



**NDMA**  
NATIONAL DISASTER  
MANAGEMENT AUTHORITY

# A Review of DRSF tables D2 and F

Faroosha Ali  
Director, Emergency Management  
NDMA, Maldives

# Contents

1. Introduction
2. Hazard and Vulnerability Profile
3. The National Disaster management Authority
4. Current Status of Disaster Data Governance
5. Review of DRSF Tables D2 and F ( Critical Infra structure and Agriculture)

# Introduction



**NDMA**  
NATIONAL DISASTER  
MANAGEMENT AUTHORITY



**NDMA**  
NATIONAL DISASTER  
MANAGEMENT AUTHORITY

*Note: Map Source: Google Earth.*

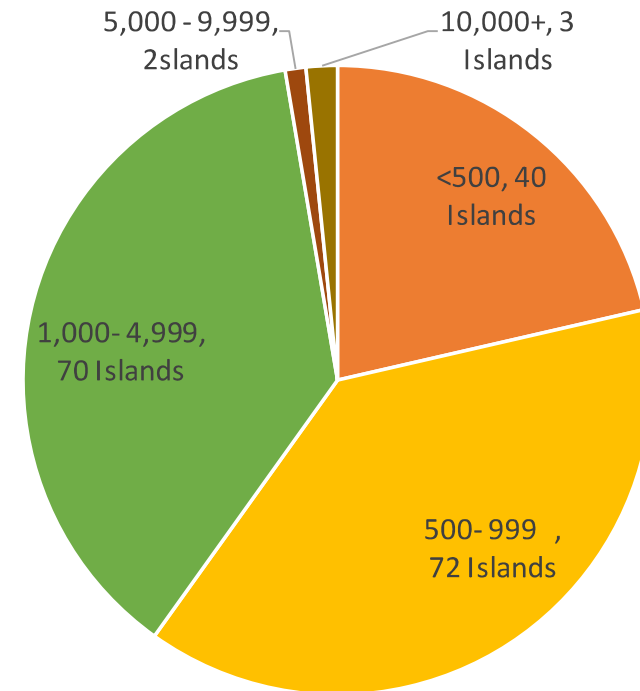
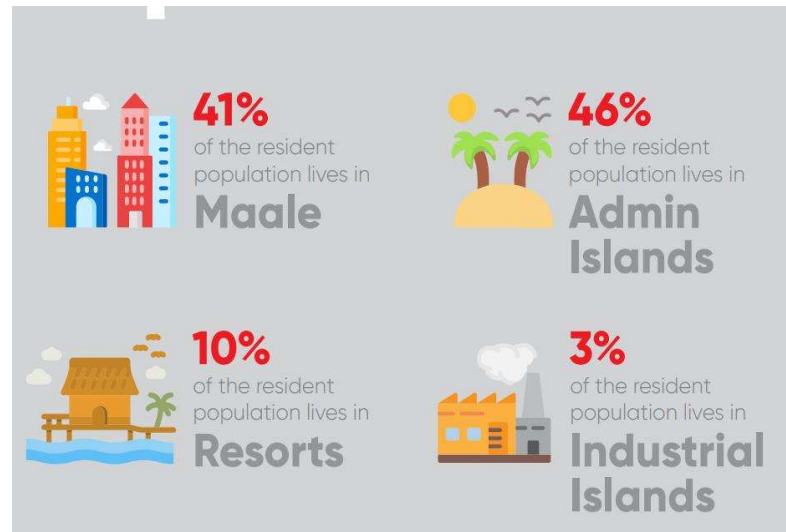
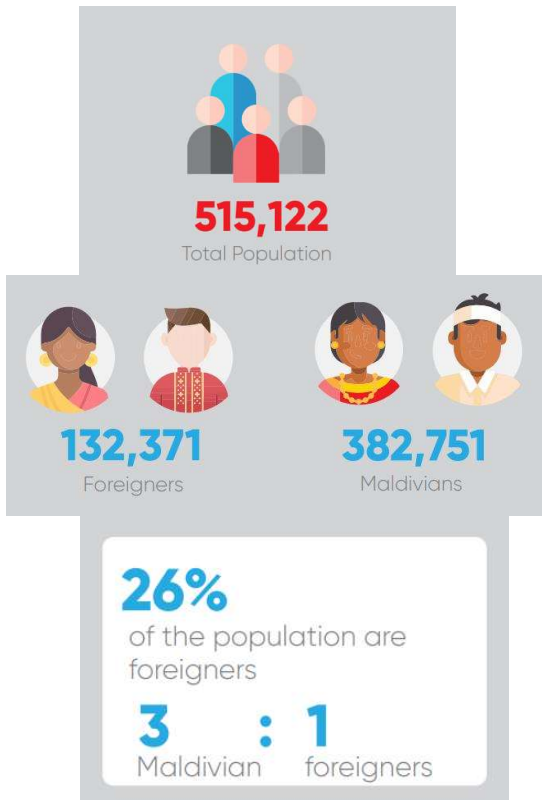
## Country Profile

- Average elevation of the islands are about 1.5 meter above mean sea level.
- Size of the islands ( largest island 5 km in length)
- 93% of the inhabited islands face perennial beach erosion
- Wide dispersal of population across tiny islands
- Extremely high economic dependence on tourism
- About 1/3<sup>rd</sup> of the population resides in Capital City



**NDMA**  
NATIONAL DISASTER  
MANAGEMENT AUTHORITY

# Population Distribution



# Hazard and Vulnerability Profile



**NDMA**  
NATIONAL DISASTER  
MANAGEMENT AUTHORITY



# Vulnerability Indicators

---

- Highest elevation 2m above sea level.
- 88 inhabited islands face perennial beach erosion.
- Wide dispersal of population across very small islands.
- Geographical Dispersion of Islands
- Extremely high economic dependence on tourism.
- High import dependence.



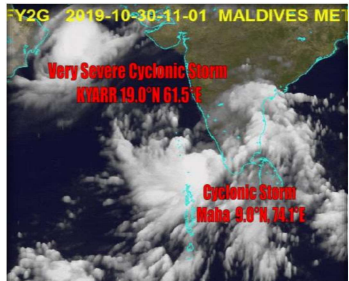
*Tourism industry is now the mainstay of Maldivian economy*



**NDMA**  
NATIONAL DISASTER  
MANAGEMENT AUTHORITY



# Natural Hazards



Tropical Cyclone



Waterspout and Tornadoes (Funnel Clouds)



Surge



Strong Winds



Thunderstorms



Earthquake and Tsunami



Drought (Prolonged Dry Season)



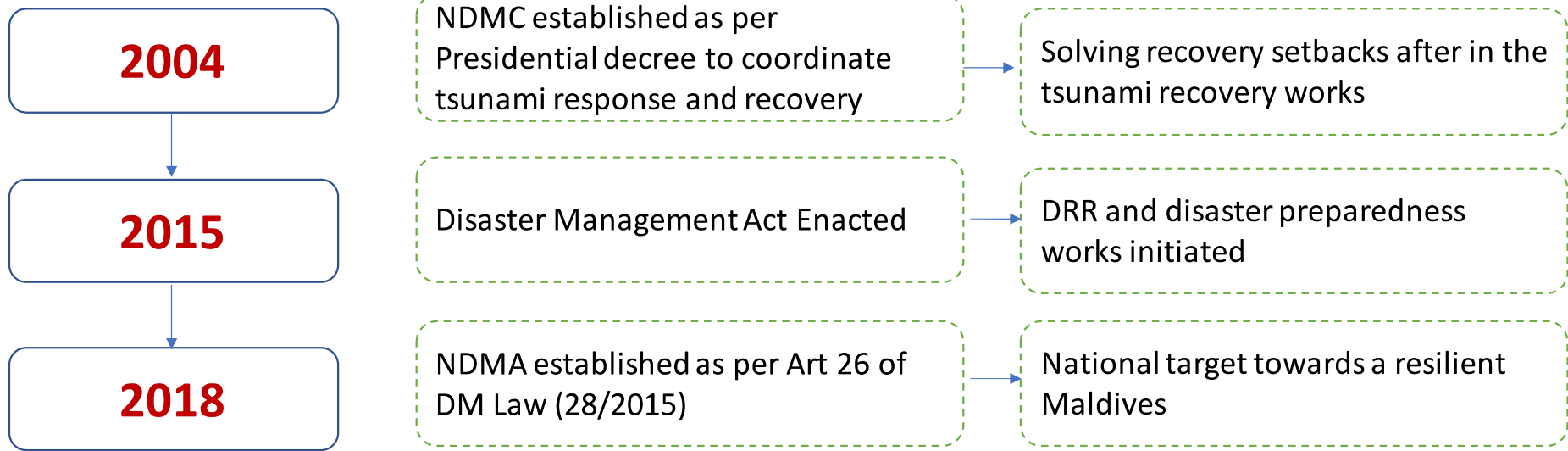
**NDMA**  
NATIONAL DISASTER  
MANAGEMENT AUTHORITY

# The National Disaster management Authority



**NDMA**  
NATIONAL DISASTER  
MANAGEMENT AUTHORITY

# Introduction-NDMA



## Our Role

We are the lead for Disaster Risk Management and Emergency Response

## Our Mission

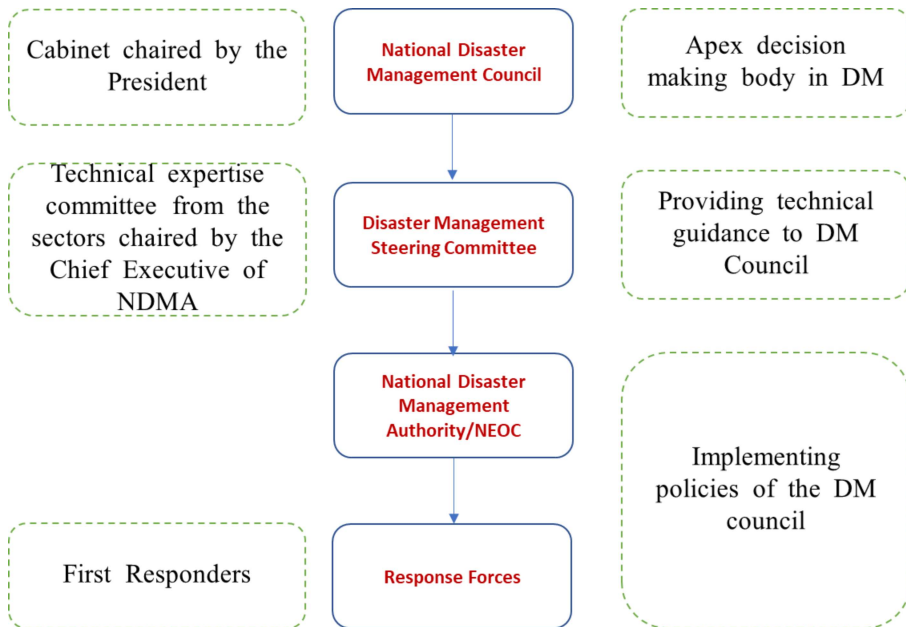
Save Lives and Protect Livelihood

## Our Vision

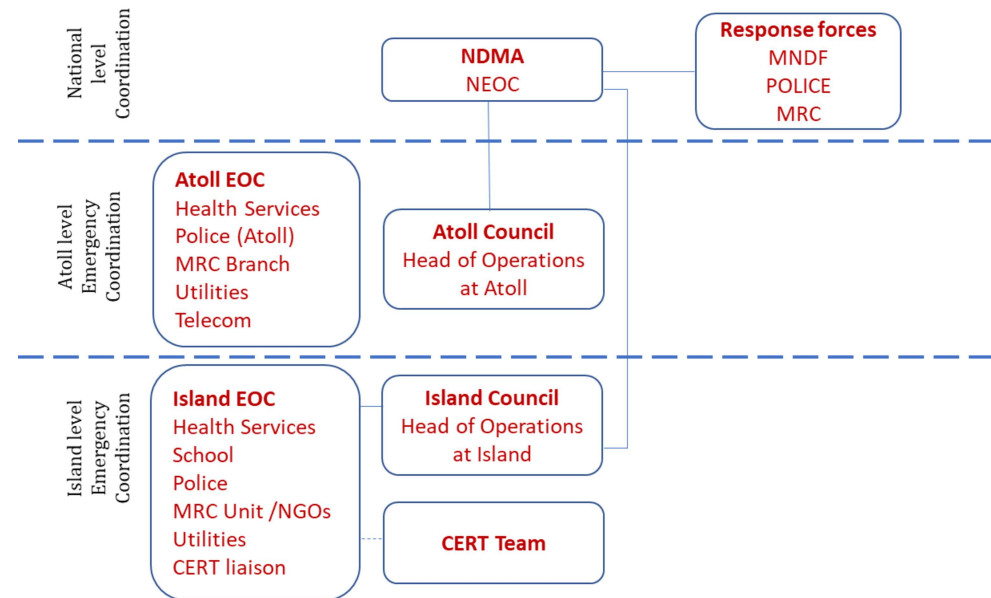
A resilient Maldives



# Decision Making



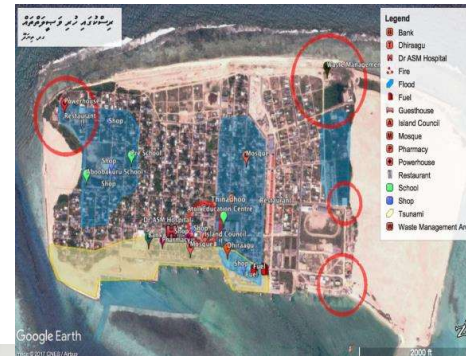
# Response Coordination





# What We Do

1. DM Policies, Risk Assessments and Plans
2. Coordinating Emergency Response
3. And Providing Humanitarian Assistance and Disaster Relief
4. Community Based Disaster Risk Management Programmes
5. Strengthening Response Capacity
6. Training and awareness:
  - Police Academy
  - NCO Academy
  - IDMP and CERT in local Islands- (All Inclusive)
  - Resort Resilience
  - School Preparedness



# Current Status of Disaster Data Governance



**NDMA**  
NATIONAL DISASTER  
MANAGEMENT AUTHORITY



- Data's Collected are mainly focused on damages - Disaster reporting for the purpose of Aid
- Limitations on collecting Dis aggregated data
- No/Limited Valuation of Disaster Loss especially Agriculture and Critical Infra Structure
- Current tools for Disaster Risk data Management
  - Hazard, Vulnerability and capacity assessments (HVCA)
  - Damage assessments- Manual Forms are being Used
- UNDRR supported data enhancement Project Completed.

**Explanation of Point Score System**

A total score of one to three is made for key indicators. The vulnerability score ranges from one (low vulnerability) to three (high vulnerability).

| Description | Low vulnerability | Moderate vulnerability | High vulnerability |
|-------------|-------------------|------------------------|--------------------|
| Value       | 1                 | 2                      | 3                  |

| 1.0 HAZARD RISK and PHYSICAL VULNERABILITY  | SCORE |
|---|-------|
| 1. Island elevation<br>Less than 1.5m - 3<br>Greater than 1.5m - 1  |       |
| 2. Presence of oceanward ridge<br>Oceanward ridge not present - 3<br>Oceanward ridge present - 1  |       |
| 3. Wave passage to shore/presence of reef<br>Ocean waves have direct passage to shore (no reef or damaged reef) - 3<br>Ocean waves only come to shore in major storm events - 2 |       |

The image shows a handwritten data entry form with several tables and notes. The tables contain numerical data and checkmarks. The notes are written in Sinhala script. The form appears to be a manual record-keeping tool for disaster risk assessment data.

## Findings of Maturity assessment: Current coordination environment of disaster data

- Currently Data Collected on 32 variables of SFDRR
- Data consolidating and collection is very much centralized and only done by NDMA
- Insufficient to estimate SDF indicators
- Data entered into Des inventar is very minimal
- Many variables reflecting the SDF are collected by other agencies but may not shared with NDMA
- Loss and damage data are not quantified by any stakeholder



Need a web based Single tool that connects all stakeholder institutions

# Findings of Maturity assessment: Current coordination environment of disaster data

Emergency Ops Cases

## EMERGENCY OPERATIONS CASE REGISTRY

Case No:

**Case Registration Details:**  
 Registered:    Form No:

**Incident Details:**  
 Date:     
 Incident Type:   
 Atoll:   
 Island:   
 Location / Address:

**Victims:**

**ADULTS:** Adults (Male)  Adults (Female)

**CHILDREN BELOW AGE OF 18:** Children (Male)  Children (Female)

**Damages:**  
 Agricultural  Household items  Public Infrastructure  
 Economical  Infrastructural  Vehicles/Vessels

**EAR Committee Decision:**  
 EAR Committee:  Required  Not  
 Temporary Aid:  Approved  Rejected  
 Recovery Aid:  Approved  Rejected  
 Finance Approval:  Approved  Rejected

**Temporary Aid:**  
**Food:** Amount (MVR)  No of Days   
**Shelter:** Amount (MVR)  No of Days   
**Clothing:** Amount (MVR)

**Recovery Aid:** Date    Amount (MVR)   
 Aid Type:  Household items  Infrastructural

Remarks:  Status:

**CASE OVERVIEW**

**Case Registration Details:**  
 Case No: EMOPS-IC/2023/0  Registered Date:     
 Form No:

**Incident Details:**  
 Date:    Atoll & Island:    
 Incident Type:  Location / Address:   
 No of houses:

**Affected (Gender):**  

|          | Male                 | Female               |
|----------|----------------------|----------------------|
| Affected | <input type="text"/> | <input type="text"/> |
| Injured  | <input type="text"/> | <input type="text"/> |
| IDP(s)   | <input type="text"/> | <input type="text"/> |
| Death(s) | <input type="text"/> | <input type="text"/> |

**Affected (Nationality):**  

|          | Locals               | Foreign              |
|----------|----------------------|----------------------|
| Affected | <input type="text"/> | <input type="text"/> |
| Injured  | <input type="text"/> | <input type="text"/> |
| IDP(s)   | <input type="text"/> | <input type="text"/> |
| Death(s) | <input type="text"/> | <input type="text"/> |

**Case Expenditure:**  
 Relief Aid (MVR)   
 Recovery Aid (MVR)   
 Operational Cost (MVR)   
 Total (MVR)

**Damages:**  
 Agricultural  Economical  Household items  
 Infrastructural  Public Infrastructure  Vehicles/Vessels

**Status:**  
 Status:  Remarks:

**HOUSEHOLDS MGT**

**Sub-case:**  
 Subcase: EMOPS-IC/2023/  Address:

**Case Details:**  
 Case No:   
 Case Details: ...

**Total Affected:**  

|              | Locals               | Foreign              |
|--------------|----------------------|----------------------|
| Adults (M)   | <input type="text"/> | <input type="text"/> |
| Adults (F)   | <input type="text"/> | <input type="text"/> |
| Children (M) | <input type="text"/> | <input type="text"/> |
| Children (F) | <input type="text"/> | <input type="text"/> |
| <b>Total</b> | <input type="text"/> | <input type="text"/> |

**IDPs:**  

|              | Locals               | Foreign              |
|--------------|----------------------|----------------------|
| Adults (M)   | <input type="text"/> | <input type="text"/> |
| Adults (F)   | <input type="text"/> | <input type="text"/> |
| Children (M) | <input type="text"/> | <input type="text"/> |
| Children (F) | <input type="text"/> | <input type="text"/> |
| <b>Total</b> | <input type="text"/> | <input type="text"/> |

**Injured:**  

|              | Locals               | Foreign              |
|--------------|----------------------|----------------------|
| Adults (M)   | <input type="text"/> | <input type="text"/> |
| Adults (F)   | <input type="text"/> | <input type="text"/> |
| Children (M) | <input type="text"/> | <input type="text"/> |
| Children (F) | <input type="text"/> | <input type="text"/> |
| <b>Total</b> | <input type="text"/> | <input type="text"/> |

**Deaths:**  

|              | Locals               | Foreign              |
|--------------|----------------------|----------------------|
| Adults (M)   | <input type="text"/> | <input type="text"/> |
| Adults (F)   | <input type="text"/> | <input type="text"/> |
| Children (M) | <input type="text"/> | <input type="text"/> |
| Children (F) | <input type="text"/> | <input type="text"/> |
| <b>Total</b> | <input type="text"/> | <input type="text"/> |

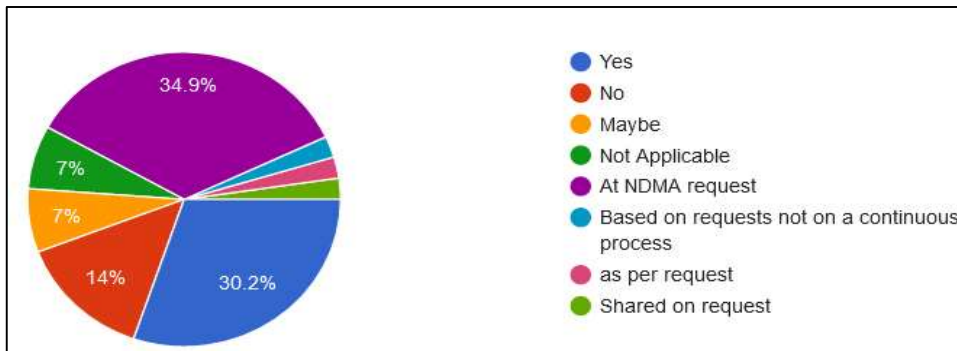
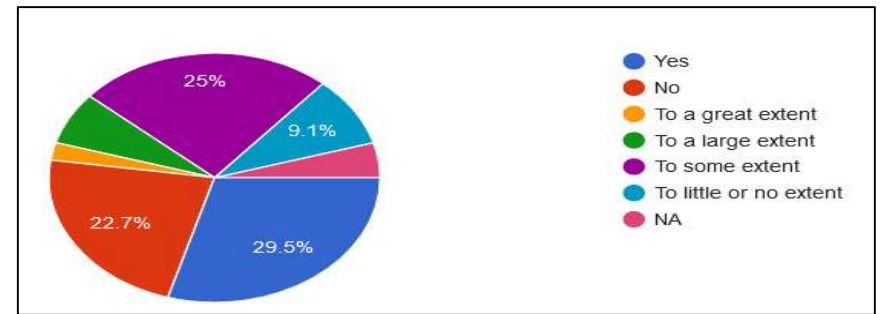
**Disabled people:**  
 Affected  IDP(s)  Injured  Death(s)

**Damages:**  
 Agricultural  Household Items  Public Infrastructure  
 Economical  Infrastructural  Vehicles/Vessels

Remarks:

# Findings of Maturity assessment: Current coordination environment of disaster data

Limited Formal relationships are established with multi-sectoral actors with regard to data sharing



Most institutions do not share disaster data on a continuous basis

# Findings of Maturity assessment: Challenges faced by stakeholders' coordination

- No national framework to coordinate disaster data
- No online portal to share data within sectors
- No standardized protocols or templates to share data
- Data to be shared by sectors are not defined
- More communication & training needed by local councils.



# Findings of Maturity assessment: NDMA's Takeaway

- Important to have a common definition for terminologies across all sectors, especially on disaster damage and loss
- A standardized agreed template for data collection by all sectors
- Linking the existing data collection mechanisms to SFDRR Indicators
- Establishing a standardized **single data management system** (Web based data systems)
- Essential to advocate and raise awareness on Need and importance of data at all levels (i.e public, local authorities, sectors and policy level)
- Data not to be taken for reporting purpose, instead advocate to use data for impact-based forecasting eventually aimed to save lives and minimize damage and loss



# DRSFTablesD2andF(CriticalInfrastructureandAgriculture)



**NDMA**  
NATIONAL DISASTER  
MANAGEMENT AUTHORITY

# D2

| Service                | Data Availability  | Source                                  |   |
|------------------------|--|---|---|
| Health Services        | Partially Available  | Ministry Of Health<br>Health facilities | Information gathered case wise (for repairing purpose), No maintained in a systematic way |
| Education              | Available  | Ministry Of Education                   | Data not shared with stakeholders   |
| Public administration  | What are the Specific Areas to Cover?<br>(The main services under PA is included in the Table) |   |   |
| Transport              | Not Available  |   | Data could be collected and maintained in Transport Ministry                              |
| Electricity and Energy | Partially Available (Male')  | STELCO                                  | STELCO, , FENAKA and URA could maintain the data  |
| Water                  | Partially Available (Male')  | MWSC                                    | Can Water, Sewerage and Waste be in same field?   |
| Other Basic Services   | * What other basic services?   |   |   |

1. Develop Criteria to understand the “length of time” to rule out as an impact
2. Nationally Agreed explanations for “Public Administration services” and “Basic Services”
3. What does “Region” mean to? Could it be atolls? Islands?

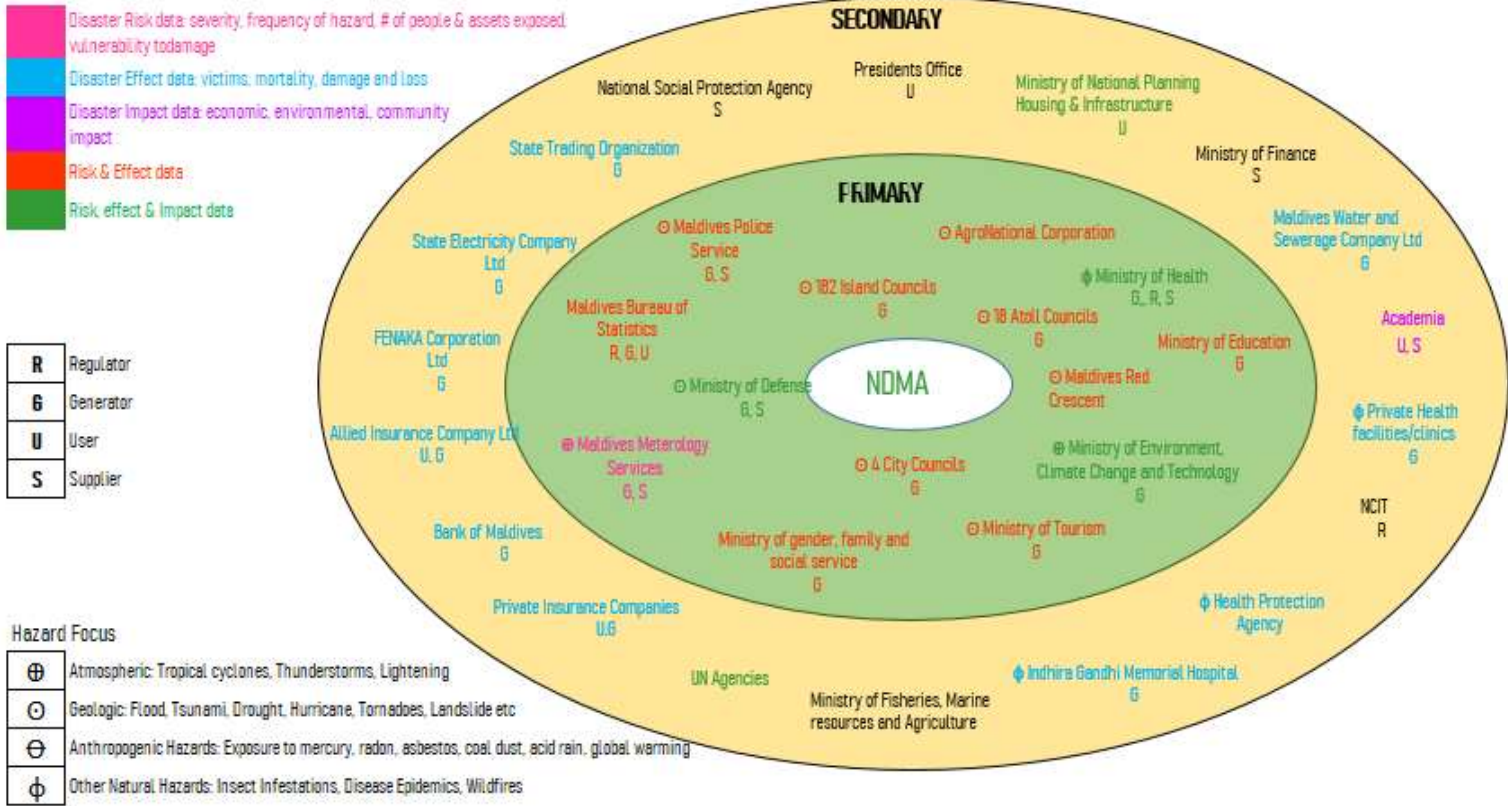
**D2b Disruption of basic services from a Disaster, by geographic region**  
**Measurement units: number of people and period of time**

|   |  | Region        |               |               |                | Adjustment for multiple counting of events by regions | ADJ NATIONAL TOTAL |
|---|--|---------------|---------------|---------------|----------------|---|--------------------|
|   |  | Geo. Region 1 | Geo. Region 2 | Geo. Region 3 | Geo. Region .. |   |                    |
| <b>Disruptions to Basic services from a Disaster (Sendai D-5)</b> |  |               |               |               |                |   |                    |
| <b>1</b>  | <b>Health services</b>                 | Sendai D-7    | Sendai D-7    | Sendai D-7    | Sendai D-7     |   | Sendai D-7         |
| 1.1   | No. of people                          |               |               |               |                |   |                    |
| 1.2   | Length of time                         |               |               |               |                |   |                    |
| <b>2</b>  | <b>Educational services</b>            | Sendai D-6    | Sendai D-6    | Sendai D-6    | Sendai D-6     |   | Sendai D-6         |
| 2.1   | No. of people                          |               |               |               |                |   |                    |
| 2.2   | Length of time                         |               |               |               |                |   |                    |
| <b>3</b>  | <b>Public administration services</b>  | Sendai D-8    | Sendai D-8    | Sendai D-8    | Sendai D-8     |   | Sendai D-8         |
| 3.1   | No. of people                          |               |               |               |                |   |                    |
| 3.2   | Length of time                         |               |               |               |                |   |                    |
| <b>4</b>  | <b>Transport services</b>              | Sendai D-8    | Sendai D-8    | Sendai D-8    | Sendai D-8     |   | Sendai D-8         |
| 4.1   | No. of people                          |               |               |               |                |   |                    |
| 4.2   | Length of time                         |               |               |               |                |   |                    |
| <b>5</b>  | <b>Electricity and energy services</b> | Sendai D-8    | Sendai D-8    | Sendai D-8    | Sendai D-8     |   | Sendai D-8         |
| 5.1   | No. of people                          |               |               |               |                |   |                    |
| 5.2   | Length of time                         |               |               |               |                |   |                    |
| <b>6</b>  | <b>Water services</b>                  | Sendai D-8    | Sendai D-8    | Sendai D-8    | Sendai D-8     |   | Sendai D-8         |
| 6.1   | No. of people                          |               |               |               |                |   |                    |
| 6.2   | Length of time                         |               |               |               |                |   |                    |
| <b>7</b>  | <b>ICT services</b>                    | Sendai D-8    | Sendai D-8    | Sendai D-8    | Sendai D-8     |   | Sendai D-8         |
| 7.1   | No. of people                          |               |               |               |                |   |                    |
| 7.2   | Length of time                         |               |               |               |                |   |                    |
| <b>8</b>  | <b>Other basic services</b>            | Sendai D-8    | Sendai D-8    | Sendai D-8    | Sendai D-8     |   | Sendai D-8         |
| 8.1   | No. of people                          |               |               |               |                |   |                    |
| 8.2   | Length of time                         |               |               |               |                |   |                    |
| <b>9</b>  | <b>Total disruptions</b>               | Sendai D-5    | Sendai D-5    | Sendai D-5    | Sendai D-5     |   | Sendai D-5         |

# F

| Areas       | Data Availability             | Source   |  |
|-------------|-------------------------------|--|--|
| Crops       | Partially Available           | Ministry of Agriculture<br>NDMA<br>AgroNAt<br>Councils | <ul style="list-style-type: none"> <li>• Ad hoc and limited data is available. (Not disaggregated by type of crop etc)</li> <li>• No valuation on damages and losses due to hazardous events</li> <li>• No Data on Equipment/Machinery damage</li> </ul> |
| Livestock   | Very Limited or Not Available |  | Ministry Of fisheries and agriculture MIGHT have the info however its not shared.  |
| Forestry    | N/A                           |  |  |
| Aquaculture | Not Known                     |  | Marine Research Centre MIGHT have some data.   |
| Fisheries   | Very Limited or Not Available |  | Ministry Of fisheries and agriculture MIGHT have the info however its not shared.  |

# Stakeholder Map of Disaster data in the Maldives



# Primary Data Sources

| Institution                            | Data collected   | Contribution to Sendai Indicators  | Hazard Focus  | Data Disaggregation  |
|--|--|--|---|--|
| National Disaster Management Authority | All Disaster specific data<br>Number of people affected<br>Loss and Damage assessments<br>Structural damage<br>Household damage<br>Agricultural loss<br>Hazards/ Disaster events (details such as date, time location, amount of damage to infrastructure)<br>DM plans at island level collects information on vulnerabilities ( people, places and things), Maps hazards, risk, capacity etc          | A-1, A-2, A-3<br>B-1, B-2, B-3, B-4<br>C-2<br>D-1, D-2, D-3, D-4<br>E-1, E-2<br>F-1, F-2, F-3<br>G-1, G-2, G-3, G-4, G-5 | Geologic<br>Atmospheric<br>Anthropogenic<br>Other Natural and non-natural hazards | Started in 2022 by age, gender, Island, atoll, hazard type |
| Atoll Councils                         | Loss and damages data from monitoring of islands<br>Flood, fire, tidal waves, tornados etc.<br>Data on assistance provided by government in disasters<br>Damages incurred to the islands<br>Damages due to severe weather conditions<br>Environment related disasters caused to inhabited and uninhabited islands<br>Environment related damage to reef/costal areas<br>Covid-19 pandemic related data | A-1, A-2, A-3<br>B-1, B-2, B-3, B-4<br>D-1, D-2, D-3, D-4  | Geologic<br>Atmospheric<br>Anthropogenic<br>Other Natural and non-natural hazards | By age, gender, Island, atoll, hazard type                 |
| City Councils                          | Fire ,damages, flood & others<br>Damages to the people affected<br>Number of house holds affected<br>Flooded areas<br>Number of people effected by disaster  | A-1, A-2, A-3<br>B-1, B-2, B-3, B-4<br>D-1, D-2, D-3, D-4  | Geologic<br>Atmospheric<br>Anthropogenic<br>Other Natural and non-natural hazards | By age, gender, Island, atoll, hazard type                 |



# Primary Data Sources

| Institution                                 | Data collected   | Potential Contribution to Sendai Indicators  | Hazard Focus   | Data Disaggregation                        |
|---|--|--|--|--|
| Maldives National Defence Force (FRS & CGS) | Incident type<br>location<br>household<br>vehicle<br>time<br>date<br>deaths<br>injuries<br>rescued<br>insurance details<br>Distress vehicles<br>missing person details<br>medical evacuations<br>accidents etc | A-1, A-2, A-3<br>B-1, B-2, B-3, B-4, B-5<br>D-1, D-2, D-3, D-4, D-5, D-6, D-7, D-8<br>F-1, F-2, F-3, F-4, F-5, F-6, F-7, F-8<br>G-1, G-2, G-3, G-4, G-5, G-6 | Geologic<br>Atmospheric<br>Other Natural and non-natural hazards | By age, gender, Island, atoll, hazard type |
| Maldives Police Service                     | Number of effected people<br>Effected properties<br>Possibilities of escalations<br>Environmental impact   | A-1, A-2, A-3<br>B-1, B-2, B-3, B-4, B-5<br>D-1, D-2, D-3, D-4, D-5, D-6, D-7, D-8<br>E-1<br>F-1<br>G-1, G-2   | Geologic<br>Atmospheric<br>Other Natural and non-natural hazards | By age, gender, Island, atoll, hazard type |
| Maldivian Red Crescent                      | Vulnerability and Capacity Assessment #<br>psychosocial support<br># First aid   | A-2<br>D-1, D-4, D-5, D-8<br>F-1, F-2, F-3, F-5, F-6, F-7, F-8   | Geologic<br>Atmospheric<br>Other Natural and non-natural hazards | By age, gender, Island, atoll, hazard type |

## Primary Data Sources

| Institution  | Data collected   | Contribution to Sendai Indicators  | Hazard Focus                   | Data Disaggregation              |
|--|--|--|--------------------------------|----------------------------------|
| Ministry of Environment, Climate Change and Technology | Coastal Erosion<br>Vegetation loss<br>habitat loss<br>chemical related incidents<br>Water and Sewerage Service Data  | A-1, A-2, A-3<br>B-1, B-2, B-3, B-4, B-5<br>D-1, D-4, D-5, D-8<br>F-1, F-2, F-3, F-4, F-5,<br>F-6, F-7, F-8<br>G-1 | Atmospheric<br>Geologic'       | By locality                      |
| AgroNational Corporation                               | Land resource capacity<br>Production per plant<br>Production per cycle<br>Disaster<br>Pest and plant disease damage  | B-1, B-5<br>C-2<br>D-1, D-4  | Insect infestation<br>Geologic | By locality                      |
| Ministry of Tourism                                    | Economic and tourism loss/value pertaining to disasters,<br>Disaster incident records (Deaths, fire etc),<br>Stranded tourists, Age, nationality, check-in date<br>Cancellation and reservation data after an incident<br>Incident/accident statistics<br>Infrastructure damage, size, location, | A-1, A-2, A-3<br>B-1, B-2, B-3, B-4, B-5<br>C-1, C-3, C-5<br>D-1, D-4, D-5, D-8                                    | Geologic                       | By locality, Age,<br>Nationality |
| Maldives Meterology Services                           | Temperature (ave. min & max)<br>Humidity<br>Wind (ave, min & max)<br>Air Pressure<br>Rainfall<br>Sunshine data<br>Cloud coverage<br>Earthquake and tsunami data<br>Current weather situation<br>Temp (balloon data).   | F-1<br>G-1, G-2, G-3   | Atmospheric                    | By locality                      |



# Improving Coordination and Data Sharing is the solution for Comprehensive data management



**NDMA**  
NATIONAL DISASTER  
MANAGEMENT AUTHORITY

**Thanks for your time!**



**NDMA**  
NATIONAL DISASTER  
MANAGEMENT AUTHORITY