SIDS are Highly Exposed to Natural Disasters and Climate Change
SIDS Suffer High Economic Losses From Natural Disasters

... AND VERY HIGH SOCIAL IMPACTS
Resilient Transport in SIDS: Program Overview

Phase I
- Call for Action Report (2017-2018)

Phase II
- Action in Pilot Countries (2019-2020)

Phase III
RT SIDS Programmatic ASA Team

Core Team
- Transport GP
  - Dung Anh Hoang
  - Caroline Holo
- GSURR
  - Fred Pedroso
  - Marc Forni
- GFDRR
  - Naraya Carrasco
- STC
  - Maria Cordeiro
  - Yapra Servi

Country Team: Cabo Verde
- Transport GP
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Country Team: Saint Vicent
- GSURR
  - Keren Charles

Country Team: Vanuatu
- Transport GP
  - Bowen Wang
  - Naoki Kakuta

Country Team: Solomon Islands
- Transport GP
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Phase I - Additional Staff
- Transport GP
  - Shomik Mehndiratta
  - Chris Bennette
  - Emiye Deneke
- GSURR
  - Marc Forni
- SLCUR
  - Julie Rozenberg
Resilient Transport in SIDS

Phase I
# High Transport Damage Costs, Asset and Well-being Losses

<table>
<thead>
<tr>
<th>Countries</th>
<th>Weather event (Year)</th>
<th>Cost of damage to transport infrastructure (US$, millions)</th>
<th>Percentage of total infrastructure damage costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belize</td>
<td>Hurricane Keith (2006)</td>
<td>40</td>
<td>51%</td>
</tr>
<tr>
<td>Fiji</td>
<td>Flooding (2009)</td>
<td>28.5</td>
<td>43%</td>
</tr>
<tr>
<td>Solomon Islands</td>
<td>Flooding (2014)</td>
<td>12</td>
<td>90%</td>
</tr>
<tr>
<td>Fiji</td>
<td>Cyclone Winston (2016)</td>
<td>63</td>
<td>61%</td>
</tr>
</tbody>
</table>

Source: Post Disaster Needs Assessment, GFDRR.

<table>
<thead>
<tr>
<th>Countries</th>
<th>Average annual asset losses (USD million 2011 PPP)</th>
<th>Average annual well-being losses (USD million 2011 PPP)</th>
<th>Socio-economic resilience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belize</td>
<td>12</td>
<td>33</td>
<td>36%</td>
</tr>
<tr>
<td>Fiji</td>
<td>250</td>
<td>446</td>
<td>56%</td>
</tr>
<tr>
<td>Haiti</td>
<td>255</td>
<td>1,193</td>
<td>21%</td>
</tr>
<tr>
<td>Jamaica</td>
<td>153</td>
<td>271</td>
<td>56%</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>32</td>
<td>55</td>
<td>57%</td>
</tr>
<tr>
<td>Solomon Islands</td>
<td>14</td>
<td>27</td>
<td>54%</td>
</tr>
<tr>
<td>St. Lucia</td>
<td>12</td>
<td>26</td>
<td>47%</td>
</tr>
<tr>
<td>Tonga</td>
<td>8</td>
<td>11</td>
<td>67%</td>
</tr>
</tbody>
</table>

Policies and Measures to Reduce Asset and Well-being Losses

**Protection Against Hazards**
- Hard protection (sea walls)
- Soft protection (nature-based solutions like mangroves, coral reef, wetlands)

**Reduced Exposure**
- Move people and assets to safer areas when possible
- Accommodate new comers (e.g., rural migrants) in safe places

**Reduced Asset Vulnerability**
- Increase infrastructure maintenance
- Increase standards for buildings and infrastructure
- Retrofit buildings and infrastructure
- Early warning systems

**Reduced Well-being Losses**
- Eliminate extreme poverty and boost shared prosperity

**Increased Coping Capacity**
- Scale up social protection after shocks
- Increase financial inclusion
- Increase access to insurance
- Make available contingent finance and reserve funds

**Reduced Income Losses**
- Rebuild faster
- Diversify income sources
- Increase the ability of the economy to cope with infrastructure disruptions

It is fundamental to reduce asset risk in order to reduce well-being risk.

If not possible to reduce all risk to assets, complementary policies are needed.
Importance of Enhancing Resilience of Transport Systems

1) Improve road maintenance
   - Belize: 12 avoided well-being losses, 12 avoided asset losses
   - Fiji: 9.1 avoided well-being losses, 8.8 avoided asset losses

2) Increase standards for critical road assets
   - Belize: 8 avoided well-being losses, 4.7 avoided asset losses
   - Fiji: 5 avoided well-being losses, 2.6 avoided asset losses

3) Transport resilience Package (Standards+maintenance)
   - Belize: 16 avoided well-being losses, 19 avoided asset losses
   - Fiji: 11 avoided well-being losses, 14 avoided asset losses

4) Increase ability of the economy to cope with transport service interruptions by 50%
   - Belize: 8 avoided well-being losses, 0 avoided asset losses
   - Fiji: 4.4 avoided well-being losses, 0 avoided asset losses

5) All transport policies (3)+(4)
   - Belize: 16 avoided well-being losses, 16 avoided asset losses
   - Fiji: 11 avoided well-being losses, 11 avoided asset losses

- Avoided well-being losses
- Avoided asset losses

Percent of current losses
Consideration of Climate Risks in Asset Lifecycle Management

- **Systems Planning**
  - Inventory of assets and conditions
  - Network analysis, critical infrastructure, redundancy
  - Integration of risks in planning and decision making

- **Engineering & Design**
  - Construction standards
  - Materials specifications and innovation

- **Operations and Maintenance**
  - Maintenance programs and funding
  - Operational capacity to manage disruptions

- **Contingency Programming**
  - Contingency plans
  - Prequalify service providers
  - Streamlined procurement

Institutional Capacity and Coordination
<table>
<thead>
<tr>
<th>Systems Planning</th>
<th>Engineering &amp; Design</th>
<th>Operations &amp; Maintenance</th>
<th>Contingency Programming</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case Study 1 / Samoa: Enhanced Systems Planning to Better Prepare for and Respond to Natural Disasters and Climate Change Impacts</td>
<td>Case Study 3 / Kiribati &amp; Tuvalu: Climate and Disaster Resilient Roads Using Geocell Concrete Pavements</td>
<td>Case Study 6 / Dominica: Development of a Risk-based Infrastructure Asset Management System</td>
<td>Case Study 11 / Caribbean: Using the CERC in Limited Capacity Environments to Reduce Road Network Interruptions following a Disaster</td>
</tr>
<tr>
<td>Case Study 2 / Mozambique: Prioritization of Road Interventions under Flood Risks and Uncertainty</td>
<td>Case Study 4 / Coral atolls of the Pacific islands: Local Materials for Climate Resilient Coastal Protection</td>
<td>Case Study 7 / Saint Lucia: Using Smartphone Apps to Increase Resilience of Road System</td>
<td>Case Study 12 / Tonga: Emergency Response System and Procurement Regulations</td>
</tr>
<tr>
<td>Case Study 9 / Vietnam: Empowering Women to Manage Rural Road Maintenance: Lessons from Vietnam</td>
<td></td>
<td>Case Study 10 / São Tomé and Príncipe: Building Resilience Through Communities Involvement in Road Maintenance</td>
<td></td>
</tr>
<tr>
<td>Case Study 13 / Tuvalu: Climate and Natural Disaster Resilient Airport</td>
<td>Case Study 14 / Colombia: Climate Risk Assessment for Muelles el Bosque Port</td>
<td></td>
<td></td>
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</table>
Resilient Transport in SIDS

Phase II
Resilient Transport in SIDS: Phase II Overview

Diagnostic

Deployment of Resilience Measures

Transition Plan

ASA

IPF

IDA 19
Focus on Road Network

Started in April 2019

Investment Project

Vanuatu Climate Resilient Transport Project
Status: Under preparation

Solomon Islands Roads and Aviation Project
Status: Under implementation

Vanuatu and Solomon Islands

Diagnostic
System Design
Transition Plan

Implementation
Asset Management System
Knowledge Platform

Under ASA
- Institutional strengthening
- Policy advisory
- Inter-governmental collaboration
- Technical training
- Knowledge sharing

Under IPF
Activities that are costly, complicated, and need more time for implementation:
- Develop the AMS IT system
- Hands-on training over years

- Baseline analysis
- Identify key gaps
- Use life-cycle AMS perspective
- Produce a Diagnostic Report

- Policy and Strategy
- IT system and tools
- Investment priority
- Day-to-day procedures
- Unit structure

- Short-, medium-, long-term actions
- Financing mechanism
- Activity under ASA and IPF
Vanuatu Road Sector: Diagnostic

**System Planning**
- **Sector Policy and Data Quality**
  - Lack of a sectoral policy and strategy
  - Poor data quality and information management
  - Climate and disaster risks not considered

**Engineering Design**
- **One More Step**
  - From Design Guide to Specifications and National Drawings
  - Accredit Material Testing Lab

**Operation & Maintenance**
- **Prioritization**
  - Monitor asset conditions
  - Prioritize maintenance works

**Contingency Programming**
- **Building Readiness**
  - Pre-qualified contractors
  - Framework procurement contract

**Institutional Coordination**
- **Data Sharing and Division of Roles**
  - Share climate and seismic data
  - Expertise on interpreting data for sectoral planning
  - Coordinate among donors’ support
Solomon Islands Road Sector: Diagnostic

**Data & People**

**System Planning**

*Focus on Existing AMS Platform and the Capacity of AMU*

01 - A dedicated Asset Management Unit
- A functional Road Inventory Management System in place but not being used for planning purpose
- No investment prioritization modal
- Climate and disaster risks not considered

02 - No National Road Design Standard in place
- Material Lab is not functional
- Rely on NZ or AUS standards but not compatible to national context

03 - Maintenance works are outsourced with 3-year contracts
- National Transport Fund is in place but only support few donor-funded roads
- No prioritization modal in place

**Standards**

**Engineering Design**

*Focus on National Standards for Roads and Use of Local Materials*

**Prioritization**

**Operation & Maintenance**

*Focus on Private Sector Engagement and Contract Management*
RT SIDS in Cabo Verde: Focus on Maritime Transport

RT SIDS PROGRAMMATIC ASA

Diagnostic Report and Transition Plan

Systems Planning
- Maritime Transport supply chain analysis
- Ports climate change and natural disaster risk assessment

Institutional Capacity and Coordination
- Maritime Transport supply chain analysis
- Cross government cooperation agreements
- Design an Islands Knowledge Platform (I-Platform)
RT SIDS in Saint Vincent: Focus on All Transport Sectors

RT SIDS PROGRAMMATIC ASA

Systems Planning
• Overarching Climate and Natural Disaster Resilient Strategy

Institutional Capacity and Coordination
• Design an Islands Knowledge Platform (I-Platform)
Resilient Transport in SIDS

Conclusions and Discussion
Conclusions and Discussion

1. Do you find this holistic integrated approach is useful and applicable in client countries?

2. What barriers to you expect for deployment and how can these be overcome?

3. What needs/gaps do you typically encounter in client countries?

4. What support would be welcome to enhance resilience of transport sectors in client countries?

5. Do you find the experience in SIDS relevant to other countries? And vice-versa?
Thank you!