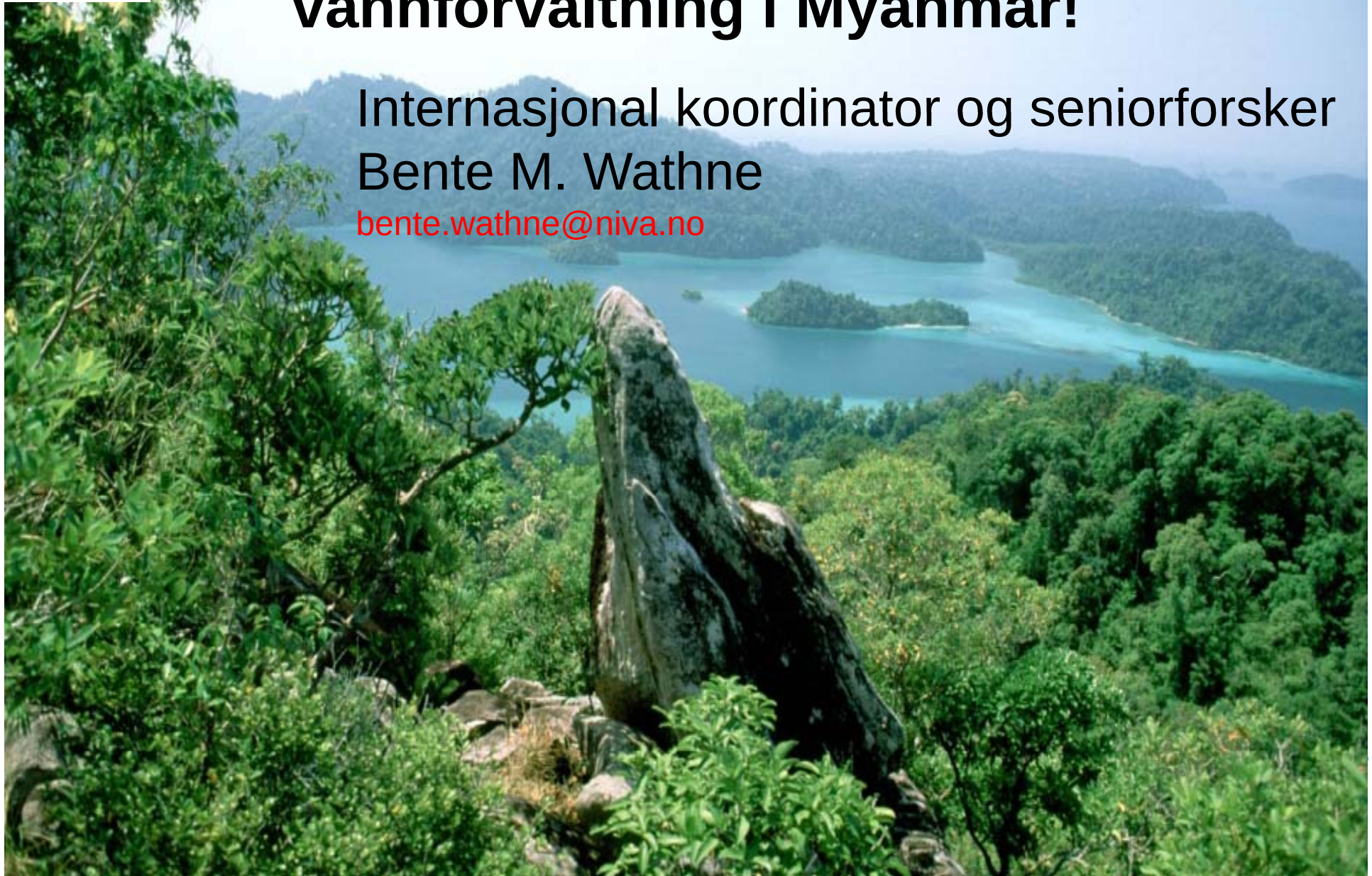




# Spennende planer for integrert vannforvaltning i Myanmar!

Internasjonal koordinator og seniorforsker  
Bente M. Wathne

[bente.wathne@niva.no](mailto:bente.wathne@niva.no)



# Disposisjon

- Bakgrunn for miljøsamarbeid Myanmar – Norge
- NIVAs basis for å bidra
- Workshop i Myanmar i januar 2013
- Veien videre





# Myanmar–Norge og miljø

- Miljø ble integrert i Myanmars skogdepartement i september 2011
- Miljø- og utviklingsminister Erik Solheim og miljø-og skogminister U Win Tun møttes i Nay Pyi Taw i november 2011
- Myanmars miljø- og skogminister, U Win Tun, med delegasjon, besøkte Oslo 9. – 12. oktober 2012. For miljør samarbeid med Norge, presenterte de en liste med 21 forslag
- Hovedvekt på skog og vannmiljø under besøket. Natur– og vannforvaltning, bærekraftig turisme/verdensarv - Inlay Lake, samt samarbeidet med det sivile samfunn
- En delegasjon ledet av MD besøkte Nay Pyi Taw i januar 2013

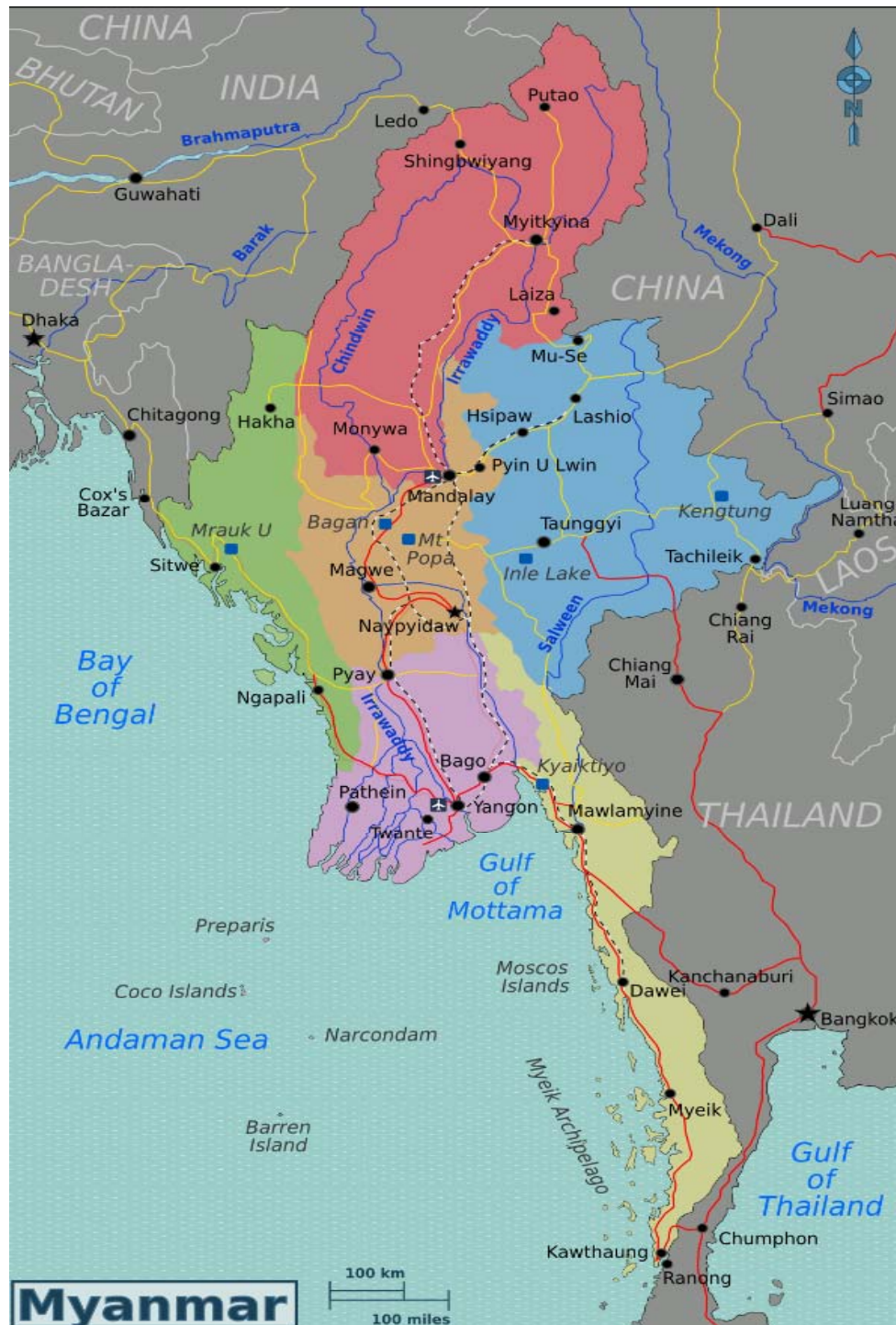




# Myanmar

NIVA reiste med delegasjonen fra MD/UD i januar for å delta i en workshop for planlegging av samarbeid og bistand innen vann og miljø og deltok i et kurs i regi av ICH om utbygging av vannkraft i februar.

Institusjons- og kapasitetsbygging innen vannforvaltning







Erfaring fra over 70 land....

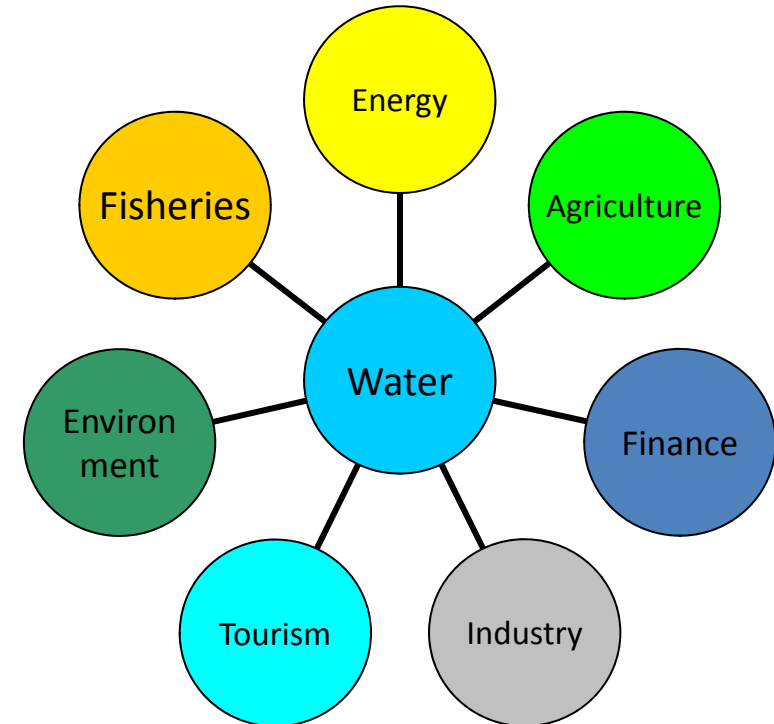


**NIVA**

og mer enn 50 års erfaring.

# Målet for innledende diskusjoner

- Identifisere de mest presserende behovene for opplæring og kunnskapsoverføring innen VFR i Myanmar og planlegge prosjektsamarbeid som kan dekke dem
- Vurdere forslag som foreligger og deres egnethet som pilotstudier for «on the job-training»



# Myanmar



Myanmar is a country between

**Sino-Himalayan region in the north**

**Indochinese region in the east**

**Malayan peninsular in the south**

This significant geo-position is combined with high variations in

- **Rainfall**
- **Temperature**
- **Topography and**
- **Extensive river systems**

Khakabo-rasi  
5788,9 m.o.h





**Oversikt over nedbørfelt fra fjellområder i  
nord til kystsonen i sør**



# Major Watersheds in Myanmar



## Ayeyarwaddy River Basin

- Chindwin River Basin
- Upper Ayeyarwaddy River Basin
- Lower Ayeyarwaddy River Basin
- Ayeyarwaddy Delta

Total watershed area of the River Basin is about 400,000 km<sup>2</sup> and estimated annual runoff is about 455 km<sup>3</sup>.

Irrawaddy River, Myanmar's viktigste kommersielle vannvei (The way to Mandalay)

- vannkraft
- erosjon
- økende forurensning.

Aung San Suu Kyi laget et opprop i 2011 (Irrawaddy Appeal) hvor hun ber om hjelp til å redde Irrawaddy



# Major Watersheds in Myanmar



## Thanlwin River Basin

- Less flat plain areas
- Fast flowing

Total watershed area in Myanmar is about 166,000 km<sup>2</sup> and estimated annual runoff is about 289 km<sup>3</sup>.



# Major Watersheds in Myanmar



## Mekong River Watershed

- About 3% of the Mekong River Watershed

Total watershed area in Myanmar is about 28,000 km<sup>2</sup>

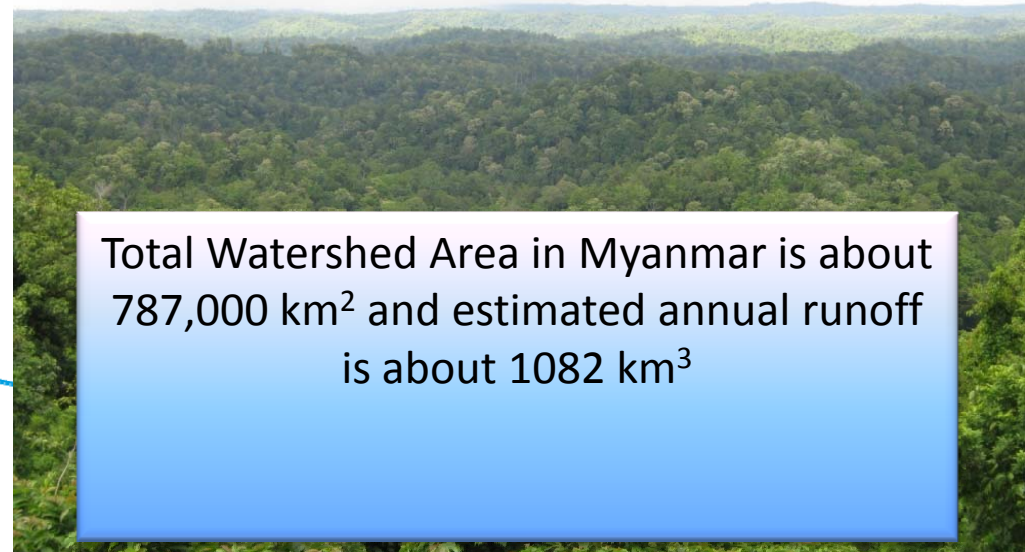


## Other Important Watersheds in Myanmar



- Rakhine Coastal Area
- Taninthayi Coastal Area
- **Sittoung River Watershed**

Total area of these 3 watersheds is about 138,000 km<sup>2</sup> and estimated annual runoff is about 320 km<sup>3</sup>



Total Watershed Area in Myanmar is about 787,000 km<sup>2</sup> and estimated annual runoff is about 1082 km<sup>3</sup>

# Inlay Lake

Mange aktiviteter er i gang  
Koordinering er helt nødvendig



PROGRESS REPORT



## INLAY LAKE, A PLAN FOR THE FUTURE

In support of the  
Action Plan for Environmental Conservation  
and Sustainable Management of Inlay Lake  
2010-2025  
Ministry of Environmental Conservation & Forestry

The Institute of International Development



INLAY LAKE: A PLAN FOR THE FUTURE  
First Steps for Implementation

24-25 January 2013, Nay Pyi Taw

### AIM OF WORKSHOP:

This workshop will present outcomes and recommendations for action from the Inlay Lake<sup>1</sup> Conservation Project 'Inlay Lake: A Plan for the Future'. This project aims to assist the Ministry of Environmental Conservation & Forestry (MOECF) in developing its rolling Action Plan for Environmental Conservation and Sustainable Management of Inlay Lake 2010-2025.

The theme of the Inlay Lake Conservation Project has been to develop recommendations to support 'sustaining the lake to sustain the community'.

There will be opportunities for questions and answer sessions with presenters to consider to the recommendations and to develop a shared vision for the future of Inlay Lake.



### Priority actions

1. Develop a coordinated governance and funding system for sustainable management of Inlay Lake (proposed Lake Authority to administer proposed Lake Fund), including:
  - Lake leadership & coordination group (senior people with authority)
  - Lake technical advisory group (influential eminent persons)
  - Lake stakeholder advisory group
  - Permanent action plan with review process, updates and adaptive management
  - Active implementation and enforcement system
  - Secretariat/office in the lake area (Nyaung Shwe)
  - Information centre
  - Database (access, coordination)
  - Coordinated monitoring program
  - Reporting and communication mechanisms
  - Identify potential external funding sources
  - Potential income (tourism levy, offsets, sales)
  - Involvement of national, regional and self-administered government levels.
2. Develop a coordinated systematic monitoring system for future data collection, with central database and standardised methodology for data gathering (see above)
3. Develop a central information centre, linked to research and the database, with programs to disseminate information to the community, and to coordinate and support education activities (see above)
4. Develop proposals for immediate improvements to drinking water supply in Nyaung Wun village, and providing water supply to multiple villages<sup>2</sup>

ation and health measures, including hand-washing and  
s in lake villages  
control of water hyacinth using weevils, noting reassurance  
r species, especially lotus, and also noting the need for  
weevils from Australia  
g more environmentally friendly Namlet Channel, for better  
of silt (assess other straight access channels for feasibility of  
am combining hand collection of adult snails and knocking egg  
ection in watershed, particularly targeting plastic bags and  
nent timing of observed changes in Inlay Lake, try to date to  
video



### Inlay Lake Conservation and Rehabilitation Projects

#### Background

Climate change and climate variability have had a significant impact on Myanmar in the past twenty years. During the 1990s, the effects of climate change and variability became apparent across the country in the forms of drought and flood. In more recent years, the change in the climate has been characterized by changing rainfall patterns, increasing temperatures and extreme weather throughout the country. Some examples of this are, Cyclone Nargis which hit Myanmar on 2 May 2008, and recently floods and landslides in Rakhine State, Kachin and Mandalay Division which have resulted from intense rain compounded by unsustainable resource practices such as deforestation in the areas.

Inlay Lake is one such area in the country that is facing the devastating effects of climate change as well as unsustainable natural resource use practices. The lake is a vital part of the broader ecosystem and economy of Shan State, providing many goods and services to its surrounding communities some of which include acting as a main water resource for Law Pi Ta hydroelectricity power plant, a major tourist attraction upon which many in the local economy rely, providing agricultural products, providing traditional products such as silk and silver ware, and a habitat for rich biodiversity and traditional culture.

The Inlay Lake is on the Tentative List of UNESCO World Heritage Sites (WHS). Several ethnic groups use the lake and its shores as their central landmark. The cultural traditions of numerous villages around it focus on the lake and have distinctive features e.g. internal navigation, fishing and commerce, floating vegetable gardens installed on artificial rafts, distinctive housing shapes and types, annual Buddhist festival on the lake. The symbiosis and ecology of the lake, its shores and its villagers constitute a genuine instance of cultural landscape. Myanmar, as a signatory to the 1972 Convention concerning the Protection of the World Cultural and Natural Heritage (popularly known as the World Heritage Convention), does not yet have any sites inscribed to the List. The Government, private sector and community is supportive of Inlay Lake enlisting as a World Heritage Natural Site and a Biosphere Reserve site that specifically calls for conservation and sustainable development.

But now the Inlay Lake Basin is gradually degrading due to the impacts of climate change and climate variability as well as unsustainable natural resource use practices. Many factors are contributing to this, including deforestation in the watershed area, eutrophication, heavy sedimentation, misuse of chemical fertilizer and insecticides, and an overall shrinkage of the surface area of the lake. Degradation of Inlay Lake Basin imposes major economic and social losses to the area, these include decreased agricultural production and fish catch and effect on the health of the local community. Thus, appropriate conservation and management of the lake basin is essential to enable Inlay Lake ecosystems to survive and continue to provide important goods and services to the local and national community.

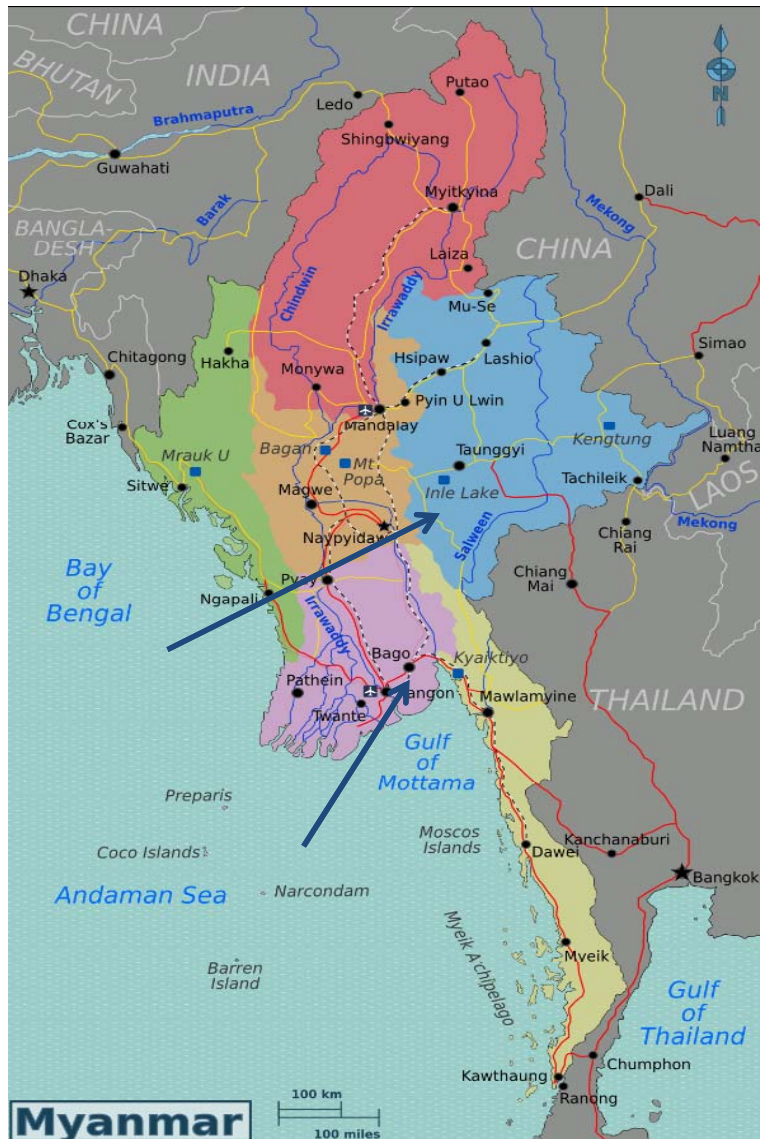
Conservation of Inlay Lake has become an urgent focus of the development community. Addressing the issue of the Inlay Lake Basin degradation is considered a priority task.

To arbeidsområder valgt ut for videre planlegging:

- ## Inlay Lake

## Valg av pilotområde for integrert VRF

# Myanmar – Institusjons- og kapasitetsbygging innen vannforvaltning



- Integrert vannressursforvaltning i Sittaung River/Bago tilløpet
- Overvåkingsprogram i Inlay Lake
- Utvikle en nasjonal vannpolicy og standarder for vannkvalitet
- Oppgradere og modernisere laboratoriet hos MOECAF og lære opp personalt
- Internasjonale konvensjoner



Bente M. Wathne

# VRF i tråd med Vanndirektivet

- God økologisk vannkvalitet
- Balanserte brukerinteresser
- Arbeidet med VRF skal være i tråd med prinsippene i Vanndirektivet
- Tilpasses forholdene i Myanmar



# VRF i tråd med Vanndirektivet

- Hvordan inkludere VFR-organisasjonsmodellen i det eksisterende administrative beslutningssystemet i Myanmar? (Sittaung pilot)
- Gjennomføre det praktiske arbeidet i Vanndirektivet (karakterisering, klassifisering, overvåking, tiltaksanalyser m.m.) «on the job training»
  - Bago River- delnedbørfelt i Sittaung
  - Inlay Lake



# Sivilt samfunn skal engasjeres

- Vanndirektivet krever at befolkningen skal informeres og involveres i vannbruksplanlegging
- Representanter for sivil samfunn - Norge og Myanmar skal involveres



Illustration by M. Friedrich for HarmoniCOP

# Parallelle samarbeidsløp

- DN på naturforvaltning
- Regnskogfondet – samarbeid med NGO'er
- NIKU på Inlay Lake og verdensarv
- ICH på kursing/kompetanseoppbygging - vannkraft
- Meteorologisk institutt på vær- og havvarsling
- NVE på flom/beredskap



Asian Disaster Preparedness Centre – ADPC i Bangkok



Bente M. Wathne



**Takk for oppmerksomheten!**

