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# Operational Planning Process of Irrigation Department - Special focus to IWRM

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# Out line of presentation

- Water Resources Development
- Planning stage of Water resources Development Projects
- Planning & operation of Water resources Development Projects
- Competing demands among different sectors

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# Water Resources Development

- During British colonial period, Water Resources Development projects
  - Mainly for Irrigation
  - Some are for Hydro Power

- Highest capacity as a % of annual water availability in dry Zone
- Contributes to annual & temporal variations

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# Early 70's

- The major use been irrigation since 1970
- Irrigation Department (ID) was the major water resource agency till the 1970 's which handled almost all water resource related work such as
  - Irrigation
  - Flood protection
  - Drainage and reclamation and
  - Coast conservation works.

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# Level of Cooperation among Institutes

- Gradually new agencies were started
- Currently **ID** and **Mahaweli Authority of Sri Lanka (MASL)** are the two major water agencies operating.
- The **Water Resources Board** is responsible for Ground Water.
- Hydropower reservoirs are operated by the **Ceylon Electricity Board.**
- Supply of domestic water and industrial water comes within the purview of the **National Water Supply and Drainage Board.**
- Coast Conservation comes under the **Department of Coast Conservation**

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# Water Storages - ID

- Reservoirs/ Tanks
- 72 Major reservoirs & 160 medium tanks
- Capacity – 3680 MCM
- Anicuts
- Total irrigable extent 284,000 ha

# Reservoirs

- Multiple services of irrigation, hydropower, flood control, domestic water, industrial water, inland fisheries and environment.


Water buffalos still can be seen in rural areas


An aldury farmer in his paddy field


Life in a farming community

# Planning Stage of Projects

- At the time of planning different water resource development projects,
- Known demands are normally built into the project at the feasibility stage.
- For instance domestic, animal and other environmental or cultural needs are usually accommodated.
- It has been the policy to accommodate even the known industrial demands approved by the government.

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# Planning Stage of Projects

At the time of planning different water resource development projects,

- In normal practice irrigation projects are designed to make use of two thirds (2/3) of water yields
- Leaving the balance to cater for future demands.
- Rising living standards and improving economy, the nature and scope of such other demands have changed and are expected to change further in the future.

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# Planning & Operation

- Planning & Operation cannot be done without proper design
- Factors consider in Seasonal Planning
  - Available
  - Inflow
  - Demand

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# Seasonal Plans

- Seasonal Allocation decided at PMC; headed by District administrative head
- Representatives from
  - Custodian and Management agencies
  - Other related Government agencies
  - Water Users
  - Non agricultural uses

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# Implementation of agreed allocation Plan Factors taken into account ?

- Equity
- Efficiency
- Productivity
- Sustainability of the system
- Public safety
- Third party rights
- Any other national interest

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# Allocation Problems

- PMC meets regularly,
  - To monitor
  - To review
  - To decide any subsequent changes

- Drought Mechanism developed over time,
  - Bethma (sharing by farmers lands closer to reservoir)
  - Low water consuming crops
  - Local allocation rules, negotiations among farmers.

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# Climate Change & Variability

- Changes of Rainfall
  - Flash Floods & Droughts
  - Seasonal Operation & Flood Management
- Temperature increase
  - High Evaporation
- Sea Level rise

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# Competing demand

- Irrigation Projects developed in dry zone
  - 100% cropping during maha
  - 50% cropping during yala
- Population increase, 3rd & 4th generation
  - Agriculture is main livelihood
    - Increase area of cultivation
    - Increase cropping intensities
  - Both is essential to sustain communities
  - Conflict arise at times in sharing

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# Agriculture Vs Agriculture

Sharing Infrastructure & conflict between each user

- Hurulu Wewa Feeder canal
- System G & Giritale
- Minneriya , Kaudulla & Kantale
- Nachchaduwa & Nuwara wewa , Tissa wewa

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# Priority among Several Water use Sectors

- Weheragala Reservoir at Hambantota District across Menik Ganga
  - Water Supply
  - Environment
  - Cultural Use - Kataragama
  - Wild Life – Yala National Park
  - Agriculture

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# Irrigation Vs Domestic

- Sharing of Water Resources and Infrastructures
- Demand for domestic water is on the increase.
  - Emerging water related chronic diseases. Eg. CKD
  - Incomes going up
  - General improvement of quality of life demand

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# Irrigation Vs Domestic

- Sharing of Water Resources and Infrastructures - issues that needs attention
- Resulting operational complexities,
- Safety considerations,
- Coordination between agencies
- Conservation of water in irrigated agriculture are issues that needs attention

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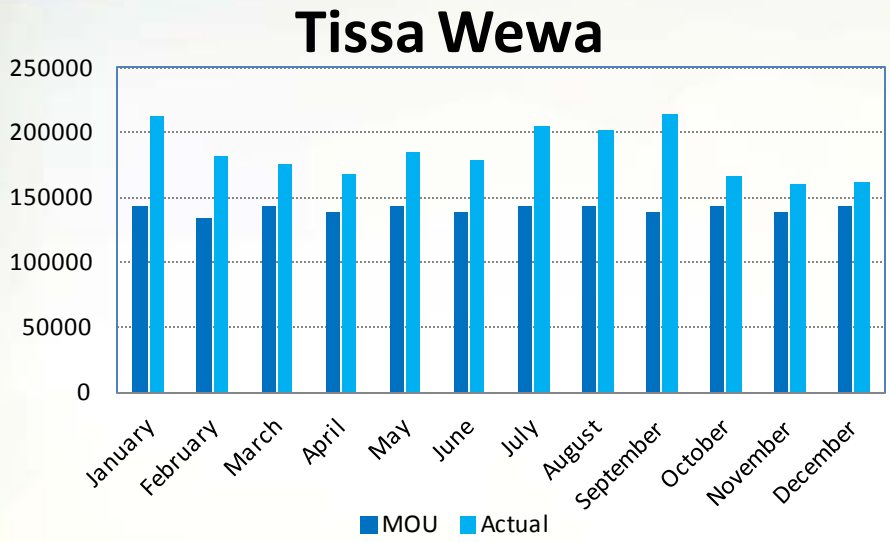
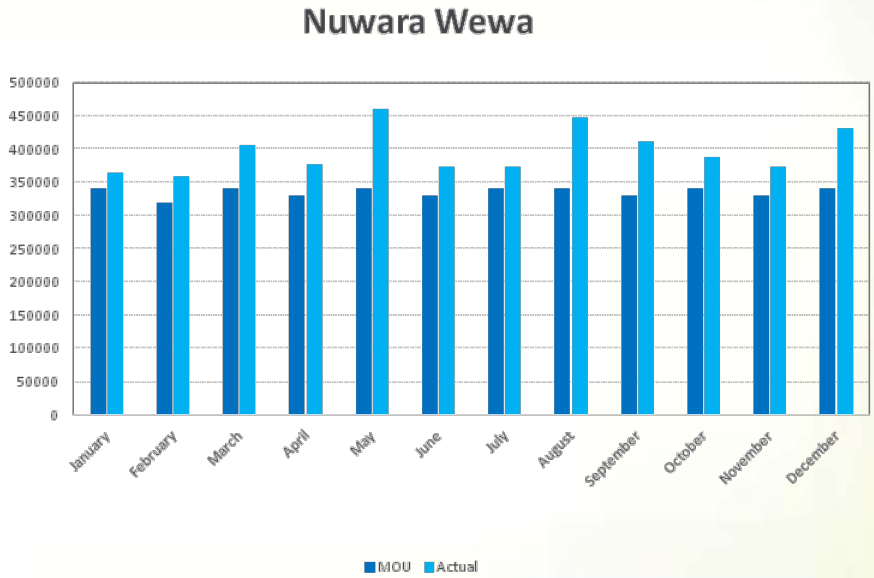
# Problems associated irrigation Vs Domestic

- Anuradhapura District; Eg Nuwara Wewa & Tissa Wewa
  - Mahaweli waters through a Feeder Canal,
  - Flows through a system of reservoirs and inter-connected conveyance system, to augment Nuwara Wewa & Tissa Wewa.
  - The NWSDB intended expansion of already existing facilities considering least cost option.

# Domestic Needs - 2012

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# Agriculture Vs Industries

- Water supply requirement for Industries
- Eg Hambantota Harbor & Airport from Ridiyagama Reservoir
  - Increase system efficiency
  - Fixed & Variable
- Latest industry – Agro Industry; Sugar

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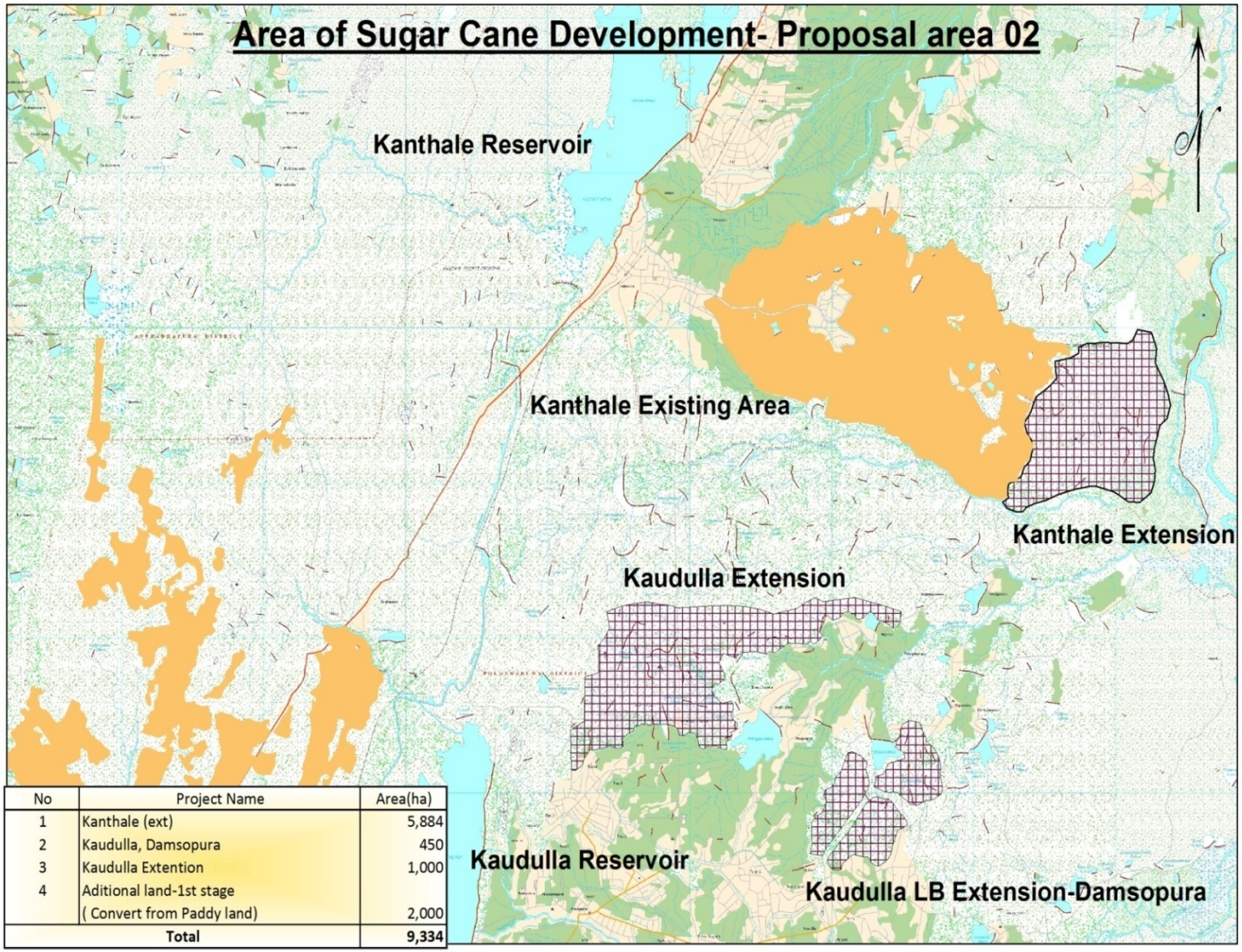
# Agriculture Vs Industries




| No | Project Name | Area(ha) |
|---|---|---|
| 1 | Kanthale (ext) | 5,884 |
| 2 | Kaudulla, Damsopura | 450 |
| 3 | Kaudulla Extention | 1,000 |
| 4 | Aditional land-1st stage ( Convert from Paddy land) | 2,000 |
| | **Total** | **9,334** |

# Demand Management

- Water Allocation; adhere to water issue calendar.
  - Land preparation period 3 weeks
  - Paddy varieties 3, 31/2 months
  - Crop diversification

- Reduce canal losses
- System modifications

- Not available agriculture- non pipe born water, every 10 days issues

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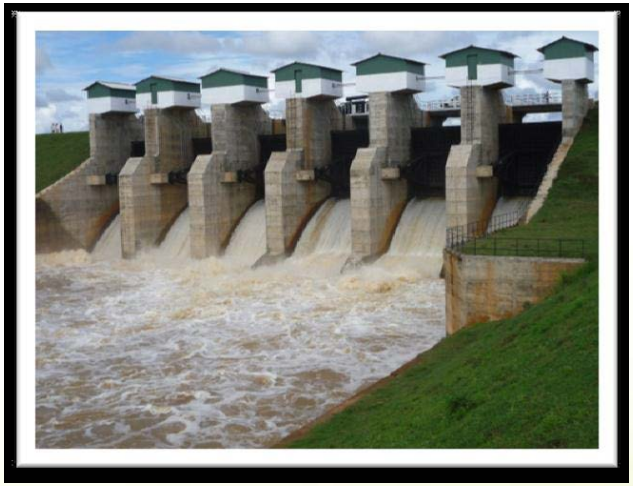
# Improving Supply Side

- Inter basin Diversions
  - Uma Oya, Deduru Oya
- New reservoirs
  - Yan Oya, Lower Malwatu Oya
- Storage increase existing reservoirs
  - Raising Spill



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Water Bodies not only
for human…..
For natural beauty
Protect eco systems