Sharing Experience on Disaster Risk Management in Sri Lanka,

By
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Victual workshop on Integrated Flood Risk Management

on 08 to 11th December,2023,

SAARC DMC program in India

Sri Lanka: Country Overview

Physical Features & Climate

Total Area	: 65,610km^2
Land Area	: 62,705km^2
Inland waters	: 2,905km^2

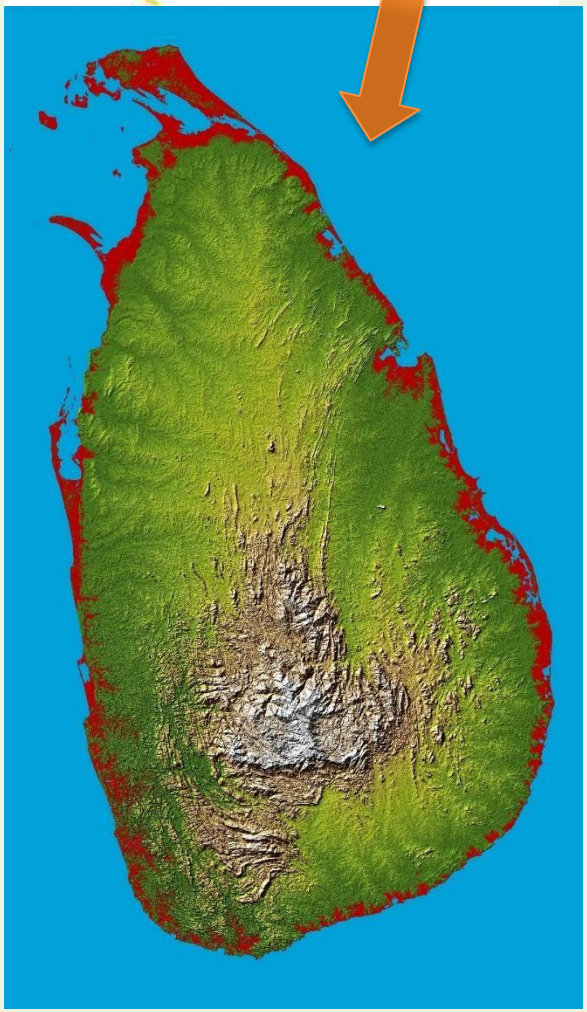
Population & Vital Statistics

Mid Year population (2014)	: 20.67Mn.
Population Density	: 330 (per km^2)
Urban Population	: 15.1%
Rural Population	: 84.9%
Infant Mortality rate (2010)	: 9.9 per 1,000 live births
Dependency Ratio (2014)	: 49.5%
Average Household Size (2013)	: 3.9 persons
Expectation of life at birth	: 74.3%
Literacy Rate (2013)	: 92.5 (Female – 93.5; Male – 91.6)
Human Development Index	: Rank 73rd place among 187 countries

Economic Indicators

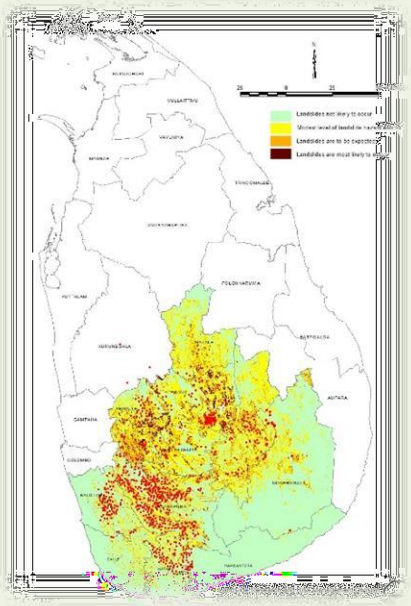
Per capita income	: 3,625 US$
Gross Domestic Product (GDP)	: 7.4 %
Sectoral Composition of GDP	: Agriculture (11.9); Industry (28.7); Services (59.3)
Inflation Rate	: 1.7%

Source:. CBSL, 2014

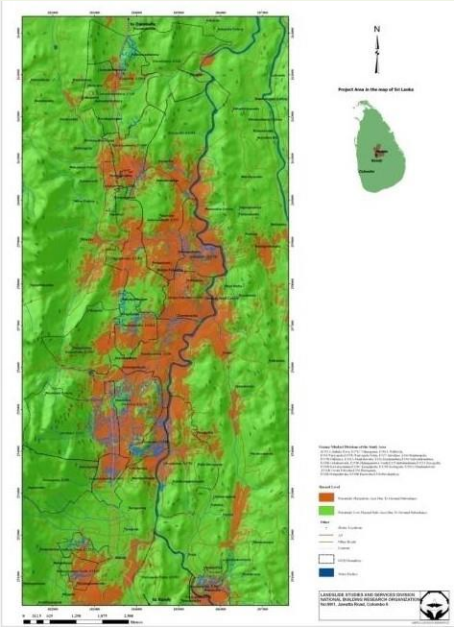


Potential disaster risk areas

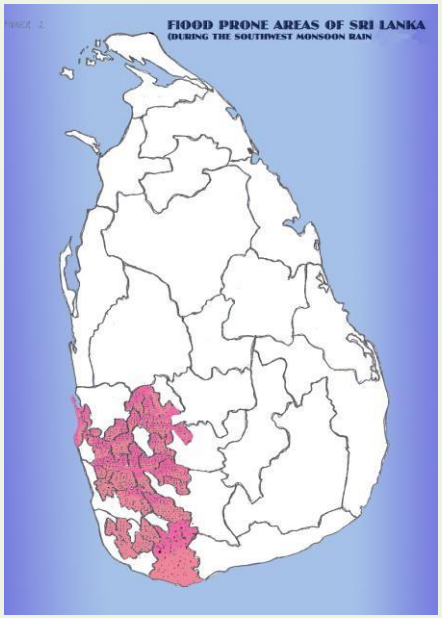
Landslide Prone areas



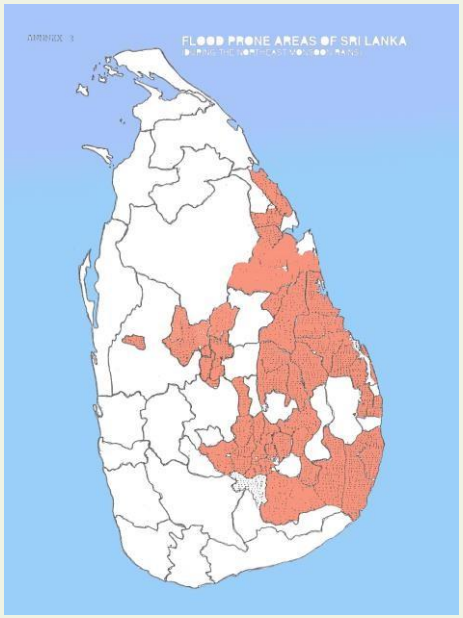
Land subsidence areas



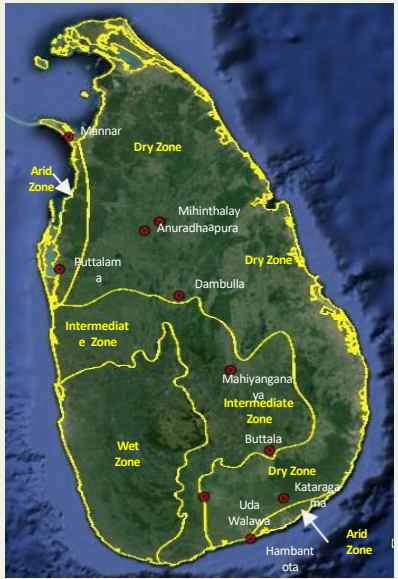
Flood Prone areas during South west Monsoon (May - Sep)



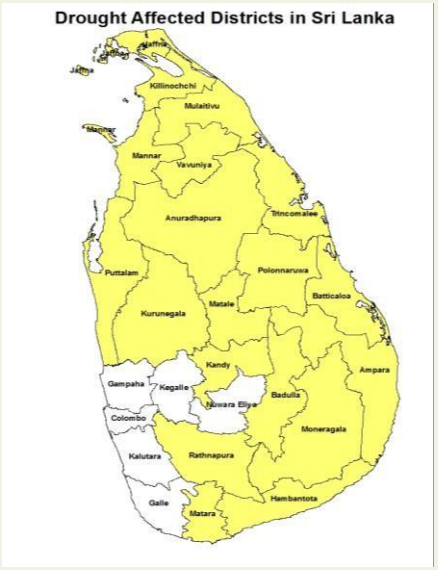
Flood Prone areas during North East Monsoon (Dec - Feb)



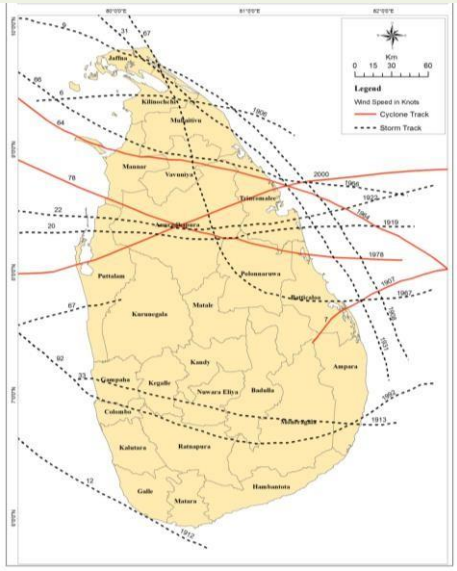
Problematic Soils -



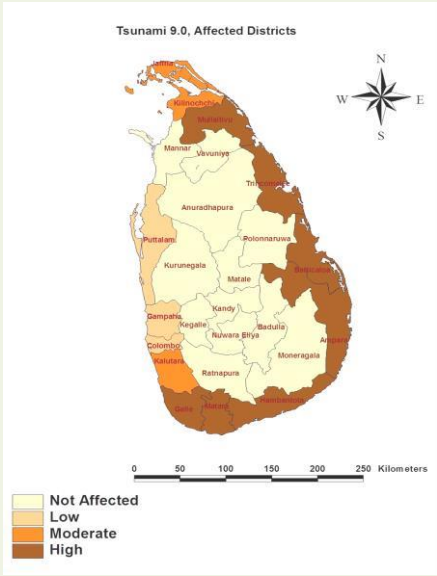
Drought Prone areas



Tropical Cyclones



Tsunami Affected Coastal Areas



Key Disaster Impacts: Overview

“Recent floods and landslides have demonstrated the challenges posed by extreme weather conditions to economic growth prospects and poverty reduction of Sri Lanka”.

- **Floods:** Frequent; losses and damages to livelihoods, foods security ,housing sector and the SME sector is enormous
- **Landslides:** Frequent and several lives and properties were loss and damages to shelter and health sectors
- **High winds:** frequent and most of the housing sector is damaged
- **Cyclones:** Rare but few extreme events occurs over the last century
- **Drought:** most of dry zone of the country affected by pro longed drought period. Agricultural sector is affected frequently.
- **Environmental hazards**

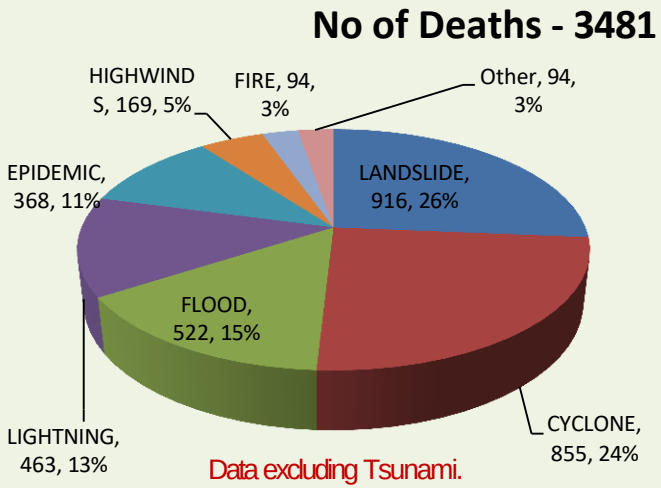
*All above disasters affect the key development sectors and divert the development investments towards to relief and rehabilitation efforts

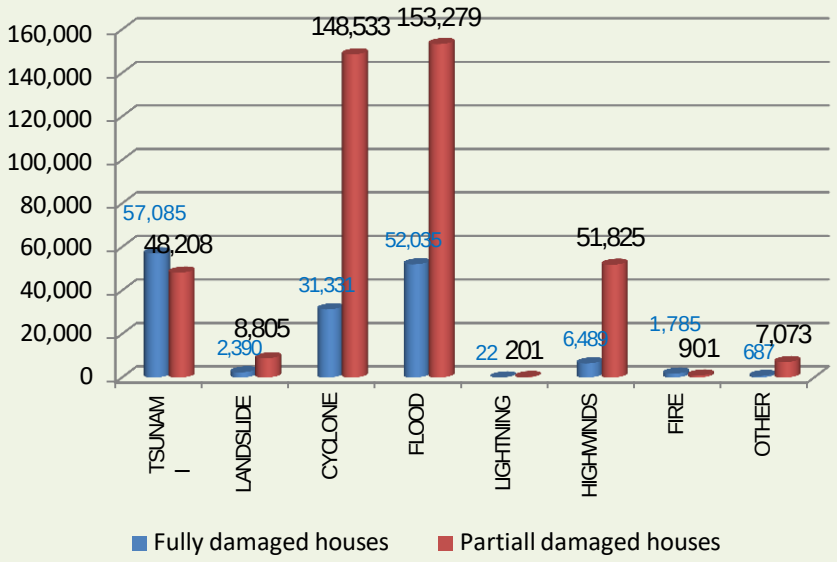
Experiences of disasters

Cumulative total of disasters occurred in Sri Lanka (1974 - 2014)

Type of Disaster	Deaths	Injured	Missing	Affected	House Damages	
					Fully	Partially
TSUNAMI	30,959	19,611	1,908	1,076,240	57,085	48,208
LANDSLIDE	916	311	77	132,922	2,390	8,805
CYCLONE	855	600	21	1,691,175	31,331	148,533
FLOOD	522	299	22	13,143,839	52,035	153,279
LIGHTNING	463	417	3	1,755	22	201
EPIDEMIC	368	0	0	588,799	0	0
HIGH-WINDS	169	489	45	525,612	6,489	51,825
FIRE	94	351	0	14,547	1,785	901
DROUGHT	0	0	0	15,456,672	0	0
OTHER	94	238	15	16,227,768	687	7073
Total	**34,440**	**22,316**	**2,091**	**48,859,329**	**151,824**	**418,825**

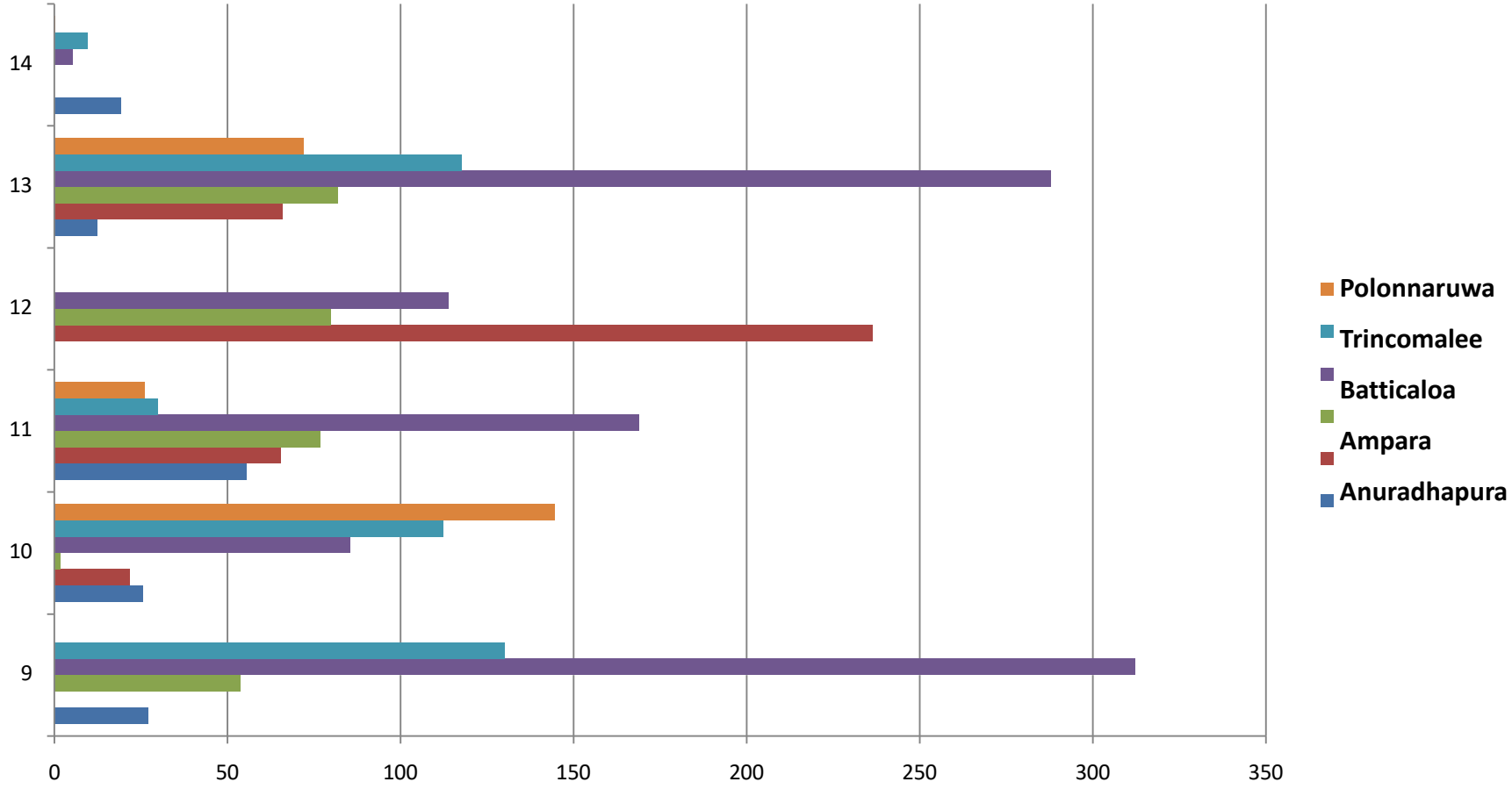
Source: www.desinventar.lk database.





Disaster Emergency Situation in Sri Lanka January 2011 Eastern Province and Pollonnaruwa District.

Rainfall Data from 9 – 14 January,2011



Rainfall Pattern in Ampara (Senanayaka Samudraya Gaging Station)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2004	173.48	27.17	45.46	9.14	42.92	-	51.81	26.67	118.87	311.15	372.61	764.28	1943.56
2005	203.70	6.09	58.16	114.80	63.75	-	61.21	33.02	33.27	250.19	439.67	127.0	1390.86
2006	282.19	58.67	15.24	104.14	22.86	36.06	6.35	43.18	42.67	114.3	226.56	123.44	1075.66
2007	217.67	32.25	24.38	230.88	42.67	26.92	87.88	73.66	15.74	211.58	1047.24	345.44	2356.31
2008	346.20	112.26	252.22	85.15	35.88	54.46	50.72	30.48	52.04	135.48	81.43	242.08	1478.40
2009	104.97	46.99	23.81	120.52	33.17	10.66	59.43	42.92	36.83	96.77	283.97	601.21	1461.25
2010	243.58	72.39	53.34	4.31	20.70	53.59	8.89	93.47	145.28	138.68	290.06	76.05	1200.34
2011	776.40	512.24	82.80	56.38	29.97	25.4	28.32	36.32	43.68	263.60	445.58	343.95	2644.64
2012	63.68	300.60	20.71	78.34	16.76	24.32	13.58	67.08	41.91	106.95	-	-	733.93
2013	-	-	-	92.67	73.53	52.57	130.47	177.73	39.21	41.23	111.42	297.45	1016.28
2014	220.42	112.98	37.59	8.53	138.78	28.15	25.27	64.0	38.81	197.50	351.75	553.84	1777.62
2015	4.50	186.50	93.00	57.00	95.70	87.40	-	66.70	86.30	282.30	368.30	346.70	1674.4
2016	238.60	86.50	50.50	15.80	198.10	-	48.10	53.70	24.00	96.50	334.10	16.20	1162.1
Average	221.2	119.6	58.2	75.2	62.67	30.7	44.0	62.22	55.27	172.5	334.82	295.2	1531
2017	334	141	81	27.7	61.8	21.2	157.6	31	67.9	81	109.2?	?	1004.2 ?

Road networks Inundated in flood 2011

Inginiyagala Road

Uhana Wawul Gas Handiya Junction

Andal Oya

Hingurana

Malkampitty

Kittangi Road

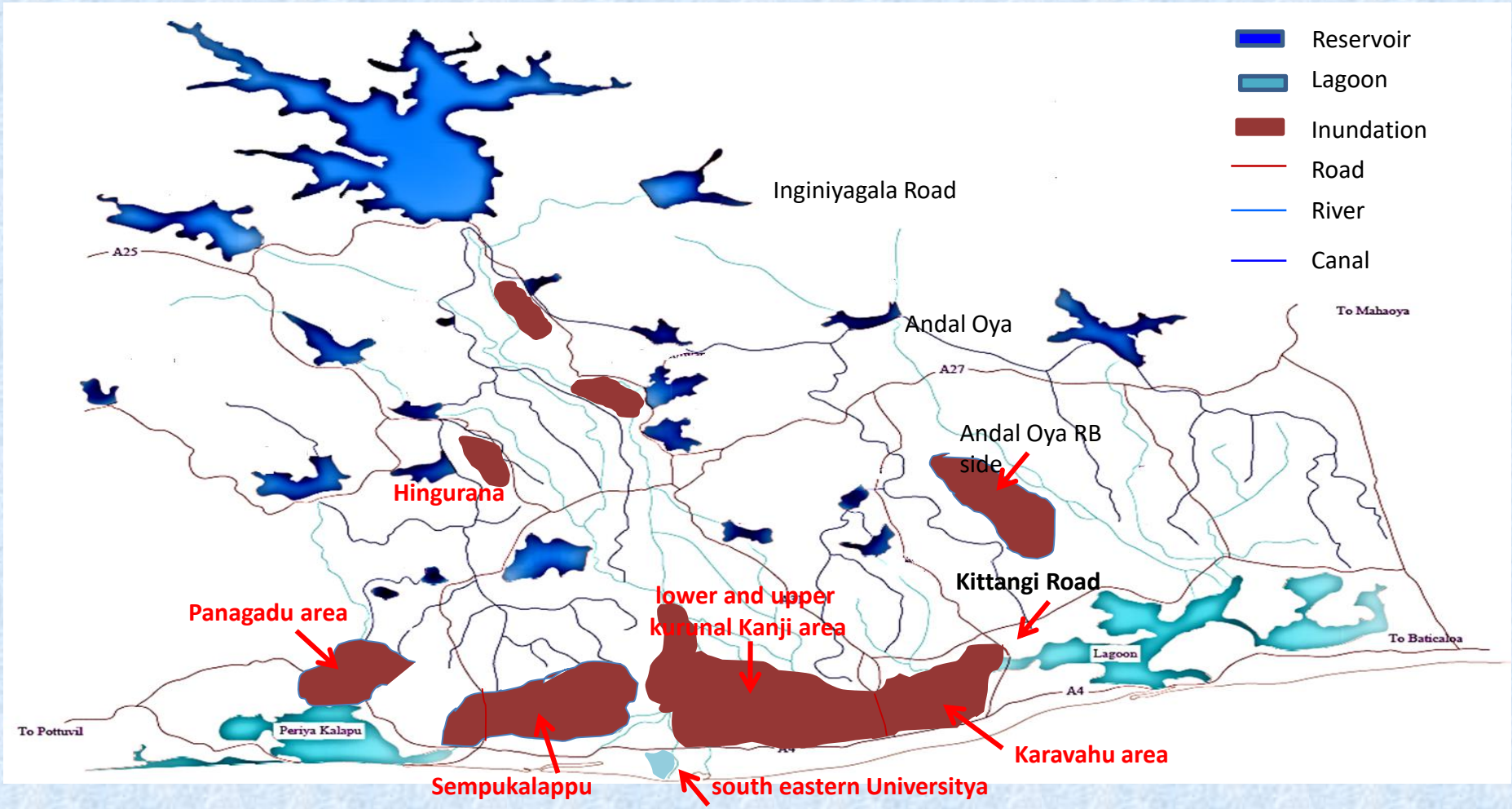
Marandamunai area

Mawadipalli area

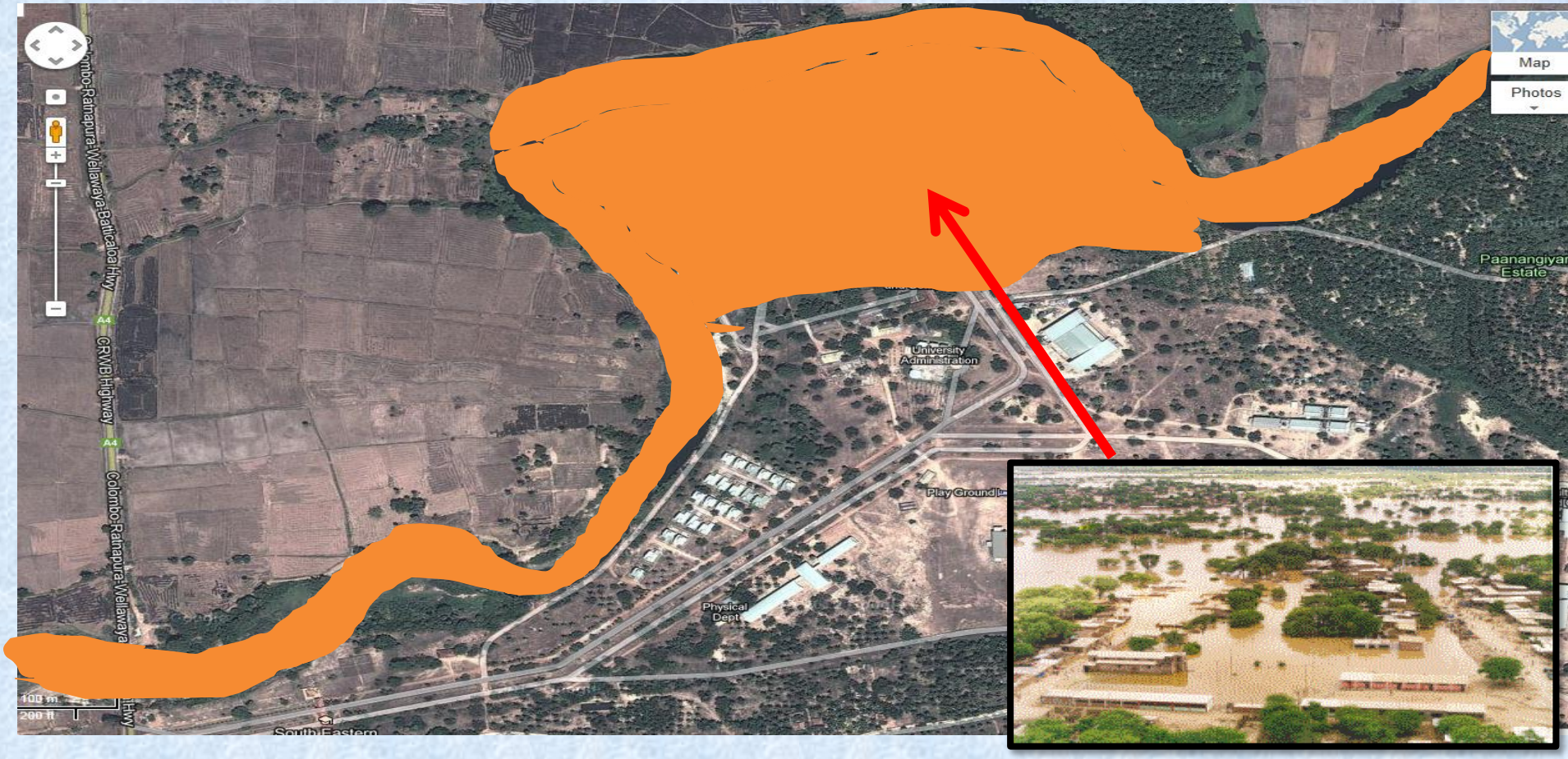
Reservoir
Lagoon
Inundation
Road
River
Canal

A25
A31
A4
A4
27
To Mahaoya
To Batticaloa
To Pottuvil
Periya Kalapu
Lagoon

Flood Inundated Areas -Year 2011



Oluvil University



Batticaloa District

Ampara District

Trincomalee District

Coordination Response with Relevant Organizations

Coordinating the Disaster Management Activities

Provision of Food and Relief Items

Provision of Food

Government of Sri Lanka Provided Cooked Meals and Dry Rations to all affected through out the Island to value of US $ 10 Millions

Summary of Persons affected and Houses damaged by 14.01.2011 at 0900 hrs

District	Affected		Deaths Reported	Injured People	Missing People	Houses Damaged		IDP Camp		
	Families	Psns				Fully	Partially	Nos.	Families	Persons
Ampara	112384	418154	9	13	11	956	4393	169	40756	157649
Batticaloa	145131	541688	9	0	1	1553	3958	275	42295	165494
Trincomalee	8529	32330	0	0	0	0	0	78	8529	32330
Polonnaruwa	707	2203	0	0	0	0	0	30	707	2203
Total	266751	994375	18	13	12	2509	8351	552	92287	357676
Other Districts	16900	60810	9	34	0	381	7678	42	860	3467
Island Total	283651	1055185	27	47	12	2890	16029	594	93147	361143

Due to Floods…..

- Over 200,000 acres of paddy cultivation have been completely destroyed
- Over 200 small and medium tanks have been damaged
- Infrastructure such as roads and culverts have been severely effected
- A-11 route from Polonnaruwa to Valachchana was impassable at Manampitiya for about five days
- Most of the minor roads were inundated. Some are still impassable
- All wells have got polluted due to overflow of septic tanks.
- There is a scarcity of drinking water
- Thousands of houses have been damaged/ destroyed
- Livelihood of people specially low income families have been severely effected
- All major tanks are overflowing and more than 200 small tanks are breached
- All schools are closed and day to day life of the people destrupted

Post-Disaster Rehabilitation

- Improvement of Health Facilities and Disease Control
- Rehabilitation of Roads and Bridges
- Rehabilitation of Damaged Tank Bunds and Irrigations Structures
- Construction of Damaged and Destroyed Houses
- Assistance for Lively-hood Improvements such as Provision of Seed Paddy and Implements etc.
- Cleaning of Wells, Houses, Septic Tanks etc.
- Cleaning of Cannels and Drainage Systems
- Construction of Damaged Schools and Community Centres

Proposed Projects (Irrigation Sector) in Ampara & Baticaloa Districts

Name of Scheme	DS Division	Estimated Cost Rs.
Periya Kalppu Drainage Scheme	Addalaichemai Akkaraipattu Alaiadyvembu	**507.75**
Causeway in Karawahu Drainage Scheme	Kalmunai Kittangy	**13.17**
Sengapada	Kalmunai	**1.54**
Namal Oya Tank	Damana	**5.53**
Egal Oya	Damana	**6.48**
Ambalan Oya	Damana	**4.03**
Navakiri	Porathivu Pattu Wellaveli	**730.00**
Chadayanthalawa Tank		**38.53**
Semmanikulam	Pothuvil	**38.82**
Kaddukkamunai	Manmunai South	**6.54**
Total		**1,352.42**

Current Status

Mainstreaming DRR in Sustainable Development Planning

"To ensure the safety of Sri Lanka by reducing potential disaster risks and impact on people, property & the economy" the Disaster Management Policy of Sri Lanka(Public Investment Program 2017-2020).

- **Sri Lanka Comprehensive Disaster Management Programme (2022 -2030)**
- **National Policy on Local Government** identifies the importance of MDRR into local level planning (NPLG, 2009)
- **Housing policy** of Sri Lanka incorporates DRR concerns (National Housing Policy 2014)
- **Coastal Management Planning** process incorporates DRR concerns (CZMP, 2015)
- **Urban Development Planning** process incorporates DRR
- **National & Regional Physical Planning & Policy** identifies the importance of DRR concerns in spatial planning process.
- **Climate Change Policy** also identifies the importance of incorporating DRR into climate change adaptation process. (National Climate Change policy of Sri Lanka 2012)

Current Status
Mainstreaming DRR in Sustainable Development Planning

- Department of National Planning (NPD) identifies the importance of conducting **Disaster Risk Assessments** prior to development activities
- **District & Divisional level planning** process identifies the importance of risk centered resilience sustainable development planning
- Post disaster reconstruction and rehabilitation incorporates DRR concerns
- **By-Laws** are prepared and gazetted for Provincial Councils. i.e. Central Province adopted a By-law to incorporates DRR while Uva Province also followed.

Landslide Risk Assessment For Development and Construction Projects

Since March 2011, NBRO has been assigned to issue Landslide Risk Assessment Reports (LRARs) and recommendations needed for all types of development and construction activities in landslide prone areas.

These LRARs are now a pre-requisite for building permits approved by a local authority.

This action prevents man made hazard of landslides and unstable slopes created by non-engineered constructions and developments

Non-engineered housing construction

Engineered housing construction

Efforts to Mainstream DRR in Sustainable Development Planning

- **Development of Hazard profiles:** Coastal Erosion, Drought, Floods, Landslides, Lightning, Sea Level Rise, Storm Surge, Tropical Cyclone and Tsunami hazard profiles are available for the country.
- **Development of Risk Assessment p**rocess is initiated by DMC and NBRO. These hazard profiles could be used basically for National and regional level planning for disaster reduction in Sri Lanka.
- **Grade 6-9 School curriculum** incorporates disaster risk management education
- **National Universities commenced** Disaster Management courses for undergrads post graduate students. i.e. MSc, Diploma, and Undergraduate courses **Agricultural sector damages** are compensated through Crop insurance scheme
- **Emergency relief and Post disaster damage and losses** were insured through National Insurance Trust Fund (NITF)
- **Mitigation and Awareness** were conducted to reduce disaster risk. i.e. Flood, Landslide, drought mitigation etc
- Irrigation sector incorporates DRR into their development projects

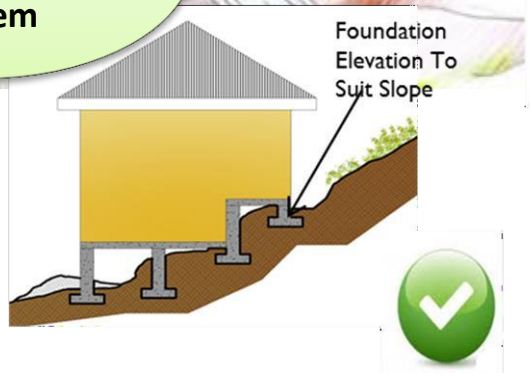
Efforts to Mainstream DRR in Sustainable Development Planning

- **Preparation of Integrated Landslide Hazard Maps** for development planning – 1:10,000 scale maps are available for 10 landslide prone districts of the country.
- **Disaster Impact Assessments (DIA)** are conduct for Road Sector Development Projects.
- **Integrated Strategic Environmental Assessments (ISEA)** are prepared for several Provinces. i.e. Uva, Northern and Western provinces
- **EIA/IEE process** of the country recognizes the level of vulnerability due to prevailing hazards in given location
- **Resilient city** planning and **village level** planning is widely recognized by the local level planning organisations
- Building codes are reviewed to incorporates the resilient construction in the country

Concept of disaster resilient village

Concept of Resilient Village

- Integration of professional inputs on level of risk and possible approach for risk reduction
- Regulations for Disaster Risk Reduction (DRR)
- Community Awareness and Participation
- Integration with District Disaster Management System
- Funding availability
- Well established Early Warning & continuous Monitoring System



Challenges in Mainstreaming DRR in Development Planning

- DRR is also needs to be aligned with National Economic Policy Framework of Sri Lanka.
- DRR is also needs to be aligned with Global frameworks such as SFDRR and SFDRR Action Plan
- Legal and institutional set up needs to reviewed in order to incorporates the emerging trends. Such as Climate change, Human induced hazards etc.
- local level data and information on hazards and disasters (Finer resolution spatial data) needs to be enhanced
- Risk assessment methodologies for developing risk profiles for each identified hazards is a complex activity due to multi stakeholder, multi disciplinary situation
- Pragmatic tools and techniques for risk assessments is a key concern

Challenges in relocating people

Details of the Risk Levels of the landslide prone locations at all districts

No	District	Investigation		Risk Level			Families recommended to be evacuated
		Landslide areas	Resettlement Sites	High	Medium	Low	
				Families	Families	Families	Families
1	Badulla)	1166	154	2518	3086	333	1756
2	Nuwaraeliya)	1426	238	822	307	29	1320
3	Kandy)	555	9	1117	960	133	962
4	Kagalle)	291	11	252	291	149	152
5	Matale)	109	11	225	237	18	187
6	Kaluthara)	157	4	117	135	32	140
7	Rathnapura	149	14	166	506	84	384
8	Matara/Hambanthota	257	1	14	194	52	21
Total		**4110**	**442**	**5231**	**5716**	**830**	**4922**

Investigation and Identification of Vulnerable Communities and High Risk Settlements

Challenges in Mainstreaming DRR in Development Planning

- Absence of benefit - cost analysis on DRR investments
- Decentralized development planning processes. i.e. Central government, Provincial Government and Local Government are implementing development activities, Perhaps needs to be integrated.
- Investing building resilience is yet to identify as a priority implementation initiative
- Inadequate technical and human resources

Support Required for Mainstreaming DRR in Sustainable Development

- Provide support to enhance the techno-legal framework of the country for mainstreaming DRR into planning
- Develop user friendly tools and techniques for MDRR into planning
- Develop benefit cost analysis tools to screen the feasibility of development projects through disaster lens
- Provide assistances to sector agencies to incorporates DRR planning through their own processes

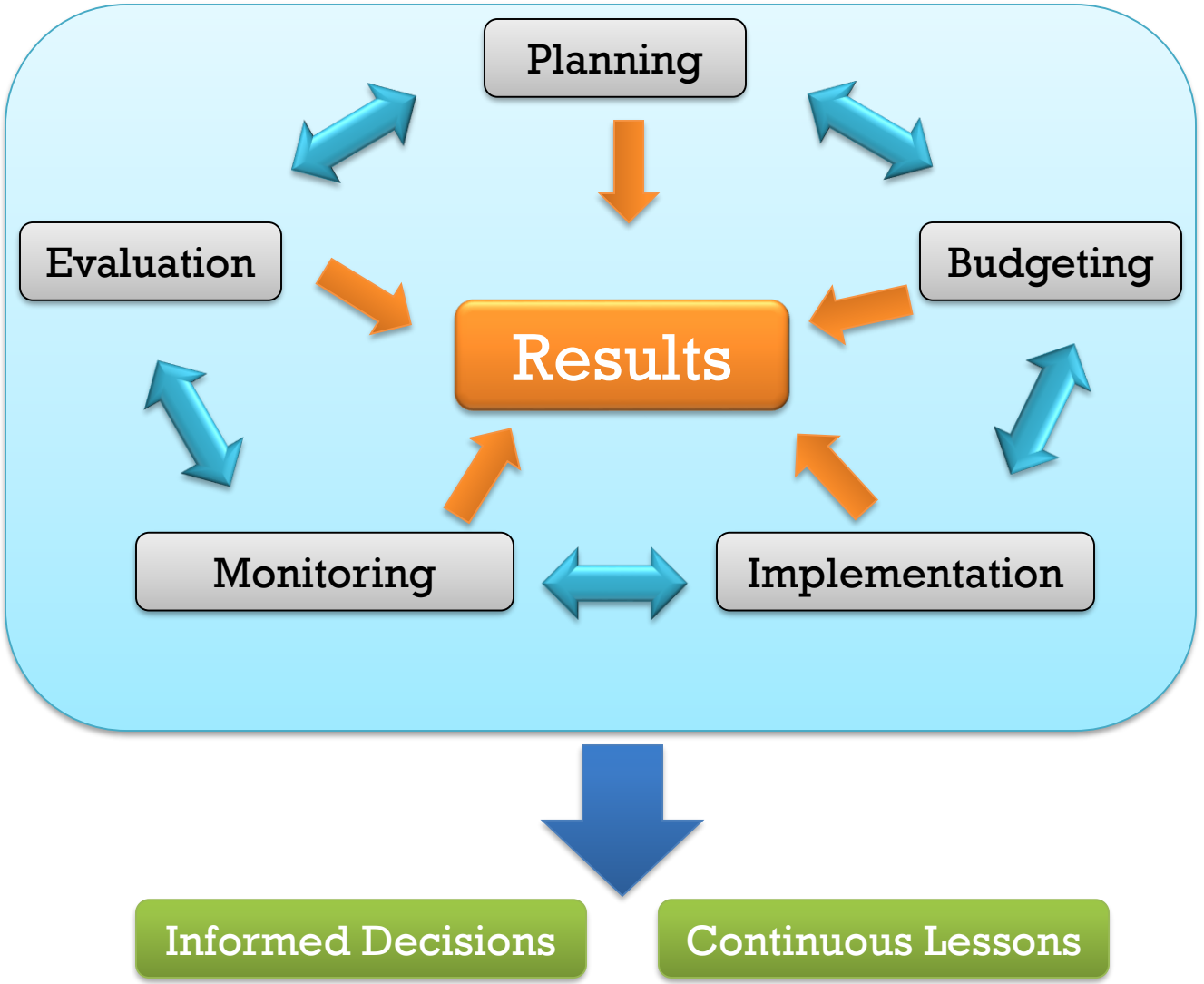
Support Required for Mainstreaming DRR in Sustainable Development

- Assistances required to acquire novel and advanced knowledge and technology for developing risk assessments
- Enhance the capacity of the officers of key development sector agencies to undertake risk incorporated development planning processes.
- Provide assistances to sector agencies to screen the feasibility of development projects through risk inclusive development processes

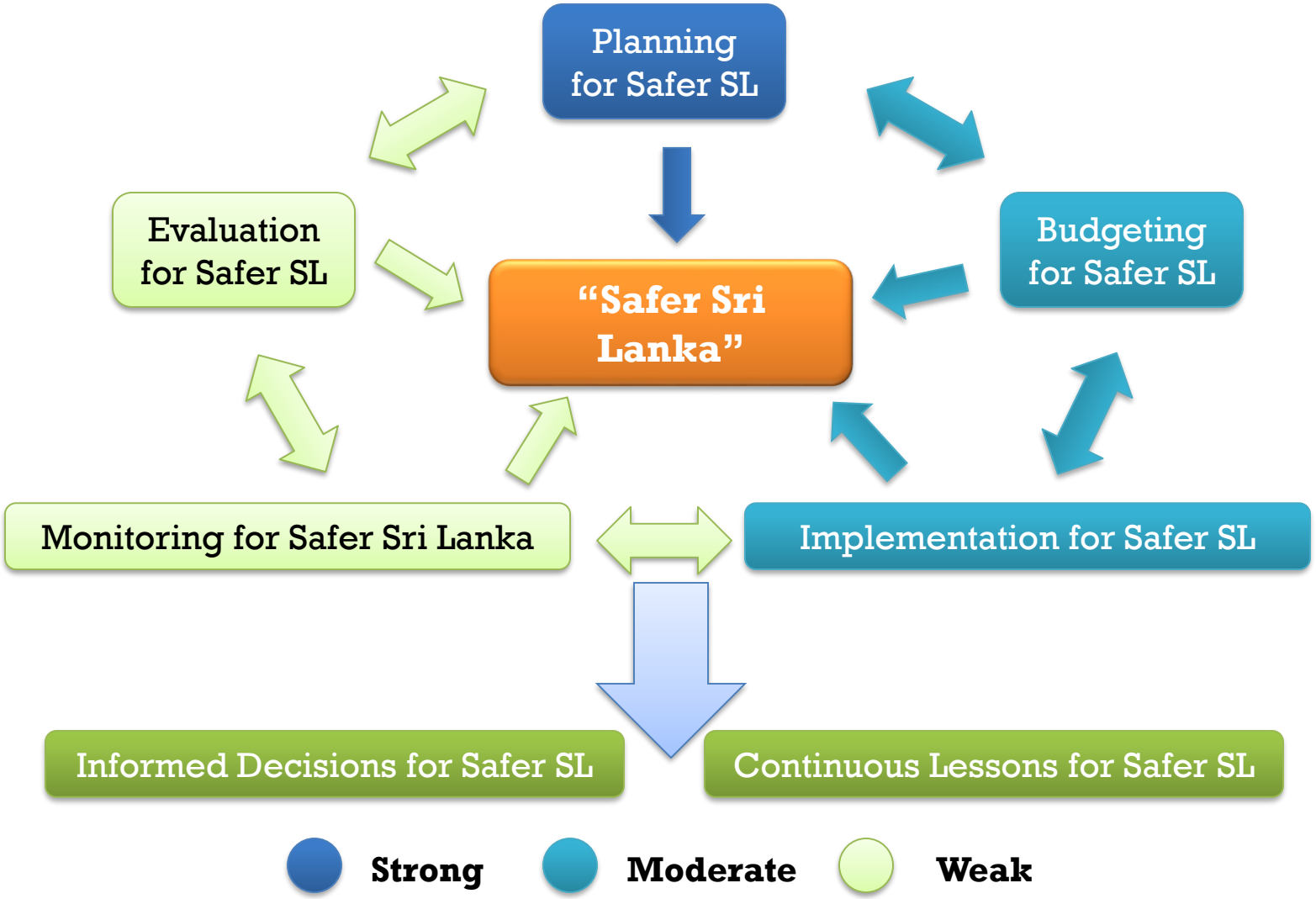
Results based Public Sector Management Framework

Key features

- Core Results Attributes
- Focus on Common results
- Interdependency of PSM components
- Horizontal & Vertical Integration



Application of Results based Public Sector Management Framework for DRM



How we plan for Safer Sri Lanka?

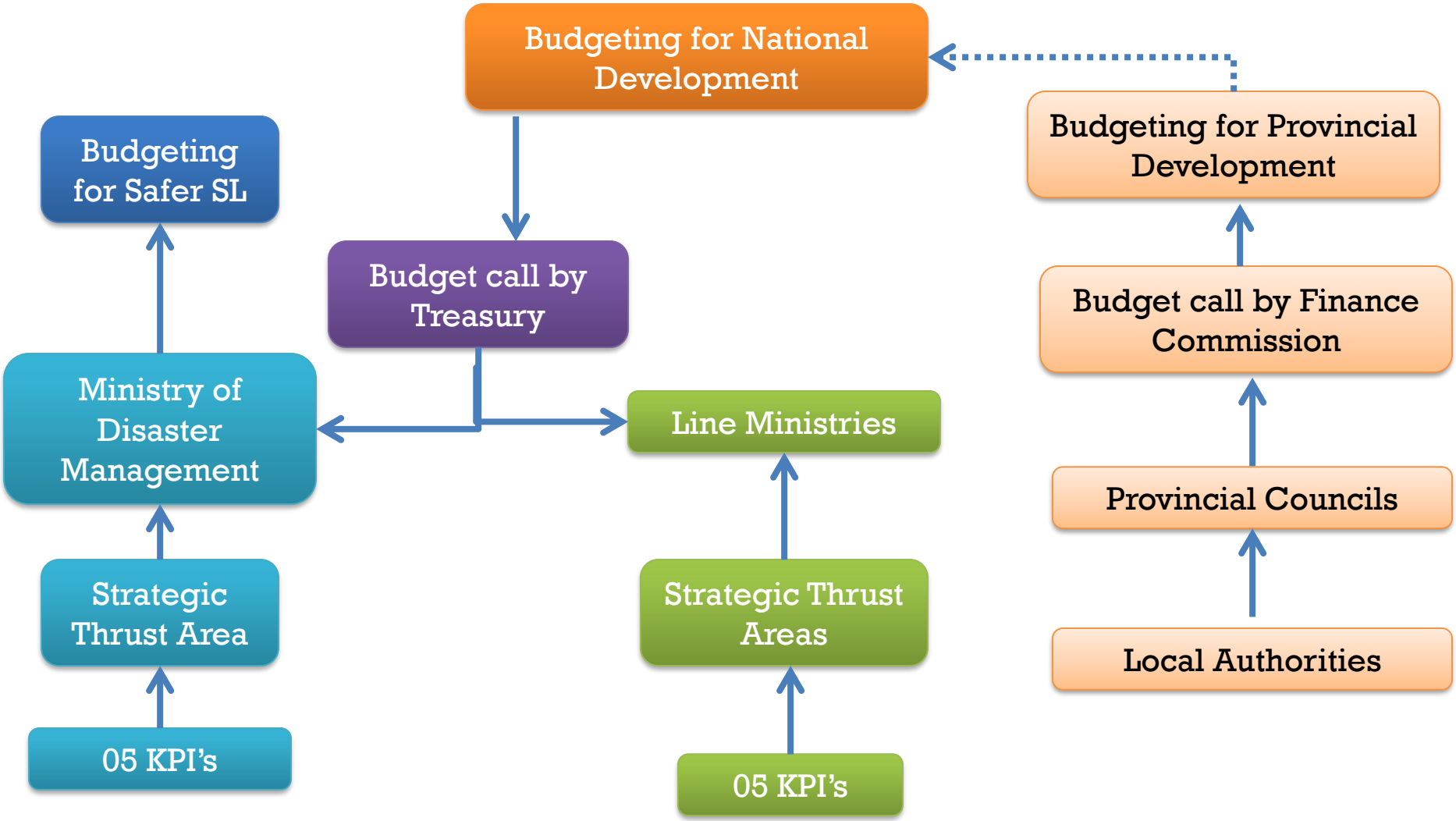
- Ministry of Disaster Management receives budgetary annually provisions for Preparedness, Mitigation and relief activities

- The project proposal submitted by the organizations under the purview of Ministry of Disaster Management develop its objectives, verifiable indicators, means of verifications, risk and assumptions

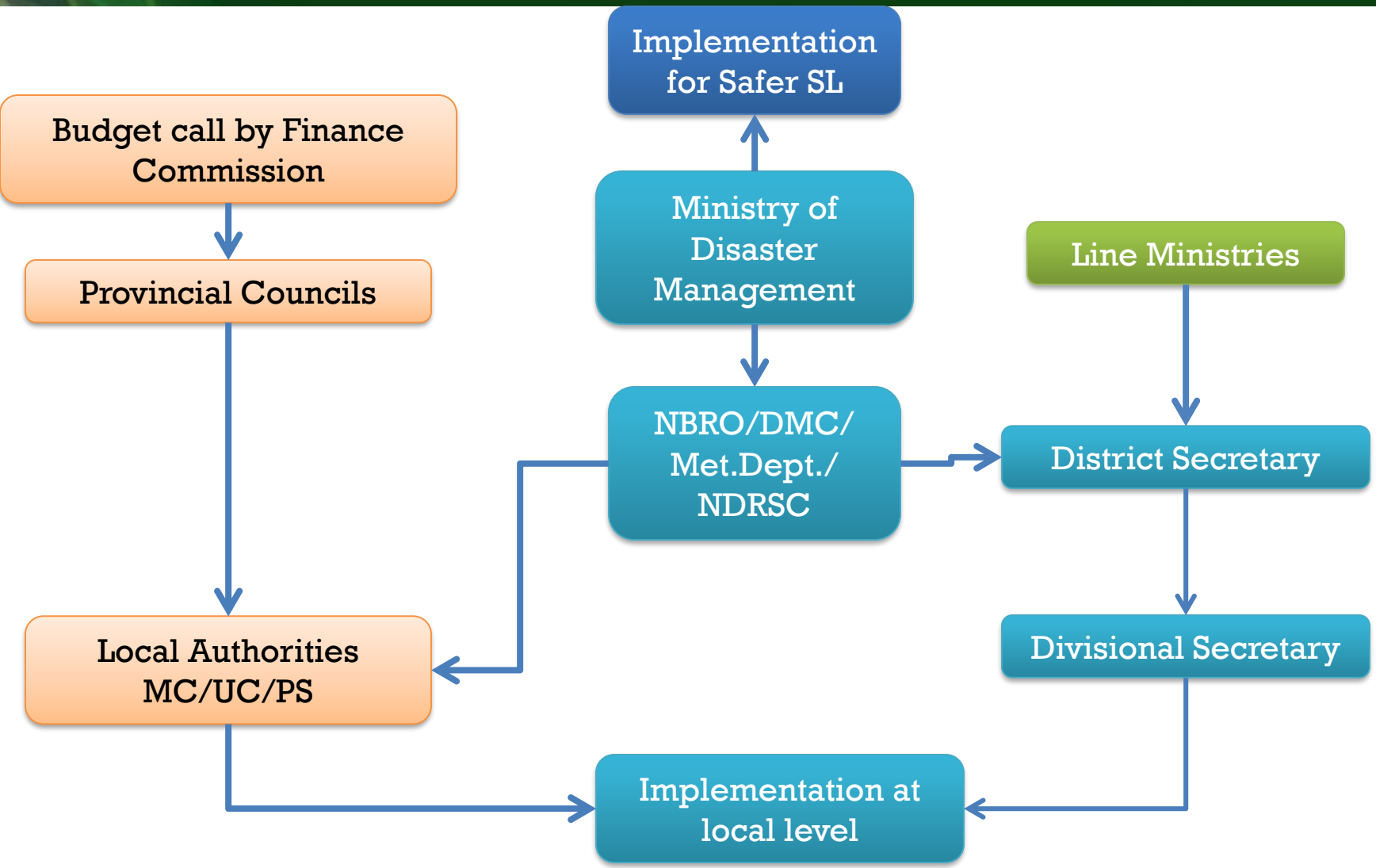
- Other sectoral ministries submitted their own project proposal to achieved the sectoral vision set according to the National Development Policy framework.

National Council for Disaster Management

Budgeting for Safer Sri Lanka



Implementation for Safer Sri Lanka



Vision

"Towards a Safer Sri Lanka"

Mission

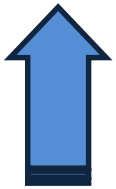
To facilitate harmony and the prosperity and dignity of human life through effective prevention and mitigation of natural and man-made disasters.

Strategic Thrust Area

1. Disaster prevention, mitigation, preparedness, early warning & response Overall coordination of post-disaster relief, rehabilitation and reconstruction

Monitoring & Evaluation based on Key Performance Indicators (KPI)

Strategic Thrust Area



Key Performance Indicators (KPI)

1. **Incorporate Risk reduction considerations into National Planning & Public investments process and into key economic development and services sectors** *such as, Local Government, Urban Development, housing & Infrastructure, Environment, Agriculture, Insurance, Economic Development and Industrial sectors*
2. **Monitor the implementation of Comprehensive Disaster Management Programme by Inter Ministerial Steering Committee** *chaired by Finance Ministry*
3. **Reduce vulnerabilities by investing on Landslide, floods and drought mitigation projects** *in landslide, floods and drought prone districts in Sri Lanka*
4. **Post disaster relief distribution reduced at least 6% annually** *by investing on DRR measures at all districts and reduced relief distribution funds by 48% by 2020*
5. **Well equipped early warning and weather forecasting system established** *in the country to provide 3 days, 7 days and monthly weather forecast*

Monitoring & Evaluation based on Key Performance Indicators (KPI)

No.	Key Performance Indicator	Unit of measurement
1	**Incorporated Risk reduction considerations into National Planning & Public investments process and into key economic development and services sectors** such as, Local Government, Urban Development, housing & Infrastructure, Environment, Agriculture, Insurance, Economic Development and Industrial sectors	• *No. of projects approved by Department of National Planning for public investment incorporated DRR measures* • *No of Urban Development plans developed by incorporating DRR information in land use planning process* • *No of sectors' incorporated DRR considerations into their policies, financial allocations and regulatory and facilitation procedures* • *Damages to houses and infrastructure due to disasters reduced by 12% annually by incorporating resilient designs by relevant sectors* • *No of insurance policies developed to absorbed the economical losses due to disasters*
2	**Comprehensive Disaster Management Programme implemented**	• *Establishment of Inter Ministerial Steering Committee chaired by Finance Ministry* • *Coordinated No of comprehensive Disaster Management programmes to be implemented by respective sectors*

Monitoring & Evaluation based on Key Performance Indicators (KPI)

No.	Key Performance Indicator	Unit of measurement
3	**Reduce vulnerabilities by investing on Landslide, floods and drought mitigation projects** in landslide, floods and drought prone districts in Sri Lanka	• *Reduce vulnerabilities by 10% annually in all 10 landslide prone districts* • *Reduce vulnerabilities by 12% annually in all flood prone districts* • *Reduce vulnerabilities by 10% annually in all drought prone districts*
4	**Post disaster relief distribution reduced at least 6% annually** by investing on DRR measures at all districts and reduced relief distribution funds at 48% by 2020	• *Relief distribution allocations reduced by 6% annually* • *Invest on DRR measures increased by 12% annually*
5	**Well equipped early warning and weather forecasting system established** in the country to provide 3 days, 7 days and monthly weather forecast	• *Doppler Radar System installed to cover entire island* • *Medium range, seasonal and long range climate forecasting technologies (seasonal weather forecasting (dynamical/statistical), climate modeling and downscaling climate projections established* • *Issue of seasonal forecast to 65% accuracy*

Challenges

- The development projects proposed by various sectoral ministries do not adequately consider the disaster risk reduction aspects in their project proposals.
- Reconstruction and Rehabilitation activities implemented by various other ministries and horizontal integration between sectoral ministries are weak
- Difficulties in evaluating the total funds disbursed to achieved the results through other line ministries
- DRM is not decentralized subject, thus difficulties in engaging all stakeholders for disaster risk management activities at sub national level


Thank you