Darwin Initiative: Final Report

To be completed with reference to the "Writing a Darwin Report" guidance: (http://www.darwininitiative.org.uk/resources-for-Projects/reporting-forms). It is expected that this report will be a ***maximum*** *of 20 pages in length, excluding annexes)*

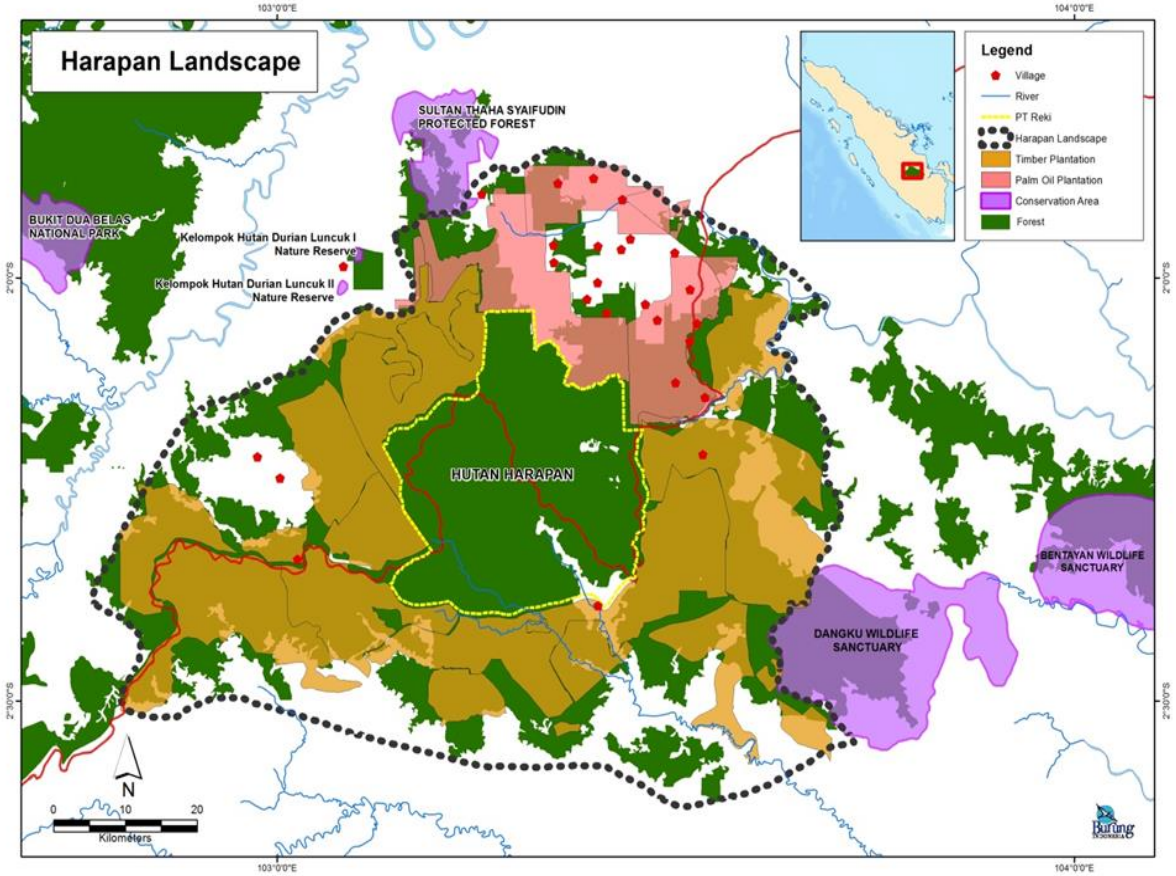
Darwin Project Information

Project reference	23-029
Project title	Investing in agroforestry options for forest restoration in Indonesia
Country(ies)	Indonesia/ Hutan Harapan in Sumatra
Lead organisation	Burung Indonesia (BI)
Partner institution(s)	Restorasi Ekosistem Indonesia (PT REKI), Royal Society for the Protection of Birds (RSPB), World Agroforestry Centre (ICRAF), University of Kent, University of Edinburgh
Darwin grant value	**£298,896**
Start/end dates of Project	1st August 2016/ 31st July 2019
Project leader's name	Fauzan Syamsuri (BI)
Project website/blog/social media	
Report author(s) and date	Fauzan Syamsuri (BI), Jeroen van der Horst (RSPB)

1 Project Summary

Ecosystem Restoration Concessions (ERC) are a new and innovative approach in Indonesia aiming to reduce deforestation, to mitigate climate change, to protect wildlife as well as to strengthen the involvement of local communities in production forests. Since the ERC policy was issued in 2004 by the Government of Indonesia, production forests under ERC licence can be managed for forest restoration, the stabilization of biodiversity and ecosystem services, and to improve economic livelihood through agroforestry development.
Hutan Harapan was established in 2008 as the first ERC in Indonesia. It covers an area of 98,000 ha and is located in Jambi and South Sumatra provinces of central-southern Sumatra. Although logged over in the past, Hutan Harapan is the last remaining 'intact' dry lowland forest on the island and still maintains a high biodiversity with 64 mammal species, 307 bird species, 72 reptiles and 55 amphibians. Amongst them, there are many threatened species such as the Sumatran tiger, elephant, tapir, gibbon and bird species like Storm's stork and the Helmeted Hornbill.

Map 1. The location of Hutan Harapan in Sumatra.



The consortium of Burung Indonesia (BI), the Royal Society for the Protection of Birds (RSPB) and BirdLife International set up a company to manage Hutan Harapan as a concession with a license of 95 years. PT REKI, the company name, employs nearly 200 field staff and has departments for forest protection, restoration, research and community partnership.
Although the major part of Hutan Harapan is still covered with forest (ca. 70%), the ERC is currently under heavy pressure. Hutan Harapan is 'a forest island' surrounded by oil palm and acacia plantations. Around 3,000 households live within the boundaries of Hutan Harapan, divided within 23 communities. There are: 1) the indigenous Batin Sembilan communities that mostly depend on the forest and use slash and burn techniques; 2) the Malay communities that cultivate mainly rubber and 3) the migrant communities that cultivate cash crops and oil palms. The migrant communities are in the majority and are responsible for the most severe form of degradation of the forest.
Agroforestry (AF) has been launched by PT REKI and partners as a sustainable approach to tackle the degradation and deforestation of Hutan Harapan. AF-models have been developed

to reconcile restoration goals and livelihood aspirations of the local communities that are consistent with the restoration and biodiversity objectives of Hutan Harapan. Moreover, value-added processing, access to markets and the possibility of obtaining land tenure security through management agreements (MoU) are thought to be powerful incentives for the uptake of agroforestry and enable the brokering of agreements to halt forest loss.
Besides ensuring economic resilience and enhancing biodiversity in designing suitable AF-models, PT REKI exerted effort to maximize community participation by accommodating aspirations of local farmers, especially those who had invested time and resources on commodities such as oil palm and rubber.

The Darwin Project was thought to be the ideal instrument to build on the AF approach of PT REKI and assist in seeking a win-win solution between the smallholder farmers of agricultural commodities in Hutan Harapan, the Harapan partners who aim to save some of the world's most threatened biodiversity and the poorest people dependent on these forest resources.

2 Project Partnerships

The Project has been a collaborative effort of PT REKI, BI, RSPB, ICRAF and the Universities of Edinburgh and Bangor. BI is the lead and has been responsible for managing the project and coordinating the activities among the project partners and stakeholders. PT REKI, as the concession holder of the ecosystem restoration licences, prepared and implemented the AF approach in close collaboration with the participating communities in the field. The RSPB led the biodiversity monitoring and prepared the research protocols, while ICRAF helped with the design and modelling of the AF options. The Universities of Edinburgh and Kent contributed to the socio-economic surveys and supervised the collection and data analysis of the household livelihoods and farm systems to inform project delivery.

The progress of agroforestry development in Hutan Harapan is dependent on PT REKI's ability to engage local stakeholders and the support of partners in guiding and providing advice related to biodiversity, restoration, AF-models and policy engagement. Coordination meetings were held regularly between PT REKI, BI and RSPB to plan project activities and to monitor the overall implementation and achievements of the Project (see annex 3). This collaboration among partners formed the basis for technical input and the development of monitoring tools for the Project.

PT REKI had government support from the local government administration (Batanghari and Sarolangun), the provincial government (Jambi and South Sumatra Forestry Agencies), and the national government (Ministry of Environment and Forestry). The role of government in this project has been to legalise agreements and monitor their implementation.
Governmental agencies such as the Forest Department for Research, Development and Innovations (FORDA) and experts from the Universities of Jambi, South-Sumatra and Bogor provided insights in the development of agroforestry in Hutan Harapan. They attended the meetings conducted during the Project and helped with the production of a policy brief on agroforestry. KPH, as the government office responsible for monitoring and regulating production forests in the area, was also involved in providing advice and support to agroforestry implementation. They attended several meetings with the communities that were organised by PT REKI.

The partnership between PT REKI, BI and RSPB on Agroforestry continues to date. As mentioned in chapter 1, the management of Hutan Harapan is under the consortium of BI, RSPB and BirdLife International and PT REKI is responsible for its implementation. A paper sharing experiences on agroforestry in ERCs is work in progress between PT REKI, the RSPB and ICRAF and there is regular exchange within the group involved on technical issues. The contribution of the Universities of Edinburgh and Bangor on surveys and monitoring was valuable and has made PT REKI and partners realise that universities can give valuable support to the management of Hutan Harapan. It has led to PT REKI signing various MoUs with other universities such as the University of Göttingen (Germany) and the Agriculture Institute in Bogor, Indonesia, for collaboration on various aspects of agriculture.

3 Project Achievements

3.1 Outputs

3.1.1 Output 1. Enhanced understanding of the household and farm systems level economics in communities at Hutan Harapan and the potential contribution of locally developed agroforestry options to enhancing livelihoods.

PT REKI and partners started with a gender disaggregated baseline survey of 477 households of 11 communities under Activity 1.1 in Year 1 of the Project, where information related to socio-economic status, farm systems and impediments to agroforestry uptake was collected, analysed and used to design project activities. The analysis of this first survey revealed that indices of subjective wellbeing and the core elements of the multi-dimensional poverty tool (material wealth, health and knowledge) are not particularly strongly correlated. The majority of the respondents (75%) overall felt happy but at the same time they admitted to living in poverty. Most of the households had more than one source of income and they cultivated several agricultural products and cash crops (mainly rubber and oil palm). Although most of the respondents said that they had enough food supply, 11% declared that they did not have enough supply and could not afford to buy staple food (i.e. rice). (See Annex 4)

It became clear from the socio-economic survey that the feedback on trust and willingness to engage in the Project varied among the communities. The indigenous communities of Batin Sembilan generally had more trust in PT REKI and were more in favour of a partnership. There were only a few groups within the Malay and migrants' communities who were willing to engage in AF despite the resistance of others. PT REKI asked local NGOs to mediate in gaining the trust of the communities and to establish partnerships with them. During the project period, PT REKI reached a partnership agreement on AF with four groups of Batin Sembilan, one Malay and three migrant groups (see annex 5).

A second survey in Year 3 amongst the 11 communities also looked at subjective wellbeing and used the same NESP multi-dimensional poverty tool. Compared with the first survey results the changes are small and variable, which means there is no evidence for meaningful change over time or from the effect of signing a MoU with PT REKI at the household level (although the MoU was actually the basis for project intervention and support to develop the AF approach).
It is likely that the short period of time between the initial survey and the re-survey would have limited the extent of change that could have been expected, but this information is important for PT REKI as it shows that the current MoUs including the community partnership implementation needs to be reviewed to improve community livelihoods.
Household participation in AF varied from community to community and also within the community as they cannot be considered as a homogenous entity. Some migrants' groups such as Kunangan Jaya 1 and 2 were willing to try AF on their land but in for example Sako Suban, the households refused to join the Project due to former tensions regarding logging in Hutan Harapan. However, HAKI, a Southern-Sumatra based NGO, mediated between PT REKI and the Sako Suban group to resolve the conflicts. After project closure, a group within the Sako Suban community signed a MoU, including the commitment to implement AF practices. The negotiation for engaging communities in AF continues beyond the lifespan of the Darwin Project.

3.1.2 Output 2. Agroforestry options, based on rubber, agarwood and native timber species, are designed, through a participatory process, to meet livelihood and restoration goals, and are trialled in focal communities in Hutan Harapan.

The target community participation in the workshops was 500 households that would implement AF on 500 hectares of land. It was assumed that each participant represented one household. During the project period, a total of 44 stakeholder workshops and socialisation sessions involving 525 participants were held with 151 female participants (28.7%). All participants had a land tenure agreement. The main outcome of several workshop was to confirm community

engagement with the Project, to allow bottom up participation and to teach agroforestry methods such as better rubber planting and cultivation techniques (see annex 7).

PT REKI established a MoU on natural resource management with eight communities during the lifetime of the Darwin Project. In these MoUs AF was an important component. The eight communities represent a total of 371 households with 2,987 ha of land. The total AF-plots reached was 84 ha with eight ha of demo plots (one demo plot in each community). This is far below the target of 500 ha which was too ambitious and did not take into consideration the lack of trust in PT REKI and the reluctance of many farmers to integrate AF-species in their oil palm plantations. The cultivation of oil palm is illegal in the concession, but it is locally perceived to be very profitable compared to rubber and potential AF-models, although this can be disputed in the long-term due to the fact that the inputs for oil palm are higher and suffers wide price fluctuations. Besides, farmers in the surrounding areas are accustomed to receiving benefits from oil palm companies in terms of capital and resources. Hence, even households of community members with MoUs requested additional capital investments by PT REKI, including fencing materials and mechanical land clearing, as well as daily wages and long-term loans.
Another main aspect of this output is to verify whether the selected AF-models had a positive impact on the restoration goals for Hutan Harapan. Through development of trials and regular biodiversity monitoring, the hypothesis was that the AF-approach leads to a decreased rate of deforestation and an increase of biodiversity on land that is converted into agroforestry.
During Year 1, four AF-models were designed for the set-up of demo plots and for land managed in collaboration with the participating communities. These models incorporate rubber as the principle tree species and belong to four categories: 1) monoculture (only rubber), 2) simple (rubber intercropping with agricultural crops and fruit trees), 3) complex (rubber with agricultural crops, native timber species, fruit and fast growing trees) and 4) natural regeneration (rubber with natural regeneration of forest species) (see annex 8).
Planting of seedlings in the AF-plots managed by the households have been carried out so far for 3 models: monoculture, simple and complex. Two-third of the households decided to choose the monoculture of rubber model. A tree species that was excluded in the model is agarwood (Gaharu). Earlier, this tree species was considered as a potential AF-species with high value for the market. However, after testing it turned out that the quality of the oil produced from the resinous wood was very poor and had a low market price. During discussions with the communities, it was decided not to use agarwood in the AF-models.

For livelihood improvement and agroforestry implementation PT REKI focused on rubber which has resulted in an increase in the number of households that deliver rubber for marketing at a fair price. Rubber was selected by the communities because this commodity has been cultivated in the area for a long time. Communities that were already familiar with cultivating rubber, have asked for better cultivation and harvesting methods in order to improve production. In this respect, the capacity building offered during the Project contributed significantly to the increased knowledge and skills of the farmers on processing and marketing rubber.
There was interest of the farmers in horticulture (vegetables) and intercropping with cash crops and fruit trees. One migrant community (KJ 1) expressed their wish to integrate livestock in their AF-plot which turned into a more silvopastoral system with fodder trees. With support of the Project several cows were purchased which will lead to additional income.
During the implementation of the Project, bamboo was another species that was identified as having potential for the market and therefore PT REKI and the participating communities such as the Kapas Tengah group were interested to put bamboo as an AF-species in their models. As a result, the elaboration of a bamboo business concept at large scale is underway.

3.1.3. Output 3. Agroforestry is recognised as an important tool in reconciling restoration goals with local livelihoods within the ERC policy forum and ERC Association.

Workshops on conflict resolution in achieving mutual benefits through AF (December 2016) and on the role of AF in restoration (March 2018) have been conducted. The AF-approach as presented by PT REKI and partners has been considered by various stakeholders (ERC working group, government agencies, local authorities) as an opportunity to balance livelihood

development of local communities, business support to companies and restoration of the forest (see annex 15 for images).
An outcome of the workshops was a policy brief on the role of agroforestry in landscape restoration and has been elaborated by BI in cooperation with FORDA and ICRAF. This brief has been submitted to all members of the ERC Working Group. The policy brief will also act as a guideline on community development (Indicator 3.3).
Another result was a series of discussions concerning multiple-use forest products that has been initiated within MoEF. The recommendations help to create a positive context for the development of agroforestry on a wider scale. Income generating from NTFP's and AF products that was previously only applicable to ERCs can now be replicated in other types of forest concessions. Pulp and paper companies and logging companies are motivated to look beyond their traditional income sources and consider the involvement of communities and the AF-approach as a tool to harvest and sell these NTFPs.

3.2 Outcome

Expected Project outcome: Agroforestry systems are developed and trialled at Hutan Harapan, resulting in improved livelihoods, enhanced biodiversity in cultivated areas and reduced rates of deforestation, and are incorporated into national ERC policy and best practices.

Due to an extensive capacity building program for Pt REKI staff and participating households on Agroforestry, various AF-models were developed and trialled in close partnership with the local communities and relevant stakeholders. It had a positive impact on Pt REKI's internal management on the AF approach, the community partnership with particularly the indigenous Batin Sembilan and the ERC policy in the wider context. In terms of tangible benefits for livelihood and biodiversity as well as natural forest cover, the impacts were less visible until now, mainly due to the limited lifespan of the Darwin Project.

A more detailed explanation per indicator for these conclusions follows here:

Indicator 0.1 The 500 families involved in the project experience positive livelihood benefits, through improved economic resilience, security of tenure, increased over-all incomes and improved gender equity, as a result of project interventions.

The involvement of 500 households as an outcome in the Project design was too ambitious to start with. There have been awareness campaigns and workshops on AF set up by PT REKI staff and partners to motivate the local communities and to explain the benefits of agroforestry, but the vast majority of the communities remained reluctant to collaborate as they occupy the land illegally in Harapan and depend completely on oil palm and cash crops for their income. However, from the households that engaged themselves in the Project, there was a recognition of the potential benefits of AF for livelihood improvement. The most notable response to the principles of agroforestry advocated by the Project was from the indigenous Batin Sembilan community and a portion of the migrant communities that had already developed close ties with PT REKI. Due to the efforts on agreeing on MoUs, a total of 371 households had been involved in the AF-strategy. Together they possess 2,987 ha of land, so it is highly likely that the AF-area will expand in the coming years with the implementation of ongoing MoUs.
With a total of 84 ha of AF-plots at the end of the project period, the target of 500 ha has obviously not been achieved. The main reason for this underachievement is that many farmers had not been willing to create an agroforestry plot in their cultivated area. Some households mentioned that they did not see the benefits and they felt that with a project duration of three years there was no long-term incentive to implement the agroforestry practices on their land. They failed to understand that PT REKI adopted AF so there was long-term commitment from the company and that effort would continue. Considering the first harvest of latex from rubber is estimated to be six years after planting and with a lifespan of 25-30 years for the trees, the agreements regarding the implementation of AF-models with rubber trees are short term. This served as a disincentive for communities to participate in agroforestry and was not addressed in Project design.
Due to the long process of acquiring skills, planting and land security administration, the involved households had not harvested and processed AF-products by the end of the project

period. The demo plots in the communities were established in 2018. Consequently, the benefits of AF on livelihoods were not visible within the lifetime of the Darwin Project. Preference over one type of AF-model is something that needs to be sorted out in coming years. The expectation is that rubber trees will remain the dominant component of most AF-models. A way forward is to encourage farmers who adopted the “simple” model under the Darwin Project, to manage their area (i.e. just 0.5-1 ha) of the simple model and use complex on the rest of their land. The reluctance to move to other AF models results from the fact that it requires more labour to manage the intercrops.

Indicator 0.2 Biodiversity across 500 ha of community managed land is enhanced (increase diversity of plants, birds and soil organisms and shift in community composition towards forest dependent species) through agroforestry interventions by EOP.

Biodiversity monitoring was conducted with trained field REKI staff and under supervision by the RSPB. Surveys on flora, soil composition and birds were carried out in the agreed AF areas (see annex 9). The acquired data of these surveys serve as a baseline for the development of the AF-plots. The lifespan of the Project was too short to draw firm conclusions about the assumption that the AF-approach would lead to an increase in biodiversity in the cultivated fields.
It is worth noting that biodiversity did decrease in the initial stage of the development of the AF-plots. This decrease is a logical consequence of the fact that most plots were established on shrub land and in (degraded) forests that had to be cleared for cultivation and not -as was initially foreseen- in monocultures of oil palms or cash crops. Moreover, many households chose monocultures of rubber and such a model limited the diversity of plants. If monocultures of rubber remain dominant, bird species that are generalists would prevail at the expense of the forest dependent species. However, if strips between the rows are managed for timber, NTFPs and natural regeneration, the model can develop as an analogue forest similar in diversity to jungle rubber, which have been assessed to support biodiversity equal to that in secondary forests.

Indicator 0.3 Forest clearance reduced by 80% in Project focal areas and by 30% across Hutan Harapan by EOP against baseline rate at start of project as a result of the ‘social fence’.

Forest change datasets deducted from Landsat images were used to compare historical and current forest cover and deforestation within and outside the agreed AF-plots in seven of the communities involved with MoUs. The situation of 2018 was compared to the situation of 2011 (see location map and tables of forest cover and deforestation in annex 10).
Since the start of the Darwin Project, forest loss rates have increased within the agreed AF areas in three of the seven communities, whereas rates have decreased in four communities. Outside of the agreed areas, forest loss rates have increased in two communities and in two other communities, deforestation rates have remained constant, but with 4.7% and 10.2% at high levels. A more positive result was identified in two communities (KJ2 and Tanding) where deforestation rates outside the agreed areas had dropped to less than 1%.
The general trend is that there was less forest cover within the AF-plots in the initial stages, because the AF-plots were being established on shrub land and in degraded forests. The cultivation of these lands resulted in a clearing of unwanted trees to open up the area and to reduce competition for planted seedlings and crops.
is the expectation is that with the further development of the AF-plots in structure and time, the vegetation cover will increase.
A positive aspect of the establishment of the AF-plots by the Batin Sembilan communities is that these areas serve as a social fence. The Batin Sembilan have become the forest stewards of Hutan Harapan and many of them now support the patrolling teams as community wardens. This has reduced the overall deforestation of Hutan Harapan and stopped some illegal encroachment. However, some areas- especially in the northern and eastern parts of the concession - are still prone to encroachment by landless farmers. The extreme droughts of 2018 and 2019 contributed to the threat of burning and clearing forest land for conversion into small oil palm plantations.

Indicator 0.4 By EOP, Hutan Harapan management adopts agroforestry as a central tenant of its community development programme and rolls out an agroforestry programme across all encroached areas.

In Hutan Harapan, agroforestry was included in the MoU on Community Partnerships and is recognised as a main tool for livelihood improvement in those communities that collaborate with PT REKI (see annex 11). There has regular maintenance of the demo plots and technical and financial support from PT REKI and partners to households that practice AF on their land. It should be noted that the AF-models have been adapted according to the wishes and needs of the farmers whether they are Batin Sembilan, Malay or migrants.
The intention of PT REKI is to roll out the AF programme as part of the MoU with the local communities across all encroached areas. However, this aim has been hampered so far by the fact that a portion of the communities living within the concession have categorically rejected any intervention by PT REKI. These communities are mostly located in the northern and eastern part within Hutan Harapan and consist of migrant households that cultivate oil palm. These households are backed up by the Indonesian Farmer's Union (SPI) and claim to have land rights within the Hutan Harapan concession.
Another aspect worth noting is that Pt REKI has adopted the AF-approach not only for community development but also for its own reforestation plans. Pt REKI is currently elaborating AF business models on reclaimed degraded areas with support of Partnership of Forests (P4F) and external experts.

Indicator 0.5 By EOP, ERC policy is adapted to facilitate agroforestry in community development.

The MoEF and members of the ERC Working Group were receptive to the idea of adopting the agroforestry approach for community development. This recognition was evident by the fact that BI hosted an ERC policy review process together with FORDA. BI and PT REKI were considered as leaders in ERC policy and practical implementation. They have established a good working relationship with FORDA, MoEF and other stakeholders through the ERC policy forum. Agroforestry has also been identified as a potentially important tool in Indonesia's Intended Nationally Determined Contribution (INDC) to mitigate effects of climate change. There was also recognition amongst political leaders that the indigenous communities of Harapan could benefit from the established MoU's in terms of customary rights over forest land. President Joko Widodo personally signed the tenure agreements which has been considered as a major achievement of the Project (see also 4.3).

Indicator 0.6 At least 3 other ERC license holders incorporate agroforestry into their community development programmes.

Activities to influence ERC policy on agroforestry were initiated through two workshops (see annex 15 for images). Three other ERC holders were amongst the participants in these workshops. Agroforestry was proposed as a common approach for reconciliation between community livelihood and maintaining biodiversity and restoration. Many ERC holders in Indonesia had already incorporated agroforestry techniques in their concessions; it was either being actively pursued as in the case of REKI with the Darwin Project or being incentivised through the marketing of NTFPs and AF products (rubber, dragon blood, rattan, honey, etc.) with adjacent communities.

3.3 Monitoring of assumptions

Efforts were made by PT REKI and partners during the Project to set a baseline for livelihood improvement and biodiversity. The initial household survey and re-survey for livelihood and the assessment of soil, birds, flora, ecosystem function and forest cover for biodiversity were used as monitoring tools (see monitoring templates in annex 9). It was assumed that the AF-approach would benefit the participating households and increase biodiversity within the cultivated plots. However, the process of preparation, elaboration and implementation of the selected AF-models took considerable time and within the three years of the project lifespan conclusions about changes in livelihood and biodiversity could not be made. During internal

discussions at PT REKI and with partners there has been agreed that both livelihood and biodiversity will continue to be monitored 5 and 10 years after project closure, using the baseline data and the same monitoring templates.
The assumption that most communities would be willing to collaborate with the Project did not hold. Another main obstacle, as was mentioned earlier, was the reluctance of farmers to integrate AF-practices in their oil palm plantations. When PT REKI and partners realized this through monitoring activities during Project implementation, the approach was adapted. Focus was then put on community within the concession that had agreed to sign a MoU with PT REKI. In particular, the indigenous Batin Sembilan were engaged and able to expand their cultivated area with AF-practices due to the incentives and capacity building offered by the Project. The results of the survey analysis and discussions at meetings with the households have shown that the AF-models have been developed in the form of intercropping with rubber and native trees on former shrub land and in degraded forests, while the initial intention was that AF could be integrated into existing oil palm plantations.
Nevertheless, effort was made to convince communities that were not willing to collaborate in the first instance. Where PT REKI staff was not welcome, such as in the community of Sako Suban, the expertise of a local NGOs was solicited for mediation. This proved to be successful, but agreement with the community was solicited upon Project closure. Therefore, the Project was not able to influence development towards AF in this area.
At national level the assumption that MoEF and members of the ERC Working Group would be receptive to the idea of adopting agroforestry for community development was valid. The government and main stakeholders have now moved to considering options other than timber from forest concessions to a strategy that is linked to the marketing of NTFPs and agroforestry and such a strategy requires close collaboration with local communities.

3.4 Impact: achievement of positive impact on biodiversity and poverty alleviation

The Darwin Project is not a stand-alone project but was considered part of an integrated approach to manage Hutan Harapan for the conservation and restoration of Sumatra's last remaining lowland forests. The Danish government's development corporation DANIDA, with a budget of [redacted] DKK (ca. [redacted] GBP), was the main donor of Hutan Harapan from 2011 to 2018. The project funded by DANIDA recognized the encroachment of the communities into Harapan as the severest threat for the integrity of the natural forest and formulated community partnership and sustainable livelihood strategies as focal points of its programme. The project by DANIDA considered agroforestry as an important instrument to establish partnerships with the communities and enhance economic benefits for the involved households during phase III of its program (2016-2018). The implementation of phase III coincided with the start of the Darwin Project, so there was overlap. The project funded by DANIDA focused on the higher level of collaborative partnership engagement and conflict resolution mechanisms, while the Darwin Project dealt with the organisational and technical issues of the AF-approach in the field.
The topics of biodiversity conservation and poverty alleviation were addressed by the DANIDA project at meso-level and by the Darwin Project at micro-level. In terms of biodiversity, the DANIDA project supported the ecosystem and the Darwin Project promoted the diversity in the agreed AF areas, also with the aim of reducing forest loss. Concerning poverty alleviation, the DANIDA project overlooked the whole range of community livelihoods while the Darwin Project was related to AF practices of a selected group of households.
The fact that the targets of the DANIDA project phase III program were only partially achieved, even with a large budget, indicates the complexity of problems in conserving and restoring Hutan Harapan. As mentioned in 3.2, also for the Darwin Project, the achievements on biodiversity and livelihoods were limited for several reasons. However, there are a few Project results, particularly in the engagement of the Batin Sembilan who are naturally hunter gatherers, the increase in the number community partnership agreements & land tenure security and the nature of these collaborations, and the development of AF-plots, that show progress in managing Hutan Harapan by PT REKI. These positive changes can now be accelerated if the lessons learned from the Project are documented and follow-up actions are adapted accordingly (see chapter 6).

4 Contribution to Darwin Initiative Programme Objectives

4.1 Contribution to Global Goals for Sustainable Development (SDGs)

The Project has poverty reduction and biodiversity conservation at the heart of its design, since the protection and restoration of Hutan Harapan is intrinsically linked to the communities living within the concession. In this context SDG15 (Sustainable use of terrestrial ecosystems), SDG13 (Climate change action) and SDG1 (No Poverty) are relevant. Indirectly, the expected Project outcome contributes to SDG2 (Zero hunger), SDG3 (Good health and wellbeing) and SGD5 (gender equality) through ensuring a sustainable and fair use of natural resources and providing opportunities for work as well as cash income for women.
Concrete progress on the above-mentioned SDGs was not measured during the lifespan of the Darwin Project. As mentioned in earlier sections of this report, the short duration of the Project was a significant constraint. However, positive results such as the engagement of the Batin Sembilan, improved market access for rubber and capacity building of women, show that PT REKI is heading in the right direction. AF is a central component of the collaboration efforts with local communities and this approach will be strengthened in the current KfW project. Hence, within the context of the overall management strategy to restore Hutan Harapan, the monitoring of the contribution to the SDGs is an ongoing process.

4.2 Project support to the Conventions or Treaties (e.g. CBD, Nagoya Protocol, ITPGRFA, CITES, Ramsar, CMS, UNFCCC)

The Project also contributed to the Convention of Biological Diversity, namely by:

-In-situ Conservation (articles 8c/8f/8i/8j): The Project promoted the management of biological resources for sustainable use, such as NTFPs and AF-species native to the area.
-Sustainable Use of Components of Biological Diversity (article 10a-e): Customary uses of forest resources by the indigenous Batin Sembilan and Malay have been incorporated into the design of the AF-approach. The experiences gained at Hutan Harapan were shared with national decision makers through the national ERC forum.
-Research and Training (article 12b/c). The Project contributed to research on livelihoods, agroforestry and biodiversity. Staff at BI and PT REKI as well as student from local universities were trained in the design and implementation of research components.
-Technical and Scientific Cooperation (articles 5,18). Cooperation between the UK (RSPB, Universities of Kent/ Bangor and Edinburgh) and Indonesian partners, resulted in improved capacity and policy recommendations.

As mentioned in 3.4, the Darwin Project did not stand as a project on its own but was part of an integrated approach to manage Hutan Harapan for the conservation and restoration of Sumatra's last remaining lowland forests. In this context, effort was made to meet the Aichi Targets, of which the following are relevant: 1 (people aware of biodiversity values), 4 (sustainable natural resource exploitation), 5 (reduce habitat loss), 14 (ecosystems contribute to livelihoods), 15 (ecosystem resilience through restoration) and 18 (traditional knowledge for biodiversity conservation) (see annex 11).

4.3 Project support to poverty alleviation

The current Indonesian president Joko Widodo launched the "Social Forestry Program" (Village forest, customary forest, Community forest plantation, Social Forestry and Forest Partnership), with rights to manage the forest for 35 years. This is part of an effort to reduce inequality among the population and poverty alleviation for rural people.
During the Darwin Project, PT REKI worked with the government structures (Batanghari District, Forestry Agency in Jambi and South Sumatera and Ministry of MoEF) and local NGOs to achieve "Forestry Partnership". The program was an opportunity for the Batin Sembilan as an indigenous community to receive customary rights over Hutan Harapan. President Joko Widodo personally signed the agreements with the engaged Batin Sembilan groups and handed over the certificates to them during a visit to Jambi in 2018 (see annex 15).

4.4 Gender equality

PT REKI takes gender equality into account in the implementation of its activities. As such gender is a cross-cutting topic of the overall management strategy for Hutan Harapan. Gender equality was also promoted in former projects (with DANIDA and KfW) and has been an important aspect in the preparation of events (meetings and workshops) and AF-activities for the Darwin Project.
It should be noted that within Hutan Harapan, there is a traditional division of roles between men and women that is also based on ethnicity, culture and socio-economic background. From the socio-economic survey, it was highlighted that men provided an income by cultivating cash crops (i.e. oil palm and rubber) while women carried out home-based activities such as gardening, taking care of the children, preparing the food and cleaning the house. In the more forest-dependent communities such as the Batin Sembilan and Malay groups, hunting was an activity for men while fishing was mostly carried out by women (see annex 15).
Activities relating to the integration of rubber in the AF-models were mostly attended by men as rubber planting and tapping was considered a man's job. The number of female participants in the beginning was low. However, the Community Partnership team of PT REKI was gradually able to convince more women to become involved. (see annex 7)
In an attempt to attract more women in AF-related activities of the Project, PT REKI also looked at other options. Workshops on the production of handicraft were organized to ensure women's participation. In these workshops, products such as household utensils (plates, spoon, chopsticks) and work tools like baskets, fish traps and gardening utensils were made from rattan and bamboo harvested in the forest and cultivated fields surrounding their gardens/ farms. These species were also promoted as suitable species for AF-plots.
Another workshop that attracted many female participants was one relating to horticulture, where expertise on the cultivation of vegetables and fruit trees was shared.

4.5 Programme indicators

- *Did the Project lead to greater representation of local poor people in management structures of biodiversity?*

During the Project period, the Batin Sembilan living in Hutan Harapan obtained customary rights over land within the concession. These rights in combination with the incentives for the AF-approach made the Batin Sembilan the main collaborators of PT REKI for the protection of Hutan Harapan. There are now 21 Batin Sembilan individuals who work as community wardens and who act as part of the patrolling groups for forest protection. They contribute to the conservation of the biodiversity of Hutan Harapan in an effective way and have been directly involved with stopping illegal activities at the site. This collaboration has gained local, national and even international recognition in the media.

- *Were any management plans for biodiversity developed and were these formally accepted?*

Hutan Harapan is home to a broad range of endangered species such as tigers, elephants and helmeted hornbills and due to its importance, a management plan for biodiversity conservation and monitoring was approved by the government in 2014.
The AF strategy (2018-2027) developed by PT REKI for Hutan Harapan incorporates restoration and promotes plant diversity. These AF-models aim to ultimately develop a far richer biodiversity than the monocultures of oil palm plantations and cash crops that are cultivated in the major part of the collaboration zone.

- *Were they participatory in nature or were they 'top-down'? How well represented are the local poor including women, in any proposed management structures?*

When the Project started, PT REKI and partners had formulated a set of ideas about how the Project could be conducted. These ideas were discussed with the households during community meetings and the feedback was used to design the AF-models and prepare the

activities. The selection of areas for the establishment of AF-plots was decided by the community that signed the MoU. Some other requests such as demanding budget for electricity or funds for other community development projects were not accepted by PT REKI. The existing culture of surrounding oil palm and agrobusiness companies to provide substantial financial support to farmers (e.g. loan wages, equipment, infrastructure) in exchange for a share in the harvest, complicates the effective implementation of projects such as the Darwin Project.
The Batin Sembilan that belong to the poorest category were mostly involved in the implementation of the Project activities. As mentioned under 4.4, women participation was encouraged and workshops on handicraft and horticulture were organized to meet their interests. While the participation of women in activities relating to AF has seen some improvement, their participation in the management structures would require further attention and interventions. These are cultural changes that need a longer time to have effect.

4.6 Transfer of knowledge

Staff at BI and PT REKI have been trained by experts of ICRAF and RSPB in the design and implementation of research components related to the AF-plots. Monitoring tools such as the Teabag Decomposition have been used to measure the soil composition. This research has resulted in internal reports of PT REKI Research and a peer-reviewed journal article on the role of agroforestry in ERCs (see annex 12).
At field level, researchers of the University of Kent/ Bangor and Edinburgh trained around 15 graduates from the University of Jambi and South-Sumatra to conduct the socio-economic surveys together with PT REKI field staff.
Representatives of the local authorities (Jambi, South-Sumatra) and the national government (MoEF) have participated in meetings and seminars on the Project's AF-approach organised by BI. Several members of the regional Forestry Departments participated in a field visit to discuss the strengths and weaknesses in the implementation of Project activities.
There were regular events with members of the ERC Working Group at the national level. BI was chairperson of this forum and as a result, could integrate the topics of agroforestry and community partnership in the discussions of the WG, using the project examples from Hutan Harapan. This has led to a better understanding of the value of agroforestry among policy makers of ERCs.

4.7 Capacity building

Staff of BI and PT REKI gained knowledge and practical experience in the design and conduct of livelihood and farm systems surveys, in the design and negotiation of AF agreements with farmers, and in the supervision of agroforestry plantings and their subsequent management. While PT REKI already implements a biodiversity monitoring programme for Hutan Harapan, their capacity in the design of protocols and analysis will be enhanced through exchange with RSPB. Staff who were involved in the Darwin Project were mostly permanent staff of PT REKI, so the skills acquired will remain in the overall Harapan project.
Pt REKI and partners developed a large capacity building program for the participating households. Technical workshops such as the training on rubber cultivation led to increased skills on processing and marketing of AF-products. The Batin Sembilan who used to practise slash and burning agriculture, gained much insight on intercropping and made the switch to more sustainable agriculture. Due to participatory character of the trainings on horticulture and handicraft, women were invited to share their views.
PT REKI's representation in the ERC Working Group has enhanced the capacity of other ERC managers through the transfer of information and experiences. BI's leading role in the ERC forum was recognized by the governmental partners at regional and national level.

5 Sustainability and Legacy

It is important to note that the Darwin Project was not a stand-alone project but incorporated into the overall management strategy for the conservation and restoration of Hutan Harapan (see also 3.4). Although project achievements have been somewhat limited, the Project's

legacy is that it has consolidated the AF-approach as a sustainable livelihood option for the communities within the boundaries of Hutan Harapan. There has not been an 'exit strategy' for the Project, but more of a close follow-up of action points to improve and expand the AF approach for the concession area after the Project and to share tangible results among main stakeholders including the MoEF and ERC WG members. The learning from the Darwin Project will also be reflected in the expected outputs of the KfW project (2019-2026), which include community partnerships through agreements (MoUs), improved livelihoods, sustainable business models and enhancing biodiversity (see annex 13). Further costs of implementing the AF-approach will be shared with the KfW project.,

A few key points of the Darwin's legacy that are integrated into Harapan's future objectives and activities:

- PT REKI will build further on the MoUs for community partnership. The target is to increase the current number of six agreements to 14 MoUs, and agroforestry will remain a main component of these agreements.
- The data from the socio-economic surveys and biodiversity monitoring serve as a valuable database and will contribute to the monitoring of the AF-approach going forward.
- The field staff that contributed to the Darwin Project, will continue with the overall Harapan Project as they are employees of PT REKI and BI. Hence the acquired skills and knowledge will stay with the current project.
- The capacity of the participating households on AF derived from trainings, workshops, etc, will remain and where needed, will be strengthened with support from the KfW project budget. The capacity built was very practical and can be easily transferred to other households.
- The AF demo-plots in the communities will be maintained and regularly monitored to measure their development.
- The business model for rubber that was developed under the Darwin Project, has attracted the engagement of more farmers and is expanding due to the contract with Halcyon to purchase the rubber.
- Bamboo that was tested in AF-plots, has led to a proposal of a business plan with bamboo at large scale. A feasibility study was started recently, partly funded by the Partnerships for Forests.
- BI and PT REKI continue to contribute to the ERC forum and, together with their partners RSPB and BirdLife International, advocate the AF-approach among policy makers at national level.

The closure of the Darwin Project is followed by an evaluation of the current status of all current AF-fields within Hutan Harapan. This analysis will lead to an action plan on agroforestry between Pt REKI, the communities with MoU's and the project partners (BI, RSPB and NABU/KfW) for 2020-2021.

6 Lessons learned

6.1 Key-lessons of the Project

- The MoU agreement between PT REKI and the communities has proven to be a valuable instrument for community partnership and land security. Although it is still at a relatively small scale with eight MoUs signed with groups (not entire communities) out of 23 communities, the agreement has certainly pushed forward trust and engagement among the participating households. This has been a learning that was observed by PT REKI field staff and consultants (see annex 7).
- The close collaboration with the Batin Sembilan communities might be considered the biggest success of the Project. As the indigenous people of Hutan Harapan, they are dependent on the forest for their survival and hence they understand the value of a

healthy ecosystem. The recognition of their customary rights over Harapan by government officials certainly played a role in their commitment; the AF-approach gave them additional benefits and changed their practice of slash and burning into a more sustainable strategy of agroforestry.

- The participatory approach adopted for developing and implementing the AF-models was another positive aspect of the Project. Before the Project start there was little knowledge on agroforestry amongst the communities, but with the extensive capacity building program, relevant skills were acquired by the involved households. The models were prepared by ICRAF and the households selected the most appropriate model for themselves and decided on the species composition. Hence, the Batin Sembilan preferred the simple model that corresponded to their daily needs, while the Malay group opted for a model with horticulture while the migrants chose the more complex models which included fodder species for livestock.
  It was important that the AF-models could be 'tailor-made' according to the wishes and needs of the households and adapted to the specific conditions of the area.
- The partnership overestimated its own capacity to involve the communities within Hutan Harapan as main collaborators in meeting the objectives of the Project, particularly with regards to willingness of the households to engage in agroforestry as a sustainable livelihood option and the time required to raise awareness of its importance and value. Project objectives and proposals are often ambitious by nature, but in this Darwin Project the expected outputs were far more ambitious than what was achievable in reality. This could have been partially avoided if the Project outputs and objectives were thoroughly analysed based on the findings of the socio-economic survey. The complexity at field level and aspects such as a lack of trust and reluctance amongst farmers to participate in an AF-Project with PT REKI (deduced from the socio-economic survey) would have been considered and more realistic project assumptions and outputs would have been set.
- Important components of the project design are 'scale' and 'lifespan' of the Project. Implementing agroforestry, as we now realise, requires considerable time to measure results in terms of livelihood benefits and biodiversity. There is not only a long trajectory needed to engage and train farmers, select the areas, design AF-models and carry out the planting, but the development of the AF-plots also takes several years. A project lifespan of five years or even ten years, would show better results. As such, one lesson learned is that agroforestry requires long-term investment.
- There is the additional background for the Project where the culture of projects in the area has tarnished the attitudes of the individuals in the community within Hutan Harapan. Surrounded by large oil palm and paper & pulp companies and with a logging company that used to manage Hutan Harapan for the exploitation of timber in the recent past, farmers had become accustomed to getting access to a broad range of incentives, such as daily loans, capital, and infrastructure in return for their collaboration. PT REKI manages Hutan Harapan for conservation and restoration of the natural forest and uses most of its restricted income to cover basic operational costs. Biodiversity and ecosystem services are expressed in non-monetary terms. By its nature therefore, the AF-approach for consolidating sustainable livelihood and restoration of degraded forests conflicts with the current concept of establishing an oil palm plantation that can be profitable for generating income in the short term. It is logical that many of the landless farmers that encroach Hutan Harapan seek a living by clearing forest and converting the land for oil palm and cash crops as their individual interests prevail over the common interests of biodiversity and ecosystem services. In such an environment, an AF project would bring high risks for these households compared to 'business-as-usual', unless HH is in a position to offer similar incentives through its own business activities.
- Good monitoring has proven to be essential: not only to assess the effectiveness of activities in the context of the expected outcome and outputs, but also to define a list of feasible action points to be followed up on. Such an in-depth analysis was lacking

during Project implementation. Monitoring was focussed more on completion of the activities, not on the effectiveness of the activities being undertaken. A Mid-term Evaluation by an external observer including a field visit would have been valuable to revise expected outputs according to progress at grassroots level.

- BI and partners organized seminars and workshops on agroforestry with participants from MoEF, Forestry Departments and other ERC's at regional and national level. This was useful to share experiences and to advocate agroforestry as a sustainable livelihood option in policy making. The advocacy would have had more impact on decisionmakers and practitioners if the discussed AF approach was illustrated by AF-models that had tangible benefits on livelihoods and biodiversity. The experience that was shared was still in the initial phase of a project with an uncertain outcome. As a result, the option to hold a seminar within five years with the MoEF and ERC members was kept open where proven AF-strategies and models could be presented.

6.2 Monitoring and evaluation

The template of the M&E log frame provided by the Darwin Project (see annex 1) was considered as a useful tool in the preparation and implementation of the Project. The M&E log frame was particularly helpful as it provided an overview of the numerous activities in relation to the indicators of the Project outcome and outputs. It served as guidelines for the coordination by BI and PT REKI.
The M&E template for progress and achievements on the log frame (see annex 2) showed the overview of the progress of activities (completed or not) and general activity outcome.
However, the log frame had its limitations. The template was not adequate to show the qualitative process of implemented activities such as acquired skills, satisfaction of participants about content and recommendations for follow up action. For this purpose, the indicators and means of verification were not formulated SMART enough. It would have been useful if there was one column with 'constraints' and one with 'action points for follow-up' added to the template so that it could give a better insight into the reality in the field amongst the partners.
The focus of the template was too much oriented to completion of the activities, further strengthened by the fact that the assumptions did not consider the output of the activity, and that many of the assumptions did not hold true during implementation. As a consequence, the templates were rather static. A living document for M&E would have been more effective in the Project implementation, that could have been adapted according to need.
As the livelihood benefits for the participating households and increase of biodiversity in agreed AF-areas were not measurable due to the short lifespan of the Project, it was agreed between PT REKI, BI and main partners that additional impact surveys on both topics will be carried out five years and ten years after project closure. The monitoring of this action has been included in the KfW project (2019-2026) and appropriate budget allocated to this action.

7 Darwin identity

The logo of the Darwin Initiative was used on printed pamphlets, workshop banners and posters. On various occasions, the Darwin Initiative was promoted as one of the key supporters of agroforestry activities in Hutan Harapan (see annex 16 for pictures). As such the Darwin Initiative was recognized, and at times this was within the broader context of the Harapan project.
The good relationship with the UK Embassy in Jakarta has been advantageous. As coordinator of the Darwin Project, BI had three meetings with the UK ambassador and his staff during the project period. During these meetings, the British ambassador was kept updated on the progress of the Project and challenges faced in Hutan Harapan.
A communication strategy for Hutan Harapan was recently finalised and social media such as Twitter, Instagram and Facebook will be used by BI or PT REKI to further promote the learnings of the Darwin Project.

8. Finance and administration

Due to Covid-19 pandemic, the final audited financial report could not be submitted along or before this programmatic report, it will be submitted separately after an audit able to visit and conduct audit for all project. This has been approved by Darwin Project Administrator (Eilidh Young).