

The Importance of Ulu Muda Forest Reserve to MADA and National Food Security

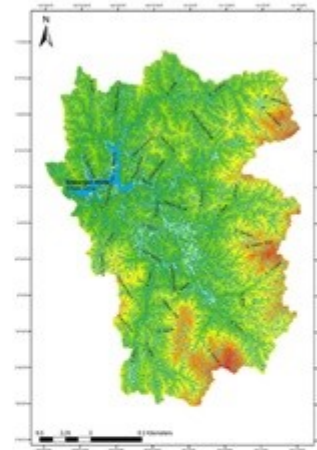
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INTRODUCTION OF MADA

- MADA is an agriculture based federal government agency that combines the function of Department of Irrigation and Drainage, Department of Agriculture and Farmers Organization Authority.
- MADA facilitates 57,635 registered farmers in Muda Area, the biggest rice granary area in Malaysia with the size of 130,282 ha, covering from northern Kedah until southern Perlis.
- Muda Area produces approximately 40% from the national rice production, thus very significant for our national food security.

MADA – THE DAM MANAGER

- MADA manages and operates 3 dams which are the Pedu Dam, Muda Dam and Ahning Dam.
- These 3 dams enable Muda Area farmers to plant paddy twice a year starting from 1970.
- Sir William Halcrow (1965), the design consultant for Muda Irrigation Plan, the initial name of MADA, already agreed that Muda river basin, which Ulu Muda is the heart of it, has abundance of water resources to support the plan.
- Muda dam (size 15 km²) collects water from Ulu Muda and transfers it using the 6.8 km long Saiong Tunnel to Pedu dam (size 52 km²) to store. The water will be released for Pedu dam into the MADA irrigation system.
- 8 water treatment plans in Kedah and 3 in Perlis are tapping their source from MADA irrigation system.
- Estimatedly 1.3 million people and most industries in northern Kedah and southern Perlis are depending on this resources.



ULU MUDA – THE CATCHMENT AREA FOR MUDA DAM

- The gazetted catchment area of Ulu Muda for Muda dam is 984 km² and the 5 main rivers that flow into the reservoir are Muda river, Teliang river, Che Song river, Nipis Kulit river and Terau river.
- Current research by NAHRIM, combining bathymetric survey, RUSLE equation, water sampling, lab testing and visual survey, shows that;

SEDIMENTATION

- The Muda reservoir volume reduced by **18.29%** from the initial design.
- From 2014 to 2020, the sedimentation rate for Muda dam is **1.94 million m³/year** and with the current condition, the life span of Muda dam is calculated at **65 years**.

WATER QUALITY AND ECOSYSTEM

- Muda dam is classified as **High Pollutant (HP)** due to human activities
- Muda dam is experiencing cultural eutrophication with the increasing dominance of **cyanobacteria**, harmful algal that may affect the lake ecosystem services.

PRESERVING ULU MUDA FOR ALL

- NAHRIM (2021) indicates, based on old data, approximately 8% of Ulu Muda forest has been cleared and WWF (2022) says around 10%.
- Subsequently, this causes sedimentation to Muda dam, decreasing the reservoir volume, thus making it spill more often and for a longer period.
- Muda dam is a concrete buttress dam with an overflow spillway and it has 204 cables anchored to the foundation.
- When Muda dam spill, the process of checking the cable load and stressing them back to the nominal load cannot be executed. This ultimately will result the dam to fail.
- Furthermore, when Muda dam spill, the water does not go into the MADA irrigation system and thus will be detrimental to the stakeholders.
- Therefore, MADA will continue to study how to mitigate the sedimentation issue in the Muda dam reservoir and at the same time work closely with the relevant authorities and NGOs to disseminate the information on how importance of preserving Ulu Muda Forest Reserve for the stakeholders.