

# ***Water Footprints of Sri Lanka***

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Impacts for improving water use efficiency  
and sustainability

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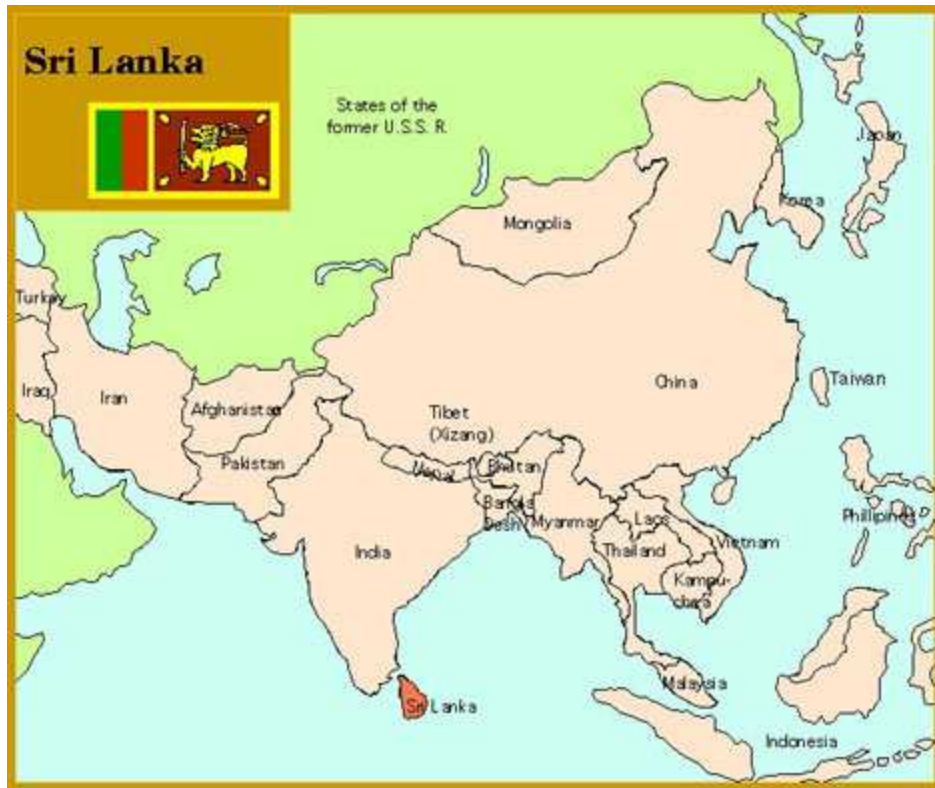
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# Outline

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1. Introduction & Current status
2. Opportunities
3. Challenges

# Sri Lanka



Base 802514 6-00

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## Country Profile

LAND AREA	-	65,525 KM2
APPROXIMATE POPULATION	-	19 MILLION
RIVER BASINS	-	103
BASINS OVER 1000 KM2	-	17
MAHAWELI BASINS	-	10,327 KM2
TOTAL EXTENT UNDER MAJOR IRRIGATION	-	240,000 HA.
TOTAL EXTENT UNDER RICE CULTIVATION	-	625,000 HA.

[www.iwmi.org](http://www.iwmi.org)

# Sri Lanka



# Climate

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- **Tropical**, with little seasonal variations
- **Humidity**, is around **60% - 90%**.
- The **SW Monsoon in May** and the **NE Monsoon in November**.
- Average annual **precipitation**:
  - **1,270 mm - 1,900 mm** (50 and 75 inches) on the southeast plains and
  - **2,540 mm - 5,080 mm** (100 and 200 inches) on the southwest plains.
- Average **temperature**:
  - in Colombo **23° C to 31°C** (73°F to 88°F) and
  - in the highlands **14°C to 24°C** (57°F to 75°F).

# BRIEF HISTORY OF WATER RESOURCES DEVELOPMENT

- SETTLEMENT ALONG RIVER VALLEYS IN THE DRY ZONE COMMENCED FROM 5TH CENTURY B.C.
- SMALL RESERVOIRS AND ANICUTS FROM 2ND CENTURY BC ONWARDS.
- LARGE RESERVOIRS AND ANICUTS ACROSS MAIN WATERWAYS FROM 3RD CENTURY AD
- MINNERIYA, KALAWEWA.
- LARGE CONVEYANCE CANALS COMMENCED FROM 3RD CENTURY AD E.G., ELAHERA YODAELA, KALAWEWA JAYAGANGA.
- FIRST DIVERSION OF MAHAWELI AND 07 MILE LONG CANAL 571 - 604 AD BY KING AGRABODHI I.
- EXTENSION OF THE CANAL BY ANOTHER 40 MILES 851 - 857 AD BY KING SENA II.
- FIRST MULTIPURPOSE RESERVOIR - GALOYA IN THE EASTERN PROVINCE 1948.

# Current situation

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- Sri Lanka is considered having little or no water scarcity in overall
- Localized and seasonal scarcity is common
- With slight delays or excess of rain either drought or flooding conditions are frequent
- Different sectors manage water independently thus the data collected by different agencies are not shared nor verified!

## There is an urgent need to,

Provide information to those who make investment decisions:

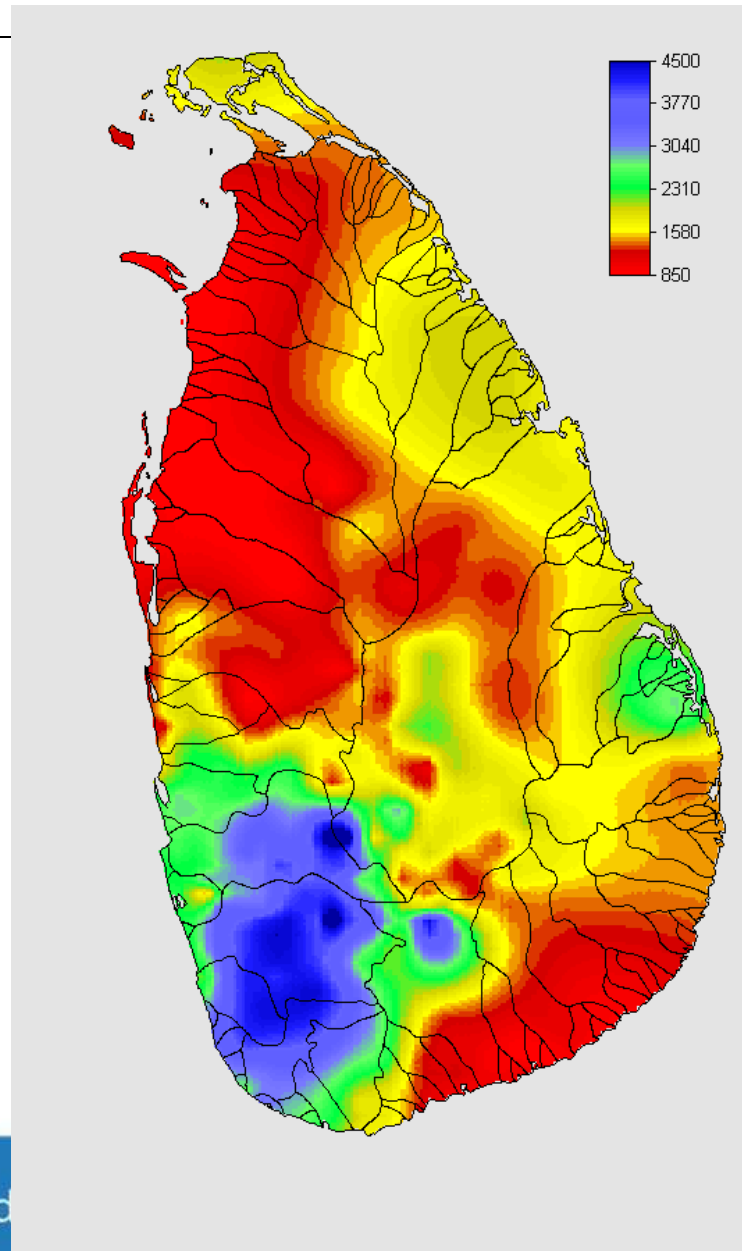
- on use efficiencies ,etc (the real picture)
- on water quality data
- on water salinity
- on water related diseases
- on waste water/ return flows

## In this regards the first steps are to:

- Develop framework to assess
  - Water availability
  - Water demand /use efficiency
  - Water quality
  - Water governance structure
  - Water related disasters
  - Climate change impacts
- Develop a information base to support management decisions

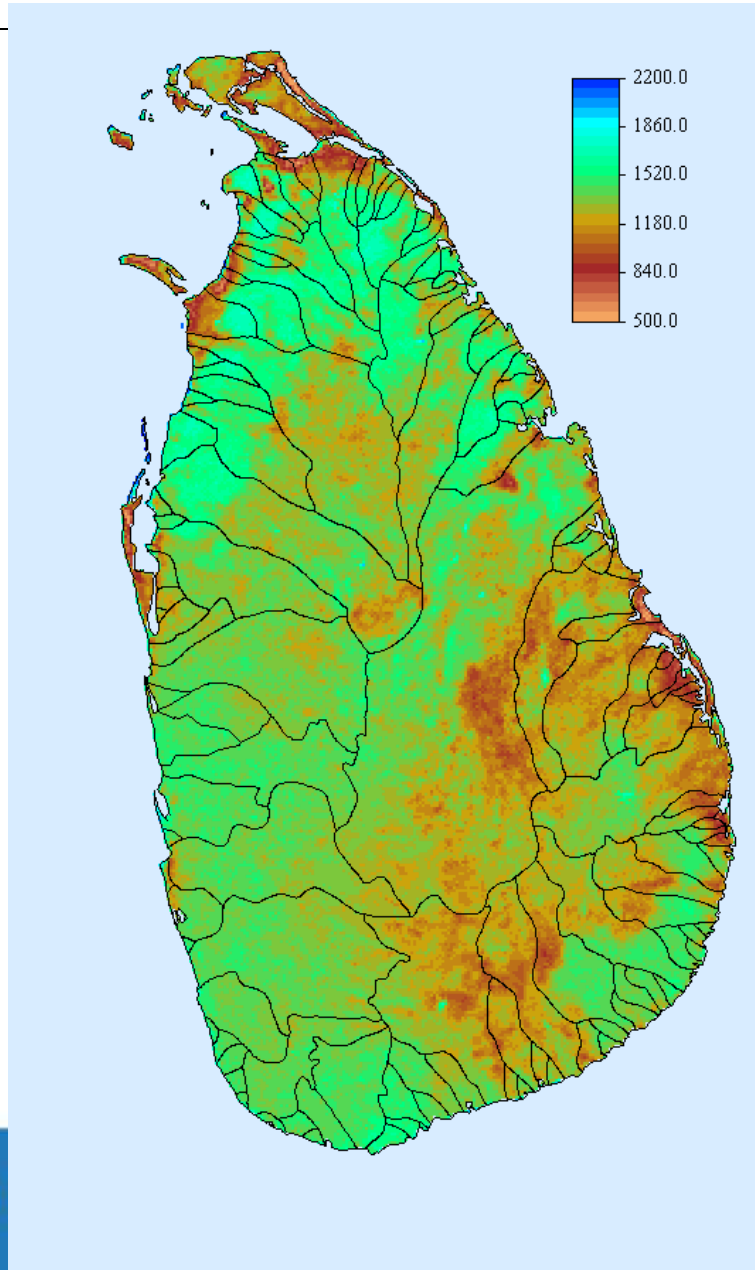
# Annual precipitation (mm)

June 1999 to May 2000



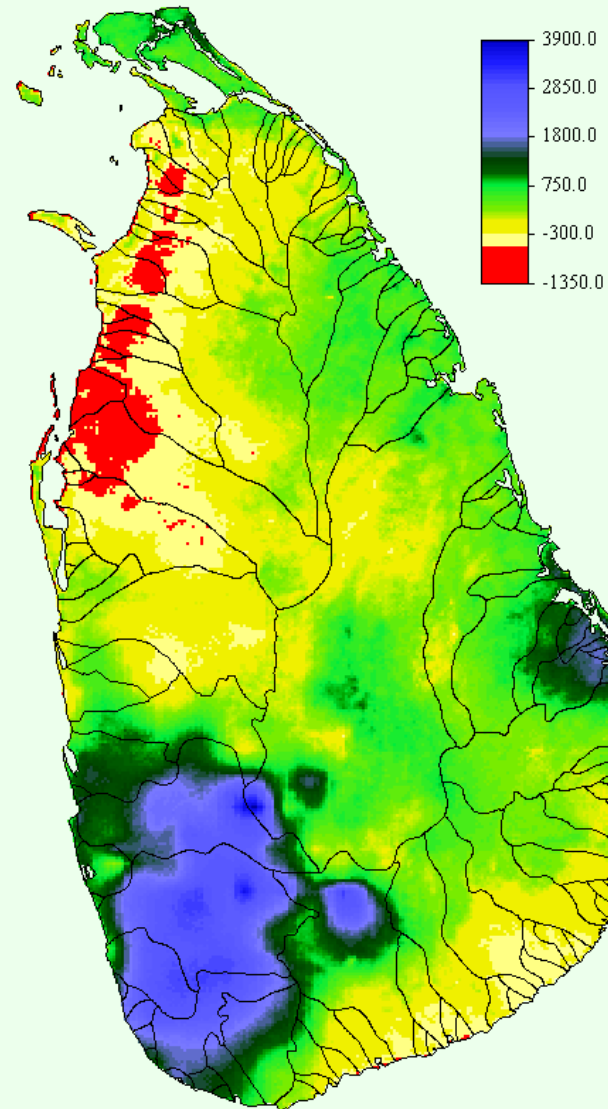
# Annual actual evapotranspiration (mm)

June 1999 to May 2000



**Annual precipitation -  
annual actual  
evapotranspiration  
(mm)**

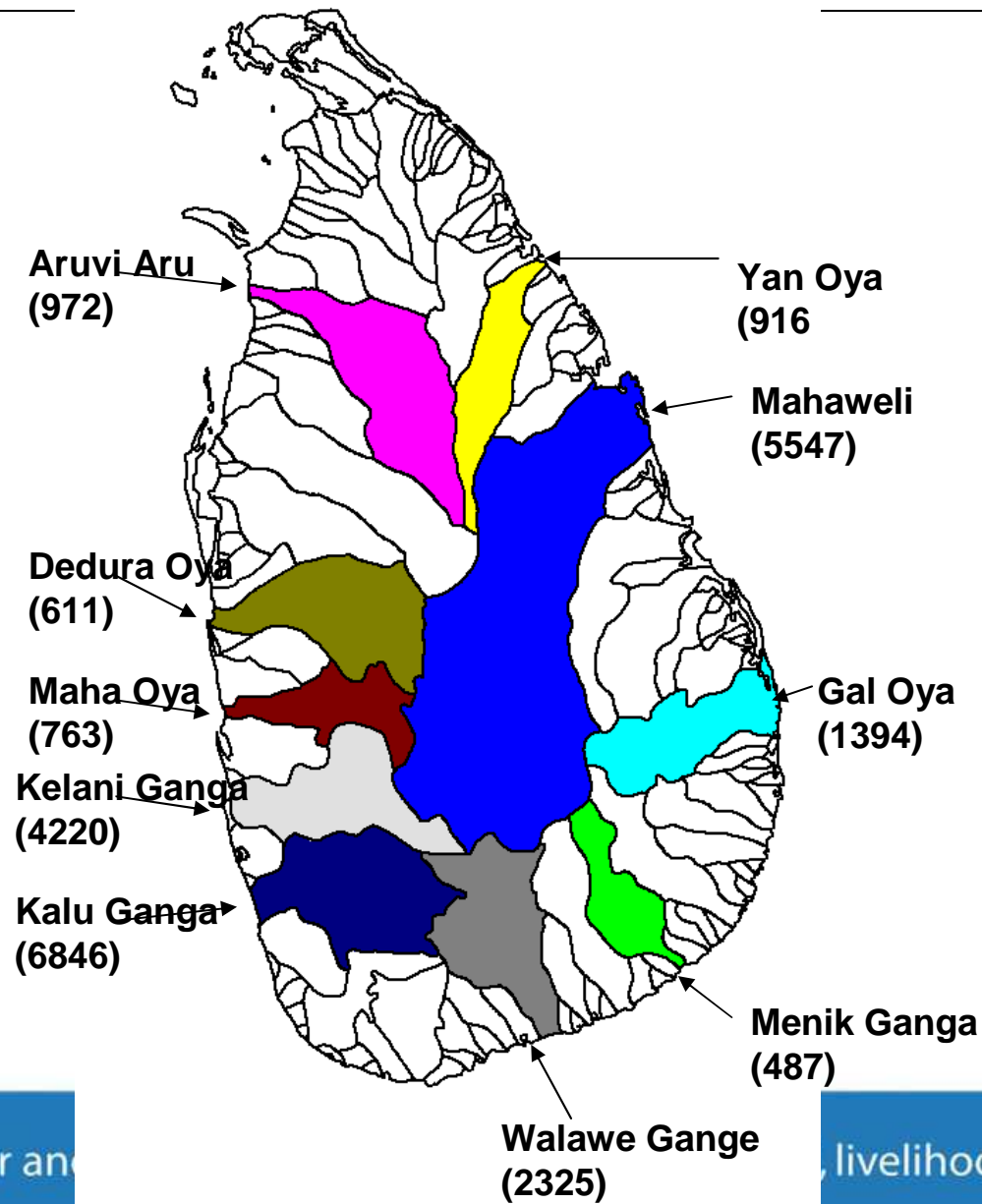
June 1999 to May 2000



# Total runoff+groundwater recharge(mcm)



June 1999 to May 2000



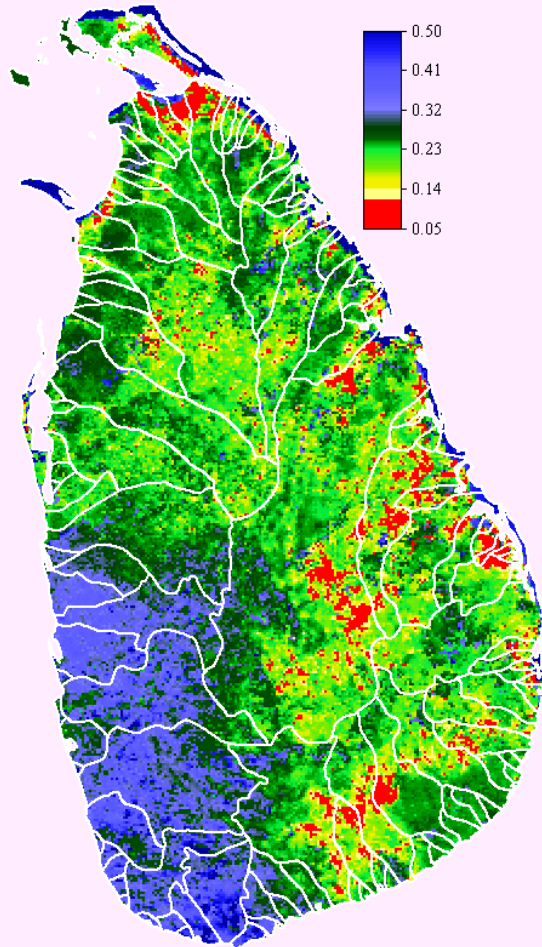
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Improving water an

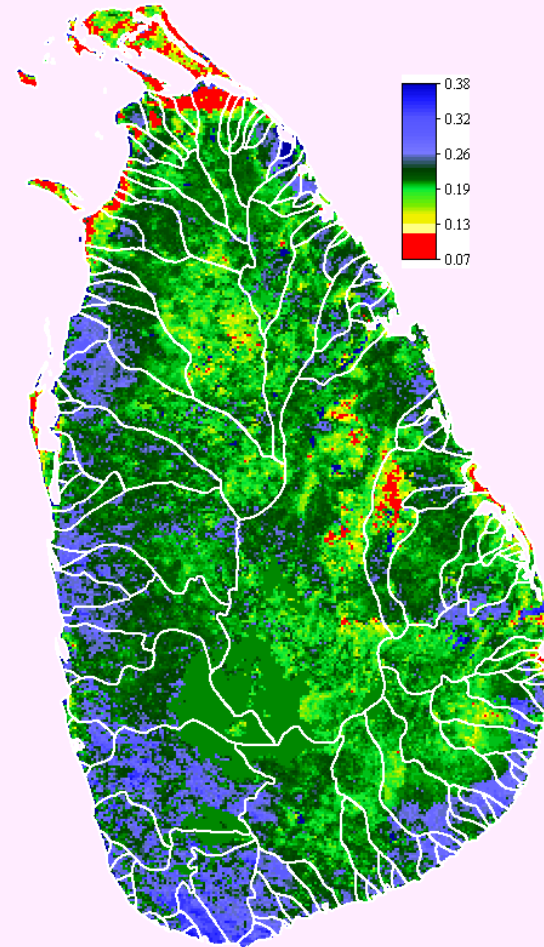
livelihoods and nature

# Soil moisture ( $\text{cm}^3/\text{cm}^3$ )

August - 1999

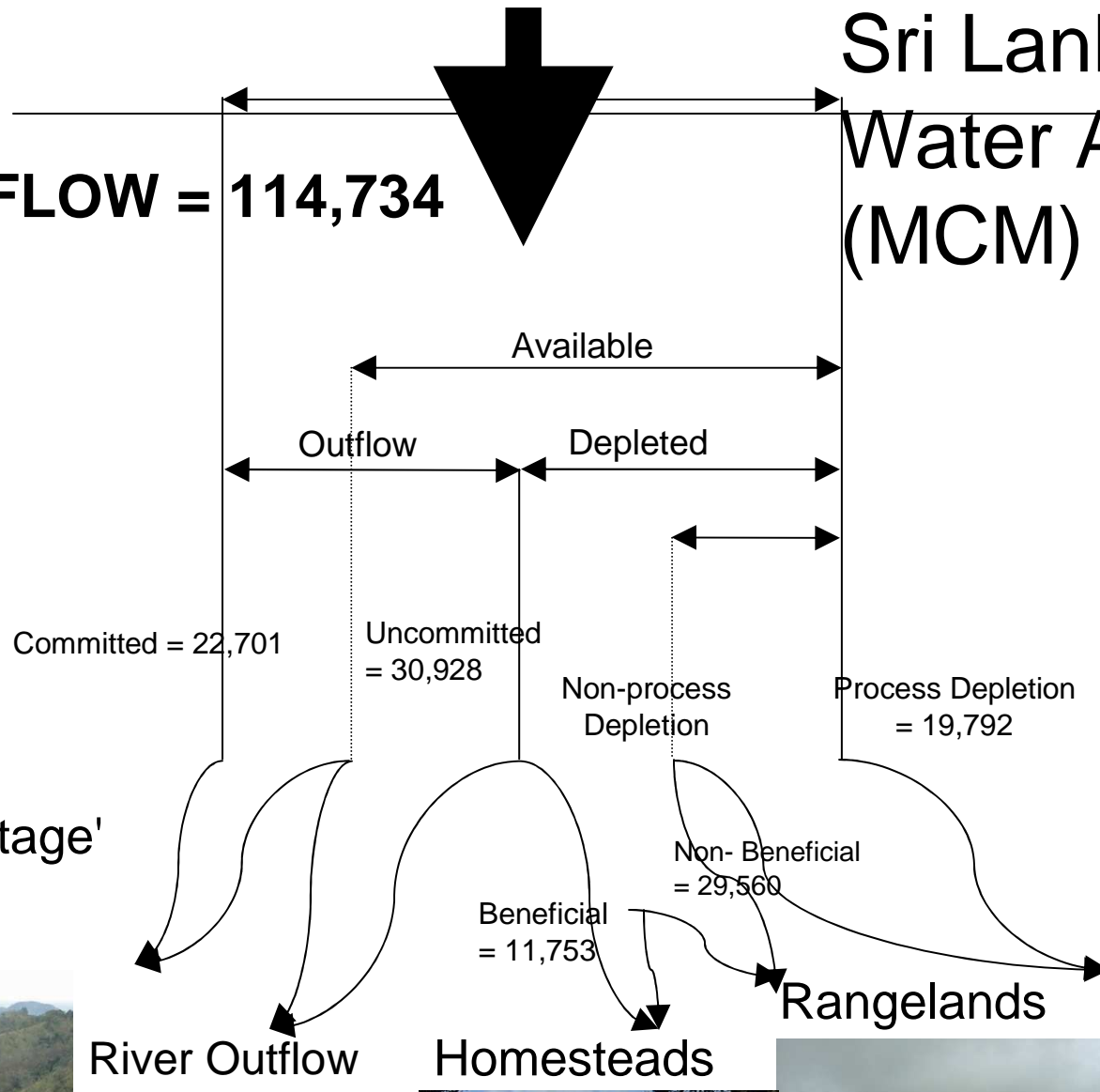


May - 2000



# Sri Lanka's Water Accounts (MCM)

**INFLOW = 114,734**



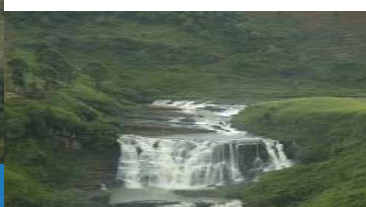
'Natural heritage'  
uses

River Outflow

Homesteads

Rangelands

Agriculture

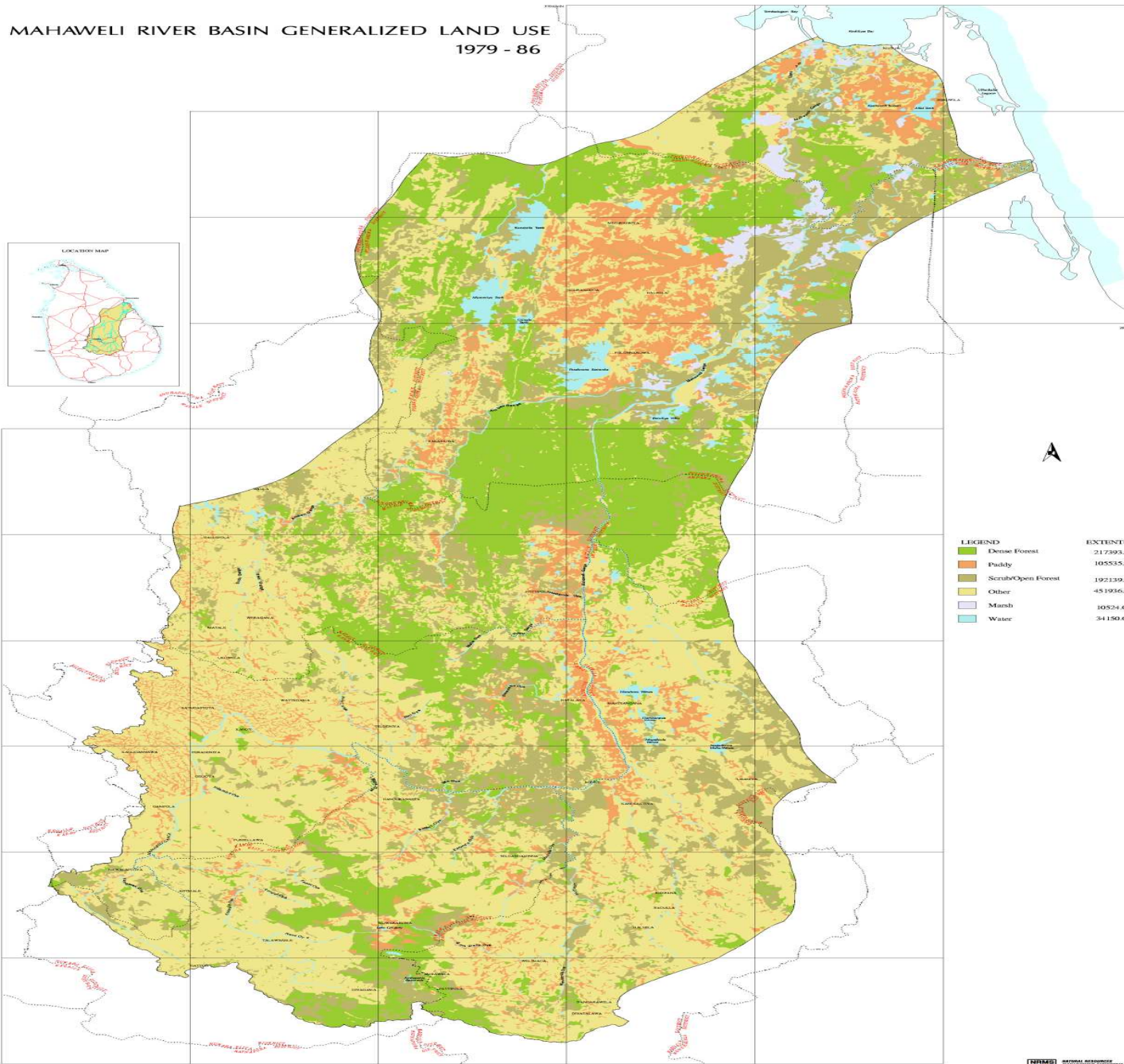


## From this study

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- 17% of the net inflow is consumed by agriculture
- 27% of the net inflow is flowing to the sea
- Water scarcity analysis can be refined using information of evaporative depletion and river outflow
- Proposed FTs can provide new opportunities in the planning and operation of water resources management

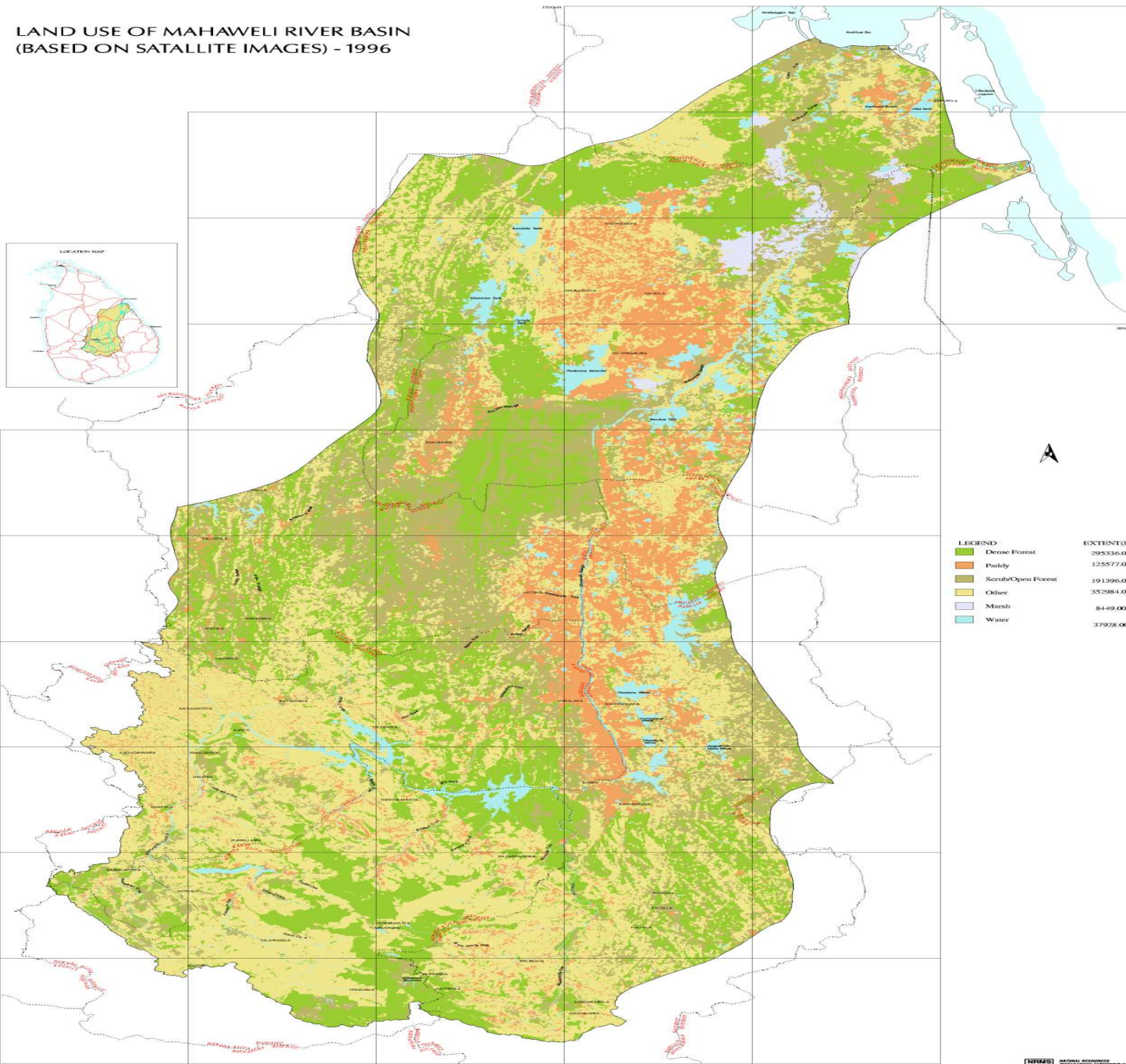
**MAHAWELI RIVER BASIN GENERALIZED LAND USE  
 1979 - 86**



Source: Survey Department of Sri Lanka  
 (1:100,000 Land Use Map Series)



**LAND USE OF MAHAWELI RIVER BASIN  
(BASED ON SATALLITE IMAGES) - 1996**



LEGEND	EXTENT(ha.)
Dense Forest	295336.00
Paddy	125577.00
Scrub/Open Forest	191396.00
Other	352984.00
Marsh	8449.00
Water	37928.00

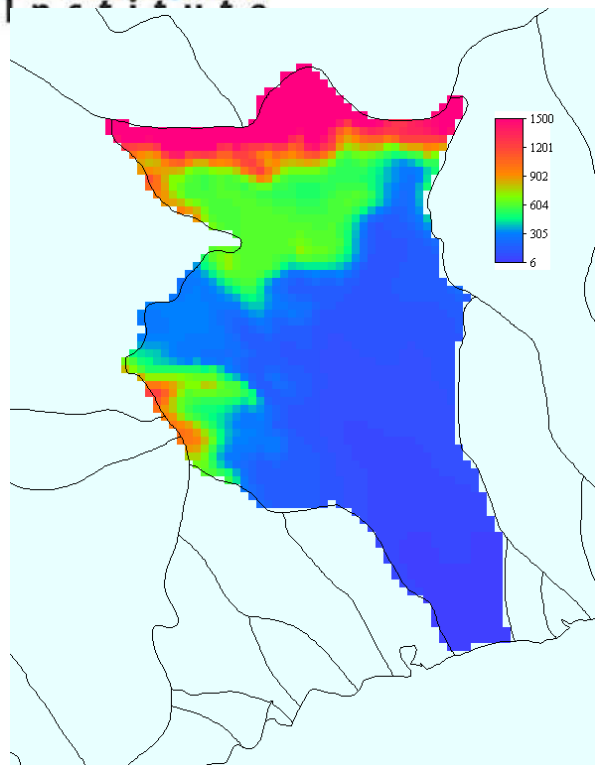
DATA SOURCE: Landsat Thematic Mapper (TM) 1996  
DIGITAL DATA: John A. White  
MAPPER: I.W.M.



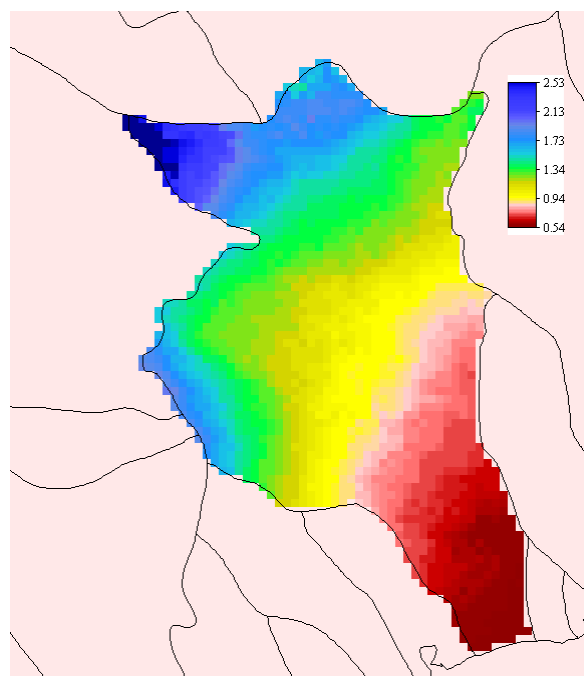


# Walawe Ganga Basin

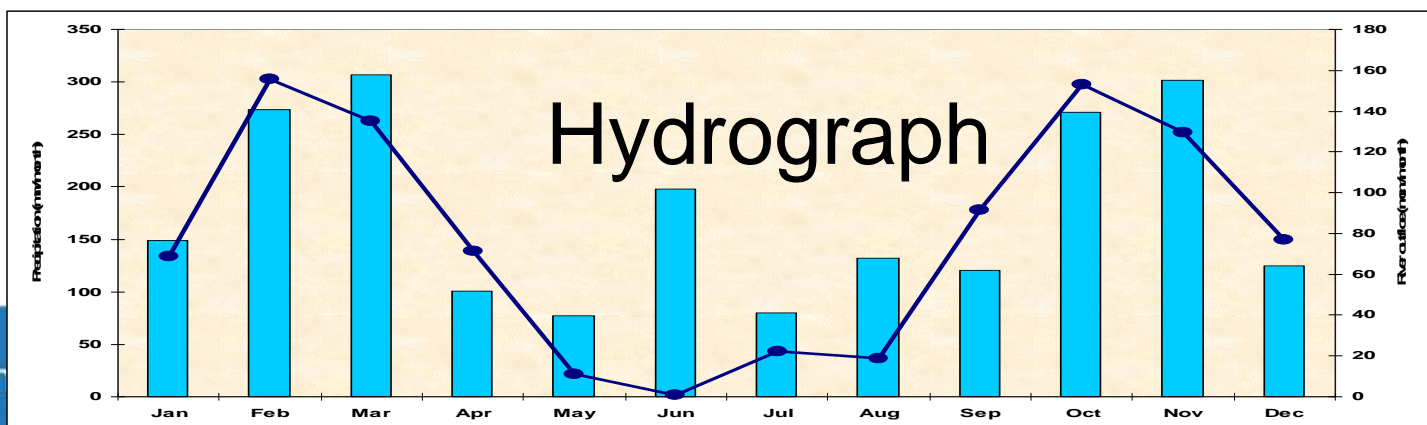
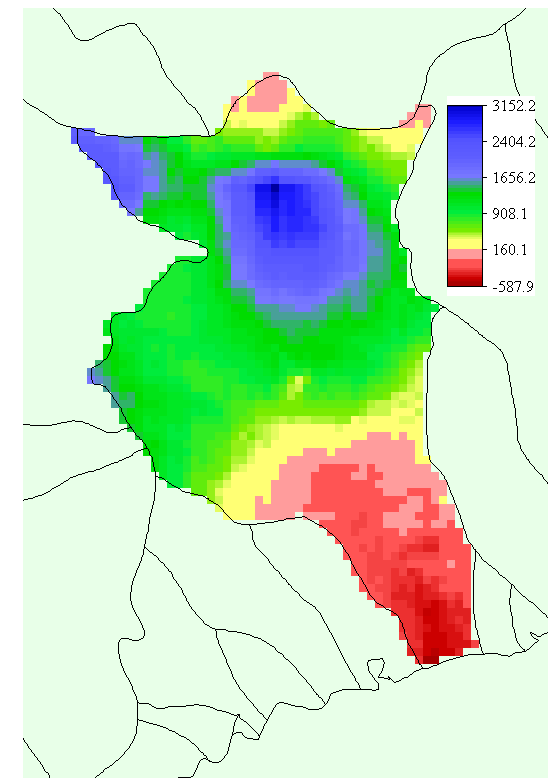
Elevation (m)



Moisture availability index (MAI)



Annual precipitation - annual actual evapotranspiration (mm)



**We can not manage what  
we can not measure**

Thank You!