

## COURSE REPORT

### Mangrove Online Training Series

Indonesia

August 16–September 6, 2024

An online course organized by:

The Environmental Leadership & Training Initiative (ELTI)

Yayasan Hutan Biru (Blue Forests)



Blue Forests-ELTI

*Mangrove forests in Graha Indah Mangrove Center in East Kalimantan.*

**Background:** Indonesia once boasted the world's largest mangrove area, covering 4.2 million hectares. However, the mangrove area has been diminished to 3.3 million hectares in recent years due to large-scale conversion for aquaculture, oil palm plantations, road construction, port development, coal-fired power plants, and settlements. Of the remaining mangroves, 1.8 million hectares are either degraded or at risk of conversion. The Indonesian government has started to push for the restoration of mangrove ecosystems, setting ambitious targets that include restoring 142,625 hectares in 2024. Rehabilitation methods commonly

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ELTI is an initiative of:

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*Local communities use mangrove forests to sustain their livelihoods.*

used in Indonesia often involve planting, but this has often been unsuccessful. Other mangrove rehabilitation techniques have been developed nationally and globally that are more effective in restoring degraded mangrove ecosystems. It is hoped that these techniques can be adopted in Indonesia and adapted to the local context to ensure successful mangrove rehabilitation at the site level.

Another topic widely discussed in Indonesia is blue carbon. As a blue carbon ecosystem, mangroves can absorb and store significantly more carbon than terrestrial forests, making them crucial for climate change mitigation and adaptation. Indonesia, which holds about 17% of the global blue carbon reserves, has a significant opportunity to engage in international trading of carbon sourced from coastal ecosystems. To implement the Paris Agreement, Indonesia has committed to reducing greenhouse gas (GHG) emissions as outlined in its nationally determined contribution (NDC). To meet these targets, Presidential Decree No. 98/2021 on the Implementation of Carbon Economic Value (NEK) was issued, followed by the Ministry of Environment and Forestry Regulation No. 21/2022, which provides technical instructions for the Indonesian Emission Reduction Certificate Scheme (SPEI). Additionally, the Indonesian government has launched the Indonesia Carbon Exchange (IDX Carbon) to facilitate the trading of market-based carbon credits and accelerate the reduction of carbon emissions, aiming for net zero emissions (NZE) by 2060 or earlier. However, these updates on carbon regulations have not been widely disseminated to all stakeholders.

Achieving the targets for mangrove rehabilitation and blue carbon will require collaboration by government, the private sector, academia, NGOs, activists, and communities. The identification of land to be rehabilitated must take into account issues such as land use, ownership, community readiness, and ecology. Rehabilitation plans must be tailored to the specific needs of each location, integrating lessons from previous rehabilitation efforts, economic issues, relevant policies, and carbon regulations.



*A local community member on their way to harvest mangrove honey in mangrove forests (week 1 content).*



*Boat excursion in East Kalimantan mangrove forests (week 1 content).*



*Local communities and Blue Forests implement Ecological Mangrove Rehabilitation (EMR) in Tanakeke Island, South Sulawesi (week 2 content).*

To increase stakeholder awareness of these topics, the Blue Forests-ELTI program conducted an online course on mangroves, covering ecological mangrove rehabilitation (EMR), mangrove ecology, blue carbon, and high conservation values (HCV).

**Course objectives:** The primary objective of this online course was to provide participants with comprehensive knowledge of mangrove ecosystems, rehabilitation techniques, blue carbon, and practical conservation approaches. The course also fostered collaboration and knowledge sharing among a wide range of stakeholders, supporting Indonesia's efforts in mangrove conservation and climate resilience.

**Course content:** The online course was held August 16–September 6, 2024. The final segment was conducted both online and in person in Southeast Sulawesi.

### **Week 1 (August 16): Mangroves 101**

The first week's session was an introduction to mangroves. The instructors were Rio Ahmad, who delivered an introductory presentation on mangrove ecosystems; Ratna Fadillah (Blue Forests), who discussed local community livelihoods associated with mangroves; and Lulu Middleton (Charles Darwin University), who delivered a presentation on nutrition from mangroves, exploring the role of mangrove ecosystems as a food system through the lens of local knowledge and gender dynamics in West Kalimantan, Indonesia.

### **Week 2 (August 22): Best Practices on Mangrove Rehabilitation: Practitioners' Experiences**

The second session featured insights from Dian Rachmawati (Indonesian Ministry of Environment and Forestry) on rehabilitation through planting; M. Ilman (Yayasan Konservasi Alam Nusantara) on the shrimp carbon aquaculture rehabilitation method; Cecep Kusmana (Bogor University) on mangrove rehabilitation using the mangrove incubator



Course participant during field practice on carbon inventory (week 4).



Course participants during field practice on carbon inventory (week 4).



Mangrove ecosystems contribute to food systems through the lens of local knowledge and gender dynamics in West Kalimantan, Indonesia (week 1 content).

technique; Apri Susanto (Wetlands Indonesia) on hybrid engineering methods for rehabilitation; and Yusran Massa (Blue Forests) on ecological mangrove rehabilitation.

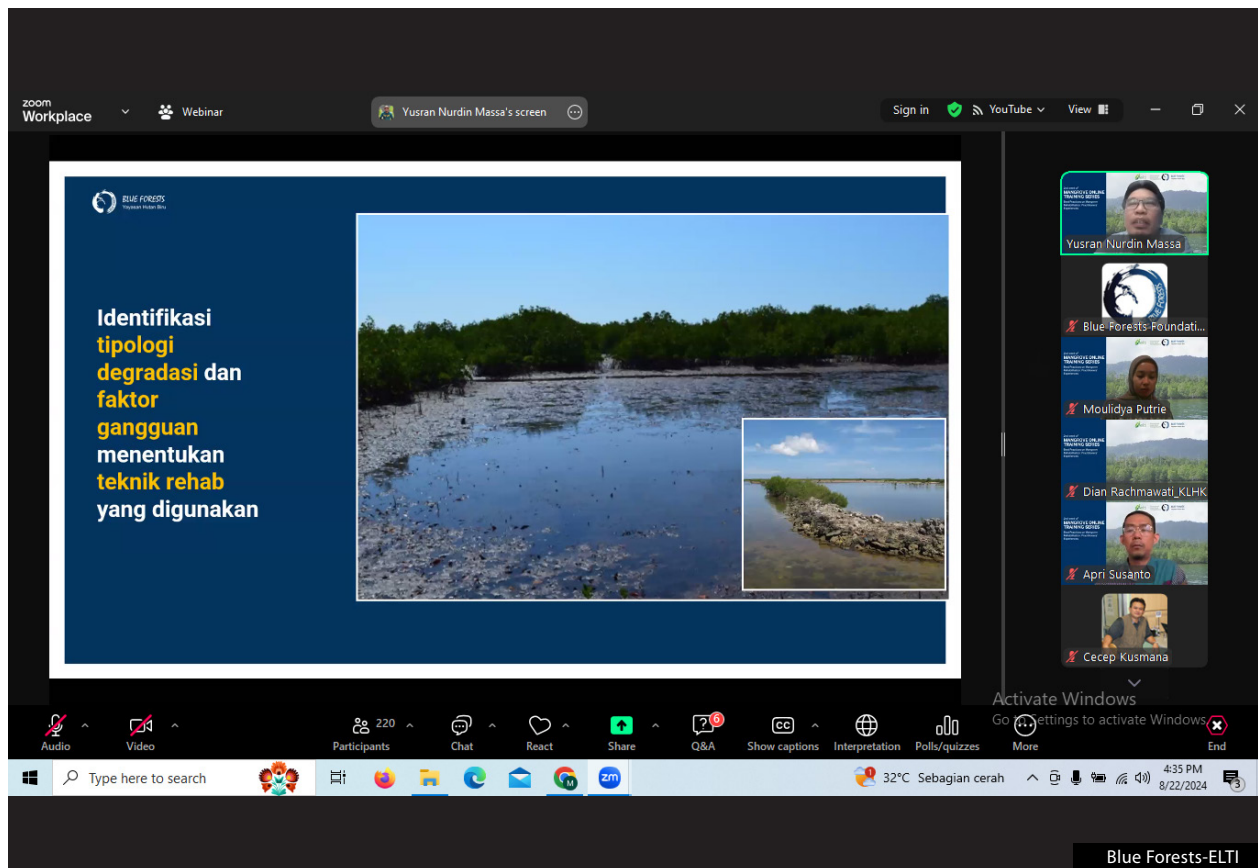
### **Week 3 (August 30): Cost-Benefit Analysis and Conservation Approaches**

The third session, presented by Ben Brown (Charles Darwin University and co-founder of Blue Forests), focused on the cost-benefit analysis of mangrove rehabilitation. The presentation was followed by discussions on HCV and high carbon stock (HCS) approaches led by Haryo Ajie Dewanto and Leo Wibowo, both from Dassa Corp.

### **Week 4 (September 5–6): Blue Carbon**

The final session centered on blue carbon. Conducted both online and in person in Kendari, Southeast Sulawesi, in collaboration with Blue Forests' Climate Collective Initiative (CCI), it featured presentations from Fegi Nurhabni (Indonesian Ministry of Marine Affairs and Fisheries) on Indonesia's blue carbon policy, Sigit Sasmito (James Cook University) on mangrove blue carbon as a nature-based solution to climate change, and Aris Ristiyana (Environment and Forestry Instrumentation Standardization Agency, Ministry of Environment and Forestry) on carbon inventory in mangrove forests.

On September 6, Ristiyana led a field practice on carbon inventory in mangrove forests in Kendari. Stakeholders from Southeast Sulawesi engaged in hands-on activities, including building sample plots, identifying mangrove species, measuring tree volume, collecting soil samples, and recording data in tally sheets. This field practice provided practical experience and skills essential for conducting accurate carbon inventories in mangrove ecosystems, contributing to improved management and conservation efforts.



*Yusran Nurdin Masa, Blue Forests' Environmental Technical Advisor, explained the types of degradation and disturbance factors to determine the most suitable rehabilitation technique.*

**Participants :** The series attracted 148 participants (75 male, 73 female) for week 1; 193 participants (112 male, 81 female) for week 2; 146 participants (70 male, 76 female) for week 3; and 141 (73 male, 68 female) participants for week 4, along with an additional 50 offline participants from Southeast Sulawesi for the final session. Participants came from diverse backgrounds, including academia (i.e., lecturers and students), community groups, government, the private sector, project management, NGOs, intergovernmental organizations, and the general public.

*This event was possible thanks to Arcadia Fund, whose Environmental Conservation grants support programmes that protect and enhance biodiversity, and provide field training and academic research.*