Republic of the Union of Myanmar
Ministry of Agriculture and Irrigation

AGRICULTURE WATER

National Water Forum 2014, 21st October, MICC II, Nay Pyi Taw

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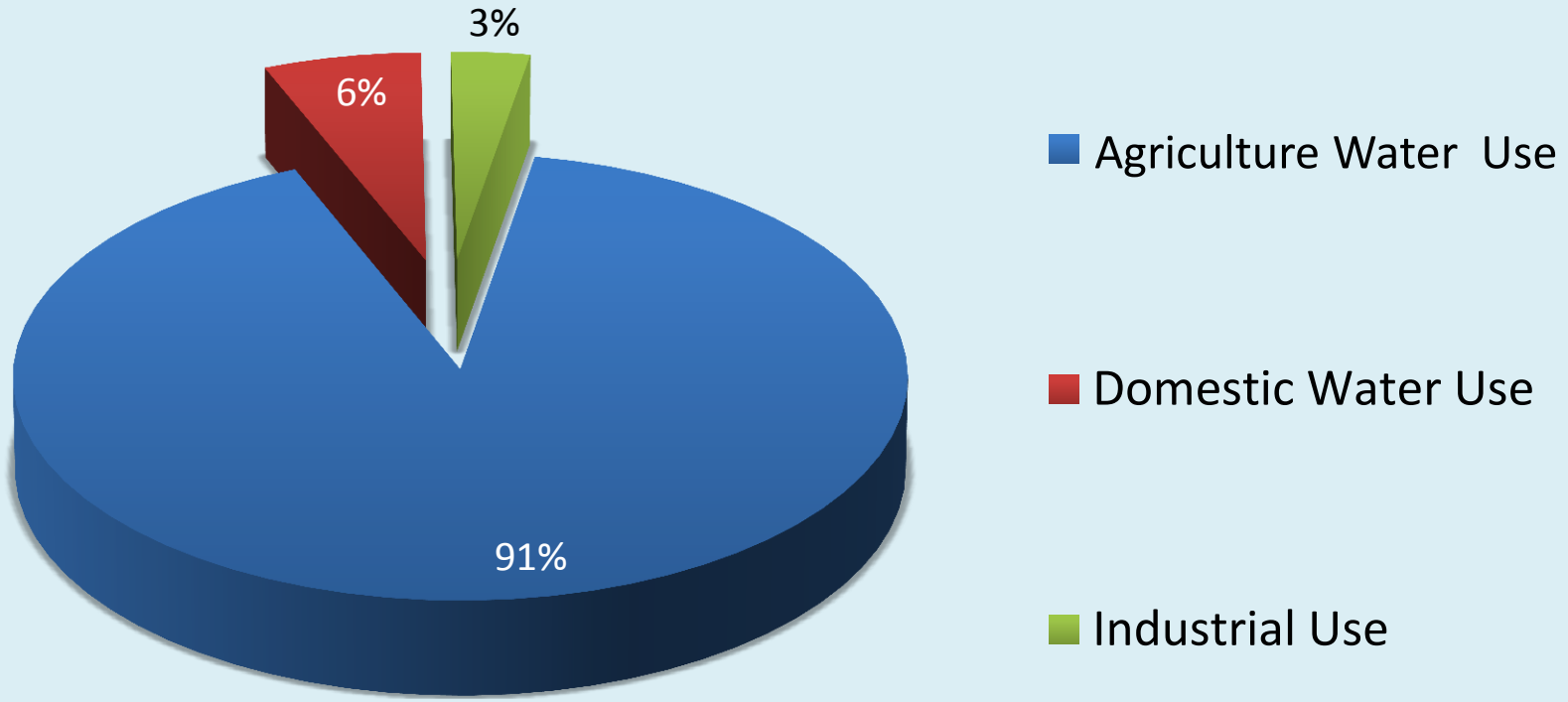


- **Myanmar : Agro- based Country and agriculture sector is the back bone of its economy**
- **Total utilization of nation's water at present is about 56 km^3 and that is only 5% of total water potential**
- **Mainly for agriculture sector and some smaller quantities for domestic use, industrial use and other purposes**

Water Resources and Status of Utilization

Dam

Weir

Barrages

Tanks

Sluice gates

- Land area 67.66 mill. ha
- Cultivable Land 17.52 mill. ha
- Population (2013-14) 51.42 mill.
- Cultivable land availability per person 0.34 ha
- Annual inflow of Water resources 1081.30 km^3
- Irrigated area under various means 2.13 mill. ha
- Annual utilization of water for cultivation 39.55 km^3
- Water availability per acre for whole of Myanmar 1.60 m
- Water availability for one acre of cultivable land 6.30 m
- Current percentage of annual usage of water for cultivation 6%

How to get Agriculture Water

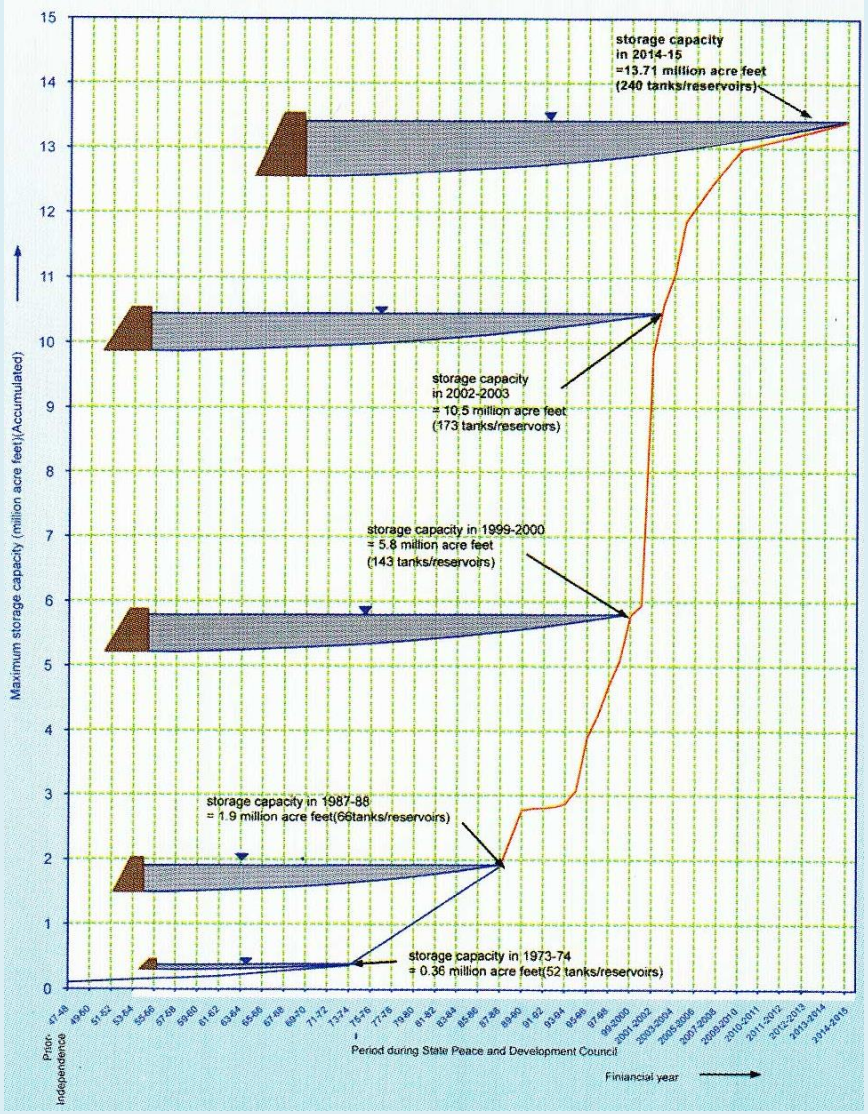
- It is estimated about 69% of surface / ground water, around the globe, is consumed as the agriculture water (FAO, 2002)
- Agriculture water can not get sufficiently from rainwater in some part of the country
- Irrigation water has to be supplemented as agriculture water
- Irrigation water come from surface water/river water as well as ground water
- Surface water - Irrigation Department (ID)
- River water and Ground water - Water Resources Utilization Department (WRUD)

Surface Water as Agriculture Water

- **Irrigation Department**
  - Water resources development: Storage reservoirs
  - Irrigation network system development

Year	Storage Reservoirs	Irrigated Area (ha)
Myanmar Kings' era to 1961 ~ 1962	69	345,315
1961 ~ 1962 to 1988~1989	69	195,430
1988 ~1989 to 2014 September	240	1,154,897
Total	**378**	**1,695,642**

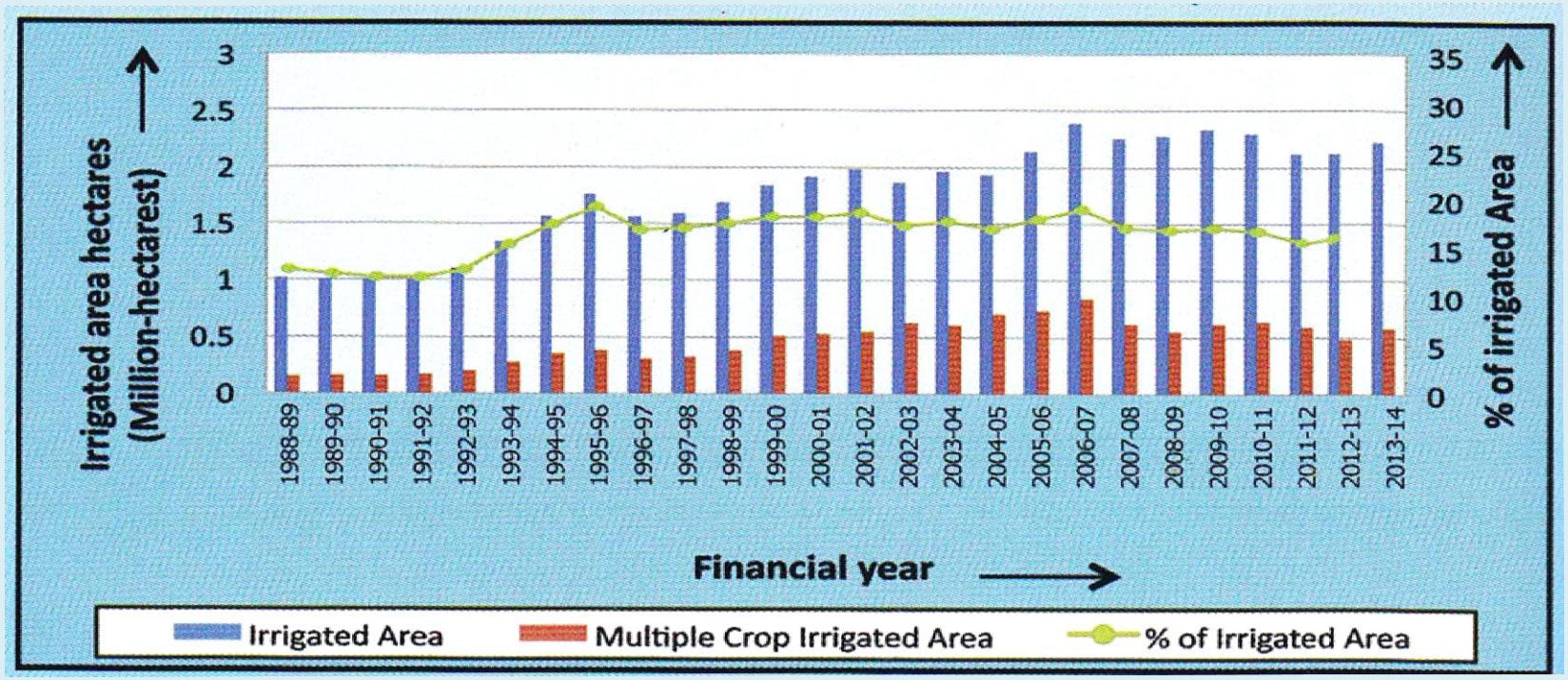
Increase in Storage Capacity of Dams and Tanks



Sr. No.	Particulars	Tanks/ Reservoirs (No.)	Storage Capacity (MCM)
1	Completed Tanks/ Reservoirs before 1988	138	2333.70
2	Completed Tanks/ Reservoirs between 1988 and 2014	240	16905.16
3	Construction works started for completion by 2015-16	11	2043.69
	Total	389	21282.55

MCM- million cubic meters

Irrigated Area and Multiple Cropping in Irrigated Areas



Year (2013-2014)

Net sown area	- 13.26 million ha
Irrigated area	- 2.13 million ha
Multiple crop	- 0.58 million ha
% of irrigated area	- 27%

River Water as Agriculture Water

- **Water Resources Utilization Department**
  - River water : Pumping stations
  - Canal network system development

Completed, Ongoing and Planned River Water Pumping Projects on various rivers								
Name of River	Ayeyar-wady	Chin-dwin	Than-lwin	Sit-taung	Mu	Dokehta-wady	Others	Total
No. of Projects	86	22	6	29	24	27	196	390
Command Area (ha.)	118794	39358	3474	11150	13072	7632	109280	302760

Ground Water as Agriculture Water

- **Water Resources Utilization Department**
  - Ground water resources development: Tube wells
  - Canal network system development

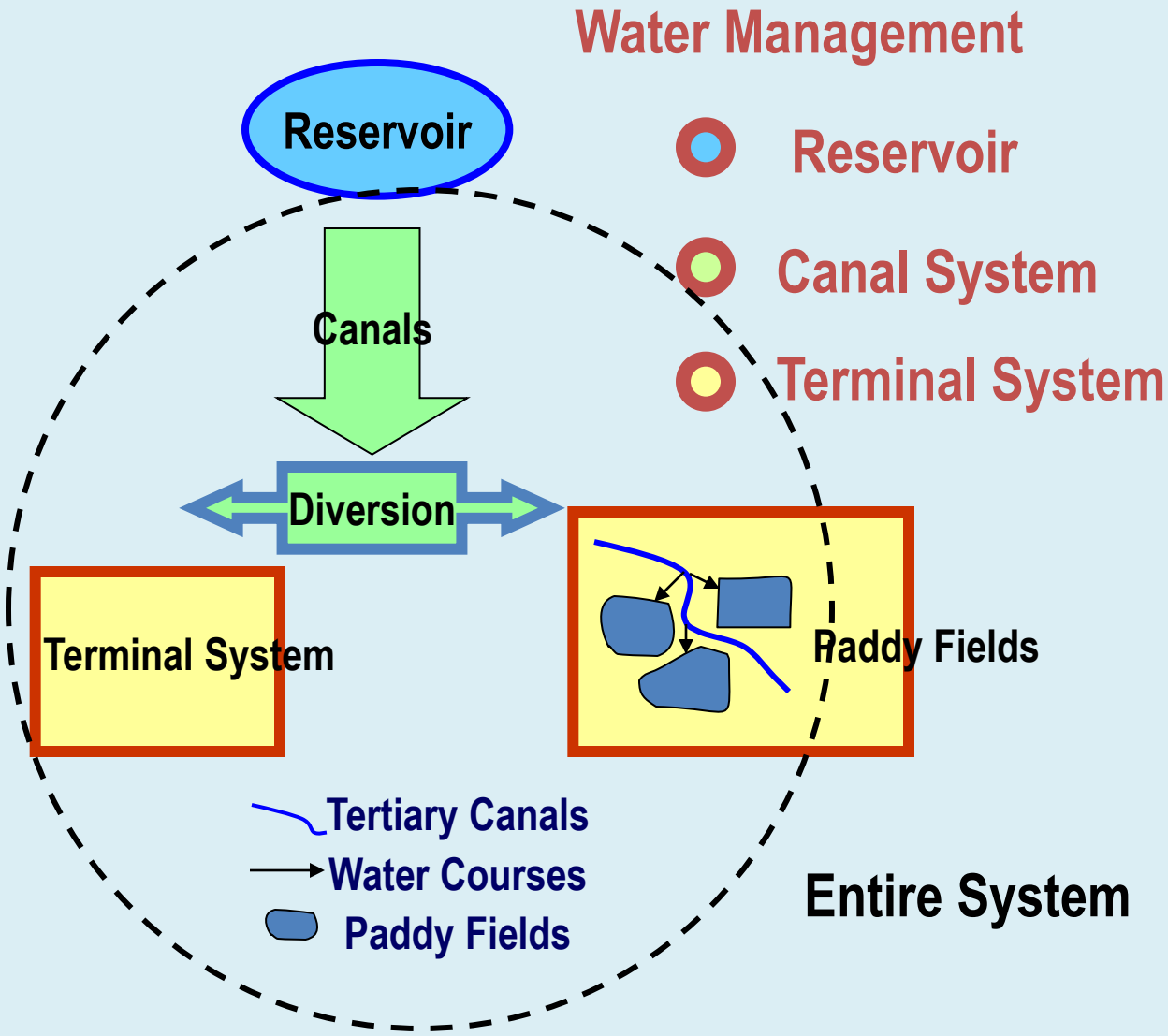
Sr	Description	Pump Irrigation		Ground Water		Total	
		No.	Hectare	No.	Hectare	No.	Hectare
1	Completed	332	204264	12508	66597	12840	270861
2	On Going	35	95700	2114	8809	2149	104509
3	Planned	23	2796	6307	25779	6330	28575
Total		**390**	**302760**	**20929**	**101185**	**21319**	**403945**

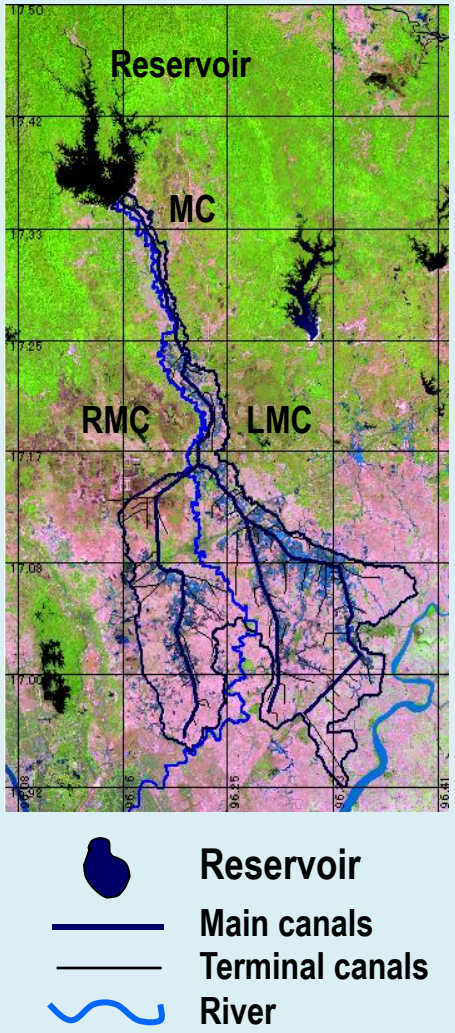
Water Management for Agriculture Water

- It is termed as Irrigation Water Management
- It means effective and efficient management of irrigation water use
- It can be achieved by managing coordinated efforts between water providers and water users (supply and demand management)

- **Necessary to know the most important parameter *Effective Irrigation Area* for estimating *Irrigation Water Requirement* and *Irrigation Efficiency***

Water Management in an Irrigation System



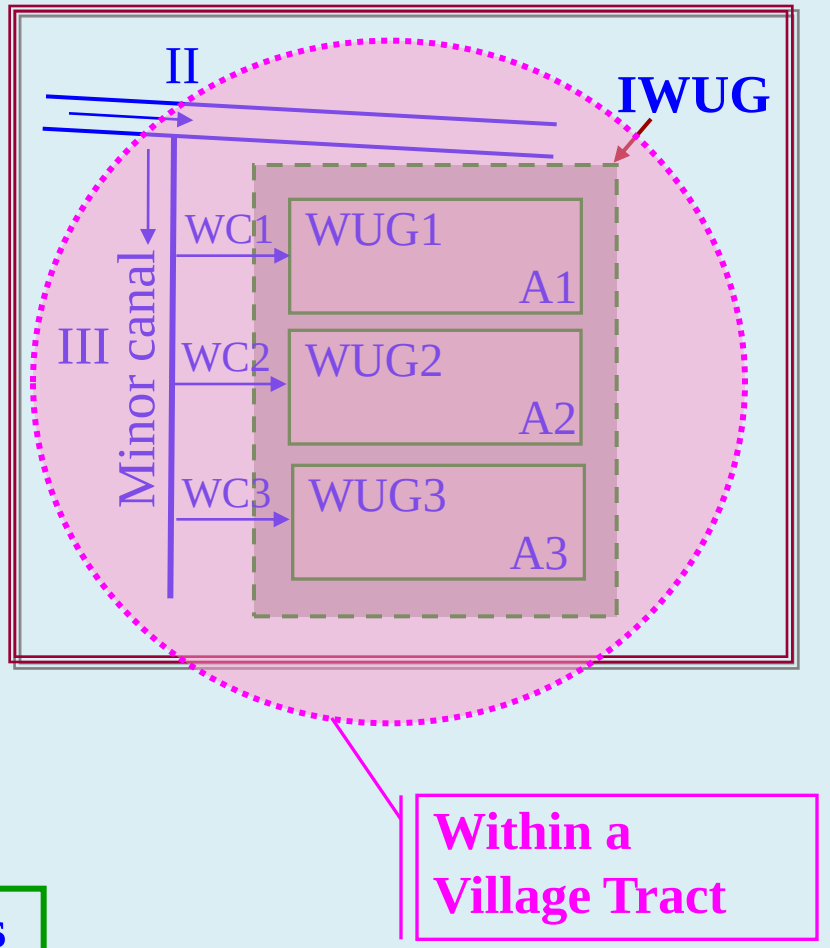


➢ **Role of Farmers (Water Users)**

- Formation of Groups at WCs
- Formation of a Group at Minor

- Operation and Maintenance
- Drive/control farmers to keep/follow the methods/rules
- Collection of the fees associated with using irrigation water

Get water equally & Control water loss



➢ A Group of Water Users at Minor Canal is very essential/effective and it is better to organize both the system and the group **within a same village tract**

Irrigation Water Management in Myanmar

- Irrigation systems in Central Myanmar had regulations and good practice for systematic management
- During the colonial period, traditional rules and regulations were strengthened
- Most of old irrigation systems in Central Myanmar have farmer groups for irrigation
- The newly implemented irrigation projects are copied from the management system of neighboring systems

Irrigation Water Management in Myanmar

- Irrigable area in lower Myanmar is less than 8,000 hectares in 1960s and increased to 40,000 hectares in 1980s and 596,000 hectares in 2008
- The farmers do not understand their role in irrigation management and importance of irrigation system in their livelihood
- Irrigation managers used to organize the water user groups or canal committee yearly but the farmers do not participate in any movement
- It can be clarified that 'the irrigation system management is not perfect without the on-farm irrigation management by farmers'
- It is started to introduce Participatory Irrigation Management (PIM) and Irrigation Management Transfer (IMT) practices in the country

Constraints in Surface Water/River Water Irrigation Development

- For many irrigation projects, water becomes a limiting factor for development
- **Physical Constraints :**

  - Poor maintenance and inadequate water control structures
- **Institutional Constraints:**

  - Inadequate data base for planning
  - Inadequate institutional capacity and mechanisms for integrated irrigation projects planning and development; design mistakes; poor quality of construction;
  - Inadequate and fragmented irrigated agriculture support services
  - Intractability of many of the interrelated socio-economic, institutional and technical aspects of managing medium and large irrigation systems
  - Public sector monopoly, weakness in the government agencies, minimal farmer participation
- **Financial and Economic Constraints:**

  - Inadequate cost recovery and provisions for operation and maintenance, poor incentive structures

Constraints in Ground Water Development

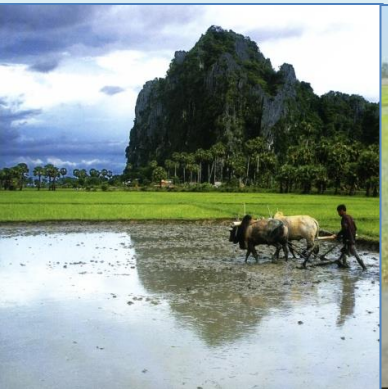
- In Groundwater Development, it was conducted by our own resources and technology and so we cannot make the efforts on groundwater monitoring and management works.
- Limited budget
- Insufficient human resources (skilled persons in the field of groundwater professional)
- Insufficient proper technology in groundwater hydrology
- Limited groundwater survey equipments, exploration machines and monitoring equipments
- Weak in country wise data compilation and data sharing
- Need to establish groundwater act/law for proper management
- Ground water potential
- Water quality

Linkage between Agriculture Water Supply (Irrigation) and Poverty Alleviation

- Irrigation **infrastructure** improvement
- Development in irrigation **water management** and allocation
- To improve **quality** of irrigation water
- Enhance irrigation **technology**
- Selection of appropriate **cropping pattern**
- Installation of **micro-hydro power** generation plants along the irrigation canals
- Participating in the land reform process for establishment of **mechanized farming**

Importance of Agriculture Water

- Water and Food Nexus
- Impact on Water and Food Security
- Impact on Poverty Alleviation
- Impact on Sustainable Development of the Country
- It is essential to promote Agriculture Water Development and Management activities in parallel with multi-stakeholder involvement




Conclusions

- Myanmar is primarily an agricultural country. It has been endowed with an abundance of land and water resources and also with adequate manpower.
- As agriculture remains pivotal for the overall economic development of the nation, the State has been rendering all-out assistance and strong support from all perspectives for its enhancement.
- ID and WRUD under MOAI has diligently conformed to the State's objectives with the construction of new infrastructures, and maintenance and efficient operation of the existing irrigation facilities.
- Both Departments has also in addition, and as one of its main tasks, been actively engaged in water development planning, and the furtherance of irrigation for food security.

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