboundary disaster risks (e.g. pests and diseases outbreak).

10) Critical actions recommended for implementing Priority 3 of the Sendai Framework are:

    a. Document existing initiatives (especially lessons learned on how they deal with local political economy factors and providing risk insurance coverage to small farmers) and create concrete guidelines for private sector involvement in DRR, including how to regulate / incentivise private sector action through policy.
    b. Identify suitable options for alternative livelihood and build capacity of local communities for taking new livelihood options.

c. Investments to establish seed banks at national and provincial level are a priority. Specifically, seed production system should be improved particularly at community level.
d. Availability and access of data and information is crucial in order to facilitate investment in DRR for resilience. Capacity building is necessary to make data use and dissemination more efficient. In this context, sharing knowledge, skills, technologies and materials (for instance on improved crop varieties), preferably through regional cooperation (SARC, ASEAN…) is key, together with support from international organizations. Government investments in providing better technical support and education for farmers is necessary in order to promote adoption of climate resilient technologies.
e. The private sector plays an important role in improving DRR capacity for the agriculture/crop sector. Therefore, the government needs to create incentives for private sector investment, while also improving their access to credit. Invest in strengthening early warning systems and community level strategies. Further important investments include developing climate risk/weather index based insurance instruments schemes that promote climate smart agriculture technologies.
f. Policies for social entrepreneurship for agri-DRR need to be promoted.

11) Critical actions recommended for implementing Priority 4 of the Sendai Framework are:

a. Scale out pilot areas for climate advisory systems (Early Warning Systems, Emergency Response System).
b. Package technology advisory to a specific disaster risk in a specific geographical area.
c. Establish seed/food Reserve System (Community Food Bank/Seed Bank).
d. Improve reliable and accessible climate data for a better early warning system especially, improvement of data accuracy and data availability is important both at downscale level and location specific; strengthen seasonal forecasting thereby enabling farmers to make better decisions and planning of the upcoming crop season.
e. Strengthen transboundary collaboration for sharing and management of the warning system.
f. Early Warning Systems need to be strengthened so that these can communicate the early warnings / advisories to farmers in a language that they can understand and act upon. Further, forecasting is done only for main crops; it should be done for other crops as well
g. Thresholds need to be developed for better early warning to farmers
h. Synergy of science and local wisdom can be effective in preparedness and early actions

Fisheries and Aquaculture

Picture 13. Panellists of session "Unpacking risks and pathways for resilient fisheries in light of the 2030 Agenda Fisheries"

The second parallel session on fisheries and aquaculture comprised a panel discussion chaired by Mr. Jagath P Wijeweera, Secretary, Ministry of Fisheries and Aquatic Resources Development, Government of Sri Lanka. Keynote presentation and the panel discussion was moderated by Mr. Miao Weimin, Aquaculture Officer, FAO RAP. The panellists comprised of: (i) Dr. Magnus Torell, Senior Advisor, Southeast Asia Fisheries Development Centre (SEAFDEC); (ii) Dr. Chumnan Pongsri, Deputy Director General, Department of Fisheries, Ministry of Agriculture and Cooperatives, Government of Thailand; (iii) Dr. Pham Anh Tuan, Vice Chairman, Viet Nam Fisheries Society (VINAFIS); (iv) Dr. AtipAsvanund, Head of Sustainability Development: Social Activities and Academics Sustainability, Good Governance and Corporate Communication, CHAROEN POKPHAND GROUP CO., LTD.; and (v) Dr. Cherdsak Virapat, Director General, Network of Aquaculture Centres in Asia-Pacific (NACA).

Key messages – actions and recommendations – emerging from this session are:

1) The Asia-Pacific region accounted for 89 percent of the global aquaculture production in 2012[vi]. Fisheries and aquaculture in Asia-Pacific provide considerable trade, employment and food security for some of the poorest communities in coastlines and floodplains of the region. As Asian economies grow rapidly and demands for fisheries' goods and services accelerate, the fisheries sector is undergoing unprecedented changes. Further, disaster and climate risks are compounding the existing pressures on the sector. Disaster events have caused adverse impacts on fisheries at multiple levels, revealing the vulnerabilities of fisheries-aquaculture dependent communities in the coastal areas not only to disasters and climate change, but also to rapid degradation of the marine, coastal and inland water bodies' environment. This is evident from Typhoon Haiyan-2013 in Philippines that resulted in USD 280 million in damage and loss to the fisheries sector alone and the Tropical CycloneWinston-2016 that caused about USD 100 million in damage and loss to fisheries in Fiji, corresponding to about 2.3 percent of the country's GDP in 2015[vii].

2) Direct disaster losses are typically loss of fishing operations (including stocks) and safety-at-sea as well as physical infrastructure of coastal and riverine communities (destroyed or severely damaged assets such as boats, landing sites, post-harvesting facilities and roads). Brunt of these impacts is faced more by the small-holder fishers who comprise 90 percent[viii] of the world's total fishers.

3) Climate change impacts such as warming of the sea surface, river and lakes, changing precipitation, increasing water salinity and ocean acidification, shifting fish distributions, more frequent cyclones, and sea level rise are already evident. These are already having an adverse effect on marine, coastal and inland environments, producing changes in habitats, stocks and species distribution. Further, food quality is getting threatened due to increased risk of species invasions and the spreading of vector-borne diseases.

Picture 14. Group discussion - session "Unpacking risks and pathways for resilient fisheries in light of the 2030 Agenda Fisheries"

4) There is a need to identify who are vulnerable within fisher groups and to recognise the different identities they carry. For example, while 80 percent fishers in Thailand are small scale, 20 percent large scale ones account for 80 percent of the financial turnover. The small-scale fishers in Thailand nevertheless are a big political constituency. Further, urbanisation and markets impact fisheries-aquaculture resources wherein location of risk creation is different from the location of risk manifestation. Understanding risks in fisheries-aquaculture should involve the analysis of these dynamics of vulnerabilities.

5) Critical actions recommended for implementing Priority 1 of the Sendai Framework in fishery-aquaculture sector are:

    a. Support the establishment of standard and practical methodology for comprehensive disaster risks analysis and damage/loss assessment in the sector;
    b. Risk assessment should clearly differentiate risks from natural hazards and those driven by other factors to define specific risks under sectoral context and local conditions;
    c. Currently, planning maps for fisheries-aquaculture are all dry season maps. Even a minor flood can create problems as flood maps do not exist for planning. This gap should be addressed;
    d. Support should be provided to academia and NGOs to conduct research/studies on risks and actual impacts of disasters on specific sectoral systems and practices;

e. Include DRR knowledge and data in the formal and informal education programs and use public media campaign for general public and focus groups awareness pertaining fisher communities;
f. Use modern technologies for timely exchange and sharing of risk information and data within and across countries.

6) Critical actions recommended for implementing Priority 2 of the Sendai Framework are:

a. Develop and implement specific strategy and plan of actions for reducing specific types of disaster risks affecting coastal fishing/aquaculture communities;
b. Define institutions and build institutional capacity for DRR in fishery-aquaculture sector and its mainstreaming into overall DRR at district (local), provincial and national levels
c. Negotiate agreements on early warning of disasters, that would impact fishery-aquaculture sector, between neighbouring countries, involving regional and international organizations;
d. Develop standard operating procedures/specific guidelines/good practices for reducing risks of different types of disasters to different types of fishing/aquaculture operations;
e. Support the adoption of standard operating procedures/specific guidelines/good practices for reducing risks and regularly monitor the compliance of fishing communities and fish farmer groups;
f. Explore practical ways for integrating fishery-aquaculture sector DRM and CCA and national, sub-national and community development planning;
g. Look beyond single sectors, departments and countries. DRM policies should empower smaller departments like fisheries to coordinate with others;
h. Make DRR in fishery-aquaculture a national priority for global financing mechanisms such as GCF and GEF;
i. Integrate fishery-aquaculture DRR programs into National DRR Plan of Actions and programs for national government funding support, which can draw investment from bilateral and multilateral development partners e.g. ADB, AIB.

7) Critical actions recommended for implementing Priority 3 of the Sendai Framework are:

a. Identify suitable options for alternative livelihood and build capacity of local communities for taking these new livelihood options;
b. Produce hard evidence for DRR investments, which require deployment of methodologies and establishment of financing instrument such as regional fund (voluntary Trust Fund and Bilateral blended financing) for disaster risk analysis and assessment of damage and loss;
c. Create Policy Enabling Environment at national and local level to encourage private sector investment in DRR e.g. tax incentives;
d. Promote PPP in DRR in fishery-aquaculture sector such as promoting the establishment of social enterprise/business model with public support;
e. Develop insurance mechanisms – what should risk transfer look like in fisheries-aquaculture?
f. Identify measures to maintain connectivity and flows across different habitats to reduce the impact of hydrological and meteorological hazards.

8) Critical actions recommended for implementing Priority 4 of the Sendai Framework are:

   a. Build capacity of government agencies and staff engaged in disaster risk management for effective communication of early warning, coordination of preparedness and response to support the needs of fisheries-aquaculture sector;
   b. Build capacity of fishing communities and fishers on disaster preparedness and recovery;
   c. Establish feedback mechanisms for documenting lesson learnt and local knowledge for developing and updating recovery, rehabilitation and reconstruction plans

9) Strengthen Asia Pacific Fishery Commission's ongoing efforts on manage risks to fisheries-aquaculture and resilience building.

Livestock

Picture 15. Panellists of session " Unpacking risks and pathways for resilient livestock in light of the 2030 Agenda"

The third parallel session on livestock comprised a panel chaired by Dr. Md. Atikur Rahman, Additional Secretary, Ministry of Disaster Management and Relief, Government of Bangladesh. Panel discussion was moderated by Dr. Muhammad Afzal, FMD Management Specialist, FAO-Pakistan Office. The panellists comprised of: (i) Mrs. Sukhbaatar Jigjidpurev (PhD.), Livestock Emergency Projects' Coordinator, FAO-Mongolia Office; (ii) Dr. Pawin Padungtod, Emergency Centre for Transboundary Animal Disease (ECTAD), Viet Nam; (iii) Mr. Kailesh Pradhan, Agriculture Systems Specialist, ARDC, Department of Agriculture, Ministry of Agriculture and Forests, Government of Bhutan; and (iv) Dr. Naritsorn Pholperm, Response Manager, Animal in Disaster, World Animal Protection, Thailand.

Key messages – actions and recommendations – emerging from this session are:

1) Livestock forms one of the key assets at household level and contributes significantly to economies of most Asia-Pacific countries. Livestock is a major source of livelihood and provides vital nutrients particularly for women and children in rural areas. The demand for livestock products will continue to rise particularly in Asia due to population growth and improved income of the people. Meeting this increased demand presents a major sustainability challenge given the resource intensity of modern livestock production systems, resulting in tremendous pressure on global natural resources and the biophysical environment.

2) Livestock is exposed to multiple risks and disasters including climate-related: relentless winter, floods and droughts, earthquakes, civil wars, terrorism, transboundary animal diseases, loss of biodiversity of indigenous breeds, and production as well as market risks. Thirty six percent of disaster impacts on agriculture are in the livestock sector. Drought remains by far the most harmful disaster for livestock, causing 86 percent of total damage and loss faced by the livestock sector. Some of the factors driving these risks and disaster losses are well understood while others need further research particularly from farming system perspective and informal / formal marketing. Risk anticipation technologies for various production systems and scenarios may be further developed.

3) Climate change impacts will put further stress on the livestock sector: shrinking grazing lands / pastures, increasing extreme weather events, which, coupled with urbanization pressures, transboundary animal diseases and unsustainable production practices to meet increasing demands, will steadily increase risks. There is the need for nuanced and contextual analysis of the causal factors, manifestations and larger cost-benefits when analysing the changing nature of risks to and from the livestock sector.

*Picture 16. Group discussion – session "*Unpacking risks and pathways for resilient livestock in light of the 2030 Agenda"

4) There also the need to better understand risks to different types of livestock (poultry, duck, small ruminants, large ruminants, and pig), in different locations (alpine, low-altitude, free-grazing, stall-based) and due to different hazards (heat and cold waves, natural hazards, transboundary animal diseases, food chain crises, and conflicts).

5) Mongolia routinely experiences Dzud, drought and other climate related disasters resulting in loss of millions of livestock thereby eroding people's assets and coping capacities, pushing them into poverty and forced migration, which adds to urban risks.

6) Institutional arrangements for DRR in livestock sector should be reviewed. Different institutional arrangements may be required for various situations and countries based on governance systems, stage of development and dominant livestock production system.

7) Investments needed in livestock-disease surveillance, early detection and action, decentralized diagnostics, and improved understanding of disease dynamics. Guidelines for de-stocking before and re-stocking after disaster need to be further improved particularly keeping view of the suitability breeds / species to be introduced, the livestock numbers to be restocked and the risk of introducing new diseases in the area.

8) Focus on creating enabling markets for smallholder livestock producers and pastoralists as a key component of any DRR strategy in livestock. Further, DRR should be made an essential component of livestock development policy of the countries and the region.

9) In low input livestock production systems, importing high producing exotic animals may not be useful. Improving indigenous breeds may prove to be more useful from an economic as well as risk management point of view.

10) Livestock sector can provide opportunities to adapt to climate change by for example, integrating animal rearing and agriculture, which can help farmers cope with hazards while boosting profits and household nutrition. Livestock management must move from seeking to only maximize yield to also increasing adaptive capacity. Increased policy attention and financial resources for managing disaster and climate risks in the livestock sector are urgently needed for the sector to be integrated into national climate change and disaster risk management policies and implementation.

Forestry

*Picture 17. Participants of session "*Unpacking risks and pathways for resilient forestry in light of the 2030 Agenda"

The fourth parallel session on forestry comprised a panel chaired by Mr. Anura Sathurusinghe, Conservator General of Forests, Department of Forest, Ministry of Mahaweli Development & Environment, Government of Sri Lanka. Keynote presentation and the panel discussion was moderated by Mr. Thomas Hofer, Senior Forestry Officer & Coordinator, Natural Resources Management Group, FAO RAP. The panellists comprised of: (i) Mr. Goseki Kazuhiro, Director, Carbon

Sink Strategy Office, Forestry Agency, MAFF, Government of Japan; (ii) Dr. Simon Lawson, Asst. Prof. University of the Sunshine Coast, Australia; (iii) Mr. Prakash Singh Thapa, Under Secretary, Department of Soil Conservation and Watershed Management, Ministry of Forests and Soil Conservation, Government of Nepal; (iv) Dr. Thavone Inthavong, Director, Climate Change Resilience in Agriculture, NAFRI, Lao PDR; and (v) Mr. Richard Rastall, Technical Adviser, Climate Change, Landscapes and REDD+ of SNV.

Key messages – actions and recommendations – emerging from this session are:

1) Asia and the Pacific is the least forested region in the world with total forest area estimated at 740 million hectares, accounting for about 26 percent of total land area in the region[ix] . The region is home to 55 percent of the world population but accounts for only 18.5 percent of total forests[x]. Forests and trees play an important role in Asia-Pacific economies with their diverse economic, social, environmental and cultural values. Essential ecosystem services such as protecting bio-gene diversity and habitat, acting as carbon sinks, sustaining water supplies, arresting soil erosion, soil reinforcement and anchoring and slope stabilization, etc. contribute to food and nutrition security, provide recreation as well as livelihood opportunities.

2) Forests are adversely impacted by disasters such as floods, tsunamis, landslides, droughts, storms, fires, wars and conflicts (with refugee camps and temporary settlements encroaching forests). Further, the Asia-Pacific forestry sector is undergoing unprecedented changes as economies grow rapidly and demands on forests for goods and services accelerate. The impacts of these changes are already being felt within and outside the region and in some cases, the increasing demands and the absence of concomitant investments have undermined long-term sustainability[xi]. These anthropogenic factors, ranging from development priorities (roads, infrastructure, dams, and such), changing land-use priorities, increasing consumption of forest goods, human-animal conflict, as well as conflict and displacement have heightened the risks to forestry sector.

3) Accounting of disaster damage and loss to forests and long term impacts are lacking and do not enter national disaster information systems. This limits proper analysis of risks and hinders risk-informed programming in the forestry sector. Therefore, the forestry sector is often not embedded in overall national DRM and resilience policy, institutional architecture, discourse and practice and not prioritized in DRM investments.

*Picture 18. Presentation on role of coastal protection forest by participant in session "*Unpacking risks and pathways for resilient forestry in light of the 2030 Agenda"

4) Forests play a key role in DRR and resilience building for e.g.-

    a. Regulating disaster risks:
    reducing small-scale flood risks; preventing landslides and soil erosion; tsunami and storm-surge mitigation; disease control);

b. Supporting recovery: food, fuelwood, medicine, livelihood and timber & space for shelter;
c. Mitigating climate risks: nutrient recycling, soil formation, carbon sinks, sustaining water supplies, soil reinforcement and anchoring and slope stabilization.

5) Watershed management, mangrove restoration, ecosystem based adaptation, revegetating landslide sites through bioengineering, advanced forest rehabilitation technologies, ECO-DRR, CHISAN, maintaining a high cover of a high quality forest, and co-management of agriculture and forestry (agroforestry) are important initiatives and approaches, amongst others, for resilience building in forestry and in overall DRM.

6) Critical actions recommended for implementing Priority 1 of Sendai Framework in forestry sector are:

a. Enhance knowledge, especially about the impacts of disaster and climate change on forests
b. Compilation of knowledge on best forestry practices for mitigating the impact of various disasters;
c. Understanding forest fire risks and risk management options;
d. Analyse the risk of invasive species and how they are moving;
e. Risk mapping and early warning systems, especially in terms of landslides with high-resolution maps.

7) Critical actions recommended for implementing Priority 2 of Sendai Framework are:

a. Strengthen governance for forest fire management;
b. Develop guidelines on how to make risk-sensitive forest management plans;
c. Combine national level DRR policies and local community resilience in forest management;
d. Address the challenges in law and regulations reinforcement and land tenure;
e. Examine practical ways for integrating forestry sector planning and DRM and CCA planning at national and sub-national levels.

8) Critical actions recommended for implementing Priority 3 of Sendai Framework are:

a. Economic valuation of environmental services of forests;
b. Develop incentive schemes;
c. Investments in forestry for DRR through innovative financial mechanisms;
d. Develop insurance mechanisms – what should risk transfer look like in forestry sector?
e. Need for quantification/payment for ecosystem services in forests, linked with investments in DRR and CCA.

9) Critical actions recommended for implementing Priority 4 of Sendai Framework are:

d. Strengthen disaster preparedness in the forestry sector with emphasis on capacity of forest-dwelling communities;
e. Tailor early warning systems for the forestry sector;
f. Put in policy measures for stopping unsustainable exploitation of forests in disaster response and recovery;

g. Developing transboundary pests and invasive species management plans
h. Promote species diversity while regenerating forests after disasters;
i. Develop guidelines for build back better / regeneration of forests after disasters i.e. promoting species diversity during disaster recovery and reconstruction.

10) Strengthen Asia Pacific Forestry Commission's ongoing efforts on manage risks to forests, build resilience of the forestry sector and strengthen the role of forests in DRR and resilience building.

Bridging Gaps in Science, Policy and Practice for Resilient Food and Agriculture Systems

Picture 19. Panellists of session " Bridging Gaps in Science, Policy and Practice for a Resilient Food and Agriculture Systems

This parallel session comprised a panel chaired by Dr. Bounthong Bouahom, Director General, National Agriculture and Forestry Research Institute, Ministry of Agriculture and Forestry, Government of Lao PDR. Key note presentation were jointly made by Dr. Faye Abigail Cruz, Climate Scientist, Manila Observatory, Philippines, and Dr. Leocadio S. Sebastian, Regional Programme Leader, CCAFS Southeast Asia. The session was moderated by Dr. Alice Joann Ferrer, Professor, Division of Social Science, University of the Philippines Visayas. The panellists: (i) Mr. Hans Guttman, Executive Director, ADPC; (ii) Mr. Viengxai Manivong, Director of General Affair Division, Department of Meteorology and Hydrology, Ministry of Natural Resources and Environment, Lao PDR; and (iii) Mr. Nguyen Van Tam, Farmer, Ma Climate Smart Village (CSV), Yen Bai Province and Nguyen Tien Minh from My Loi CSV Village, Ha Tinh Province of Viet Nam and plenary discussion focussed on:

a) shared successful (and ineffective cases) experiences in applying S&T in DRR and CCA in the agriculture sector;
b) deliberated on priority actions for S&T to effectively play its role in addressing specific risks facing the agriculture sector, as called for in the Sendai Framework, the Paris Agreement, and the SDGs; and
c) facilitated collaboration and partnerships to bridge the gaps in Science, Policy, and Practice.

Key messages – actions and recommendations – emerging from this session are:

1) There is a need to maximize science and technology advancements including in early warning for risk reduction and resilience building in agriculture sectors, reaching the 'last mile'.

2) Linkages between weather and climate monitoring, early warning and disaster resilience/climate smart agriculture practices need to be established. It is important to recognise that the timeline for monitoring, warning and action differs significantly for agriculture as compared with other sectors. For example, seed production in response to monitoring data/information and warning

will require at least one cropping cycle while adaptation measures like breeding take as many as 5-10 years. Understanding and featuring these linkages in DRR/CCA in the agriculture sector are of vital importance.

3) Improve the availability of and access to S&T for all levels of decision-making and by all actors along the value chain. CCAFS study on the 2016 ENSO found that simple local agricultural risk maps would have gone a long way in supporting timely decision making.

4) Policy makers look for technologies that will help them quantify risks and losses to crops (as well as livestock, fisheries and forestry) so that they can make informed decisions. Need for tools and technologies that can enable the transformation of this information into plans like contingency plans was stressed.

5) Uniquely, this session had two farmers from Vietnam on the panel who shared their experiences, highlighting strongly, that when farmers themselves are engaged in the generation of risk knowledge and co-conceiving of solutions, then actions most relevant to their contexts emerge. The farmers shared a strong sentiment to the panel that "please communicate with us".

Picture 20. Participants of session " Bridging Gaps in Science, Policy and Practice for a Resilient Food and Agriculture Systems"

6) The need for platforms that (i) enable exchange, validation and feedback loops for climate information - scientific and traditional; (ii) enable interfaces between users, policy makers, scientists to align information generation and use; and (iii) encourage and support cross-border data exchange for risk disclosure and effective actions.

7) Combining climate projections using different methods, models and scenarios with understanding of needs and capabilities of users. While communicating climate projections to stakeholders for use in policy and decision-making, the strengths and weaknesses of methods used, uncertainties in projections, and such needs should also be communicated. More support is needed for better climate observation networks and countries need to institutionalise systems for timely and appropriate delivery of forecasts. Further, countries need to ensure that science is not just a tool to identify problems but also for finding solutions.

8) There is also the need for building trust across actors and mechanisms that enable continuous engagement and feedback loops, promote evidence-based approaches, open access information and risk disclosure and access to real time data, tools to translate information to action.

9) There are limitations in providing a full range of plausible outcomes due to constraints in resources. Scientists will increasingly be unable to give predictions with certainty but it is important for them to communicate in a way that shows they stand behind their best assessments otherwise no trust in information and no actions.

10) Decision-support tools (e.g. Climate Futures Tool), Climate Information Risk Analysis Matrix (CLIRAM), South East Asia Climate Information System (SARCCIS) are available/being developed to support policy makers and planners.

Making Disaster and Climate Risk Financing Work for Smallholders

Picture 21. Panellists of session "Making Disaster and Climate Risk Financing Work for Small hodlers"

The sixth parallel session on making disaster and climate risk finance work for smallholders comprised a high-level panel chaired by Mr. Ganzorig Tsogtbaatar, Deputy Chief, National Emergency Management Agency (NEMA), Government of Mongolia and moderated by Mr. Shukri Ahmed, Deputy Strategic Programme Leader, FAO. The panellists: (i) Dr. Pham Hoang Mai, Director General, Department of Science, Education, Natural Resources and Environment (DSENRE), Ministry of Planning and Investment (MPI), Vietnam; (ii) Dr. Chantarat, Head of Financial System Research, Puey Ungphakorn Institute for Economic Research, Bank of Thailand; (iii) Mr. Suriyan Vichitlekarn, Deputy Cluster Coordinator for Food and Agriculture, GIZ, Thailand; (iv) Dr. Tran Dai Nghia, Head of Department of Natural Resource and Environmental Economics Studies and Head of the Climate Change and REDD+ Research group, Institute of Policy and Strategy for Agriculture and Rural development (IPSARD), MARD, Viet Nam; and (v) Mr. Banaras Khan, Resilience Officer, FAO Pakistan shared about several initiatives such as Remote-sensing based Information and Insurance for Crops in emerging Economies (RIICE), ASEAN Sustainable Agri-food Systems (SAS), ASEAN Climate Resilience Network (CRN), and others were shared to draw out learning for the future. The emerging learning from the ASEAN Roadmap for Disaster Risk Financing and Insurance (DRFI), which was adopted by three sectoral bodies: Disaster Management, Finance & Central Banks and Insurance Regulators, was shared to highlight the importance of addressing institutional aspects in developing disaster risk financing strategies and instruments along with the advantages and limitations of traditional and weather-based index / parametric insurance. Plenary discussion focussed on:

a) improving understanding of the effectiveness as well as limitations of financing DRR/CCA and disaster/climate risk financing in agriculture in protecting smallholders and the most vulnerable population;
b) taking stock of disaster and climate risk financing instruments in the agriculture sector developed and/or applied in Asia-Pacific countries, the lessons learned, challenges and gaps therein; and
c) identifying priority actions to further promote effective risk financing instruments, as part of comprehensive risk management strategies in the agriculture sector, to achieve the resilience-building objective of the Sendai Framework, the Paris Agreement and the SDGs.

Key messages – actions and recommendations – emerging from this session are:

1) Investing in ex-ante DRR and CCA is cost-effective and while these investments are increasing, most governments still rely on ex-post risk financing instruments to react to a disaster when it occurs. Sensitization of sector and finance ministries to further move towards financing ex-ante actions is required. As resources become increasingly scarce, evidence and data on the benefits and impacts of these ex-ante investments will be critical to effectively target resources use in the agricultural sector.

2) Disasters impact agriculture beyond the short-run. The sector often endures long-lasting consequences of loss of harvest and livestock, outbreak of disease, destruction of rural infrastructure and irrigation systems. Disaster and climate risk financing for smallholders need to take this into account while developing financial models and instruments.

3) Each disaster risk financing instrument (such as Reserve fund, Budget contingencies, Budget reallocation, Contingent loan, Risk transfer through insurance and re-insurance, Donor assistance, Debt and Tax relaxation) has its advantages and disadvantages in terms of speed of availability, coverage; level of price at which the instrument can be provided and implications / consequences at political, economic and social level.

4) The understanding of advantages of weather-based index / parametric crop insurance seems emerging amongst Asian countries. However, the concern that there are hardly any insurance models and products for fishery-aquaculture and forestry sub-sectors was underscored. Further, the insurance products need to be also customized / tailored according to the risk contexts of the sub-sectors, locations as well as different types of producer groups.

5) The need to strengthen access of small holders to credit and disaster/climate risk finance, especially the successfully piloted weather-based index insurance was highlighted. Addressing legal framework, data and technology that will enable the private sector engagement were emphasized as crucial in this regard.

6) Risk financing requires certain level of risk information and analysis that should be addressed. Legal and institutional framework for design, technology development, financing and monitoring of implementation of risk financing instruments was also stressed upon. This framework should examine risk sharing between public and private entities and establish suitable management process to maximize public, private and individual investments. Furthermore, risk pooling (at national, regional and global levels) should also be examined to determine the extent of re-insurance to reduce risk to fiscal management. Underwriting by the government should be

carefully analysed to avoid paying taxpayer monies for profit-maximizing insurance and reinsurance products.

7) The key factors for successful disaster risk insurance are:

    a. Enabling Policy Environment: Creating an effective insurance system cuts across various political spheres. A broad consensus amongst policy makers and their commitment to create an enabling policy environment that supports mobilization of resources and fosters transparent operation and supervision of insurance schemes is important. This includes the integration of agricultural disaster/climate insurance into respective national policies, strategies, and action plans.
    b. Public-Private Partnership: The supply of appropriate agriculture disaster/climate insurance products has been limited. Private insurance companies design appropriate insurance products, establish administrative processes and carry the risk. Beyond regulatory framework, government support such as premium subsidies, tax exemption, acting as a reinsurer of last resort, fostering market development, bearing part of high start-up costs; investing in disaster risk monitoring and data infrastructure (i.e. weather stations), support product design and rating, awareness raising, education, etc. can be critical to the sustainability of such systems. Donors and development agencies assistance in these will also be important.
    c. Integrated Risk Management Approach: Insurance is only one risk financing tool and needs to be part of in an integrated risk management approach that addresses (i) Risk information and understanding that form the prerequisite for any insurance product; (ii) Incentivizing investments in risk prevention and reduction such as adaptive and resilient agriculture practices; and (iii) Adapting social protection to enhance disaster resilience and respond to shocks
    d. Risk diversification and Up-Scaling Potential: To lower covariate risks, the portfolio needs to be diversified, in terms of commodities, type of risks, and different geographical regions. Further diversification can be achieved through reinsurance. Pilot projects need to be developed with a view towards reaching scale quickly.
    e. Innovation & Technology: Agriculture insurance suffers from high transaction costs, especially in serving low-income smallholders in developing and emerging economies. Data collection, processing and management, premium payment mechanisms, claims verification and settlement inflate the operational costs, thus included in high premium that without government subsidies, smallholders have yet able to pay. Investing in technologies and innovations such as more accurate weather and agricultural yield-information based on satellite data for weather-based index/parametric insurance products or mobile payment devices will be critical to reduce the premium and increase efficiency.
    f. Value for Clients & Consumer Protection: Insurance suppliers need to provide appropriate, transparent and cost-effective risk management products. Benefits, cost structures, consumer rights and responsibilities have to communicated transparently and comprehensively in order to build and sustain trust.

Picture 22. Participants of session "Making Disaster and Climate Risk Financing Work for Smallholders"

Unpacking risks to and pathways from food and agriculture for resilient urbanization

Picture 23. Panellists of session " Unpacking risks to and pathways from food and agriculture for resilient urbanization"

The seventh parallel session on unpacking the interlinked rural-urban-agriculture risks and investing on food and agriculture for resilient urbanization comprised a panel chaired and moderated by Ms. Loretta Hieber Girardet, Chief, UNISDR Regional Office for Asia-Pacific. The panellists: (i) Dr. Shiraz Wajih, President, Gorakhpur Environment Action Group (GEAG), India; (ii) Ms. Truong Thi Thu Trang, Acting Director, Policy and Strategy Study Division, Institute of Policy and Strategy for Agricultural and Rural Development (IPSARD), Viet Nam; (iii) Mr. Jhanka Nath Dhakal, Under Secretary, Ministry of Home Affairs, Nepal; (iv) Dr Nguyen Quang, Habitat Programme Manager, UN Habitat, Viet Nam; and (v) Marielle Dubbeling, Director, RUAF Foundation, Netherlands (*video presentation*) and plenary discussion focussed on:

a) developing a common understanding of the significance of resilient food and agriculture systems for resilient urbanization through analysis of the inter-linked urban, rural and agriculture risks' context;
b) facilitating a multi-stakeholder dialogue to take stock of ongoing actions pertaining food and agriculture for resilient urbanization for identifying successes, gaps and challenges in developing urban food and nutrition resilience in context of CC-DRR and the 2030 Agenda; and
c) identifying priority actions at policy, institution and programmatic level to enhance resilience of food and agriculture to contribute to resilient urbanization, and thereby to further the implementation of the SFDRR and the overall 2030 Agenda in the region.

Key messages – actions and recommendations – emerging from this session are:

1) The session discussed various issues in the backdrop of the aspirations inherent in the New Urban Agenda 2030, Milan Pact, Climate Paris Agreement, SFDRR and SDGs. Taking into cognizance the unprecedented rapid urbanization, discussion emphasized on the need for due consideration of food and agriculture systems as one of the key drivers of urban vulnerabilities.

Due priority is needed for secondary cities in Asia which face highest rate of urbanization clubbed with the high level of climate change induced vulnerabilities.

2) Lesser interest in agriculture due to physical, social and economic causes hugely contributes to rapid urbanization. There is a need to consider the rural-peri-urban and urban continuum and intertwined risks towards building holistic resilience.

3) The land use changes in urban and peri-urban spaces, which often ignore the value of ecosystems as natural buffer for disaster protection, should pay due attention to protecting flood plains, green costal belts, etc. The weak governance in protecting such crucial spaces for resilience building often increase urban risks and vulnerabilities.

Picture 24. Participants of session " Unpacking risks to and pathways from food and agriculture for resilient urbanization"

4) Agriculture and food production system, especially the small land holding farms and agri-businesses are not only largely dependent on ecosystems services but also create ecosystems which, through its supporting, provisioning and regulating services, contribute to urban DRR and climate change adaptation.

5) The need to address food safety issues and food chain crisis threats (transmission of diseases from animal to humans) as part of urban planning and urban-rural nexus was highlighted.

6) Critical actions recommended for implementing Priority 1 of the Sendai Framework are:

    a. Information and data are crucial for understanding and measuring the intertwined risks to agriculture and food system and urban vulnerabilities and resilience. Such data and information management needs to be highly decentralized and cost efficient. Use of ICT, leveraging community contributions and facilitating direct linkages amongst community and related formal institutions will be important to promote citizen science and modern technologies in better understanding of risks and involving local communities (urban citizens) therein.
    b. Vulnerability and risk assessments in urban and peri-urban areas need to include risks to agriculture and food system (and hence urban food security), paying due attention to climate change, variability and extreme events' induced risks as well as to food safety and FCC induced new risks.
    c. Understanding and including competing water demands (and hence data) between rural, peri-urban, urban agriculture and food production system and other uses are crucial in understanding risks and vulnerabilities of urban-peri-urban food production system and evolving resilience measures.
    d. There is the need for better understanding of health and other risks associated with increasing chemical intensive and industrial urban agriculture (such as intense/industrial poultry and piggery in and around urban areas).

e. Include in urban risk assessment a better understanding of seasonal / permanent rural-peri-urban and urban migration as one of the drivers of risk (due to increasing informal settlement in hazard prone zones, lack of assess to disaster risk information and warning) as well as a resource for promoting urban agriculture and resilience building.

7) Critical actions recommended for implementing Priority 2 of the Sendai Framework are:

a. Raise awareness at policy, planning, programme and governance levels on the role of ecosystems and its provisioning, supporting and regulating services in food and agriculture production, DRR and urban resilience building
b. Rural-Peri-Urban-Urban continuum is crucial in terms of identifying risks and vulnerabilities of all the three spaces. The flood plains and coastal zones play a major role in this direction and their protection require due attention to urban planning, policies and governance.
c. Peri-urban agriculture and food production system play a very important role in synergizing agriculture-food production system, livelihoods of peri-urban and urban poor and urban DRR and CCA. Due attention is needed in planning, enforcement and governance of these spaces.
d. Urban areas largely consume the resources from rural, peri-urban areas due to better economic capacities. In the process, rural areas are often abandoned which disrupts the crucial rural-urban connect. It is important that costs flow back to rural areas for maintaining a balance.
e. Urban DRR and resilience building is generally missing in Sub-National Disaster Management Plans. Due priorities are needed in evolving City Disaster Risk Management Plans and subsequent resource allocation, which make agriculture and food systems an integral component. In the process, due consideration of risks in urban land use planning is instrumental.
f. Review institutional arrangements and mandates of government departments in urban and peri-urban contexts to enable food and agriculture investments as urban resilience building measure; taking into account the need for territorial approaches and multi-sectoral and vertical governance structures.
g. Address capacity gaps in local and (sub) national administration (following a territorial approach) as well as amongst other stakeholders pertaining food and agriculture in resilient urbanization.
h. Develop specific measures to ascribe and promote accountability in urban (and peri-urban) planning from risk prevention and reduction point of view.
i. Alignment of investments in both urban and rural sides with due understanding of the intertwined risks to rural, urban and agriculture and resilience.
j. Promote risk-informed polycentric territorial development approach for the rural-peri-urban-urban continuum as well as planning and overall extension work including agriculture extension in urban areas.
k. Incentivize strict implementation of existing laws and policies pertaining urban areas especially building codes, land-zonation, and land use as well as develop and / or reinforce laws and policies on protecting agricultural and green spaces from urban sprawl.

8) Critical actions recommended for implementing Priority 3 of the Sendai Framework are:

    a. Incentivize the private sector and citizens' investment in DRR and resilience building of the agriculture and food production system, especially in peri-urban and urban areas.
    b. Make DRR integral to development on the ground. Urban development programmes must be risk informed to build 'disaster and climate smart' and resilient cities. As such, it will help in efficient utilization of resources.
    c. Prioritize investments in developing community capacities and mechanisms to promote resilient peri-urban and urban food production system.
    d. Create a 'practice-bank' / documenting evidence of how agriculture sub-sectors have played a crucial role in risk reduction and disaster preparedness for the urban areas to incentivize further investments.
    e. Focus equally on the four sub-sectors (crop, livestock, fishery-aquaculture, and forestry) during promoting investments in urban agriculture and resilience building.
    f. Develop multi-stakeholder partnerships for promoting investments in food and agriculture in resilient urbanization.

9) Critical actions recommended for implementing Priority 4 of the Sendai Framework are:

    a. Critical Infrastructure (both grey and blue-green) in urban and peri-urban areas needs to be planned, developed and safeguarded taking into consideration the urban-peri-urban-rural continuum and the evolving interconnected risks therein.
    b. Include in urban disaster warning systems advisories available in downscaled ICT and information system and in local languages to access and use by agriculture extension system.
    c. Strengthen food and agriculture related early warning and early actions in urban areas.

The Way Forward

<insert photos of panel and participants>

The final plenary session comprised a high-level panel co-chaired by H.E. Mr. Le Quoc Doanh, Vice Minister, MARD, Government of Viet Nam, and Ms. Saulye Janimkhan, Honourable Vice-Minister of Food, Agriculture and Light Industry Government of Mongolia. Keynote speech and panel discussion moderation was by H.E. Saber Chowdhury, Member of Parliament, Bangladesh, Former President of IPU, Co-Chair of UNISDR Asia Advisory Group of Parliamentarians for DRR. The panellists: (i) Dr. Bounthong Bouahom, Director General of the National Agriculture and Forestry Research Institute, Ministry of Agriculture and Forestry, Lao PDR; (ii) Dr Md Atiqur Rahman, Additional Secretary, MoDMR, Bangladesh; (iii) Ms. Roselyn Mullo, Regional Food Assistance and Nutrition Thematic Expert, DGECHO; (iv) Mr. Stephan Baas, Strategic Advisor, FAO; and (v) Ms. Tran Tu Anh, SNV and plenary discussion focussed on:

a) building consensus on the priorities for actions across the agriculture sub-sectors to implement the Sendai Framework for DRR, Paris Agreement and related SDGs;
b) agreeing upon the need and actions to raise the profile of the agriculture sector in the implementation of the 2030 Agenda; and
c) making recommendations for the FAO 34th APRC and the 2018 Asian Ministerial Conference for DRR.

Picture 25. Panellists of plenary session " Resilient agriculture for resilient nations – The way forward"

Key messages – actions and recommendations – emerging from this session are:

1) Agriculture is the single theme that cut across all the SDGs for the 5P agenda – People, Prosperity, Planet, Peace and Partnership. This agenda will not be possible if resilient agriculture is not achieved.

2) Impact data enables a 'confrontation with reality'. As resources become more scarce evidence will become more important. Capacities for monitoring and statistical analysis need to be

strengthened. Further, perspectives need to be built that agriculture sector is not just a victim but agent of economic growth and poverty reduction.

3) Agriculture sector's implementation of the Sendai Framework for DRR, Paris Agreement and 2030 Agenda provides unique opportunity to 'connect the dots', reinforcing actions on DRR, CCA poverty reduction and sustainable natural resources management. High frequency and high impact disasters will become the 'new normal', requiring holistic approach in allocating scarce resources. Partnership particularly with the private sector is the rule of thumb with the private sector contributing to 60 percent of the GDP, 80 percent of capital and 90 percent of employment.

4) DRR and resilience activities are emerging in the agriculture sector, but these are still scattered. There was an acknowledgement of the complexity of the challenge to scale resilience building in agriculture in terms of the need of diverse actions addressing multiple risks, geographies, local contexts, governance realities, institutional mandates, and such.

5) Risk-informed agriculture development; integrated approaches to humanitarian response, risk management and resilience building; upscaling through priority setting and enhanced evidence and strengthening governance with clear roles and responsibilities across coordinated institutions are critical for the sector to accelerate actions and to mainstream agriculture DRR and CCA into national and sub-national development agenda and fiscal allocation.

6) A clear and explicit articulation of the humanitarian-development nexus including early warning early actions and no-regret DRM-CCA actions needs to be done and implemented.

7) Strengthening risk information, forecast, early warning that work for people and farmers is instrumental for investments to be effective.

8) Capacities, particularly at local levels, guidelines and accountabilities are the key in this regard.

9) There is a need to address gender stereotypes and integrate gender-specific actions as part of the various DRM-CCA actions. The recognition that women play a strong role in DRM-CCA needs to be translated into practice through women leadership and capacity building for decision making in agriculture sector DRM-CCA.

10) Develop and implement the Agriculture Sector Action Plan for implementation of the Sendai Framework (AgriSendai-ASAP) to facilitate regional joint learning, collaboration and partnerships and complement actions at the country level. The AgriSendai ASAP should provide guidance for investments to improve the understanding of multiple risks to agriculture and

AgriSendai ASAP

The AgriSendai ASAP would provide guidance for actions and investments at the national level for the agriculture sector's implementation of the SFDRR in Asian countries. At the regional level, it would identify strategic priority actions that would be jointly implemented by countries, Inter-Governmental Organizations (SAARC, ASEAN, ECO, Triangle cooperation and such), Asia-Pacific agriculture sub-sector commissions (Fishery, Forestry), UN Agencies, other development partners and regional organizations and networks (CGIAR, Diary-Asia, etc.) to facilitate joint learning and collaborative actions to support and complement national level actions. The AgriSendai ASAP will be developed through a participatory process, facilitated by FAO RAP.

implement actions to manage the risks and strengthen resilience with coherent approaches across sub-sectors. Regional platforms for joint learning, collaborative actions and building partnerships are needed to support countries.

11) Investments and commitments by the governments as well as private sector are needed at various layers to implement the actions identified during the conference and which would be part of the AgriSendai-ASAP. It is important to think about how to make a case for investing in agriculture DRR and CCA, should we only present the dollar values which can't compare with life-essentials like food and water.

Picture 26. Participants of plenary session " Resilient agriculture for resilient nations – The way forward"

Message for FAO 34th APRC

Representatives from the ministries of agriculture, national disaster management agencies and other sectors from more than 20 countries in the region attended the above conference on 15 - 16 March 2018 in Ha Noi, Viet Nam:

Picture 27. H.E. Le Quoc Doanh - Vice Minister, MARD, Viet Nam delivering the message for FAO 34th APRC

1. Concerned by the vulnerability of agriculture to disaster, as evidenced in the FAO report "2017 impacts of disaster and crisis on agriculture and food security". Particularly concerned about the disproportionate burden that disaster and climate risks impose on the vulnerable and smallholders, causing losses and pushing them into vicious debt cycles, negative coping strategies and poverty;
2. Recognize the urgent need to improve disaster damage and loss data-information management, especially in fisheries/aquaculture and forestry and to contribute to the monitoring of the Sendai Framework and related SDGs;
3. Stress the importance of investing in agriculture DRR and CCA that will strengthen the resilience of millions livelihoods. The Sendai Framework for DRR, Paris Agreement and 2030 Agenda provide unique opportunity for the agriculture sectors to reinforce actions, integrating disaster risk reduction, climate change adaptation and poverty reduction;

Recommend the APRC to:

4. Request FAO's support for member countries to develop and implement an Agriculture Sector Action Plan to implement the Sendai Framework (AgriSendai AP) that will:
   a) **Enhance the understanding of risk**, especially to smallholders. Recognize the changing nature and cascading risks of natural hazards, food chain crisis and protracted crises and the intertwining risks to the urban, rural and agriculture to define the critical role of agriculture for urban resilience. This includes development of standards and tools for different types of risk assessment (transboundary animal diseases, risk of loss of biodiversity, production and market risks), decision support tools and improve risk awareness through formal education as well as public information campaign.
   b) **Strengthen disaster risk governance:** develop and implement strategy and action plan to address specific risks; mainstream DRR into sector and community development planning and agriculture DRR action plan into national DRR plan; define institutional role and capacity, especially at local levels; forge institutional linkages at all levels; reinforce regulatory and incentive mechanisms (i.e. strengthen regional cooperation for knowledge sharing.

c) **Invest in DRR for resilience:** Investments in ex-ante disaster risk reduction, livelihoods diversification, building capacity of local communities, tools and practices; strengthen access to credit and climate risks insurance/weather-based index insurance including legal framework, data, technology for the private sector to engage under an overall disaster risk management.

d) **Strengthen preparedness for effective response and to build back better**: Improve seasonal forecasting and early warning, ensuring the information is understandable for everyone. Strengthen national and local capacity for preparedness and response. Develop guidelines including on destocking and restocking. Promote indigenous knowledge. Facilitate agreements on early warning of transboundary disasters, involving regional and international organizations.

5. Encourage member countries, organizations and stakeholders to continue sharing experience and dialogue, including to continue this biennial regional conference, to advance DRR, CCA and resilience building in the agriculture sectors and to make agriculture an important sector in national, regional and global DRR and climate change agenda.

Message for 2018-AMCDRR

Representatives from the ministries of agriculture, departments of agriculture, livestock forestry and fisheries/aquaculture, national disaster management agencies and other DRR stakeholders from more than 20 countries in the region having met on 15 - 16 March 2018 in Ha Noi Vietnam, for the regional conference to discuss ways forward for "Strengthening resilient food and agriculture systems – Implementing the Sendai Framework for DRR in the Agriculture Sector in Asia and the Pacific":

Picture 28. H.E. Saulye Janimkhan, Vice Minister, MoFALI, Mongolia delivering the message for 2018-AMCDRR

1. Reiterate the Sendai Framework's call to make disaster risk management integral to development by all sectors and segments of the society in order to achieve sustainable development;
2. Emphasise the critical role of agriculture in achieving the Sustainable Development Goals (SDGs), especially zero hunger and ending poverty which cannot be achieved if agriculture's vulnerability to disasters – 23 percent of all damage and loss caused by medium to large scale natural disasters is on agriculture - will not be reduced;
3. Recognize the disproportionate burden that disaster and climate risks impose on the vulnerable and smallholders, causing losses and pushing them into vicious debt cycles, negative coping strategies and poverty.
4. Stress that people dependent on agriculture are not only victims of disasters but also integral to addressing risks. Farmers, herders, fishers, and forest communities are custodians of environment at local level hence their decision-making and participation is essential for the success of any resilience-building efforts.
5. Highlight the role that agriculture plays in urban resilience through ensuring food and nutrition security, provision of ecosystem services and reducing risks to urban areas; and thus the need to understand the intertwining risks to the urban, rural and agriculture.
6. Flag the interest and readiness of Agricultural sectors to take sector specific responsibilities for the implementation of SFDRR targets and integrate them into SDG delivery within the sector;
7. Commit to developing and implementing an Agriculture Sectors Action Plan for implementing the Sendai Framework (AgriSendai AP) that will:
    a) Improve the understanding of multiple risks of natural hazards, food chain crises and protracted crises facing food and agriculture systems and dependent livelihoods, their changing and cascading nature and intensification, driven by climate change and development factors. This includes strengthening disaster damage and loss data management systems, that will address the under-accounted loss and impacts, especially on

fisheries, aquaculture and forestry and contribute to the Sendai Framework monitoring and reporting;

b) Strengthen agriculture sectors' institutional arrangements, particularly existing institutions at the local level including extension services, farmer groups, FFS and cooperatives, to deliver comprehensive DRR and risk-informed development;
c) Mobilize higher investments including designing innovative financial instruments for ex-ante risk reduction as well as financing the management of residual risks, particularly of drought, which remains the highest contributor to agriculture disaster losses. Also, strengthen the research-policy-practice linkages.
d) Maximize science and technology advancements including in early warning for resilience building in agriculture sectors, reaching the 'last mile'. Strengthen risk informed recovery planning in the agriculture sectors.

8. Commit to monitoring this AgriSendai Action Plan and regularly reporting the progress at the AMCDRR;
9. Reiterate that reducing risks and strengthening resilience in the agriculture sectors require concerted efforts and institutional linkages and clearly allocated responsibilities at all levels between ministries of agriculture sectors and disaster management as well as with private sector, civil society and academia within countries and across the region.

Annexes

Annex 1 - Agenda

<table>
<tr>
<td><u>Opening Plenary (Pre-Lunch):</u>

Welcome & Introductions

Opening Remarks: ADG, FAO RAP; Vice-Minister, MARD, Government of Viet Nam and Vice-Minister, MoFALI, Government of Mongolia

Global launch: ‘2017 – The Impact of Disasters and Crises on Agriculture’ global report.

Key Note Address: “Strengthening food security and resilient livelihoods – the daunting task of agriculture sectors” – H.E. Mofazzal Hossain Chowdhury Maya, Minister of Disaster Management and Relief, Bangladesh (delivered by Asst. Secretary, Ministry of Disaster Management, Government of Bangladesh)

Panel discussion: From loss to resilience – progress and challenges in managing risks to agriculture sectors</td>
<td><u>Parallel Sessions (Post Lunch Half Day-1)</u>:

Parallel Sessions focusing on evolving nature of risks and challenges, lessons learned and future priorities for risk sensitive development of the agriculture sub-sectors, in light of the SFDRR and 2030 Agenda:

S-1: Unpacking risks and pathways for resilient crop sector in light of the 2030 Agenda (co-organizer: CIAT)

S-2: Unpacking risks and pathways for resilient livestock in light of the 2030 Agenda (organizer: FAO)

S-3: Unpacking risks and pathways for resilient fisheries in light of the 2030 Agenda Fisheries (organizer: FAO)

S-4: Unpacking risks and pathways for resilient forestry in light of the 2030 Agenda (organizer: FAO)</td>
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<td><u>Plenary (Day 2: 09.00 to 10.15):</u>

Panel discussion: Bringing sub-sectors together – Common priorities for managing risks and strengthening resilience in agriculture sectors</td>
<td><u>Break-Out Sessions (Day 2: 10.30 to 13.00)</u>:

Parallel sessions focusing on innovations to support the implementation of identified priorities for resilient food and agriculture systems:

S-5: Bridging Gaps in Science, Policy and Practice for a Resilient Food and Agriculture Systems (co-organizer: CGIAR- CCAFS)

S-6: Agriculture Risk Financing: Scaling up Insurance and Going Beyond (co-organizer: GIZ- Food & Agriculture Cluster)

S-7: Unpacking risks to and pathways from food and agriculture for resilient urbanization (co-organizer: Gorakhpur Environment Action Group)</td>
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<td colspan="2"><u>Final Plenary: Resilient agriculture for resilient nations – The ways forward (Day 2: 14.00 to 16.45):</u>

Reporting back from parallel sessions (5, 6 & 7)

Key note address: Towards an Agriculture Sector Action Plan for implementation of the Sendai Framework (‘Sendai-ASAP’), Hon. Saber Chowdhury, Chair, Asian Advisory Group of Parliamentarians for DRR and former President of the Inter-Parliamentary Union

Panel discussion: Taking the AgriSendai-ASAP forward

Co-Chair summary; Key messages to convey at the FAO 34th APRC by MARD, Viet Nam and at the 2018 AMCDRR by MoFALI, Mongolia

Closing remarks by Government of Viet Nam</td>
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</table>

Annex 2 – Link to Profile of Speakers

Annex 3 – Link to Participants list

Annex 4 – Links to Session concept notes, Remarks, Key note speeches and presentations

END NOTES

[i] See Pp. 108, Chapter 3, 2016, 'Rural Development Report: Fostering inclusive rural transformation', IFAD.
[ii]See Pp. 4, Chapter 1, 2010, 'FAO Regional Priority Framework 2010-2019: Towards a Food Secure Asia-Pacific', FAO RAP Publication 2010/24.
[iii] See Pp. 25, Chapter 2, 2016, 'The State Of Food and Agriculture: Climate Change, Agriculture and Food Security', FAO.
[iv] 10 ASEAN + 7 SAARC + 5 North-East Asia + Timor Leste + 2 Pacific + 1 Africa
[v]www.fao.org/resilience/resources/resources-detail/en/c/1106859
[vi] FAO RAP, 2016, 'FishAdapt: A global conference on climate change adaptation for fisheries and aquaculture', Conference Background Paper, FAO RAP, Bangkok, Thailand
[vii] FAO, 2018 (unpublished, forthcoming), '2017: The impact of disasters and crises on agriculture and food security', FAO, Rome, Italy
[viii]https://www.rare.org/fisheries
[ix] http://www.fao.org/docrep/012/i1594e/i1594e00.pdf
[x] http://www.fao.org/docrep/012/i1594e/i1594e00.pdf
[xi] ibid