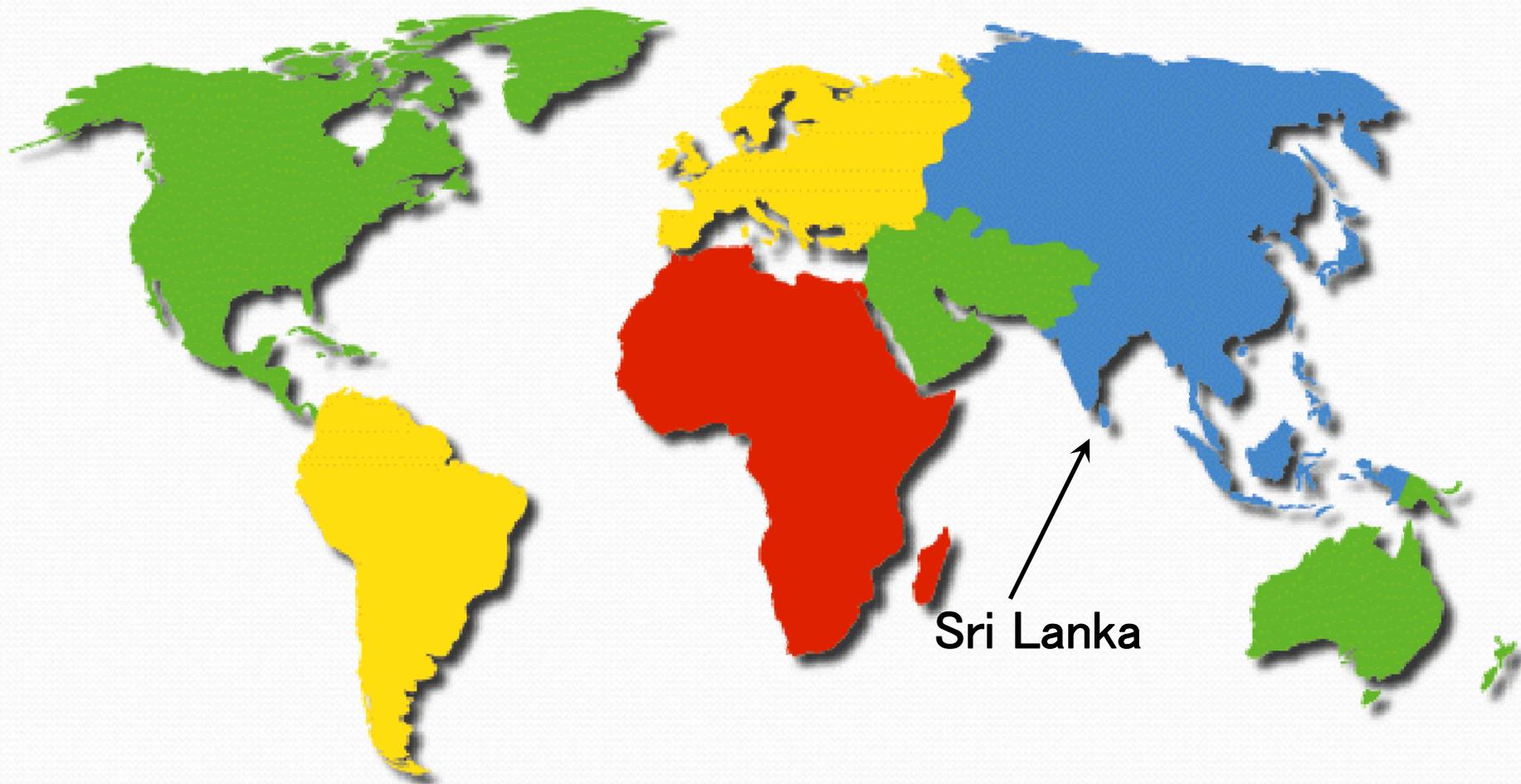


SRI LANKA IN THE WORLD MAP

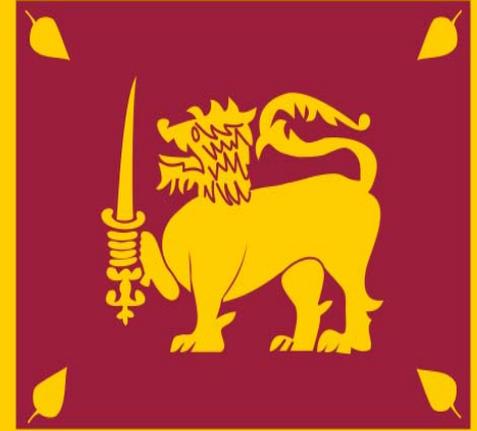


இலங்கை - Sri Lanka



கே. ஜே. சேனா







Capital and Longitudes and Latitudes

Official languages

Language for inter-ethnic communication

Ethnic groups - 73.8% Sinhalese/13.9% Tamil/7.2% Moors4.6% /Indian Tamil,/.5% Others.

Government

- President
- Prime Minister
- Minister of Disaster Management And Human Rights
- Secretary of the Ministry of Disaster Manahgement and Human Rights
- Director General of the Disaster Management Center

Establishment

- Independence from the United Kingdom
 - Republic
- February 4, 1948
May 22, 1972

Area

- **Total** **65,610 km²**
- Water (%) 4.4

Population

- 2009 estimate 20,238,000

GDP (PPP)

- Density 798.9 people/sq mi
- Total \$92.018 billion
- \$4,581

Currency

Sri Lankan Rupee (LKR)

Time zone

Sri Lanka Standard Time Zone (UTC+5:30)

Sri Jayawardenapura Kotte 79.9°E / 6.9; 79.9

Sinhala, Tamil

English

Democratic Socialist Republic

H.E. Mahinda Rajapaksa

Hon. Ratnasiri Wickremanayake

Hon. Mahinda Samarasinghe

Prof. Rajeewa Wijesinghe

Major General Gamini Hettiarachchi



WEATHER AND CLIMATE IN SRI LANKA

The climate of Sri Lanka is typically tropical with an average temperature of 27° C. In the higher elevations it can be quite cool with temperatures going down to 8-16° C at an altitude of nearly 2,000 meters.

Normally-Bright, sunny, warm days.

*The south west monsoon -May to July western
(southern and central regions)*

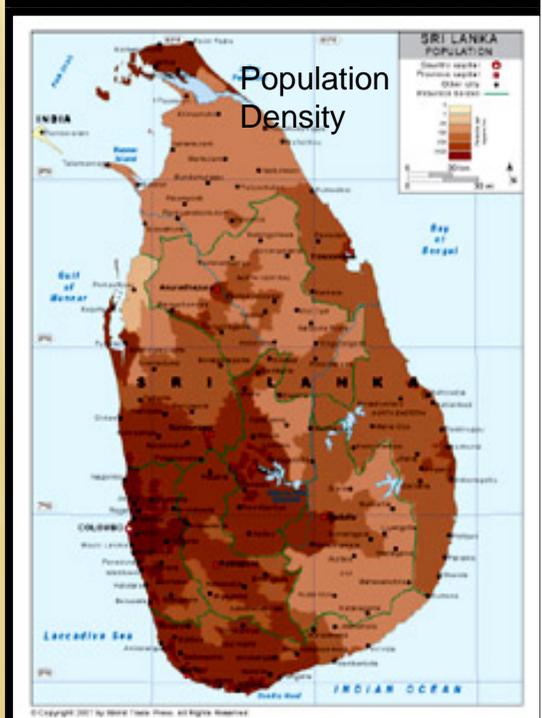
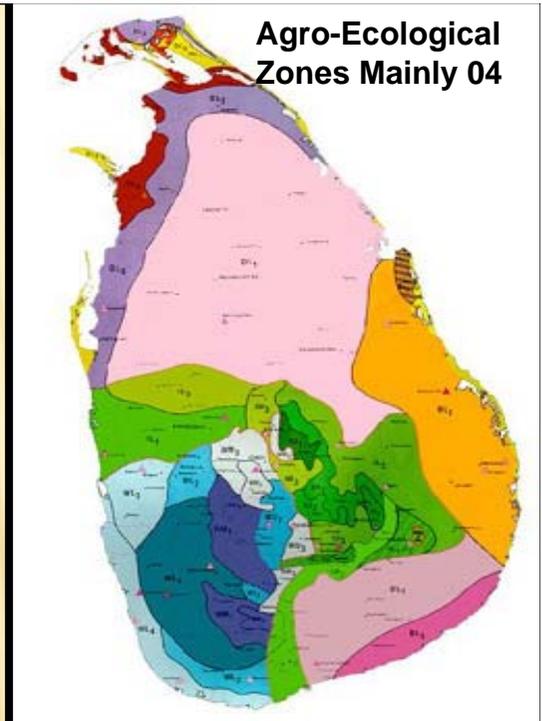
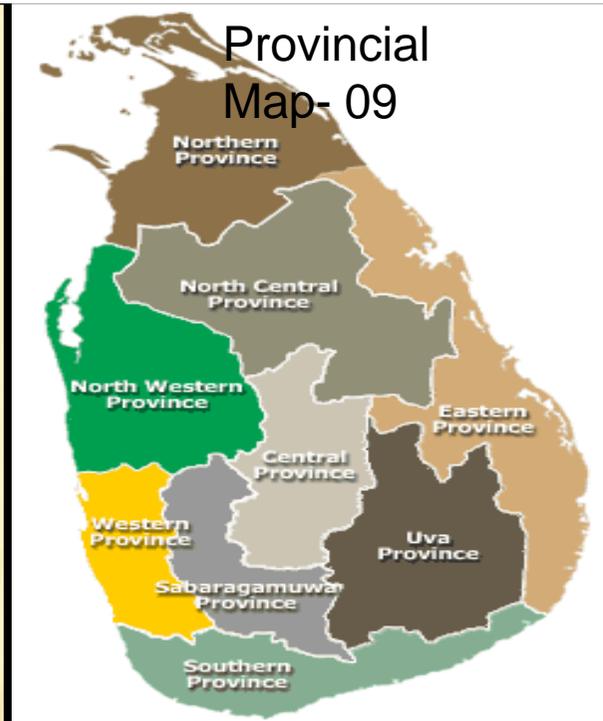
*North-east monsoon –December and January
(Northern and eastern regions)*

Bio Diversity

covering only 0.013 percent of the world's land surface,

Sri Lanka is home to more than 2 percent of the world's known frog and toad species.

The island is also home to 3,210 flowering plant species, of which 916 species are endemic. Overall, about 27 percent of the country's plants and 22 percent of its amphibians, birds, mammals, and reptiles are endemic.





Multi Hazards in Sri Lanka



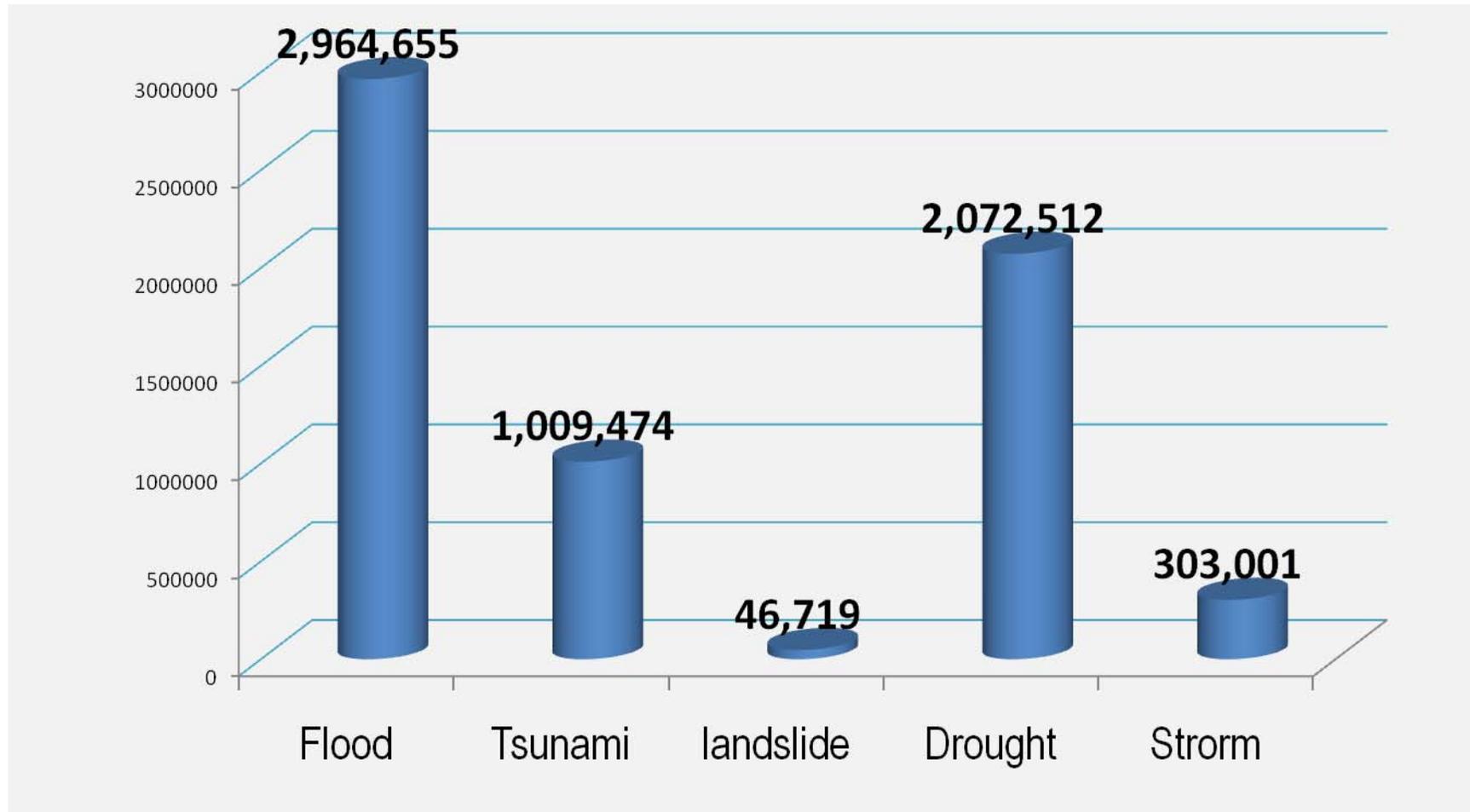
Multi Hazard Country

Major Natural Disasters in Sri Lanka

- ❖ Floods
- ❖ Cyclones
- ❖ Landslides
- ❖ Droughts
- ❖ Tornados
- ❖ High Winds
- ❖ Lightning
- ❖ Sea Erosion
- ❖ Sea Surge
- ❖ Tsunami
- ❖ Epidemics
- ❖ Animal Attacks

The Hazard Profile

Number of people affected by different disasters in Sri Lanka
(1974 – 2008)



Floods



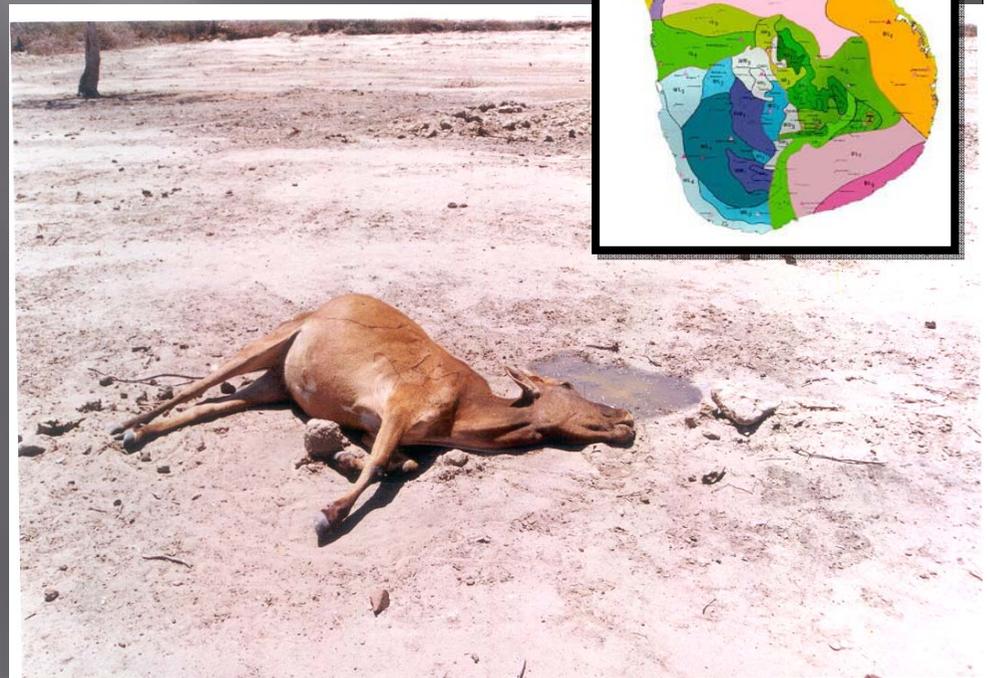
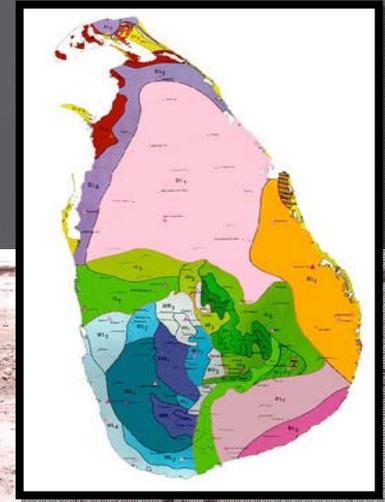




DROUGHT

- ❖ Regionally significant drought occurs once in about every 3 - 4 years
- ❖ Severe drought occurs once in about 10 years

Enhance by the Change the Climate



FOREST FIRE



Earthquake



Walapane – Hanguranketha - 2007



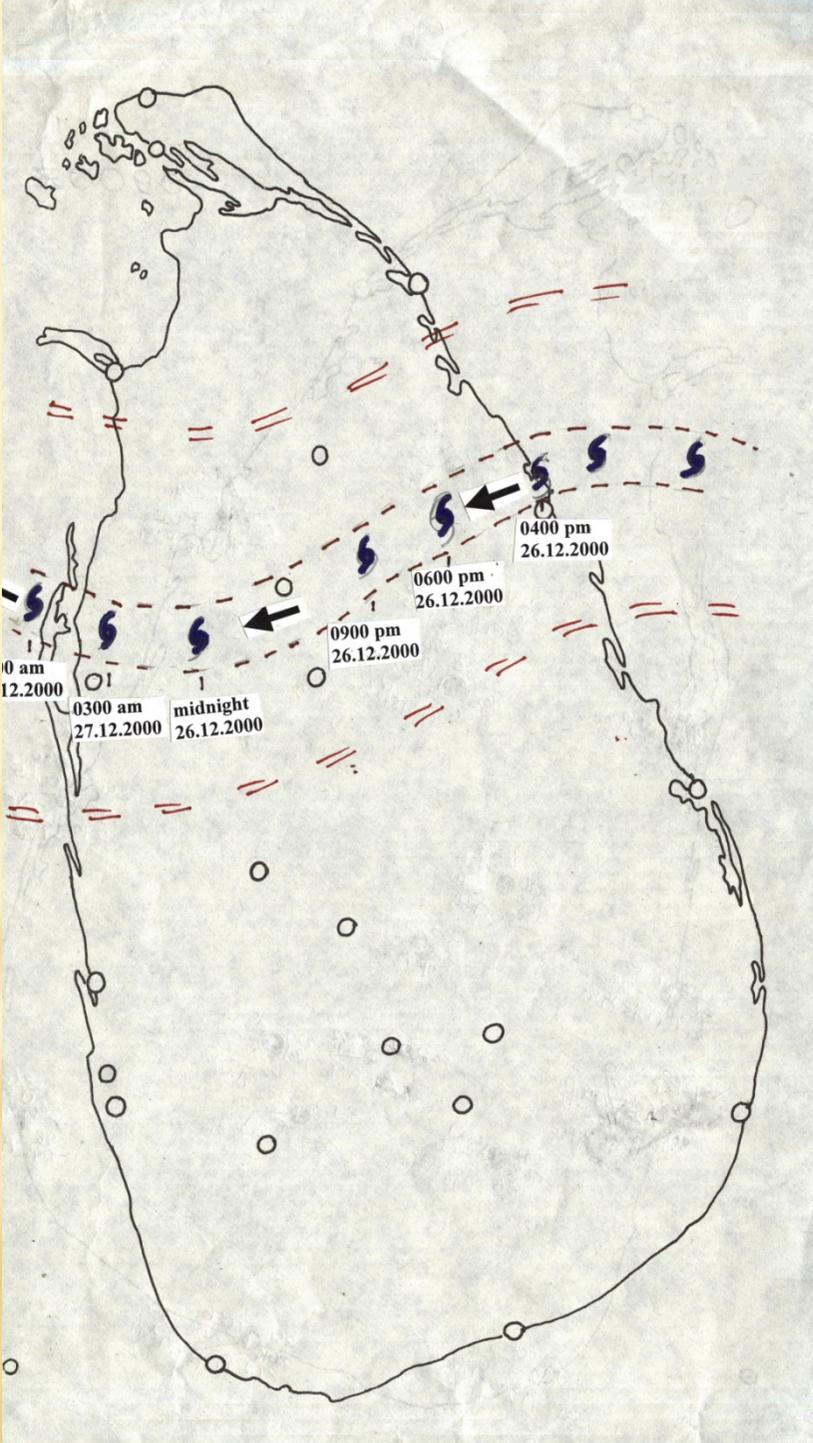
18:50 PM



18:50 PM

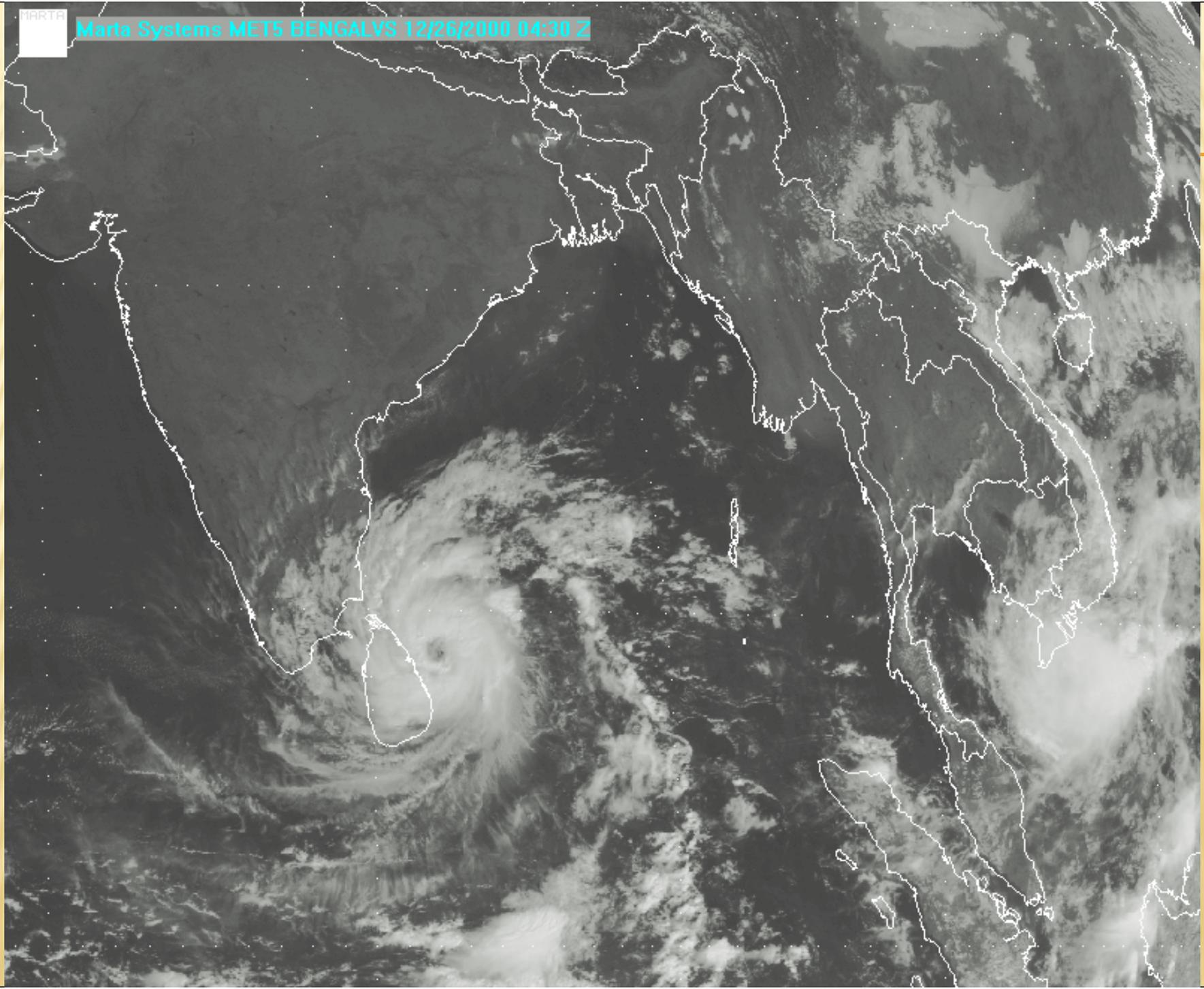
Wathumulla -2007

Cyclone December 2000



DIRCTV

Marta Systems MET5 BENGALVS 12/26/2000 04:30 Z



DAMAGE TO PROPERTY BY ELEPHANTS.

Year	Number properties
2004	532
2005	669
2006	708
2007	800+





Encroachment of “elephant habitats” by humans interferes with “elephant lives”



Elephant Drive





But we care them

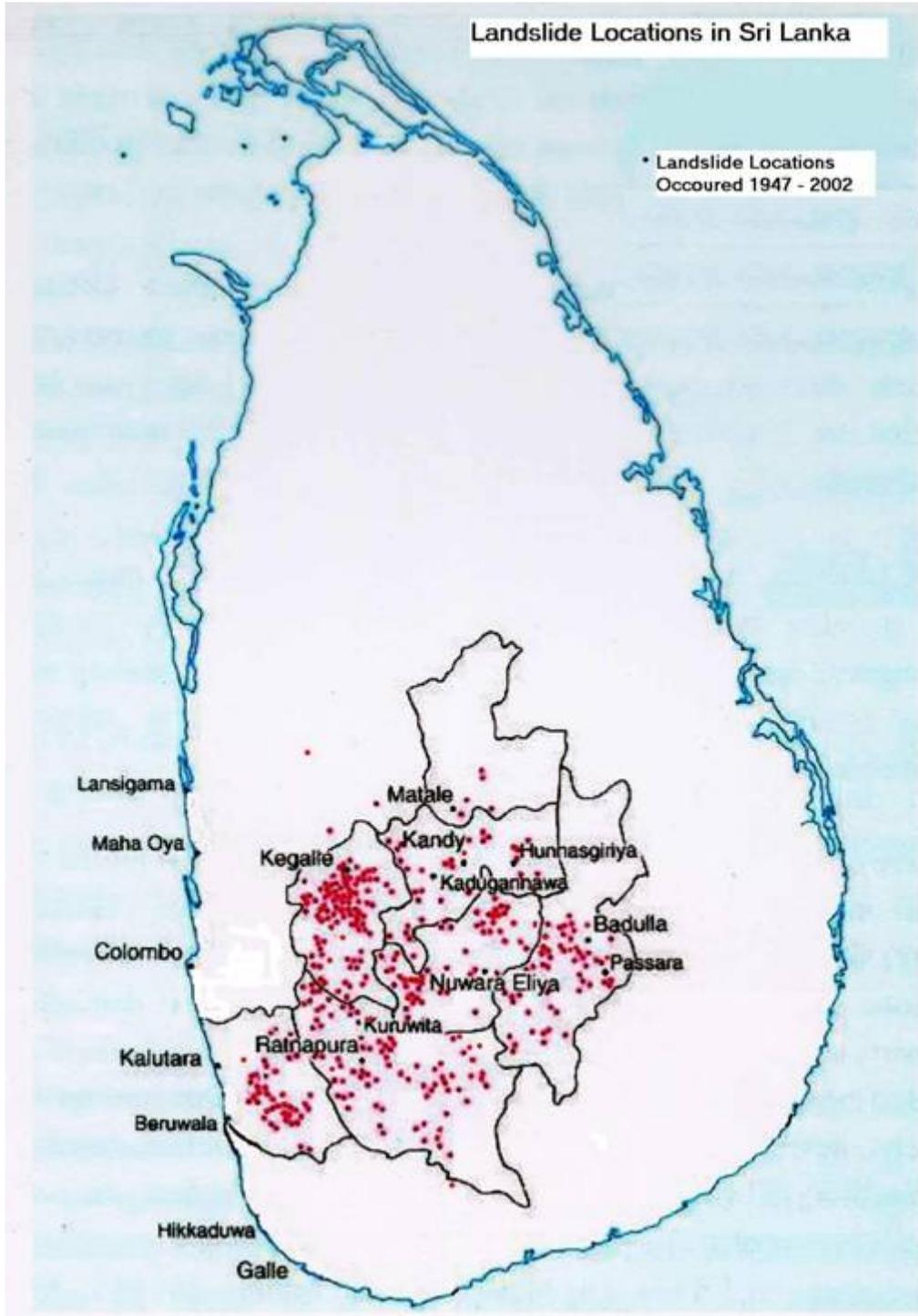
Landslides



Ladupita, Kiriwanella-2007

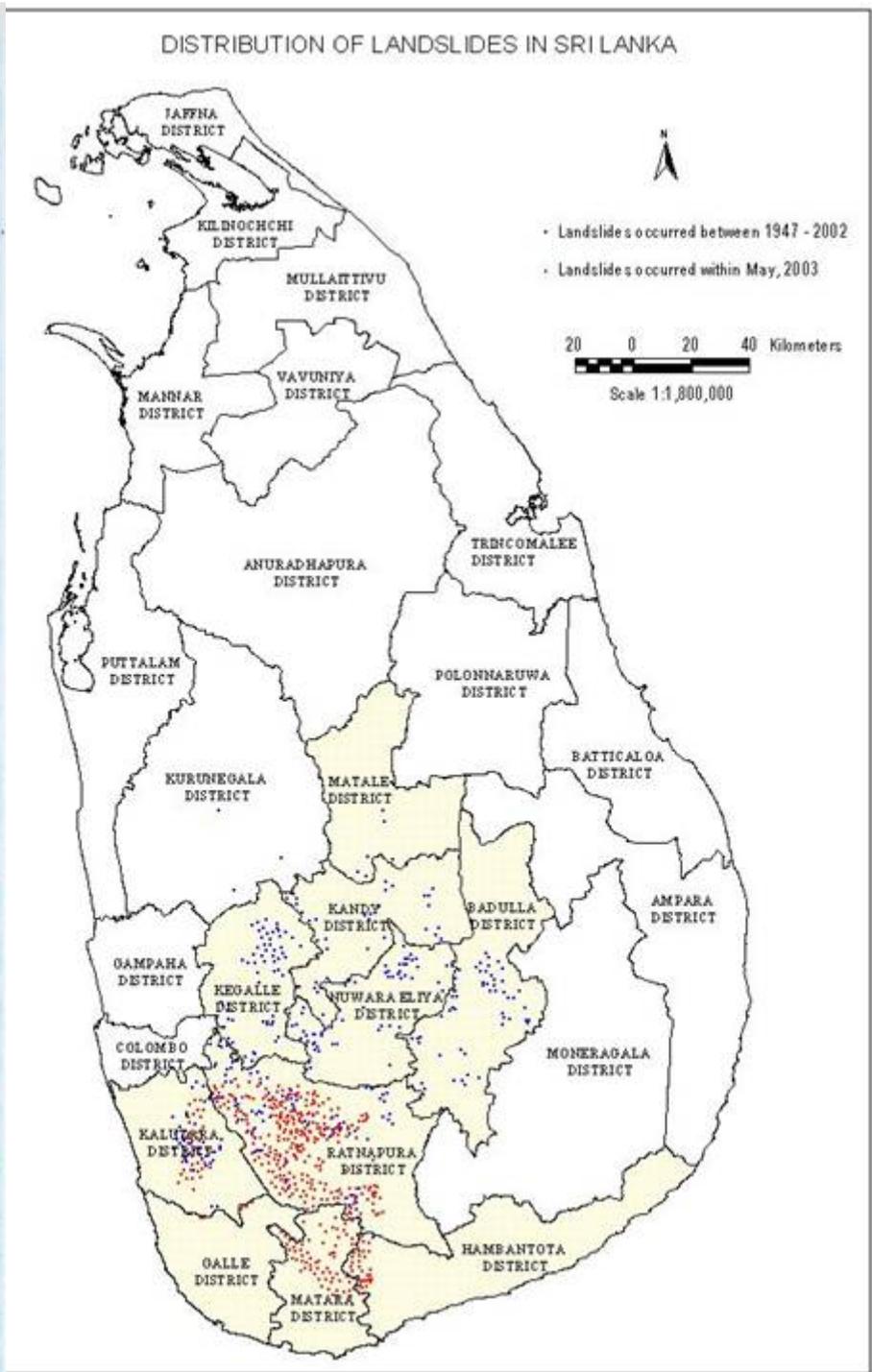
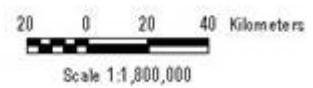
Landslide Locations in Sri Lanka

• Landslide Locations Occurred 1947 - 2002



DISTRIBUTION OF LANDSLIDES IN SRI LANKA

• Landslides occurred between 1947 - 2002
 • Landslides occurred within May, 2003





Naranthalawa - interrupting traffic on Padiyapellela-Walapane road



Subsidence of road from Hewaheta to Deltota



Damaged house at Kirimetiya at Hewaheta



Watawela -1992/1993



Koslanda -1997

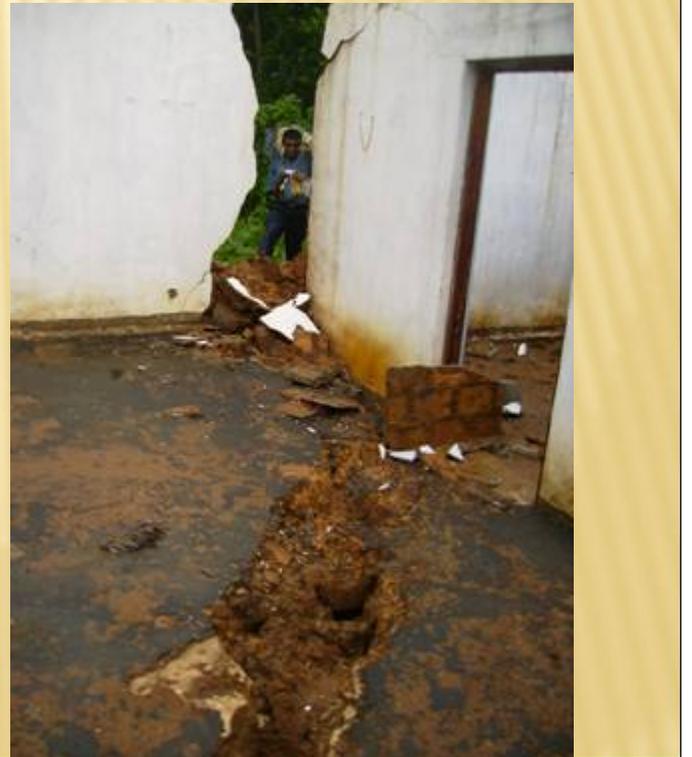


Okadagala, Haguranketha-2007





Mahawawe, Walapane-2007



BOMB EXPLOSION

MAN MADE DISASTERS





NOW WE ARE FREE FROM FEAR



2009-May-19





Man made cutting failure at Beruwala



Imd, Ikao Pdwe,-2006



Imd, Ikao Pdwe,- 2006

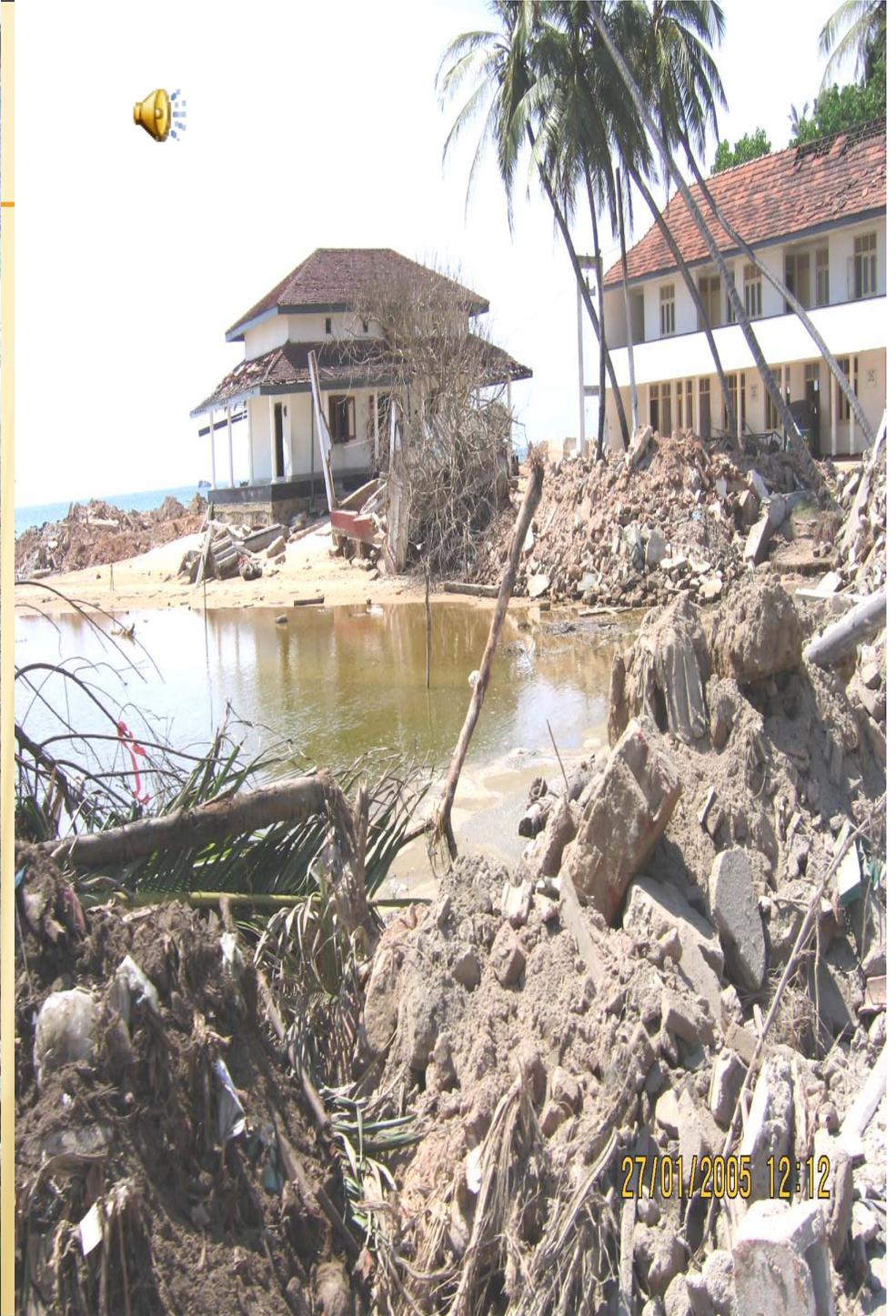


Imd, Ikao Pdwe,-2006

TSUNAMI 2004

- ❑ Southern, Western, Eastern and Northern coastal belt is prone to Tsunami
- ❑ The unprecedented havoc caused by Tsunami had devastated two thirds of the coastal belt of Sri Lanka.
- ❑ More than 35,000 lives were lost and 100,000 houses were completely damaged in thirteen districts along the coastal belt. Approximately 5,000 people were missing.





Some of the devastation



Tsunami in Payagala



Galle harbour



Hambantota



INITIATIVES TAKEN BY THE GOVERNMENT

- ❑ There has been unanimous recognition by the Sri Lankan government, civil society and international agencies for an urgent need to setup a mechanism which will prepare the country to withstand the effects of various types of disasters
- ❑ A Parliamentary Select Committee was appointed to review the disaster risk management status of the country and make recommendations
- ❑ An Interim Committee on Early Warning System was set up.

- ▣ In May 2005, the Government of Sri Lanka passed the Sri Lanka Disaster Management Act No 13 of 2005 in the Parliament.
- ▣ The National Council for Disaster Management (NCDM) was established, as per the act
- ▣ The Disaster Management Centre (DMC) was established under the National Council for Disaster Management (NCDM) as the lead agency on disaster risk management in the country in implementing the directives of NCDM
- ▣ In December 2005, the Ministry for Disaster Management was established. On January 2006, above Ministry was renamed as the Ministry of Disaster Management & Human Rights with human right portfolio being added to the Ministry



Vision:

Disaster Risk Management for safer communities and sustainable development in Sri Lanka

The Broad Mission:

To create a culture of safety among communities and the nation at large through systematic management of natural, technological and man-made disaster risks

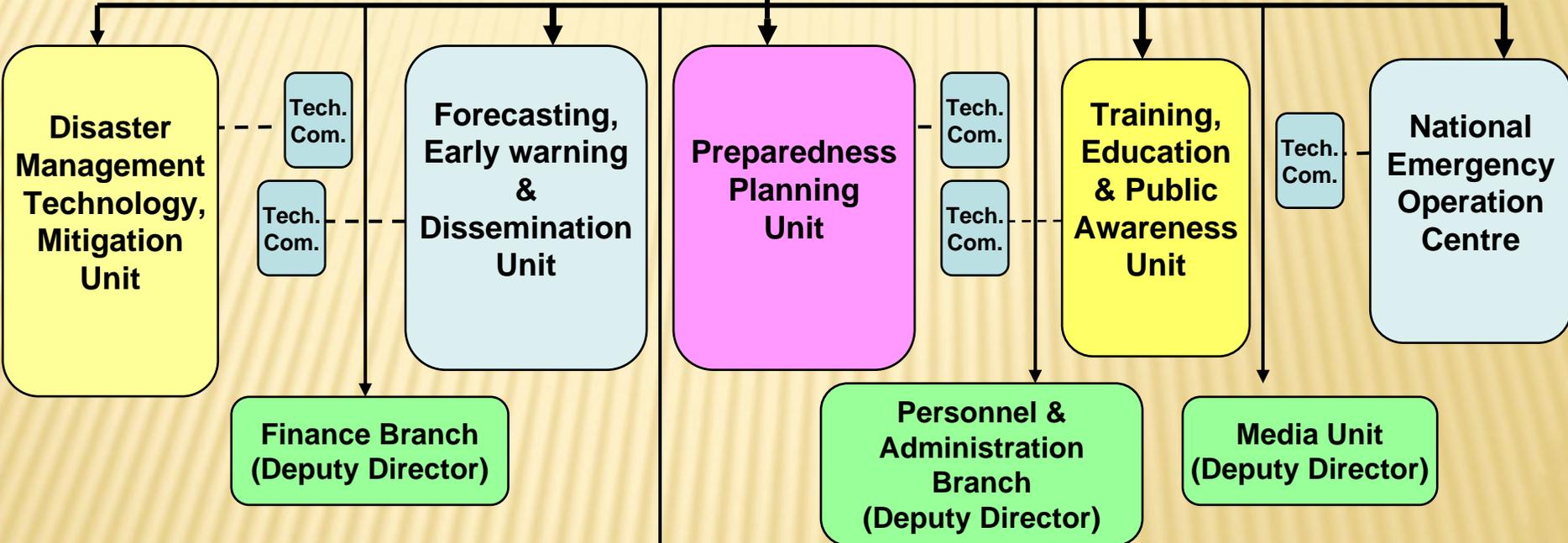
Organizational Structure



National Level

**Disaster Management Centre
(Director General)**

**National
Consultants**



Intermediate & Local Levels

**District Emergency Operation Centres
(DRM Coordinators)**

Disaster Management Assistants

National Council For Disaster Management

Ministers in charge of

Social Services

Rehabilitation &
Reconstruction

Home Affairs

Health

Science &
Technology

Housing

Coast
Conservation

Irrigation

Power

Defence

National Council for Disaster Management

Chair Person : H.E. President
Vice Chairman: Hon. Prime Minister

Ministry of Disaster
Management & Human Rights

DMC

Ministers in charge of

Police

Finance

Land

Fisheries & Aquatic
Resources

Foreign Affairs

Water Supply

Highways

Urban
Development

Education

Environment

What We have doing through

Disaster Management
Technology, Mitigation Unit
To Reduce the Risk?

THIS IS MY
RESPONSIBILITY



Flood Mitigation - 2008

District	No of Projects	Total Allocation Rs (Mn)
Colombo	08	44.42
Gampaha	03	28.7
Kalutara	07	30.505
Hambantota	01	26
Puttalam	01	2.25

Mitigation activities – flood prevention



Desilting and clearing the inlet & outlet of Mutwal tunnel



Meegahagoda Ela Project

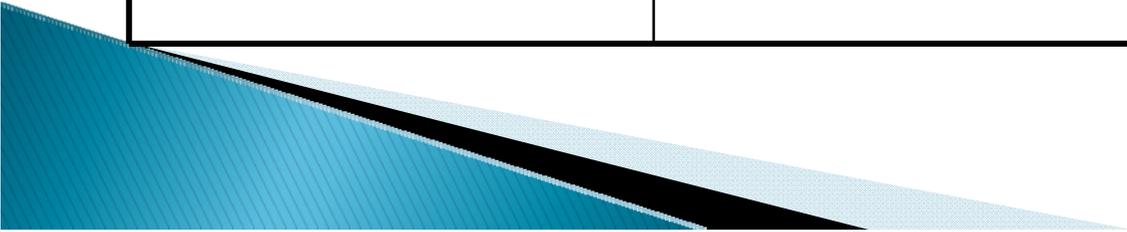


Waskaduwa Drain System



Drought Mitigation

District	Unit	Total Allocation Rs (Mn)
Kandy	50 Tanks	1.269
Hambantota	70 tanks	2.487
Kalutara	03 projects	10.7
Deraniyagala	01	10
Total		23.456



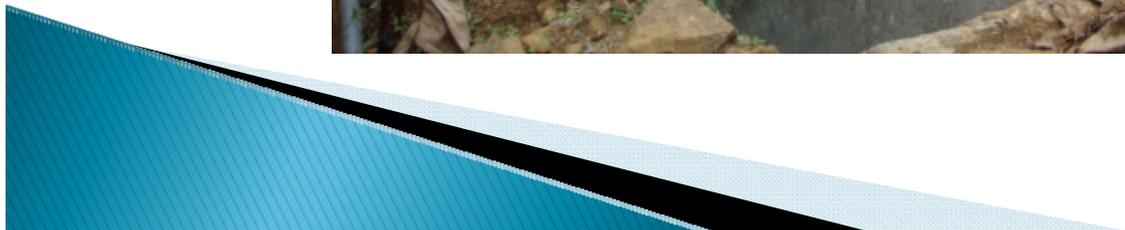
Manikgoda Ela Project

MORE
THAN
500
FAMILIES
BENEFIT
FROM
THIS



Agalawatta Water tank

MORE
THAN
300
FAMILIE
S
BENEFI
T
FROM
THIS

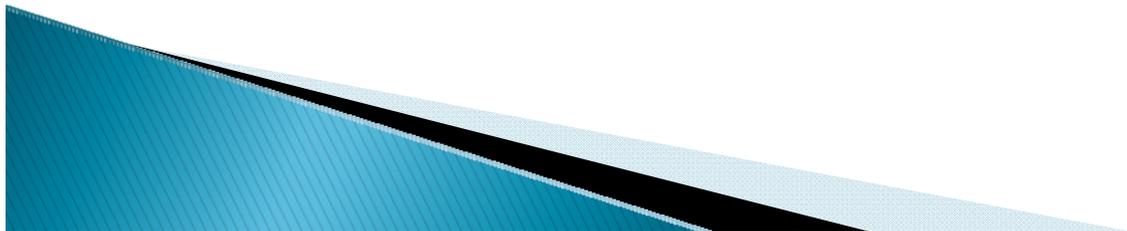


Udawela Water Tank



Establishment of Natural Barriers along the coast

District	Place	Total Allocation Rs (Mn)
Colombo	Moratuwa	2.479
Matara	Weligama	0.342
Puttalam	Chilaw	0.65
Total		3.421



Planting of trees along the coast..

– Moratuwa.



Natural Barriers



Mangrove Plant



Panadus Plant

- ✓ Building of Bio-Shields with community Participation
- ✓ Planting of Mangroves and sea shore plants such as Pandanus sp. to provide a wave-break

Safer evacuation routes



Baddegedara Watta Road



Rathnapura



CROCODILE CAGES PROJECT AT MATARA

More than
3000
families are
benefitted



Saved more than 20 lives in a
YEAR

ESTABLISHMENT OF ELECTRIC FENCES AND LIVE FENCES

Spent more than 20
Mn Rupees to protect
crops and lives

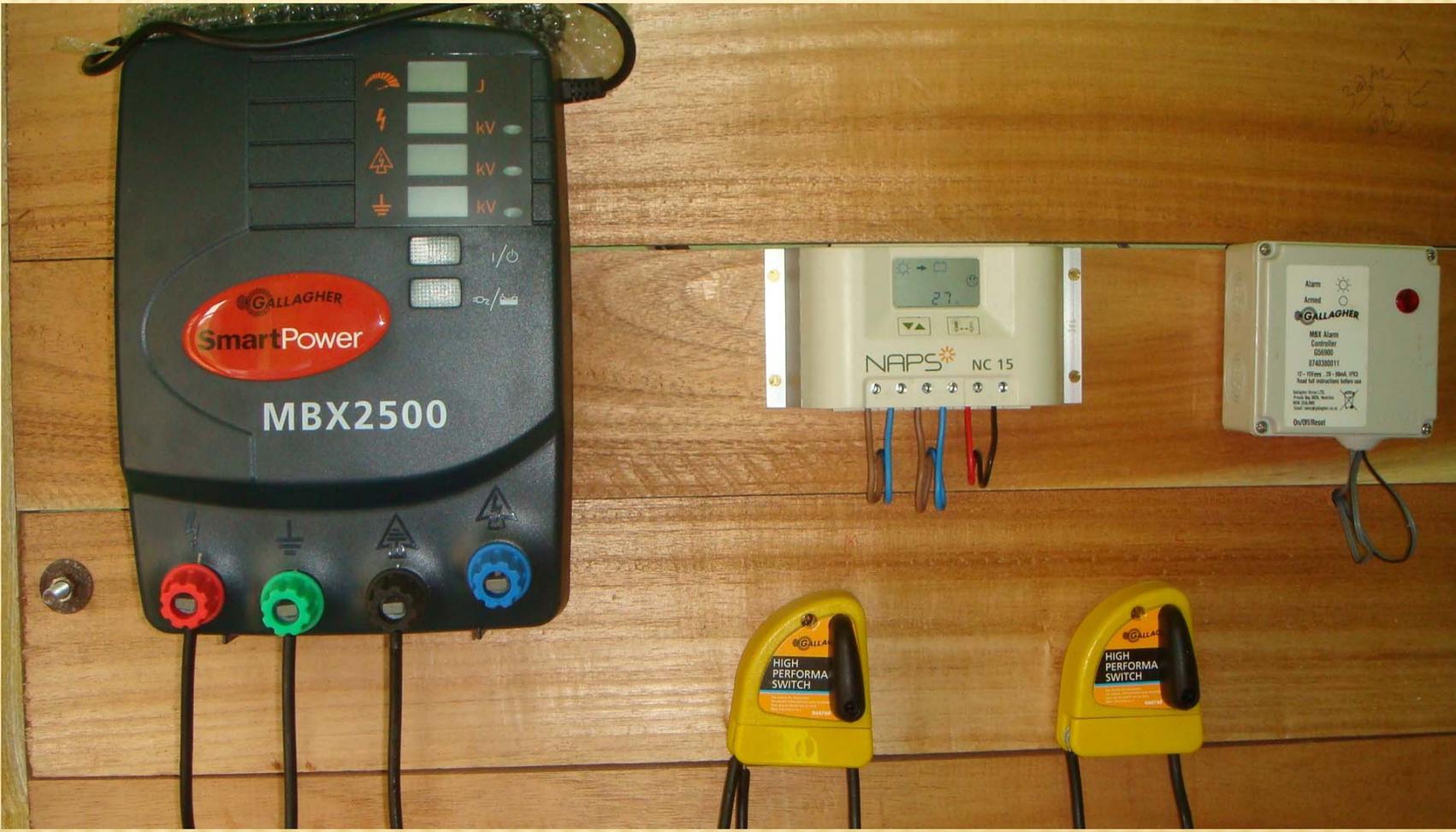


- ✘ Electric fences are traditionally used as a barrier for Elephants.

Electric Fence



This project directly contributed to enhance the agricultural production





Number of land slide mitigation projects were conducted in the upper mountain area to reduce the risk



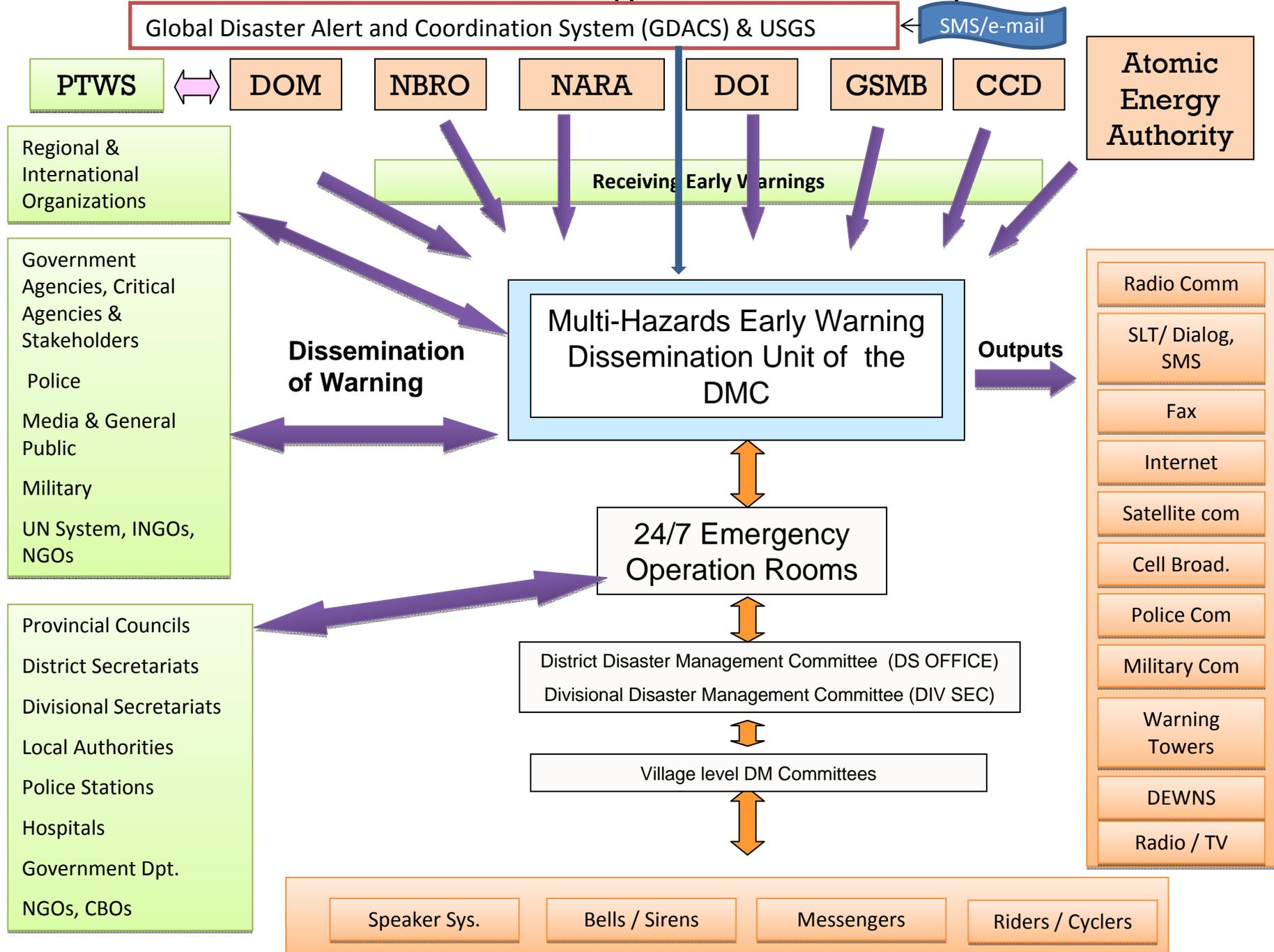


How We reach to the People through

Early Warning Division

To Reduce the Risk?

Multi-Hazards Warning Dissemination System

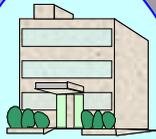


Seeking a Reliable Communication System for "Last Mile"

Government

Community

Communication Tools



DMC



District Division

Police

Media



DEWN



Multi hazard EW tower



Temple Bell



Loudspeaker car



SMS



Handy speaker



Loudspeaker

TV & Radio



Tsunami



Flood Warning



Evacuation Instruction

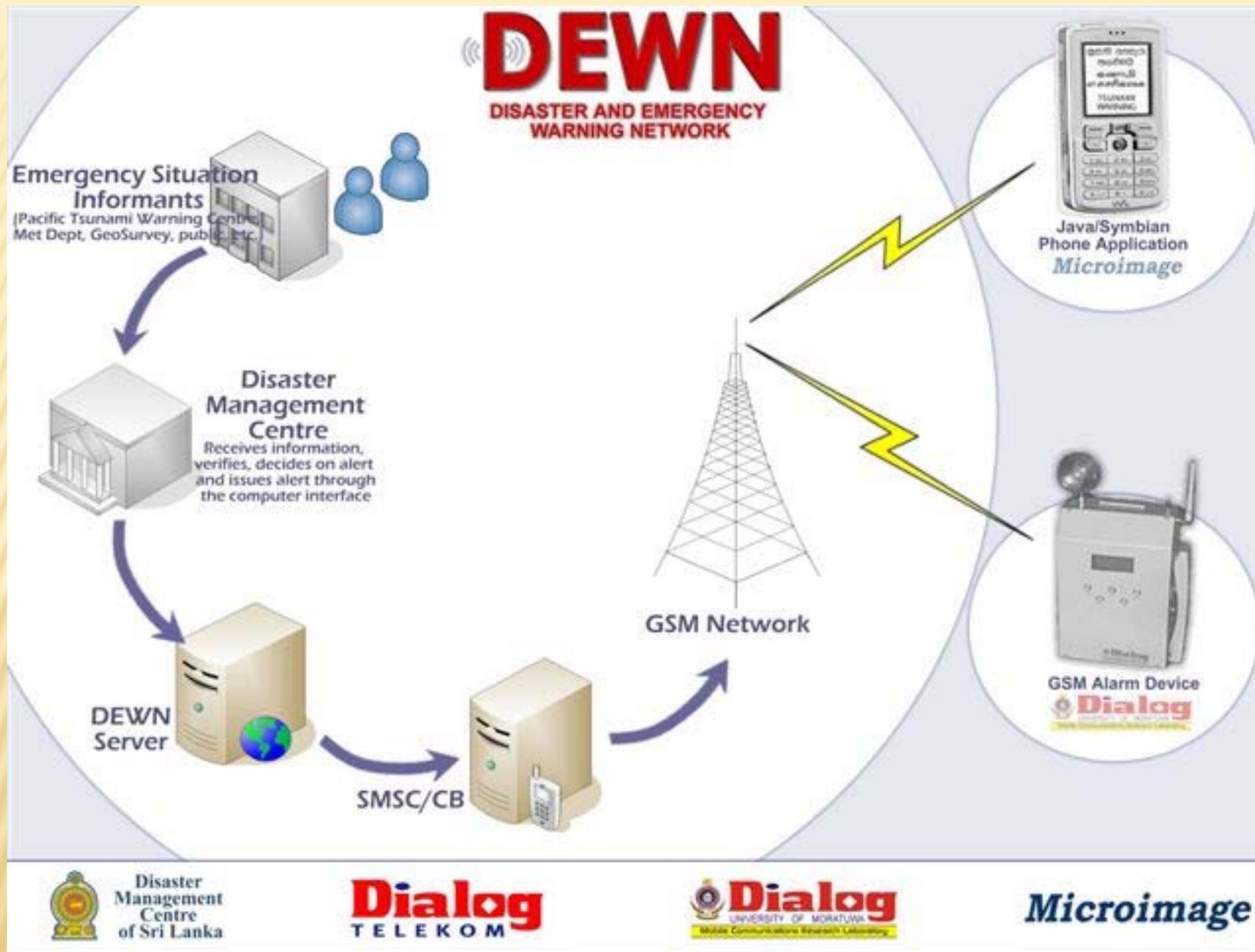
In cooperation with
CBDM



Erection of warning signs







5 Million people can Receive the messages with in few seconds (SMS or CB)

LAST MILE MEGAPHONE WITH SIREN



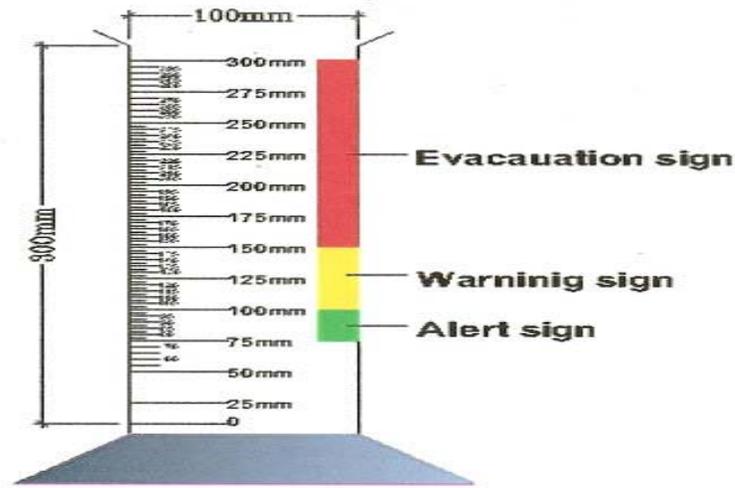
ADRC

conducted a Local Level Early Warning Program in Ratnapura area

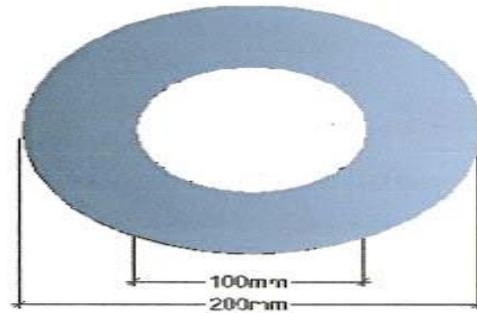
Project for Community Centered Early Warning Capability for Landslides and flood (financially supported by ADRC)



Rain Gauges were given to the local community in the flood prone areas and trained the responsible persons levels for the Alert and The Evacuation at the rainy seasons.



SECTIONAL VIEW



PLAN VIEW

PLASTIC RAIN GAUGE

SPECIFICATIONS

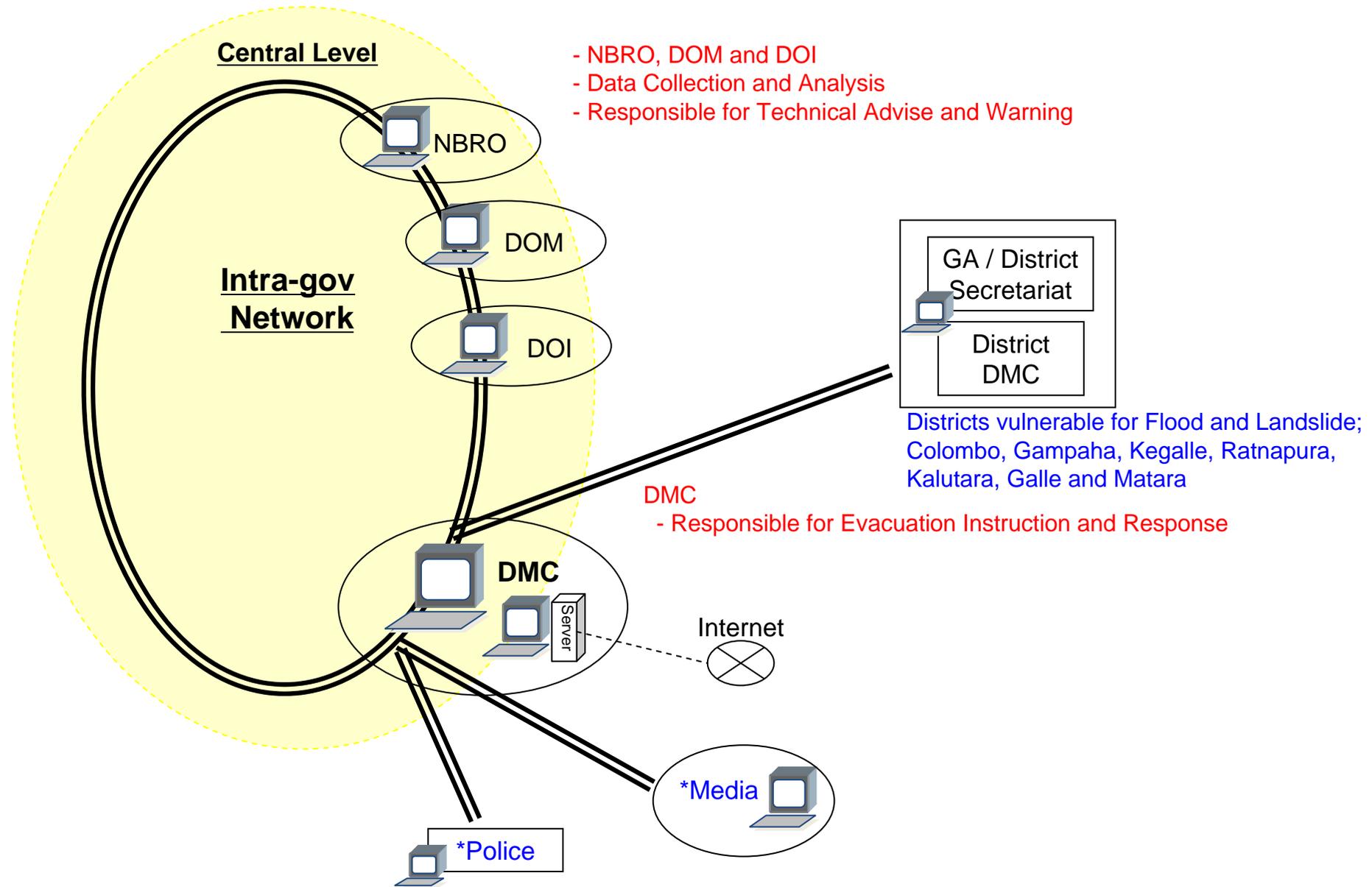
Capacity :

size :100mm dia x 300mm/H

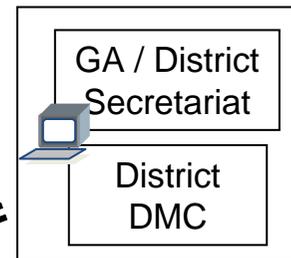


Self Evacuation

JICA PROJECT – Intra-Governmental Network



- NBRO, DOM and DOI
- Data Collection and Analysis
- Responsible for Technical Advise and Warning



Districts vulnerable for Flood and Landslide; Colombo, Gampaha, Kegalle, Ratnapura, Kalutara, Galle and Matara

- DMC**
- Responsible for Evacuation Instruction and Response

Internet

*Media

*Police

Sharing Disaster related Information

*Information would be filtered or protected as required



Sharing Disaster related Information with Image

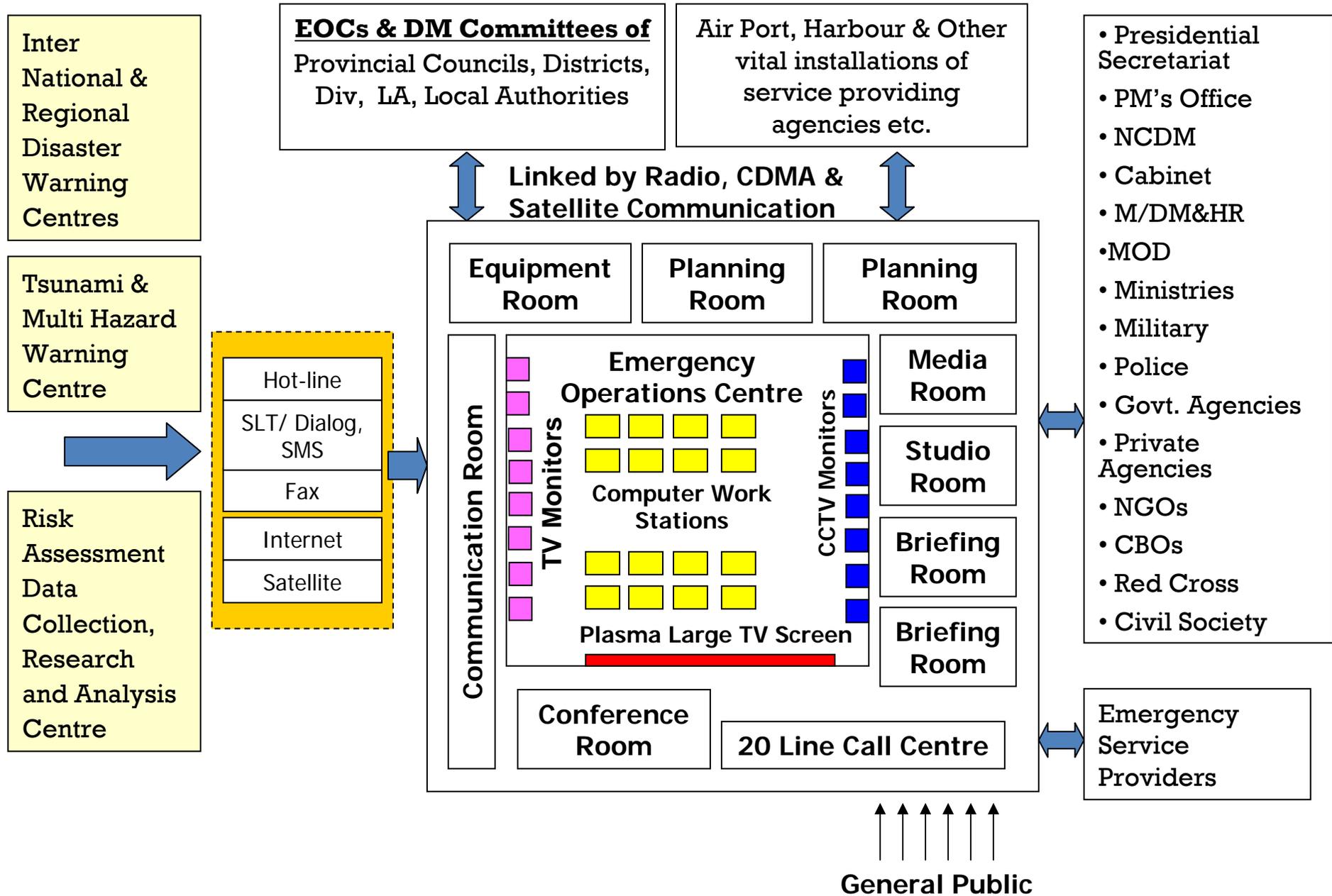
Emergency operation center



24 x 7 National Emergency Operations Centre



24 x 7 National Emergency Operations Centre





What we are doing
through the Training
and Public
Awareness Division.

Knowledge and Awareness Building in Communities Risk Reduction



Participatory Work with Communities

Workshops and Lectures

On Mechanism of Disasters and Disaster Management

Purpose: To understand current situation of community disaster risk management system and disaster response



Field Survey (Town Watching)

Discussion on evacuation in case of emergency
Confirmation/Reconsideration of proposed evacuation route



Develop a Community-based Hazard Map (draft)

To Visualize the observations and findings through the discussion and field survey.

Discussion on Current Problem & Action Plan

To discuss

- what are the problems,
- who is responsible to solve them,
- what actions are needed.



Participatory Hazard Mapping in Vulnerable Communities



Community Evacuation Drills



Mock Drills to ensure response capacities

Community Response Capacity

Community response capacity enhance through the training of village level volunteers for the following;

- ✓ First Aid
- ✓ Life Saving
- ✓ Swimming
- ✓ Boat handling
- ✓ Leadership (Outward Bound Training)
- ✓ Search & Rescue
- ✓ Camp Management







**Current Progress and
the future
Developments of
through the
Preparedness and the
Planning Division.**

Preparedness & Response Plans

- ✓ National Level Plans
- ✓ Provincial Level Plans
- ✓ District Level Plans
- ✓ Divisional Level Plans
- ✓ Gramaniladhari Level Plans

Preparation of SOPs at National, District,
Divisional and Community Levels



Disaster Management Plans

- ✓ School Preparedness Plans.
- ✓ Institutional Preparedness Plans
- ✓ Hospital Preparedness Plans for mass casualty transfer.



AREAS TO GROW

- ✘ Developing guidelines and Standard Operational Procedures for line agencies
- ✘ Developing data bases for DRM and Disaster Impact Assessments
DesInventar Data Base - www.dmc.gov.lk
- ✘ Using every possible method for early warning
- ✘ Enhancing area of research and survey while coordinating with relevant technical agencies
- ✘ Human resources , Capacity Building of the DMC staff.
- ✘ Consolidation of DM Activities in Line with the HFA

Climate Change in Sri Lanka



Increases the
Disaster Risk

severe damage is predicted for plantation crops grown in Sri Lanka in the future as a result of this excess and **unpredictable rain fall.**

Already, paddy farmers of Sri Lanka do planting in between Yala and Maha seasons with the late arrival of the South West monsoon rains and face severe problems caused by the inter monsoon rains just at the commencement of harvesting.

GLOBAL WARMING

- ✘ South Asia is the home of almost one-fourth of world population.
- ✘ Economies of the countries of South Asia are highly dependent on agriculture.
- ✘ More than 80 per cent of withdrawn water is used in the Agriculture sector.
- ✘ Global warming will alter water resources and irrigation water requirements, and their distributions in time and space.

What causes to the Climate Change

Continental drift

Volcanoes

The earth's tilt

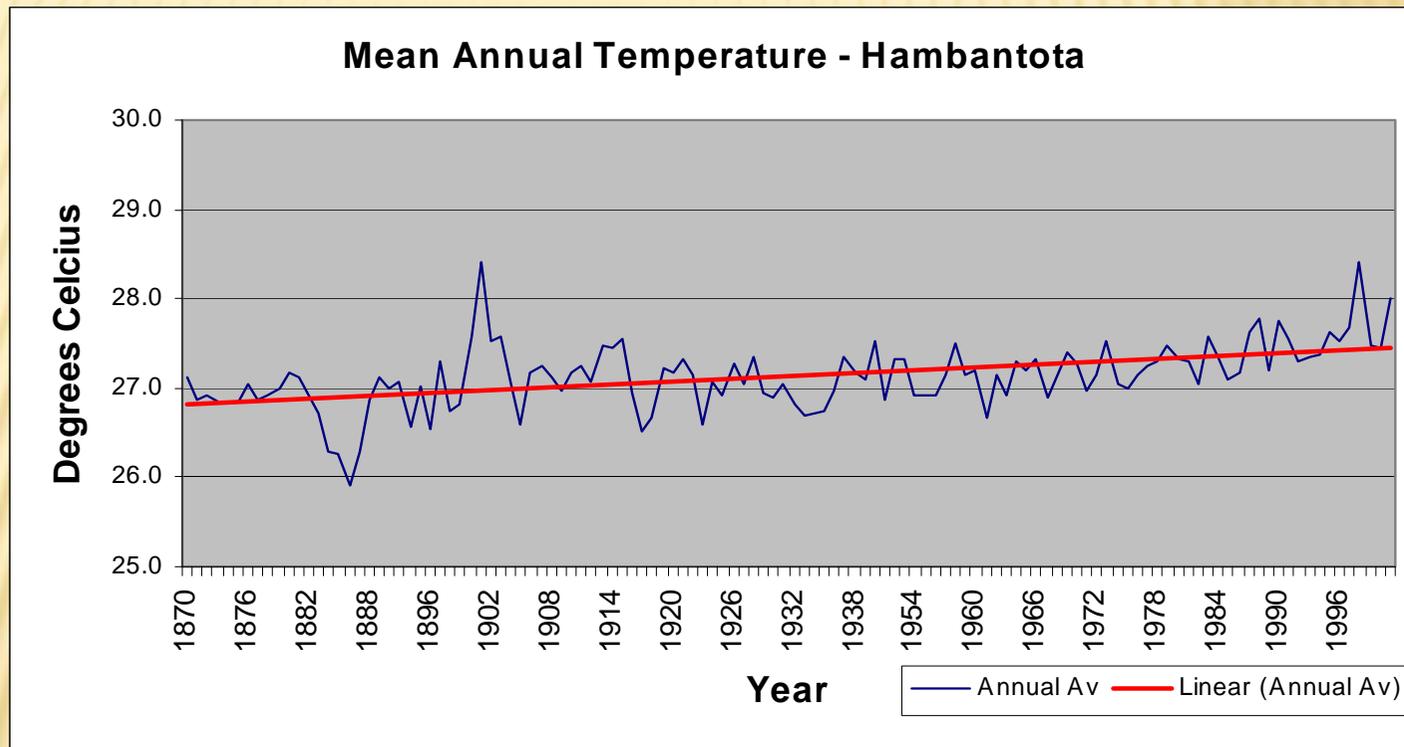
Ocean currents

Greenhouse gases and their sources



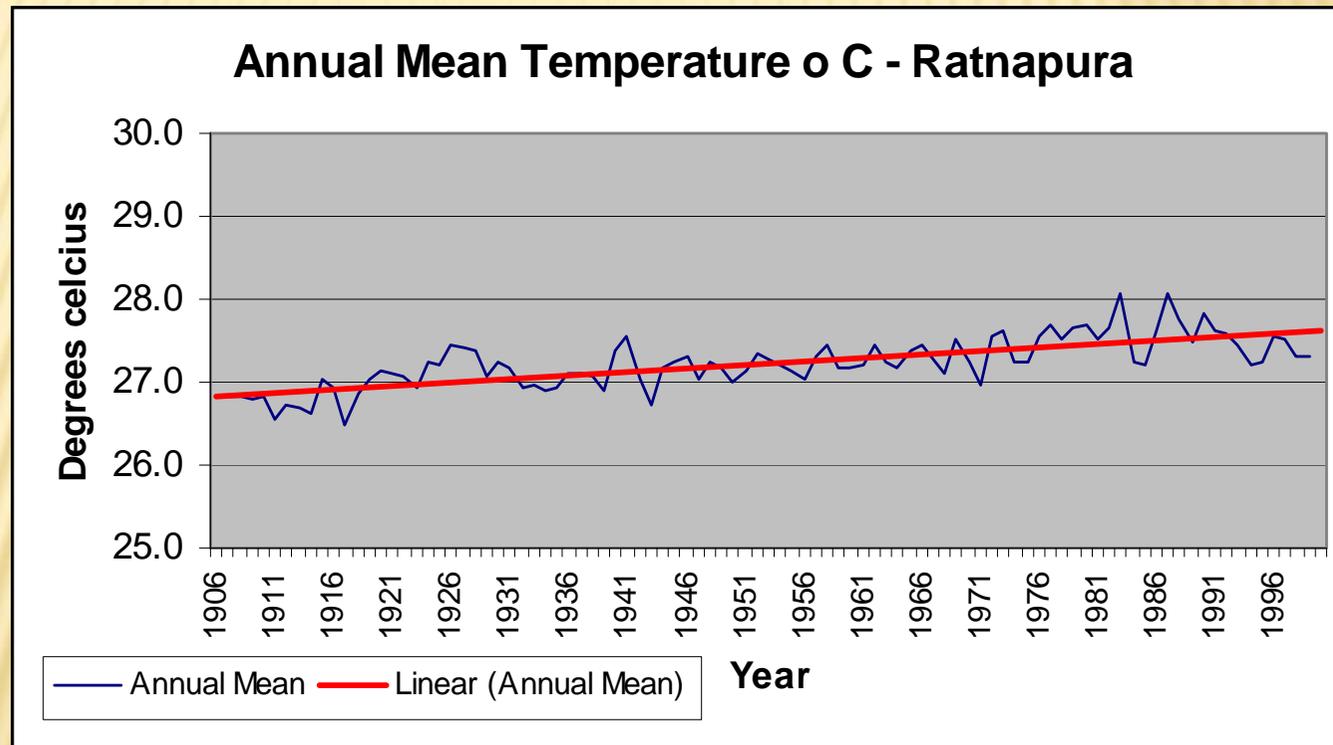
Over the past 15 years (1990-2005), Sri Lanka has had one of the highest deforestation rates of primary forests in the world.

CLIMATE CHANGE TRENDS - MEAN ANNUAL TEMPERATURE HAMBANTOTA (LOWER WALAWE BASIN)



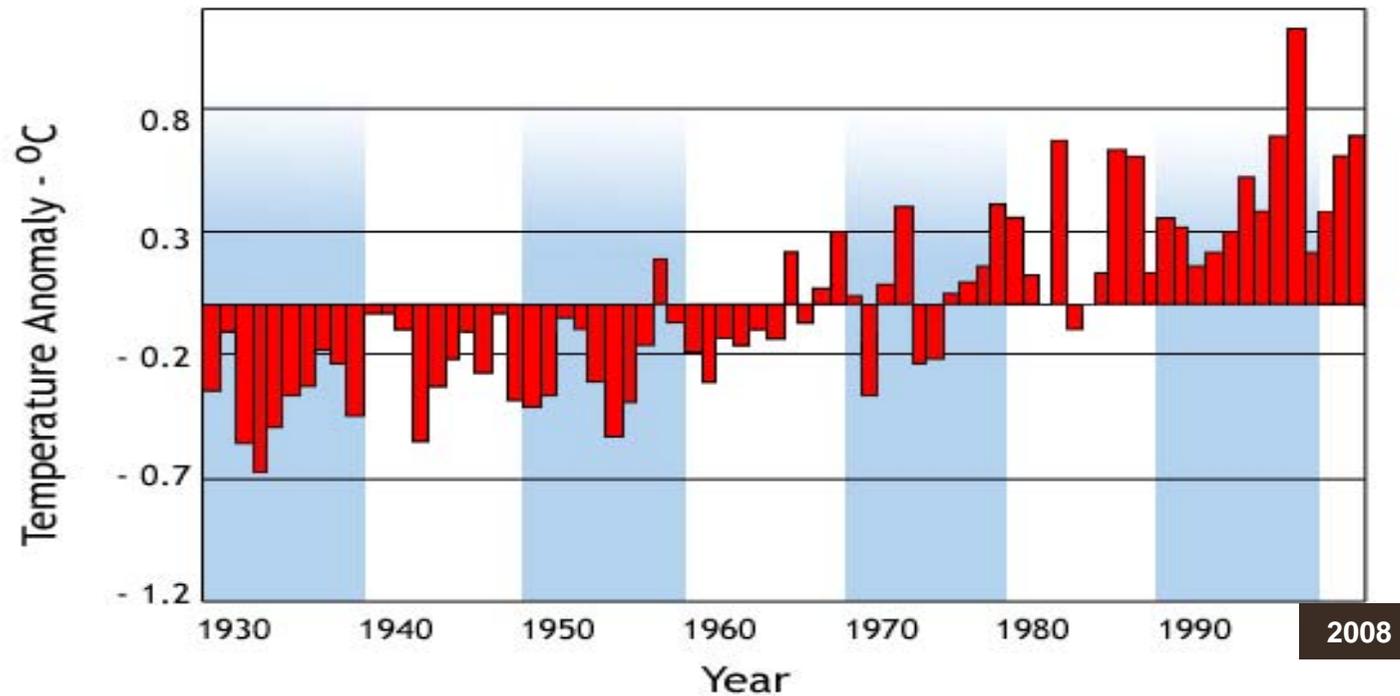
Clear Increasing Trend with Prominence
After early 1970s

CLIMATE CHANGE TRENDS - MEAN ANNUAL TEMPERATURE RATNAPURA (UPPER WALAWE BASIN)

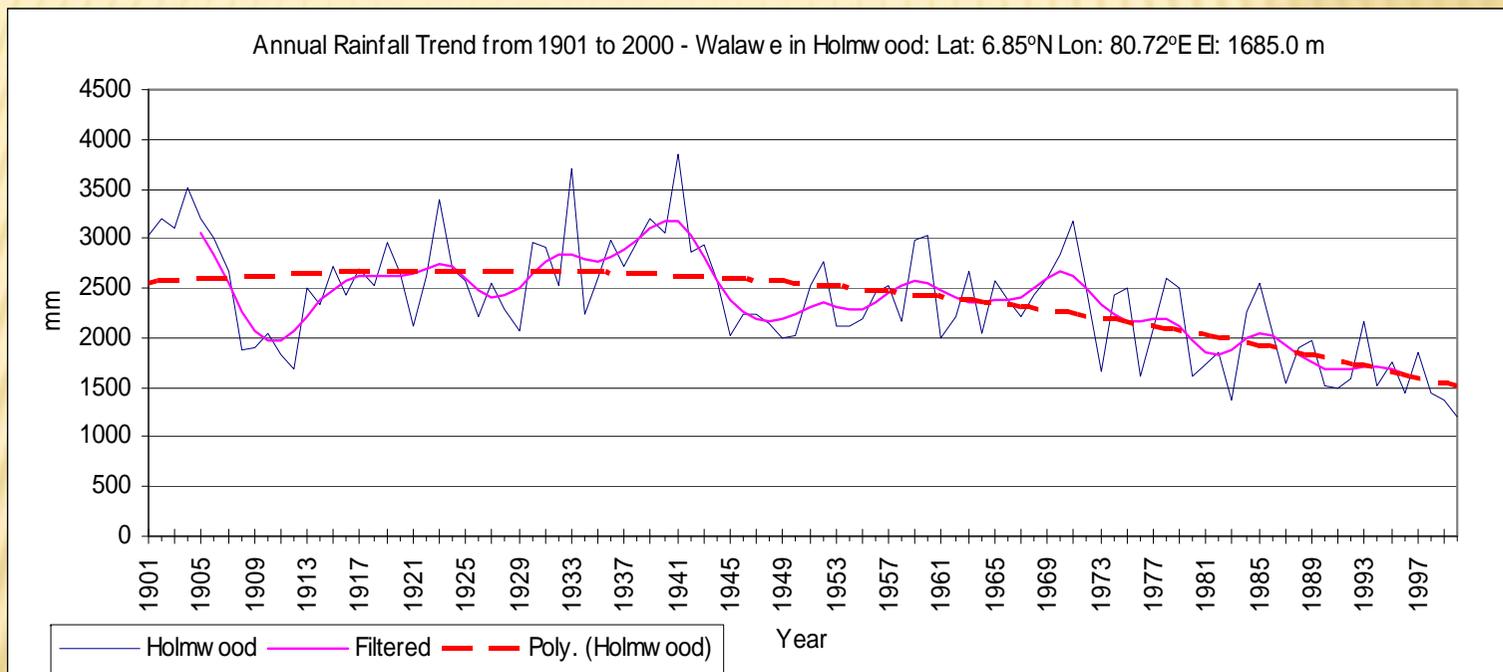


Similar increasing Trend

SRI LANKA'S TEMPERATURE IS RISING AT A RATE MUCH HIGHER THAN THE GLOBAL AVERAGE RISE – 0.60C GLOBAL VS 1.60C IN SRI LANKA FOR 100 YEARS.



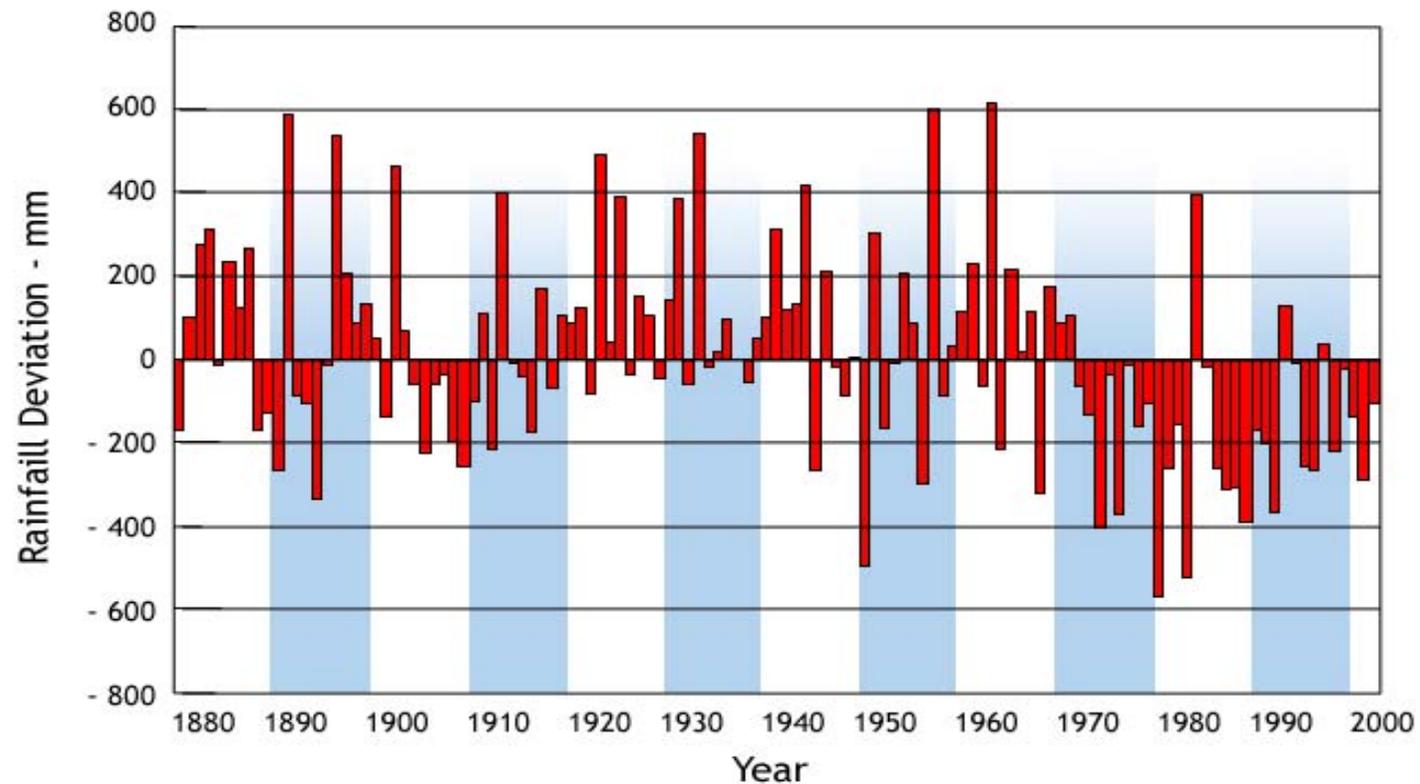
ANNUAL RAINFALL TRENDS



Walawe in Holmwood – A Reducing Trend from early 70s

ANNUAL RAINFALL DEVIATION FROM MEAN

A REDUCTION OF AROUND 7% IN ANNUAL RAINFALL AFTER 1970S



By 2020 we need 45 % more rice

**We need more than 930,000 tons
of rice in 2020**



FUTURE CHALLENGES TO INCREASE THE PRODUCTION

- Water – Quantity & Quality
- Uncertainty in weather
 - High air temperature
 - Increased frequency of water stress periods (Mainly affect for the Rain fed agriculture)
- Soil Salinity
- Health hazards

Climate change would further deteriorate this situation

SALT AFFECTED PADDY FIELD

- 4000 ha in Coastal Area due to Tsunami
- 112,000 Ha affected by the salinity in coastal (Panabokka,1972)
- Most productive lands in Dry Zone
10-20% land in Pollonnaruwa, Ampara, Anuradhapura, Puttlum, Hambantota (SL Soil Science Society)
- Some Lands Under the *Accelerated Mahaweli projects* (SL Soil Science Society)

Climate change would further deteriorate this situation

CLIMATE CHANGE PREDICTION FOR 2050S

Southwest Monsoon Rainfall across the country is predicted to increase by 38% in 2050s.

This increase in rainfall will cause floods and land slides in wet zone areas.



CLIMATE CHANGE PREDICTION-2050S

The North east monsoon (December to February) is predicted to decrease 34% and in 2050s.



The highest decrease is predicted in Trincomalee and Batticaloa

Coasts

- ❖ Coastal erosion, due to climate change and sea level rise.
- ❖ By the 2080s, more people than today are projected to experience floods every year due to sea level rise.
- ❖ The numbers affected will be largest in the densely populated and low-lying areas.

Industry, settlements and society

- ❖ The most vulnerable industries, settlements and societies are generally those in coastal and river flood plains, those whose economies are closely linked with climate-sensitive resources and those in areas prone to extreme weather events, especially where rapid urbanization is occurring.
- ❖ Poor communities can be especially vulnerable, in particular those concentrated in high-risk areas.

ADAPTATION TO CLIMATE CHANGE

- ✘ Adapting to short- and long-term changes in climate
- ✘ Measures to reduce the impacts of climate change

[Mitigation –

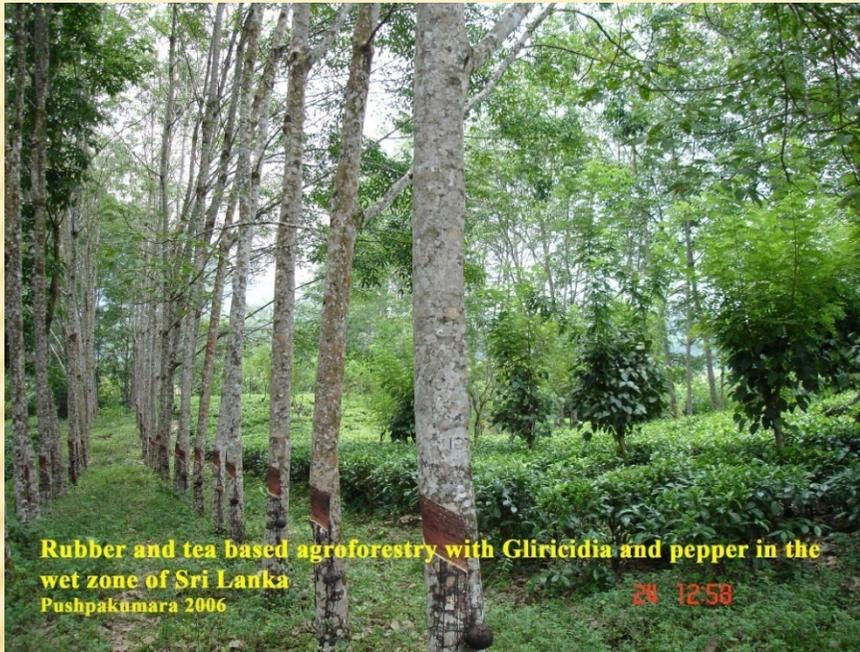
Measures to reduce the probability of climate change by eliminating its causes]

ADAPTATION MEASURES

- ✘ Introduce short duration paddy varieties to avoid low rainfall in January and February.
- ✘ Introduce methods to use less water for paddy cultivation.
- ✘ Reduce the extended of paddy cultivation in highly stressed areas and introduce low water requirement other field crops. Storage of water will enhance the agricultural productivity to ensure food security.
- ✘ Adequate awareness and education must be given to people on proper way of collection, storage, maintenance and usage of water.

How Agro Forestry can help to mitigate climate change challenges.....

- 1. Minimize the level CO₂ which will result in lower contribution to the greenhouse gas pool**
- 2. Helping to conserve soil and moisture, and increasing microbial populations in lands which otherwise will cause change of climate**
- 3. Reducing the pressure on forests through on-farm production**



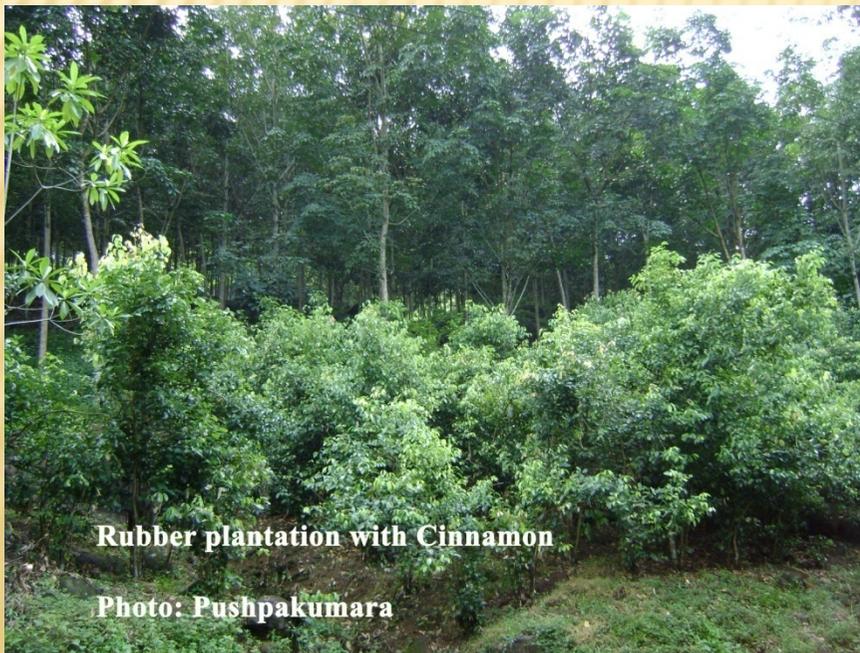
Rubber and tea based agroforestry with Gliricidia and pepper in the wet zone of Sri Lanka
Pushpakumara 2006

29 12:58



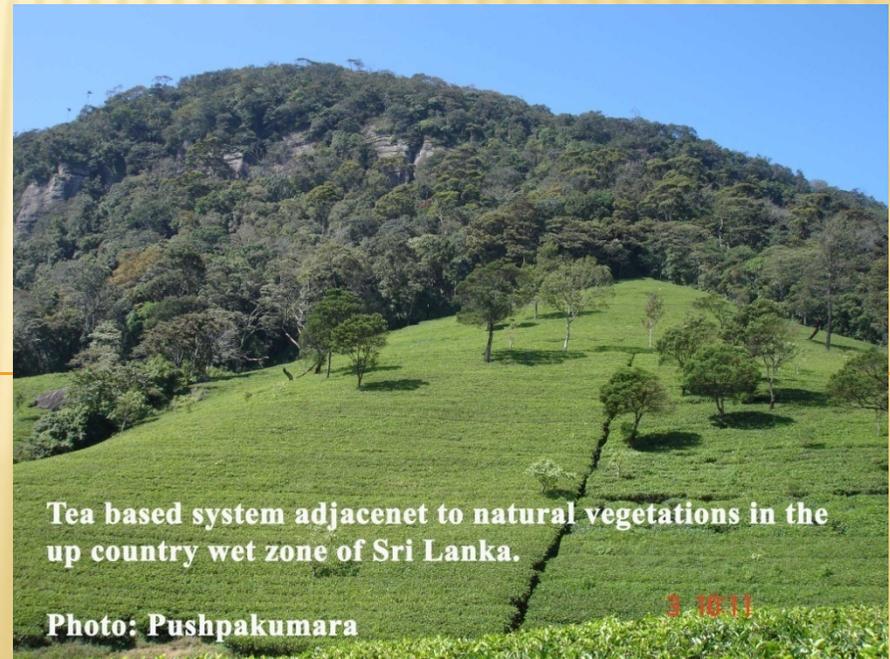
Coconut and cocoa agroforestry model in the coconut triangle of Sri Lanka.

Photo: HAJ Gunathilake



Rubber plantation with Cinnamon

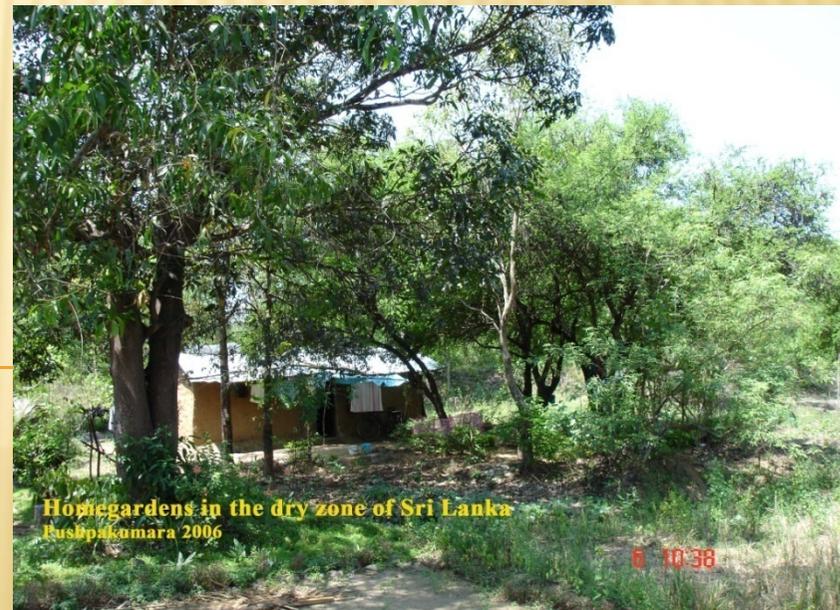
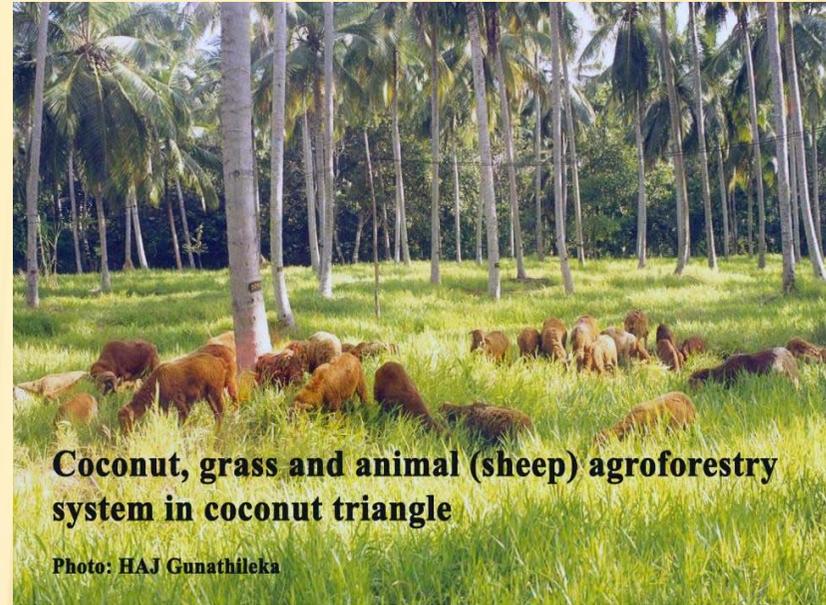
Photo: Pushpakumara



Tea based system adjacent to natural vegetations in the up country wet zone of Sri Lanka.

Photo: Pushpakumara

3 16:11





Establishment of Taungya system in the dry zone of Sri Lanka.

Photo: T Sivananthawerl



Trees outside forest with terraced paddy based agroforestry systems in the up country wet zone of Sri Lanka (can you see the environment services that agroforestry can provide?)
Pushpakumara 2007



As a Human Being,
every one's ultimate
target must be save
this beautiful planet
for all of us and for
the future
generations.



PROTECT THE ENVIRONMENT

THAN K YOU

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