Report of ERECON Extension Programs in 2023 (Extension Center)

Following extension programs were implemented in the program year of 2023 from 1 April 2023 to the end of March 2024.

1. Program on Environmental Rehabilitation and Conservation in Asian Countries

1-1 *Project of Reforestation for Sustainable Forest Management in Kampong Cham Province, Cambodia* (*Phases 4 and 5*)

The local residents in Kampong Cham Province have faced various hardships due to climate change impacts, such as droughts and flooding caused by low-density forests. Therefore, this project aims to promote sustainable forest management by implementing tree-planting activities and workshops at pagodas and elementary schools, which are deeply rooted in the lives of residents. It is expected to contribute to the conservation and sustainable management of the forest for advancing the goal of "Sustainable Forest Management" outlined in SDGs No. 15. A planting activity at a pagoda in Batheay District was conducted in September 2023. After planting, the afforestation management group continued to carry out monitoring activities; however, as the planted area was flooded due to heavy rainfall immediately after planting. Accordingly, the result of seedling survival rate was only 50% in January 2024. We are planning to carry out further tree planting through supplementary planting activities scheduled in June 2024.

Photo. 1 Monitoring activity in Kampong Chan Province, Cambodia (Project 1-1)

1-2 *Project on Greening for Satoyama Regeneration in Eastern Cambodia* (*Phases 2 and 3*)

Biodiversity was abundant in the past in the northeastern part of Cambodia, such as Mondulkiri, and Kratie Provinces; however, since the 1970s, priority has been given to economic development and forest resources have continued to be expropriated. Deforestation and forest degradation caused by land conversion and illegal logging have severely degraded biodiversity in the region. Therefore, tree-planting activities were conducted in Kratie and Mondulkiri Provinces to restore Satoyama landscapes, where people and nature can coexist. In August 2023 during Phase 3, tree-planting activities were carried out at the community conservation area in Mondulkiri Province and at an elementary school in Kratie Province. In the community conservation area, 42 residents participated in planting activities, while 65 people, including students and teachers, participated in planting activities at Meak Kandal Elementary School in Kratie Province. Monitoring activities conducted in December revealed a 90% survival rate of seedlings in community conservation areas and a 95% survival rate in the elementary school. The results of these survival rates indicated effective managements were conducted by the afforestation management group. Additional monitoring activities, including supplementary planting activities, will be conducted in June 2024.

Photo. 2 Reforestation activity in Kratie Province, Cambodia (Project 1-2)

Photo. 3 Reforestation activity in Kampong Cham Province, Cambodia (Project 1-3)

1-3 *Project on Promoting Reforestation for Rehabilitating Rural Environment in Kampong Cham Province, Cambodia* (*Phase 3*)

In Kampong Cham Province, a collaborative effort involving 558 local residents led to the planting of 5 species of native trees across 10 districts, with the aim of restoring rural environments for future generations. Furthermore, a workshop titled "The Importance of Forest and Biodiversity Conservation" was held for the local communities. During Phase 3, the planted sites have been under the management of Forest Management Groups comprised of residents from each reforestation site. These groups play a central role in various management practices, including weeding, watering, pruning, and partially setting up protection nets. Moreover, local residents conducted replanting activities based on the survival rates observed at each site. Over the past three years, starting from 2021, greening and extension activities have been promoted in over 30 planting sites

across all 10 districts of Kampong Cham Province. Looking ahead, we plan to maintain our collaboration with the Kampong Cham Provincial Department of Agriculture, Forestry, and Fisheries to carry out follow-up inspections and surveys. These will include monitoring the growth status and survival rates at each reforestation site. Furthermore, we aim to encourage local residents to adopt effective management practices through ongoing dissemination of the multiple benefits derived from forests.

2. Program on Sustainable Use of Natural Resources in Asian Countries

2-1 *Project on Capacity Building and Women's Empowerment of Agricultural Cooperative through Production and Sales of Safety Agricultural Products by Promoting Sustainable Agriculture in Sre Santhor District, Kampong Cham Province, Cambodia* (*Phase 3*)

The project has offered technical guidance on sustainable agriculture utilizing natural resources for local farmers in Srey Santhor District, Kampong Cham Province. Additionally, efforts were made to enhance the capacity of the Agricultural Cooperative (AC). During the project's last year, agricultural experts from "The New Zealand Institute for Plant and Food Research Limited" were invited to solve farm management issues, particularly plant diseases, and to facilitate collaboration with companies specializing in organic produce. We believe that AC members have developed a certain level of proficiency in cooperative management of the cooperative even after the termination of the project. Future challenges include stabilizing transactions with companies and improving water quality/ quantity for irrigation as a farming concern. Our plan involves conducting regular follow-ups even after the project term, and offering ongoing support to the Srey Santhor Agricultural Cooperative to ensure their continued independent activities.

Photo. 4 Field survey on plant disease protection with agricultural experts from New Zealand in Sre Santhor District of Kampong Cham Province, Cambodia (Project 2-1)

2-2 *Project of Community Development through School Construction and Renovation in Tbong Khmun Province, Cambodia* (*Phase 1*)

The objective of this project is to cultivate a sense of ownership among local residents by engaging them in providing labor services for school construction and renovation projects in rural areas of Cambodia. Additionally, the project aims to nurture a sustainable school environment and facilitate sustainable rural development in the region. In detail, local residents contribute labor and materials to cover about 20% of the construction costs. This contribution will be refunded to the community as a "Development Fund" to aid in the future maintenance of the school. Two buildings at 2 elementary schools were constructed in Phase 1 in Dambae District, Tbong Khmun Province. An inauguration ceremony was conducted in March, during which the new school building was officially handed over to the school. The event was attended by supporters, including the Nippon Foundation, the Deputy Governor of Tbong Khmun Province, and government officials from Tbong Khmun Provincial Education, Dambae District, among others. Community development projects utilizing the funds will soon be initiated. There is an expectation that the development fund committee will take a central role in launching a community business, with the profits directed towards enhancing the educational environment. The success of this project hinges on the strong commitment of local residents, as external support will not be provided without self-help endeavors. Our objectives include fostering ownership among local residents, establishing a sustainable school environment, and implementing sustainable rural development projects in the region.

Photo. 5 School construction in Tbong Khmun Province, Cambodia (Project 2-2)

3. Program on Environmental Education in Asian Countries

3-1 *Project on Promoting School Environment Greening aiming for Forest Environmental Education in Tbong Khmum Province, Cambodia* (*Phases 2 and 3*)

In Tbong Khmum Province, mixed forests, once rich in biodiversity, have significantly dwindled due to large-scale land conversion, particularly to rubber plantations. There is a need for environmental education targeting children to strengthen the foundation for future forest conservation efforts. Thus, the project aims to enhance the green environment of elementary schools and deliver Forest Environmental Education to local students and residents. Besides the workshop on the "The Importance of Forest and Biodiversity Conservation," each school hosts a competition on "Seedling Management" to encourage students' participation in tree management. During Phase 2, the majority of schools demonstrated increased participation in tree management, with an average seedling survival rate exceeding 80% across all 16 schools. Phase 3 of the project continues to advance Forest Environmental Education, not only through greening activities but also by producing tree seedlings at model schools and conducting workshops for elementary school teachers on developing "Nature Games" as an environmental

education tool. These games are anticipated to be integrated into school curricula. Activities such as field surveys, preparation for seedling production at schools, and planning for extension activities are currently ongoing.

Photo. 6 Forest Environmental Education in Tbong Khmum Province, Cambodia (Project 3-1)

Photo. 7 Meeting with the Siem Reap Provincial Department of Agriculture, Forestry, and Fisheries, Siem Reap, Cambodia (Project 3-2)

3-2 *Project on Promoting Reforestation and Education for Sustainable Development in Siem Reap Province, Cambodia (Phase 1)*

In Siem Reap Province, the major factor contributing to deforestation is the economic growth in the agricultural and tourism industries since the civil war ended in the 1970s. In recent years, nearly half of the forests presented in 2000 have vanished, primarily in the northern hills and mountains. Moreover, nearly 80% of the provincial population residing in rural areas, where access to adequate knowledge and resources is limited, jeopardize their livelihoods through unplanned consumption of wood materials, participation in illegal logging, or forest fires to clear land for temporary farmland use. Hence, the project aims to promote reforestation in the northern Banteay Srei District, which has experienced forest resource depletion due to rapid agricultural development. Forest regeneration will be encouraged through the adoption of an agroforestry system, which involves cultivating indigenous trees and enhancing carbon sequestration using local organic resources. Furthermore, Education for Sustainable Development (ESD) for local residents will be promoted through a series of workshops aiming at deepening their understanding of land management and raising awareness of environmental issues in their community. Ultimately, the community is expected to further discuss a community development plan focused on the sustainable utilization of natural resources. Phase 1, initiated in January 2024, commenced with a kickoff meeting with the Siem Reap Provincial Department of Agriculture, Forestry, and Fisheries, where the project aims were shared. Activities such as field surveys, establishment of nurseries and compost pits, and preparation of seeds for seedling production are currently in progress.

3-3 *International Training for Green Volunteers in Cambodia*

The International Training for Green Volunteers was conducted from 7 to 14 March 2024 in Cambodia. The training tour was organized by the ERECON Institute with support from the Green Fund of the National Land Afforestation Promotion Organization. The aim of this training was to deepen the understanding and knowledge of trainees from Japan on the importance of the forest through reforestation activities and environmental education. Ten Japanese trainees attended various lectures on forest management and conservation in Cambodia, visited several reforestation project sites, and engaged in reforestation activities alongside local residents. The ten trainees were divided into three groups according to their interests, and conducted interviews and questionnaire surveys to local residents for collecting data. Through this training, the Japanese trainees learned about the current status and context of forest deforestation in Cambodia and deepened their understanding of the importance of symbiotic relationships, especially with forests for sustainable development. The outcomes from the field appraisal were shared to the students of University of Heng Samrin Thbongkhmum and discussed in detail, and the final presentation was held in Phnom Penh.

Photo. 8 Closing ceremony after the final presentation in Phnom Penh, Cambodia (Project 3-3)

3-4 *ESD Training and Internships in ERECON Headquarters*

During September 2023, four graduate students from Tokyo University of Agriculture attended the ERECON ESD training session focused on water quality assessments with GIS integration. During the training, participants conducted measurements of water temperature, pH, NO_3-N, and PO_4-P in the Tama River watershed of Tokyo. They were instructed on recording measured values and capturing photographs of each survey site as georeferenced data points using the QField smartphone app. Later, on 20 October 2023,

three of the training participants attended a GIS Seminar conducted at the ERECON Administrative Center. They were then taught how to process the data for subsequent analysis, upload it into QGIS, and compute NDVI. Following that, the participants were instructed on preparing data layers in QGIS for survey collection using the QField mobile app., uploading prepared layers into QField, and recording survey data in QField using their smartphones, as they had previously practiced during the September field training. Finally, participants practiced re-importing data back into QGIS for additional analysis, which involved linking survey point data with NDVI values derived from satellite data. As part of the post-seminar follow-up, participants were given supplementary QGIS notes and exercises.

Concurrently with the aforementioned activities, the ERECON Institute arranged an internship program for three undergraduate university students, involving them in greening and beautification efforts in the Onoji Satoyama. This served to deepen their comprehension of the importance of Satoyama conservation. As part of their internship, the students also took part in the Global Festa JAPAN 2023, where they gained insights into the role of NGOs in global environmental conservation and international cooperation.

Photo. 9 ERECON ESD training on water quality assessments with GIS integration in Tokyo, Japan (Project 3-4)

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