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Consolidated Responses for the PAFPNet Discussion for the First quarter of 2016

Date: 17/03/16 - 22/04/16

"Re-building the Agriculture sector and Farmer Livelihoods – Post – Disaster"

For the first quarter of 2016 PAFPNet hosted the discussion topic themed, "Re-building the Agriculture sector and Farmer Livelihoods – Post – Disaster" where in just 2 years, both Fiji and Vanuatu have faced their most devastating natural disasters on record. Six questions were underlined for the discussion that triggered an extensive and thorough exchange of views and altogether 15 replies were received. Thank you very much for participating!

Tropical cyclones Winston and Pam, both Category 5s, have caused cataclysmic losses in both countries. Extreme weather events like TC Winston and Pam are not unexpected in the Pacific, which is one of the most vulnerable areas in the world to natural disasters due to powerful tectonic forces constantly shaping the region and the occurrence of unusually warm ocean conditions. Scientists and Inter Governmental Panel on Climate Change (IPCC) have predicted that the natural disaster frequency has risen and that their intensity will be more and more severe, hence causing major destructions especially to small and vulnerable countries such as Small Island Developing States (SIDS).

Increasing unplanned urbanization, migration patterns, and people occupying high-risk areas in greater numbers, however, increase the impact of natural hazards on population. Although disasters do not respect borders, nor distinguish between economic levels, their impact is always much more detrimental to vulnerable populations in low income countries.

It has been highlighted in the discussion that **preparedness** is very critical, and this requires training of relevant agricultural public and private stakeholders on Post Disaster Needs Assessment (PDNA) methodology; developing template for data collection; and ensuring that a sound baseline is in place and updated regularly. Assessments tend to move much faster and more efficiently where good baselines are in place.

A study or investigation needed to be done on the indigenous knowledge and should they be credible incorporate them in post disaster strategies. Also it is important to note that there are certain level of resilience relating to this knowledge that are present within communities, the form and manner in which the assistance are delivered should not interfere with the traditional resilience mechanisms which are in existent as this may lead to communities heavily depending on outside assistance in future disasters rather than being able to deal with some of the issues themselves.

There are some mechanisms in place that are working well to prepare farmers, agricultural officers not only to be prepared to reduce the impacts of hazards but also to respond effectively in a timely and resourceful manner. It is about having a good pre-disaster risk reduction plan and also a good post disaster process in place – prepare to respond.

This PAFPNet Discussion revisits the important area of natural disaster preparedness and prevention for the agriculture, forestry and livestock sector. The assessments of the consolidated responses were gauged from the questions below:

1. **Agriculture (including Fisheries and Forestry) is the backbone of most Pacific countries. In your view.**
    i. **Are the mechanisms to assist the recovery of the agriculture/forestry sector following disasters working well? If yes how, if no, how would you improve it? (Please name country)**

   ii. **Should national agriculture/forestry plans stipulate a post disaster recovery plan for the sector? (A recent SPC survey of National Agriculture sector frameworks and plans in the Pacific show only a small number include text on post-disaster recovery)**

2. **Ministries of Agriculture (MoAs) typically have a front line role getting the agriculture, livestock, fisheries and forestry sector back on its feet. Yet these Ministries are severely under-resourced. Only 2-3% of national expenditures go to MoAs and vital services such as public extension officers are already limited or in decline.**
   i. **How could businesses, commercial buyers and markets of agriproduce assist the recovery process?**
   ii. **Should we be mobilising our youths, unemployed and other groups to assist the recovery of the sector. How?**
   iii. **Are you aware of Post Disaster National Assessment processes and how they work in your countries? If no would you like to know more?**
3. **ICT, mobile technology etc. is widely available in this region.**
   i. **What information do farmers, fishers and foresters need during the recovery process?**
   ii. **How can this information be effectively and efficiently relayed to farmers, fishers and foresters?**
4. **The provision of seeds, plant material and livestock recovery is critical to recovery of farmers.**
   i. **How can a country ensure that it has adequate stocks of seeds and plant material at a national level?**
   ii. **How can other countries in our region or other regions help in this area?**
5. **Soil quality is often reduced following events such as tropical cyclones, flooding, storm surges, and tsunami.**
   i. **How should we help with soil recovery?**
   ii. **How do we prevent soil fragility to these disasters?**
6. **How should countries use cultural or indigenous knowledge to mitigate or adapt to natural disasters?**

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Responses from:

1. **Dr Siosiua Halavatau, SPC Land Resources Division – Fiji**
2. **Mr Soud Boudjelas, University of Auckland – New Zealand**
3. **Mr Patrick Arioka, Ministry of Agriculture – Cook Islands**
4. **Mr Howard Aru, Ministry of Agriculture, Livestock, Forestry, Fisheries and Biosecurity – Vanuatu**
5. **Mr Samson VilvilFare, Technical Centre for Agricultural and Rural Development (CTA) – Netherlands**
6. **Mr Bruce Chapman, SPC PAPP Consultant – New Zealand**
7. **Professor Alan Quatermain, University of Goroka – Papua New Guinea**
8. **Ms Marita Manley, GIZ – Fiji**
9. **Manaia Halafihi, Ministry of Agriculture, Food, Forest and Fisheries – Tonga**

10. Mr Dean Solofa, SPC Land Resources Division – Fiji
11. Mr Michael Ho'ota, Ministry of Agriculture – Solomon Islands
12. Mr Kofi Nouve, Food and Agriculture Global Practice – Australia
13. Mr Jim Currie, College of Micronesia – Federated States of Micronesia
14. Mr Viliamu Iese, University of the South Pacific – Fiji
15. Mr Charles Pitt – Cook Islands Herald – Cook Islands

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1) Dr Siosiua Halavatau, SPC Land Resources Division – Fiji

1. Agriculture (including Fisheries and Forestry) is the backbone of most Pacific countries. In your view.
   i. Are the mechanisms to assist the recovery of the agriculture/forestry sector following disasters working well? If yes how, if no, how would you improve it? (Please name country)

I think the mechanisms are okay. It is how people implement things that sometimes do not work. Most countries have their own emergency response plans (ERP) with a multisectoral representation with the agriculture/ forestry/ fisheries ministry the lead agency in assessing damages to agriculture/ forestry/ fisheries resources. Once the damage assessment is done and depending on scale – the country might declare emergency or not. The recovery plan is then quickly designed. In Tonga the recovery after Cyclone Ian was difficult because of the spread of outer islands and psychological impacts of the 1st category 5 to hit Tonga on the people. The damage to crops were practically almost 100% (80 to 100%). The damages to fruits, cultural and forest trees were about 90%. The damages to livestock – chicken and pigs were about 20%. It was estimated that households will run out of foods in a matter of few weeks. And food aid will be required for about 3 to 4 months.

The recovery process was to include:

- **Assist with land clearing for crops and fence lines.**
- **Assist with land preparations for immediate planting of food crops.**
- **Source early maturing (short duration) crop planting materials, including cuttings (sweet potato) and seeds (corn and vegetables) for immediate distribution.**
- **Distribute agricultural equipment and small tools. Many households reported loss or damage of tools and other agricultural equipment. These were needed to be replaced.**
- **Assist/request rescheduling loan repayment option to assist farmers and weavers with existing loans.**
- **Assist with seeds and planting materials for trees.**
- **Provide seedlings and encourage planting of fruit trees including coconut and breadfruit, and along the coastal areas plant salt tolerant trees to protect against salt spray and future cyclones.**

Funding was received from various agencies including UN agencies, governments, NGOs, and Tongans locally and from abroad.

The operation of the above activities was coordinated by National Emergency Management Office (NEMO), MAFFF, Mainstreaming of Rural Development Initiatives (MORDI), Tonga National Youth Congress (TNYC), Ministry of Environment, Communities. OXFAM NZ sent a team that was based in Ha'apai for a while.

There were challenges to the process of recovery and they include:

- **Immediate measures are vital to recovery and replanting to restore food security as early as possible. A clear strategy was needed to be able to identify households that are most affected and vulnerable to be targeted for assistance, and to monitor and assess service delivery.**
- **Given the extent of damage in Ha'apai, there are likely to be institutional capacity constraints within MAFFF to respond to the replanting and recovery needs in a timely manner. Support of associated line ministries, NGOs and other development partners needs to be identified and mobilized.**

- **MAFFF did not have an established standard system for assessing farm damages and losses arising from disasters. A robust assessment method will be developed for future. On-going records of planting statistics for baseline is needed. In the past MAFFF used to have crop and livestock surveys annual to be finished by November to be used as baseline if there is a cyclone. Agricultural statistics capacity needs to be strengthened.**
- **Ensure there is balance between medium and long term recovery strategy. Tree crops will take longer time to recover but suitable short duration crops should be introduced to fill the gap immediately.**

Ha'apai was also struck by drought after Cyclone Ian providing another challenge but I think they did well.

I was stranded in Tonga in Ha'apai during Cyclone Winston and if the amount of agriculture on the ground is an indication of the good recovery after Cyclone Ian then I would say Tonga did a great job.

ii. Should national agriculture/forestry plans stipulate a post disaster recovery plan for the sector? (A recent SPC survey of National Agriculture sector frameworks and plans in the Pacific show only a small number include text on post-disaster recovery)

Since Climate Change projection is that we will have fewer cyclones but stronger and we have had a category 5 in each year for the last 3 years – and Cyclone Ian, Cyclone Pam and this year Cyclone Winston are telling us that we need post cyclone recovery plans in our Agriculture Strategies.

2. Ministries of Agriculture (MoAs) typically have a front line role getting the agriculture, livestock, fisheries and forestry sector back on its feet. Yet these Ministries are severely under-resourced. Only 2-3% of national expenditures go to MoAs and vital services such as public extension officers are already limited or in decline.

i. How could businesses, commercial buyers and markets of agriproduce assist the recovery process?

Just as food security is everyone's business – so is recovery of food production systems in our countries. This means businesses, markets including agribusinesses must be involved in rebuilding food production. If primary production suffers because of cyclones then value adding, tourism, etc. will be affected. Businesses should help fund primary industry back to their own feet so normal value chains can operate.

ii. Should we be mobilising our youths, unemployed and other groups to assist the recovery of the sector. How?

The youths are the source of energy of our countries and they must be involved in the recovery of agriculture. In Tonga after Cyclone Ian – the National Youth Congress put together volunteer groups that went out to the communities and help with recovery from replanting to building houses, etc.

iii. Are you aware of Post Disaster National Assessment processes and how they work in your countries? If no would you like to know more?

Yes, I am aware SPC was heavily involved in the Vanuatu TC Pam PDNA.

3. ICT, mobile technology etc. is widely available in this region.

i. What information do farmers, fishers and foresters need during the recovery process?

First priority information on production. Any assistance on input supply from land preparation to seeds, etc. In Ha'apai while farmers were recovering a UN program also initiated a livelihood program to help get households on their feet. Such information will also be great.

ii. How can this information be effectively and efficiently relayed to farmers, fishers and foresters?

Traditionally via agricultural extension but now with radio and mobile phones – they can be used.

4. The provision of seeds, plant material and livestock recovery is critical to recovery of farmers.

i. How can a country ensure that it has adequate stocks of seeds and plant material at a national level?

Staple crops like root crops – usually after a cyclone – there is enough and if not part of the country which do not have enough can be supplied from other parts. After Cyclone Ian – Ha'apai was supplied planting materials from within and Tongatapu.

Vegetable seeds – we will still rely of commercial seeds. But we can develop our own seed saver system if we have access to open pollinated varieties.

ii. How can other countries in our region or other regions help in this area?

Countries can help supply certified seeds. Vegetative planting materials will be a biosecurity issue.

5. Soil quality is often reduced following events such as tropical cyclones, flooding, storm surges, and tsunami.

i. How should we help with soil recovery?

Soil quality is affected in different ways by disaster:

- **Erosion – high intensive rain can cause erosion or strong wind on shoreline can cause coastal erosion. We need to constantly keep our soils under cover to reduce erosion from heavy rain. Also plant trees to protect shoreline.**
- **Soil can be flooded – how long soil under flooding will be how severe the effects but once flood disappears or recede then soil will recover but depends on what damage has been made. Once dry we can turn the soil and plant with cover crops.**
- **Inundation with seawater – this will take time and plenty of rain to leach the soil.**

ii. How do we prevent soil fragility to these disasters?

Make sure soils are well covered to break impact of raindrops and do coastal planting.

In a nutshell – ecosystem approach if adopted will minimize fragility of soil to disasters. Ecosystems such as wetlands, forests, natural fallows, coastal systems, can reduce physical exposure to natural hazards serving as natural protective barriers or buffers and thus mitigate hazards.

6. How should countries use cultural or indigenous knowledge to mitigate or adapt to natural disasters?

All our countries have traditional knowledge and cultures that help us mitigate or adapt to disasters.

Our traditional farming systems were very resilient because it had diversity. There were many crops and trees in the systems making them resilient to disasters.

We also need to go back to traditional preservation of our foods to be used in time of disaster.

We can also grow back-up plantation as food reserve. This is usually crops like giant taro, giant swamp taro, etc.

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2) Mr Soud Boudjelas, University of Auckland – New Zealand

Dr Siosiua raised a good point regarding biosecurity. I think it would be good to add a question to this discussion along the lines: "How to reduce biosecurity risks during recovery activities following disasters"

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3) Mr Patrick Arioka, Ministry of Agriculture – Cook Islands

1. Agriculture (including Fisheries and Forestry) is the backbone of most Pacific countries. In your view.
   i. Are the mechanisms to assist the recovery of the agriculture/forestry sector following disasters working well? If yes how, if no, how would you improve it? (Please name country)

The answer for the Cook Islands is Yes in terms of having its own Food Security Cluster Response Plans in place for natural disasters and No for training and capacity development of all partners involved. Cook Islands have links in its disaster response plan for Food Security with FAO who is the Regional Partner for Food response actions together with WHO and WFO. This plan was put together with the assistance of FAO by a consultant to ensure the response measures fits well with the National Disaster Management Office

(NDMO) legal/policy framework for Disaster Response Management. With the Guidance of SOPAC, the Cook Islands Joint National Action Plan Strategy for Disaster Risk Reduction and Climate change adaptation, have kept track on making sure that the Ministry of Agriculture (MoA) has in place a Food Security Cluster response plan which is now completed.

What remains to be done, is the testing of our Food Security Cluster Plan and all its Standard Operating Procedures (SOP) through a training regime by the MoA and its partners. It is our NDMO office policy that all plans must be tested through an approved simulation exercises carried out by nominated positions under those SOPs with roles and responsibilities to meet the minimum standard of confidence that the plan works in accordance to national disaster response plans. To date the MoA is putting together a proposal for carrying out these training and aims to involve SOPAC, FAO, SPC and our government partners of Ministry of Health (MoH) Red Cross, Department for water under Infrastructure Cook Islands (ICI), and our the NDMO. Submission for this program is still under design.

ii. Should national agriculture/forestry plans stipulate a post disaster recovery plan for the sector? (A recent SPC survey of National Agriculture sector frameworks and plans in the Pacific show only a small number include text on post-disaster recovery)

Absolutely. In the 2005 and the 2010 disaster, the Cook Islands faced enormous struggle to rejuvenate and re-establish livelihoods without a plan. Livelihoods suffered in the sense that, small and medium farmers and fisherman were unable to return immediately back to farming or fishing business soon after a disaster. The Cook Islands lesson learnt here is that the slow response to the needs of our farmers, farmers themselves decided to leave and move to New Zealand for better opportunities. Therefore it is government responsibility under the Ministry of Agriculture to ensure small island economies remains resilient with the ability to recover quicker from enormous cost impacts and be able to return to business without delay. It is also wise, like the Cook Islands, that government's aim of establishing disaster insurance package for relief and recovery and prepare further economic stimulus package designed for farmers and fisherman to help re-establish and keep business turning over. And so it is more than including text on post disaster recovery, it is about securing a resilient recovery framework and technical, financial support which the Cook Islands has in place today.

2. Ministries of Agriculture (MoAs) typically have a front line role getting the agriculture, livestock, fisheries and forestry sector back on its feet. Yet these Ministries are severely under-resourced. Only 2-3% of national expenditures go to MoAs and vital services such as public extension officers are already limited or in decline.

i. How could businesses, commercial buyers and markets of agri-produce assist the recovery process?

Commercial and development banks or business investment agencies is crucial to assist in the recovery process by reducing interest rates for farmers and fishermen through a economic stimulus package, relaxing qualification criteria's, expanding interest free grace periods for 2 years until business is fully recovered, adding mentoring and market development plan requirements to the loan criteria. These are some areas financial businesses can assist. Markets however will have to be part of the process by relaxing trading and rental fees, increasing space for farmers and fishermen on wholesale opportunities dedicated to increase food supply and nutrition under controlled pricing structure that is best for the buyers and customers. Often though hotels and restaurants struggle with food availability after disasters therefore food imports is the only option and so government will have to open its food import exemptions to allow the importation of crops to such time growers and fishermen are able to return to normality.

Business will also need to factor pricing control regimes. Regimes that government has the power to suspend prices to be kept at reasonable prices than hiking prices due to demand and supply. This was experienced in the Cook Islands were bread prices increased, fuel costs, and many others were exploited until government intervened. Therefore these are areas businesses will have to be part of the recovery processes.

ii. Should we be mobilising our youths, unemployed and other groups to assist the recovery of the sector. How?

Agriculture role is to engage farming as soon after the disaster with the aim of Food Security and nutrition under humanitarian principles therefore growing enormous short term crop seedlings, engaging in purchasing and selling fertilizers and other resources at lower prices helps re-establish farming immediately either through community program groups, NGOs, Youth groups farming association the unemployed is highly necessary as part of a disaster response action framework plan. There should be no restrictions of food security resource assistance. It should be for all families the unemployed, destitute and the vulnerable which is the focus of food security response actions. Like the Cook Islands, we faced a lot of unprepared challenges which saw an exodus of people moving out from the islands to the capital to find other opportunities and so small island economies dwindled and failed. The lessons learnt is to have emergency stock prepared for all purposes.

iii. Are you aware of Post Disaster National Assessment processes and how they work in your countries? If no would you like to know more?

The Cook Islands Food Security Cluster for disaster response has in place a post disaster joint assessment process.

3. ICT, mobile technology etc. is widely available in this region.

i. What information do farmers, fishers and foresters need during the recovery process?

- **The extent in terms of land area total affected by disasters.**
- **Fishermen resource damage and immediate recovery total cost needs.**
- **The total cost of damage by crop.**
- **Expected recovery estimates based on types of crops, area total planned to be planted.**
- **List of short term crops ready to distribute that are necessary for family food supply.**
- **Crop food prices approved for sale based on emergency pricing structure of some sort.**
- **List of agriculture resource assistance availability for fertilizers, water, chemicals and others.**
- **Types and access to financial and technical support assistance program.**
- **Growing short term crops manuals.**

ii. How can this information be effectively and efficiently relayed to farmers, fishers and foresters?

- **Regular farmers meetings and regular radio programs is the most effective and efficient information sharing assistance followed by newsletter bulletins when it comes to disaster response effectiveness.**
- **Regular updates follow soon after by cell phone texting, social media if the facility is available in disaster areas.**

4. The provision of seeds, plant material and livestock recovery is critical to recovery of farmers.

i. How can a country ensure that it has adequate stocks of seeds and plant material at a national level?

In terms of seeds, this would be a challenge considering it has certain shelf life to last even though it is properly stored and in large volumes would not be at all economical. And therefore it is only reserved for purpose. What is important though is to have emergency funds under government and pre-arranged agreements between seed suppliers for types and quantity whether in country or abroad, specifically designed for disaster response purpose.

For planting materials however, is not so a challenge. Before the Cook Islands Food Security Cluster was established there has been always an unwritten understanding when an island has been struck by disaster, all unstruck neighbouring islands supplies food and planting materials to help with recovery. And therefore Island are scattered from far distances across oceans which is an advantage. To date Cook Islands has in place agreements with island authorities to be a major supplier of planting materials when the need arises based on agreed humanitarian principles.

ii. How can other countries in our region or other regions help in this area?

For bio-security reasons, it would not be in the interest as far as pest and disease control is concern and to trade planting materials across countries unless through cultured materials supplied through SPC germplasm stock would be the answer to this need. Approved seeds however in large volumes would be preferred procured or out sourced from approved suppliers whether internally or external.

5. Soil quality is often reduced following events such as tropical cyclones, flooding, storm surges, and tsunami.
   i. How should we help with soil recovery?

Compositing is necessary for soil recovery when it is demanded to help grow crops.

ii. How do we prevent soil fragility to these disasters?

In the northern atoll islands of the Cook Islands, soil inundation due to salt intrusion is a common problem and therefore the Island population is well known to be experts in re-establishing compositing gardens soon after a cyclone or sea surge. Plant wastage, fallen trees are collected and stored for organic compositing mixed with rusted cans to help with the decomposition process and nutrient development. There are also extended knowledge on types of plants that are fast decomposing materials and high nutrient processed materials for plant growth. This knowledge has been passed on for generations. And so these are common methods well documented in the Cook Islands.

One of the successful quick fix methods to increasing vegetable crops to help with food and nutritional needs for the population is the establishing of small hydroponics that has been successful in the northern Cook Islands soon after a disaster. This continued to be a major source of vegetables on atoll islands to date. Some outcome lessons learnt for this product is to develop a much quicker emergency hydroponic kit set systems for household level. Although water can be a problem, when house tanks are been destroyed after a cyclone, however atoll islands has established water proofing tank systems for emergency purposes only. Through government subsidies and building codes standard reforms, Island household are required to comply with these standards to ensure sufficient water tanks are installed based on family size and minimum water requirements.

6. How should countries use cultural or indigenous knowledge to mitigate or adapt to natural disasters?

The use of documentation, filming to help secure, and share indigenous knowledge as part of disaster preparedness program under the NDMO office and which the Ministry is looking into as well. The Cook Islands Food Security Cluster has factored in these indigenous knowledge into its disaster response plan so that these experiences continue to be part of life. The knowledge includes:

- **Fruit harvesting activities as part of the disaster preparation.**
- **Fruit and food processing methodologies.**
- **Types of food ingredients and preparation, menus using common food resources after disasters.**
- **Old established ground water source for drinking.**
- **By-laws on the usage of water sources.**
- **Agreements and best practices to access reserved areas for food gathering and fishing.**
- **Island by-laws used for family to grow sufficient crops (Atiu Island taro plantation requirement per household).**

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4) Mr Howard Aru, Ministry of Agriculture, Livestock, Forestry, Fisheries and Biosecurity – Vanuatu

1. Agriculture (including Fisheries and Forestry) is the backbone of most Pacific countries. In your view.
   i. Are the mechanisms to assist the recovery of the agriculture/forestry sector following disasters working well? If yes how, if no, how would you improve it? (Please name country).

Yes and No.

On the positive side, Vanuatu established a few years ago what we call a Food Security and Agriculture Cluster (FSAC) - comprising a number of key stakeholders in Government, the private sector and NGOs - which was activated within 24-48 hours of TC Pam's passage on the night of 13th March 2015. The FSAC played a very pivotal role in helping to mobilize staff and network resources to do rapid assessments in affected areas and to report back to capital to assist with emergency food distribution to complement other related disaster relief supplies to affected communities.

On the flip side, whilst the food calculations appeared to be working, distribution became very chaotic, at least during the first week following Pam's passage. One of the main contributing factors to the chaos had to do with the uncoordinated manner and confusion caused by Non-Government Organizations (NGOs) which firstly had no central coordination body in place to direct the activities of NGOs, and secondly, due to the various funding agencies (even foreign Governments) involved thus leading to duplication of distribution efforts in some parts of the country between Government and the NGOs. This is a major issue which needs to be addressed right away to ensure we do not fall back into the same trap in future.

   ii. Should national agriculture/forestry plans stipulate a post disaster recovery plan for the sector? (A recent SPC survey of National Agriculture sector frameworks and plans in the Pacific show only a small number include text on post-disaster recovery).

Definitely a must. We need to prepare now and be proactive rather than wait till another cyclone strikes before we start putting things in place. Here we would need the support of organizations such as the SPC, FAO, etc. to help get such a plan in place ready for the future. If such plans already exist elsewhere in the Asia-Pacific region, Vanuatu would definitely wish to know so we can formulate our own plans along similar lines. This is a great idea. Prevention as we all know, is better than cure.

2. Ministries of Agriculture (MoAs) typically have a front line role getting the agriculture, livestock, fisheries and forestry sector back on its feet. Yet these Ministries are severely under-resourced. Only 2-3% of national expenditures go to MoAs and vital services such as public extension officers are already limited or in decline.

   i. How could businesses, commercial buyers and markets of agriproduce assist the recovery process?

It is in the best interest of 'agri-produce' businesses, commercial buyers and markets to assist countries during recovery process largely with the view to making a quick turnaround post-disaster. They should assist with the purchase and distribution of seeds for instance rather than wait for donors to do things for them. Local businesses should also help to mobiles their networks and contacts overseas to assist with related relief supplies in order to help the sector quickly recover and allow business to return to some level of normalcy.

   ii. Should we be mobilising our youths, unemployed and other groups to assist the recovery of the sector. How?

Yes, fully agree. That is what happened on a larger scale in Vanuatu after TC Pam. The Ministry of Climate Change mobilized a lot of volunteers to assist. Many of these came from various church groups who saw the need to support and went out of their way to provide that much needed support. No doubt they would have been 'rewarded' with some incentives possibly with the payment of some cash to the group, and some additional support out of the relief supplies that came in from donors.

   iii. Are you aware of Post Disaster National Assessment processes and how they work in your countries? If no would you like to know more?

For Vanuatu, the FSAC has been responsible for this for the Agriculture sector. Since TC Pam, the cluster has met pretty much almost every week to keep working on recovery efforts that will definitely continue at least for the next 12-24 months still to come given the magnitude of the disaster. Not only that, but the ongoing El Niño has posed further complications to the existing difficulties, and thus the great need for the FSAC to continue to remain alert and keep working.

3. ICT, mobile technology etc. is widely available in this region.
   i. What information do farmers, fishers and foresters need during the recovery process?

On the outset, this is a key issue I am pushing for Agriculture in Vanuatu - ICT for Agriculture. The 'project' commenced almost 18 months ago following my former Minister and my weeklong visit to Suriname to attend the annual Caribbean Week of Agriculture and seeing how that region (plus Africa) has fully embraced ICT in their development and promotion of their respective agriculture sectors. Vanuatu will soon be embarking on an 'e-strategy for Agriculture' to help pave a roadmap for Vanuatu along these lines.

During the recovery process, among other vital pieces of information, farmers need to know about:

- **sources of new planting material (seeds, cuttings, etc.) and where to get them, shipping arrangements, costs involved, when to expect receipt of supplies, what varieties most suitable to use, planting instructions/requirements, how to take care of their plants during recovery time, and many other such information.**

ii. How can this information be effectively and efficiently relayed to farmers, fishers and foresters?

Experience immediately after TC Pam with some donor funding saw 'key messages' being sent out to farmers via our FSAC team along lines already noted above. As such, in Vanuatu's case this is something we have already done and it has worked well for us given over 80% mobile coverage of the country.

What we are doing now with FAO support is to build a Food Security Monitoring and Early Warning System. This will include an ICT component supported by capacity development, primarily amongst extension officers through to our Risk and Resilience Unit (RRU) to help timely policy-making decisions at Ministry/Government level. This facility is vital even now with the ensuing El Nino (though subsiding – which is good news). But for the future, we need a robust system in place to help us effectively and efficiently address similar situations as post-TC Pam.

4. The provision of seeds, plant material and livestock recovery is critical to recovery of farmers.
   i. How can a country ensure that it has adequate stocks of seeds and plant material at a national level?

The Department of Agriculture and Rural Development (DARD) has been engaged in growing crops to collect open pollinated (OP) seeds and replanting planting materials collected from Vanuatu Agriculture Research and Training Centre (VARTC) to multiply the production of these planting materials. These activities are a normal programme of DARD but need to be expanded upon to ensure there is adequate stock of seeds and planting materials at a national level.

A national policy on seeds will help Government make informed decisions on seeds – not only on seed adequacy but also and perhaps more importantly on seed quality. This policy framework must address and strengthen local capacity in seed production. At the national level, seeds can be harvested and stored for later use e.g. Forestry Cool storage.

For livestock – we need to work with private sectors that have capacity to produce good quality breeding stock. Policy on Animal genetics at national level ensuring that a country must have wider genetic base and adapted to our local condition.

Importation of genetic breeds from overseas is a short term solution to address current stages in animal protein and income generation.

Key Messages is important on what farmers will do.

ii. How can other countries in our region or other regions help in this area?

Other countries in the region could share with us what they are doing in the area of seed policy. Some countries like Fiji have a Seed Policy in place and may be they can share with us their expertise in this area when we do our seed policy later this year.

Countries in the region could share with us their available genetic resources at government and private sector. Their conditions on Import Protocols (IP) and other related information.

5. Soil quality is often reduced following events such as tropical cyclones, flooding, storm surges, and tsunami.
   i. How should we help with soil recovery?

Share relevant information on what is happening in other countries. Soil restoration is usually a long process and lessons learnt from other countries would be very useful.

i. How do we prevent soil fragility to these disasters?

- **Always advise farmers to do minimum tillage to limit unnecessary exposure of soil surface to weathering and runoff.**
- **Avoid cultivating fragile soils as it only adds to the problem.**
- **Agro-forestry systems help improve soil stability and nutrition.**

In addition:

- **Avoid grazing or raising livestock on land sites that are vulnerable to soil movement or erosion. Sylvi-pastoral grazing system is best practice to adopt.**

6. How should countries use cultural or indigenous knowledge to mitigate or adapt to natural disasters?

Traditional knowledge on mitigation incorporated into introduced mitigation measures is the proven means to address disaster. Some work has been done on this. Concern government authorities needed to align this into their programs to further consolidating the pass efforts to address this.

In Vanuatu cultural or indigenous knowledge are not usually share in the public domain. There is a need to research and share indigenous knowledge to wider public to help mitigate disaster risks.

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5) Mr Samson VilvilFare, The Technical Centre for Agricultural and Rural Cooperation (CTA) – Netherlands

1. Agriculture (including Fisheries and Forestry) is the backbone of most Pacific countries. In your view.
   i. Are the mechanisms to assist the recovery of the agriculture/forestry sector following disasters working well? If yes how, if no, how would you improve it? (Please name country)
   ii. Should national agriculture/forestry plans stipulate a post disaster recovery plan for the sector? (A recent SPC survey of National Agriculture sector frameworks and plans in the Pacific show only a small number include text on post-disaster recovery)

On a global level and especially related to Small Island Developing States (SIDS), it is important that information is shared across the board. Pacific SIDS are not the only one facing natural disasters especially cyclones and I think that we could learn from our counterparts in the Caribbean. They too have faced tremendous number of cyclones during the last few years and I believe that by working closely with them and knowing what are their recovery plan, we could save time and money to if information is shared among us. We have seen during the last couple of years or so that the Pacific and Caribbean regions have engaged more and more on issues of climate change but it would be wise to strengthen the cooperation further in terms of Natural Disaster Management.

2. Ministries of Agriculture (MoAs) typically have a front line role getting the agriculture, livestock, fisheries and forestry sector back on its feet. Yet these Ministries are severely under-resourced. Only

2-3% of national expenditures go to MoAs and vital services such as public extension officers are already limited or in decline.

i. How could businesses, commercial buyers and markets of agriproduce assist the recovery process?

I strongly think that the business community should not work in silo especially during the aftermath of a given natural disaster. Instead, they should work hand in hand with the government in shaping their recovery plans. Businesses working in the area of markets of agriproduce should be actively engaged with the govt. to ensure that the proposed plan that the government will put in place does reflect the reality on the ground. As some previous participants are already mentioned here, businesses should be able to mobilise their national, regional and international network to provide for instance grains and other plant materials to contribute to a speedy recovery and to ensure food insecurity impact is minimized.

Another aspect of involving the business community would be that govt. could provide some sort of incentives to businesses such as tax rebate on importation of grains from their overseas suppliers. Over more, the government may want to make sure that there is no over pricing of such products during the post disaster.

ii. Should we be mobilising our youths, unemployed and other groups to assist the recovery of the sector. How?

Youth should definitely be mobilised, especially the unemployed ones. In all clusters that are put in place by the national disaster task force, youth should be represented. It may be possible that in some countries youth are very active and have specialised themselves in one or many fields related to agriculture such as ICTs. Whether employed or unemployed youth are still able to contribute significantly to a post recovery period.

In order to mobilise them, the task force can seek information through the national youth council if there's one but can also seek help from youth based NGOs in the country.

iii. Are you aware of Post Disaster National Assessment processes and how they work in your countries? If no would you like to know more?

I am aware that the some countries in the Caribbean have a Post Disaster National Assessment processes. As mentioned earlier, it would be important to strengthen the SIDS cooperation (all SIDS countries involved) through various channels –e.g. AOSIS in NY, SIDS Forum at ACP in Brussels and other UN Agencies dealing with SIDS issues across the world etc. – in order to ensure that we get the best information on post recovery that is available on the market.

3. ICT, mobile technology etc. is widely available in this region.
   i. What information do farmers, fishers and foresters need during the recovery process?
   ii. How can this information be effectively and efficiently relayed to farmers, fishers and foresters?

ICT, mobile technology etc. are widely used nowadays in different parts of the world for post disaster recovery. While it is comforting to see that many Pacific Island Countries are well equipped with the ICT tools, we should not limit ourselves to our region only and should look for opportunities in other parts of the world, especially those similar to us on how they use ICT in agriculture but especially in post recovery after a natural disaster. As mentioned previously, now that the ICT tools are widely available to countries in the region, it would be important first to see how these tools are incorporated into agriculture? Some Pacific Island countries are already embarking on their E-Agriculture policy and it would be good to see bring all Pacific stakeholders together and to take stock of what is happening and where? Exchanging our experiences among ourselves but also getting information from elsewhere (apart from the region) – e.g. Africa, Caribbean, Asia etc. - would also help in shaping our ICT tools targeting post recovery and especially farmers.

4. The provision of seeds, plant material and livestock recovery is critical to recovery of farmers.
   i. How can a country ensure that it has adequate stocks of seeds and plant material at a national level?
   ii. How can other countries in our region or other regions help in this area?

5. Soil quality is often reduced following events such as tropical cyclones, flooding, storm surges, and tsunami.
   i. How should we help with soil recovery?
   ii. How do we prevent soil fragility to these disasters?

6. How should countries use cultural or indigenous knowledge to mitigate or adapt to natural disasters?

When Cyclone PAM hit Vanuatu last year, and few months after some UN agencies are making a lot of noise on the use of Traditional Knowledge to mitigate and to adapt to the impact of natural disasters in the country. I sincerely think that Traditional knowledge is important in all society across the world and more importantly in the Pacific. We seem to have lost a lot of our respective traditional knowledge whether it be for navigation at sea, building houses or planting our gardens etc. While some of the traditional knowledge may be regarded as "secret" I still think that we should teach widely in schools basic traditional knowledge skills that can help people in times of need – e.g. food and water storage before a cyclone, building cyclone resistant houses using local materials etc. School curriculum should include traditional knowledge and countries should exchange their traditional knowledge on basic lifesaving skills.

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6) Mr Bruce Chapman, SPC PAPP Consultant – New Zealand

1. Agriculture (including Fisheries and Forestry) is the backbone of most Pacific countries. In your view.
   i. Are the mechanisms to assist the recovery of the agriculture/forestry sector following disasters working well? If yes how, if no, how would you improve it? (Please name country)
   ii. Should national agriculture/forestry plans stipulate a post disaster recovery plan for the sector? (A recent SPC survey of National Agriculture sector frameworks and plans in the Pacific show only a small number include text on post-disaster recovery)

The inventory of national policies in 2015 showed that at that time five countries included some reference to disaster resilience. These cover a combination of climate change mitigation and disaster preparedness and response. For example:

Cook Islands:
- **Has a key output relating to 'an effective Ministry of Agriculture Disaster response plan' with reference to 'planting new varieties of climate resilient crops resistant to droughts and diseases in preparation for future disasters and [for] food security purposes'**
- **Identifies extended drought as a risk area especially for fruit crops**

FSM:
- **Identifies a Development Outcome (results) area of "Enhanced environmental services and sector resilience to natural disasters and climate change".**

Samoa:
- **'Climate Change adaptation' is identified as a cross-cutting issue, with emphasis on 'building the resilience of farmers and the rural poor to cope with climatic fluctuations'**
- **Specific strategies include a research component 'to minimise vulnerability … to natural disasters'**

Solomon Islands:
- **Identifies a 'Major output for sustainable management of natural resources; including 'Farmers shielded from impacts if natural disasters and climate change through disaster risk management and climate change mitigation'.**
- **There is also a supporting list of activities: Policy Statements/Focused Activities**
  - **Support the development and implementation of a National Action Plan on Disaster Risk Reduction & Disaster Management, promoting disaster risk management as a sustainable development issue with strong linkages to agriculture development.**
  - **Develop mitigation plan for climate change in collaboration of other relevant ministries and relevant regional and international agency.**

- **Encourage use of conservation farming techniques such as agro-forestry, fallow, cover crops, intercrop and contour planting.**
- **Develop and implement a Contingency Plan for speedy recovery of food production following natural disasters.**
- **Promote traditional ways to protect crops from natural hazards and methods to preserve food and seed stocks.**
- **Promote agro-forestry with the use of intercropping to reduce vulnerability to natural disaster, soil degradation and erosion and improve farm productivity.**
- **Discourage slash and burn methods that lead to soil and environment degradation**
- **Develop crops that are resilient to natural disasters.**
- **Develop a crop insurance schemes where possible.**
- **Mainstream climate change adaptation into national policies, strategies and programmes related to agriculture, forestry and fisheries.**
- **Develop community-based approaches to climate adaptation.**

Vanuatu:

- **Includes a specific objective for 'disaster and climate resilient agriculture'**
- **Has a Policy Directive to "mainstream climate variability, climate change and disaster risk reduction using adaptive and mitigation strategies in all agriculture initiatives and developments.**

2. Ministries of Agriculture (MoAs) typically have a front line role getting the agriculture, livestock, fisheries and forestry sector back on its feet. Yet these Ministries are severely under-resourced. Only 2-3% of national expenditures go to MoAs and vital services such as public extension officers are already limited or in decline.

Discussions on the national policies/strategies has highlighted the sense that agriculture agencies are under-resourced and lack the capacity to deliver many of the things that stakeholders seek from them. One response is to provide regional support to agriculture Ministries/departments to raise their profile within government and assist with putting together effective budget proposals. Another response is to engage more with the private sector and civil society (as suggested in parts i and ii of this question).

i. How could businesses, commercial buyers and markets of agriproduce assist the recovery process?

ii. Should we be mobilising our youths, unemployed and other groups to assist the recovery of the sector. How?

iii. Are you aware of Post Disaster National Assessment processes and how they work in your countries? If no would you like to know more?

3. ICT, mobile technology etc. is widely available in this region.

i. What information do farmers, fishers and foresters need during the recovery process?
ii. How can this information be effectively and efficiently relayed to farmers, fishers and foresters?

4. The provision of seeds, plant material and livestock recovery is critical to recovery of farmers.
i. How can a country ensure that it has adequate stocks of seeds and plant material at a national level?
ii. How can other countries in our region or other regions help in this area?

5. Soil quality is often reduced following events such as tropical cyclones, flooding, storm surges, and tsunami.
i. How should we help with soil recovery?
ii. How do we prevent soil fragility to these disasters?

6. How should countries use cultural or indigenous knowledge to mitigate or adapt to natural disasters?

General comment on questions 3-6.

Natural disasters can be very different in character (flood, drought, tropical cyclone, earthquake, volcano etc.) so the ways to prepare, respond and recover will differ according to these circumstances, as well as the sector being affected (crops, livestock, forestry).

Some of the issues can be anticipated and can therefore, in theory at least, be addressed through planning before the event. Recovery immediately post-disaster will depend on what has happened and a practical balancing between assisting people at risk, and property while also addressing longer term recovery in an appropriate sequence.

The reporting of events from Vanuatu in 2015 suggested that an influx of outside assistance post -disaster was not always well directed, and in some cases by-passed the systems structures the government had put in place.

The issue of soil recovery relates back to different land uses and how these affect the stability of soils (e.g. deforestation); again – in theory, more effective planning could assist in reducing risk.

The issue of traditional knowledge and traditional crops was raised repeatedly in the national plans/policies reviewed in the inventory. For example it was pointed out that traditional agro-forestry systems have a natural resilience built into the methods and practices.

A broader issue that is relevant is that of identifying what is best delivered regionally and what is best done nationally. Some disaster-related services, such tropical cyclone prediction and warnings, are delivered regionally. There is a good case for other services being handled regionally, especially given the limited resources and capacity at national level. One such regional service might be holding repositories of seeds/cultivars; it would be useful to hear from others about what would form an appropriate regional role, and whether, say SPC (or regional farmer organisations), should be supported to deliver some services.

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7) Professor Alan Quatermain, University of Goroka – Papua New Guinea

There is an aspect of recovery from disasters, whether natural or man-made, that requires consideration and is not clearly covered by your set of questions. This concerns the nature of the post-recovery situation with respect to agriculture and farmer livelihoods. This has been brought to my attention by concerned anthropologists in a recent book engaging the anthropology of Roy A, Rappaport (Ecology and the Sacred - edited by Ellen Messer and Michael Lambek, 2001, University of Michigan Press).

The point is that it is impossible to return to the exact same situation, ecological or social, that prevailed pre-disaster.

Opportunists may take advantage of the recovery process to further their own agendas, social relationships may have changed, partly as a result of reactions to the disaster or participation in the recovery effort, and the environmental conditions on the ground will have changed. Much of this will be unpredictable. Farmers and support agencies, government or other, must be cognizant of these possible changes in preparing for disasters and engaging in recovery efforts.

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8) Ms Marita Manley, GIZ – Fiji

My two cents below are based on experiences that farmers in Fiji have shared but do not in any way attempt to be a comprehensive response! I've limited my thoughts to the agriculture sector, though the forestry sector is as vital to livelihoods and resource management.

1. Agriculture (including Fisheries and Forestry) is the backbone of most Pacific countries. In your view.
   i. Are the mechanisms to assist the recovery of the agriculture/forestry sector following disasters working well? If yes how, if no, how would you improve it? (Please name country)

Getting planting material out as soon as possible is obviously vital to the recovery – and this is not entirely within the control of the agriculture sector alone.

Being able to access rural areas is critical. It was great to see the speed at which roads and washed out bridges and jetties in Fiji were temporarily repaired post-Winston to enable all supplies, including agricultural supplies, to be distributed.

<u>Continue to support diversification and value addition</u>

In talking to farmers' post-Winston, one of their immediate needs is support for replanting for food security, particular short-term vegetables – but also diversification of their cash crops. Many farmers rely on yaqona (kava), cassava and dalo (taro) as their cash crops but with the predicted increasing intensity of cyclones relying on a long term crop such as yaqona leaves farmers' livelihoods very vulnerable.

As well as diversification, value addition at the point of harvest can also help – provided of course that supplies can be stored securely (e.g. as dried fruit, jams and chutneys etc.) and there is a market for them.

There is quite a bit of work which has been highlighted in previous PAFPNet discussions being undertaken in Fiji and around the region to support farmers to better link to markets, support a better understanding of the value chain and to value add.

<u>Partnerships with the private sector</u>

Middle-men are often treated with suspicion – and yet their role in taking on risk, in enabling farmers to concentrate on farming rather than logistics -is often not recognised.

Farmers with strong links to private sector purchasers can often utilise these relationships to access support (planting material, seeds, tools, credit) post-disaster as the private sector can often mobilise resources quickly. The Ministry of Agriculture can also utilise these links and private sector assets (tools, vehicles) to support the recovery efforts. In an ideal world a mapping of all of these links would be available beforehand and could be used to quickly mobilise support. For example, if a particular purchaser is working with a particular community regularly, having a good information system in place which contains this information can be used not only to help get warnings and key messages out before a disaster but also for supporting the recovery. This is also true of the tourism sector – most tourism organisations have links to particular communities which can be utilised to help with distribution efforts – as they often have good access to transport. Combining this with information about NGO links to particular communities would also allow the government to quickly utilise existing links and resources and enable the government to focus their attention and resources on areas that do not have other external support. Information systems to track the 3Ws (Who does What Where) are often put in place post-disaster but could be there beforehand for existing actors as this is useful knowledge for policy and decision making generally.

Strengthening local government structures (the Divisional Offices and Provisional Offices) to ensure that they have this information to hand before a disaster, and that it is linked to central government structures, is important in ensuring that valuable time post-disaster is not lost gathering this information.

ii. Should national agriculture/forestry plans stipulate a post disaster recovery plan for the sector? (A recent SPC survey of National Agriculture sector frameworks and plans in the Pacific show only a small number include text on post-disaster recovery)

Yes. The Pacific is one of the most disaster-prone regions in the world and the agriculture sector is especially vulnerable. Ensuring that the national policy framework include strategies for how to recover post-disaster is important – as is linking them where relevant to overarching disaster plans and legislation including the cluster structure.

The cluster system works well (though doing things by committee naturally takes time) but if you're not in the loop it can take a while to know where to go to get information (e.g. about needs identified in needs assessments). And it would be good to have assessment templates and seed distribution pack guidelines in

draft and ready to go beforehand where possible. Great to see that these are now all available online at http://fscluster.org/fiji. It is not always possible to have them before time but the quicker they can be made available the less change of fragmentation as many actors go ahead and distribute supplies (understandably and with the best of intentions) immediately but do not inform government and/or cluster leads which could lead to duplication.

Again, strengthening local government structures and boosting their personnel is as important as boosting the national government personnel so they can drive coordination locally is important.

It's great to see the volume of important information now being made accessible online. http://fscluster.org/fiji

2. Ministries of Agriculture (MoAs) typically have a front line role getting the agriculture, livestock, fisheries and forestry sector back on its feet. Yet these Ministries are severely under-resourced. Only 2-3% of national expenditures go to MoAs and vital services such as public extension officers are already limited or in decline.
   i. How could businesses, commercial buyers and markets of agriproduce assist the recovery process?

In addition to the support in terms of planting material, tools and vehicles that agri-businesses support, they may also be able to offer credit facilities to enable farmers to pay for seedling, planting materials etc. from the proceeds of their first harvests.

   ii. Should we be mobilising our youths, unemployed and other groups to assist the recovery of the sector. How?
   iii. Are you aware of Post Disaster National Assessment processes and how they work in your countries? If no would you like to know more?

I think among many actors there is insufficient awareness of how these processes happen and how to engage with them. Clearer information made available online pre-disaster (assessment templates, lead staff in each district DMO etc.) could help in supporting more active engagement by other actors in this process.

3. ICT, mobile technology etc. is widely available in this region.
   i. What information do farmers, fishers and foresters need during the recovery process?
   ii. How can this information be effectively and efficiently relayed to farmers, fishers and foresters?

ICT and mobile technology can of course be massively impacted by a disaster itself so getting communications networks back up and running is also critical.

One of the challenges that farmers face is knowing where to start so having some simple post-disaster messages sent out can help people who have been traumatised to prioritise.

Such as:

- **Collect all available food that has been uprooted.**
- **Store if possible (I understand that there are various traditional knowledge techniques to bury and preserve food).**
- **Plant cassava back as soon as possible if planting material is available.**
- **Plant kumala and bele (if available).**
- **Plant short-term vegetables (beans, pumpkins etc.) if available.**

I think it is also sensible not to overstate the benefits of generic messages that go out via text message.

Farmers are much more likely to listen to advice in terms of disaster preparedness from a trusted source (family member, business partner, NGO) rather than a generic message over the radio or via text. Messages about the importance of not eating food which was uprooted over two weeks ago and hasn't been stored appropriately are getting to some very remote places.

4. The provision of seeds, plant material and livestock recovery is critical to recovery of farmers.

i. How can a country ensure that it has adequate stocks of seeds and plant material at a national level?
ii. How can other countries in our region or other regions help in this area?

Maintaining an adequate supply at research stations around the country is an important way to ensure some stock exists for distribution immediately. Centralised gene banks such as CePaCT also play an important role.

Shipping containers have been used previously to store material and prevent its damage.

I'm not sure if this already exists but putting in place supply contracts between the Ministry of Agriculture and their regular suppliers which contain clauses that cover disaster response may be a way to ensure valuable time post-disaster is not spent negotiating and setting up contracts. For example, this could allow the Ministry to quickly activate an increase in their order amount. Having lists of preferred suppliers of planting materials available online can also help individuals, private sector and NGOs to source quality supplies for distribution.

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9) Manaia Halafihi, Ministry of Agriculture, Food, Forest and Fisheries – Tonga

1. Agriculture (including Fisheries and Forestry) is the backbone of most Pacific countries. In your view.
   i. Are the mechanisms to assist the recovery of the agriculture/forestry sector following disasters working well? If yes how, if no, how would you improve it? (Please name country)

The mechanism for disaster recovery is there and in place for some natural disasters in some Pacific nations since natural disasters is not quite new to every Pacific Islands, particularly hurricanes and strong winds. Natural disasters in the Pacific can be different and categorized into various types with various extend of impacts upon the environment and economy of each island country. However, hurricanes and strong winds are the most common natural disasters that always visited the Pacific region and it has specific season (i.e. October – April every year in Tonga). The Pacific region has experienced significant amount of strong hurricanes within anyone's lifetime in the Pacific. Like what Dr. Halavatau mentioned, the implementation of the recovery mechanism would be the focus point to be discussed here. The Agriculture Ministry needs to have well planned strategies in place to cope up with when encountered environmental disasters. It should have standard surveying formats for an immediate rapid assessment and evaluation team right after the disaster struck. These should link to relevant information in place like land and cropping areas from annual pre-disaster season surveys and updated gross margin information for various crops. It may also need to have standard priority demanding levels, categorized into Very High, High, Medium, and Low priority in place with each have different strategy and treatment levels. Such recovery processes should be in hand as natural disasters have become common issues in the region right now.

   ii. Should national agriculture/forestry plans stipulate a post disaster recovery plan for the sector? (A recent SPC survey of National Agriculture sector frameworks and plans in the Pacific show only a small number include text on post-disaster recovery)

I should say that there should be disaster recovery plans within national agriculture sector plans of every island country within the region. Natural disasters are unavoidable and are becoming frequent and severe in the region. Our tropical locations made it unavoidable of tropical cyclones and storms in the region and our fragile economies, to make it worse, would be heavily affected from strong disaster impacts and very challenging for fast recoveries if there are no or few donor agents to assist.

2. Ministries of Agriculture (MoAs) typically have a front line role getting the agriculture, livestock, fisheries and forestry sector back on its feet. Yet these Ministries are severely under-resourced. Only 2-3% of national expenditures go to MoAs and vital services such as public extension officers are already limited or in decline.
   i. How could businesses, commercial buyers and markets of agri-produce assist the recovery process?

Definitely all agricultural businesses, commercial buyers and agri-produce markets should assist with the recovery processes as they are the primary beneficiaries. This is the sector that provides benefits for them every year and the faster the recovery processes in place, the faster the resumptions of their normal business operations. They should donate assistance, in whatever forms, to speed up recovery activities as to bring down the situation back to normal again. They may come together to form up a national disaster recovery group within the country and may assist with the government in speeding up recovery activities and performances. They may allocate contributions, such as national disaster recovery funds or part of some insurance funds, to government on whatever forms and means as to cater for such natural disaster fast recoveries.

ii. Should we be mobilizing our youths, unemployed and other groups to assist the recovery of the sector? How?

Most people in the region are residing in villages and communities and they belong to various social groups and organisations, which make it easy for them to be mobilized to assist with the sector recovery. The Agriculture Ministry should list all the recovery activities in hand and arrange them accordingly to assist with such national group assistance. There should be a national declaration to perform such emergency recovery activities in a given period of time.

iii. Are you aware of Post Disaster National Assessment processes and how they work in your countries? If no would you like to know more?

Currently, in Tonga, we have 2 post disaster national assessment procedures, which are the Disaster Rapid Assessment and the Disaster Detail Assessment process. The Disaster Rapid Assessment procedure involves a national team from various sectors to have rapid assessment on the impact severity of the disaster and identify emergency necessities right after the disaster struck. This assessment is always done within a week after the disaster. This national team, under the National Emergency Management Office (NEMO), have representatives from Agriculture, Infrastructure, Health, Communications and Energy sectors and they are the primary evaluators to assess the situation after the disaster, providing rapid recommendations for national immediate intervention and assistance. The Disaster Detail Assessment process comes at a later stage with detail assessment on the disaster impacts and usually involves interviewing of households. It would provide more details and better estimate of the disaster impact.

3. ICT, mobile technology etc. is widely available in this region.
   i. What information do farmers, fishers and foresters need during the recovery process?

During the recovery process, information to farmers, fishers and foresters require proactive and hand-on information. All information that should requires fast recovery should be the relevant information for these clients.

ii. How can this information be effectively and efficiently relayed to farmers, fishers and foresters?

Most island countries in the region now access to televisions and digital communications with Wi-Fi technologies. The availability of versatile mobile phones makes it an advantage for communications. Fast conveyance of the real and correct information can be achieved but only if there would have been little damages to such communication networks and systems in the disaster. Using of AM and FM radio broadcasting systems has proven very effective, particularly in remote areas of the region where islands are scattered and far off from the main island. It is an efficient ways in conveying recovery information and conveying advisory messages to clients. In Tonga, the operations of several FM Radio stations with one AM Radio station have proven effective in announcing alert information at pre-disaster time. They also provide updated information during and after the disaster which were very effective in allowing the public for preparations and have advice on what to do.

4. The provision of seeds, plant material and livestock recovery is critical to recovery of farmers.
   i. How can a country ensure that it has adequate stocks of seeds and plant material at a national level?

The Ministry of Agriculture always delivered an annual pre-disaster crop survey in August – October on the cropping status. These data would provide benchmark information on the availability of seeds and planting materials. This is always done prior to the hurricane season, which is in November – March every year.

ii. How can other countries in our region or other regions help in this area?

There should be a mechanism of regional assistance within the region as we shared some common interests in terms of food, crops, livestock and cultural life. As we are mostly members under the Secretariat of the Pacific Community (SPC), there should be a room of helping each other between our countries. Whatever forms of assistance we may contribute with but we need to help each other. One country may suffer today and one may suffer tomorrow.

5. Soil quality is often reduced following events such as tropical cyclones, flooding, storm surges, and tsunami.
   i. How should we help with soil recovery?

In regards to soil recovery after a natural disaster, there would be various ways in which every country has experience with. Using of composting from debris and decayed materials left over after the disaster would be effective in soil recovery.

However, flooding and tsunami disasters may have severe impacts with soil recovery and it should have different strategy to tackle soil recovery in such situation. It may involve large quantity soil mobility and transfers and should have a serious planned strategy in hand to help and mitigate soil recovery in such situation. Government should identify locations with those problems and should declare as dumping sites for organic waste to build up in coming years.

ii. How do we prevent soil fragility to these disasters?

The degree of damages to soil may link to types of natural disasters, land topography and soil structure. We may expect higher impacts of soil erosion from an event of flooding, continuous heavy rains and tsunami than tropical cyclones and storm surges. For tsunami and flooding disasters, low lying areas are more vulnerable to heavier damages than in higher elevated area while flat land are more resilient to soil erosion during heavy rains and flooding disasters. Based on these factors, we may need to prepare ahead standard strategies to prevent soil fragility in these area. In sloping and high elevated land, we may advice to apply contour plantings but with less cultivation in such areas. Cultivating of long term cover crops would be effective in controlling soil erosion and using such land for pasture purposes would reduce complete expose of soil to running water.

6. How should countries use cultural or indigenous knowledge to mitigate or adapt to natural disasters?

In the region, access to cultural and indigenous knowledge is very limited due to lack of availability. Cultural and indigenous knowledge are mostly orally available but not documented. It should be documented, disseminated and can be used to mitigate natural disasters. The indigenous knowledge has been collected for many years and passed through many generations up to present dates, based on experiences and observations. In Tonga, it is said that there would be a hurricane coming when the air is so humid. When bees are building their nests near to the ground level or in tree hollows or in lying coconut husks, it gives an alert for a strong wind. Cultural and indigenous knowledge is very important but it needs to be documented to make available. We cannot just sit there and let our cultural and indigenous knowledge drains away in years to come while the natural disasters are more frequent now.

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10) Mr Dean Solofa, SPC Land Resources Division – Fiji

1. Agriculture (including Fisheries and Forestry) is the backbone of most Pacific countries. In your view.
   i. Are the mechanisms to assist the recovery of the agriculture/forestry sector following disasters working well? If yes how, if no, how would you improve it? (Please name country)

ii. Should national agriculture/forestry plans stipulate a post disaster recovery plan for the sector? (A recent SPC survey of National Agriculture sector frameworks and plans in the Pacific show only a small number include text on post-disaster recovery)

Yes, there is great value in having post disaster recovery plans for the sector, perhaps even as an integral part of a sector plan. Given the future climate variability and predictions indicate a likelihood of more frequent natural extreme events like tropical cyclones and drought in the future, sector plans must have contingencies for such events to have negative impacts on the sectors to help mitigate potential adverse impacts while reducing potential losses through timely and effective post disaster action to restore the sector to pre-disaster operations.

The aftermath of tropical cyclone and drought events such as the ones being experienced by countries like Fiji, Tonga, Vanuatu, Marshall Islands, FSM, and others will provide important lessons in their recovery works that could help to inform sector plans from the perspective of focusing on resilience building into the sector pre-disaster, and emergency responses post-disaster. These will help inform the kinds of decisions on investments to be made in terms of resilience work and post-disaster recovery that the sector must consider. Traditional agriculture and forestry (and fisheries) development programmes must now feature climate resilience and disaster risk management elements beyond basic accounting for the likelihood of disruptions from natural hazards.

2. Ministries of Agriculture (MoAs) typically have a front line role getting the agriculture, livestock, fisheries and forestry sector back on its feet. Yet these Ministries are severely under-resourced. Only 2-3% of national expenditures go to MoAs and vital services such as public extension officers are already limited or in decline.

i. How could businesses, commercial buyers and markets of agriproduce assist the recovery process?

It is probably safe to say that many in the private sector have assisted in post recovery efforts of previous disaster events, although it is likely that their efforts might be underestimated and also potentially unattributed also. There is obviously a lot of scope for the private sector to be involved in the recovery process, and perhaps it is a matter of an effort to identify first what the scope is, and where the mutual benefits lie. To facilitate more effectively a private sector engagement in this area, perhaps it would also be useful to understand what policies or action frameworks exist that would allow the potential of the private sector to be fully realized in the recovery process. For example, roles in specialist information, in-kind support to state or federal (or via CSOs or NGOs) efforts, mobilization and engagement of farmer networks, to support affected producers are all roles that specialist private sector businesses could have opportunity and incentive for action in.

ii. Should we be mobilising our youths, unemployed and other groups to assist the recovery of the sector. How?

I am not familiar with work in the youth development area, but my thoughts and questions are along similar lines to the above. For the unemployed and for youth networks, what are the social capital responsibilities and interests, or incentives around the response process, would likely engage them? If there are such opportunities (and interest, above all) what organization has to happen to facilitate this? Can youth networks coordinate with interested CSOs, NGOs, even private sector agents that may want to deploy their capabilities in the post-disaster recovery effort? What resources are required to support something like this to happen and how can these be turned into those employment or career type opportunities that unemployed youth could gain experience from?

iii. Are you aware of Post Disaster National Assessment processes and how they work in your countries? If no would you like to know more?

I am aware of the PDNA and its deployment in some of the countries in post disaster assessments. PDNAs have the potential to provide some much more insight into disasters and their impacts via their detailed

contextual analysis around losses and damages and their social and economic costs. I understand that the PDNA process is a new tool and to some and will require training for disaster practitioners in some countries. The use of the PDNA to help contextualize the impacts of disasters on the agriculture sector will have high value and lend its outputs readily to the idea of the inclusion of disaster resilience and recovery plans into Agriculture sector plans.

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11) Mr Michael Ho'ota, Ministry of Agriculture – Solomon Islands

1. Agriculture (including Fisheries and Forestry) is the backbone of most Pacific countries. In your view.
   i. Are the mechanisms to assist the recovery of the agriculture/forestry sector following disasters working well? If yes how, if no, how would you improve it? (Please name country)

In Solomon Islands mechanisms put in place were tried out during the April 2014 Flush Floods. However from my observation the time taken to activate the assessment teams to do initial rapid assessment took some time as each stakeholders especially government institutions had difficulty to access financial resources to send out their teams into the disaster areas. Both NGO's and Government institutions and Donor agencies carried out their own assessments in some cases several groups of people going into the same communities asking the same questions which created some resentment from the affected communities. When assistance was given out again issues of affected communities' where double dipping also occurred.

To improve this suggested that assessment be done by only one team comprising all relevant stakeholders. Funding should be made available somehow somewhere for the immediate activation of rapid assessment teams.

All the assistance and support need to go through a single coordinating committee or organisation so that type of assistance is unified, and to reduce the incidence of some communities getting multiple assistance while other get none.

   ii. Should national agriculture/forestry plans stipulate a post disaster recovery plan for the sector? (A recent SPC survey of National Agriculture sector frameworks and plans in the Pacific show only a small number include text on post-disaster recovery)

Yes they should have a post disaster recovery plan, however we had made several attempts but failed to convince The Ministry of Planning and Aid Coordination and Ministry of Finance to allocate funds for us in this area.

2. Ministries of Agriculture (MoAs) typically have a front line role getting the agriculture, livestock, fisheries and forestry sector back on its feet. Yet these Ministries are severely under-resourced. Only 2-3% of national expenditures go to MoAs and vital services such as public extension officers are already limited or in decline.

   i. How could businesses, commercial buyers and markets of agriproduce assist the recovery process?

They could assist in the provision of inputs to assist their farmers to recover quickly from damage to their infrastructure or loss of produce.

   ii. Should we be mobilising our youths, unemployed and other groups to assist the recovery of the sector. How?

Yes employing them as contractors to clean up farms, construct or rehabilitate damaged agriculture infrastructure, land preparation and establishment of nurseries for mass propagation and distribution of planting materials.

   iii. Are you aware of Post Disaster National Assessment processes and how they work in your countries? If no would you like to know more?

Yes

3. ICT, mobile technology etc. is widely available in this region.
   i. What information do farmers, fishers and foresters need during the recovery process?

Information on the recovery process; Sources of farm inputs, Sources of possible assistance, market information and commodity prices and Shipping information's.

   ii. How can this information be effectively and efficiently relayed to farmers, fishers and foresters?

By simple text messages through the mobile phones or service messages through the public radio or FM stations.

4. The provision of seeds, plant material and livestock recovery is critical to recovery of farmers.
   i. How can a country ensure that it has adequate stocks of seeds and plant material at a national level?

Establishment of national seed banks and germplasm collection sites in strategic locations throughout the country.

   ii. How can other countries in our region or other regions help in this area?

Each country in the region should have established seed banks and germplasm collection sites and should be able to assist their fellow pacific islanders with their stock in the time of need.

5. Soil quality is often reduced following events such as tropical cyclones, flooding, storm surges, and tsunami.
   i. How should we help with soil recovery?

Soil recovery could be addressed through introduced sustainable farming systems.

   ii. How do we prevent soil fragility to these disasters?

Firstly to avoid farming on fragile land and prevention through appropriate farming systems developed for different land forms and soil systems for disaster prone areas.

6. How should countries use cultural or indigenous knowledge to mitigate or adapt to natural disasters?

A study or investigation needs to be done on the indigenous knowledge that a present and should they be credible incorporate them in post disaster strategies.

It is also important to note that there are certain level of resilience relating to this knowledge that are present within communities, the form and manner in which the assistance are delivered should not interfere with the traditional resilience mechanisms which are in existent as this may lead to communities heavily dependent on outside assistance in future disasters despite them being able to deal with some of the issues themselves.

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12) Mr Kofi Nouve, Food and Agriculture Global Practice – Australia

Great responses from Michael Ho'ota. Thanks for sharing them. I find the comments on the PDNA particularly powerful. The unified approach to damage and loss assessment, and easy access to resources for carrying assessment are key to fast and effective assessment of damage, losses, and needs.

Preparedness is also critical, and this requires training of relevant agricultural public and private stakeholders on PNDA methodology; developing template for data collection; and ensuring that a sound baseline is in place and updated regularly. Assessments tend to move much faster and more efficiently where good baselines are in place.

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13) Mr Jim Currie, College of Micronesia – Federated States of Micronesia

I would have to agree with almost every comment made by Michael Ho'ota. I would agree that in cases here in Micronesia, we had many donors heading off in their own direction and in one case buying up all of the food on one island and transporting to other affected areas and then leaving the original island without staple foods.

In the larger, dispersed countries there is often areas that are not affected by the same events. It is best to have the unaffected areas support the affected areas as much as possible. This reduces the quarantine problems between countries and gives a sense of ownership and accomplishment to the citizens.

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14) Mr Viliamu Iese, University of the South Pacific – Fiji

1. Agriculture (including Fisheries and Forestry) is the backbone of most Pacific countries. In your view.
   i. Are the mechanisms to assist the recovery of the agriculture/forestry sector following disasters working well? If yes how, if no, how would you improve it? (Please name country)

There are some mechanisms in place that are working well for examples the Disaster Preparedness and Disaster Risk Reduction approaches taken by some countries. These are for example in Fiji. There are multiple efforts in place to prepare farmers, agricultural officers not only to be prepared to reduce the impacts of hazards but also to respond effectively in a timely and resourceful manner. There is an active Food Security and Livelihood Cluster in Fiji that is working with several partners to prepare and develop processes and materials for warning farmers and also streamlining assessment procedures and forms to make post disaster assessments aligned in order to conduct assessments effectively and provide timely loss and damage data, values and recovery needs in order to develop good recovery strategies. The point here is referring to having a good pre-disaster risk reduction plan and also a good post disaster process in place – prepare to respond.

However, there are challenges that are hindering the effective and efficient implementation of some of these mechanisms. Firstly challenge is the limited capacity existing in the agriculture and forestry sector to implement these processes effectively. Firstly, the limited human capacity – from my experiences the extension or advisory officers are the first point of contacts between the farmers/communities and ministries after disasters. In some countries there are very few extension/advisory officers in the field (may be 1 officer/100 or 1000 or even more farmers). After disasters, these officers are also highly affected as well so their priorities are not usually the job as a data collector or assessment officers – they are firstly worried about their own houses, families and household recovery. Then secondly, there are limited trainings or specific capacity building for officers to conduct post disaster damage assessments, delivery of post disaster advises and identification of post disaster recovery needs from farmers. From my experiences most of the regional and national trainings on post disaster assessments and recovery needs are targeting the NDMO officers but rarely the agricultural sectors (if there are trainings with the agricultural sectors, only few from the headquarters are involved but not the ones in rural or isolated islands/area), the main ones who will meet the farmers/communities. This lack of capacity and proper training lead to the delay of delivery of assessment information, inconsistencies in valuing damage and losses and delay of important decision support information for timely recovery needs. I think there is also a need to have some post disaster stress counselling for officers on the ground as not only they are affected with their families but they conduct interviews with affected farmers.

The second challenge here is especially with limited resourcing in terms of financial support in place to mobilize staff for damage assessments and also initial recovery plan implementation. Most of the countries in the Pacific wait for donors, non-government agencies, development partners to arrive and provide resources then they will start damage assessments and early response.

Solution-wise, there is a need to increase the number of extension officers through scholarships or other education options. There is also a need to conduct loss and damage, DRR trainings of extension officers or all agricultural officers to conduct assessments, develop recovery priorities and work with farmers to prepare well before disasters. This could be through TVET processes or skills upgrading training.

ii. Should national agriculture/forestry plans stipulate a post disaster recovery plan for the sector? (A recent SPC survey of National Agriculture sector frameworks and plans in the Pacific show only a small number include text on post-disaster recovery)

Yes I strongly agree national agriculture and forestry plans should include post disaster recovery plans for the sector. This might help with securing extra funds to support training of Agriculture officers and relevant stakeholders to prepare and effectively and efficiently take part in post disaster recovery plans, implementation and monitoring, evaluation and learning.

2. Ministries of Agriculture (MoAs) typically have a front line role getting the agriculture, livestock, fisheries and forestry sector back on its feet. Yet these Ministries are severely under-resourced. Only 2-3% of national expenditures go to MoAs and vital services such as public extension officers are already limited or in decline.

i. How could businesses, commercial buyers and markets of agriproduce assist the recovery process?

Involve the private sector in pre-disaster preparedness and invite them to take part in food security/agriculture cluster activities including damage assessments and development of recovery priorities

ii. Should we be mobilising our youths, unemployed and other groups to assist the recovery of the sector. How?

Yes it is important to mobilize youths, unemployed and other relevant groups to assist the recovery of the sector. I think it is important to learn from other sectors where volunteer programs are strong in order to map out how to engage them and where and when.

iii. Are you aware of Post Disaster National Assessment processes and how they work in your countries? If no would you like to know more?

I am aware of PDNA processes. But I am aware there are very few people in national agriculture sector who are aware of PDNA. They should be involved in PDNA training before a disaster. This will put more emphasis in the whole process rather than just a quick training when PDNA is needed. The knowledge of the process will add value to the work of Agriculture officers in the whole cycle of post disaster damage and needs assessment and development of recovery frameworks and capacity needs. The more they are aware the better the value of collecting good baseline data, damage and loss data, need and capacity data. It will lead to good ownership of the process. Everyone involved will appreciate that their roles are very important in every step of the PDNA process.

3. ICT, mobile technology etc. is widely available in this region.
   i. What information do farmers, fishers and foresters need during the recovery process?

- **Extend of damages and why**
- **What are the assistance available in the short term, long term timeframe (also form of assistance)**
- **Where they should go to for help/ask for assistance (Remember not all farmers/households are covered during the assessments)**
- **What are the upcoming forecasts (weather/season). Sometimes they receive assistance like planting materials but lack of awareness of immediate seasonal forecasts will lead to more losses when they plant all seedlings and a drought or a flood hit.**
- **How to minimize the loss and damages in the future? How to rebuild back better at the household level.**

ii. How can this information be effectively and efficiently relayed to farmers, fishers and foresters?

- Through normal media (TV, Radio, News Paper).
- Internet mode of delivery.
- Mobile phone services.
- Most effectively is the word of mouth (especially when all electricity are down for longer periods (this could be through agriculture officers, government-subnational offices and other relevant partners who are working in the field.
- Most importantly, there should be a communication strategy developed at national level to map out effective and efficient ways to relay information before, during and after an event.
- Agriculture officers should also be trained/empowered to communicate with farmers and partners. There are very good and knowledgeable officers but they cannot communicate to farmers when needed.

4. The provision of seeds, plant material and livestock recovery is critical to recovery of farmers.
   i. How can a country ensure that it has adequate stocks of seeds and plant material at a national level?
   ii. How can other countries in our region or other regions help in this area?

5. Soil quality is often reduced following events such as tropical cyclones, flooding, storm surges, and tsunami.
   i. How should we help with soil recovery?
   ii. How do we prevent soil fragility to these disasters?

6. How should countries use cultural or indigenous knowledge to mitigate or adapt to natural disasters?

There are existing good practices of how cultural and indigenous knowledge help in various communities in the Pacific. These should be collected, documented and transform into information materials for farmers. These information are needed to be as specific as possible down to the type of crop, type of action and when it should be applied and how.

It is important to look at "dangerous cultural and indigenous practices" that contribute to the vulnerability of the agriculture system. Not all TKs are relevant and useful. It's important to select the most relevant and appropriate ones.

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15) Mr Charles Pitt – Cook Islands Herald – Cook Islands

Thank you. Viliamu Iese raised some good points regarding food security for Pacific government policy makers to consider. In the Cook Islands we have no seed bank. Flooding from past cyclones has wiped out many of our outer island taro plantations. We now have many Hydroponic farms but none are sheltered under strong structures so as to provide a supply of fresh vegetables immediately following a cyclone. In the Cook Islands our building code only requires buildings to withstand a category 2 cyclone but with more cyclones now in the 4-5 category range, many structures including those used in farming, will need to be strengthened.

My newspaper will publicise the issues you have raised for wider awareness.
