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Maldives Country Presentation



[Disaster Risk Reduction in Maldives]

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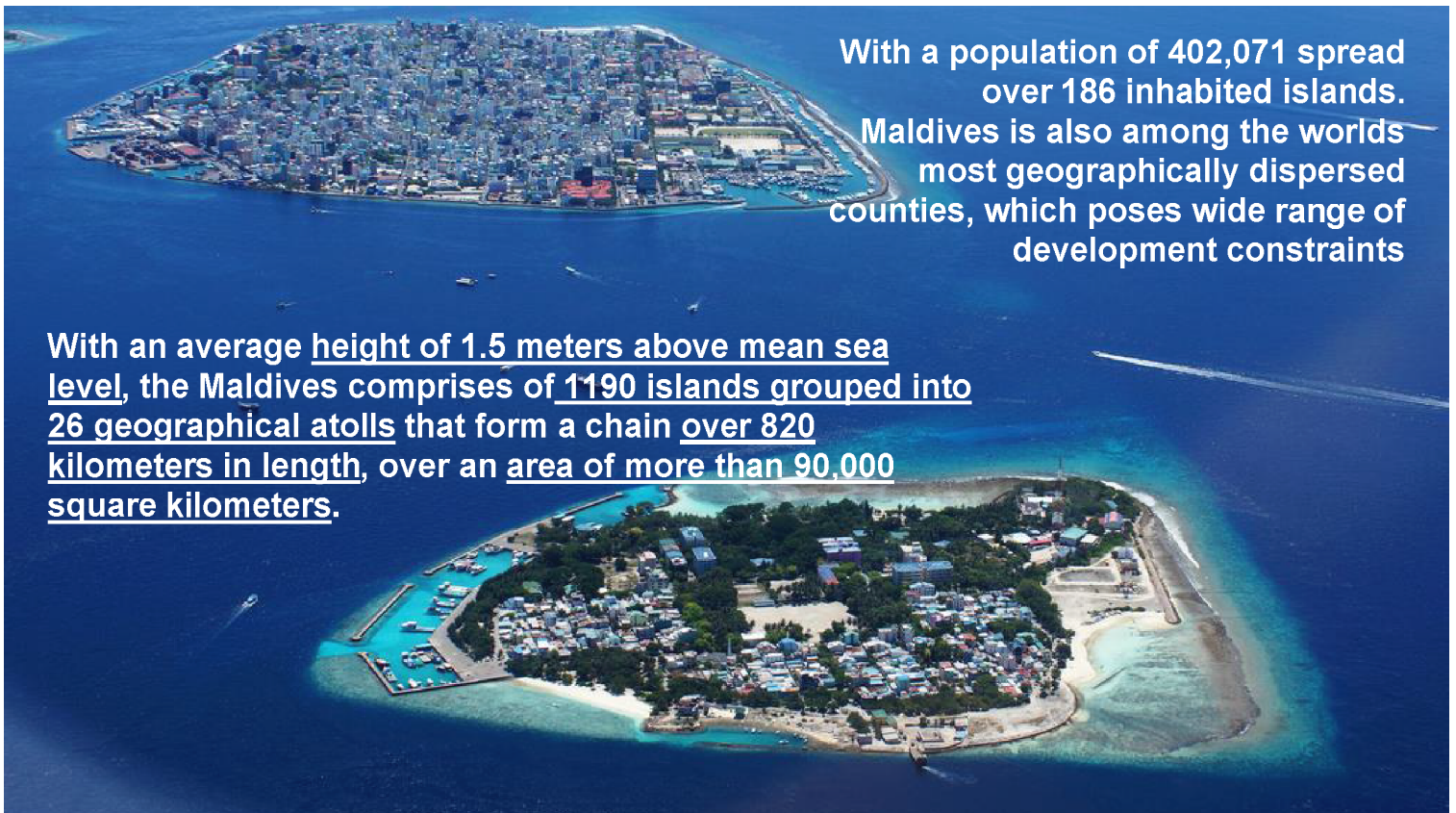
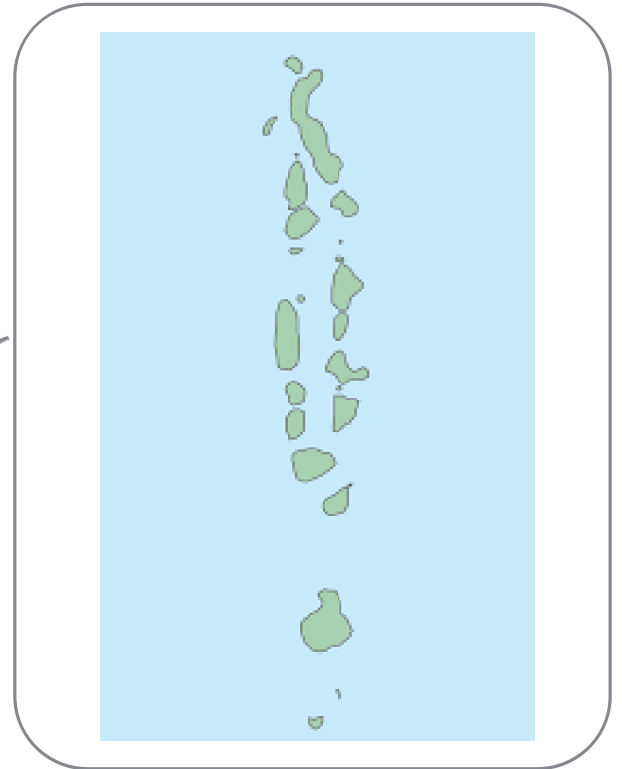
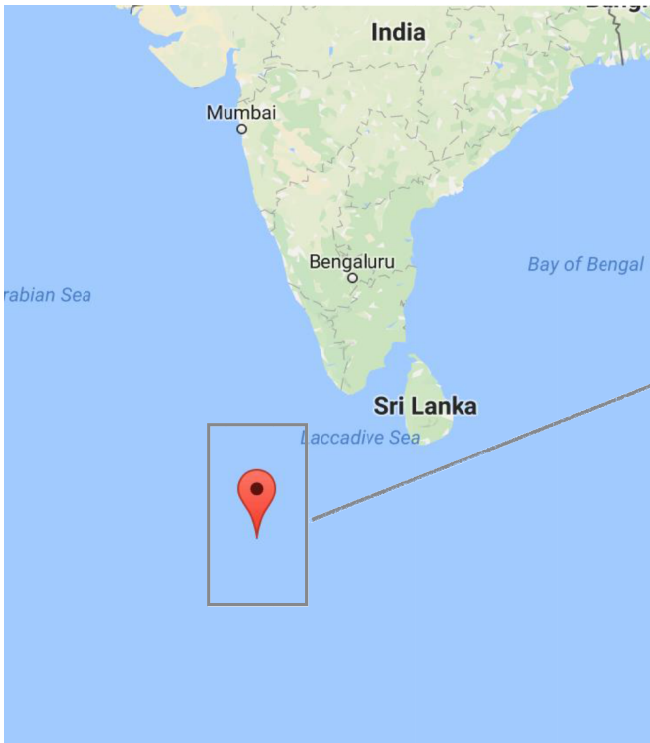
Contents

- ✓ General description
- ✓ Natural hazards
- ✓ Disaster management system in the Maldives
- ✓ Disaster management strategy, policy, and plans
- ✓ Recent major projects on DRR
- ✓ Challenges in disaster management

General Description



Situated south west of Sri Lanka and India in the middle of the Indian Ocean, the Maldives is among the most low-lying, geographically isolated countries in the world.



With a population of 402,071 spread over 186 inhabited islands. Maldives is also among the worlds most geographically dispersed counties, which poses wide range of development constraints

With an average height of 1.5 meters above mean sea level, the Maldives comprises of 1190 islands grouped into 26 geographical atolls that form a chain over 820 kilometers in length, over an area of more than 90,000 square kilometers.



Located on the equator, Maldives experiences monsoonal climate. There are two seasons, *Iruvai Monsoon* (Northeast Monsoon) - the dry season extending from January to March/April and *Hulangu Monsoon* - wet season (Southwest monsoon).

Yearly temperatures: 26.6°C to 31.1°C

(NBS, Pocket Book, 2017)

DEMOGRAPHY

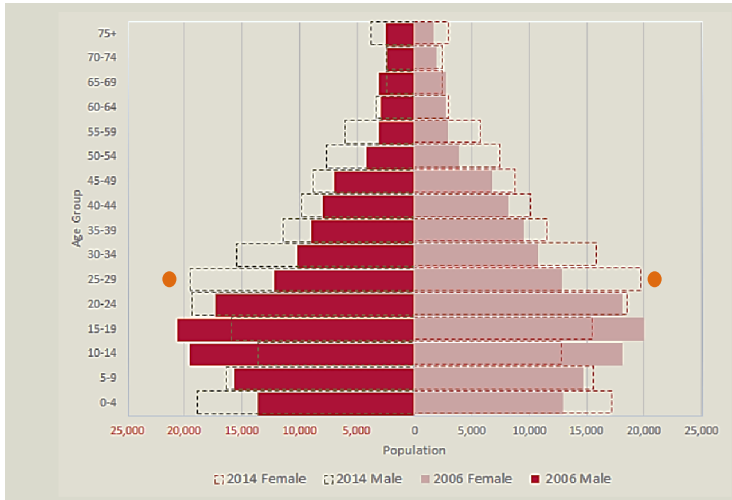
- Maldivians are ethnically from South Indians, Sinhalese, and Arabs.
- Islam is the religion of the State
- National Language - Dhivehi
- Script – Thaana
- Even though not officially quoted, English is the second language of the Maldives and the majority of the populace can speak and write in English.



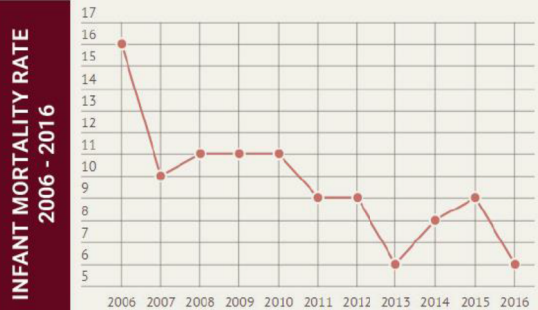
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DEMOGRAPHY

POPULATION PYRAMID OF MALDIVES
CENSUS 2006 & 2014



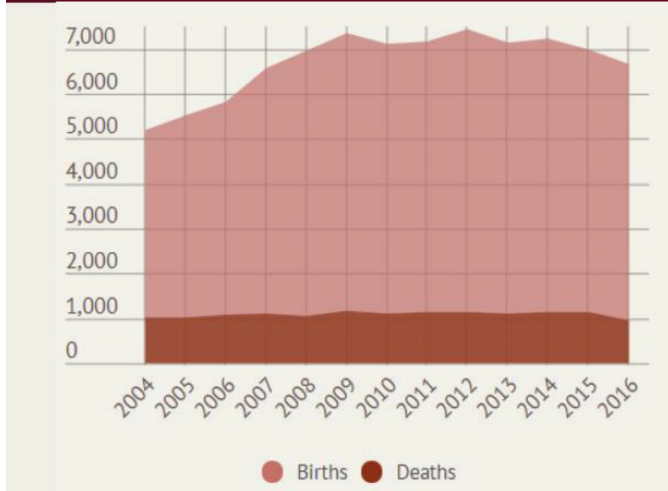
A total of 6,647 births & 954 deaths occurred during the year 2016.



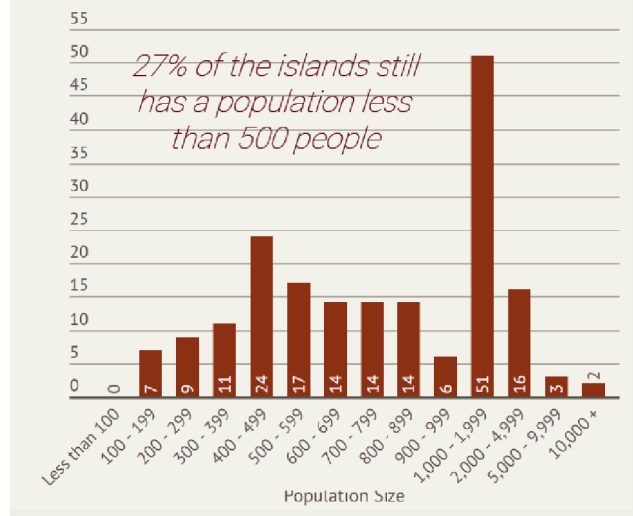
Sex Ratio
2014 **103** Males per
100 females

DEMOGRAPHY

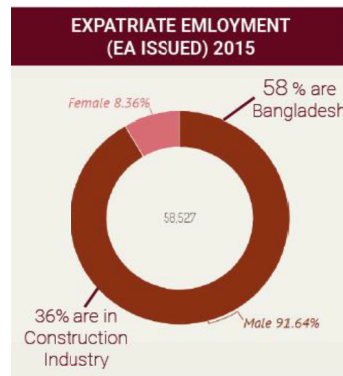
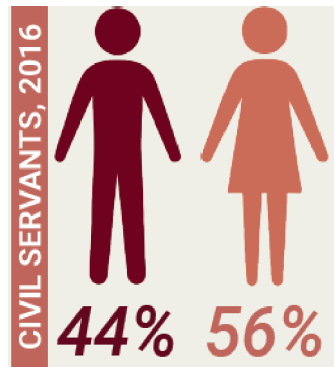
ANNUAL RECORDS OF BIRTHS AND DEATHS
2004 - 2016



NUMBER OF INHABITED ISLANDS BY SIZE
CENSUS 2014



DEMOGRAPHY

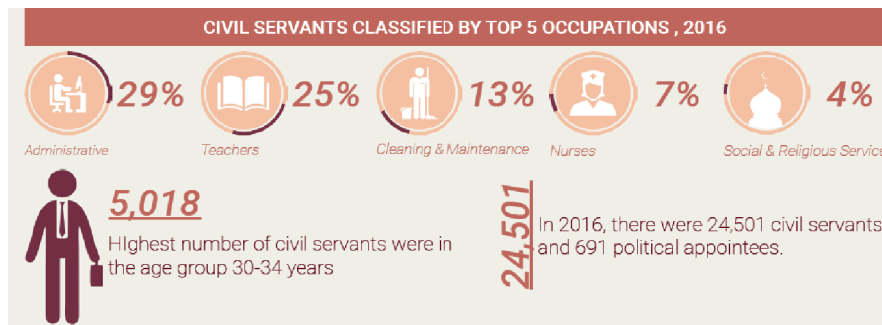


UNEMPLOYMENT POPULATION

100,602 (5.5%)
(2006)



145,757 (5.2%)
(2014)



ECONOMY



Rufiyaa
(1 USD = 15.42 MVR)

GDP: 2.05 billion USD

GDP per capita: 9,400 USD

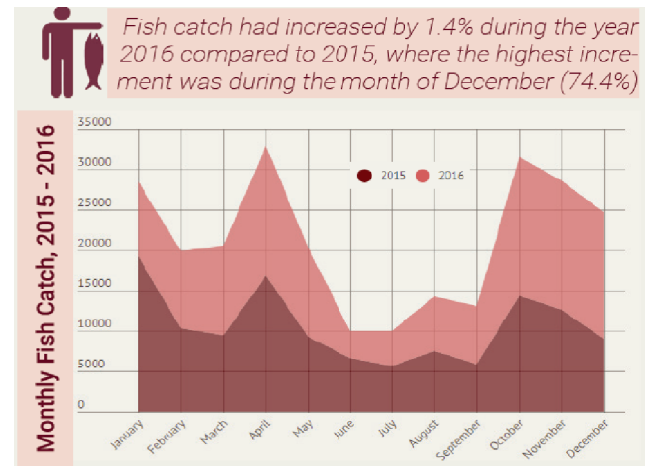
Main industries: Tourism, fishing

Heavily dependant on imports

26% of government current expenditure is on salaries & wages

Overall government deficit (including grants) for the year 2016 is 4,304.1 (In Million MVR)

4 Int'l Airports.
8 Domestic Airports



In 2016, 54 thousand MT of fresh tuna was purchased by the purchasing companies (42% of the catch)

Out of the total fish produced during the year 2016, majority of the fish was exported (52.9%)

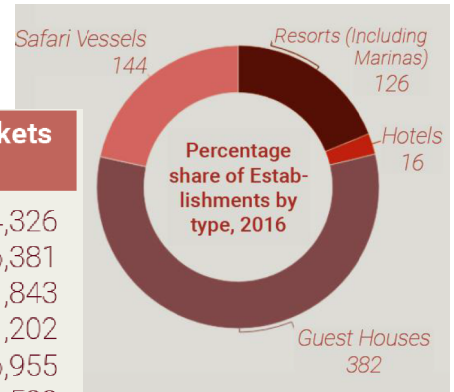
GST on tourism accounted for 30% of government tax revenue in (3,984.6) 2016

Increase of 4.2% in tourist arrivals

Number of guest houses has increased rapidly over the past few years and account for 16% bed capacity in 2016

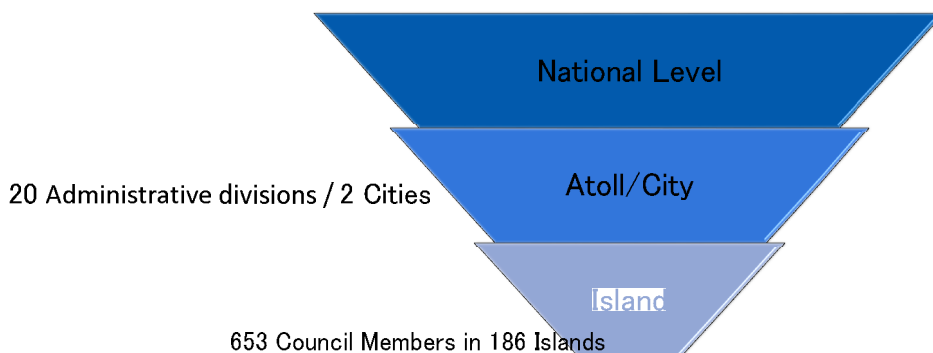
Top ten tourism markets 2016

China	324,326
Germany	106,381
UK	101,843
Italy	71,202
India	66,955
Russia	46,522
France	40,487
Japan	39,894
U.S.A	32,589
Switzerland	31,678



GOVERNMENT

- Presidential representative democratic republic.
- Unicameral legislature.
- Independence: July 26, 1965 (from the British).
- Current President: Mr. Abdullah Yaamin Abdul Gayyom (2013).



Natural Hazards

Geophysical Vulnerabilities

1. Small land area
2. Topography (average elevation, island width, coastal ridge height)
3. Dispersed nature of islands
4. Health of marine environment
5. Geographic location within the



Climate Change Induced Vulnerabilities

1. Sea level rise : 3mm a year (projections 10-100cm by year 2100)
2. Temperature rise and the effects (1.3 degrees by 2025) including rise in sea surface temperature
3. High dependency on environmental assets
4. Rainfall (increased rainfall in Northern islands, decrease in Southern islands by 2025)
5. Coastal erosion (85% of inhabited islands of Maldives face erosion ; 30 – 35% face severe erosion)
6. Loss of coral cover
7. Food security and water security

Vulnerabilities

- 1. Trends in population concentration
- 1. Nature of the economy - predominantly dependant upon tourism and fisheries, increasing economic and social vulnerability to hazards related to the sea.



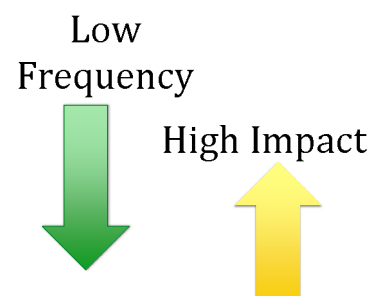
Likely Hazards In The Maldives:

Natural Hazards

- Tsunami
- Flood
- Tropical Storms
- Cyclones
- Sea Surge
- Coastal Erosion
- Drought /Water Shortage
- Earthquake

Man-Made Hazards

- Fire
- Internal Conflicts
- Maritime Incidents
- Epidemics
- Economic and Financial Crisis
-

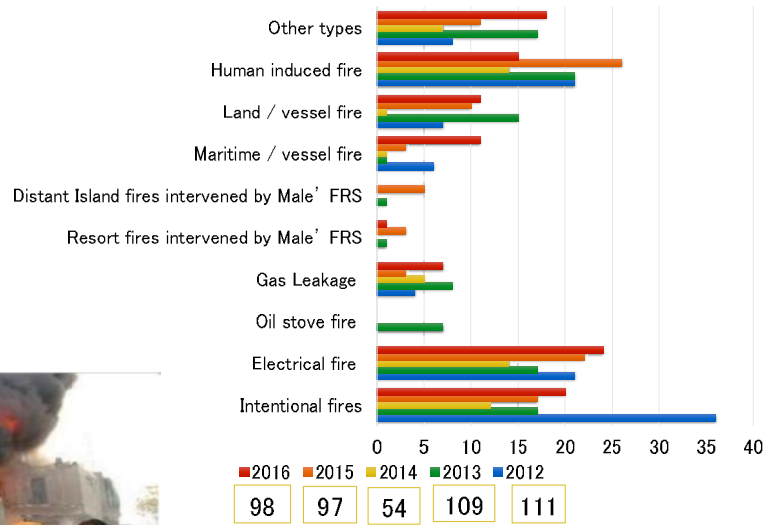


Fire Incidents

- Urban / Residential fires remains a critical concern as the rate has increased over the previous years.
- Frequency –



Status of Fire Incidents
2012 – 2016



Storms

- Disrupts transportation.
- Detrimental to fishing.
- Destroys crops.
- Storm surges in low-lying islands.
- Flooding (secondary: sanitation, spread of



Cyclones

- Less Prone to tropical cyclones.
- Northern islands are effected by weak cyclones that are formed in Sothern parts of bay of Bengal and Arabian sea.
- Over 128 Yrs – 11 cyclones crossed over Maldives.



Water shortage

- 2004 tsunami turned the freshwater lens salty.
- During dry seasons, islands run out of fresh drinking water.
- Government provide drinking water during shortages
 - In 2015 : USD 507,331.28
 - Total amount of water delivered (in tons) – 4457.85 T
 - No of Islands: 77 (98 Requested)



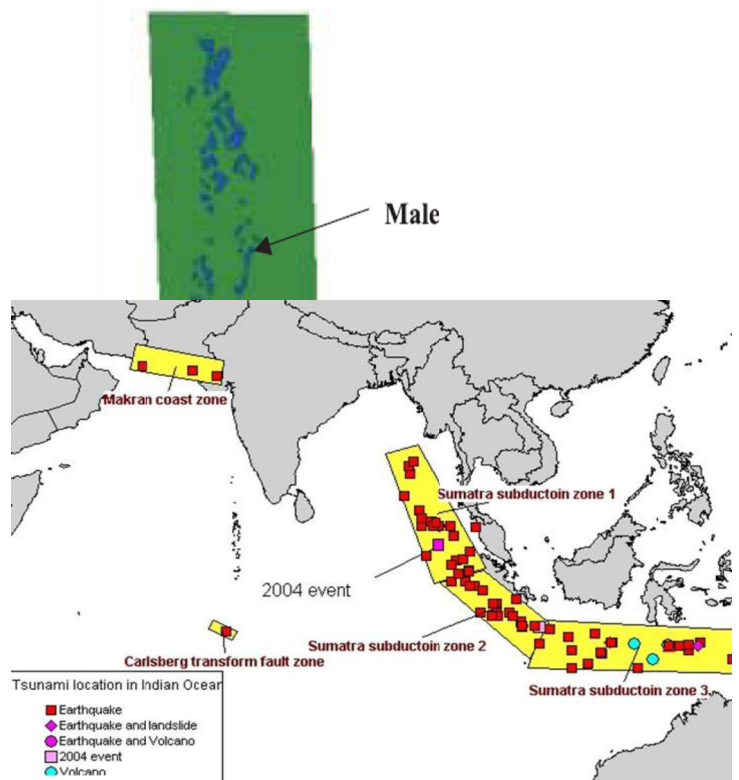
Flooding

- Maldives is more prone to coastal flooding than heavy rainfall flooding.
- Flooding causes many adverse effects to number of sectors.



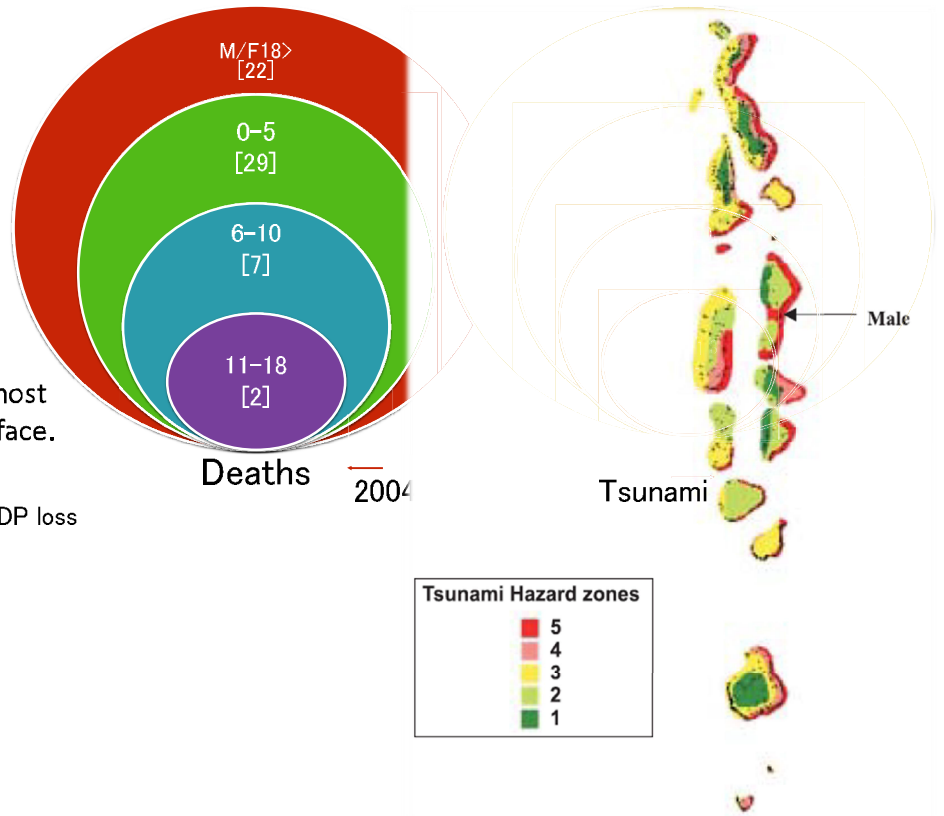
Earthquake

- Situated on the Indo-Australian plate, the Maldives is tectonically very stable and aseismic.
- Maldives is in the proximity of several faults and ridges.



Tsunami

- First time large number of IDPs.
- Low elevation makes a tsunami the most dangerous hazard the country could face.
- Huge impact on the economy. - 65% GDP loss

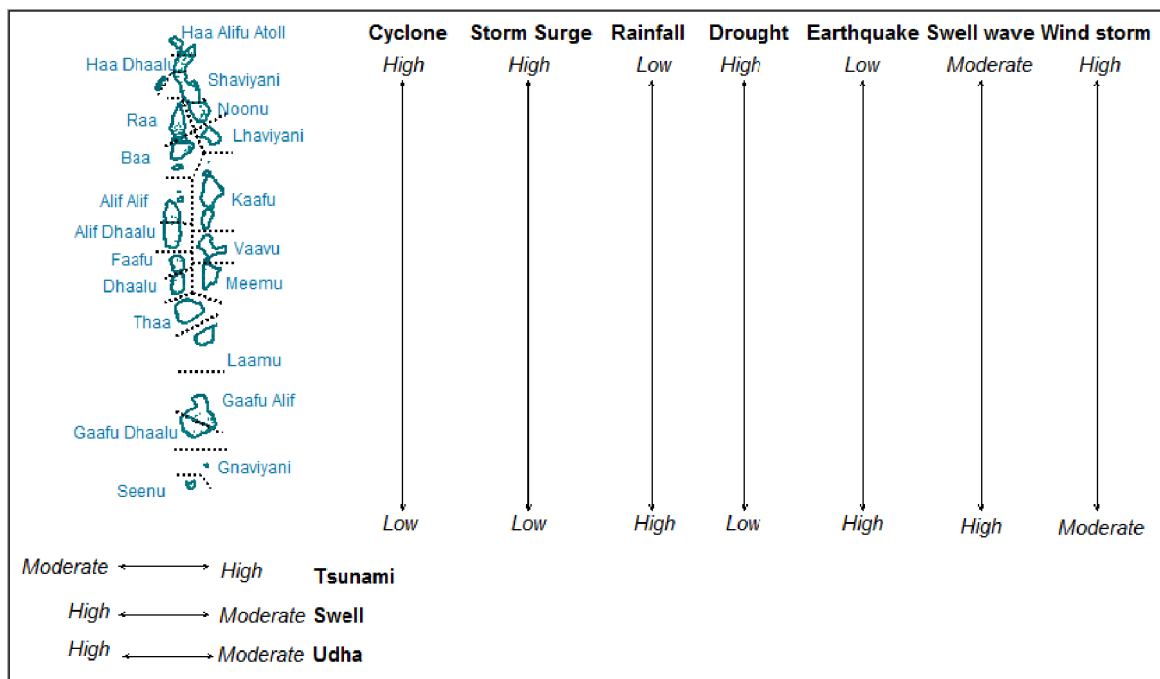
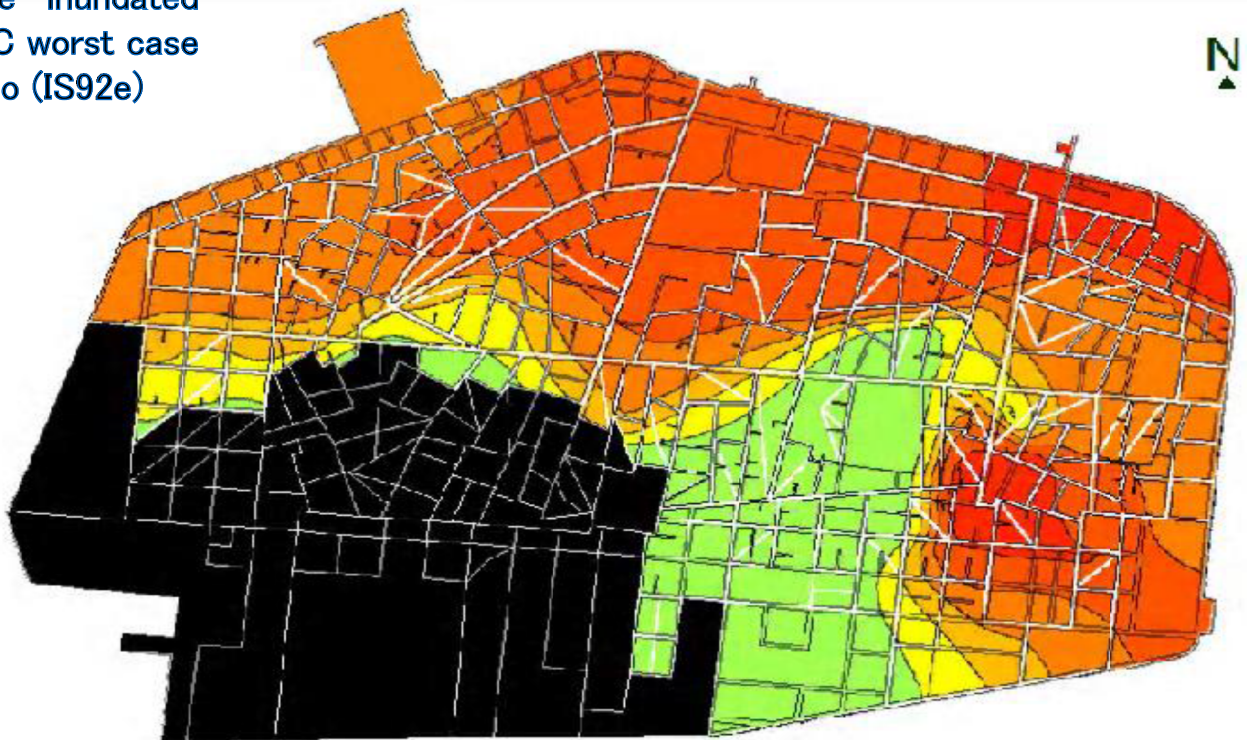


Sea Level Rise

- Biggest long-term hazard.
- Effect of global warming.
- If sea level continues to rise, the worst case scenario is that majority of the Maldives would be underwater by 2100.

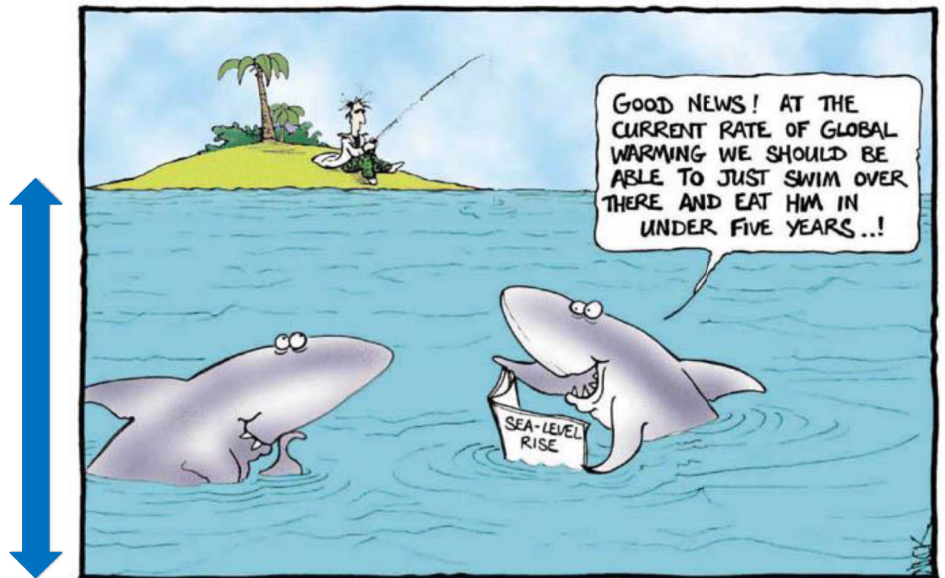


Male' in the year 2050
 31% of Male' inundated
 under IPCC worst case
 scenario (IS92e)



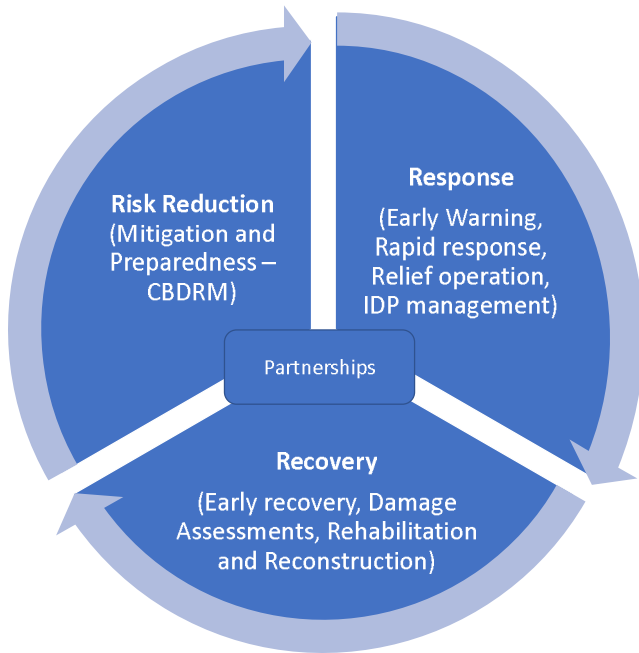
Maldives is the lowest lying country in the world

2.4 meters (7 ft 10 in)



Disaster Management System In The Maldives

Background



NDMC - established by a presidential decree (2004/77) with the primary role of coordinating disaster management.

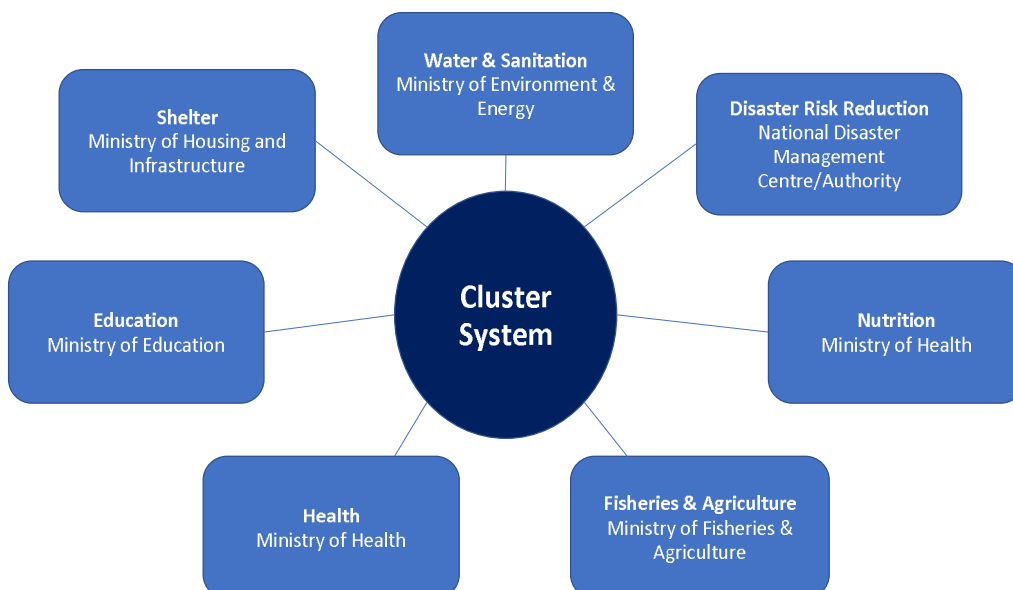
NDMC is mandated to organize and conduct various programs needed to prepare the public both natural and otherwise, and raising government and public awareness of such event.

28/2015 Disaster Management Act;

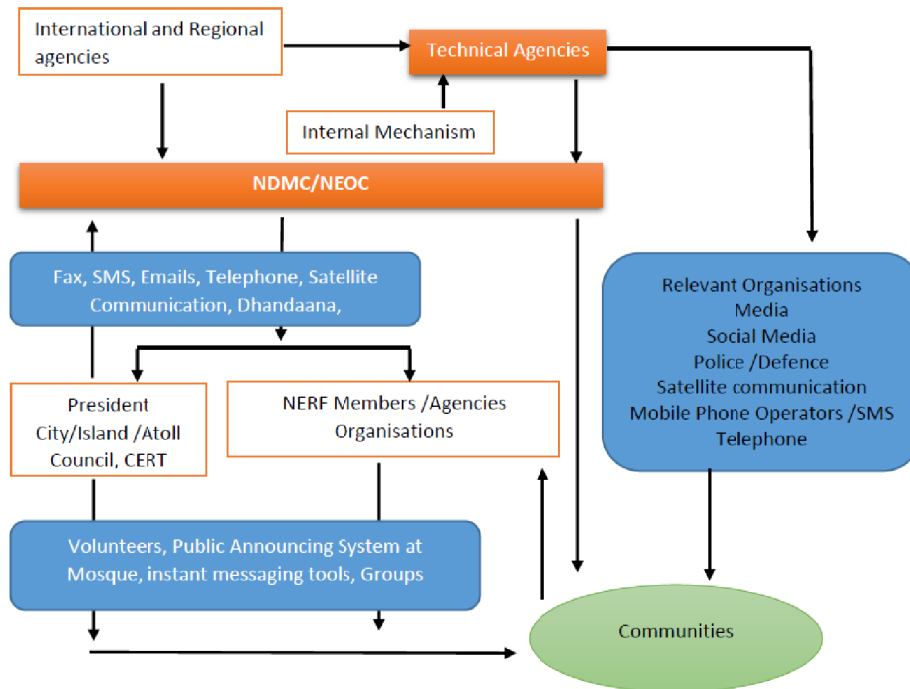
State responsibilities;

- Increasing national level and island level response capacities,
- Providing rapid response and relief in disasters

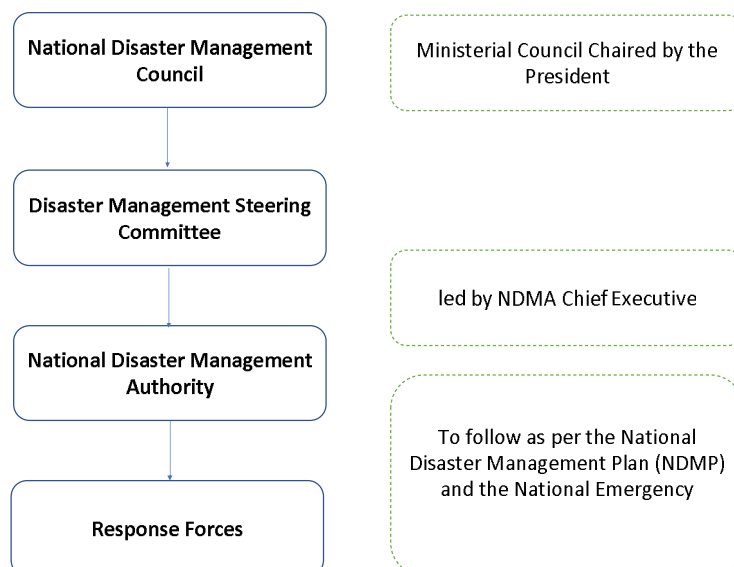
The Cluster System for Disaster Management



Method of receiving early warning information and dissemination



Emergency Response Mechanisms in Maldives



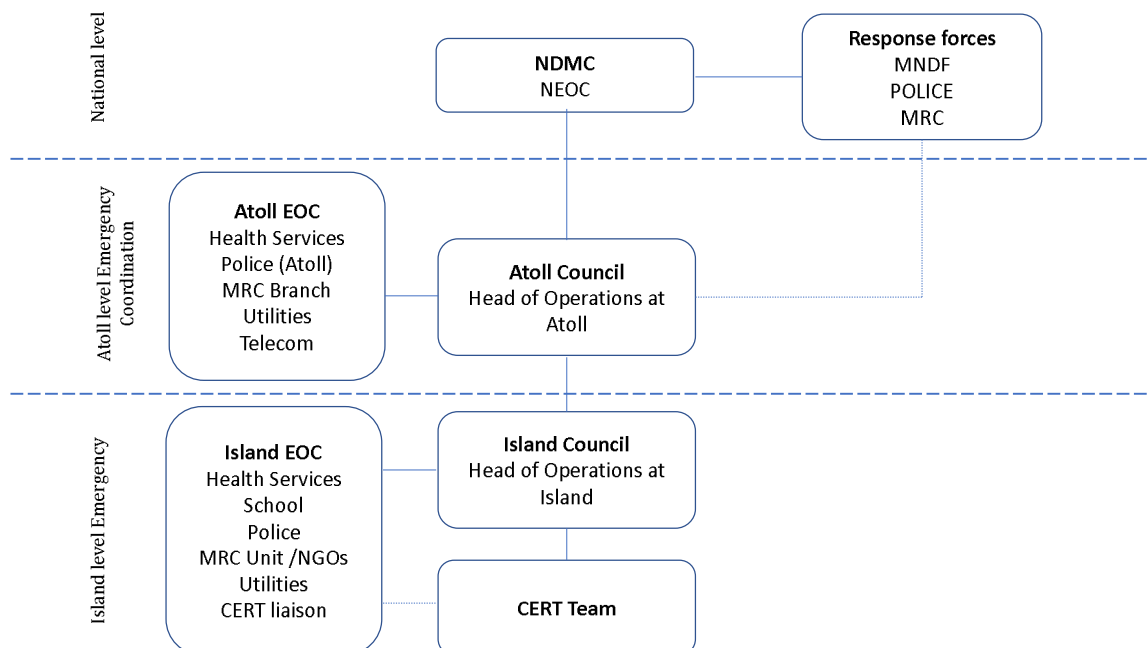
Who are the Response Forces in Maldives?

Chapter 8 of the Disaster Management Act.

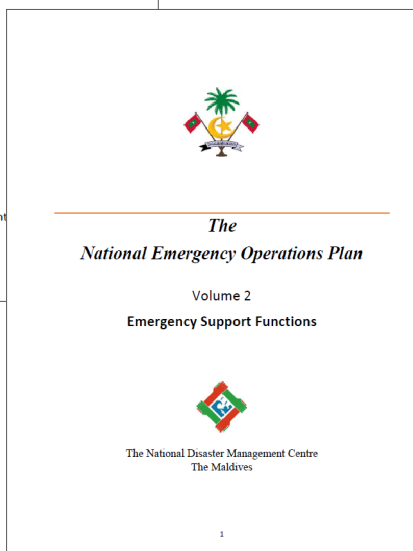
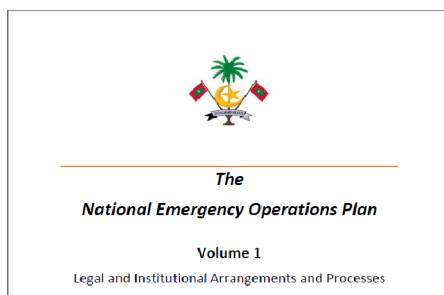


Health Protection Agency
Ministry of Health
Maldives

Response and Coordination Mechanism



Disaster Management Strategy, Policy, and Plans



The work to formulate national disaster management plan (NDMP) is underway and the national emergency operational plan (NEOP) has been now approved by the president.

DM Act compels to produce and maintain these two plans.

Other plans include the establishment of :

- National early warning system,
- Commissioning of disaster management plan for tourism sector
- Development of Safe Island Strategy and integration and mainstreaming of climate change adaptation and disaster risk reduction into the resilient island development planning of the Maldives.

Relief Guideline – Kuri Folder

- Disaster Management Resource Pack For Island Councils.
- Relief guideline based on Sphere standards.
- Covers basic items for immediate relief and compensation for loss.

Post Disaster Assessment and Relief – Forms

- Situation Report – type of disaster, affected area, casualties, displaced people, temporary shelters, Immediate Relief Aid requisition forms.
- Rapid Impact Assessment form – damage to infrastructure, households, livelihoods, casualties and deaths (after 24 hours).
- Damage and Loss Assessment form (after 2 weeks).
- Relief guideline based on Sphere standards is in development.
- Covers basic items for immediate relief and compensation for loss.



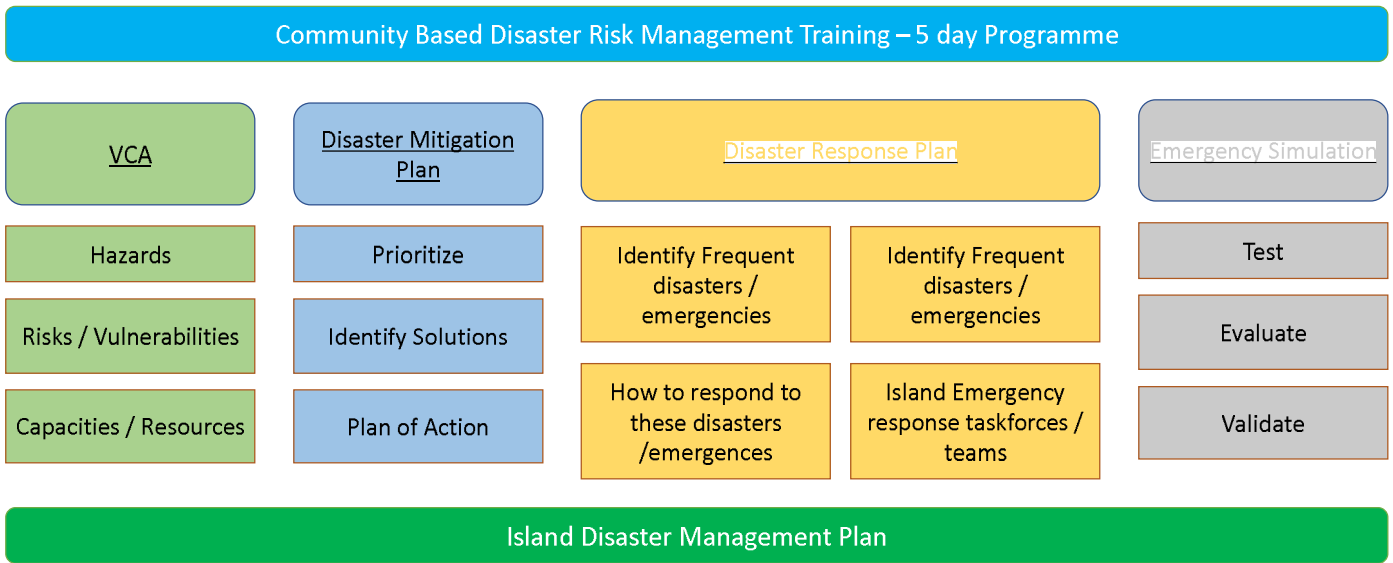
NDMC'S WORK TOWARDS REDUCING DISASTER RISKS

Several Soft and Hard intervention tools are being used by NDMC in DRR.
Main programs include:

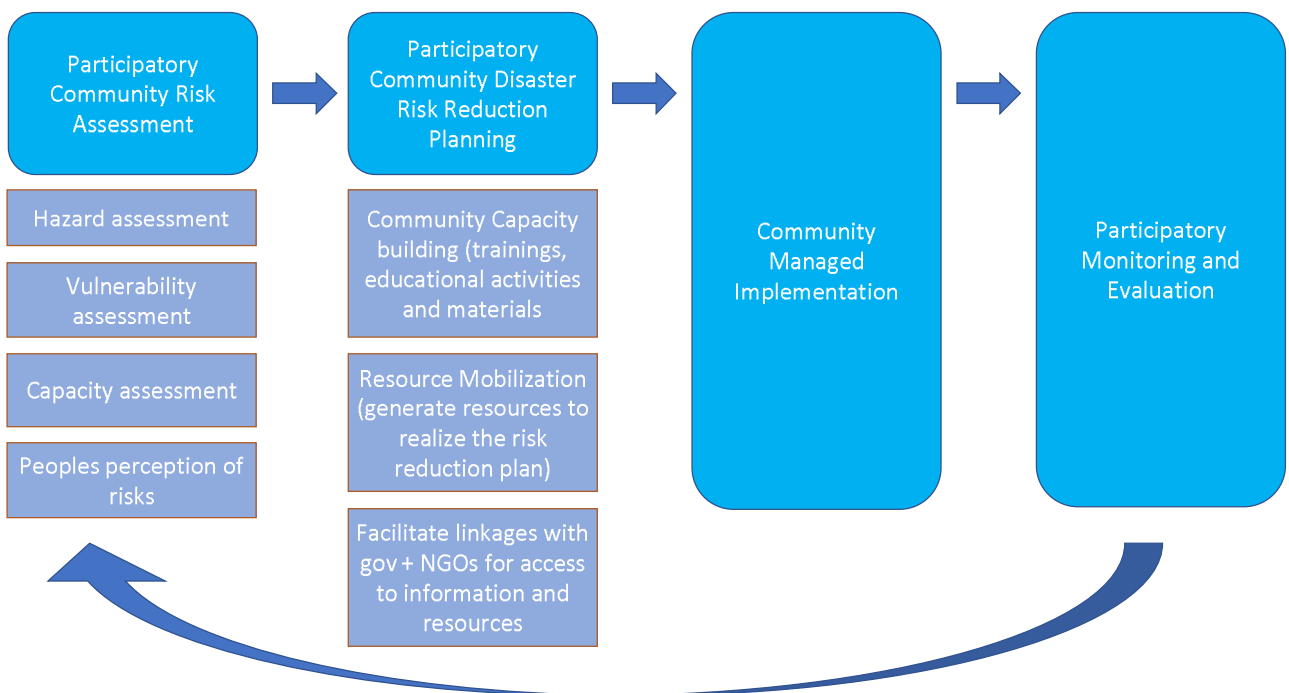
1. A comprehensive Community Based Disaster Risk Management program
2. Flood mitigation projects for islands
3. Early warning and emergency communications
4. Creation of a disaster information hub
5. School programme
6. Resort resilience programme

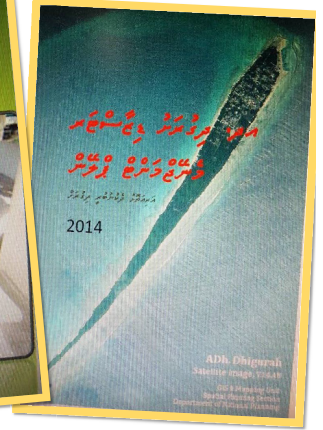
7. Deployment of innovative technologies to address vulnerabilities
8. CAP on a MAP
9. Loan scheme
10. Insurance scheme
11. Building partnerships
12. Japan Non-Project Grant Aid 2015 - JICS

Current CBDRM Process



CBDRM Approach

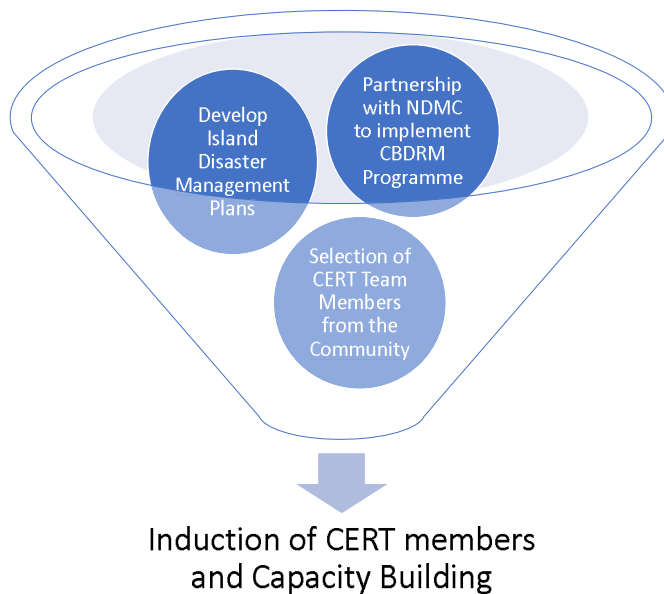




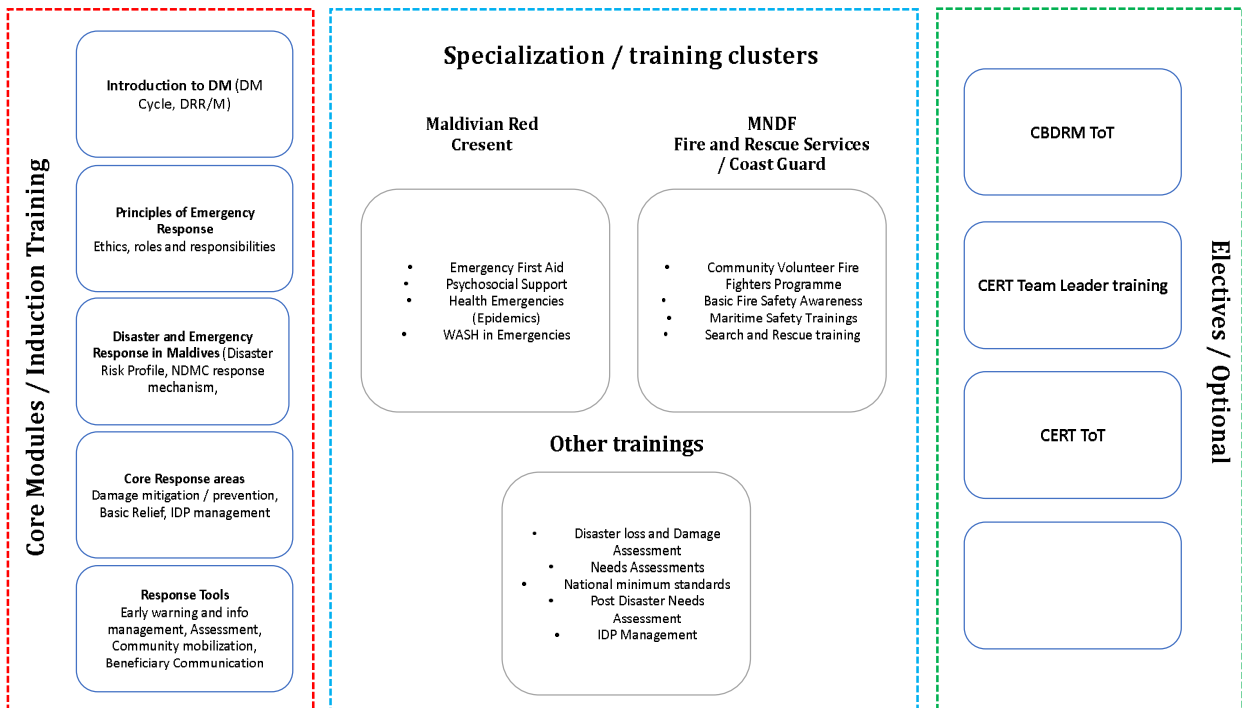
56 Islands



Establishing CERT in a Community



Community Emergency Response Teams (CERT)

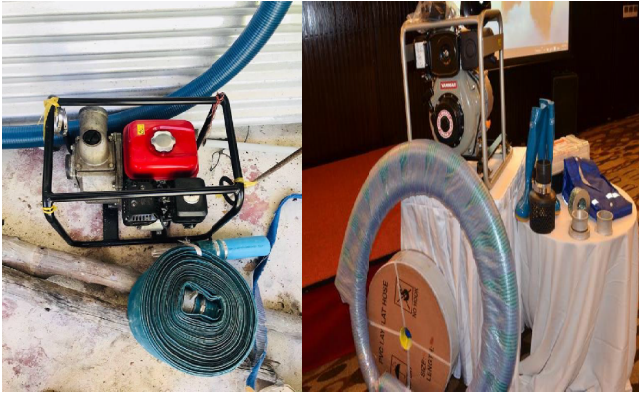


Fire Fighting
First Aid

CERTs
Established in
10 Islands
(2017-2018)



Flood Mitigation Project For Islands



Pump Stations Established in 31 Islands
(2014-2017)

7 more Pump Stations to be established
(2018)

- Flood mitigation equipment being provided for the islands in order to enhance response time.
- Pump, pump storage facility, dewatering accessories are all provided for the islands.
- Island communities are empowered to respond to the disasters without having to wait for support to arrive.
- 2 pump systems per island.
- Will further integrate with CBDRM program and CERTs where they will be trained to use the pump systems effectively.
- Started on 2014

Early Warning and Emergency Communications System



Disaster Information Hub

Cap On a Map - Dhandhaana System

Sends out alert messages to all disaster focal points. Messages go out as texts, emails and also via RSS feed.

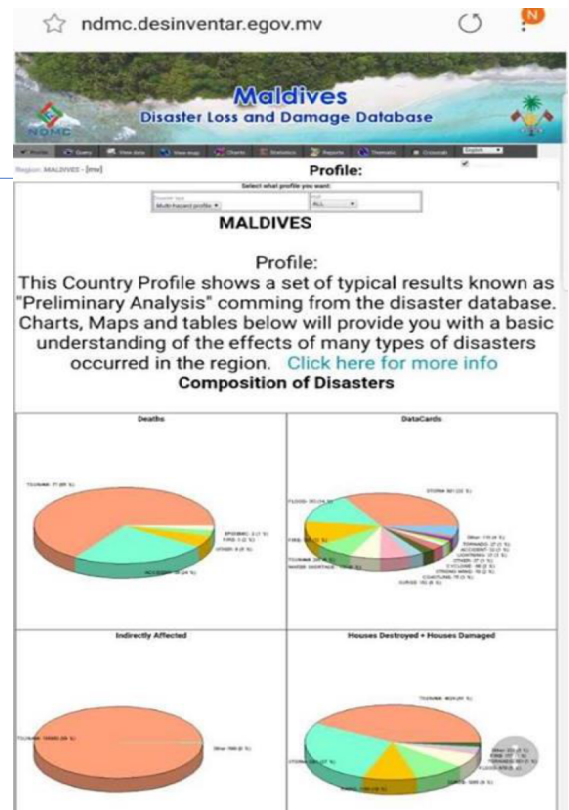
Contact information of disaster focal points from all islands, government companies, corporations and major NGOs have been collected.

Messages will go out immediately to the disaster focal points in case of a disaster

Disaster Information Hub

Disaster Information System - Desinventar

- A country disaster loss database is established.
- Integrated to a GIS and remote sensing database.
- The database software is able to generate reports, charts and maps based on the information that has been entered.



Deployment of Innovative Technologies To Address Vulnerabilities

Standard Operating Procedures

1. Drone Image acquisition
2. Drone Deploy pre flight setup
3. Image processing using Agisoft

Geographic Information System (GIS)

1. Training NDMC staff on the usage of GIS in collecting, compiling and demonstration of disaster related information.
2. Piloting a GIS system in one atoll with all necessary data and spatial mapping.



Resort Resilience Program

- Public-Private Partnership model.
- NDMC gives technical support to resorts to develop DM Plans and build capacity.
- Resort makes in-kind contribution to NDMC and at risk communities to strengthen DRR and Response capacities.



School Program

- Technical assistance in the development of SEOP.
- School tsunami drills.
- Tsunami Drills conducted in 5 Schools (UNDP)
- Implementation of SEOP and Fire Drills conducted through MoE and FRS.



Disaster Relief BML Loan Scheme

- Introduced in 2016.
- Loan scheme introduced under MOU signed with BML.
- BML provides loans up to 40% of the total costs to recover from total damage.
- Long term repayment period of 15 years.
- Provides a maximum loan amount of MVR 510,000
- Interest rate is 9% (lowest interest rate by BML)
- One year grace period

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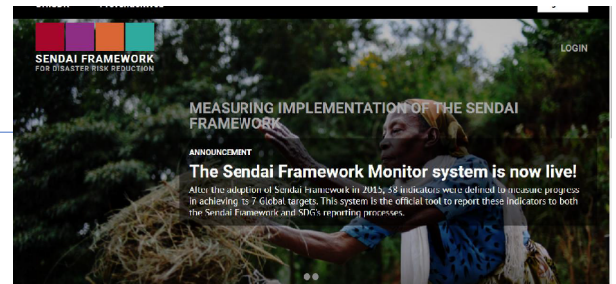
Disaster Insurance Scheme (Ayady Kaarisaa Thakaful)

- Insurance scheme that covers all natural disasters and fire incidents.
- Compensation for infrastructural and structural damages to buildings and properties.
- Individuals joining the scheme have to pay 0.18% every year for the insured infrastructure and properties.
- Scheme also has further add-



Implementation of SFDRR in Maldives

- Develop an Action Plan for SFDRR implementation - work in progress as part of NDMP.
- Reporting and Evaluation.



GLOBAL TARGETS

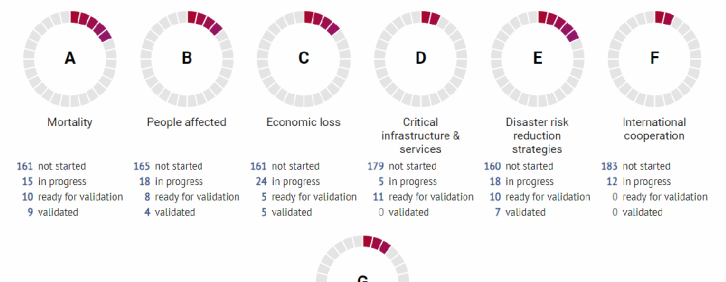
Reporting year: 2017

PROGRESS OF GLOBAL TARGETS

COUNTRY REPORTING OVERVIEW



TARGET REPORTING OVERVIEW



Building Partnerships

- Enhancing existing partnerships with the local island councils and atoll councils.
- Building new partnerships with the major stakeholders of Disaster Management from public and private sector.
- Strengthening partnerships with international organizations.
- Bringing together government agencies to build the conversation to carryout DRR activities and successfully



Japan Non-Project Grant Aid 2015

Japan's Grant Aid for the Provision of Japanese Disaster Reduction Equipment - Japan International Cooperation Systems (JICS)

Increasing response capacities of National Emergency Response Forces by Providing Disaster Response Equipment's and vehicles to MNDF (Fire/Coast Guard)

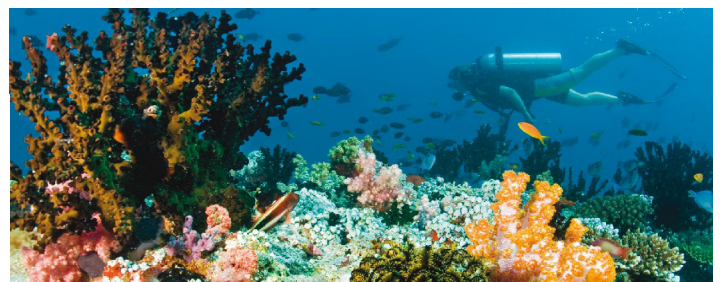
Phase 1 : Exchange of Notes signed on 07 April 2015 - Amount 500 Million Japanese

Phase 2 : Exchange of Notes signed on 06 April 2016 - Amount 600 Million Japanese Yen (9.9 Mil USD)



Challenges In Disaster Management

- No state budget for preparedness and awareness
- Poor legal framework
- Lack of local capacity
- Lack of coordination between agencies and overlap of mandates
- Lack of awareness at governance and community level
- Difficult to priorities in the absence of major disasters.
- Weak building code; provisions are not made for DRR.



Thank You !