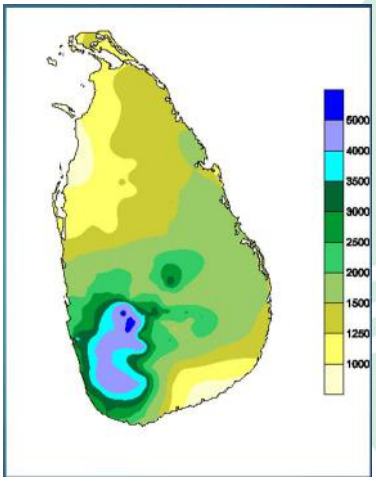
SRI LANKA'S CHALLENGERS TO THE CLIMATE CHANGE IN IRRIGATION AND WATER RESOURCES

Eng T Janaki Meegastenna
Director of Irrigation (Water Management & Riverine Management)
Deputy Project Director (CRIP)
Irrigation Department,
Sri Lanka
janakimeega@hotmail.com

1

Topography and Climate of Sri Lanka

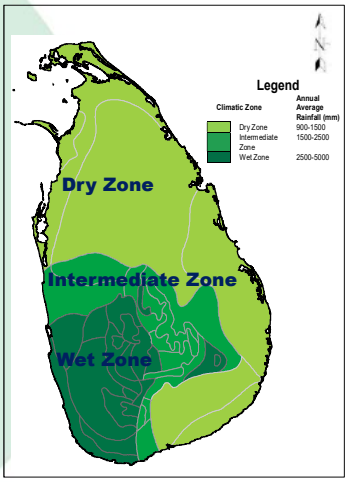


Rainfall in Sri Lanka has multiple origins:

- Monsoonal
- Convectional
- Depressional

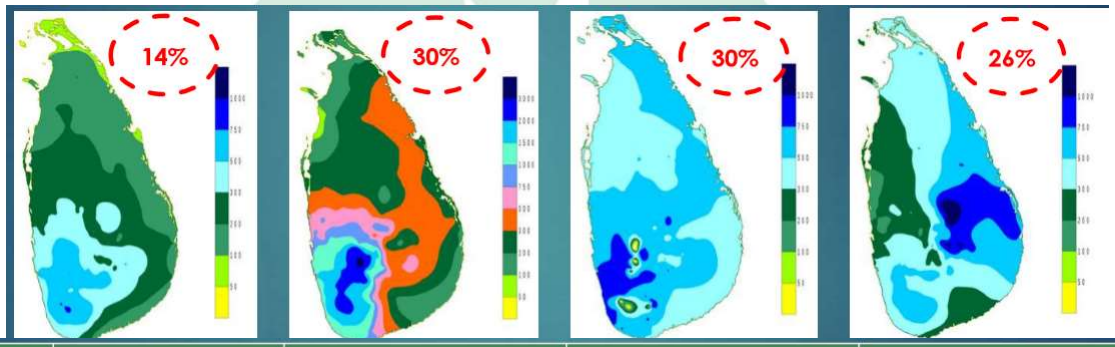
Sri Lanka is subject to two main wind regimes:

- Southwest
- Northeast



2

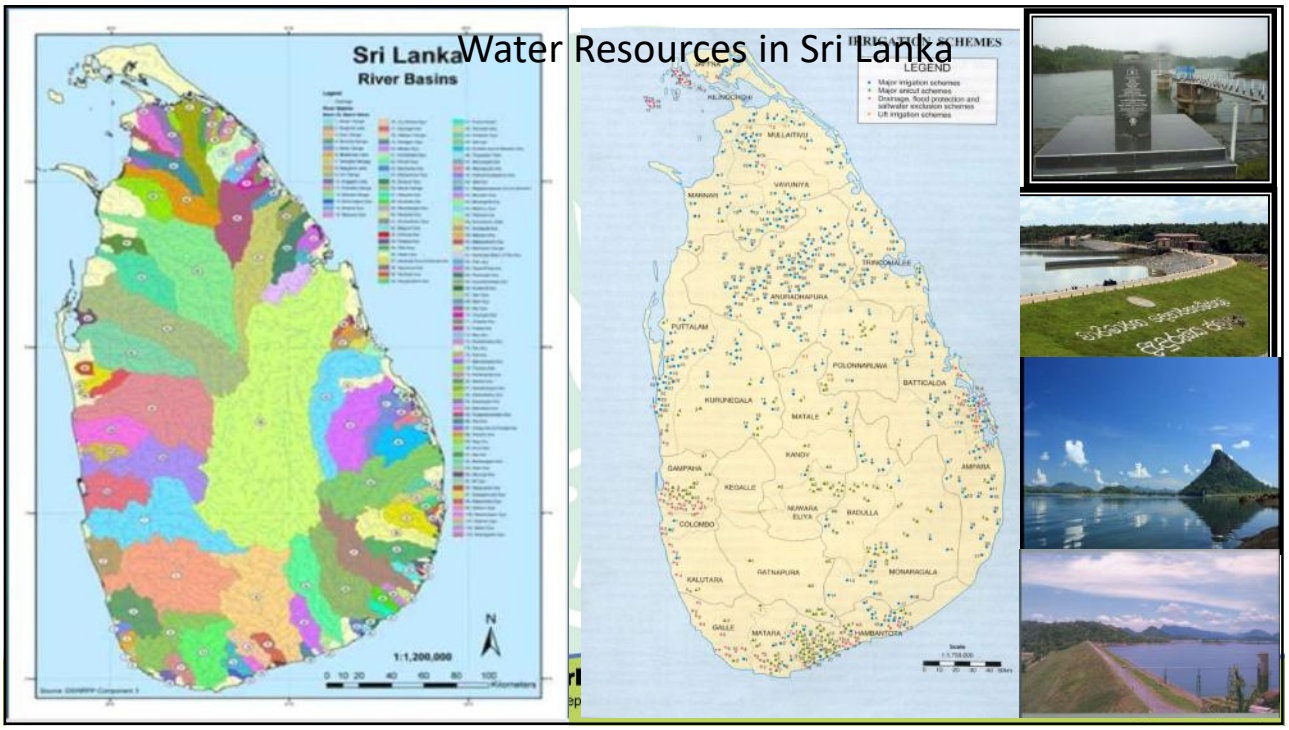
Seasonal rainfall distribution of Sri Lanka



Season	First Inter-monsoon	Southwest Monsoon	Second Inter-monsoon	Northeast Monsoon
Period	March – April	May – September	October - November	December – February
Rainfall	260 mm	546 mm	548 mm	459 mm

3

Water Resources in Sri Lanka

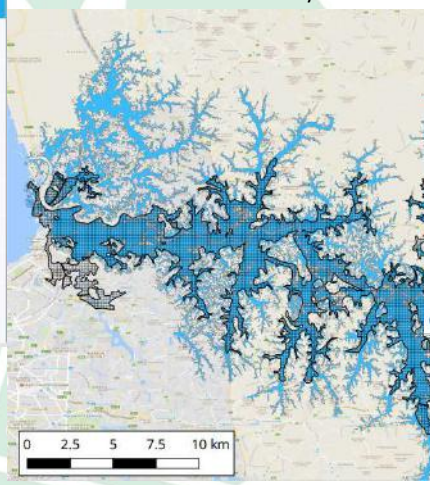


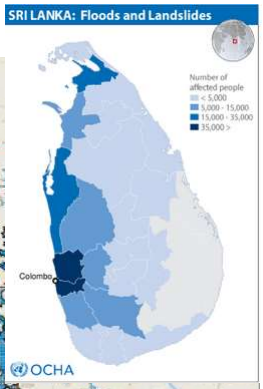
4

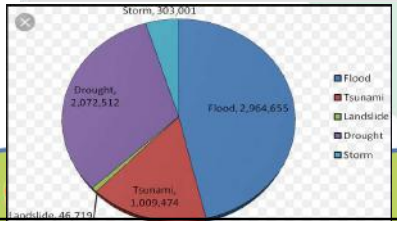
Recently observed weather related hazards

year	Hazard
2010	Flood
2011	Flood/Drought
2012	Flood/Drought
2014	Flood/Drought
2015	Flood
2016	Flood/Drought
2017	Flood/Drought
2018	Flood/Drought

2016 May 21st Flood



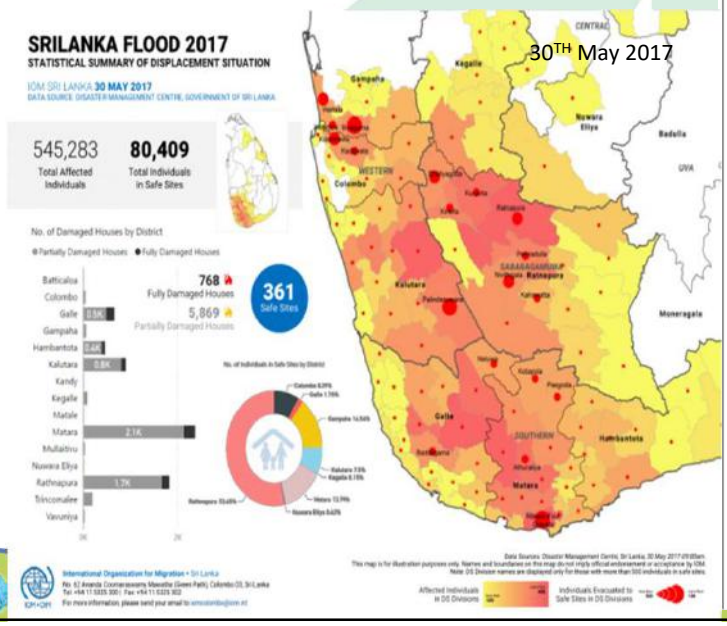




3rd World Irrigation Forum
1-7 September 2019, Bali, Indonesia

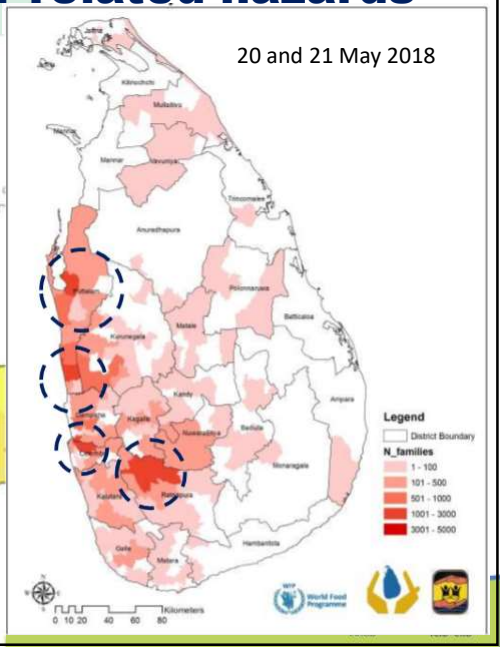
5

Recently observed weather related hazards



30TH May 2017

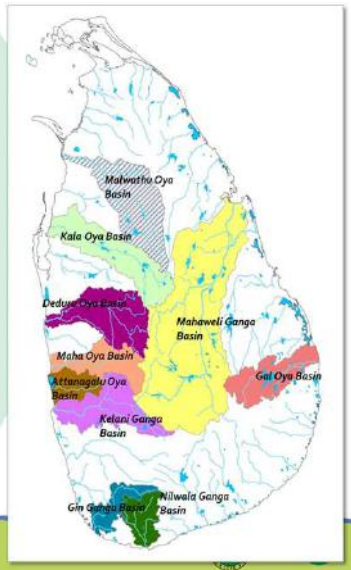
20 and 21 May 2018



6

Flood Modelling Initiatives in Sri Lanka

- Climate Resilience Improvement Project (CRIP) - Development of Basin Investment Plans (DBIP): Consultant WS Atkins UK
- Mundeni Aru Basin study for reducing impacts of the Floods – Royal Haskoning , Netherlands
- Kalu River Basin Flood Modelling : ICHARM Japan



7

Climate Resilience Improvement Project (CRIP) Development of Basin Investment Plans (DBIP)

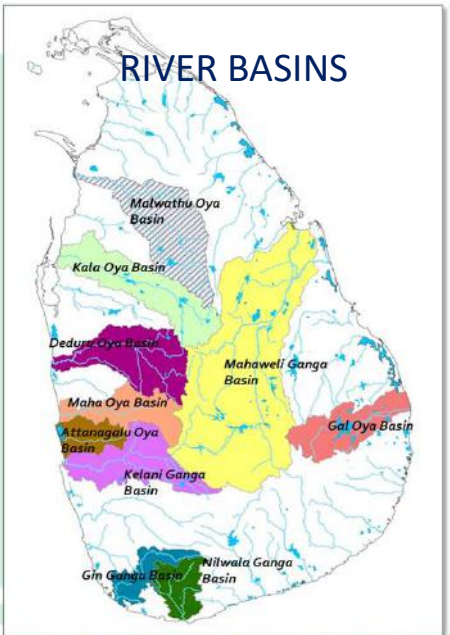
Priority Basins:

- Kelani Ganga
- Attanagalu Oya
- Gin Ganga
- Nilwala Ganga
- Mahaweli Ganga
- Malwathu Oya

42% of the total area of the Country

Other Basins:

- Maha Oya
- Deduru Oya
- Kala Oya
- Gal Oya



8

CRIP – Objectives

- Improve the understanding of climate risk for floods and droughts in critical river basins and implement mitigation activities to minimize the impact of flood & drought Hazards and preparation of operation rules and guidelines to minimize impacts of flood and drought

9

MODELLING

Data Processing and Analysis

Rating Conceptualization, Flood Analysis

Detailed/ 2D Flood Analysis

GIS Data Processing and Analysis

Rainfall Runoff Modelling

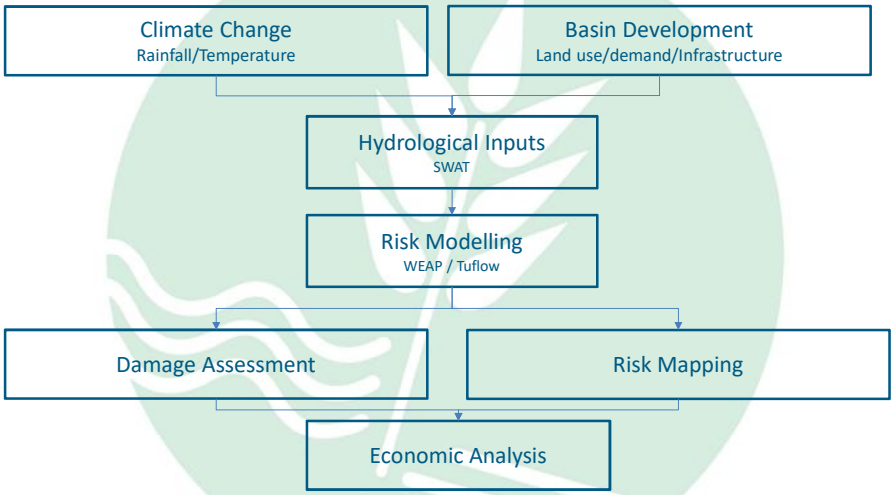
Platform for SWAT

Water Demand Allocation

- Digital terrain model – LiDAR data
- Stream network
- Rainfall run off
- Groundwater representation
- Soil Infiltration
- Land cover roughness values

10

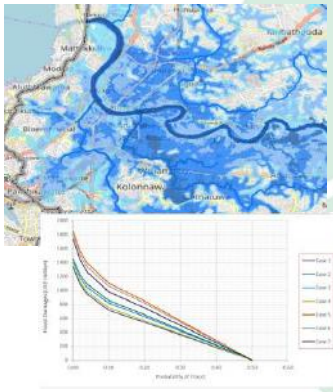
Risk Assessment Method



11

Outputs

Flood Risk
- Damage Assessment
- Flood Hazard Maps
- Economics- Damages



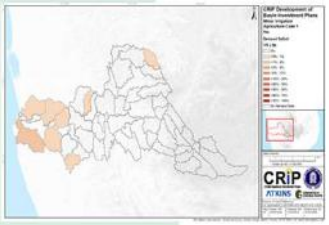
TABLES

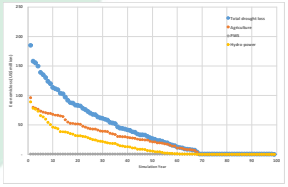
MAPS

QUANTITIES

ECONOMICS

Drought Risk
- Damage Assessment
- Drought Risk Maps
- Economics- Losses





12

Basin Investment Plan

- **The aim of the integrated flood and drought risk management is to:**

1. Present the PFSs for the basin
2. Summarise the PFSs to identify flood and drought risk mitigation options toward improving climate resilience in the basin
3. Recommend flood & drought risk mitigation options to be taken forward for feasibility studies (FS)
4. Place mitigation options and recommendations in the context of long-term strategic planning: **the Basin Investment Plan**

13

Climate Resilience Multi-Phased Programme (Cres MPA)

- Forecasting and Early warning system
  - Department of Meteorology: Weather forecasting & issue early warning
  - Irrigation Department: Flood forecasting & issue early warning
  - National Building Research Organization: Landslide forecasting & & issue early warning
  - Disaster Management Centre: Early Warning and Emergency Operation

Better Forecasting practices & Better Watershed Management could help in climate resilience

14