



Environmental Monitoring Activities in Myanmar

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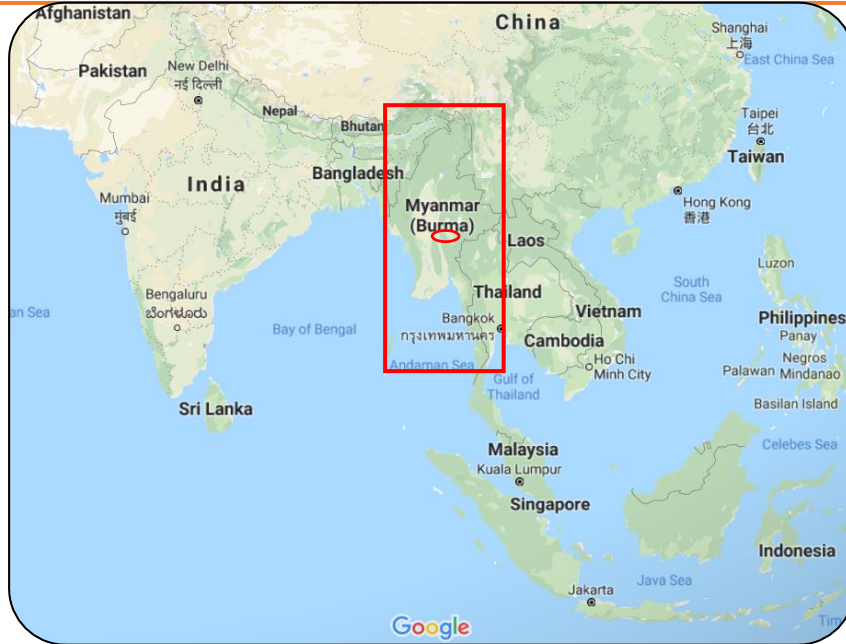
Outlines



- ✂ Introduction
- ✂ Environmental Activities
- ✂ Current Efforts for National Level
- ✂ Limitations and Challenges



Introduction



- Myanmar (676,575 km²)
- Population 53.37 million (2017 census)
- Three season (summer, rainy, winter)
- Capital : Nay Pyi Taw
- Rich in Natural resources

Rich Natural Resources



Natural Gas Resources



Forest



Land Resources



Precious Gem Stones



Fishery Resources



Gold

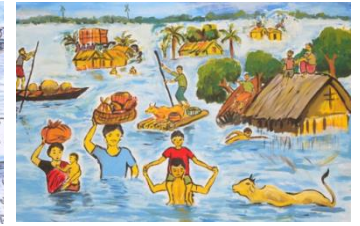


Other Mining Products



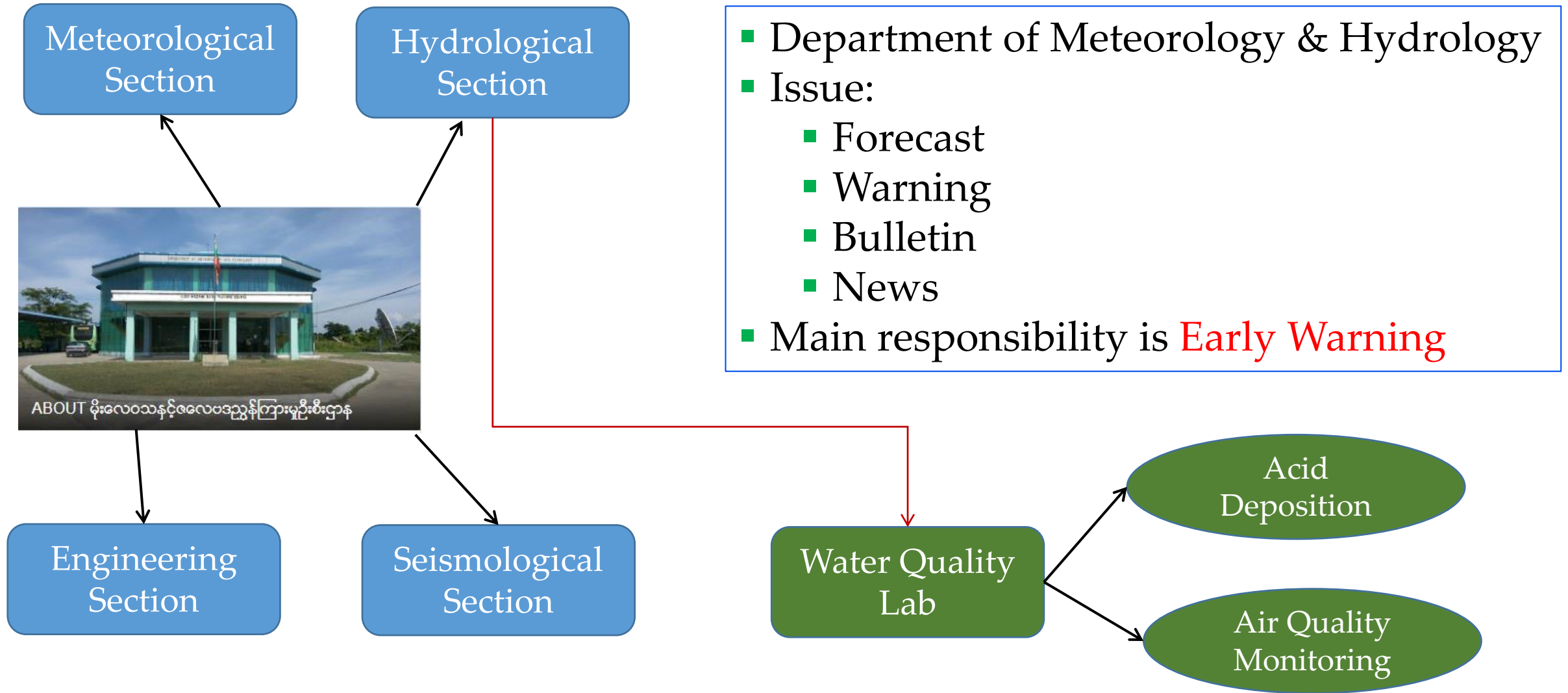
Copper

- Third most affected countries in terms of extreme weather events.



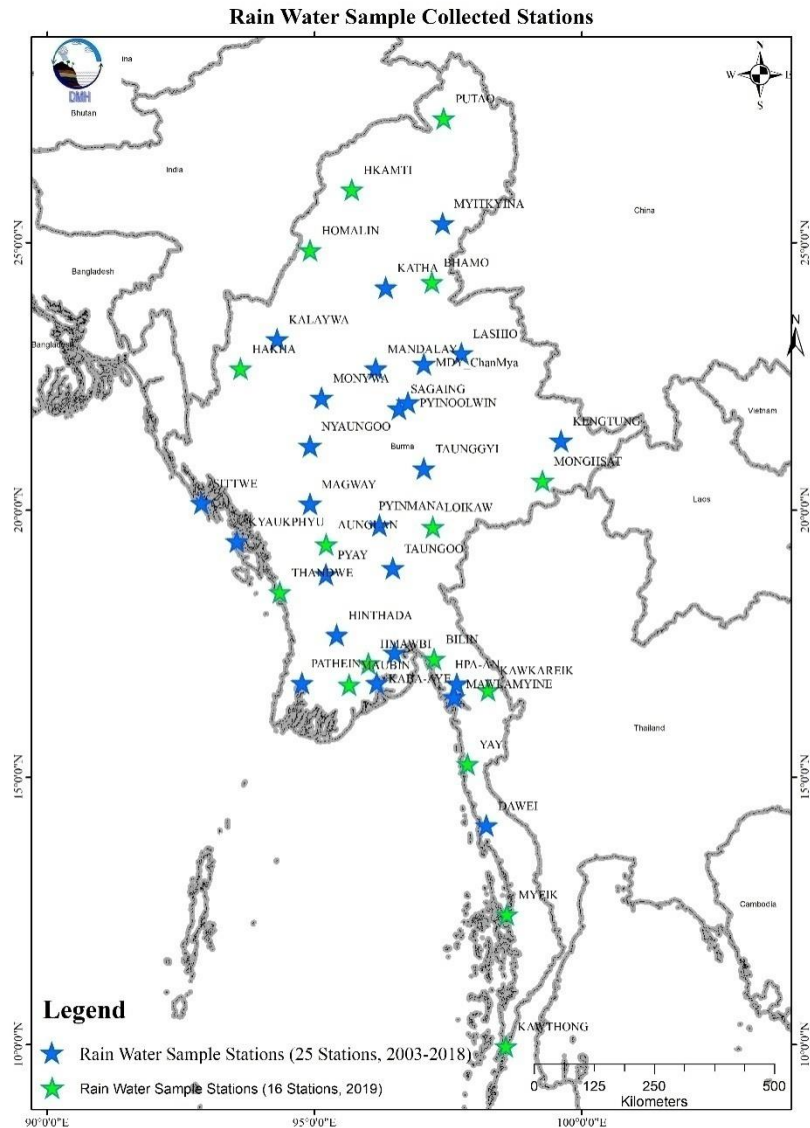


Introduction





Environmental Activities



- Department of Meteorology and Hydrology (DMH) is National Focal in EANET to monitor acid deposition since 2003 with 9 stations.
- Monitoring stations increased up to 25 stations until March, 2019.
- Due to the transboundary haze pollution, 16 rain sample collection stations increased on April 2019, near border areas to monitor acid deposition.
- Total of 41 rain sample collection stations are operation to monitor acid deposition across Myanmar.

Source: Department of Meteorology and Hydrology, Myanmar

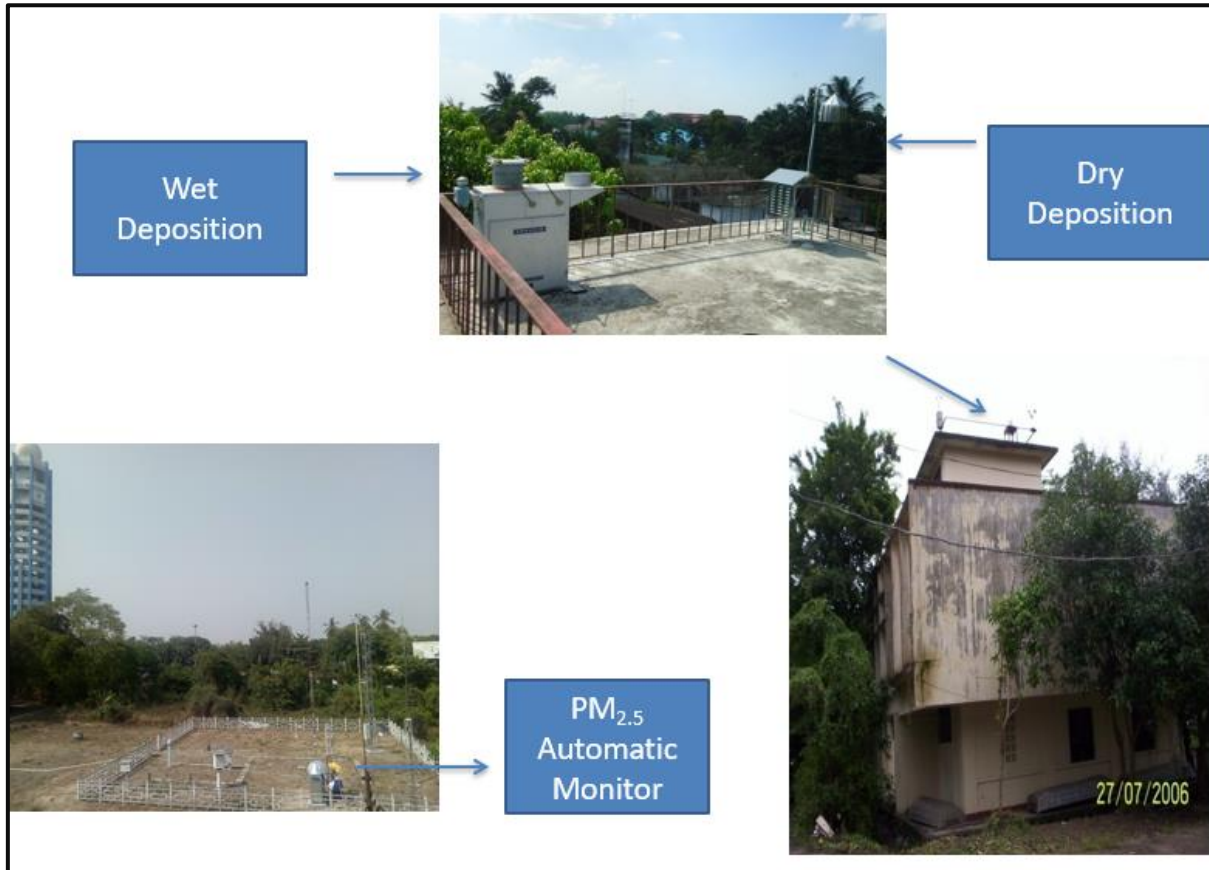


Environmental Activities



Wet & Dry Deposition, and PM_{2.5} Monitoring Site (Yangon, Myanmar)

Wet Deposition Monitoring



Set up

Sampling Interval

Measurement
Parameters

- started in 2007

- Daily Collection

Weekly Composite

- pH, EC

- NH_4^+ , Na^+ , K^+ , Ca^+ , Mg^{2+}

- SO_4^{2-} , NO_3^- , Cl^-



Environmental Activities



Dry Deposition Monitoring



Filter Pack Sampler System



Set up : started in Nov 2011

Sampling Interval : Biweekly

Parameters

Cations : NH_4^+ , Na^+ , K^+ , Ca^{2+} , Mg^{2+}

Anions : SO_4^{2-} , NO_3^- , Cl^-





Environmental Activities



Analysis of Wet Deposition



Analysis of Dry Deposition





Environmental Activities

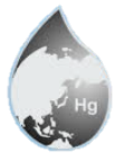


PM_{2.5} Monitoring (Air Quality)



- Set up - 26 March 2018
- Sampling Interval- Hourly
- Parameter -PM_{2.5}

Automatic PM_{2.5} Monitor



pH and EC Range Across Myanmar



Annual Range of pH of Whole country

Year	No. Of Stations	Range of pH	Mean
2003	9	5.5 to 7.6	6.5
2004	12	5.2 to 8.1	6.3
2005	15	4.8 to 7.9	6.0
2006	15	5.0 to 8.2	6.4
2007	15	4.4 to 8.2	6.5
2008	15	5.1 to 8.6	6.2
2009	18	4.9 to 10.3	6.5
2010	18	5.3 to 8.8	6.6
2011	25	5.1 to 9.2	6.7
2012	25	5.2 to 8.0	6.5
2013	25	4.7 to 7.9	6.7
2014	25	5.3 to 7.9	6.5
2015	25	4.7 to 8.0	6.6
2016	25	4.4 to 7.4	6.5
2017	25	4.2 to 8.4	6.6
2018	25	5.2 to 8.7	7.0

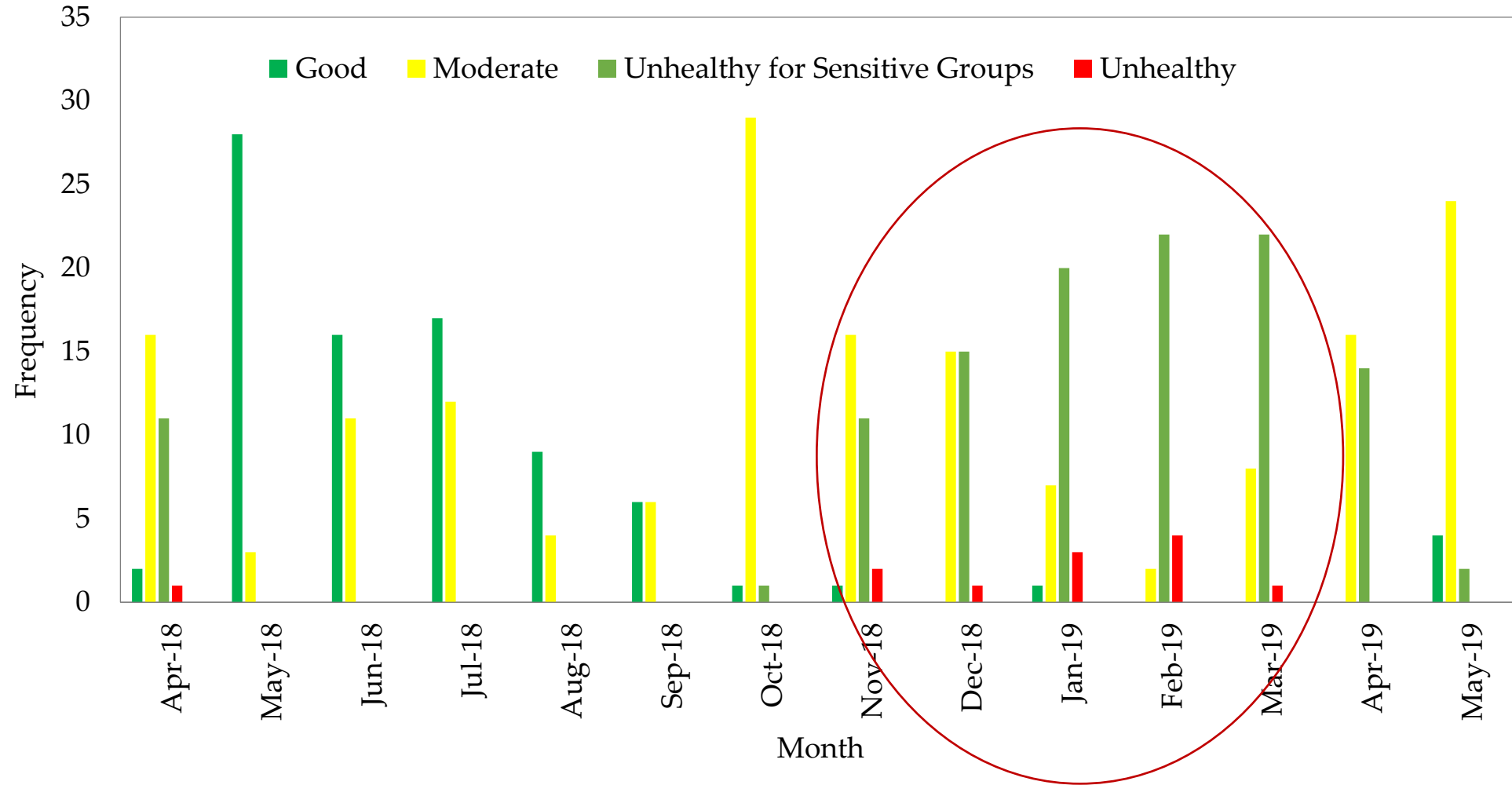
**Annual Range of
Electric Conductivity of Whole country**

Year	No. Of Stations	Range of EC	Mean
2005	15	2.61 to 143.60	62.60
2006	15	23.00 to 23.00	23.00
2007	15	0.27 to 1.73	0.87
2008	15	0.146 to 8.30	2.18
2009	18	0.07 to 6.18	1.11
2010	18	0.01 to 6.56	0.92
2011	25	0.10 to 11.20	0.57
2012	25	0.01 to 36.60	3.40
2013	25	0.04 to 23.00	1.71
2014	25	0.04 to 7.44	1.54
2015	25	0.04 to 35.00	2.51
2016	25	0.10 to 43.30	21.50
2017	25	0.30 to 99.00	47.50
2018	25	0.10 to 48.10	24.10

Source: Department of Meteorology and Hydrology, Myanmar



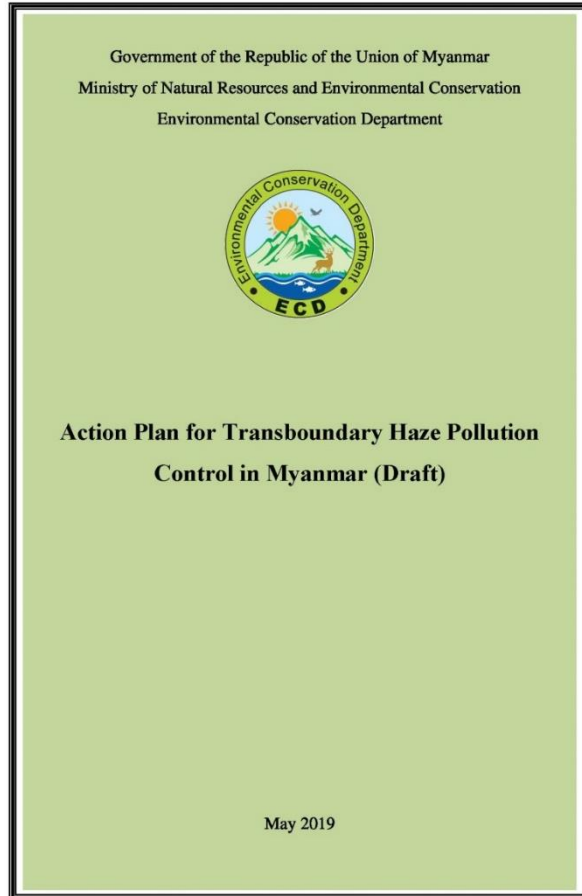
PM2.5 Monitoring Site (Yangon, Myanmar)



Source: Department of Meteorology and Hydrology, Myanmar



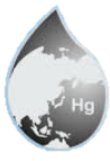
Current Efforts for National Level



Implementing Departments and Organizations for Action Plan for Transboundary Haze Pollution Control

- General Administrative Department
- Fire Services Department
- Department of Agriculture
- Department of Agriculture Land Management and Statistics
- Department of Meteorology and Hydrology
- Department of Disaster Management
- Department of Public Health
- Department of ASEAN Affairs
- Forest Department
- Dry Zone Greening Department
- City Development Committees
- Environmental Conservation Department

Source: Environmental Conservation Department, Myanmar



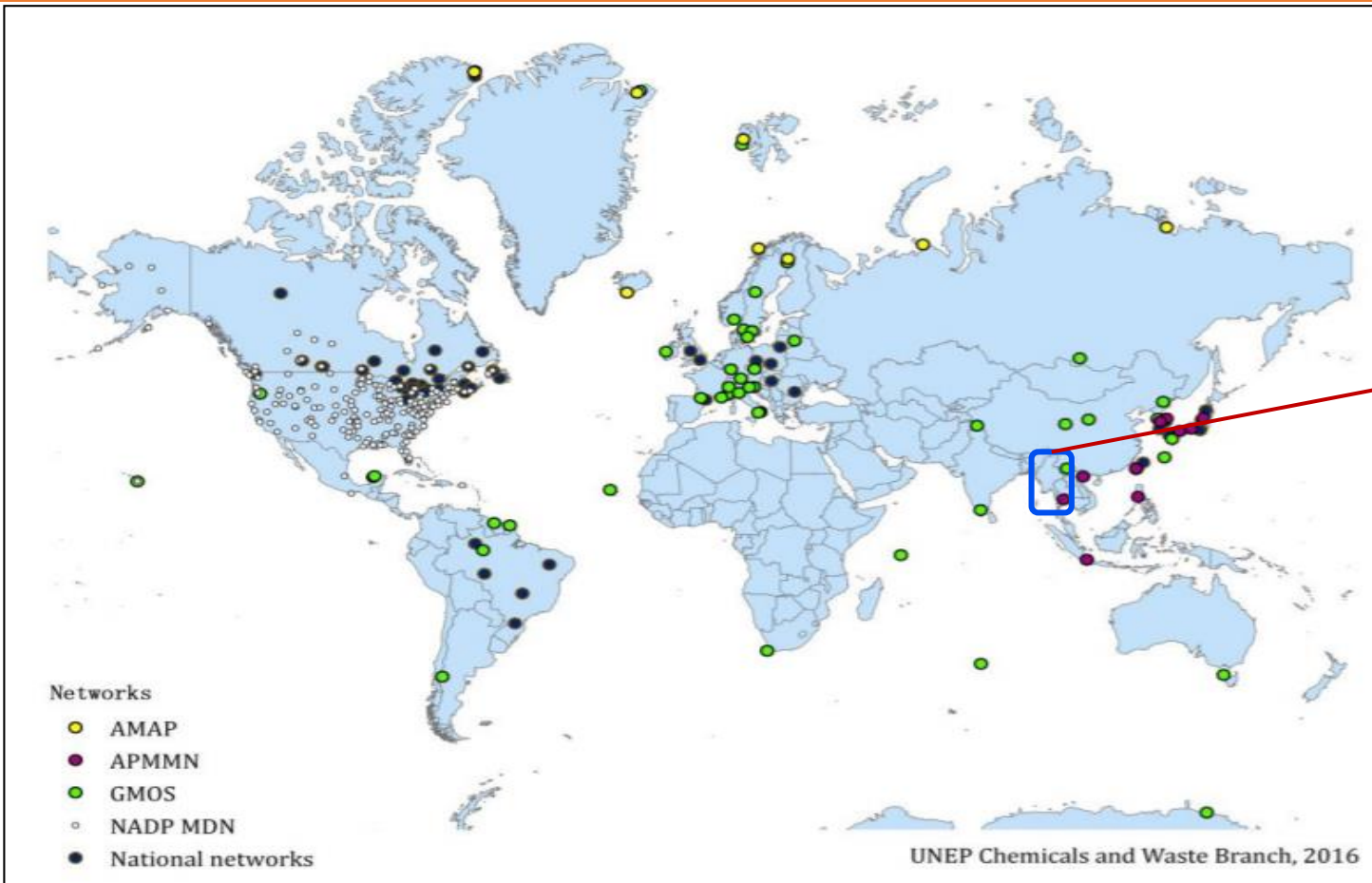
Action Planned To Implement Transboundary Haze Pollution



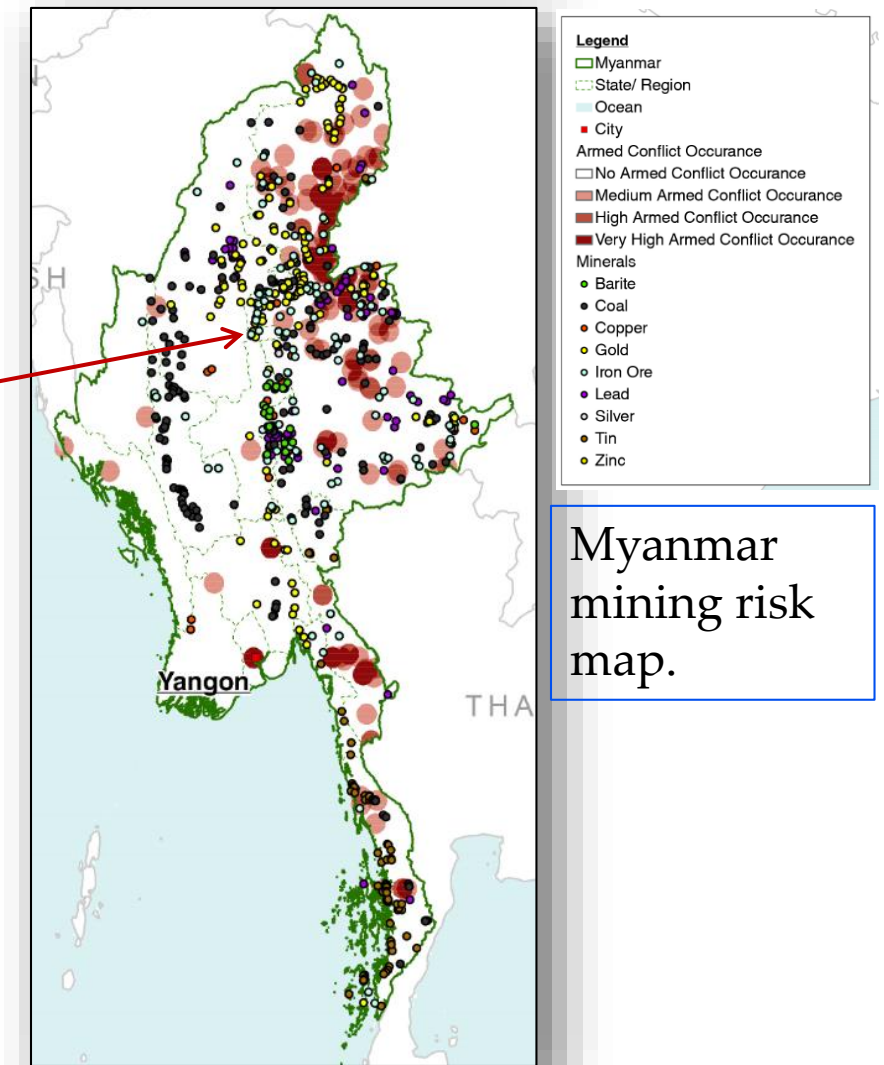
- “Integrated National Strategic Action Plan on Fire Management in Myanmar” (April 2019 to December 2019) - Cooperation with Food and Agriculture Organization (FAO) aiming to develop Integrated Strategy and Action Plan on Fire Management in Myanmar.
- “Sustainable Management of Peat Land Ecosystems in Mekong Countries” (2019-2022) – Cooperation with International Union for Conservation of Nature (IUCN) aiming to develop policy, framework, strategies and action plans for sustainable peat land management.
- Proposed Project for Ambient Air Quality Assessment along Mekong River Area in Shan State (2020-2022) – Aiming to monitor the Transboundary Haze Pollution.
- Proposed Project for Improvement of Capability of Air Quality Monitoring in Myanmar – Proposed to Japan Government for Financial and Technical Assistance.



Limitations and Challenges



Source: UNEP Chemicals and Waste Branch, 2016



Myanmar
mining risk
map.

Source: Tractus Research and Analyia, Myanmar Directorate of Geological Survey and Exploration, US Campaign for Burma



Limitations and Challenges



- Limitation on the temporal and spatial information including **data availability** and quality, **instrumental devices and monitoring network**. (**Not yet mercury monitoring station**)
- Inadequate **financial** commitment and allocation of resources to tackle both acid deposition and air pollution monitoring, particularly in most polluted areas and sensitive areas.
- Necessary to develop **technical staff** to undertake activities such as **capacity building, analysis and station maintenance** and **research activities**.
- Lack of the implementation of pollution control **laws, strategies, guidelines** and compliance as well as emission inventories, **public education and public participation**.



Thank You!

Keep the

Earth clean

