Integrated Water Monitoring and Prediction to Improve Crop Production

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In Sri Lanka

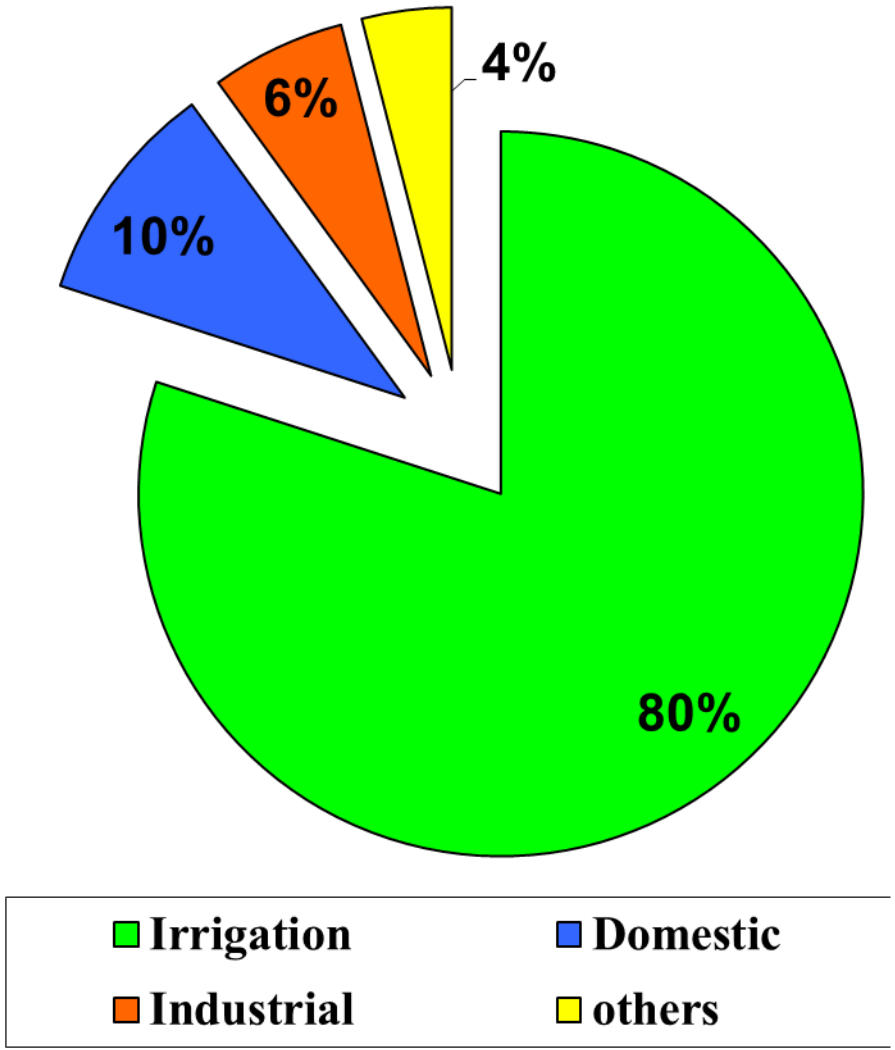
- Total available surface water
  - 43,200 MCm
- Irrigation usage - 12,000 MCm
- Domestic & Industrial usage
  - 3,000 MCm
- Water goes to Sea without utilising
  - 28,200 MCm

In Sri Lanka

From the Surface Water

- Irrigation usage is 28%
- Industrial & Domestic usage is 7%
- 65% goes to the sea without any usage

Usage of Water in Sri Lanka



Irrigation

- Irrigation Schemes are Managed by four institutions in Sri Lanka
  - ✓ Mahaweli Authority of Sri Lanka

    Schemes under Gazetted area as Mahaweli area
  - ✓ Irrigation Department

    All Major and Medium schemes of interprovincial rivers
  - ✓ Provincial Council

    All Major and Medium schemes of provincial rivers
  - ✓ Agrarian Development Department

    All Minor Irrigation Schemes

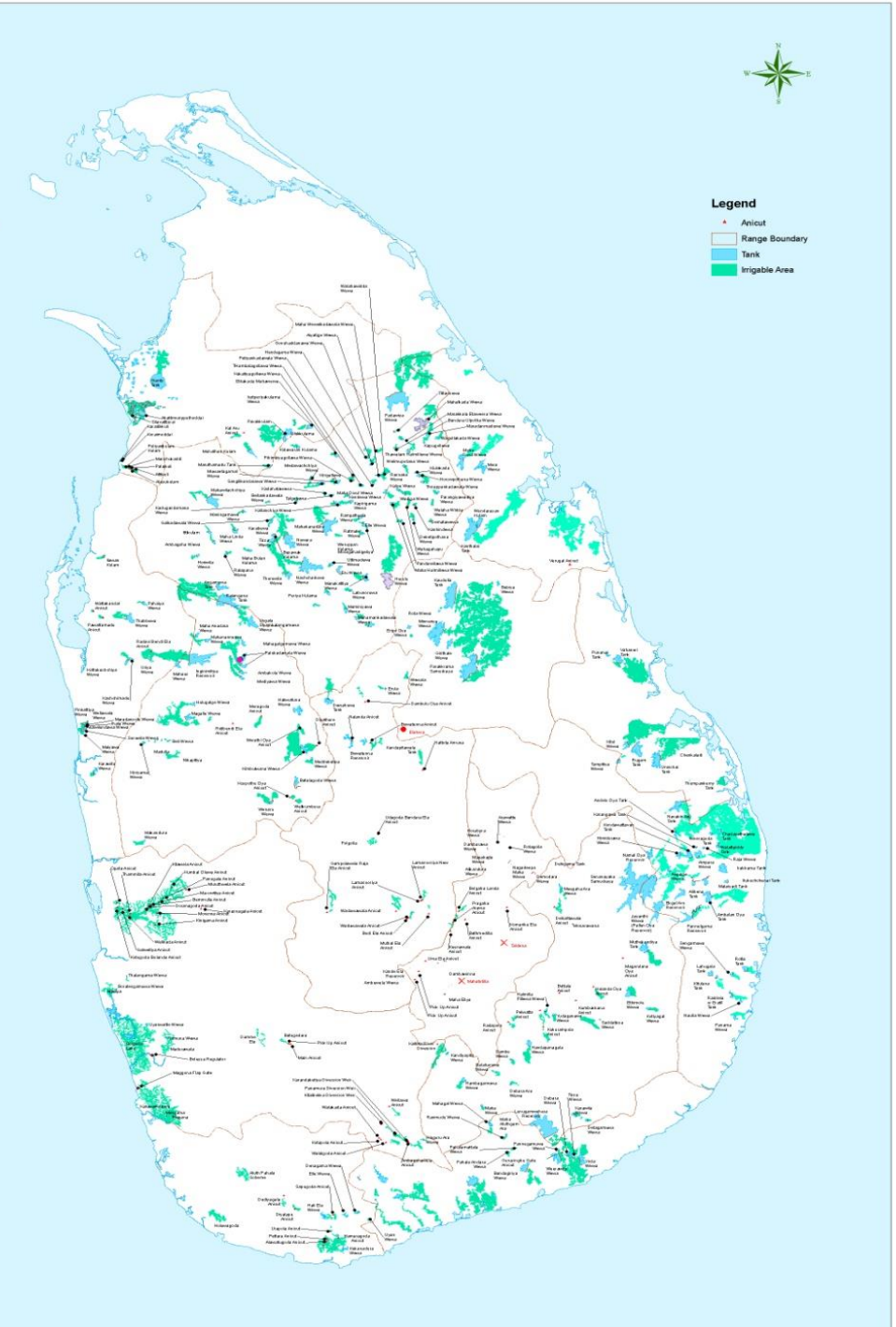
Irrigated Agriculture in Sri Lanka

- Irrigation Manage - 282,000 ha
- Mahawelli Manage - 100,000 ha
- Agrarian Development Department Manage - 257,000 ha
- Provincial Council - 39,000 ha
- Rainfed - 145,000 ha

Total - 823,000 ha

Schemes under the Purview of Irrigation Department

- No. of Majors schemes - 97
  - ✓ Reservoir - 73
  - ✓ Anicut - 24
- No. of Medium Schemes - 220



Irrigable Area around the Country under the Purview of Irrigation Department

Irrigation Department

- Irrigation Department manage;
  - Gravity Irrigation Schemes
    - 304 schemes (281,914 ha)
  - Lift Irrigation Schemes
    - 6 schemes (2,000 ha)
  - Flood Protection, Drainage & SWE Scheme
    - 62 schemes

Gravity Schemes Under Irrigation Department

- 320 km length of dams;
- 310 km of feeder canals;
- 2,820 km of main canals & branch canals;
- 2,600 km of distributary canals

Roads maintained by Irrigation Department

- Length of roads - 3,400 km

Maximum Crop Yield

The following factors play an important role in the photosynthesis process:

- ✓ CO_2 Concentration of the air
- ✓ Water availability
- ✓ Solar Radiation
- ✓ Temperature
- ✓ Crop characteristics

CROP YIELD

$$\left[1 - \frac{Y_a}{Y_m}\right] = k_y \left[1 - \frac{ET_a}{ET_m}\right]$$

Where as

Y_a – Actual Dry matter Yield

Y_m – Maximum Dry Matter Yield

ET_a – Actual Evapotranspiration

ET_m – Maximum Evapotranspiration

Water Distribution System

- Our Water Distribution is Imposed
- We prepare Prior Water Delivery Schedule (Seasonal Planning, Project Management Committee & Cultivation Meeting)
- Issue water according to the delivery schedule and in any case if there is a drought the Irrigation Interval is being increased during non sensitive period

Monitoring System

- The reservoir water levels monitored daily and website is updated
- The channel water level, reservoir water levels are monitored manually and gradually being automated

Future Challenges

- Presently the Water Requirement are based on past records of climatic condition. This should be enhanced by remote sensing method.
- Due to the Climate Change the Rainfall intensity increased and dry spell duration also increased. Due to this more water is unutilized during rainy period & cultivation and crop yield are decreased during dry period.

Future Challenges

- To improve efficiency of the distribution system cutting edge technology need to be adopted.

Thank You for Listening !