



## 6<sup>th</sup>. NARBO General Meeting

### “RBO experience in Myanmar: Community–based practice”

24<sup>th</sup> , Feb. 2017

By:

*Prof. Dr.Swe Swe Aye, Chairperson of ARBRO, Member AAG / NWRC*

*Venue: Century Park Hotel*

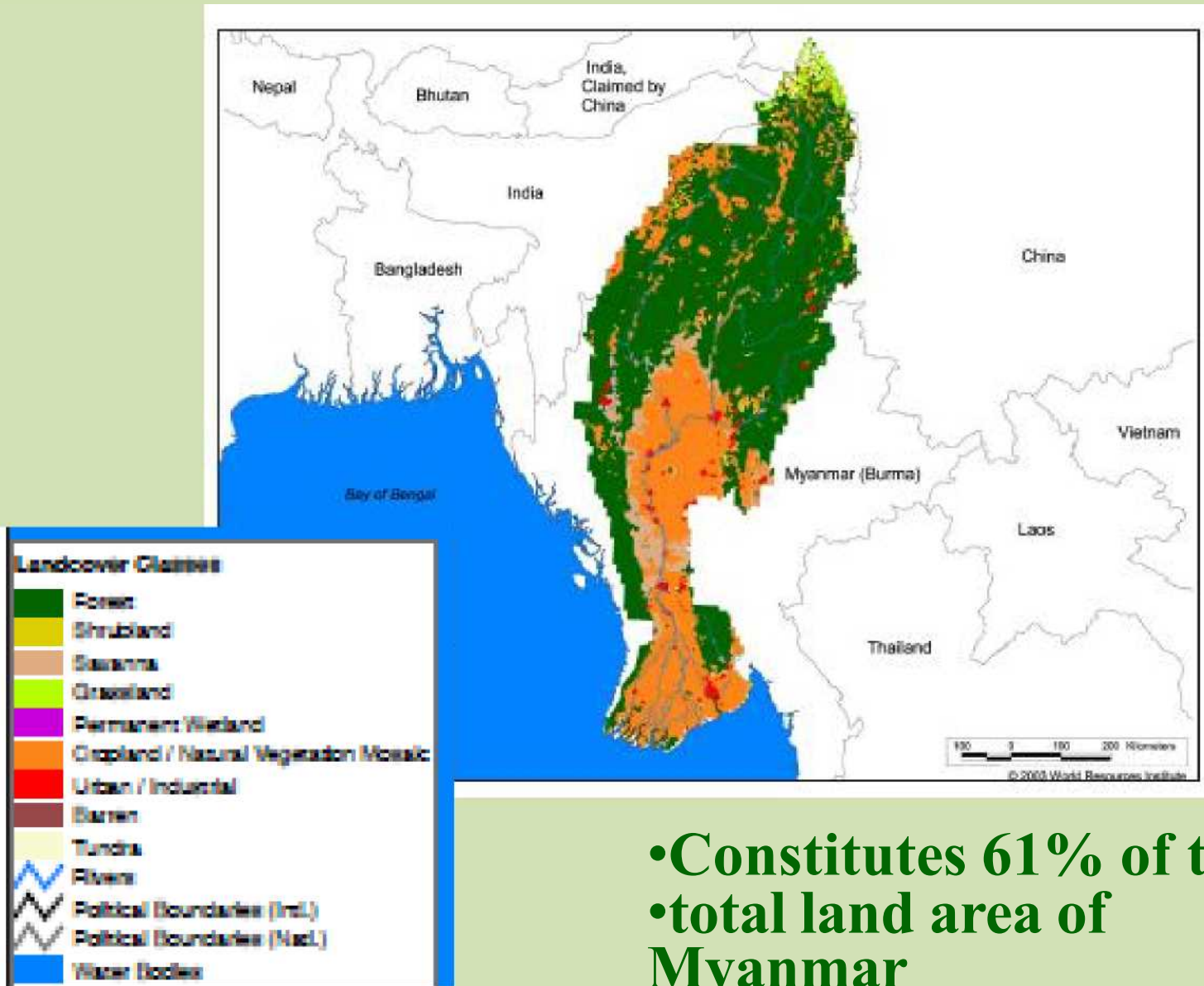
*Jakarta, Indonesia*

# •Myanmar Overview

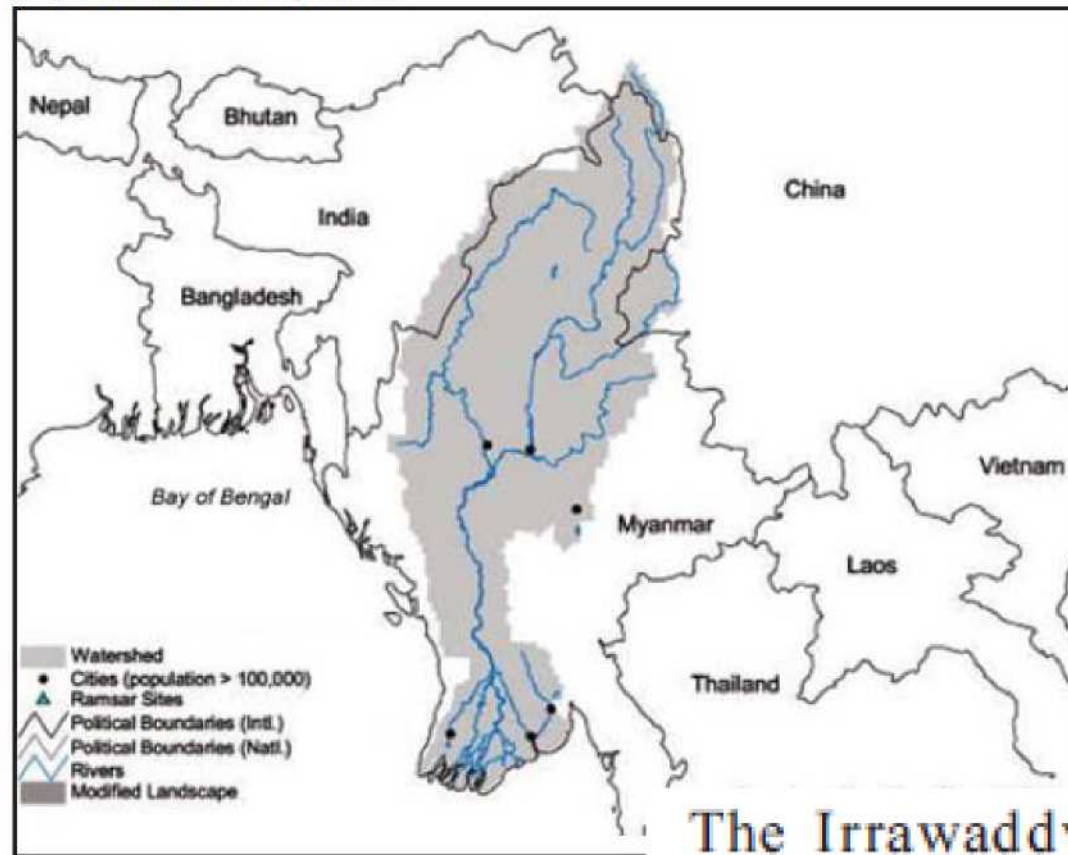


- **Location:** 9° 32' N & 28 ° 31' N, 92 ° 10' and 101 ° 11'E
- Land area - 677,000 Sq Km
- Administratively divided into 7 Regions &
- 7 States – **Population 62 million**
- Agriculture based country (40.2 % of •GDP)\*
- Tropical climate with three seasons
  - ☐ **Rainy season (mid-May to mid-Oct.)** ☐
  - Winter season (mid-Oct. to mid-Feb.)** ☐
  - Summer season (mid-Feb. to mid-May)**
- Large variation in average precipitation
  - ☐ **Coastal (4000 mm to 5600 mm)**
  - ☐ **Central dry zone (600 mm to 1400 mm)**

# •Ayeyarwady River Basin



**Map: The Irrawaddy Basin**



© EarthTrends 2002 World Resources Institute

•Source: Damming the Irrawaddy

The Irrawaddy River flows through the heartlands of Myanmar. The river's basin is 413,674 square kilometers, covering a remarkable 61% of Myanmar's total area.<sup>13</sup> At approximately 2,170 kilometers long, it is Burma's most important commercial waterway.

# •Water in Myanmar

## •Water use distribution in 2009

•Domestic use 6.0 %

•Industry use 3.1 %

•Agriculture use 90.9 %

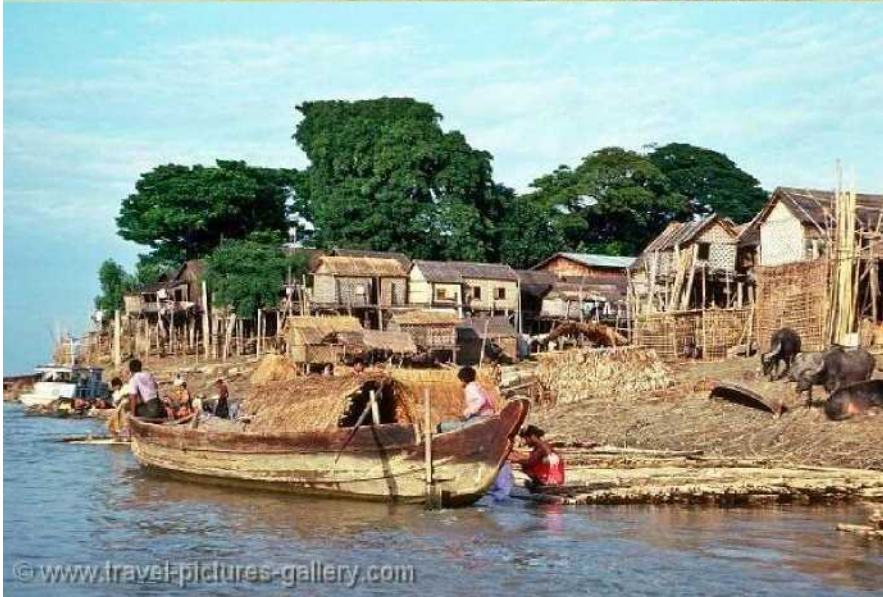
•Industrial water use will be increased by the further

•economic developments.

# AYEYARWADY



••



## •Livelihood along the river and in the delta

- Many people lost their livelihood along the river due to
  - uncontrolled gold mining in the upper reach, flood, bank erosion,
  - sedimentation, serious pollution and cyclones and other water-related disasters in the delta
- Water availability decreased
- Navigability is limited
- In the delta area peoples suffer from the extreme weather
  - conditions caused by Climate Change and a lack of land rights.
- Private fish and shrimp farms and deforestation have destroyed
  - the environment to such an extent that the Ayeyarwady fresh-
  - water ecosystem becomes “bleak.”



# •Physical characteristics

- **The Irrawaddy River flows through the heartlands of Myanmar.**
- The river's basin is 413,674 square kilometers.
- It covers a remarkable 61% of <sup>Burma's</sup><sub>Myanmar's</sub> total area.
- **Approximately 2,170 kilometers long.**
- **26 million peoples living in the basin area**
- **It is the most important commercial waterway of the country.**

## •Physical characteristics (Contd.)

- Downstream, the river empties into the Andaman Sea through a nine-armed delta.
- The delta consists of a large and fertile plain that is 290 km long and 240 km wide.
- The lower part of the delta is a fragile and intricate ecosystem of mangrove swamps and tidal estuaries.
- The delta supports a population of over three million people and provides nearly 60% of Myanmar's total rice production.

## •Biodiversity of the Irrawaddy River

- According to the UNEP - World Conservation Monitoring Centre, the Irrawaddy is:
  - □ one of the world's top 30 high priority river basins
  - □ due to (i) its support of high biodiversity and (ii) high
    - vulnerability to future pressures
- Irrawaddy is home to 79 known fish species
- As of 2002 there were four known endemic bird areas in the
  - basin
- The biodiversity of the river is still not well studied
- A new species of hill stream catfish was discovered in 2005
- The fifth most heavily silted river in the world.

## **•Biodiversity of the Irrawaddy River (Contd.)**

- **Near Mandalay the river is habitat to the**
  - **critically endangered Irrawaddy Dolphin.**
- **Orcaella brevirostris is one of only four species**
  - **of river dolphins in the world.**
- **However, the dolphins' habitat in the**
  - **Irrawaddy has declined nearly 60% in the last**
    - **century.**
- **The best estimate of the current population is**
  - **just 59 individuals.**

# **•Land Cover and Use Variables •in the Ayeyarwady River Basin Area**

- Percent Forest Cover: 25**
- Percent Grassland, Savanna and Shrubland: 9.7**
- Percent Wetland: 6.3**
- Percent Cropland: 3.4**
- Percent Dryland Area: 4.4**
- Percent Urban and Industrial Area: 1.9**
- Percent Loss of original Forest Cover: 60.9**

## ISSUES

- ❖ Ayeyarwady River Basin faces rapid development initiatives. Especially the business driven economic developments – “Gold Rush” .
- ❖ Ayeyarwady River Basin passes through 2170 km from North to South. It has 46 constraints and very difficult for navigation. To get reliable data is a challenge.
- ❖ Sediment transportation due to bank erosion, sheet erosion and deforestation is the major obstacle for any water resources development project. Need bank protection measures.

# •Key Issues

1. Household Water Security
  2. Economic Water Security
  3. Urban Water Security
  4. Environmental Water Security
  5. Resilience to Water-Related Disasters
  6. Planning for Ayeyarwady River Basin
- Development (Integrated Approach)

## • *Dams, Navigability and Bridges*

### • Indicators: In the past ©® At present © ®

- Ships can navigate up to Homelin © ®
- Livelihood along the Ayeyarwady River © ®
- Water transport © ®
- River water **quality** and quantity © ® (**serious pollution!**)
- Laws, Acts and Regulations (?)
- Law enforcement (?)
- Dams are controversial – see IHP guidelines, WCD report,
  - etc.
- Peoples participation and awareness ® ©
- **Not too late to begin the rehabilitation process!**



- CHALLENGES for Myanmar

- 1. To ensure water security , water-related disaster risk reduction
- Good water governance, sustainable development and
- acceleration of the promotion of green economy and green growth thro
- IWRM PRACTICES ;
- SINCE IWRM planning and implementation has to
- adhere to the general socio-economic concepts and criteria as
- formulated by the Gov.; in which the concepts relevant for Myanmar are:
  - Equity for the benefit of the people
  - Poverty alleviation
  - Sustainable economic development and green growth etc.

- ❖ Hydropower potential in the basin is enormous. Piece-wise approach to develop hydropower will kill the river basin. Integrated Basin Development Plan advocated.
- ❖ IWRM promotion is very remote at present. Need intensive capacity building at all levels for meaningful participation from all stakeholders.

## ❖ Fundamental Elements of IWRM

- i. The enabling environment (not exist until Feb 2013)
- ii. Institutional Roles (to be improved)
- iii. Management Instruments (underway)

## **•Priorities in Myanmar**

### **•1.Erosion and Flood Control as people**

**•living along the main rivers is characterized**

**•by recurrent disaster, caused by annual**

**•monsoon flooding and unpredictable local burst**

**•of often substantial riverbank erosion.**

### **2. Getting the Myanmar river healthier, water**

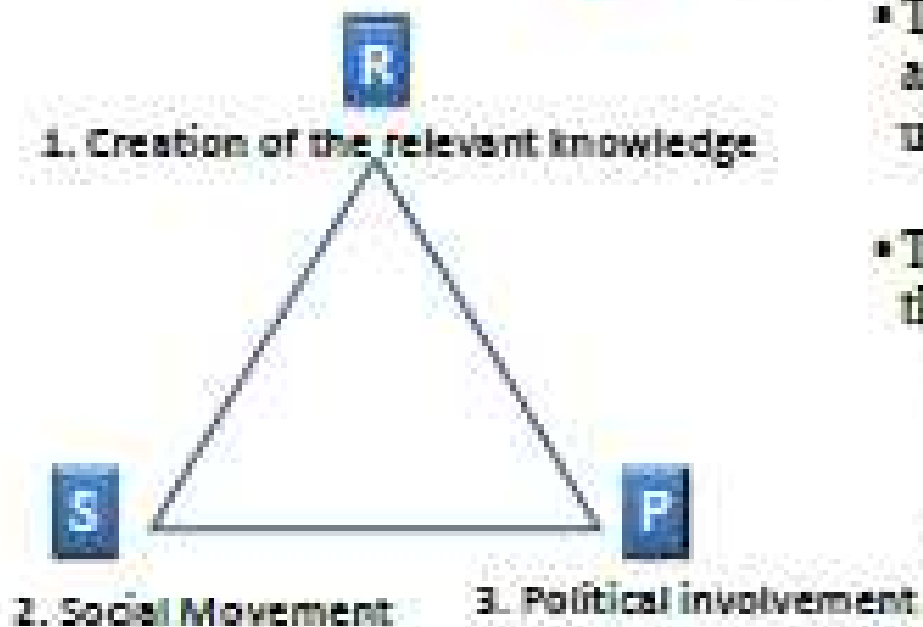
**•cleaner and accessible to all Communities**

### **1. Getting green economy and green growth shortly**

## **•ASPERATIONS AND AIMS**

- Myanmar changes rapidly**
- and the direction of political and socio-eco will**
- change accordingly;**
- As such, our ambition for a people centered**
- development aiming at a stable livelihood and a**
- green economy ; achieving good qualities and**
- quantities status of all water bodies**
- Within Myanmar shortly ( max ten years).**

## Our Approach



- The Mountain means a big and very difficult problem, usually unmovable.
- The Triangle, as illustrated in the Figure beside, consists of:
  - 1) Creation of relevant knowledge through research,
  - 2) Social movement or social learning, and
  - 3) Political involvement

This process is desirable in Myanmar to generate meaningful Public Policies.

## Our Main Activity:

Advocacy, Awareness and Implementation of IWRM

Understanding  
challenges and  
pressing issues in  
the Myanmar  
Water Sector

Training of the  
trainers by  
MANGO interns

Identifying  
priorities for  
feasibility studies

Policy  
recommendations  
& suggested  
initiatives

## Action Plan

*Rain Water Harvesting is the answer for healthy river basin with plenty of water – calling for national rain water harvesting campaign since March 2013!*

*Activities in the light of adaptation to the Climate Change*

*-Research Network => on going => 110+ members*

*-River Modeling Centre => to be established*

*•Data Bank => verify, collect, generate*

*•Knowledge Bank => Training Groups*

*•Research Groups => GIS & RS Groups*

*•Survey Groups => Water quality Groups*

*•Modeling Groups => Civil Society Coordination*

*People – centred government participated ARBRO*





**Ayeyarwady Delta, Rice Granary of Myanmar**

**Rain Water Harvesting Campaign (since 2013)**

**Wish to mobilize as a National Campaign**



**Sand Dam / Underground Dam – one of the rain water harvesting technologies suitable for Dry Zone in Myanmar**

# **•About ARBRO**

- **Integrated Water Resources Management (IWRM) is recognized**
  - **by many as the paradigm for establishing good water governance**
  - **and putting water resources on the recovery path.**
- **The Ayeyarwaddy River Basin Research Organizations (ARBRO)**
  - **was established on 10 May 2012 to share knowledge and build**
  - **capacity for IWRM in Ayeyarwaddy River Basin and other three**
  - **major basins in Myanmar.**
- **4 Major River Basins in Myanmar are: Ayeyarwaddy, Chindwin,**
  - **Sittaung and Thanlwin.**
- **Registered under the Myanmar Law – recommended by the**
  - **Directorate of Water Resources and Improvement of River**
  - **Systems, Ministry of Transport 1 18**

•WRTC (since 1997)  
•(2003) Go to Myanmar



- **ARBRO contributes to the making of Good Water**
  - **Governance in Myanmar by complementing the**
  - **Government's efforts in this direction**
- **The role of ARBRO is very important to enhancing the**
  - **actions to improve IWRM, to create enabling environment,**
  - **and to create river basin organizations for other major river**
  - **basins in Myanmar**
- **Currently 115 Members joined ARBRO, initiated by women**
  - **water professionals together with male water Professionals**
  - **joined in ARBRO**
- **Ayeyarwady River Basin Research Organization (ARBRO)**
  - **has joined the Network of Asian River Basin Organizations**
  - **(NARBO) in May, 2012.**

- The first Public Consultative Meeting held on 9 Feb 2013 at Royal
- Rose in Yangon
  
- The second meeting held on second week of September 2013 at
- Royal Rose in Yangon
  
- World Water Day Celebration on 19<sup>th</sup>. Feb 2014 at MES.
  
- The Third meeting held on 24<sup>th</sup>. Feb 2014 as a joint IWRM
- seminar between **ARBRO** & JWA of NARBO at Mi Casa Hotel.
  
- Today's workshop of River Basin Management with Science &
- Technology , held in Nay Pyi Daw, jointly organized by JICA-JST
- SATREPS (Uni of Tokyo & YTU), NARBO, MOT, Myanmar
  
- The fourth meeting of ARBRO scheduled for 7 Dec. 2014 in
- Yangon.

## •Planning for Ayeyarwady River Basin Development •(Contd.)

•**ARBRO is a multi-stakeholders platform also.**

•*Organizational Plan in the light of adaptation to*

•*the Climate Change: –*

- Research Network – on going – **110+ members**
- **Natural science + Social science Research Work**
- **River Modeling Centre – to be established**
  - Data Bank – verify, collect, generate
  - Knowledge Bank - Training Groups – Media – Public Speakers
  - Research Groups - GIS & RS Group
  - Survey Groups - Water quality Groups
  - Modeling Groups - Civil Society Coordination – Action Research

# •Planning for Ayeyarwady River Basin

## •Development

### •Geographical Divisions for Development

#### 1. Upper Reach

#### 2. Middle Reach

#### 3. Delta – lower reach

#### •Information note on Delta:

- In the year 1980 master plan for "Ayeyarwaddy Basin Integrated Agricultural Development " was studied with the assistant from JICA in the delta area.
- The studied covered 17 dam projects on the left side of the delta and 16 dam projects on the right of the delta. Between 1988 and 2007, 15 dam projects on the left side were implemented to cover 186,100 ha and on the right 8 dam projects were implemented and irrigated about 21,900 ha.



# •Sectoral Components •and Approaches

## •Multi-sectoral approach:

- Agriculture and Irrigation (MOAI)
- Water Resources and Improvement of the River Systems (MoT)
- Hydro-power development (Ministry of Electrical Power No.I)
- Fishery (MoLF)
- Water Conservation and Utilisation (MOAI)
- Finance (Ministry of Finance and Revenue)
- Planning (Ministry of Planning)
- Environment (Ministry of Environmental Conservation and Forestry)
- Education (MoE, MoT and MOST)
- Transboundary issues (MOFA)
- Civil Society Organisations

## •Trans-sectoral approach:

- Effective Institutional Framework
- Water Resources Ministry

- Climate Change Factor
- Data Bank
- Research Network

# •Approach for Ayeyarwady River Basin Development

## •Approach

- Integrated River Basin Management Approach
  - (Trans-sectoral approach)

## •Tools

- Institutional Framework - River Basin Organization under the
  - auspices of National Water Resources Committee (NWRC) –
  - ongoing discussions
- Integrated Water Resources Management (IWRM)

## •Geographical and hydrological divisions

- Sub-basins and 3 geographical segments
- Upper Reach – Middle Reach (Dry Zone) – Delta

## •ARBRO ACTIVITIES



•First Public Consultative Meeting-ARBRO, Feb 2013



- ARBRO Members and the audience interacting
- with ARBRO Founder Prof. Dr. Khin Ni Ni Their



•Second Public Consultative Meeting-ARBRO, Sept 2013



- **Third Public Consultative Meeting-ARBRO**

- (A joint IWRM seminar with JWA of NARBO)



**•ARBRO participated in Case Study 3: MEKONG BASIN**

**•on 7th September 2014**

**•the Royal Theatre,**

**•17th International River Symposium, in Canberra.**



- Mekong Delegations,
- Canberra

- 17<sup>th</sup> International River Basin
- Symposium held in Canberra,
- Australia (13- 17 Sept 2014)







•Panel Discussion of the River Symposium, Canberra 35

- Write Shop
- At the WLE
- Project,
- Vientiane,
- Laos.



# WATER LAND & ECO SYSTEMS (WLE-MK30)



## **CAPACITY BUILDING PROGRAMME :**

**Inclusive governance and management of water and ecosystem services in the Ayeyarwady River Basin**

# Organizations and funding

- Project lead
- Myanmar coordinator
- Government partner
- Support
  
- Trainers
- International network
  
- Donor CGIAR, WLE programme (2015-2017)



Greater MEKONG

## **Why this Fellowship Programme?**

Water is high on the agenda in Myanmar. The Ayeyarwady WLE fellowship programme aims to build a group of mid-level professionals to contribute to Ayeyarwady river basin management. The programme will pay ample attention to enhancing fellow's personal skills including presenting, cooperation and debating skills.

## **Objectives**

- ✓ Demonstrate an improved understanding of key Ayeyarwady river basin management issues, challenges, and their causes.
- ✓ Reflect on the application of the concepts learned through a selected project, understand the specific project context including its institutional setting, and can propose improvements to support more integrated approaches.
- ✓ Present and defend ideas, use skills for critical thinking as well as enhance cooperation and coordination between stakeholders with different backgrounds.

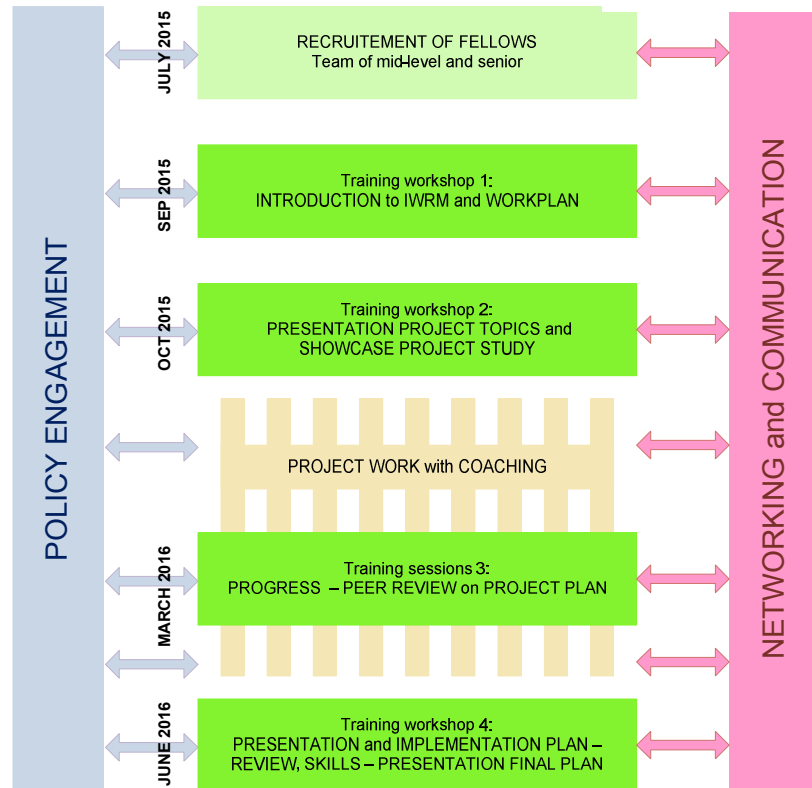
# Tailor-made training programme



RESEARCH PROGRAM ON  
Water, Land and  
Ecosystems



Greater  
MEKONG



- 2 batches, 4 training events
- Training 1: Introduction and IWRM approach
- Training 2: Application of concepts, data collection, processing and analysis, selection projects
- Coached project work
- Training 3: Mid-term progress
- Training 4: Project presentation and debate

STRENGTHENING PARTICIPATING MYANMAR ORGANIZATIONS

UNESCO-IHE  
Institute for Water Education



ARBRO



# **THEMES OF THE WLE MK-30 Projects**

- 1. Water Governance**
- 2. Healthy Rivers**
- 3. River Food Systems**
- 4. Healthy Landscapes and Ecosystems**
- 5. Safe rivers and deltas**
- 6. Water and energy**
- 7. Water and gender**

•SISTER ORGANIZATION OF ARBRO :

## •Water Mothers Organization

- Water Mothers" the non-governmental organisation in the form of women
- only club is the sister organisation of ARBRO, Ayeyarwady River Basin
- Research Organisation in Myanmar.



- Water Mothers (WM) are technically sponsored by WRTC



- WfWP Myanmar



- +



- Soroptimist International
  - Myanmar Club

•WATER MOTHERS Myanmar

- . . . .

- . .

- .

- **Established on 10 May 2012** as a sister organization of ARBRO
- **Technically sponsored by WRTC , Myanmar**

- **(13 Clubs**

- **Formed in 13 Clubs**

- 1  
• 0

- **1 group leader per club, members : min 5 to no limit**

• WATER

# MOTHERS MYANMAR

• ALL WOMEN'S PARTICIPATION



## •WATER MOTHERS MYANMAR

### • ALL WOMEN'S PARTICIPATION



- WATER MOTHERS MYANMAR

- WOMEN'S PARTICIPATION



## •CONCLUSION

- **Ayeyarwady River Basin Research Organization (ARBRO) is a**
  - **people-centered, Community-based organisation; established**
  - **by Myanmar Water Professionals who later became members**
  - **of the Expert Group of NWRC.**
- **The role of ARBRO is to act proactively in the implementation of**
  - **IWRM in Myanmar as a pioneer RBO; and**
- **to create enabling environment and mobilize river basin**
  - **organizations for other major river basins in Myanmar.**
- **Chindwin, Dawei, Taninthryi, Thanlwin and other River Basins**
  - **Organizations will come forward in the near future by**
  - **interested parties. ARBRO will give technical support and**
  - **certification.**

**•Thank you for your time and  
attention**