

Small Island States Resilience Initiative



Summary of the Second meeting of the Practitioners Network Climate and Disaster Resilience in Small Island Developing States Practical Solutions

Cancun, Mexico - May 21-23, 2017

Contents

Background	2
Objectives of the meeting.....	2
About SISRI and first meeting of the Practitioners Network	3
Summary of the presentations and discussions	4
Session 1: Public policies and strategies on resilience and links to SDGs, the Sendai Framework and the Paris Agreement.....	4
Session 2: Coastal Areas, Ecosystem and Community Resilience.....	6
Session 3A, 3B, 3C and CD: Parallel sessions on Tools and Innovations	9
3A: Lessons Learned from Hurricane Matthew	9
3B: Effective data and information sharing	11
3C: Risk-based spatial planning.....	13
3D: Effective Project Management	15
Session 4: Institutional Strengthening and Coordination	17
Session 5: Early Warning and Preparedness	20
Session 6: Success in Accessing and Securing scaled-up Financing for Resilience	22

Background

The 2030 Agenda for Sustainable Development, with 17 Sustainable Development Goals (SDGs) and associated targets, has provided a unique opportunity for building resilience in all countries and communities – such that no one is left behind. The commitment to building resilience is reinforced by the Paris Agreement and the Sendai Framework for Disaster Risk Reduction—which were also agreed on in 2015—and the Samoa Pathway adopted in 2014. These agreements and processes, taken together, present a powerful set of instruments for addressing the special challenges faced by the Small Island Developing States (SIDS) which are particularly vulnerable to the adverse effects of climate change and geo-hazards.

Over the last few years, it has also become clear that although there is extensive discussions on climate and disaster resilient solutions, they are not being adopted in SIDS to scale. The reason seems to include limited linkages between the normal development processes and the government staff who are responsible for climate resilient project and programs. It is thus proving to be important to bring together representatives of the Ministries of Finance and Planning who have the overall responsibility for development as well as those from the technical Ministries and agencies. There is also a need to bring together many of the development partners to meet the ambition of coherent and scaled up efforts for climate and disaster resilient development in SIDS. To this end, the World Bank and GFDRR, through SISRI, have joined forces with UNISDR and UNDESA to organize a meeting that brings together practitioners from SIDS to share solutions on climate and disaster resilient development and agencies that support such efforts.

34 SIDS came together bringing more than 80 participants to share solutions on climate and disaster resilient development in Cancun from 21st to 23rd of May, 2017, as a side event of the [UNISDR's Global Platform on Disaster Risk Reduction](#).

Objectives of the meeting

The objectives of the meeting are:

- To exchange experiences and good practices developed by small island states to make development climate and disaster resilient;
- To facilitate peer-to-peer learning so as to support effective design and implementation of climate and disaster resilient investments and policy interventions;
- To further strengthen the community of practice between small island states' practitioners; and
- Identify synergistic solutions and actions for building resilience and reducing climate and disaster risk and contribute to achieving the SDGs and the Sendai targets in SIDS.

The program presented here has been developed jointly with practitioners from SIDS to ensure that the knowledge and lessons most relevant to their work is being shared and there is an opportunity to share

challenges and seek solutions from peers on making development climate and disaster resilient. The meeting will also include presentations of innovative designs and solutions being implemented in small island states from experts and practitioners from all over the world.

Expected outcome of the meeting

The major outcome is peer-to-peer learning on practical solutions to challenges SIDS face from climate and disaster risks to their people, economies and ecosystems. A summary below highlights key points from the discussions, propose recommendations and next steps, based on lessons learned and good practices shared at the meeting.

About SISRI and first meeting of the Practitioners Network

About the Small Island States Resilience Initiative (SISRI)

The World Bank and GFDRR's Small Island Resilience Initiative (SISRI) was launched at the UN SIDS meeting in Samoa in 2014 and is an integral part of the [SAMOA Pathway](#). SISRI's objective is to provide support to reduce climate and disaster risks to populations, assets, ecosystems and economies in small island states. SISRI supports 25 island countries where the World Bank is already engaged including those in African/Indian, Caribbean and Pacific region.

Based on extensive knowledge from investment and policy support, SISRI has developed a framework with three major building blocks that are critical components of strengthening climate and disaster resilience in small island states. These building blocks are: i) Enhancing institutional capacity and coordination across sectors; ii) Support for effective management of operations and planning of resilient activities; and iii) Technical support that range from early warning, coastal resilience to financial protection. SISRI supports analytical work, synthesis of knowledge and good practices in small island states and facilitates the sharing of such knowledge. As part of the knowledge sharing, SISRI has established a community of practice within the World Bank and a Practitioners Network from government agencies and other stakeholders in small island states.

First meeting of the SISRI Practitioners Network

The first Practitioners Network meeting was held in Venice at the margins of the [Understanding Risk Forum](#) in May 2016 to share good practices and facilitate peer-to-peer learning to strengthen design and implementation of climate- and disaster-resilient development. Practitioners highlighted the insights gained and how they expect to apply these for their national policies and projects They also expressed a need to continue the exchange of solutions and information through a virtual network and face-to-face meetings when possible, preferably in conjunction with other major climate and disaster resilience events. As a result, a virtual platform was set up and these discussions have continued through the platform. They have concerned practices and solutions related to investment planning and institutional coordination, risk-informed land-use planning, as well as solutions on resilient infrastructure, coastal protection, social

protection, and risk financing. The 2017 Global Platform for Disaster Risk Reduction provides an opportunity to bring together these practitioners, but also enlarge the discussion through also the countries that UN organizations support.

Summary of the presentations and discussions

Session 1: Public policies and strategies on resilience and links to SDGs, the Sendai Framework and the Paris Agreement

In this Session, five countries—Samoa, Cook Islands, Guinea Bissau, Haiti and Grenada - presented challenges and solutions to strengthen policies and strategies to enhance climate and disaster resilient development.

Weak public policies exacerbate the level of vulnerabilities related to climate and disaster risks, which are compounded by the socioeconomic and geographic factors in small island countries. Sound policies are needed to create incentives to integrate climate and disaster resilience into development processes, linking SDGs, the Sendai Framework and the Paris Agreement.

Solutions shared by the countries to address the vulnerabilities include strengthening of public policies at the national and sector levels by integrating climate and disaster resilience within sustainable development actions and linking these efforts to international and regional planning processes, frameworks, agreements, plans and goals. Various policy instruments and tools that are in use. Use of budgetary processes to incentivize the integration of climate and disaster risk is showing promise.

Two approaches emerged from the presentations and discussions during this Session:

- i) **Climate and disaster resilience is mainstreamed into national and sector planning:** In this approach, climate and disaster resilience is integrated into national development planning and strategy documents and sector plans. For example, **Samoa** has successfully integrated disaster and climate resilience into the Strategy for the Development of Samoa 2016/2020, targeting all 14 sectors to achieve 100% compliance in including disaster and climate risks management in all sector plans. **Haiti** Strategic Plan for the Development (PSDH) includes focus on reducing vulnerability. **Saint Lucia** included climate and disaster resilience as a priority area in its National Development Strategic Plan (NDSP). Similar process is underway in **Grenada**, where the National Sustainable Development Plan 2030 is being prepared with a specific pillar on climate change and Disaster Risk Management. These processes have been informed by and are linked to SDGs, the Sendai Framework and the Paris Agreement.
- ii) **Integrated approach for climate and disaster resilience:** In this approach, disaster and climate agencies are working together to develop combined planning document to address climate and disaster risks, not necessarily embedded in higher national development plans. **Cook Islands**, for example, has developed a Joint National Action Plan for Disaster Risk Management and Climate Change Adaptation (JNAP 2016-2020), drawing from regional frameworks for disaster risk reduction and management (2005-2015), climate change 2006-2015 and resilient development 2017-2030 in the Pacific. The JNAP is also well aligned with the National Development Plan and SDGs.

Budgetary process Grenada is using modified accounts charters to track disaster and climate change expenditure, budget labeling to quantify climate and disaster resilience investments and screening of projects to ensure conformity with national level plans.

Other key policy instruments used by SIDS. For example, in Haiti Emergency Fund; Social Emergency Program; Caribbean Catastrophe Risk Insurance Facility (CCRIF) parametric insurance; emergency interventions; budget reallocation; appeal to international solidarity.

Main messages:

- Mainstreaming of climate and disaster risks into national and sector planning takes time. Political leadership at the highest level and right time are important.
- Both top down and bottom up approaches are needed to create ownership and ensure buy-in at all levels. Participatory consultations, including communities, NGOs, academia, policy makers, parliamentarians and Ministers, opposition parties, private sector leaders, social partners, technical working group and steering committee, is essential. To engage with key government officials, it is helpful to use existing processes (e.g. regular cabinet meetings, presentations, sectoral planning processes) and fit into their schedule to avoid creation of parallel processes.
- Good collaboration between disaster and climate change institutions is key.

Issues needing further exploration:

- How to access financing and ensure adequate allocation of budget to address climate and disaster risks, including management of fiscal risks?
- How to ensure that public policies take into account the needs of the most vulnerable?
- How can the sector ministries/agencies be persuaded to prioritize climate and disaster resilience and strengthen coordination across institutions?
- How to improve data analysis, tools and methodologies for risk assessments for enhanced consideration of results in decision making processes?
- How to put in place a comprehensive and effective monitoring and reporting framework to track and report on resilience results, coordinating with multiple institutions and agencies?

Session 2: Coastal Areas, Ecosystem and Community Resilience

Kiribati, Republic of Marshall Islands, Jamaica, Solomon Islands, Federated State of Micronesia, and Mauritius presented the challenges and solutions put forward to enhance resilience of coastal areas, ecosystems and communities.

Climate change impacts combined with some development decisions are having devastating impacts on small islands coastlines and in some cases threatening the very existence of some atolls islands. Sea level rise, storm surges, hurricanes, and coastal erosion are having devastating impacts on small islands and in particular on atolls islands. Climate change is also influencing rain patterns and the start and end of cyclone seasons is changing. Excessive and non-regulated beach sand mining, deforestation, lack of land use planning enforcement, low expertise and local capacities are contributing to increasing the climate and disaster risks in SIDS. Island remoteness and small size are contributing to the challenges of moving towards climate resilient development.

However, SIDS are taking actions to protect coastlines, infrastructures and communities through improved understanding of risk, structural measures, ecosystem based solutions, risk governance, land use planning and land reclamation, planned relocation and migration with dignity, and community based resilient development. The different types of measures been implemented in SIDS are listed below. Some measures are taken in combination to enhance their effectiveness:

- To better **understand risks**, RMI studied coastal erosion processes over time using GIS and remote sensing technology. They are trying to better understand interaction between physical and biological processes. **Belize** conducted roads vulnerability assessments as well as topographic and bathymetric surveys to better understand effects of protection works to minimize inadvertent increase of risk and exposure. They also assessed anticipated impacts of climate change on new settlements. **Solomon Islands** performed community based risk assessments. Data collection and creation of data bases are action that **Belize** and **Haiti** are carrying using Lidar data. In **Belize**, Lidar data allows for high quality flood modeling and risk assessment of larger areas of watersheds. However, costs of Lidar data acquisition are high, around a USD 1 million with partial territorial coverage. In **STP**, drones were used to collect data to perform risk assessments for key coastal communities. Overall, building capacities to allow for data collection, storage and analysis is key to better understand risks.
- **Structural measures** are used by all SIDS. Seawalls are the most common protection infrastructures (e.g. **RMI, Kiribati, and Mauritius**). **Kiribati** has modified seawall using mass concrete and sandbags. In **RMI**, concrete sea walls are proving to be more robust and cost-effective than sandbags, although the cost is a burden for the Government (about USD 1,630/m). They also constructed causeways (Ailinglaplap) in 2015 using only local material. **Jamaica** is improving drainage to regulate floods. In general, countries are experimenting with different types of coastal protection structures. Often this is a learning process and improvement after failures. Effectiveness of some still need to be proved.
- **Ecosystem based solutions** are used by several islands, mangroves restoration or plantation are carried out in **Kiribati, RMI, Jamaica** and **Mauritius**. Oftentimes plantations are done by local communities. In **Mauritius** they are doing coral farming to restore coral reefs. In non-atolls islands

of **FSM**, moving roads inland will allow to reduce human pressure on coastlines giving space for mangroves and vegetation to take over costal protection. (they are also trying planting pandanus first to stabilize the coastal erosion and creating good conditions for mangrove to be established). In **Mauritius**, green spaces are encouraged to protect coastal roads.

- **Risk governance** including coordination, plans and reforms are important actions taken in several islands. **RMI** is enhancing coordination among Government agencies, **Kiribati** is developing costal management plans and **Jamaica** Coastal resource management plans. The Cabinet in **Belize** has mandated the integration of climate and disaster resilience into all infrastructures. Banning and regulating beach sand mining is a promising solution that **Mauritius** has implemented since 2001. Finding alternative solutions to beach sand was a preliminary condition to ban its extraction. Measure to minimize social impacts were also taken such as financial compensation and capacity building for alternative employment. Currently a basalt sand rock industry has been created in **Mauritius**. Following an exchange between **Mauritius** and **STP** after the first meeting of the Practitioner Network in Venice, a private initiative in **STP** is now testing basalt rocks to generate alternatives to beach sand. **RMI** is considering banning beach sand mining but first they have to consider alternative livelihoods for communities relying on beach sand mining as a source of income.
- **Land use planning and land reclamation.** For **Jamaica** land use planning is important for coastal risk management; they are looking for incentives such as regularization of land tenure to encourage resettlement in safe areas. In combination with ecosystem-based solutions, **FSM** is using risk informed land use planning to bring coastal roads inland to reduce their exposure and leave space for mangroves to protect the coast (see ecosystem based solution). To reclaim land, **Mauritius** is using beach nourishment in 5 sites and dune restauration. In **Kiribati** land reclamation is on a concept stage but they are aiming to raise land surface by 4 to 5 meters above current levels in a pilot project.
- **Planned relocation and migration with dignity.** Relocation and migration are difficult and complex resilience measures for SIDS. Relocation after catastrophic events are taking place in **Kiribati** and **RMI**. Awareness raised after disasters has motivated **Samoa** to draft a relocation strategy, however land tenure and provision of infrastructures and services to new safe settlement areas are challenges they face. **Mauritius** has planned the relocation of 75 families to reduce their exposure to coastal flooding and at the same time create green space to protect coastal roads. **STP** is planning voluntary resettlement for critical communities by preparing safe areas with minimal basic social infrastructure to motivate relocation. Safe areas are chosen close to the original community to maintain easy access to their livelihoods (fisheries). In the **Maldives**, for island with high population density like Male, the Government is promoting selected islands as safe places and is building homes, providing financial assistance to encourage voluntary relocation, and development of economic centers. **Kiribati** has an ongoing project for migration with dignity that includes a cross-border labor migration to forge expatriate communities in various receiving countries (Australia and New Zealand), to support future migrants, and also to enhance the opportunity for remittances to be sent back. It includes improvement of educational and vocational qualifications.
- Several **community based resilience** measures are implemented such as risk assessment and identification of engineering designs for community infrastructure projects in **Solomon Islands**. In

Jamaica communities are involved in projects since the inception phase to encourage ownership of the space and infrastructures. Moreover, capacities are built and interactions between development, coastal management and disaster risk management are analyzed with the communities. To facilitate planning and implementation of measures, local disaster committees are strengthened and community based contracting is encouraged. **Kiribati** is conducting a community based Mangrove Management Planning that includes public consultations and policy development. Emergency response and Early Warning Systems (EWS) are also being developed at local level. **Solomon Islands** have developed an EWS based on radio communication with siren capabilities in 4 provinces at community level including tsunamis, earthquakes and volcanic activities. **Mauritius** is raising local awareness and enhancing community resilience by trainings and equipping local volunteers to act and respond in case of disasters. Emergency Centers were also built.

Main messages:

- Finding measures to protect coastlines and enhance community resilience needs a collaborative effort of all actors from national to local levels including civil society and NGOs.
- Effective solutions need combinations of different and complementary measures ranging from protective infrastructure (green and grey), coordination to policies and regulations.
- Better understanding of bio-physical and social processes, including their interactions, such as erosion processes, impacts of climate change, development (social and economic aspects) and risk management are key to find effective and sustainable solutions.

Issues needing further exploration:

- Effectiveness of single or combined measures still need to be tested and improved.
- Relocation processes are complex resilience measures implying several challenges needing further exploration such as land tenure, compensations, cultural issues and availability of safe land.
- Finding sustainable beach sand alternatives to implement effective sand ban and regulations, including alternatives for livelihoods and income generating options for local population currently relying on sand mining.
- Enhance local capacities and expertise to reduce countries dependency on foreign expertise.
- How to adapt key development sectors that are also highly vulnerable to climate and disaster risks such as tourism.

Session 3A, 3B, 3C and CD: Parallel sessions on Tools and Innovations

3A: Lessons Learned from Hurricane Matthew

Haiti, Saint Vincent and the Grenadines, and Saint Lucia shared lessons learned from Hurricane Matthew. These focused on two areas:

i) Building standards and risk informed land use planning

The use of remote sensing technology and data is bringing evidence of the importance of risk informed land use planning and enforcement in Haiti. Haiti used an innovative remote sensing web based platform to facilitate the assessment of damages (haitidata.org) and they identified that several shelters (school) are located in flood prone areas. Lessons learned acknowledge the importance of enforcement of risk informed land use planning, particularly concerning public and private buildings, such as schools often used as refuges in the aftermath of disasters. Despite these efforts, many affected people are still in temporary shelters, often in bad conditions to withstand storms and potential hurricanes. Urgent action is still needed.

ii) Risk transfer

Combinations of complementary risk transfer instruments can be effective when used in a holistic risk management approach. Saint Vincent and the Grenadines (SVG) has taken a holistic approach to build resilience which includes risks assessments, reducing exposure and vulnerabilities and using risk transfer instruments. They have implemented a disaster fund to assist with implementation of climate and disaster risks reduction measures. Their early warning systems alerted exposed populations and therefore loses of life were limited during Matthew. **Saint Vincent and the Grenadines** and **Saint Lucia** are members of Caribbean Catastrophe Risk Insurance Facility (CCRIF) and for both a payout disbursement was triggered by Hurricane Matthew (USD 285,000 for SVG and USD 3.7 million for Saint Lucia). The payout depended on the coverage as well as the estimated damage. **Saint Lucia** has gone further and developed a range of instruments as part of their risk transfer mechanisms including Contingency Emergency Response Component (CERC – so that funds can be reallocated quickly and easily and training for triggering the CERC is also provided), a Catastrophe Deferred Drawdown Option (CAT DOO – budget support that can be accessed and requires policy actions including general emergency/ disaster risk management plan, national plan to reduce risk and enhance resilience) and a Climate Adaptation Financing Facility (CAFF) - a pilot financing mechanism to incentivize pre-emptive climate adaptation amongst households and businesses. Concessionary loans (from 100,000- 300,000 are offered to finance works and activities which build the resilience of assets and livelihoods to adverse hydro-meteorological events with an initial focus on agriculture, housing, manufacturing and tourism services).

Main message:

- A holistic approach needs to be taken to effectively reduce risks, including a better understanding of risks, risk informed spatial planning, implementation of disaster risk reduction measures and Early Warning Systems and different types of insurances and financial tools to transfer risks. All

of these implies the need for mainstreaming climate and disaster resilience in development activities.

Issues needing further exploration:

- How to increase insurance coverage and find a balance between sovereign and individual insurances to increase effectiveness of risk transfer instruments. For example, currently in SVG only 2/300 people have insurance cover.
- How to enhance coordination among national institutions, a key factor for successful risk management. This is especially important during catastrophic events when lack of coordination is more evident.
- How to enhance a better understanding of characteristic of insurance and financial instruments to optimize combination and design of instruments according to the level of risk and local capacities.
- How to use insurances to address extensive risks. Extensive risks are not yet covered by insurances and they are having an important recurrent impact, particularly on the most poor and vulnerable.
- Acceptance of the limitation of affordability of insurance premiums in the face of increasing climate-related risks and impacts

3B: Effective data and information sharing

Vanuatu, Cabo Verde and Maldives presented the challenges and solutions put forward related to risk data and information sharing.

Sharing data and information is a recurrent challenge in SIDS due to several factors involving lack of coordination and institutional arrangement, followed by the difficulties of collecting, analyzing and storing data compounded with ensuring effective and open access features at least within the government. Different institutions collect and analyze data that is not necessarily shared with other potential users often leading to duplication of data collection. In addition, decentralized data and information repositories make access and use difficult. Most SIDS do not have policies and legal framework to encourage effective use of data and information sharing among government agencies. Although there are technological solutions for information systems, local capacities and implementation of those systems to local contexts are often an issue.

SIDS proposed solutions

i) Institutional arrangement for data management and sharing

Restructuring institutions and bringing climate and disaster risk reduction agencies under the same roof to minimize transactions and enhance coordination is a solution that some SIDS are implementing. **Vanuatu** has reorganized its institutional set up by bringing together climate change and disaster risk reduction (DRR) institutions under the National Advisory Board for Climate change and DRR. To store and manage data a web based one stop shop – the Vanuatu Climate change and DRR Portal – was created in 2012 and upgraded in 2016. It is linked to the regional portal set up by South Pacific Regional Environment Program (SPREP). **Cabo Verde** is taking a similar institutional approach under the new strategy for DRR. For **Vanuatu**, the benefits of these arrangements are mainly an increase in domestic and international awareness for climate and disaster resilience, enhanced coordination between government and non-government stakeholders and more transparency in decision making processes. However, challenges remain such as internet access, backup systems, staff turnover, and willingness to share information from different actors. Moreover, too often data is available only after a disaster and not in times when preventive and preparedness measures could be planned and implemented to reduce risks.

ii) Legal framework and regulations

Legal frameworks and regulations to share data could facilitate the complex and difficult process of sharing data and information in SIDS; a matter too often based on personal relationships. **Jamaica** is developing a policy draft on that matter and other islands such as **Cabo Verde** are interested on finding similar solutions to clarify the role and responsibilities of national agencies to enhance data and information sharing.

iii) Tools and software for data collection, analysis and storage

SIDS are exploring different tools and software to store, analyze and share data. For instance, **Cabo Verde, Vanuatu** and **Maldives** have or are using Desinventar; a web-based system, which, when having enough past data can be used for probabilistic risk assessments. **Cabo Verde** and **The Maldives** are also

using Desinventar. However, **Vanuatu** and **Pacific Resilience Program** found that Desinventar is not robust enough. Another option is to use [OpenDRI](#), an open source tool to collect, share and use data that has been already used in [Pacific Islands](#) and [Saint Vincent and the Grenadines](#) to accelerate data sharing; the case of [Sri Lanka](#) is a good example for SIDS to use. **The Maldives** is also looking to institutionalize the use of drones to collect data for risks assessments. The use of drones can facilitate high resolution data collection for rapidly changing conditions such as beach reclamation occurring in the laps of few months as in The Maldives. LIDAR data collection is very useful but its use is limited due to its high costs. GFDRR is piloting the option to use LIDAR cameras on drones.

Main message:

- Legal framework and institutional arrangements need to be put in place to ensure that data and information are shared while minimizing the influence of personal arrangements.
- Technical solutions for information systems need to be adapted to the local context.

Issues needing further exploration:

- Further successful experiences of institutional arrangements and legal frameworks to enhance data and information sharing are needed to inform other countries undergoing similar reforms.
- More technical solutions for data and information management need to be explored to identify best systems adapted to the challenges and needs of SIDS.

3C: Risk-based spatial planning

Republic of Marshall Islands, Sao Tome and Principe, Jamaica and Surinam shared lessons learned. The main points are summarized below:

SIDS face different challenges when it comes to implement risk based spatial planning such as identification of risk areas, lack of legal frameworks for land use plan integrating risk information and enforcement, as well as socio-economic issues when it comes to relocate exposed population to safe areas. Assessing current and future climate and disaster risks in complex costal environments and along river requires reliable scientific and socio-economic data and modelling capacities, not always available in SIDS. Some policies and regulations are either outdated or under development and don't always integrate risk information. In addition, capacities for enforcement are limited. Exposed communities have strong cultural and economic ties that need to be considered when incentivizing voluntary relocation to safer zones, a challenge that many SIDS face.

Solutions put in place by some SIDS to address those issues include i) comprehensive science based risk assessment using state of the art technology and data, ii) development of new risk informed legislation and iii) offering compensations and basic social infrastructure in safer zones to motivate voluntary resettlement. Below the three types of solutions that emerged are described.

i) Comprehensive science based risk assessments:

The Republic of Marshall Islands, presented a comprehensive approach ranging from multi-hazard risk assessment to comparison of disaster risk reduction strategies and measures. The approach used to address floods, land loss and coastal erosion followed a four-step process: (1) Assessment of hydro-meteorological events, using topographic, bathymetric and global data including current and future scenarios; (2) Impacts and risk assessment, combining information on multiple hazards, exposures and vulnerability, including value of assets to calculate expected annual damages for today and in 2030, 2050 and 2100; (3) Prioritization of areas of interventions considering the evolution of risks over time; and (4) comparison of measures to allow of identification of best options including. The methodology can be find at www.simplecoast.com. In **Suriname**, flood risk assessments were performed using the Caribbean Handbook on Risk Information Management (CHARIM.net) approach, HEC-RAS -a powerful 2D modeling and mapping open source software, 10 meters grid digital elevation models, and data from different sources including Airbus satellite imagery, Open Street Map, and local surveys among others. Assets vulnerability curves allowed to estimate annual average damage for different return periods. With this information maps of annual average damages allowed the identification of best combination of structural and non-structural solutions. These and other maps showing the estimated cost benefit ratios and estimated capital investments required to implement potential solutions were powerful decision making tools for the Government of Suriname. For example, they found that flood forecasting and increasing mangrove areas have a very high cost benefit ration compared to road drainage with a fairly low cost benefit ratio. **Jamaica** has developed disaster risk information platform, pre/post impacts assessment including vulnerability and risk maps to inform local development plan. **Sao Tome and Principe** created community risk assessment groups as part of the civil protection system.

ii) Legislation

Jamaica is fairly advanced in the development of new legislation that include risk based spatial planning. They have completed a Climate Risk Atlas, with the involvement of national agencies for planning, Disaster Risk Reduction and others. The main objective of the atlas is to provide risk information and guidelines on how to further develop the coastline ensuring a resilient development. Jamaica is currently exploring how to define and establish zones where building are forbidden in exposed zones. For prioritized exposed communities **Sao Tome and Principe** has identified and negotiated safe areas for future expansion of the communities.

iii) Relocation

Jamaica is exploring the use of compensations to motivate voluntary relocation and exploring defining cost-benefit ratios for relocation. With a participatory approach **Sao Tome and Principe** has negotiated with local population the creation of safe areas adjacent to the communities to develop expansion and delocalization zones. Adjacent zones were selected to ensure that traditional livelihoods are preserved. Partial compensations to the owners of the land have been done. As incentives for voluntary relocation, the Government will create economic poles of attraction with social infrastructure such as schools, health centers, markets etc.

Main messages:

- Local data and accurate resolutions are essential for the assessment of the damages from hydro-meteorological events.
- It is important to consider both direct and indirect (intangible) damages in risks assessment.
- South-south collaboration is critical to allow for the planning of adaptation and risk reduction options.
- State of the art technology and global data can be used for risk assessments. Tool such as SIMPLECOAST, Caribbean Handbook on Risk Management (CHARIM), and Hydrologic Engineering Center's River Analysis System (HEC-RAS) were highly appreciated by participants.
- Capacity building through periodic training is key to ensure sustainability of risk based spatial planning as local conditions and risk are dynamic processes and need regular updates.
- Preferences of communities in vulnerable locations are important to be considered for relocation plans.

Issues needing further exploration:

- How to integrate community consultations as part of hazard risk assessment.
- The need to capture non-quantifiable values of all damages and losses as well as all economic values.
- The need to address the issue of missing data. Identify the critical data sets for flood risk assessments.
- Create and maintain the institutional capacity to update modeling results, hazard, vulnerability, and risk maps.
- How to ensure that risk-based spatial planning inform relocation policies and informed land use plans are enforced to prevent development of high density settlement in at risk areas.

3D: Effective Project Management

During this session, the draft Knowledge Note on Effective Project Management under preparation by SISRI was presented to the participants to seek their feedback. Besides, challenges and solutions to better manage projects were presented by Fiji and Granada. The note will provide successful experiences from both the Caribbean and the Pacific, discuss common challenges and propose practical, innovative, and simple solutions illustrated by some cases. Special attention will be given to financial management and procurement processes. The note will also present user-friendly tools, examples, templates and guidance.

Challenges shared by SIDS when managing projects involve institutional aspects, local skill and capacities, consultation processes, stakeholder's coordination and involvement, procurement, non-systematic risk assessment, and monitoring and evaluation among others. Weak understanding of roles and responsibilities among institutions and rapid changes in leadership and priorities affect project management. Low local capacities and difficulties in keeping skilled staff, combined with low involvement and poor consultation of stakeholders can become obstacles for project management, especially when stakeholders are not project oriented. Lack of coordination between stakeholders and institutions at different levels of the state from national to local can be an issue. Complex and fix procurement procedures and discrepancy between national and international accounting standards, and reporting systems add difficulties to project management. Non-consideration of climate and disaster risks in the formulation of projects can lead to set back in the implementation of projects in the occurrence of extreme events, particularly when the project does not count with a specific contingency plan defined in the planning phase of the project. Lack of appropriate monitoring and evaluation approaches and resources as well as insufficient documentation for monitoring are barriers to effective project management, especially when monitoring is done at community level.

Solutions proposed by SIDS include enhanced consultation of stakeholders, trainings, pre-definitions of rules for implementation, screening of projects design and expenditures, and a close follow up during the implementation phase. **Grenada** is enhancing consultation with stakeholders and communities during investment conceptualization, design and implementation phases. **Fiji** has strengthened the Integrated Rural Development Approach, and identified skilled contractors (national and international). **Granada** has provided trainings to local bidders. This was beneficial for local bidders having the capacities to implement project but not to prepare the bids. During kick off meetings, **Grenada** gather selected contractors to establish rules, communication lines and reporting mechanism. They also screen infrastructure designs undertaken by the government to ensure they are climate and disaster resilient and use Excel as a cost management tool to monitor budgets and expenditures. During the implementation phase **Grenada** has a close follow up of the implementation to ensure terms of reference are implemented as intended, this include field visits. Concerning procurement aspects, the World Bank is rolling out a new procurement framework which is aimed to consider the local procurement market and trying to better align bank procurement procedures to the country when feasible.

The provided feedback to the knowledge Note turned around 3 questions. Answers by participants are listed below:

Questions 1: What other areas are we missing in this Knowledge Note to support effective project management?

- Mentioned of Environmental and Social Safeguards. The new procurement standard bidding documents changed in January to include more requirements for health and safety, etc.
- Can guidance be provided for termination/elimination of consultants that do not perform?
- Contract Management could include how do you deal with contingencies, arbitration, etc.?
- Risk Management: how can risks (including risks from natural disasters) be managed by effective project management?
- Cost management: how can costs be managed properly to minimize budget over-runs?
- Recognition that in order to engage in effective project management the complexity of the project should be appropriately matched with the capacity of the country.

Question 2: Specific to FM and procurement, are there some areas that we need to add more or delete from?

- Can guidance be provided on how to address areas of non-performance?
- Is there a process for identify if there is any litigation pending for consultants/contractors, etc.?
- Clarification on qualifications: what is sufficient for Financial Management and project Procurement staff? How many minimum years of experience are required? Capacity is different in Caribbean from Pacific, so this may need to be recognized.
- How can steps be taken to ensure country procurement and Financial Management process do not interfere with implementation of the project (i.e., if there are any contradictions between country systems and Bank systems.).
- If the countries have a pooled fund, can the Bank funds flow through it?

Question 3: What other tools, examples, and templates would you like to see?

- Provide information on how to do good evaluation of committees, processes, etc.
- Provide guidance on how to develop electronic database of pre-qualified at a country level.

Session 4: Institutional Strengthening and Coordination

Seychelles, Tonga, Sao Tome and Principe (STP), Saint Vincent and the Grenadines (SVG) have presented their experiences on institutional strengthening and coordination. The main topics discussed and summary is below.

i) Enhancing coordination among institutions

In most SIDS, climate change and disaster risk management are led by different ministries and have weak linkages with development planning often leading to weak coordination of climate and risk disaster management actions. This often results in duplication of efforts, non-effective allocation of funds and delays in implementation of climate and disaster resilient projects. Coordination among Institutions having different interests is a challenge in SIDS where human and financial resources are already scarce.

Better understanding of institutional structures and mandates (STP); better understanding of particular interests and adapt communication strategies accordingly (Jamaica, Tonga, Trinidad and Tobago); formulation of community development plans to provide bottom-up evidence to influence policy dialogue (Tonga); and the creation of a “single entry point” or “super ministry” englobing different institutions were some solutions shared. In the case of **Tonga**, institutions dealing with different sectors such as energy, meteorological services, information, communication, disaster risk management, environment and climate change are now under one ministry. They also have developed a Joint Action Plan for climate and disaster resilience. **SVG** has one ministry in charge of coordination and monitoring of all climate and disaster risk management actions, although implementation is under the responsibility of sectoral ministries. In **FSM** incoming assistance is channeled through a single entry point and a joint management network is the key player for climate and disaster risk management. Similar approaches are also undertaken in **Vanuatu, Solomon Island and Marshall Islands**.

These solutions have enhanced coordination among institutions, nevertheless challenges remain such as different understanding of risks and priorities between political and technical levels; partial acknowledgment that climate and disaster risk management are an integral part of sustainable development; undermining disaster risk reduction as an effective measure to adapt to climate change impacts, and weak institutionalization of processes to enhance climate and disaster resilience.

ii) Budgeting and fund allocation

Budgets and mandates to respond and build back better in the aftershock of disasters are often sub-optimally allocated to institutions lacking the knowledge and capacities. For example in voluntary relocation and reconstruction phases in SVG, financial flows are channeled through different institutions that don't necessarily have the knowledge and expertise to consider climate and disaster risks in the reconstruction phase. Moreover, procurement aspects follow different processes according to different institutions leading to delays in emergency response and implementation of risk reduction measures.

Solutions implemented by some countries include enhanced collaboration among key involved institutions and targeted support to development sectors to integrate climate and disaster resilience in the reconstruction phase. In the case **SVG**, a strong collaboration among Ministry of transport, hydrometeorology institute, Ministry of housing and national disaster management office was necessary

to upgrade roads, relocate population and reconstruct of housing in the aftermath of hurricanes. Moreover, **SVG** uses a single fiduciary agency to carry out procurement and financial management letting line ministries implement according to their mandates. In the case of **Saint Lucia**, a DRR expert from the Ministry of planning was assigned to the Ministry of Transport to facilitate procurement and ensure integration of climate and disaster risk management aspects in the reconstructions or upgrade of road infrastructure. Some challenges remain such as dependency on international assistance to address climate and disaster risks.

iii) Funding processes to support coordination

Funding processes to support coordination ex-ante and ex-post disaster can be enhanced through the use of different financial instruments such as Development Policy Loan with a Catastrophe Deferred Drawdown Option (CAT-DDO), Debt Swap and Blue Bonds. CAT-DDO provides immediate liquidity in case of disasters; Debt Swap, are financial transactions in which a portion of a developing nation's foreign debt is forgiven in exchange for local investments to enhance climate and disaster resilience; and Blue bonds are fixed-income financial instruments linked in some way to promotion of an ocean-based economy. These instruments can be designed in ways to support policies and institutional reforms for a resilient development.

Seychelles uses the three instruments. After cyclone Felleng in 2013, a CAT-DDO of USD 7 million has been approved with a cap of 15 years, the first one for African countries. A Debt Restructuring Swap has been completed in March 2016 buying USD 21.4 million debt for marine conservation and climate adaptation. This debt swap helped to secure USD 5 million grant and the Nature Conservancy gave a low interest loan. Seychelles is also preparing a blue bond of USD 15 million and developing a blue economy national roadmap. **Grenada** is trying to access these instruments and is seeking support from the World Bank to get a guarantee to access Blue Bonds. There was interest from countries to learn more about CAT DDO and Blue Bonds.

Main messages:

- Enhancing coordination by institutional reforms to bring different sectors and institutions together is a promising solution among SIDS. A single entry point for development partner discussions avoids duplications and enhances internal coordination as well as that with development partners. For a successful reform, leadership at the highest level is required, as well as maintaining implementation responsibilities under line agencies according to their mandates.
- At the community level, climate and disaster resilience are well integrated and implications for sustainable development are evident. Therefore, community planning and bottom-up approaches are powerful to bring the evidence needed to advocate on policy dialogues for an integrated approach for climate and disaster resilient development.
- Integration of climate and disaster resilience is more effective when tied to budgetary process, national strategies and plans.

Issues needing further exploration:

- Multitude of factors play a role when restructuring institutions to enhance coordination. Better understanding of the enabling conditions needed to shifts towards a improved coordination could help SIDS go through such change faster.

- Explore how financial instruments can be used to promote development of sustainable income generating activities along conservation ones and also build resilience of economic sectors.
- Better understanding of conditions and mechanisms of financial instruments such as CAT-DDO, Debt Swaps and Blue Bonds to help countries prepare prior actions to access those instruments.

Session 5: Early Warning and Preparedness

Commonwealth of Dominica, Tonga, Vanuatu, Madagascar, and Tuvalu shared challenges and solutions in their efforts for Early Warning Systems and preparedness. Countries are taking actions to forecast and signal potential disastrous events aiming to prevent loss of life and minimize economic impacts.

Since SIDS are exposed and highly vulnerable to multi-hazards in a geographically scattered context with low access to modern communication systems and low institutional and local capacities for response, SIDS face several challenges to run efficient Early Warning Systems and Preparedness. With hundreds of islands scattered in large spatial marine territories, reaching remote islands is a challenge for many SIDS. Often the population does not have access to internet, mobile coverage. TV or radio broadcasts are used disseminate timely alerts. Expanding hydro-meteorological systems is difficult and costly; it is also limited by availability of finance to install the systems and then an ongoing operating budget. Limited institutional coordination among meteorological institutions and others national agencies is still difficult. Locally, communities are not always aware and have low understating and capacities to act on emergency alerts. Reaching the “last mile”, i.e. dissemination of warnings and community ability to respond to the alert are the biggest challenges faced by some SIDS.

Nevertheless, SIDS are testing and implementing different solutions ranging from institutional and policy arrangements, use of technologies such as radio and satellite communication, making sure local communities are well prepared and can act in emergency situations. Solutions shared include:

i) Institutions and policies

To strengthen institutions, **Tonga** has adopted a UN Cluster System and established an AGROMET Working Group in 2015. Tonga has also adopted a Meteorology Act in April 2017, a legal instrument to guide Meteorological work with clearly defined mandates, powers and responsibilities. To simplify time consuming procedures with a multitude of donors, **Tonga** proposed the establishment of a multi donor trust fund, so national institutions can concentrate on delivering results on fewer but comprehensive projects. **Vanuatu** has put in place institutional arrangements between different agencies providing 24h multi-hazards alerts, telecommunications services, Provincial Operation Centers and Community Disaster and Climate Change Committees.

ii) Alerts and communication technologies

Madagascar and **Vanuatu** have developed a color code alert system (e.g. from Madagascar: red - imminent danger, yellow - danger, Green - warning and Blue – vigilant). Lead time varies according to countries and local specificities. Both countries recommended lead times should NOT be internationally standardized because the communities may not be able to understand these. To communicate alerts to remote islands **Tuvalu** is using satellite based technology called [Chatty Beetle Network](#). “The Chatty Beetle is a rugged portable satellite terminal that operates through the Iridium gateway to the Internet. This offers the user the capability of transmitting and receiving e-mail messages anywhere in the world”. This solar powered systems is installed in remote islands and can serve as a relay to transmit signals within the island via other available systems (sirens, HF radio or others). The **Commonwealth of Dominica** is using a Geostationary Operational Environmental Satellite system (GOES) combined with a mobile

communication network and a data collector server. The server, storing raw data from different sources (hydro-meteorological networks and satellite), is a source of data and information supporting decision making processes (assessment of the situation and if required issue alerts). Other communication systems used are SMS (**Vanuatu, Madagascar**), FM, HF and AM radio wavelengths (**Vanuatu, Tonga**) with some hand-winded radios (**Madagascar**), electric or solar powered sound warning systems (**Madagascar, Tuvalu**).

iii) Preparedness for local communities

To reach local communities and ensure a state of preparedness **Tonga** is working closely with NGOs. Field visits by technical staff and decision makers was critical to better understand the level of local capacities and cultural factors influencing on preparedness aspects. In **Madagascar** traditional communication systems such as conches are used to reach very remote areas.

Main messages:

- Effective EWS it is not only a Meteorological agenda, it needs the active involvement of several national institutions, civil society, donors, and NGOs.
- In terms of warning transmissions, depending on the context, different types of communication systems are needed capable of interconnection and interoperation forming an integrated whole.
- Code alert systems need to be adapted to the physical and social local context and needs.

Issues needing further exploration:

- An important challenge needing further attention is the “last mile” of a EWS, i.e. dissemination of warnings to remote areas and the appropriate community response.
- How to reduce budget constrains to expand hydro-meteorological networks and other components of a EWS including the maintenance.
- Enhance coordination and coherence among projects to limit overlaps and reduce administration and management pressure on implementing national partners.

Session 6: Success in Accessing and Securing scaled-up Financing for Resilience

Maldives, Samoa and Fiji shared solutions and challenges encountered in the process to accessing finance for resilience. Access to climate finances remain a challenge for SIDS. Maldives, Samoa, and Fiji shared their process for accessing funds from the Green Climate Fund (GCF).

Challenges encompass mainly coordination, project preparation and long term planning. To achieve a whole of government approach in accessing climate funds, coordination among different national institutions and with international partners remains a challenge. Project preparation remains a challenge; the level of detail required is high. The countries said they don't have yet the capacities to fulfill GCF requirements for project preparation. Prioritization of needed activities among different sectors, all having their own needs, combined with a long term planning perspective is an important goal but also a challenge for these SIDS. Moreover, explicitly showing the transformational nature of project and their value on social impacts in terms of return on investments remain complex issue.

Solutions proposed include high-level leadership, a collaborative approach, and sensitization of fund's board members to the realities encountered on the ground. In **Maldives**, consultations also involved utility companies providing services within the project. To facilitate coordination, in **Samoa** discussions and consultations were led by a Climate Resilience Steering Committee and Ministries prepared required information centralized by the Ministry of Finance. **Samoa** has taken a proactive approach to sensitize GCF board members to the realities of their country by hosting a GCF meeting in Samoa (December 2016). increase financing resources for SIDS, **Maldives** proposes involvement of private sector and increase domestic funding.

Main message:

- Although financial resources needed to enhance climate and disaster resilience in SIDS exceed current financing, access to existing financing can be facilitated by streamlining project preparation processes, and accelerating disbursement of current funds.
- Implementation and thus use of the funds remains a challenge for many SIDS.

Issues needing further exploration:

- Create in-country enabling condition for direct accreditation and enhance capacities for project preparation.
- Develop national processes and tools to facilitate long term planning that accounts for climate change and socio-economic scenarios.

Extra sessions

On-site demand driven extra sessions were carried out on the financial instrument CAT-DDO and on the web-based National Risk Atlas that the Government of Mexico as put in place to monitor and manage risks (<http://atlasnacionalderiesgos.gob.mx/>). This Atlas uses Google Map to geo-reference collected life information from various sources to inform on the current multi-hazard risks situation in the country.

Feedback from participants and suggestions for the next meeting.

The meeting was judged by all participants as very successful and have recommended to organize this type of event on regular basis. This year's event has seen the number of participants increase to 80 people coming from 34 SIDS compared to the last year event in Venice where 60 participants came from 24 SIDS. Collaboration with UNISDR and UNDESA contributed to this increase.

The practical lessons and knowledge can be easily adopted by other SIDS. An example is the exchange of experiences that took place last year in Venice allowing Sao Tome and Principe to start a pilot private sector initiative to develop alternatives to beach sand mining based on the experience shared by Mauritius on the basalt rock sand alternative.

Selected quotes from SIDS are presented below:

"This is one of the meetings that is extremely important for us. We are surrounded by big countries and are isolated from other SIDS. In this meetings we have an opportunity to learn and contribute and then bring back messages to our home."

"This workshop is very useful. I am glad we built on last year's meeting, particularly on project management. SVG, Tonga and Granada have very interesting experiences".

"[I found] a lot of very useful information that I will be taking back home. I like the way the meeting brings the experiences of the various countries together. I will be sharing as much as I can with my Director. I hope that this [event] will become a permanent annual meeting."

"Excellent get together. [This is a] way to build our confidence for the Global Platform in the next few days." (Reference to the second annual Global Multi-stakeholder Small Island Developing States (SIDS) Partnership Dialogue that followed the meeting.)

"Considering the limited human resources and limited ability to succeed in our countries, having been here, I am very impressed about what SIDS have achieved."

The suggestions for the next meeting are the following organized by modalities and topics:

Modalities

- Take more time to analyze selected relevant topics more in detail.
- Invite policy and decision makers to explore challenges that in some cases are still preventing the climate agenda to move forward.
- Sharing best practices needs to continue being a central feature of this event.

Topics

- Monitoring and Evaluation
- Avenues to bring the climate and disaster resilience agenda to high policy and decision making levels.
- Relocation and migration challenges in remote islands and in particular for atolls islands.

- Budgetary support and use of CAT-DDO and other financial instruments.
- How to institutionalize processes rather than depend on individual champions.