Darwin Initiative Main & Extra: Final Report

Darwin Initiative Project Information

Scheme (Main or Extra)	Main
Project reference	29-007 Darwin Initiative Final Report
Project title	Developing Sustainable Management of Tropical Peatlands in Southern Borneo
Country(ies)	Indonesia
Lead Organisation	University of Exeter
Project partner(s)	Borneo Nature Foundation
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Project Leader name	Prof Frank Van Veen
Project website/blog/social media	BNF Website Darwin project website
Report author(s) and date	Bernat Ripoll Capilla, Pau Brugues Sintes, Alison Heatherington, Prof Frank Van Veen – June 2025

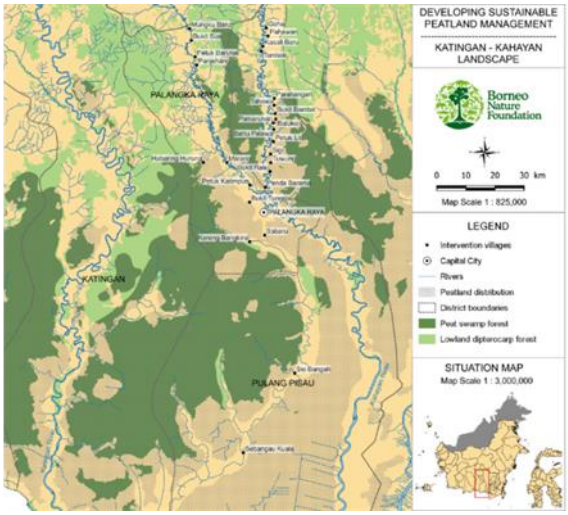
1 Project Summary

Indonesia contains one of the world's largest expanses of tropical peatlands (approximately 15 million hectares), with significant areas located in southern Borneo (Kalimantan). These peatlands support exceptional biodiversity, including globally important populations of threatened species such as the Critically Endangered Bornean orangutan. However, historical drainage for agriculture and logging has extensively degraded large areas of peatland, leaving them highly vulnerable to fire, particularly during drought periods. When these peatlands burn, the fires can smoulder underground for months, emitting vast quantities of carbon and producing hazardous smoke haze, which impacts human health and regional economies. In severe fire years, carbon emissions from peat fires in this region have exceeded those of the entire UK economy.

Even legally protected areas such as Sebangau National Park are at risk due to legacy canal networks that continue to drain peat soils. Without active intervention, particularly rewetting, revegetation, and community fire prevention, degradation and fire risk will likely increase. Adjacent unprotected peatlands face ongoing threats from smallholder expansion and plantation development, although recent government moratoriums and the revocation of plantation permits provide an opportunity for improved management and restoration.

The fundamental drivers of these challenges are weak land-use planning, inadequate enforcement of peat protection measures, and widespread poverty in peatland-adjacent communities. Rural livelihoods often depend on unsustainable practices, such as draining peat for farming or fire use for land clearance. These practices, in turn, further degrade the landscape, reinforcing the cycle of poverty and environmental harm. The Indonesian government has recognised these risks and committed to peatland protection through its moratorium on deep peatland conversion and its national restoration and Social Forestry schemes, but large-scale implementation remains limited by capacity constraints.

This project addressed these linked biodiversity and human development challenges by combining ecological restoration with community empowerment and institutional capacity building. In Sebangau National Park and the wider Katingan-Kahayan landscape, the project delivered peatland rewetting and revegetation, enhanced fire prevention networks, expanded sustainable livelihood options, and supported the formal designation of Village Forests under the national Social Forestry scheme. These interventions aimed to reduce fire incidence, improve forest condition, and strengthen local economies, while building lasting local capacity to manage and protect peatland resources.



The problems addressed by the project were identified through long-standing engagement with local communities, government agencies, and research institutions, supported by detailed ecological and socio-economic assessments. The project built on evidence generated by previous Darwin Initiative and GCRF-funded projects, scaling up successful approaches such as canal blocking, community fire teams, and village-level livelihood diversification across a larger landscape. The target landscape covers over 600,000 hectares of tropical peatland in Central Kalimantan, including Sebangau National Park and the Rungan forest block. The project focused on priority areas for restoration and community management within this landscape, working closely with government forest agencies, local universities, and 25 village communities.

Figure 1. Forest cover map of the Katingan-Kahayan landscape with intervention villages on it.

2 Project Partnerships

This project was delivered through a collaboration between the University of Exeter (UoE), Borneo Nature Foundation (BNF), and the University of Palangka Raya (UPR). UoE led on project strategy, monitoring, and scientific capacity building; BNF acted as the main implementation partner in Indonesia, coordinating field activities and partnerships; and UPR contributed local academic expertise and implementation support.

The project built on long-standing collaborations, including Darwin Initiative grant 25-001 and the GCRF-funded KaLi project, which laid critical foundations for joint work on peatland resilience, biodiversity conservation, and fire risk reduction in Central Kalimantan. During implementation, the project strengthened partnerships with key stakeholders at regional and national levels, including:

- Sebangau National Park (BTNS), with whom BNF completed and extended a MoU until 2029; and co-developed the 2023–2027 Habitat Restoration Plan and 2024–2028 Community Empowerment Plan
- The Central Kalimantan Environmental Agency (DLH), Disaster Management Agency (BPBPK), and Climate Change & Forest Management Agency (PPI Kalteng)
- The Ministry of Forestry and Environment (KLHK), especially the directorates of PSKL and PKTHA
- Social Forestry Agency (BPSKL), supporting village-level social forestry approvals and acceleration plans
- Local governments in Palangka Raya, Gunung Mas, and Pulang Pisau districts
- Indonesian universities (UPR, UMP, UGM, UI, UNAS)
- Private sector partner PT PUM (ecosystem restoration concession, 23,613ha)

Community partnerships were central to project delivery. BNF supported 15 community firefighting teams, 20 nurseries, and 22 Village Forest Management Groups through direct collaboration, training, and material support. These groups were not only project beneficiaries but active participants, co-developing and implementing local restoration and land management plans and monitoring protocols.

The partnerships were established in response to local needs and priorities identified over years of engagement in the region, with all partners contributing to project design, regular reflection and monitoring, and adaptive management. UoE led on overall project strategy, capacity building, and monitoring and evaluation frameworks, ensuring that the knowledge and systems developed are sustainable beyond the project's life. BNF led field delivery and stakeholder coordination. UPR contributed technical expertise and practical support through involvement in fire-free alliances, community outreach, and research into peat-adapted livelihoods.

A key challenge was ensuring continuity across institutional and policy changes within Indonesian government agencies. This was mitigated by embedding project activities in formal agreements and multi-year strategic plans, and by diversifying engagement across multiple agencies and levels.

This strong and diverse partnership base has enabled widespread uptake of restoration, governance and fire prevention activities, increased capacity at all levels, and laid the groundwork for long-term sustainability. To engage wider stakeholders and communicate the biodiversity–poverty link, the project used a range of tailored approaches: policy briefs and joint plans for government actors; public events and training workshops for communities; technical guidance for implementing partners; and communications materials in Bahasa Indonesia. Project understanding was tested and reinforced through feedback surveys, participatory monitoring, and workshop evaluations, which demonstrated strong local awareness of conservation goals and their connection to community wellbeing.

Strong partnerships were central to the project's success, grounded in a robust stakeholder engagement strategy developed during the inception phase. A comprehensive stakeholder mapping exercise was conducted to identify key actors from community groups, government bodies, and partner institutions. This mapping process assessed each stakeholder's influence, role, expectations, and degree of involvement, and was used to guide tailored engagement approaches throughout the project. As the project progressed, these partnerships evolved. A post-project assessment showed that these key stakeholders experienced significant positive change, reflecting their high involvement and supportive stance.

[The Stakeholder Monitoring & Evaluation Matrix, presented in Annex 5]

3 Project Achievements

3.1 Outputs

The Project Assessment Summary Table, linked here, provides a detailed comparison of proposed outputs against actual achievements throughout the project. This comprehensive overview highlights progress, successes, and areas for improvement.

Output 1: Local capacity developed to implement, improve, and encourage replication of peatland restoration efforts throughout the target landscape.

1.1 Multi-stakeholder forum (MSF) established by end Y1 to ensure coordination and communication between different stakeholders active in peatland restoration, share resources including creation of data management system to map and monitor progress, and ensure integration with national strategy

Baseline condition: No existing MSFs related to peatland restoration and sustainable peatlands management.

Source of evidence available: MSF establishment documents, decrees, attendance minutes, and internal and external Back to the Office (BoR) reports.

Over the project period, significant changes have been achieved in building and institutionalising local capacity to support peatland restoration and fire resilience through the creation of local coordination networks and collaborative fora. The project strengthened collaboration between communities, government agencies, and other stakeholders through the formation and operation of inclusive governance and technical platforms, direct skills training, provision of restoration resources, and support for community-driven restoration and monitoring efforts. Three multi-stakeholder coordination mechanisms were successfully established across the region to enable inclusive planning, coordination and discussion between community, government and private sector actors. These include the Social Forestry Forum (ForkomPerSos) uniting 33 community forest management groups, a regional Habitat Restoration Network for the Sebangau-Kahayan landscape (19 stakeholders), and the Disaster Risk Reduction Forum (37 stakeholders). Over 15 meetings were held during the project period, with these multi-stakeholder forums. These platforms have ensured coordinated planning, data-sharing, and alignment with national strategies, including the development and revision of regional policies and management plans (See Output 3.1).

[Multi-stakeholder forums establishment evidence provided in Annex 5]

1.2 10 training sessions held (20% in Y1, 50% Y2, 30% Y3) and resources provided to implement peat rewetting activities with Sebangau NP (target 350 dams built by end Y3), slowing annual average water-table drawdown by up to 70% compared to pre-project baselines

Baseline condition: Base-line data collected and available. No training sessions held and 22 canals historically blocked pre-project (2020: 50 dams/ 4 canals; 2021: 0 canals) and water-table drawdown data available.
Source of evidence available: Training session materials and session records are available, including attendance lists; hydrology restoration data, hydrology monitoring plan and spatial information on canal, dam and hydrology monitoring datasets.

Peat rewetting activities progressed throughout the project, with a total of 182 dams built across 12 canals on the Sebangau, Koran and Rasau rivers; significantly raising water tables (by 10cm, on average) in blocked canals representing a reduction of water drawdown during the dry season of 72%, relative to pre-project baselines. It is estimated that these canal-blocking efforts supported the hydrological restoration of approximately 27,849 hectares across the two sub-catchments. The number of dams constructed was revised down by 50%, following agreement with Sebangau National Park that the priority canals were shorter than originally anticipated, reducing the number of structures needed.

Two targeted peat rewetting training sessions were conducted in Years 1 and 2, building the capacity of 25 staff members from Sebangau National Park and CIMTROP. As the project progressed, the original target of seven sessions was reviewed and adjusted as other capacity-building priorities emerged. By the end of Year 2, the key technical and practical needs of the two primary stakeholders had been met, and therefore, no further peat rewetting training sessions were delivered.

[Peat rewetting impact and capacity building evidence provided in Annex 5]

1.3 15 training sessions held (20% in Y1, 50% Y2, 30% Y3) and resources provided to upscale community nursery programme into 5 additional villages, providing conservation-based income to 100 families in rural communities and targeting equal participation by women.

Baseline condition: Base-line data collected and available. 10 training sessions held to the 10 previous existing groups with 75 members.
Source of evidence available: Training sessions attendance list, GPS location, pictures and monitoring data of Community Nurseries groups for each village including full names, gender and address for each.

At the community level, the network of Community Seedling Nurseries (CNs) expanded to 20 (10 new during the project period), across 7 key villages (4 new) and with a total of 166 members (21% women), to support the expansion of BNF's restoration activities. This expansion has brought in 91 new families and 10 new community nurseries in 5 villages through the course of the project. These groups received ongoing training, tools and technical support from BNF's reforestation team to raise native tree seedlings to planting size.
Seven training events were held, throughout the project period, providing training on seedling nursery management techniques including seedling transplant, care and growth, monitoring techniques and data collection. It was decided that providing joint sessions to multiple groups would be beneficial, in preference to a larger number of sessions for individual groups. This joint training method across several community nursery groups enabled knowledge sharing across communities. A total of 129 members of community nursery groups raised technical capacity during the training sessions.

[Capacity building and community nursery programme evidence provided in Annex 5]

1.4 By Y3, good-practice guidelines for tropical peat rewetting and revegetation including M&E protocols, published; minimum two Indonesian scientist-led papers published in international indexed scientific journals and 10 Indonesian students supported; target min. 15 papers published in newly re-established Journal of Tropical Peatlands; and feedback provided to MSFs with uptake evident by Y3

Baseline condition: Base-line data available. No GPG is available and no M&E Hydrology protocols in place. Two relevant revegetation publications on peat rewetting and revegetation
Source of evidence available: Links to publication of open access, protocols, Students' and scholarships database, SOP and M&E Plans

Good progress was also made towards supporting local stakeholders with good-practice guidelines on ecological restoration. Twenty research papers were published over the course of the project, including three led by Indonesian scientists.
Nineteen Indonesian students were supported to attend university with scholarships. A further eight Indonesian students were supported with the development and implementation of their research dissertations. Of these, four are complete and four are ongoing.

BNF and partners have produced and disseminated five good-practice guidelines (GPGs), including:

- *Long-term M&E Plan for the Peatlands Restoration Initiatives (Y1)*
- *M&E Protocol for Habitat Restoration (Y2)*
- *SOP for the development of Community Seedling Nurseries (Y2)*
- *SOP for reforestation of Degraded Peatlands (Y3)*
- *SOP for Peatland Hydrology Restoration (Y3)*

The planned relaunch of the Journal of Tropical Peatlands as a platform for sharing peatland research remains under development, with partner discussions ongoing. While this was not completed during the project period, research outputs generated by the project are prepared for future publication, supporting the journal's relaunch when feasible.

[Good-practice guidelines, manuscripts and students' capacity building evidence provided in Annex 5]

Output 2: Communities develop more 'peat-friendly' agriculture and livelihoods and are empowered to tackle fire and degradation.

2.1 Peat-friendly agriculture and agroforestry practices (paludiculture) introduced to smallholders in target area, aiming for minimum 40% take-up by Y2 and increased number of participants up to 400 individuals by end Y3. Target equitable participation by women in sustainable livelihoods activities.

Baseline condition: Base-line data available. 112 smallholders in four target villages engaged with peat-friendly practices.
Source of evidence available: Monitoring database, Groups and gender composition, names and address for members.

Significant progress was made during the project in strengthening community capacity for peat-compatible livelihoods and fire resilience. Peat-friendly agricultural practices have now reached 14 villages, with a further 6 groups (97 smallholders) being introduced to paludiculture and aquaculture in year 3, meaning 347 people were trained in total throughout the project period, and 459 since activities in this area began. Women made up 67% of participants.

To understand broader impacts, the project implemented Nested Spheres of Poverty (NESP) surveys, allowing for a baseline-to-endline comparison of wellbeing indicators among participating households (see Outcome 5 impacts). NESP results show that permaculture groups in both the Sebangau and Rungan landscapes reported positive increases in self-perceived wealth (from 5% to 7%), knowledge (from 9% to 13%), and economic wellbeing (from 1% to 6%). These findings suggest that livelihood diversification is contributing to enhanced economic stability and improved food security.

[Development of peat-friendly agriculture and agroforestry practices evidence provided in Annex 5]

2.2 A regional network of community-fire-fighting teams and government agencies, alongside, NGO and private stakeholders forms a fire-free alliance to tackle fires, encourage paradigm shift and behaviour change.

Baseline condition: Base-line data available. No existing Free-Fire or Fire-risk reduction network alliance.
Source of evidence available: Firefighting teams database for the target areas, team composition and names, regional decree for the established alliances and networks

The Fire-Free Alliance effectively prevented forest loss in 2023 despite extreme El Niño conditions (See Annual ENSO index table). 200+ people (including 135 community members) fought 100 fires, supported by BNF's training and coordination through regular meetings. BNF now supports a network of 15 trained community firefighting team and has increased the number of community members supported with training and equipment to 191. Following the 2023 fire season, post-fire evaluations were conducted with participating teams as part of a fire season review workshop, to assess lessons learned and identify training needs and areas of improvement. As a result, two major policy tools at the regional level were finalised:

- *The Forest and Land Fire Contingency Plan for Central Kalimantan Province*
- *A Standard Operating Procedure (SOP) for Effective Firefighting Coordination within the Sebangau NP.*

The formal establishment of the Fire Risk Reduction Forum in partnership with government agencies and private sector organisations marks a key step towards a paradigm shift in fire prevention and firefighting in the region.

[Development of a regional network of community-fire-fighting evidence provided in Annex 5]

2.3 Recommendations on sustainable fisheries and mitigation of impacts identified from restoration projects to fishers and restoration projects to protect fishing livelihoods by end Y2; and engaging with 30-40 local fishers regarding implementing these recommendations and positive feedback from these fishers received by end Y3, demonstrating upscaling potential.

Baseline condition: Base-line data available. No recommendations or mitigation actions in place.
Source of evidence available: Completion of research describing impacts of mining activities on fish and fish-based livelihoods, drafted Decrees and Action Plans, Socialisation and meeting records and Back to the Office reports

Fishery-related restoration impacts were assessed during the project period, and mercury contamination from illegal mining activities was documented. This prompted the development of a new action plan in collaboration with the Environmental Agency (DLH) and the Palangka Raya city government.
A total of 190 community members from ten fisheries groups (10 target villages) received support, tailored recommendations, and capacity-building opportunities aimed at developing sustainable fish-based livelihoods. In total, 68 capacity-building sessions were delivered over 81 training days, covering topics such as fishpond management, fish feed production, sustainable aquaculture, fish product development, market access, and financing. However, these activities remain at a proof-of-concept stage, and further work is required to scale adoption across the landscape and link products to viable market opportunities to ensure long-term impact.

[Development on sustainable fisheries and fishing livelihoods evidence provided in Annex 5]

Output 3: Long-term sustainable peatland management enhanced through expanded community forest management and strengthened institutional capacity.

3.1 For each Forest Management Units (FMU) within the landscape, by end Y3: successful review, update and implementation of Long-term Management Plan activities which benefit biodiversity. Training and resource needs identified and provided via training workshops leading to quantified skill improvements.

Baseline condition: Base-line data available. Three existing Management Plans for the Central Kahayan FMU (one for each Sub-unit) and 1 Management Plan for Sebangau NP (2007-2026). No training needs identified or existing implementation partners except for BNF for the Sebangau NP and FMU. Additional Management plans to be developed or updated (ei. Habitat restoration and community development management plans for Sebangau National Park)
Source of evidence available: MoUs/Collaborative agreements in place, Work plans in place with training and resource needs identified, Long-term Management Plans implementation evidence, training sessions derived from it, plus training records, including participant lists and published reports.

By the end of Year 3, BNF and its partners successfully strengthened forest governance and management across multiple stakeholder groups, supporting the review, update and implementation of long-term management plans designed to safeguard biodiversity in two of the most important Central Kalimantan's peatland landscapes, Rungan and Sebangau. Training and capacity-building efforts were embedded throughout the project to address identified knowledge and resource gaps, ensuring that government, local community and private sector stakeholders are better equipped to deliver sustainable management of these vital ecosystems.

Throughout the project period, we worked closely with the Central Kahayan Forest Management Unit (FMU) and the Sebangau National Park (BTNS). In Year 1 and 2, support focused on the implementation of the FMU's existing sub-unit management plans and the Sebangau NP's 2007–2026 Management Plan. In Year 2, this expanded to include the co-development of two strategic documents for BTNS: the Habitat Restoration Management Plan (2023–2027) and the Community Empowerment Plan (2024–2028), as well as supporting BTNS in an updated Orangutan Population Assessment. By Year 3, BNF also supported the FMU in preparing a new Long-Term Forest Management Plan to guide sustainable forest use and restoration beyond the project lifespan.

BNF provided technical and facilitation support to secure and improve forest governance in Community Managed Areas (Social Forestry initiatives), initially assisting six communities with the development of Long-Term Management Plans. This number grew to eight additional communities by Year 2, bringing the total to 14 communities supported over the project period. These included the development of participatory mapping, FPIC facilitation, biodiversity assessments, and proposal development for official Village Forest designation. Management plans were completed or advanced for communities including Penda Barania, Tuwung, Sigi, Petuk Liti, Bukit Bamba, Parahangan, Bahu Palawa, Pamarunan, Balukon, Petuk Barunai, Petuk Katimpun, Kasali Baru, Pahawan, and Goha.

The project also engaged with three large concessions to improve sustainable forest management, promoting habitat assessments, Endangered species baseline population, and threats reduction by providing recommendations and best practices in ecosystem management and restoration. In Year 1, BNF established a new collaboration with PT PUM Ecosystem Restoration Concession, providing technical capacity for biodiversity monitoring and sustainable peatland management. Year 2 saw completion and publication of the Orangutan Baseline Population Assessment, as well as habitat assessments in collaboration with PT BSA and PT LBP industrial plantation concessions, informing transitions to improved ecosystem and populations management. In Year 3, BNF and PT PUM finalised a new 3-year agreement to advance ecosystem management and restoration practices and completed a Gibbon Baseline Population Assessment.

To summarise, during the project the following deliverables were achieved:

- Two Ecosystem Management Plans were updated for Sebangau National Park.
- Four new population assessments were completed for orangutans and gibbons.
- Habitat and population assessments were conducted in three additional private concessions.
- Support was provided for the completion of Management Plans in eight community-managed areas.
- A total of 36 training sessions were delivered on forest governance, threat mitigation, and ecosystem management.
- The project engaged with over 40 units, agencies, and community groups.
- More than 400 individuals directly benefited from project activities.

The project successfully supported the expansion of Village Forest designations covering a total of 26,910 ha, alongside the development of associated management plans. These achievements reflect a multi-level, cross-sectoral effort to strengthen forest management across over 600,000 ha of tropical peatland, underpinned by tailored training, long-term planning support, and direct facilitation of official designation processes. The result is strengthened capacity among government agencies, local

communities, and private companies to maintain and restore peatland health, protect biodiversity, and secure sustainable livelihoods into the future. The long-term effectiveness of these plans will depend on continued capacity-building and sustainable financing mechanisms, with collaboration among local authorities, partners, and communities remaining essential beyond the project period.
[Implementation of Long-term Management Plans and improved Forest Governance evidence provided in Annex 5]

3.2 Support creation and management of community-managed 'Village Forest' areas in peatland through expansion of national social forestry scheme to cover 20,000 ha benefiting >2,000 households in the target landscape, identifying sustainable livelihoods programmes and providing associated management and M&E tools and training to communities by end Y3

Baseline condition: 12 existing community-managed Village Forest (13,474 ha and 237 households) in peatland areas.
Source of evidence available: Formal documents and maps of Village Forest establishment and coverage, Management Groups composition records, shapefiles and records of training and management tools provided.

The project has made great progress expanding and supporting community-managed Village Forest (Hutan Desa) areas under Indonesia's national social forestry scheme. This effort directly contributes to the sustainable management of peatlands and the empowerment of local communities to safeguard their customary forest resources.
At the start of the project, 12 Village Forest areas covering 13,474 ha and involving 237 households had been formally designated in the target landscape. Through sustained technical assistance, facilitation of proposal development and verification processes, FPIC implementation, participatory mapping, and stakeholder coordination, BNF has significantly expanded this network.
Over the course of the project:

- Twelve new Village Forests were formally designated, covering an additional 12,430 ha of community protected land
- A further 747 ha awaits final decree issuance.
- These designations benefit an additional 1,228 households.

BNF also provided technical and management support to improve the effectiveness of 10 additional Social Forestry areas that had been designated prior to the project. This included capacity-building on forest governance, preparation of long-term management plans, development of sustainable livelihood options, and provision of monitoring and evaluation tools to enhance the viability and sustainability of these community-managed areas.

The project's comprehensive support has strengthened community rights, improved local forest stewardship capacity, and laid the foundation for sustainable livelihoods linked to peatland conservation, contributing directly to both environmental and socio-economic resilience.

[Support creation and management of community-managed evidence provided in Annex 5]

3.3 Development and implementation of targeted capacity building programme for land managers (Forest Management Units; Sebangau NP, Communities) to include Best Management Practices, GIS/Remote Sensing, Firefighting, SMART Monitoring and Patrolling, with each stakeholder receiving specific relevant training on the above aspects by end Y3 (30% delivered in Y1, 50% Y2, 20% Y3)

Baseline condition: Base-line data available. Records of BNF capacity-building interventions for land managers as Sebangau NP, FMU and other Community Groups
Source of evidence available: Partnership Work Plans with Capacity building needs identified and listed on it, records of capacity building activity/training sessions implemented, including attendance and before and after surveys.

A comprehensive capacity building programme was implemented to strengthen the skills and knowledge of land managers across the Sebangau National Park, Central Kahayan FMU, Village Forest groups, community organisations, and private sector stakeholders. Training topics addressed Best Management Practices, hydrology monitoring, biodiversity surveys, sustainable livelihoods, reforestation, community nurseries, fire prevention and control, and the use of SMART monitoring technology.

At the start of the project, baseline data on capacity-building needs was available but limited to records of past BNF interventions. Building on this, tailored training plans were co-developed with key stakeholders to address identified gaps.

Over the project period, 123 training sessions were delivered covering all technical areas, comprising:

- A total of 36 sessions (spanning 88 days) were conducted on land management, sustainable forest governance, tourism development, and social forestry planning. As a result, 210 individuals (58% women and 42% men) improved their knowledge and skills in these areas
- A total of 66 sessions (over 111 days) were delivered on peat-friendly livelihoods, including agriculture, fisheries, and agroforestry techniques. These sessions reached participants with 80% women and 20% men, strengthening their capacity to implement sustainable practices
- Two sessions (over 3 days) focused on hydrology restoration techniques, with 25 participants (92% men and 8% women) gaining technical knowledge to support peatland rewetting and water management efforts
- Seven sessions (7 days total) were conducted on community nursery management and reforestation, reaching 129 participants (87% men and 13% women) who enhanced their skills in seedling production and forest restoration techniques
- Twelve sessions (over 16 days) on Integrated Fire Management, including SMART patrolling, were delivered, strengthening the skills of 189 participants (82% men and 18% women) in fire prevention, detection, and response.

These sessions reached a total of 559 participants from 70 stakeholder units, including government agencies, FMUs, Sebangau NP staff, community groups (LPHD, KTH), universities, and firefighting teams. Gender participation was broadly balanced in many areas, with specific efforts to encourage women's involvement in agroforestry, fish farming, and enterprise development.

This investment in capacity building supports the project's strategy by enhancing local capabilities for peatland restoration, fire management, and sustainable livelihoods, laying the foundation for lasting impact and a resilient landscape legacy.

[Capacity building sessions implemented for land managers evidence provided in Annex 5]

3.2 Outcome

Outcome 1 - Indicator: Number of fires in the target area reduced to 25% of baseline value by Y3, compared to climatologically comparable pre-project years.

The project has met and exceeded Outcome 1, based on MODIS hotspot (Annex 5, Figure 91) and ENSO index data (Annex 5, Figure 93). Compared to climatologically similar pre-project years, fire hotspot counts dropped by 99.9% in Year 1, 79.2% in Year 2, and 76.4% in Year 3, resulting in an average reduction of 85.2% across the project period.

This significant reduction is likely due to a combination of factors, including faster and more effective fire response, enhanced coordination through the firefighting network, improved fire prevention driven by community outreach and ecosystem restoration, and greater awareness of fire risks and impacts among local communities.

Data Source: Baseline figures for the number of hotspots (MODIS hotspots VIIRS Catalogue) in the target area were established for pre-project years (2015-2021) and compiled annually during the project, alongside the ENSO index for each year.

- *Hotspots - MODIS VIIRS Catalog. Imagery from the Land, Atmosphere Near real-time Capability for EOS (LANCE) system operated by NASA's Earth Science Data and Information System (ESDIS)*
- *Multivariate ENSO index values: National Oceanic and Atmospheric Administration (NOAA) of the US Government*

Link for Evidence Presented in Annex 5:

i. Spatio-temporal analysis of MODIS hotspot distribution in the Katingan – Kahayan landscape compared to previous years with similar ENSO index.
ii. Hotspot maps and tables for target area using MODIS VIIRS Catalog pre- and during the project period.
iii. Fire periods and ENSO events from 2000- 2024.

Means of verification/adequacy of indicators: The number of hotspots detected is a reliable and adequate indicator as it correlates with burned area size but should take into account that one fire can include many hotspots and hotspots can be undetected when smoke haze is very thick.

Outcome 2 - Indicator: Area of peatland burned and resultant carbon emissions in target area reduced by 25% by Y3, compared to climatologically comparable pre-project years.

This outcome has been fully met and exceeded. The area of peatland burned, and the resulting carbon emissions have decreased significantly in the project area compared to climatologically similar pre-project years.

Detailed spatial and carbon emission analyses were conducted using reference data to quantify reductions in forest loss due to fire within Sebangau National Park. The forest loss reductions compared to the pre-project baseline were 44.6% in Year 1, 92.6% in Year 2, and 20.4% in Year 3, totalling an average reduction of 39%.

The average carbon emissions from fires also decreased significantly. Pre-project (2016–2021), an average of 42,824,167 tCO2e per year was emitted (average ENSO index of –0,47), while during the project period, the average dropped to 16,168,316 tCO2e per year (average ENSO index of –0,66). This represents an overall reduction of 62.3% in annual carbon emissions in comparable climatological conditions.

Data Source:
Spatial datasets of burned areas for the pre-project years (2015-2021) and during the project years (2022-2024) have been compiled and processed, using the updated 2024 reference spatial data source from Tyukavina et al. *(2022) Global trends of forest loss due to fire, 2001-2019*
The processed data presented on peatland burned, forest loss due to fires since 2017 and yearly carbon emissions have been collected from the new Forest Fires Monitoring platform (SiPongi+ Karhutla Monitoring Sistem; Indonesian Ministry of Forestry). Spatial data published by the Indonesian Ministry of Forestry has been used to map the extension of burned areas in 2023 fire crisis. Additional analysis on forest loss—due to fire and other drivers—has been conducted to better understand the spatio-temporal variations across the landscape. This work builds on established global datasets and methodologies, including Hansen et al.'s Global Forest Loss data and M. J. Sims' study on global drivers of forest loss at 1 km resolution, providing a comprehensive view of landscape dynamics and their underlying causes.

Link for Evidence Presented in Annex 5:

i. Forest Loss due to fires comparative maps for pre-project and during the project years
ii. Tables and charts on Forest loss and carbon emissions on a yearly basis for the project area,
iii. Analysis on Forest loss drivers across the landscape during the project years.
iv. Petland burned maps for the target area on a yearly basis (baseline, Y1, Y2, and Y3) representing total ha and resulting Carbon emissions in Central Kalimantan.

Means of verification/adequacy of indicators: We consider the indicator reliable and adequate. Analysis has been undertaken to validate the area of peatland burned in the target area using satellite imagery and assessing against climatologically comparable years (i.e. similar ENSO index and rainfall).

Outcome 3 - Indicator: Additional 50,000 ha of degraded peatland subject to rewetting and revegetation initiatives, with positive impacts on peat hydrology (increase in water table depth and decrease in dry-season drawdown) and vegetation (increases in seedling density and vegetation cover).

This outcome has been 57% achieved, with a total of 28,420 hectares restored through rewetting and revegetation initiatives: 27,849 hectares via rewetting and 571 hectares through revegetation. Work is ongoing, with an additional 21,627 hectares identified, mapped, and planned for restoration interventions throughout 2025.

A total of 12 canals have been blocked using 182 dams, and 531,591 seedlings have been planted across 570.64 hectares. The positive impacts of hydrology restoration and reforestation, including water table recovery, reduced water flow, increased seedling density, enhanced vegetation cover, and biodiversity recovery, are detailed in Outcome 4.

The main challenges limiting higher achievement of the outcome KPIs include:

- Collaborative agreements with Sebangau National Park required adjustments to planned ecosystem restoration activities. Following the revision of the Sebangau Ecosystem Recovery Plan (2023–2027), both reforestation and hydrology restoration targets and locations were updated to align with the new strategic priorities.
- Environmental conditions posed significant constraints. During the La Niña years of 2022 and 2024, persistently high-water levels reduced the available window for planting and dam construction, limiting the scale and timing of interventions.

Despite the challenges, good progress has been made, and activities will continue through 2025 and beyond, as the project builds strong momentum toward achieving its long-term restoration goals.

Data Source: baseline figures are available for historical canals/areas and new data has been compiled for new canals and reforestation-targeted areas; all areas have been mapped and characterised before intervention.
Link for Evidence Presented in Annex 5:

i. Baseline, Y1, Y2 and Y3 average Ground Water Tables for 40 stations located in the Sebangau forested and non-forested areas
ii. VTOL drone Orthophoto-composition for aerial mapping for the reforestation planting sites
iii. Reforestation species planted composition in the Y1, Y2 and Y3 planting sites.
iv. DEM and water sub-catchment delineation map and table
v. Habitat and hydrology restoration summary tables and charts, including canal names, locations, number of dams, planted trees, species composition, monitoring results, total ha per site, etc

Means of verification/adequacy of indicators: Shapefiles and maps of additional rewetting and revegetation intervention areas, supported by ground and drone verification; combined with monthly monitoring of trends and yearly checks remain as adequate means of verification. The water sub-catchments delineation using DEM has been used as a proxy to define the total peatland area subject to rewetting; it is assumed that if canals drain the peat within a specific catchment, the groundwater levels will be permanently raised by blocking the canals, returning them to levels close to the land surface (H. Wösten *et al.* 2010; I.Urzainki *et al.* 2023).

Outcome 4 - Indicator: By Y3, Zero forest loss, improved forest condition (5% increase in tree above-ground biomass and forest litterfall, no increases in tree mortality), and increased or at minimum stable populations of key forest fauna (including target 10% increase in orangutan and gibbon density), improved river water quality and stable populations of economically important fish species), as compared to pre-project baselines

The means of verification were useful to prove the improvement of forest condition and populations of key forest fauna. Specific details on the results and analysis interpretation on this outcome are available in Section 3.4 (Impact on biodiversity).

The project has contributed to maintaining and improving forest condition and stability of key fauna populations in the Sebangau and Rungan peat forests. Tree growth data from permanent plots indicates gradual increase in tree biomass over the project period (Pre-project average 2015-2021: 491.63 t/ha; during the project 2021-2023: 572.38 t/ha) and stem density and basal area in restored sites, consistent with forest recovery trends. Litterfall collection continued across the project but requires further analysis to assess nutrient cycling changes.

Gibbon population monitoring using acoustic triangulation surveys shows a stable or slightly increasing trend in group density across habitat types. Orangutan nest surveys indicate increased densities compared to pre-project baselines (Pre-project MSF - 2020: 2.42-2.88 ind/km2; 2021: 2.26 – 3.10 ind/km2. During the project MSF – 2022: 2.38-2.99 ind/km2; 2023: 2.78-3.22 ind/km2; 2024: 3.54-5.07). Camera trap data and occupancy analysis confirms presence and activity of target species, including critically endangered species, across restored and control sites. River water quality and fish population trends remain under investigation in the context of mercury contamination (see Output 2.3)

During the project period, a total of 2,011 hectares of forest were lost across the target area (Year 1: 285 ha; Year 2: 1,543 ha; Year 3: 181 ha). This represents a significant 39% reduction in forest loss compared to climatologically similar pre-project years, based on ENSO index values.

The Key Performance Indicator (KPI) related to air quality, measured by PM_{10} concentration, also showed a significant improvement over the project period. Average PM_{10} levels decreased from 29.07 µg/m³ during the pre-project years (2017–2021) to 17.65 µg/m³ during the implementation period (2021–2024), representing a 39.3% reduction. This decline reflects the project's positive influence on reducing fire-related emissions and improving overall air quality and human health in the target landscape.

Data Source:

- Baseline data for indicators that demonstrate forest condition improvement were collated and compared to annual monitoring data collected during the project period. These tree growth and mortality rates in 2.4 ha of permanent forest plots; orangutan and gibbon population surveys using line transects of nests and acoustic triangulation; organic matter litter-fall and monthly monitoring of fauna species presence and abundance using fixed location camera-traps across the Sebangau NP:
- Baseline and forest loss monitoring from Hansen et al.'s Global Forest Loss reference spatial data for the period 2015 – 2024
- Analysis of forest loss in 2023 using burned areas shapefile provided by the Indonesian Ministry of Forestry, drone imagery and ground validation surveys.

<u>* Sebangau NP – Sebangau Forest Block (Kawasan Khusus 45,000 ha)</u>

Yearly tree size increase (2003-2024): from BNF Forestry plots (2.4 ha; trees >20 cm DBH)
Orangutan population density estimates (1997 to 2023): from BNF monthly nest surveys across seven transects.
Gibbon population density estimates (2006 – 2023): BNF yearly data from gibbon triangulation surveys in 3 habitat types
Forest organic matter/ litter-fall: from litterfall traps (2017-2024): from 16 x 1 m2 traps, data collected monthly along two transects.
Fauna species presence and abundance (2015-2023): BNF Camera traps monthly surveys: 79 camera traps (Y2).

<u>* Rungan Forest block:</u>

KHDTK Managed Area (4,910ha) Rungan Forest block: Tree size, DBH, and species composition forest condition (36 plots 3.24ha); Orangutan population density estimates (2016 to 2023): from BNF monthly nest surveys across six transects. Fauna species presence and abundance (2016-2023): BNF Camera traps monthly surveys: 20 camera traps.

Link for Evidence Presented in Annex 5:

i. Tree size increase in BNF historical Forestry plots (2003 – 2024, monitoring implemented every 2 years): including the following variables as indicators: stem density /ha, Basal area (m2/ha), AGB t/ha, BGB t/ha and total Biomass (t/ha).
ii. Orangutan population density trends: number of nests found every month (from 1997 to 2024) and population density analysis yearly for each habitat type (Mixed Swamp Forest, Tall interior Forest and Low-pole Forest), the total number of orang-utans in Sebangau in a 13 x 10 Km sample area.
iii. Gibbon population density trends: number of Gibbon groups/km2 on a yearly basis for each habitat type (Mixed Swamp Forest, Tall interior Forest and Low-pole Forest).
iv. Fauna species presence and abundance: camera trap results for the period 2015-2024 presented yearly, including camera trap effort, camera trapping days, the total amount of species caught on camera, the total amount of photos and occupancy index for key species.
v. Forest organic matter/ litter-fall: 2017-2024 data set, processed analysis for litterfall leaves (kg/ha).
vi. Forest loss table for the target area for 2024 from the main big fire events
vii. Graph comparing air quality (pm10) and ENSO index 2017 – 2023.

Means of verification/adequacy of indicators: The indicators are considered to be reliable to verify the forest condition and populations of key fauna. The forest structure changes, and biodiversity variables provided evidence of responses to improved conservation management.

Outcome 5 - Indicator: Overall target 10% reduction in poverty indicators across multiple spheres (economic, natural, social and political), and subsequent 10% increase in subjective well-being scores among local community members in target villages by Y3, compared to pre-project (where available) or Y1 baseline.

The outcome has been partially met, as of project end. Using the NESP Multidimensional Poverty Monitoring and Evaluation tool, the project has quantified poverty indicators across multiple socio-economic dimensions. Social surveys were conducted in six villages across two landscapes, covering both target groups (N=173) and control groups (N=141). Poverty reduction was assessed through a combination of parameters, including subjective well-being, core aspects such as health, adequate wealth, and knowledge, as well as contextual dimensions encompassing the natural, economic, social, and political spheres. Additionally, infrastructure and services were evaluated, given their influence across all these spheres. Results indicate that overall poverty indicators in the intervention groups have improved relative to control groups. Specifically, notable increases were observed in wealth (4% increase), knowledge (10% increase), and the natural (9% increase) and economic spheres (1.2% increase). These improvements demonstrate the programme's effectiveness, particularly in building local capacity through skill development and behavioural change initiatives.

Significant differences in impact were found between the Sebangau and Rungan landscapes and among various community groups, reflecting how factors such as community composition, village size, and proximity to the capital city or forest areas shape outcomes. This suggests that the project's influence has varied considerably depending on the local context and target population (see Summary Table 124 in Annex 5).

Some poverty indicators, including subjective well-being, health, social and political dimensions, as well as infrastructure and services, did not show any or minor significant changes in certain intervention groups. This may be attributed to several factors. Firstly, the project's activities to date have primarily focused on knowledge and natural resource-related aspects, meaning that areas such as social cohesion, political empowerment, health improvements, and infrastructure development were less directly targeted. Secondly, it is possible that these dimensions require a longer timeframe to reflect measurable improvements, as changes in social and political capital or infrastructure often occur more gradually and may depend on sustained community engagement and external support.

Additionally, while intervention groups have gained valuable knowledge and skills, especially related to economic activities and environmental awareness, the translation of this capacity into tangible improvements in subjective well-being and broader social indicators may take additional time. The gradual nature of behavioural change and systemic development means that benefits in these spheres might become more evident beyond the current evaluation period. Therefore, continued monitoring and support will be essential to capture the full spectrum of the project's long-term impact on multidimensional poverty reduction.

See further and more Indepth analysis in Section 4.2 Project support for multidimensional poverty reduction.

i. **Data Source:** Structured interview questionnaire (with a total of 55 questions) has been developed. A total of 314 community members were interviewed across six target villages, 141 respondents didn't have any previous relation with BNF (control), and 173 respondents were involved in BNF community development programmes.

Link for Evidence Presented in Annex 5:
i. Summary table of respondents to the NESP questionnaires.
ii. Summary table of NESP analysis at the landscape level and community group intervention level
iii. Graphs with NESP analysis at the landscape level and community group intervention level
iv. A map with the respondents' homes georeferenced.

Means of verification/adequacy of indicators: The individual poverty indicators used in the assessment are considered reliable, and the overall methodological approach is appropriate for capturing multidimensional poverty. However, certain key performance indicators (KPIs) related to the social, political, and infrastructure/services spheres tend to show less responsiveness in the short term, especially within the scope of a project with limited intervention reach. This limitation reflects the complex and often gradual nature of changes in these areas, which may require longer timeframes and broader interventions to become measurable.

Outcome 6 - Indicator: More "peat-friendly" livelihoods, following paludiculture principles, implemented by end Y3, indicated by increased number of local community members willingly engaged in these activities and improved peat hydrology in target intervention areas, compared to pre-project baseline.

This target has been fully met, with 12 new villages adopting peat-friendly practices, expanding the total to 16 villages and 459 individuals, an increase of 300% in villages and 310% in participating households since project start. Group numbers rose from 4 to 25.

Data Source: Annual surveys of fishers and farmers in target intervention areas, including self-reporting of economic activities conducted and income levels from these (categorised as peat un/friendly based on reported practices used), including peat drainage levels established through hydrological monitoring; and fire use/incidence in their farming/fishing area.

Link for Evidence Presented in Annex 5:

- Summary tables, maps and impacts for peat-friendly practices developed during the project
- Summary table for capacity building sessions provided related to the development and implementation of targeted capacity building programme for land managers and stakeholders
- Increased number of local community members engaged in these activities in target intervention areas, compared to pre-project baseline.
- Self-reporting economic activities evolving from the livelihoods models developed and income levels

Means of verification/adequacy of indicators: The indicators are considered to be reliable and an adequate methodological approach to quantify the outcome at the landscape level and verify the assumptions.

3.3 Monitoring of assumptions

OUTCOME ASSUMPTIONS

Assumption 1 and 2: *Fire incidence and severity is directly linked to peat drainage (i.e., peat water levels). Fire hotspots and burn scars can be effectively detected and distinguished by remote and drone imagery, and on-the-ground observations.*

Comments: Yes, the assumption has held true and has been monitored. Assumptions all supported by peer-reviewed studies.
Monitoring evidence: See Section I in Annex 5
Pathway to change: Improved peat water levels in Sebangau NP reduced fire risk, while remote sensing, early warning systems, and drone technology enabled rapid detection and response. The project catalyzed systemic change through the publication of new Ecosystem Recovery Plans for the NP, establishment of fire-fighting team network with standardized intervention protocols, and the formation of a Fire Risk Reduction Forum.

Assumption 3: *Target rewetting and replanting areas can be accurately mapped. Peat water levels show detectable changes within project period. Rewetting and revegetation monitoring sub-sets are indicative of wider intervention area (to be guarded against through selection of random sampling locations).*

Comments: Yes, the assumption has held true and have been monitored.
Monitoring evidence: See Section I in Annex 5.
Pathway to change: Reforestation areas were accurately mapped using the Sebangau NP Zonation system, with interventions focused within designated Rehabilitation Zones. The newly published Ecosystem Recovery Plan (2023–2027) now guides future site selection. Drone technology and staff training have enhanced pre-planting mapping accuracy, while Digital Elevation Models (DEMs) are used to delineate rewetting catchments and assess the broader impact of hydrological interventions.

Assumption 4: *Forest structure, biomass and biodiversity variables show detectable responses within the project period to changes in conservation management interventions. Forest-loss projections are reasonable and evidence-based.*

Comments: Yes, the assumption has held true and have been monitored. Above assumptions all supported by peer-reviewed studies. Improved conservation management, through fire prevention, rewetting, and reforestation, could be quantified and measured with specific KPI on forest structure, biomass, and biodiversity. Certain KPIs for biodiversity recovery may not be suitable to assess short-term impacts (ie. Camera trapping, AGB (above ground biomass), primate population assessment, etc.); but baseline and monitoring data using species indicators and vegetation indexes (ie. Insects, Soundscapes, NDVI, Water Table depth and fluctuations, Pollinator activity, etc) confirm these trends.
Monitoring evidence: See Section I in Annex 5
Pathway to change: The project established standardized monitoring and evaluation protocols (SOPs) and strengthened stakeholder capacity to ensure continuous assessment and validation of conservation management improvements. Ecosystem restoration monitoring plans now integrate KPIs such as groundwater level (GWL), vegetation structure, soundscape analysis, rapid species indicator surveys, camera trapping, remote sensing and drone imagery.

Assumption 5: *Local community members are willing to engage within and reply truthfully and openly to NESP surveys. Changes in poverty and subjective well-being indicators can be reasonably attributed to changes in local factors arising from/relating to project activities.*

Comments: To promote honest responses, NESP surveys were conducted by independent enumerators not affiliated with BNF. The assumption has generally held true, particularly for parameters related to the Environmental and Subjective Well-being spheres of poverty. However, changes in the Political, Social, and Cultural spheres appear less influenced at a broader community level within the project timeframe.
Some community members expect small financial compensations for information sharing; this practice has been widely implemented by other conservation organisations in Indonesia. BNF is reluctant to implement these practices and is instead developing reciprocity approaches and trust.
Monitoring evidence: See Section I in Annex 5
Pathway to change: Building on community trust; FPIC procedures and continuous engagement is key for a future pathway to change; the project is developing reciprocal, non-monetary incentive mechanisms to encourage continued open participation.

Assumption 6: *Fisher and farmer survey respondents self-report accurately and truthfully (guarded against by introducing checks, and employing separate survey and intervention implementation teams, and for fire incidence by checking against MODIS satellite hotspot data), and are representative of the wider fisher and farmer population in the target intervention area (guarded against through random respondent selection*

Comments: The first part of the assumption has held true; existing protocols and measures support the validated accuracy of self-reported data and the representativeness of the survey samples. However, limitations in monitoring capacity across the broader fisher and farmer populations within the wider landscape constrained the ability to fully validate whether the surveyed subset is truly representative of the wider fisher and farmer population.
Monitoring evidence: See Section I in Annex 5
Pathway to change: To strengthen data reliability and validation, future efforts will focus on expanding socio-economic assessments/monitoring capacity, incorporating more efficient and independent verification methods.

OUTPUT 1 ASSUMPTIONS

Assumption 1.1 *MSF keeps good, formal written documentation of establishment, forum members, meetings held, etc., and are willing to implement electronic data management systems. MSFs are willing to share these records for verification (while ensuring data confidentiality is maintained). Guarded against through training delivered by project*

Comments: Yes, the assumption has held true and have been monitored. BNF Monitoring and evaluation team have developed series of monitoring spreadsheets with access through a specially developed online server platform.
Monitoring evidence: See Section H in Annex 5

Assumption 1.2 and 1.3 *Training materials produced are kept and documented; accurate records of training sessions delivered, resources provided and dams built are kept. Guarded against through training delivered by project. Surveyees respond truthfully during before-and-after training assessments.*

Comments: Yes, the assumption has held true. Materials, documents and resources produced have been stored and made available through the online server.
Monitoring evidence: See Section H in Annex 5

Assumption 1.4 *Suitably qualified scientists accept positions on BNF Scientific Advisory Board (SAB) and as scientific staff within new BNF Research Division. Scientific stakeholders remain committed and continue to engage post-establishment. Guarded against by collaborative development and decision making from the outset. Journal of Tropical Peatland hosts (University of Palangka Raya) remain committed to journal establishment (expected, given their partnership in the project). MSFs are open to receiving feedback and implementing scientific recommendations. Guarded against through continual dialogue. Our recommendations are of relevance to external partners. Expected by project grounding in national and international conservation, climate and SDG policy.*

Comments: Yes, the assumption has held partially true. Several Indonesian scientists, local universities, and students developed collaborative agreements with BNF and supported project development and research leadership. The SAB and the Research Division have enhanced coordination and strengthened the project's research impact capacity. However, limited institutional capacity at UPR has so far delayed the relaunch the Journal of Tropical Peatland.
Monitoring evidence: See Section H in Annex 5

OUTPUT 2 ASSUMPTIONS

Assumption 2.1 *A significant number of members of local community are willing to engage in peat-friendly livelihoods activities, believed to be true based on existing communication and feedback, survey respondents self-report accurately and truthfully and are representative of the wider sector in the target intervention area.*

Comments: Yes, the assumption has held true and community members receive with positive attitude the proposed peat-friendly approaches and practices. However, the "community" concept is heterogeneous and therefore is subject to many meta-perceptions and conflicts of interests; we truly believe that time and long-term presence increase community trust and reduce resistance to behavioural change.
Monitoring evidence: See Section H in Annex 5

Assumption 2.2 *Individuals are willing to make public commitments to join alliance. Alliance is launched and continuously promoted by MSF members, community is aware of alliance, alliance commitments are simple, clear and verifiable.*

Comments: Yes, so far the assumption has held true; however, further verification of the Alliance's commitments will be necessary. Monitoring will continue beyond the project's end to confirm sustained behavioural and management changes.
Monitoring evidence: See Section H in Annex 5 (Decree)

Assumption 2.3 *Impacts are detectable and can be reliably attributed (or not) to changes in management activities. MSFs and local fishers self-report accurately and truthfully and are open to engaging with the project and implementing recommendations.*

Comments: These assumptions have not yet been fully tested as implementation of the fisher-focused restoration recommendations is ongoing or pending wider adoption. Monitoring will continue beyond project end to confirm behavioural and management changes.
Monitoring evidence: N/A

OUTPUT 3 ASSUMPTIONS

Assumption 3.1 *FMUs remain accepting of project engagement and involvement in plan development, and in sharing information with the project. Guarded against through continual dialogue during project period.*

Comments: Yes, the assumption has held true; FMU and Sebangau National Park officials are fully engaged and involved in plan and activities development. MoUs have been developed and extended and Annual Work plans remain active and aligned with the current project. BNF, the Sebangau National Park and the Ministry of Forestry successfully extended the existing MoU until 2029.
Monitoring evidence: See Section H in Annex 5 (MoU, PKS)

Assumption 3.2 *National and local support for social forestry continues. Local communities are supportive, and willing to contribute efforts to establishment of Village Forests.*

Comments: Yes, the assumption has held true; province-level and national agencies are supportive of BNF's intervention, including the Central Kalimantan Social Forestry and Environmental Partnerships (BPSKL), the Directorate of Tenure and Customary Forest Conflict Management (PKTHA) - Ministry of Forestry and Environment (KLHK); both agencies responded positively to BNF requests and implemented the technical verifications for the proposed Social Forestry proposals. Communities remain committed and engaged in the Village Forest efforts initiated.
Monitoring evidence: See Section H in Annex 5 (Social Forestry)

Assumption 3.3 *Training materials produced are kept and documented; accurate records of training sessions delivered and resources provided are kept. Guarded against through training delivered by project. Surveyees respond truthfully during before-and-after training assessments.*

Comments: Yes, the assumption has held true. Materials, documents and resources produced have been stored and made available through the online server.
Monitoring evidence: See Section H in Annex 5 (Training documentation and monitoring datasets)

3.4 Impact

The intended impact of this project, as stated in the original application, was: "Effective local conservation leadership and management of peat-swamp forests, for the benefit of biodiversity, human health and local economies."

This project has made measurable progress towards this goal by building local capacity, strengthening institutional arrangements, and empowering communities to lead peatland conservation and management efforts across the Sebangau and Rungan landscapes of Central Kalimantan.

Contribution to Biodiversity Conservation:

The project has enhanced the ecological condition and resilience of over 600,000 ha of tropical peat-swamp forest, with peatland rewetting applied across 27,849 ha and active revegetation of 571 ha. This has contributed to improving hydrology, reducing fire risk, and facilitating forest regeneration.

Fire occurrence in the target area declined significantly, with MODIS hotspot counts reduced by an average of 85.2% across the project period compared to climatologically similar pre-project years. These outcomes have lowered the risk of catastrophic peat fires that threaten biodiversity and human health.

Forest monitoring indicates increasing above-ground biomass from 477.89 t/ha to 557.20 t/ha in key plots, consistent with improving forest condition. Orangutan and gibbon populations remain stable or are showing positive trends in density and occupancy across monitored habitats, suggesting that critical species populations are being maintained or recovering.

The project's efforts have directly contributed to safeguarding the world's largest protected population of Bornean orangutans (>6,000 individuals in Sebangau National Park), while ecosystem service restoration has the potential to avert significant greenhouse gas emissions, estimated at 27–66 tCO_2/ha/year from rewetting and 101–455 tCO_2e/ha/year from avoided peat fires.

Three partnerships have been established with large private concessions within the target landscape, covering a total of 44,616 hectares of peatland forest and a total population of 834 – 1,231 Critically Endangered Bornean orangutans. These areas are now operating under improved forest governance, monitoring, and threat mitigation frameworks, in line with recommendations from the Biodiversity and Habitat Assessments.

Contribution to Human Development and Wellbeing:

Communities in the target landscapes have benefited from strengthened capacity for sustainable forest management through the national Social Forestry scheme. Village Forest areas expanded from 13,474 ha to 26,910 ha under formal designation, providing management rights and livelihood opportunities to over 3,260 households.

Peat-friendly livelihood activities, including agroforestry, aquaculture, and permaculture, engaged 459 individuals (67% women) across 14 villages. Community seedling nurseries supported 166 members and generated over £153,000 in income during the project period. In fisheries, 190 fishers received training and tailored recommendations to support sustainable practices, with positive feedback received during endline workshops.

By reducing fire frequency and haze pollution, the project has likely contributed to improved health outcomes for the ~500,000 residents of the wider landscape. Educational and outreach activities reached approximately 100,000 people, raising awareness and promoting sustainable peatland management practices.

Strengthening Local Conservation Leadership:

A key achievement of the project has been the development of local leadership and institutional capacity. Multi-stakeholder platforms were established or strengthened including community firefighting teams, Village Forest management groups, and restoration networks, fostering coordination between communities, government agencies, and private sector actors.

Training and capacity building delivered to nearly 600 participants across government agencies, FMUs, national park staff, private sector and communities have enhanced local skills in ecosystem restoration, fire management, sustainable livelihoods, and forest governance, with strong participation by women and efforts to ensure inclusive representation. This investment has built a foundation for sustained, locally led conservation action beyond the project's lifetime.

To summarise: in line with its original impact statement, the project has built effective local conservation leadership and governance structures. It has also improved the management and ecological condition of critical peat swamp forests, and delivered benefits to biodiversity, human health and local economies. These achievements contribute to Indonesia's commitments under the Convention on Biological Diversity (CBD), its national peatland protection strategy, and multiple Sustainable Development Goals (SDGs), and provide a replicable model for sustainable peatland management.

4 Contribution to Darwin Initiative Programme Objectives

4.1 Project support to the Conventions, Treaties or Agreements

This project actively supports the implementation of the Convention on Biological Diversity (CBD) post-2020 Global Biodiversity Framework (GBF), contributing to its action targets for 2030. Through integrated activities linking peatland restoration, sustainable community livelihoods, biodiversity protection, and fire prevention, the project has addressed key aspects of the Framework designed to transform society's relationship with nature and achieve the 2050 vision of living in harmony with nature.

Specifically, the project has contributed to the following CBD 2030 Action Targets:

Action Target 1 – Reducing threats to biodiversity

Targets 2, 3 and 8: The project has directly contributed to the critical restoration of degraded peatlands through hydrology restoration and revegetation efforts, covering over 28,000 ha. By securing formal social forestry designations and improving ecosystem

connectivity for almost 27,000 ha of community managed forests in the Sebangau-Katingan landscape, the project supports both protected and Other Effective area-based Conservation Measures (OECM). Fire prevention capacity-building and Integrated Fire Management have strengthened resilience to climate-related threats, supporting Target 8 on ecosystem-based adaptation.

Action Target 2 – Meeting people's needs through sustainable use and benefit-sharing

Targets 9, 10 and 11: Sustainable livelihoods activities (including agroforestry and aquacultures) have been expanded and strengthened across 14 villages, benefitting 307 households. In addition, the project supported the establishment and operation of 20 Community Nurseries in 7 villages, with a total membership of 166 individuals actively producing seedlings for reforestation and restoration activities. These activities have contributed to food security, improved incomes, and reduced reliance on extractive or damaging practices. The project also supports customary land tenure rights via the national social forestry scheme, ensuring equitable benefit-sharing aligned with community priorities.

Action Target 3 – Tools and solutions for implementation and mainstreaming

Targets 14, 20 and 21: The project has informed the development of forest and peatland management plans with government agencies, integrated biodiversity values into regional land-use plans, and supported monitoring tools such as SMART patrolling and community-based hydrology assessments. Collaborative forums and Village Forest Management Groups have strengthened local governance structures. Education, awareness and capacity-building activities (including environmental education in schools and public outreach events) have helped to mainstream biodiversity values into local decision-making processes.

The project also contributed towards and will directly support Indonesia in meeting its national and international environmental commitments, including:

- The Kunming-Montreal Global Biodiversity Framework and the aligned recently published Indonesian Biodiversity Strategy and Action Plan (IBSAP) 2025–2045, by conserving critical habitats and species through ecosystem restoration and inclusive management.
- Indonesia's Nationally Determined Contributions (NDCs) under the Paris Agreement, which aim to reduce GHG emissions by 29% unconditionally (or 41% with international support) by 2030, in part through reducing deforestation, reforesting 12 million hectares, and rehabilitating 2 million hectares of peatlands.
- The Indonesia FOLU Net Sink 2030 Agenda and REDD+ National Strategy 2021–2030, which prioritize peatland restoration, emission reductions from fire, and sustainable forest governance.
- The Peat Restoration Agency's 3Rs Strategy: Rewetting, Revegetation, and Revitalisation of livelihoods.
- UN Sustainable Development Goals, including SDG 13 (Climate Action), SDG 15 (Life on Land), among others.

Overall, the project's multi-level approach, from community empowerment to policy engagement, supports Indonesia's progress in meeting its CBD commitments and the FOLU net sink targets for carbon emissions reduction from deforestation and peat degradation; and delivering nature-based solutions that also contribute to national climate, development, and poverty reduction goals.

4.2 Project support for multidimensional poverty reduction

This project adopted a multi-dimensional approach to poverty alleviation, recognising the complex, intersecting factors that shape poverty in rural peatland communities. By integrating conservation action with livelihood development, capacity-building, and governance strengthening, the project directly and indirectly contributed to poverty reduction in Central Kalimantan.

A key achievement was the completion of a multi-dimensional poverty assessment using the Nested Spheres of Poverty (NESP) methodology (Gönner et al. 2007) across six target villages. This enabled monitoring of project impact on well-being, health, wealth, knowledge, and community context (natural, economic, social and political spheres). Data were gathered from 314 respondents, including 173 project participants and 141 control respondents not engaged in BNF interventions, providing valuable insight into the project's contribution to improving livelihoods and reducing poverty vulnerabilities (See analysis, NESP diagrams and results interpretation in Annex I).

Our project has contributed to poverty reduction by advancing multidimensional knowledge and evidence on the complex linkages between biodiversity conservation, sustainable land management, and human wellbeing. While direct poverty reduction impacts varied across intervention groups and landscapes, the project generated clear improvements in key socio-economic indicators, particularly in wealth (+7.0% in Rungan permaculture villages; up to +5.1% in Sebangau permaculture groups), knowledge (+8.8% to +13.5%), and natural and economic spheres (up to +20.9% in natural sphere for fire fighters). These improvements reflect enhanced local capacity, skills development, and behavioural changes that are essential foundations for long-term poverty alleviation. Although some indicators such as subjective well-being, social, political participation, health, and infrastructure showed limited or no immediate change, this is likely due to the relatively short project duration and the complexity of these dimensions, which require sustained interventions and time to manifest measurable outcomes.

Direct Benefits Evidenced

- The Permaculture groups (459 members) in both landscapes exhibit the most consistent positive improvements across multiple indicators. For example, in Sebangau, the Permaculture group showed increases of +8.6% in subjective well-being, +9.0% in health, +13.5% in knowledge, +8.5% in the natural sphere, and +6.3% in the economic sphere. In Rungan, permaculture showed more modest but positive gains in wealth (+7.0%), and knowledge (+8.8%)
- The firefighting tams in Sebangau (191 members) demonstrated meaningful improvements across several poverty-related indicators. Notably, members reported a +7.8% increase in subjective well-being, +4.2% in wealth, and +7.2% in knowledge, reflecting gains in personal development and perceived quality of life. The most significant progress was observed in the natural sphere, which improved by +20.9%, indicating strengthened community capacity in ecosystem protection and fire prevention.
- The Community Nursery groups (166 members) in Sebangau achieved moderate but positive changes across several indicators, suggesting early impacts on poverty reduction and wellbeing. Improvements were recorded in knowledge (+9.3%), natural sphere (+6.3%), economic sphere (+3.4%), and infrastructure/services (+4.0%), reflecting gains in ecological awareness, basic livelihoods, and access to supporting systems. However, some areas such as subjective well-being (–5.0%), social sphere (–5.1%), and wealth (–0.6%) showed marginal or negative change.
- Sustainable Livelihoods Groups (459 individuals): Smallholders and fishers in 14 villages received technical training and inputs that improved land productivity, enhanced food security, and diversified income sources. Income streams included permaculture produce, aquaculture, and non-timber products such as purun grass crafts. Women made up 67% of participants, demonstrating strong gender inclusion.

- Village Forest Management Groups (1,465 households, 26 formal groups): Training and technical support enabled Village Forest groups to access and manage 26,910 ha of community forests, supporting community-led sustainable enterprise development (Annex H). This enhanced land tenure security, resource rights, and long-term income potential.
- Green Job Creation: The project supported employment for community members in firefighting teams, reforestation activities, dam building and monitoring, research support, and transport services. These roles provide stable, conservation-linked income streams while building local technical expertise.
- Women's Economic Empowerment: Women's groups benefited from new livelihood opportunities such as organic purun crafts for ecotourism markets. The Marang female-led firefighting team, established in Y1 and sustained through Y3, represents a breakthrough in gender roles in peatland fire prevention (Annex H).

Indirect and Long-Term Poverty Reduction Benefits

- Ecosystem Service Protection: By reducing fire incidence and supporting peatland restoration, the project secured provisioning services (local foods, water), regulating services (air quality, disease control), and supporting services (carbon storage, nutrient cycling). These improvements safeguard community livelihoods against environmental shocks (see Outcomes 1–4, Annex I).
- Reduced Economic Loss and Health Risks: Fire reduction mitigated the economic costs of haze-related health problems, agricultural disruption, and transport closures, benefitting approximately 500,000 residents in the landscape.
- Education and Youth Development: Environmental education activities and green skills training provided young people with improved employment prospects in conservation and ecotourism sectors.
- Improved Governance and Institutional Capacity: Strengthened local governance structures, including Village Forests, private concessions, and Social Forestry Business Groups, provide long-term platforms for income generation, conflict resolution, and sustainable land management.

The project has contributed to poverty reduction by building income sources, strengthening community capacity, and protecting vital ecosystem services essential for long-term well-being. This multi-dimensional impact aligns with Darwin Initiative priorities for poverty alleviation in Upper Middle-Income Countries by advancing understanding and practice in sustainable peatland management and community development.

4.3 Gender Equality and Social Inclusion (GESI)

GESI Scale	Description	Put X where you think your project is on the scale
Empowering	The project has all the characteristics of a 'sensitive' approach whilst also increasing equal access to assets, resources and capabilities for women and marginalised groups	**X**

The project is assessed as Empowering, reflecting that it has addressed basic needs and vulnerabilities of women and marginalised groups (as per the Sensitive criteria), while also contributing to increased access to knowledge, skills and capabilities, particularly in sustainable livelihoods development, community-based fire prevention and restoration activities.

Promoting gender equality and social inclusion is a core commitment of this project. In a context where patriarchal norms are still prevalent, we recognise that shifting attitudes and achieving equitable participation require long-term cultural change. Our partner in Indonesia, BNF, actively champions gender equity through policy and practice; women currently hold 58% of the Board of Management roles (N=9), contributing significantly to strategic decision-making, leading scientific research, and serving as key representatives in high-level stakeholder engagement.

The project successfully promoted strong female representation in sustainable livelihood (Output 2.1), with community groups maintaining gender ratio of around 3:1 (women: men), with 307 of 459 participants female.

The community nurseries programme, part of the broader intervention to promote conservation-based income to 100 families in rural communities, saw lower female participation, with 74 men (81%) and 17 women (19%) involved. This contrasts with the overall project's near gender parity in training sessions (50.3% women) and highlights opportunities to strengthen inclusive engagement within this specific activity.

While physical firefighting, patrolling, and dam building activities have largely been male-dominated (in line with prevailing social norms), the project has enabled broader participation of women in firefighting activities, patrolling and fieldwork, as well as in non-physical roles such as awareness raising, village-level coordination and environmental education. In Year 2, BNF notably advanced gender inclusion by supporting and empowering Central Kalimantan's pioneering women-led firefighting team (MPA Marang). We celebrate this team as a Project champion, hoping to inspire future behaviour change and greater gender inclusion within male-led initiatives.

To promote women as Local Conservation Champions and Role Models, we have intensified efforts to increase the visibility of their leadership in the following contexts:

- We publicly promoted and celebrated the vital contributions of women in rural Borneo by recognizing their role in equal professional contexts during events such as Kartini Day, a national holiday honoring women's rights, and International Women's Day.
- We actively invited and encouraged female conservation leaders to participate in conservation forums, conservation podcasts, and campaigns.
- BNF supported and empowered Central Kalimantan's first women-led firefighting team, the Marang Fire Fighting Community (MPA Marang), the region's pioneering firefighting team composed mainly of women.
- BNF awarded local scholarships to young women, facilitating their access to careers in conservation.

BNF actively encouraged women by promoting equal job opportunities for all community members while supporting educational programs with a strong gender perspective. Despite ongoing barriers from entrenched societal norms and cultural beliefs limiting women's full participation, which remains a key challenge, the project demonstrated that inclusive consultation, female leadership, and knowledge sharing empower women to contribute meaningfully to conservation efforts.

4.4 Transfer of knowledge

The project has actively supported the transfer of knowledge to both practitioners and policymakers, with a strong emphasis on capacity building and applying conservation learning to real-world challenges in peatland management and community-based resilience. New knowledge generated through the project, such as peatland restoration and fire prevention models, has been shared through over 123 sessions (225 training days) with series of workshops, capacity building sessions and fora meetings involving local government agencies, NGOs, and community leaders.

[Knowledge transfer summary tables and evidence available in Table 87 and Figures 88 and 89]

The findings from the multidimensional poverty assessments corroborate the increased knowledge gained by community members across target villages and intervention areas. Across all intervention groups, particularly in permaculture and fire-fighting teams, knowledge scores increased by 8.8% to 13.5% [See knowledge increase assessment evidence for community intervention groups in Figure 125-128], reflecting the effectiveness of training and hands-on engagement in sustainable land management, fire prevention, and ecological restoration practices. In particular, the project facilitated the integration of scientific and community-derived knowledge into local forest governance management plans and regulations, fostering collaborative decision-making and encouraging evidence-based conservation practice. [See Forest Governance and local policies evidence in Figure 75]

At the national and international levels, the project contributed to broader dialogues through presentations at national conservation forums, submission of case studies to global restoration networks, and published articles in scientific journals and conservation media. Materials and learning products including policy briefs, training manuals/protocols, and visual communication tools were developed in accessible formats and shared across relevant networks to ensure uptake by diverse stakeholders. These efforts have extended the reach of Darwin-generated knowledge and are expected to encourage adaptation and replication in similar socio-ecological contexts across Indonesia and beyond.

4.5 Capacity building

Through targeted capacity-building efforts, several staff members from our in-country partner organizations experienced notable professional growth. Some were invited to participate in national and regional expert panels, conferences and symposiums, while others were appointed to technical working groups or received promotions within their institutions. These advancements reflect the strengthening of local expertise and the growing recognition of their contributions to conservation at various levels.

BNF staff gained increased recognition through participation in national and international expert platforms:

- National Expert Committees: Three BNF staff members (2 female, 1 male) have been invited to join the IUCN Science panel for Borneo to contribute to the development of an assessment report.
- BNF Scientific Advisory Board: The Board now comprises six members, including four female and two male scientists, reflecting a strong commitment to gender balance and scientific excellence.
- Fire Risk Reduction Forum: Established in Year 3, this forum brings together over 37 local stakeholders to collaboratively enhance fire risk management strategies. Two BNF representatives (1 female, 1 male) have been formally included as committee members.
- Conference Participation: a female Indonesian BNF primate scientist has actively participated in and presented at several national and international conferences, strengthening both institutional visibility and gender representation in scientific spaces.

5 Monitoring and evaluation

The main outcome for this project was to Improve local capacity and stakeholder coordination enabling effective implementation and upscaling sustainable peatland forest management. To monitor and evaluate our activities and the impacts of our achieved outcomes, we have collected baseline and activities monitoring data (presented in the Monitoring and Evaluation Plan Annex 4 Section A).

With support from UoE, baseline and annual progress on KPI data has been collected and monitoring implemented to report against the project outcomes and outputs. A summary table with KPIs and the level of achievement against the project Outputs has been prepared and presented in Figure 5 Annex 5. The project achieved strong overall results, with most targets fully met or exceeded, particularly in strengthening local capacity, supporting sustainable livelihoods, and improving forest governance. Stakeholder engagement was robust, with multi-stakeholder forums established and over 15 meetings held, while long-term management plans were reviewed, updated, and implemented across various forest areas. More than 13,000 hectares of community forest were secured (66% of the 20,000-ha target), benefiting over 1,400 households, and over 400 individuals were trained through 36 capacity-building sessions. Scientific output was also significant, with 20 published or submitted manuscripts and five best-practice documents. Peat-friendly agriculture showed high uptake and strong women's participation (67%), though women's involvement in community nurseries remained low (21%). The peat rewetting and fisheries components also faced challenges, with activities falling short of targets due to limited training delivery and engagement. Despite these gaps, the project delivered impactful outcomes for ecosystem restoration and community resilience.

The full list of the Darwin Initiative Standard indicators to report the project impact has been made available in Annex 3. This includes detailed data on outputs, outcomes, and progress towards long-term goals.

As part of the project's monitoring and evaluation framework, a stakeholder mapping exercise was conducted, during the project inception phase, using a stakeholder matrix to identify key actors across community, government, and partner levels. This process defined each stakeholder's level of influence, roles, expectations of change, and degree of involvement in the project. The matrix helped guide engagement strategies and ensure that communication and participation were appropriately tailored. A post-project assessment was later carried out to evaluate how stakeholder expectations aligned with actual achievements, particularly looking at the observed change during the project period. The Stakeholder M&E Matrix has been presented in Figure 6 Annex 5. The stakeholder analysis shows that core community groups and key government agencies were highly involved and experienced strong positive change, aligning with their supportive predispositions. Most stakeholders helped or actively made change happen, especially in decision-making roles, while those with more peripheral roles saw moderate change.

6 Lessons learnt

The implementation of this project has required adaptive management and continuous learning, particularly in project administration, partnership development, forest governance, and community engagement. We would like to highlight the following lessons learned during the project period:

- Women's Empowerment, Engagement, and Participation: The project successfully demonstrated that with targeted support, women can play active roles in conservation and sustainable livelihoods, such as leading firefighting teams, managing permaculture groups, and participating in trainings. However, persistent gender norms and cultural barriers, particularly around physically demanding roles like peatland restoration, continue to limit full inclusion. Long-term behavioural change requires continued advocacy, local role models, and gender-responsive approaches across all activities.
- Limitations of impacts on poverty: While the Nested Spheres of Poverty (NESP) survey tool offered a structured way to measure change in household well-being, short project timeframes limited the ability to capture deeper, systemic shifts. Some indicators showed early signs of improvement, but NESP is better suited to multi-year monitoring where trends in poverty alleviation and resilience can be more meaningfully interpreted.
- Forest Governance and Political Commitment: Despite substantial efforts in Year 1 to align project goals with regional government agendas, Year 2 was marked by reduced political momentum due to the national elections in early 2024. Fluctuating priorities and delayed decision-making posed challenges for advancing forest management plans and policy engagement. Strengthening relationships with mid-level government staff and maintaining flexible timelines proved essential for sustaining dialogue and cooperation.
- Forest Governance and Political Commitment: Despite substantial efforts in Year 1 to align project goals with regional government agendas, Year 2 was marked by reduced political momentum due to the national elections in early 2024. Fluctuating priorities and delayed decision-making posed challenges for advancing forest management plans and policy engagement. Strengthening relationships with mid-level government staff and maintaining flexible timelines proved essential for sustaining dialogue and cooperation.
- Community participation and land tenure conflicts: Land tenure disputes in Village Forest areas highlight the need for better clear FPIC, socialisation, conflict resolution, and boundary adjustments. However, such issues are complex and not always resolvable within project timelines—and it is not the role of NGOs to dictate outcomes, but to support transparent, community-led processes.

7 Actions taken in response to Annual Report reviews

This section outlines our response to key recommendations from the previous Annual Report review. We also provide specific insights into the strategies adopted to ensure the post-project sustainability, assess impact, and explore innovative financing mechanisms.

Exit Strategy: An exit strategy was developed during Years 2 and 3 to guide a sustainable transition, focusing on four main areas: (1) integrating community-led projects into Regional and Village Development Plans to access long-term funding and build autonomy; (2) enabling Social Forestry Business Groups to access annual government support through certified accreditation; (3) securing long-term investment for community-managed protected areas, including carbon funds, Indonesian development funds, and compensation schemes from the private sector; and (4) ensuring institutional sustainability through strengthened partnerships with local organizations and government agencies, including a newly signed 5-year MoU with Sebangau National Park.

Project Impacts on Poverty Status: To assess the socioeconomic impact of the project, we conducted and completed the Nested Spheres of Poverty (NESP) assessment across target communities. This comprehensive tool evaluated poverty through multiple dimensions including access to natural resources, education, health services, financial stability, food security, and participation in governance. Results from the assessment have provided valuable baseline and endline comparisons, revealing notable improvements in income diversification, reduced dependency on extractive activities, and increased resilience. (See Figures 125 to 128)

Training courses and revised protocols on social and environmental safeguarding for project staff: We have been promoting internal capacity building and revised safeguarding protocols for UoE and BNF staff. During the second and third year of the project we reviewed Social and Environment Safeguard protocols and practices to ensure the sustainable and responsible management of conservation initiatives. Amongst others, the following safeguarding protocols were revised: Free, Prior and Informed Consent (FPIC), Community Feedback and Grievance Mechanisms.

Specific and external staff capacity building has been delivered on First Aid training, community development strategies and associated risks, as well as effective community engagement techniques. These trainings aimed to enhance staff preparedness for fieldwork, improve their ability to work respectfully and effectively with local communities, and mitigate social and operational risks linked to conservation interventions

8 Risk Management

A detailed assessment related to the project-related potential risks has been carried out, including contextual, fiduciary, and reputational risks; all of these have been added to the Risk Management Framework document (made available), which has been reviewed and updated as needed. Specific responses and mitigation measures have been considered to address identified issues and manage them appropriately, should they arise. No major adaptations to the project design have been made during the project, but specific measures, protocols, and newly revised agreements at the community-group level have been developed.

In addition, several key policies and Standard Operating Procedures (SOPs) related to accountability, safeguarding, and risk management were reviewed and updated during Years 2 and 3. These include the SOP for Financial Management, a new Community Feedback and Complaints Mechanisms, and revised clauses addressing Anti-Terrorism, Child Labour, Anti-Corruption, and Bribery. All updated documents are available upon request.

9 Scalability and Durability

Certain project components, such as the relaunch of the Journal of Tropical Peatlands and upscaling of sustainable fisheries livelihoods, remained at preparatory stages and require further development to achieve full impact. These areas offer opportunities for continuation and expansion by local partners and government agencies post-project.

The project effectively raised awareness and built capacity among key stakeholders, including the Sebangau National Park Authority (BTNS), community firefighting teams (MPAs), and residents of surrounding villages. Practical training sessions, joint fieldwork (e.g. canal blocking), and community meetings improved stakeholder understanding of the benefits and costs of fire prevention and peatland restoration measures.

Incentives for government, and community were aligned where possible. For instance, the project supports BTNS's application for Ramsar designation (a recognised national objective). Community-level priorities were focused on reducing fire-related livelihood and safety risks while piloting alternative, sustainable income options. These shared priorities laid the groundwork for continued engagement.

The project also supported policy alignment at multiple levels. At the national and subnational scales, activities contributed to peatland protection and fire prevention strategies, including coordination with district fire authorities. BTNS's renewed MoUs with BNF and the extension of conservation work across the 3rd managed areas, extend BNF's partnerships through 2029, embedding project activities into ongoing management an expanded geographical scope.

Communities involved in restoration activities are growing in confidence and capabilities. Community discussions indicate growing awareness of peat fire risks and the importance of preventive action, though further evidence is needed to quantify these behavioural changes. Project-produced communication materials also remain in use to support continued outreach and stakeholder education.

BNF developed an exit plan during Years 2 and 3 to promote sustainability. Key actions included skill transfer, maintenance responsibilities for physical infrastructure, integration of fire prevention and restoration into community and park plans, and continued collaboration under new funding streams.

The project's most enduring achievements include strengthened institutional capacity in fire management, restored hydrology infrastructure (blocked canals), and empowered community partnerships. These are underpinned by strong local ownership, alignment with policy goals, and relevance to pressing livelihood and environmental concerns.

BNF Darwin-funded staff have transitioned into other projects with similar objectives, ensuring continued technical support to BTNS and community stakeholders. Equipment remains in active use by MPAs and BTNS, supporting ongoing fire prevention and firefighting operations.

10 Darwin Initiative identity

Throughout the project, BNF has prominently featured the Darwin Initiative logo on its website, as well as on posters and banners displayed at workshops and meetings in Kalimantan, wherever possible. Darwin Initiative support was acknowledged alongside other funders as part of a broader programme. This support was also recognised in several of BNF's online articles and social media posts related to activities delivered under this project, and shared with journalists reporting on our work, and through BNF's social media channels.

Section M in Annex 5 provide an overview of BNF's communications and the growing number of followers. In addition, UoE developed and launched a dedicated Darwin Initiative website highlighting the project, anticipated outcomes and success stories from the field.

11 Safeguarding

12 Finance and administration

12.1 Project expenditure

Project spend (indicative) since last Annual Report	2024/25 Grant (£)	2024/25 Total actual Darwin Initiative Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)	[redacted]			
Consultancy costs				
Overhead Costs				
Travel and subsistence				
Operating Costs				
Capital items (see below)				
Others (see below)				
Audit costs				
TOTAL	192,810.00	188,292.41		

Staff employed (Name and position)	Cost (£)
Helen Morrogh Bernard - Research Fellow	[redacted]
Frank Van Veen - Project Lead	
Anton Nurcahyo, CEO BNF	
Adhy Maruli, Head of Sebangau Programme	
Daniel Refly Katoppo, Habitat Restoration Manager (until August 24) then Interim Head of Sebangau Programme	
Franciscus Harsanto, ComDev Manager	
Astria, IFM Coordinator	
Koesmyadi, Community Seedling Nursery Coordinator	
Idrus Daff, Hydrology Monitoring and Dam Building Coordinator	
Salahudin, Habitat Restoration Coordinator	
Hendri, Senior Field Coordinator	
TOTAL	

Capital items – description	Capital items – cost (£)
N/A	[redacted]
TOTAL	

Other items – description	Other items – cost (£)
Community seedling nursery construction costs (logistics)	[redacted]
Consumables for project teams	
Field radios	
Research station repairs and maintenance	
TOTAL	

12.2 Additional funds or in-kind contributions secured

Matched funding leveraged by the partners to deliver the project	In 2024/2025	Project Total (£)

The Orangutan Project (TOP)	[redacted]
Arcus Foundation	
Re:Wild	
CISU	
University of Exeter	
TOTAL	

Total additional finance mobilised for new activities occurring outside of the project, building on evidence, best practices and the project	**Total (£)**
CISU CCAM	[redacted]
TOTAL	

12.3 Value for Money

The project delivered strong value for money by achieving substantial conservation and community outcomes at controlled cost, supported by high standards of financial management and oversight.

Economy was maintained by employing skilled Indonesian staff whose costs are lower than international equivalents, while contributing to local capacity-building. Major expenses, including staffing, transport to remote field sites, and restoration materials, were all sourced locally, reducing costs and supporting the regional economy. Freely available datasets (e.g. MODIS fire alerts, air quality and health data) were used for monitoring, avoiding reliance on paid data sources. Competitive procurement and robust financial controls ensured transparency and cost control.

Efficiency was maximised by integrating activities with existing local structures, such as LPHDs, community fire patrols, and previously established seedling nurseries. This avoided duplication, enhanced relevance, and built local ownership. The project leveraged £[redacted] in matched funding to expand impact and reach. The delivery model is scalable, offering potential cost efficiencies if expanded to other peatland landscapes.

Effectiveness was demonstrated through delivery of key outputs, including an 85% average reduction in fire incidence, rewetting of nearly 28,000 ha of peatland, expansion of Village Forest designations to 26,910 ha, training provided to nearly 600 individuals across 62 stakeholder groups, and strong progress towards improved landscape governance. BNF's longstanding local presence enabled effective delivery in a challenging environment, reducing operational risk and maintaining continuity.

Additionality was clear; these outcomes, particularly the expansion of Social Forestry, community-based fire prevention, and restoration scaling, would not have been possible at this scale without Darwin Initiative support. The project complemented existing government and NGO initiatives without duplication.

Equity considerations were central, ensuring direct benefits for low-income and marginalised Dayak communities via social forestry rights, livelihood support, and fire risk reduction. Women's participation was prioritised across activities, particularly in livelihood and nursery programmes, reaching 67% female participation in key interventions.

In summary, the project achieved demonstrable conservation and social impact relative to cost, with lasting local benefits and strong potential for replication elsewhere, fully aligned with Darwin Initiative principles of value for money.

13 OPTIONAL: Outstanding achievements of your project (300-400 words maximum). This section may be used for publicity purposes.

I agree for the Biodiversity Challenge Funds to edit and use the following for various promotional purposes (please leave this line in to indicate your agreement to use any material you provide here).

The Darwin Initiative project in Central Kalimantan has delivered a significant, lasting impact on tropical peatland conservation, community empowerment, and sustainable development. Its achievements demonstrate how integrated, landscape-level approaches can reduce environmental risk while supporting local livelihoods and governance.

A standout success has been the remarkable reduction in fire incidence across the target landscapes. Despite extreme El Niño conditions in 2023, fire occurrence fell by over 85% compared to climatologically similar pre-project years. This outcome reflects the effectiveness of the project's rewetting interventions across 27,849 hectares of peatland and the mobilisation of 15 trained community firefighting teams, whose capacity to detect and suppress fires was significantly strengthened.

The project also achieved a major expansion of Indonesia's national Social Forestry programme. By supporting the designation and management of over 12,000 additional hectares of Village Forest areas, the project doubled community tenure rights coverage to 26,910 hectares, directly benefiting more than 3,260 households. This has laid the foundation for sustainable peatland management and inclusive, community-led conservation in the Sebangau and Rungan landscapes.

A further achievement is the strong engagement and capacity-building of women, with 67% of livelihood training participants being female. The establishment of the region's first all-women fire patrol team in Marang village demonstrates progress in challenging traditional gender roles and promoting broader participation in conservation action.

The project's technical innovations, including the development of hydrology restoration guidelines, a peatland monitoring framework, and the introduction of digital participatory mapping in social forestry areas, have strengthened the ability of local institutions, such as Sebangau National Park and the Central Kahayan FMU, to maintain and build on these gains.

These outcomes reflect the project's success in aligning local community needs with government policy objectives, such as Indonesia's FOLU Net Sink 2030 agenda. Its integrated approach has demonstrated how peatland restoration, fire risk reduction, and livelihood improvements can be delivered cost-effectively and equitably, offering a model for replication elsewhere in Indonesia and beyond.

Annex 1 Report of progress and achievements against logframe for the life of the project

Project summary	Progress and achievements
Impact Effective local conservation leadership and management of peat-swamp forests, for the benefit of biodiversity, human health and local economies	The project contributed strongly towards this impact by substantially reducing fire incidence (85.2% average reduction) and fire-related emissions (62.3% reduction), enhancing peatland resilience and contributing to climate mitigation. The project succeeded in rewetting and restoring 28,420 ha of degraded peatland to improve hydrological function, and improving forest condition (16.6% increase in biomass). The project supported the recovery of key fauna populations (orangutan, gibbon), which remained stable or increased. Formal recognition of Village Forests strengthened community rights and forest governance, benefiting thousands of households as 26,910 ha of Village Forests were formally secured, strengthening community rights and forest governance. Adoption of peat-friendly livelihoods promoted sustainable economic development, and reduced likelihood of forest degradation, reaching 459 individuals (67% women). Improved air quality (39.3% PM_{10} reduction) reflects significant human health co-benefits stemming from fire reduction efforts.
Outcome Improved local capacity and stakeholder coordination enables effective implementation and upscaling of sustainable peatland/forest management, reducing forest loss, fire and carbon emissions, rehabilitating degraded peatland and improving livelihoods and wellbeing.	The project met or exceeded all key outcome targets. Fire hotspots reduced by an average of 85.2% compared to baseline years, enabled by strengthened community firefighting networks and improved prevention measures. Carbon emissions fell by 62.3%, with 182 canals blocked and over 531,000 seedlings planted, restoring 28,420 hectares of degraded peatland. Above-ground biomass increased by 16.6%, while orangutan and gibbon populations remained stable or increased. Sustainable livelihoods programs reached 459 participants (67% women), expanding peat-friendly agricultural practices to 16 villages. Twenty-five Village Forests covering 26,910 hectares were formally secured, benefiting over 3,200 households. Capacity building included 111 training sessions for 559 stakeholders, and three multi-stakeholder forums enhanced coordination and data sharing.
Outcome indicator 0.1 Number of fires in the target area reduced to 25% of baseline value by Y3, compared to climatologically comparable pre-project years.	Target exceeded. Average 85.2% reduction in fires across project years compared to baseline climatological years. Annual reductions: Y1 = 99.9%, Y2 = 29.2%, Y3 = 76.4%. Total fire count: Y1 = 1, Y2 = 1,481, Y3 = 87.
Outcome indicator 0.2, Area of peatland burned and resultant carbon emissions in target area reduced by 25% by Y3, compared to climatologically comparable pre-project years.	Target exceeded. CO_2 emissions 78% lower than previous 3-year period; 46% less land burned. 2023 fires caused 48% less area burned and 79% lower CO_2 emissions than 2019
Outcome indicator 0.3 Additional 50,000 ha of degraded peatland subject to rewetting and revegetation initiatives, with positive impacts on peat hydrology (increase in water table depth and decrease in dry-season drawdown) and vegetation (increases in seedling density and vegetation cover).	Target partially met. Peat rewetting covered 27,849 ha; revegetation on 571 ha; total area affected: 28,420 ha. Hydrology improved with raised water tables and reduced dry-season drawdown by 72% in blocked canals.
Outcome indicator 0.4 By Y3, Zero forest loss, improved forest condition (5% increase in tree above-ground biomass and forest litterfall, no increases in tree mortality), and increased or at minimum stable populations of key forest fauna (including target 10% increase in orangutan and gibbon density), improved river water quality and stable populations of economically important fish species), as compared to pre-project baselines.	Target met. Above-ground biomass increased by 16.6% in Sebangau (from 477.89 to 557.20 t/ha). Orangutan and gibbon densities stable or improved. River water quality and fish populations not fully assessed in this period

Outcome indicator 0.5 Overall target 10% reduction in poverty indicators across multiple spheres (economic, natural, social and political), and subsequent 10% increase in subjective well-being scores among local community members in target villages by Y3, compared to pre-project (where available) or Y1 baseline.	The project partially met its Outcome 5 target of reducing multidimensional poverty and increasing subjective well-being by 10%. Using the NESP tool, improvements were recorded in wealth (4%), knowledge (10%), natural (9%), and economic (1.2%) spheres among intervention groups. However, changes in subjective well-being, social, political, and health indicators were limited, likely due to the project's focus and the need for longer-term engagement. Impacts varied by village context, highlighting the importance of local conditions and continued support for lasting change.
Outcome indicator 0.6 More "peat-friendly" livelihoods, following paludiculture principles, implemented by end Y3, indicated by increased number of local community members willingly engaged in these activities and improved peat hydrology in target intervention areas, compared to pre-project baseline.	Target met. Peat-friendly practices introduced to 347 new participants (14 villages); cumulative 459 trained. High uptake among women. Improved hydrology recorded in intervention zones.
Output 1 Local capacity developed to implement, improve and encourage replication of peatland restoration efforts throughout the target landscape.	
Output indicator 1.1 Multi-stakeholder forum (MSF) established by end Y1 to ensure coordination and communication between different stakeholders active in peatland restoration, share resources including creation of data management system to map and monitor progress, and ensure integration with national strategy,	Three multi-stakeholder forums established (Social Forestry, Habitat Restoration, Disaster Risk Reduction) with 15+ meetings held. Strengthened coordination and planning across stakeholders. Data-sharing occurred but centralised platform not finalised.
Output indicator 1.2 10 training sessions held (20% in Y1, 50% Y2, 30% Y3) and resources provided to implement peat rewetting activities with Sebangau NP (target 350 dams built by end Y3), slowing annual average water-table drawdown by up to 70% compared to pre-project baselines.	182 dams built across 12 canals, restoring 27,849 ha; reduced dry-season water drawdown by 72%. Two peat rewetting training sessions held; target revised as stakeholder needs were met early.
Output indicator 1.3 15 training sessions held (20% in Y1, 50% Y2, 30% Y3) and resources provided to upscale community nursery programme into 5 additional villages, providing conservation-based income to 100 families in rural communities and targeting equal participation by women.	10 new nurseries established in 5 villages; total 20 nurseries, 166 members (67% women). 531,591 seedlings raised for 571 ha restoration. Seven group training events held, knowledge shared across sites.
Output indicator 1.4 By Y3, good-practice guidelines for tropical peat rewetting and revegetation including M&E protocols, published; minimum two Indonesian scientist-led papers published in international indexed scientific journals and 10 Indonesian students supported; target min. 15 papers published in newly re-established Journal of Tropical Peatlands; and feedback provided to MSFs with uptake evident by Y3.	5 good-practice guidelines published. 20 papers published (3 led by Indonesian scientists). 19 Indonesian students supported. Journal relaunch pending. MSF feedback informed restoration guidelines.
Output 2. Communities develop more 'peat-friendly' agriculture and livelihoods in peatland areas and are empowered to tackle peatland fire and degradation impacts.	
Output indicator 2.1. Peat-friendly agriculture and agroforestry practices (paludiculture) introduced to smallholders in target area, aiming for minimum 40% take-up by Y2 and increased number of participants up to 400 individuals by end Y3. Target equitable participation by women in sustainable livelihoods activities.	347 new participants (67% women) trained; total 459 since programme began. Peat-friendly farming introduced in 14 villages. Positive impact on livelihood diversity; NESP survey data collected.
Output indicator 2.2. A regional network of community-firefighting teams and government agencies, alongside, NGO and private stakeholders forms a fire-free alliance to tackle fires, encourage paradigm shift and behaviour change.	15 community firefighting teams supported; 191 members trained. Fire Risk Reduction Forum formalised. Two provincial fire policies finalised.

Output indicator 2.3. Recommendations on sustainable fisheries and mitigation of impacts identified from restoration projects to fishers and restoration projects to protect fishing livelihoods by end Y2; and engaging with 30-40 local fishers regarding implementing these recommendations and positive feedback from these fishers received by end Y3, demonstrating upscaling potential.	190 fishers trained in 10 villages; 68 sessions delivered. Positive workshop feedback. Interventions remain proof-of-concept; scaling and market access needed.
Output 3. Enhancing long-term sustainable management of peatlands by local government and community stakeholders, by expanding community forest management, supporting implementation of long-term management plans and capacity building.	
Output indicator 3.1. For each Forest Management Units (FMU) within the landscape, by end Y3: successful review, update and implementation of Long-term Management Plan activities which benefit biodiversity. Training and resource needs identified and provided via training workshops leading to quantified skill improvements.	FMU and Sebangau NP plans reviewed and updated. 36 governance training sessions held; 400+ stakeholders reached. Orangutan/gibbon baselines and private concession assessments completed.
Output indicator 3.2. Support creation and management of community-managed 'Village Forest' areas in peatland through expansion of national social forestry scheme to cover 20,000 ha benefiting >2,000 households in the target landscape, identifying sustainable livelihoods programmes and providing associated management and M&E tools and training to communities by end Y3.	25 Village Forests covering 26,910 ha secured (target exceeded); benefits 3,262 households. 14 communities received planning and governance support. Additional 747 ha pending approval.
Output indicator 3.3. Development and implementation of targeted capacity building programme for land managers (Forest Management Units; Sebangau NP, Communities) to include Best Management Practices, GIS/Remote Sensing, Firefighting, SMART Monitoring and Patrolling, with each stakeholder receiving specific relevant training on the above aspects by end Y3 (30% delivered in Y1, 50% Y2, 20% Y3).	123 training sessions delivered to 559 participants from 70 stakeholder units. Topics covered fire prevention, restoration, hydrology, livelihoods, SMART monitoring. Women's participation has been strong in livelihood training.

Annex 2: Project's full current logframe as presented in the application form (unless changes have been agreed)

Project summary	SMART Indicators	Means of verification	Important Assumptions
Impact: Effective local conservation leadership and management of peat-swamp forests, for the benefit of biodiversity, human health and local economies.			
Outcome: Improved local capacity and stakeholder coordination enables effective implementation and upscaling of sustainable peatland/forest management, reducing forest loss, fire and carbon emissions, rehabilitating degraded peatland and improving livelihoods and wellbeing.	0.1 Number of fires in the target area reduced to 25% of baseline value by Y3, compared to climatologically comparable pre-project years. 0.2 Area of peatland burned and resultant carbon emissions in target area reduced by 25% by Y3, compared to climatologically comparable pre-project years. 0.3 Additional 50,000 ha of degraded peatland subject to rewetting and revegetation initiatives, with positive impacts on peat hydrology (increase in water table depth and decrease in dry-season drawdown) and vegetation (increases in seedling density and vegetation cover). 0.4 By Y3, Zero forest loss, improved forest condition (5% increase in tree above-ground biomass and forest litterfall, no increases in tree mortality), and increased or at minimum stable populations of key forest fauna (including target 10% increase in orangutan and gibbon density), improved river water quality and stable populations of economically important fish species), as compared to pre-project baselines.	0.1 Spatio-temporal analysis of MODIS hotspot distribution across landscape, supported by drone flights, and TSA patrol and local community reports in target intervention areas. Data compared to previous years with a similar El Niño Southern Oscillation (ENSO) index. 0.2 Analysis of annual pre/post-fire season LandSat imagery, and on-the-ground and drone monitoring of burned areas. Carbon emissions estimated using above information and published formulae. Data compared to previous years with similar ENSO index. 0.3 Shapefiles and maps of additional rewetting and revegetation intervention areas, supported by ground and drone verification. Monthly monitoring of trends in peat water levels at 100 locations (min. 20/intervention area). Annual monitoring of seedling survival and growth, and vegetation cover, in min. 5% of replanting plot area in each replanting intervention location. 0.4 Regular monitoring of trends in (i) tree size, biomass, mortality and consequently carbon sequestration in 2.4 ha of forest plots; (ii) orangutan population density and abundance through nest surveys; (iii) gibbon population abundance through call triangulation surveys (iv) catch-rates of economically important fish and measures of water quality (inc. temperature, pH, dissolved oxygen and turbidity) and (v) habitat cover and habitat loss within target landscapes through remote sensing. Data collected during project compared to pre-	0.1 & 0.2 Fire incidence and severity is directly linked to peat drainage (i.e. peat water levels). Fire hotspots and burn scars can be effectively detected and distinguished by remote and drone imagery, and on-the-ground observations. While rainfall has a mediating impact on total fire incidence and severity in a given year, more drained areas will remain more vulnerable across years. Above assumptions all supported by peer-reviewed studies. 0.3 Target rewetting and replanting areas can be accurately mapped. Peat water levels show detectable changes within project period. Rewetting and revegetation monitoring sub-sets are indicative of wider intervention area (to be guarded against through selection of random sampling locations). 0.4 Forest structure, biomass and biodiversity variables show detectable responses within the project period to changes in conservation management interventions. Forest-loss projections are reasonable and evidence-based.

	0.5 Overall target 10% reduction in poverty indicators across multiple spheres (economic, natural, social and political), and subsequent 10% increase in subjective well-being scores among local community members in target villages by Y3, compared to pre-project (where available) or Y1 baseline. 0.6 More "peat-friendly" livelihoods, following paludiculture principles, implemented by end Y3, indicated by increased number of local community members willingly engaged in these activities and improved peat hydrology in target intervention areas, compared to pre-project baseline.	project baseline and against projected no-project scenario. 0.5 Annual monitoring of subjective well-being derived from assessment of indicators of poverty across economic, natural, social and political spheres among target 10% of key village community members using the Nested Spheres of Poverty approach developed by Gönner *et al.* (2007) and employed previously by BNF in Rungan. 0.6 Annual surveys of fishers and farmers in target intervention areas, including self-reporting of economic activities conducted and income levels from these (categorised as peat un/friendly based on reported practices used, including peat drainage levels established through hydrological monitoring; e.g. drainage-based palm oil vs. non-drainage based illipe nut production), plus fire use/incidence in their farming/fishing area, conducted with at least 75% of respondents (randomly selected) in each target village. Data matched with M&E data from other parts of project to verify "peat friendliness" of reported activities in terms of expected impacts on peat hydrological condition and fire incidence.	0.5 Local community members are willing to engage within, and reply truthfully and openly to NESP surveys. Changes in poverty and subjective well-being indicators can be reasonably attributed to changes in local factors arising from/relating to project activities. 0.6 Fisher and farmer survey respondents self-report accurately and truthfully (guarded against by introducing checks, and employing separate survey and intervention implementation teams, and for fire incidence by checking against MODIS satellite hotspot data), and are representative of the wider fisher and farmer population in the target intervention area (guarded against through random respondent selection). Pre-project baseline exists (if not, we will establish in Y1).
Output 1 Local capacity developed to implement, improve and encourage replication of peatland restoration efforts throughout the target landscape.	1.1 Multi-stakeholder forum (MSF) established by end Y1 to ensure coordination and communication between different stakeholders active in peatland restoration, share resources including creation of data management system to map and monitor progress, and ensure integration with national strategy, 1.2 10 training sessions held (20% in Y1, 50% Y2, 30% Y3) and resources provided to implement peat rewetting activities with Sebangau NP (target 350 dams built by end Y3), slowing annual average water-table drawdown by up to 70% compared to pre-project baselines.	1.1 MSF establishment documents, meeting minutes, and internal and external reports, verified by BNF team attendance at MSF meetings and correspondence with MSF members. Electronic data management system files review and cross-checking of MSF strategies against those at the national level. 1.2 Training session materials and session records, including attendance lists disaggregated by gender. Written reports from field teams, photos and field checks of dams constructed. Training impacts assessed through before-and-after surveys of a randomly selected sub-set of participants.	1.1 MSF keeps good, formal written documentation of establishment, forum members, meetings held, etc., and are willing to implement electronic data management systems. MSFs are willing to share these records for verification (while ensuring data confidentiality is maintained). Guarded against through training delivered by project. 1.2 Training materials produced are kept and documented; accurate records of training sessions delivered, resources provided and dams built are kept. Guarded against through training delivered by project. Surveyees respond truthfully during before-and-after training assessments. 1.3 As above for #1.2.

	1.3 15 training sessions held (20% in Y1, 50% Y2, 30% Y3) and resources provided to upscale community nursery programme into 5 additional villages, providing conservation-based income to 100 families in rural communities and targeting equal participation by women. 1.4 By Y3, good-practice guidelines for tropical peat rewetting and revegetation including M&E protocols, published; minimum two Indonesian scientist-led papers published in international indexed scientific journals and 10 Indonesian students supported; target min. 15 papers published in newly re-established Journal of Tropical Peatlands; and feedback provided to MSFs with uptake evident by Y3.	1.3 Training sessions, resource provision and impact assessment as for #1.2 above. 1.4 Publication of open access protocols and GPGs; number of journal papers submitted/published and nationality of lead author, number of students directly supported, number of open-access papers published on Journal of Tropical Peatlands website, evaluation reports produced and minutes from MSF research feedback/socialisation meetings.	1.4 Suitably qualified scientists accept positions on BNF Scientific Advisory Board and as scientific staff within new BNF Research Division. Scientific stakeholders remain committed and continue to engage post-establishment. Guarded against by collaborative development and decision making from the outset. Journal of Tropical Peatland hosts (University of Palangka Raya) remain committed to journal establishment (expected, given their partnership in the project). MSFs are open to receiving feedback and implementing scientific recommendations. Guarded against through continual dialogue. Our recommendations are of relevance to external partners. Expected by project grounding in national and international conservation, climate and SDG policy.
Output 2 Communities develop more 'peat-friendly' agriculture and livelihoods in peatland areas and are empowered to tackle peatland fire and degradation impacts.	2.1 Peat-friendly agriculture and agroforestry practices (paludiculture) introduced to smallholders in target area, aiming for minimum 40% take-up by Y2 and increased number of participants up to 400 individuals by end Y3. Target equitable participation by women in sustainable livelihoods activities. 2.2 A regional network of community-fire-fighting teams and government agencies, alongside, NGO and private stakeholders forms a fire-free alliance to tackle fires, encourage paradigm shift and behaviour change.	2.1 Interviews, questionnaires and focus-group discussions with smallholders indicate willingness to engage with and commitment to adopt peat-friendly practices. Number of participants, annual surveys of agricultural practices, crop types and yields, income levels and sources, and wellbeing indicators tracked and disaggregated by gender; verified through field checks. 2.2 Official creation and announcement of a fire-fighting network. Records of number of local community members, groups, smallholders and companies actively supporting fire-free alliance, evidenced by public commitments made, and adherence to these, also determined via detection of fire hotpots detected through MODIS satellites on individuals' land and field checks.	2.1 A significant number of members of local community are willing to engage in peat-friendly livelihoods activities, believed to be true based on existing communication and feedback, Survey respondents self-report accurately and truthfully and are representative of the wider sector in the target intervention area. 2.2 Individuals are willing to make public commitments to join alliance. Alliance is launched and continuously promoted by MSF members, community is aware of alliance, alliance commitments are simple, clear and verifiable. 2.3 Impacts are detectable and can be reliably attributed (or not) to changes in

	2.3 Recommendations on sustainable fisheries and mitigation of impacts identified from restoration projects to fishers and restoration projects to protect fishing livelihoods by end Y2; and engaging with 30-40 local fishers regarding implementing these recommendations and positive feedback from these fishers received by end Y3, demonstrating upscaling potential.	2.3 Completion of research and publication journal articles describing impacts of restoration activities on fish and fish-based livelihoods. Recommendation provision evidenced through production of guidance documents and records of their distribution, inclusion in MSF meeting minutes, and records of meetings held with local fishers/fishing groups. Uptake of recommendations by these evidenced through self-reporting during annual surveys and field checks, with these led by separate M&E team members.	management activities. MSFs and local fishers self-report accurately and truthfully, and are open to engaging with the project and implementing recommendations.
Output 3 Enhancing long-term sustainable management of peatlands by local government and community stakeholders, by expanding community forest management, supporting implementation of long-term management plans and capacity building.	3.1 For each Forest Management Units (FMU) within the landscape, by end Y3: successful review, update and implementation of Long-term Management Plan activities which benefit biodiversity. Training and resource needs identified and provided via training workshops leading to quantified skill improvements.	3.1 Evidence of FMU Long-Term Management Plan implementation derived from FMU proposals, reports and minute meetings, including reference to and incorporating recommendations arising from the project, plus field checks. Evidence for training sessions derived from above plus training records, including participant lists, and before-and-after assessments of skill levels among randomly selected participants.	3.1 FMUs remain accepting of project' engagement and involvement in plan development, and in sharing information with the project. Guarded against through continual dialogue during project period.
	3.2 Support creation and management of community-managed 'Village Forest' areas in peatland through expansion of national social forestry scheme to cover 20,000 ha benefiting >2,000 households in the target landscape, identifying sustainable livelihoods programmes and providing associated management and M&E tools and training to communities by end Y3.	3.2 Formal documents and maps of Village Forest establishment and coverage. Records of training and management tools provided as for #1.2 and 1.3 above. Livelihood development identification indicated through management reports, photos and field checks of activities, and minute meetings, plus surveys and feedback from community members.	3.2 National and local support for social forestry continues. Local communities are supportive, and willing to contribute efforts to establishment of Village Forests.
	3.3 Development and implementation of targeted capacity building programme for land managers (Forest Management Units; Sebangau NP, Communities) to include Best Management Practices, GIS/Remote Sensing, Fire-fighting, SMART Monitoring and Patrolling, with each stakeholder receiving specific relevant training on the above aspects by end Y3 (30% delivered in Y1, 50% Y2, 20% Y3).	3.3 Records of capacity building activity/training session implementation as for #1.2 and 1.3 above. Training impacts assessed through before-and-after surveys of randomly selected participants for a sub-set of sessions delivered across the different themes, with data disaggregated by gender.	3.3 Training materials produced are kept and documented; accurate records of training sessions delivered and resources provided are kept. Guarded against through training delivered by project. Surveyees respond truthfully during before-and-after training assessments.

Activities (each activity is numbered according to the output that it will contribute towards, for example 1.1, 1.2 and 1.3 are contributing to Output 1)

1.1 MSFs established comprising community, industry and government stakeholders from each FMU. Information sharing platforms established, technical support provided, and regular planning, feedback and evaluation meetings held.

1.2a Peat rewetting training delivered to BTNS, relevant resources (damming materials, monitoring equipment) provided and dams built to close drainage canals and rewet the peat.

1.2b Hydrological monitoring training conducted, equipment installed, stations established, and data collected, including pre-damming baseline data for comparison, to monitor impacts on peat hydrology.

1.3a Community Nursery Program socialised to additional families invited to participate with up to 15 new nursery collectives created. BNF's expert reforestation staff will train each new group, helping them build the required infrastructure and providing necessary technical skills and resources to source, plant and raise seedlings of target species to minimum planting heights.

1.3b Once planting size reached, we will buy seedlings back from community nurseries, thus generating income and replant degraded areas, followed by ongoing monitoring and protection of reforestation area.

1.4a Establish Scientific Advisory Board of international and Indonesian experts, working alongside new Research Division within BNF, strengthening scientific foundations, produce Indonesian-led scientific publications, support local student development, produce good-practice guidelines and technical feedback/input to MSFs, and advise local peatland restoration efforts.

1.4b UPR supported to relaunch their Journal of Tropical Peatlands, serving as an open access repository of peer-reviewed research on all aspects of tropical peatland socio-ecology and sustainable management.

1.4c Rewetting and revegetation GPGs and M&E protocols, plus Indonesian-led journal papers produced, peer reviewed, translated, published OA, promoted through media and networks, and directly disseminated via MSFs.

2.1a Paludiculture introduced to smallholders, including socialisations and site visits to discuss suitable options. Training provided, with new crops, land rehabilitation and harvesting methods trialled, and M&E systems introduced.

2.1b M&E of success indicators collected and evaluated in Y2 with initial participating smallholders, with expected success helping recruit additional smallholders in Y3.

2.2 Fire-free alliance created via MSF, encouraging project participants and other local stakeholders to commit to reduced burning. Recognition system agreed with MSF. Work to increase concept awareness and drive acceptance as standard.

2.3a Evidence compiled from literature, expert/fisher interviews and our fish data collection (Y1). Recommendations to ensure net positive impacts of peat restoration activities on fish and fishing livelihoods created (Y2).

2.3b Above recommendations socialised with peat restoration projects and fishers (including through MSFs) in Y3. Participating local fishers engaged regarding recommendation implementation and feedback compiled to demonstrate upscaling potential.

3.1a Forest Management Units engaged to identify training and resource needs, and other barriers to effectively implement management plans which benefit biodiversity within remaining forests.Plans co-created where do not already exist.

3.1b Contributions (training, implementation, collaboration, etc.) provided to conservation and M&E activities in existing management plans (e.g. 2007-2026 Sebangau NP management plan), and appropriate additional activities proposed..

3.2a Village Forest designation facilitated in unprotected areas under Indonesia's social forestry scheme. VillageForest designation provides legal rights to villages to manage and sustainably use customary land for community benefit.

3.2b BNF's experienced social forestry team will socialise with communities, train village representatives in requirements and procedures, and support them to collect required data, complete and submit their community forest application.

3.2c Management plans describing administration and sustainable-use prepared for each Village Forest, facilitated by BNF, coordinating with FMU. Necessary management, M&E tools and training provided, including regarding sustainable livelihood and financing options.

3.3a Stakeholder r training needs identified and bespoke training plans created in Y1, and relevant external assistance acquired to cover specialist topics.

3.3b Training initiated in Y2 and extended into Y3, with coordination through the MSFs, and M&E of knowledge gain and training success assessed.

Annex 3 Standard Indicators

Table 1 Project Standard Indicators

Please see the Standard Indicator Guidance for more information on how to report in this section, including appropriate disaggregation. N.B. The annual total is not cumulative. For each year, only include the results achieved in that year. The total achieved should be the sum of the annual totals.

Group A: Capability and Capacity

DI Indicator number	Name of indicator using original wording	Name of Indicator after adjusting wording to align with DI Standard Indicators	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
DI-A01	Training and resource needs identified and provided via training workshops leading to quantified skill improvements.	Number of people from key national and local stakeholders completing structured and relevant training	People	Gender Disaggregation (% Male : Female)	48 : 52	40 : 60	63 : 37	48 : 52	50: 50
				Environmental Education	369	542	320	734	600
				Paludiculture & aquaculture	199	174	53	377	400
				Patrol and Integrated Fire Management	87	18	144	167	250
				Habitat Restoration	51	44	49	138	100
				Sustainable Forest Management	118	210	163	385	300
DI-A01	Training and resource needs identified and provided via training workshops leading to quantified skill improvements.	Number of training weeks to be provided	Number	Environmental Education	19	24.9	26.6	76.3	50
				Paludiculture & aquaculture	5.9	7.7	1.9	15.5	15
				Patrol and Integrated Fire Management	0.9	0.2	1.3	2.4	2
				Habitat Restoration	0.4	0.6	0.4	1.4	3.6

DI Indicator number	Name of indicator using original wording	Name of Indicator after adjusting wording to align with DI Standard Indicators	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
				Sustainable Forest Management	1.7	5.9	5.4	13.0	5
DI-A03	Development and implementation of targeted capacity building programme for land managers	Number of local/national organisations with improved capability and capacity as a result of project.	Number	Governmental (FMU, NP, Agencies)	8	5	0	11	15
				Village Forest Management Unit	10	11	6	20	20
				Universities	1	2	0	2	2
				Community Groups	15	18	9	28	20
				Community Patrol and Firefighting	8	1	9	9	20

Group B: Policies, Practices and Management

DI Indicator number	Name of indicator using original wording	Name of Indicator after adjusting wording to align with DI Standard Indicators	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
DI-B01	For Forest Management Units (FMU) within the landscape, by end Y3: successful review, update and implementation of Long-term Management Plan	Number of new/improved habitat management plans available and endorsed	People						6-8 total
				Mercury Reduction Action Plan	1 draft	-	-	1 draft	1
				Social Forestry Management and Development Plan	1 draft	8	0	8	1
				Sebangau NP Ecosystem Restoration Plan	-	Published	-	1	1
				Sebangau NP Community Empowerment Plan	-	Published	-	1	1
				Palangka Raya District Strategic					

DI Indicator number	Name of indicator using original wording	Name of Indicator after adjusting wording to align with DI Standard Indicators	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
				Environmental Long Term Development Plan	-	Published	-	1	1
DI-B03	Support creation and management of community-managed 'Village Forest' areas providing associated management and M&E tools	Number of new/improved community management plans available and endorsed	Number	Village Forest Management Plan	6	3	0	9	10
DI-B06	Support creation and management of community-managed 'Village Forest' areas in peatland through expansion of national social forestry scheme to cover 20,000 ha benefiting >2,000 households	Number of Indigenous Peoples and Local Communities (people) with strengthened (recognised/clarified) tenure and/or rights.	People/ Total area (Ha)	Total People involved in Village FMUs Baseline Current Year Total Ha New Supported Development	 237 432 4,025 ha 13,474 ha 10,455 ha	 606 6,774 ha 13,733 ha 10,111 ha	 190 2,378 ha 13,733 ha	 1,465 13,177 ha	 2,000 20,000 ha

Group C: Evidence and Best Practices

DI Indicator number	Name of indicator using original wording	Name of Indicator after adjusting wording to align with DI Standard Indicators	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
DI-C01	Good-practice guidelines for tropical peat rewetting and revegetation including M&E protocols, published;	Number of best practice guides and knowledge products published and endorsed	Number	Bioprospection Study Sebangau	1	-	-	1	5-10 total
				Hydrology Restoration SOP	1 draft	-	1	1	
				Reforestation of degraded peatlands SOP	-	1 draft	1	1	
				Habitat Restoration M&E Plan	2	-	-	2	
				Establishment and Development of Community	1 draft			1	

DI Indicator number	Name of indicator using original wording	Name of Indicator after adjusting wording to align with DI Standard Indicators	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
				Seedling Nurseries SOP Paludiculture Development SOP	 1 draft	1 -	- -	 1 draft	
DI-C17	Minimum two Indonesian scientist-led papers published in international indexed scientific journals	Number of unique papers published in peer reviewed journals	Number	Indonesian scientist-led Other nationalities	2 9	- 6	1 4	3 19	2 15

Group D: Sustainable Benefits to People, Biodiversity and Climate

DI Indicator number	Name of indicator using original wording	Name of Indicator after adjusting wording to align with DI Standard Indicators	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
DI-D04	Improved forest condition (5% increase in tree above-ground biomass and forest litterfall, no increases in tree mortality), and increased or at minimum stable populations of key forest fauna (including target 10% increase in orangutan and gibbon density),	Stabilised/ improved species population (relative abundance/ distribution) within the project area.	% Increase	Tree AGB and forest litterfall Orangutan density Gibbon density	Baseline Baseline Baseline	Monitoring (6.79 %) Monitoring (6.4 %) No data	Monitoring / Analysis Monitoring / Analysis Monitoring / Analysis	16.6 % 25 % 19%	5% increase in tree AGB and forest litterfall Increased or at minimum stable populations of key forest fauna *(*)10% increase in orangutan and gibbon density*

DI Indicator number	Name of indicator using original wording	Name of Indicator after adjusting wording to align with DI Standard Indicators	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
DI-D06	Area of peatland burned and resultant carbon emissions in target area reduced by 25%	Net change in greenhouse gas emissions – tonnes of GHG emissions reduced or avoided as a result of the project	Tonnes of CO_2 equivalent	Tonnes of Co_2 e based on the forest related emission savings	Baseline	Monitoring	Monitoring / Analysis	78 % reduction *	25% C emissions reduction *(*) compared with climatologically comparable pre-project years*
DI-D09	Area of peatland burned and resultant carbon emissions in target area reduced by 25%	Number of hectares where deforestation has been avoided through project support	Area (hectares)	Forest loss due to fires	285 ha	1,543 ha	181 ha	2,011 ha 39 % reduction *	25% area reduction *(*) compared with climatologically comparable pre-project years*
DI-D12	Additional 50,000 ha of degraded peatland subject to rewetting and revegetation initiatives	Area of degraded or converted ecosystems that are under active restoration	Area (hectares)	Hydrology Restoration Reforestation	8,850 ha 170 ha	227 ha 151 ha	18,999 ha 252 ha	28,420 ha	Total of 50,000 ha under restoration
DI-D16	More “peat-friendly” livelihoods, following paludiculture principles, implemented by end Y3, indicated by increased number of local community members willingly engaged in these activities	Number of households reporting improved livelihoods	Households	Baseline Year	112 89	161	97	459	400

Group E: Impact on Biodiversity and People

DI Indicator number	Name of indicator using original wording	Name of Indicator after adjusting wording to align with DI Standard Indicators	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
DI-E01	Number of fires in the target area reduced to 25% of baseline value by Y3, compared to climatologically comparable pre-project years.	Ecosystem Degradation Avoided (ha)	Number of Hotspots	Landscape Baseline (*) Reporting period	Data compiled 1	1,481	87	1,569	Hotspots detected reduced to 25%

DI Indicator number	Name of indicator using original wording	Name of Indicator after adjusting wording to align with DI Standard Indicators	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
				Hotspots reduction *(*) including climatologically comparable pre-project years*	Baseline available	N/A	Data Analysis	14.8 %	

Table 2 Publications

Title	Type (e.g. journals, manual, CDs)	Detail (authors, year)	Gender of Lead Author	Nationality of Lead Author	Publishers (name, city)	Available from (e.g. weblink or publisher if not available online)
Sociality predicts orangutan vocal phenotype	Journal	Lameira, A. R., G. Santamaría-Bonfil, D. Galeone, M. Gamba, M. E. Hardus, C. D. Knott, H. Morrogh-Bernard, M. G. Nowak, G. Campbell-Smith and S. A. Wich (2022)	Male	Portuguese	Nature Ecology & Evolution 6(5): 644-652	Link
A case of polygyny in the Bornean white-bearded gibbon (Hylobates albibarbis)	Journal	Thompson C, Cahyaningrum E, Birot H, Aziz A, Cheyne SM (2022)	Female	British	Folia Primatol:1–9	Link
Primate conservation in shared landscapes	Book chapter	Bersacola E., Hockings K. J., Harrison M. E., Imron M. A., Bessa J., Ramon M., de Barros A. R., Jaló M., Sanhá A., Ruiz-Miranda C. R., Ferraz L. P., Talebi M. and McLennan M. R (2023)	Female	Italian	Springer International Publishing, Cham. pp 161-181	Link
Odonata (Insecta) communities in a lowland mixed mosaic forest in Central Kalimantan, Indonesia	Journal	Hendriks J. A., Mariaty, Maimunah S., Anirudh N. B., Holly B., Erkens R. H. J. and Harrison M. E. (2023)	Male	Dutch	Ecologies 4(1): 55-73	Link
Multi-scale, multivariate community models improve designation of biodiversity hotspots in the Sunda Islands	Journal	Chiaverini L, Macdonald DW, Bothwell HM, Hearn AJ, Cheyne SM, Haidir I, Hunter LTB, Kaszta Ż, Macdonald EA, Ross J, Cushman SA (2022)	Male	Italian	Anim Conserv	Link

Tree species that 'live slow, die older' enhance tropical peat swamp restoration: evidence from a systematic review	Journal	Smith S. W., Rahman N. E. B., Harrison M. E., Shidera S., Giesen W., Lampela M., Wardle D. A., Chong K. Y., Randi A., Wijedasa L. S., Teo P. Y., Fatimah Y. A., Teng N. T., Joanne Y. K. Q., Alam M. J., Brugues Sintes P., Darusman T., Graham L. L. B., Katoppo D. R., Kojima K., Kusin K., Lestari D. P., Metali F., Morrogh-Bernard H. C., Nahor M. B., Napitupulu R. R. P., Nasir D., Nath T. K., Nilus R., Norisada M., Rachmanadi D., Rachmat H. H., Ripoll Capilla B., Salahuddin, Santosa P. B., Sukri R. S., Tay B., Tuah W., Wedeux B. M. M., Yamanoshita T., Yokoyama E. Y,, Yuwati T. W. and Lee J. S. H.	Male	British	Journal of Applied Ecology	Link
Assessing the impact of forest structure disturbances on the arboreal movement and energetics of orangutans - an agent-based modelling approach	Journal	Widyastuti K., Reuillon R., Chapron P., Abdussalam W., Nasir D., Harrison M. E.‡, Morrogh-Bernard H., Imron M. A. and Berger U. (2022)	Female	Indonesian	Frontiers in Ecology and Evolution 10: 983337	Link
Kajian Bioprospeksi Taman Nasional Sebangau	Book	Peniwidiyanti, Asih Perwita, Dewi, Muhammad Rifqi Hariri, Fatkurrahman, Muhammad Irham, Andi Muhammad Kadhafi, Suyoko, Adhy Maruly (2022)	Male	Indonesian	Sebangau National Park (BTNS), KLHK	Link
Application of Palaeoecological and Geochemical Proxies in the Context of Tropical Peatland Degradation and Restoration: A Review for Southeast Asia	Journal	Ramdzan K. N. M., Moss P. T., Heijnisb H., Harrison M. E. and Yulianti N. (2022)	Female	Australia	*Wetlands,* Springer	Link
Professional development in conservation: an effectiveness framework	Journal	Loffeld, T. A. C., T. Humle, S. M. Cheyne and S. A. Black (2022)	Female	British	*Oryx,* Cambridge University Press	Link
Implications of large-scale infrastructure development for biodiversity in Indonesian Borneo	Journal	Spencer, K. L., N. J. Deere, M. Aini, R. Avriandy, G. Campbell-Smith, S. M. Cheyne, D. L. A. Gaveau, T. Humle, J. Hutabarat, B. Loken, D. W. Macdonald, A. J. Marshall, C. Morgans, Y. Rayadin, K. L. Sanchez, S. Spehar, Suanto, J. Sugardjito, H. U. Wittmer, J. Supriatna and M. J. Struebig (2023)	Female	British	*Science of The Total Environment,* Science Direct	Link
The power of gibbon songs: Going beyond the research to inform conservation actions	Journal	Cheyne, S. M., C. Thompson, A. Martin, A. A. K. Aulia, H. Birot, E. Cahyaningrum, J. Aragay, P. A. Hutasoit and J. Sugardjito (2024)	Female	British	American Journal of Primatology: e23626	Link
Tropical field stations yield high conservation return on investment	Short publication	Eppley, T. M. et al. (2024)	Male	British	Conservation Letters: e13007	Link

Impacts of fire and prospects for recovery in a tropical peat forest ecosystem	Journal	Harrison, M. E., N. J. Deere, M. A. Imron, D. Nasir, Adul, H. A. Asti, J. Aragay Soler, N. C. Boyd, S. M. Cheyne, S. A. Collins, L. J. D'Arcy, W. M. Erb, H. Green, W. Healy, Hendri, B. Holly, P. R. Houlihan, S. J. Husson, Iwan, K. A. Jeffers, I. P. Kulu, K. Kusin, N. C. Marchant, H. C. Morrogh-Bernard, S. E. Page, A. Purwanto, B. Ripoll Capilla, O. R. de Rivera Ortega, Santiano, K. L. Spencer, J. Sugardjito, J. Supriatna, S. A. Thornton, F. J. F. v. Veen, Yulintine and M. J. Struebig (2024)	Male	British	Proceedings of the National Academy of Sciences 121(17): e2307216121	Link
People and Plants of Sebangau. Edited by Sebangau National Park (BTNS) and Borneo Nature Foundation (BNF), Palangka Raya, Indonesia	Book	Badri S., Kulu I. P., Hendri, Krisyoyo, Santiano, Adul, Iwan, Ripoll Capilla B., Jeffers K. A. and Harrison M. E. (2022)	Male	Indian	na	Link
Accounting for cumulative seedling performance from nursery to outplanting when reforesting degraded tropical peatlands	Journal	Harrison M. E., Brugues Sintes P., Kusin K., Katoppo D. R., Marchant N. C., Morrogh-Bernard H. C., Nasir D., Ripoll Capilla B., Salahudin, Suppan L., van Veen F. J. F. and Smith S. W. (2023)	Male	British	Restoration Ecology	Link
Reforestation for primates? Tree species for orangutans and tropical peatland revegetation on Borneo	Book	Harrison M. E., Smith S. W., Morrogh-Bernard H. C., Nasir D., Salahuddin, Azis A., Maruly A., Katoppo D. R., Brugues Sintes P. and van Veen F. (2023)	Male	British	Primate Eye 139: 29-30	
Project Barito Ulu Expedition 2023	Journal	Jorian A. Hendriks, Mukki, Khadafi, Francis Brearley, Mark E Harrison et al., (2024)	Male	Dutch	na	Link
Mammals of the Rungan-Kahayan landscape, Central Kalimantan, Indonesia	Book	Namrata B. Anirudh, Nicolas J. Deere, Erik Estrada, Rahmad Hidayat, Matthew J. Struebig and Jatna Supriatna (2024)	Female	Indian	TAPROBANICA, ISSN 1800–427X. November, 2024. Vol. 13, No. 02: pp. 101–115	Link
Gastrointestinal parasites of wild Bornean orang-utans (Pongo pygmaeus) in a habitat affected by wildfire smoke	Journal	Gwynn, A. L., H. C. Morrogh-Bernard, A. Thornton, H. Segah, A. Azis and F. J. F. Van Veen (2024)	Female	British	Global Ecology and Conservation 55: e03214	Link
Communicating conservation: Evidence of knowledge gains through a children's conservation club in Central Kalimantan, Indonesia	Journal	Hutasoit, P. A., R. A. Saragih, D. Riyan, I. Christina, R. Yustiningtyas, J. Aragay Soler and Susan M. Cheyne (2024)	Female	Indonesian	Folia Primatologica: 1-10	Link

Wind dispersed tree species have greater maximum height	Journal	Slik, F., B. X. Pinho, D. M. Griffith, E. Webb, A. S. Raghubanshi, A. C. Quaresma, A. Cuni Sanchez, A. Sultana, A. F. Souza, A. Ensslin, A. Hemp, A. Lowe, A. R. Marshall, K. Anitha, A. M. Lykke, Armadyanto, A. Mansor, A. K. Honam, A. D. Poulsen, B. Sparrow, B. J. W. Buckley, B. Ripoll Capilla, B. W. Albuquerque, C. B. Schmitt, D. Mohandass, D. S. B. Rocha, D. Sheil, E. A. Pérez-García, E. Catharino, E. van den Berg, E. Rutishauser, F. Brambach, F. Z. Saiter, F. Senbeta, F. Wittmann, F. Rovero, F. Mora Ardila, F. Bongers, G. M. Fredriksson, G. Rutten, G. Imani, G. A. Aymard Corredor, G. Durigan, G. Shukla, G. Williams-Linera, H. Culmsee, H. Segah, I. Granzow-de la Cerda, J. S. Singh, J. Grogan, J. Reitsma, J.-F. Bastin, J. Lindsell, J. Millet, J. Roberto dos Santos, J. Schoengart, J. H. Vandermeer, J. Herbohn, J. Lovett, J. A. Meave, J. Roberto Rodrigues Pinto, J. C. Montero, K. Ruokolainen, K. B. Mahmud, L. O. Demarchi, L. Poorter, L. Bernacci, M. Satdichanh, M. Seiji Suganuma, M. T. F. Piedade, M. A. Niun, M. E. Harrison, M. Schulze, M. Fischer, M. Kessler, M. Castillo, M. S. Hussain, M. B. Libalah, M. A. Imron, N. Parthasarathy, N. Seuaturien, N. Targhetta, N. P. D. Mahayani, N. C. A. Pitman, O. Rangel, P. Munishi, P. Balvanera, P. Ashton, P. Parolin, P. da Conceição Bispo, P. Davidar, R. Sukri, R. Zakaria, R. C. Prasad, R. K. Chaturvedi, R. Steinmetz, R. Muñoz, R. M. Zakaria, S. J. DeWalt, H. Van Sam, S. Rolim, S. A. Mukul, S. Maimunah, S. K. Sarker, T. Sunderland, T. Gillespie, T. van Andel, T. Van Do, W. Chutipong, R. Zang, X. Yang, X. Lu, Y. Laumonier and Z. Hemati (2022)	Male	Dutch	Global Ecology and Biogeography: e13878	Link

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