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# Understanding the Impacts of Financial Flows in the Landscape

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**Abstract:** Donors and non-governmental organizations are showing increased interest in integrated landscape initiatives (ILIs), where landscape stakeholders work together to achieve common goals related to development, climate change and conservation. In order to support the work of ILIs, we developed a novel methodology with which stakeholders—organized in multi-stakeholder partnerships—can assess how financial flows in the landscape are impacting their common goals and to identify funding gaps. Piloting the methodology in three landscapes in Indonesia, Ghana and Vietnam, we found that there were trade-offs between ensuring broad stakeholder participation in the assessments (to capture different perspectives) and the level of technical and quantifiable detail that could be acquired. The methodology effectively contributed to a common understanding among landscape-level stakeholders and triggered discussions on methods in which financial flows can be adapted to reduce their negative impacts or increase their positive impacts. It also functioned as a basis for the development of joint action plans and to initiate collaborations with the providers of financial flows that have potential to contribute to common landscape objectives. In addition to promoting common understanding and providing a basis for the development of action plans, we conclude that implementing the methodology also helped with strengthening the landscape partnerships themselves.

**Keywords:** integrated landscape initiatives; financial flows assessment; integrated landscape management; innovative finance; sustainable landscapes



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## 1. Introduction

Forested tropical landscapes are undergoing rapid changes due to ever-increasing levels of investments, not only for the production of agrocommodities but also for other crops, mining and infrastructure. The livelihood impacts may be positive for some groups, for example, through increased income-earning opportunities, while they may be negative for others, especially for people who are pushed off their land and lose access to food resources [1]. The overall environmental impacts of many agricultural and infrastructural investments tend to be negative, as landscapes are transformed from diverse mosaics of forests, agroforests and agricultural fields into monocultures. At the same time, it is widely acknowledged that forests, trees and agroforestry play a crucial role in achieving sustainable development goals and the Paris Agreement [2,3]. Even though international public funding has been committed to enhance the role of forests, trees and agroforestry in the context of international agreements such as the Aichi Targets and the Bonn challenge for restoration, the size of these funds is insufficient to meet the goals of these agreements [4].

In order to achieve sustainable development goals and the Paris agreement, both public and private investments in sustainable, inclusive and integrated landscape man-

agement are urgently needed. Such finance should also be available to smallholders and farm and forest producer organisations (LFFPOs), as they are critical to the sustainability of landscapes, but in tropical landscapes this is often not the case [5,6]. This calls for innovative forms of finance, with positive outcomes on livelihood, environmental and climate objectives [7].

Financial institutions, companies, NGOs and governments are increasingly showing interest in implementing innovative financial instruments (e.g., loans, grants, guarantees, equity investments and bonds) that can reorient investments in such a way that they contribute to livelihood, environmental and climate objectives [8]. However, such efforts rarely take place in the context of integrated landscape initiatives (ILIs), where stakeholders work together to achieve common goals and develop coherent strategies to reach those (sustainability) goals [9–11]. Thus, investments and innovative finance is often more oriented towards meeting the international goals of sustainable resource areas and zero-deforestation than towards meeting local goals of sustainable development and resilience to outside shocks. In many cases, this has resulted in local producers either being dependent on the income of one single crop (and, thus, susceptible to global prices, global trade restrictions and effects of climate related events) or possessing little opportunity to access the resources (human, natural, physical and financial) needed to change toward, expand or even maintain practices that maintain diversity, respect locally important natural areas and contribute to local priorities.

Assessments of current financial flows within existing ILIs will help define gaps in current funding for landscape goals, as well as identify existing financial flows that could be redirected to contribute to the strategies and goals as defined by the ILIs and, thus, contribute to linking achievements of international goals to that of local needs and aspirations. To be effective, such assessments need to engage local stakeholders, including local authorities, in setting the landscape objectives that need to be met and against which the impacts of the financial flows need to be assessed. They also need to involve a learning process for these stakeholders to engage in the assessment of the financial flows and in the analysis of the results and their implications for landscape investment priorities. Such participative learning approaches should result in a greater understanding of the relation between financial flows and land-use dynamics within the landscape and could form the basis for negotiating conservation and development initiatives [12]. However, so far, such approaches have rarely been implemented in rural tropical landscapes for which data are typically scarce.

To support the work of ILIs, we developed a methodology to assess financial flows at the landscape level [13]. The Landscape Assessment of Financial Flows (LAFF) methodology was designed as a tool for multi-stakeholder partnerships to analyse the impacts of financial flows on agreed-upon landscape objectives. It can be used to supplement (and in preparation for) the Landscape Investment and Finance Tool (https://liftkit.info, accessed on 4 October 2021), which was designed to identify opportunities for specific business cases aligned with landscape objectives and direct them to appropriate sources of finance. The LAFF tool intends to improve stakeholders' understanding of a landscape's financial context. It helps with identifying system-wide challenges with respect to the landscape's financial structure (e.g., key gaps in services) and opportunities to strengthen the coordination of investments in the landscape and can inform the development of policies supportive of investments in ILIs by local and provincial authorities. Implementing the tool will also help with identifying financial flows considered to be most relevant for further study because of their impacts on landscape objectives.

The methodology was piloted in three landscapes: the Ketapang Kayong Utara (KKU) landscape in West Kalimantan, Indonesia; the Juabeso-Bia and Sefwi-Wiawso (JBSW) landscape in the Western Region of Ghana; and the Srepok River Basin (SRB) in the Dak Lak province of the Central Highlands in Vietnam. The methodology was used to identify trade-offs and opportunities for synergies between finance needs for landscape sustainability as defined in landscape goals, as well as to identify existing financial flows and their impacts on the landscape goals. In this article, we first summarize the methodology and main results from the pilots. In the Discussion section, we reflect on the need to understand financial flows in a landscape and on some of the methodology's strengths and weaknesses based on the pilots in Indonesia and Ghana.

## 2. Methodology

### *2.1. Users*

The methodology was specifically developed for multi-stakeholder partnerships with a set of common landscape objectives and with the ambition to influence financial flows, for example, by attracting investment or by targeting certain financial flows by implementing an advocacy campaign. Where there is no active multi-stakeholder partnership, the methodology could be used by a NGO or local government seeking to promote landscape objectives, but in such cases extra work is required to identify key audiences and collaborators and to agree upon the targeted landscape objectives.

### *2.2. Implementation*

The methodology has been designed for implementation by local representatives of the stakeholders in different landscapes. To aid implementation, a manual was prepared, describing the various steps of the methodology in detail [13]. Figure 1 explains the general flow of the assessment process.

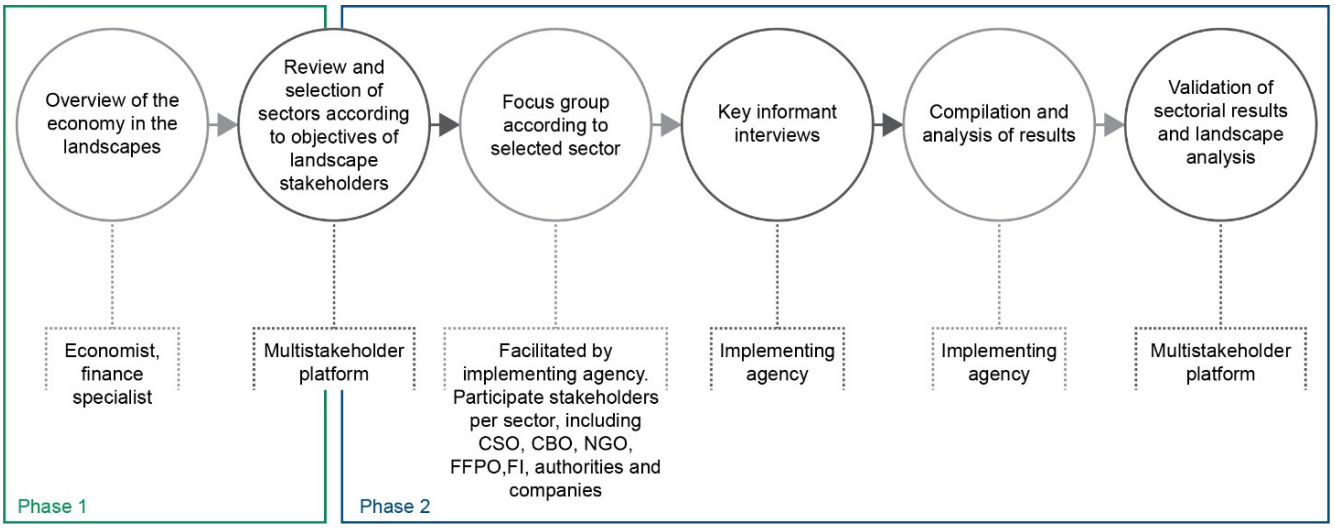


**Figure 1.** The general flow of the assessment process. CSO: civic society organizations; CBO: community-based organizations; NGO: non-government organizations; FFPO: forest and farm producer organizations; FI: financial institutions.

A crucial first step is to establish the exact boundaries of the landscape. As economic data are usually available at the level of jurisdictions, it will often make sense to focus on the smallest administrative unit for which data are publicly available. Implementation in larger administrative units will easily become overly complex due to the large number of sectors and financial flows.

The implementation of the LAFF methodology typically involves four groups: (i) a landscape multi-stakeholder partnership, which should be able to use the results to develop actions; (ii) an implementing partner with good knowledge of the landscape's

financial context (and the main actors within the economic sectors), which coordinates and facilitates the process, while also implementing parts of the assessment; (iii) a small project team, with representatives of various stakeholders in the landscape, which primarily acts as the sounding board; and (iv) several sector focal groups that each focus on one particular economic sector in the landscape (e.g., agriculture, mining, nature conservation, manufacturing, construction or tourism).

The participatory methodology consists of two phases. In the first phase, the implementing partner characterizes the landscape based on existing information and interviews with key informants. This results in an overview of the most important economic sectors; trends and drivers in the landscape; the value of ecosystem services and their relationship to the relevant sectors; the roles of government and civil society; and key landscape objectives as identified by the multi-stakeholder partnership. The results are discussed during a meeting of stakeholders, where participants identify those economic sectors in the landscape that they perceive to have the most impact on the agreed-upon landscape objectives. The first phase concludes with a capacity building workshop for the project team and other members of the multi-stakeholder partnership on key concepts of landscape economy and finance, as well as on the implementation of the second phase.

The second phase focuses on financial flows that are considered most relevant to meeting sustainable landscape objectives within the economic sectors identified in the first phase. For this, sector focal groups are formed. The focal groups draw a map of all the financial flows that they can identify within their sector and prioritize these flows according to perceived size, perceived impacts and perceived facility to either expand flows with positive impacts or redirect flows with negative impacts. In each sector, the ten to twelve flows that are considered to be of highest priority are selected. Then, the focal groups score the impact of each of the selected flows on each landscape objective, using a scale of −2 to +2. These are explored in greater depth through in-depth interviews with associated actors, covering, among others, the following: the context of the flow, the sources and recipients of funds; the types of financial instruments applied; the terms of the financing arrangements; and governance mechanisms. After this, the implementing partner develops a report that includes financial flow maps for each sector and tables on key characteristics of the most relevant flows in each sector. At the end of phase two, the results are presented to the multi-stakeholder partnership, which then discusses the implications of the findings for future actions.

### *2.3. Pilots in Ghana, Indonesia and Vietnam*

Between November 2018 and July 2020, the methodology was piloted to discover which elements were most successful and which could be improved. The pilots took place in the Ketapang Kayong Utara (KKU) landscape in Indonesia, the Juabeso-Bia and Sefwi-Wiawso (JBSW) landscape in Ghana and the Srepok River Basin (SRB) in the Dak Lak province in the Central Highlands of Vietnam (Figure 2). The three landscapes have been undergoing rapid forest loss due to the expansion of agrocommodities (oil palm in KKU, cocoa in JBSW and coffee in SRB). In all landscapes, local stakeholders are organized in multi-stakeholder platforms and have agreed upon a set of common landscape objectives. All three implementing organizations are associated with Tropenbos International, which aims to increase the role of smallholder agroforestry and community forestry to achieve climate-smart landscapes [14–16]. Below, we summarize some of the main results of the pilots. The results of the full assessments have been documented in detailed reports [17–19] (provide background information on the cases used for this analysis, these are available at https://www.tropenbos.org/resources/publications/the+landscape+assessment+of+financial+flows+-+a+methodology, accessed on 4 October 2021).


**Figure 2.** The location of the research areas (elaboration by Juanita Franco, Tropenbos International).

## 3. Results

### *3.1. Ketapang-Kayong Utara (KKU) Landscape, Indonesia*

The Ketapang Kayong Utara landscape covers seven districts in the Ketapang regency and two of five districts of Kayong Utara regency in the province of West Kalimantan, Indonesia. Agricultural production is dominated by oil palm, and there is some rice production. Forests cover approximately 40% of the landscape. The landscape contains three state-managed forest areas—Gunung Palung National Park (GPNP), Gunung Tarak Protection Forest and Sungai Putri Peat Swamp Forest—as well as 21,000 ha of village forest areas. The national park is a source of irrigation and drinking water, and it functions as a habitat for the Bornean orangutan (*Pongo pygmaeus wurmbii*, 3000 individuals) in the Ketapang and Kayong Utara region. Oil palm expansion, mining and illegal activities (mining, hunting and logging) are the major threats to the forests. The original Dayak population typically combines subsistence agriculture with commercial tree crops (e.g., rubber), and more recently many started converting parts of their land to oil palm plantations. In peat swamps and surrounding areas, it is more common to find people of Malay descendance cultivating oil palm.

Stakeholders identified the following objectives: (1) create economic benefits for local people; (2) contribute to the restoration of landscape biodiversity; (3) strengthen social capital; (4) contribute to food security; (5) contribute to secure access to clean water; and (6) contribute to climate change mitigation. Figure 3 presents the perceived impacts of current financial flows on these objectives, distinguishing between private and public flows. The main private flows in the KKU landscape come from national banks and credit unions. These financial institutions provide loans for small-scale and large-scale oil palm plantations, oil palm processing facilities, smallholder rice cultivation and mining companies, among others. The main public flows in the landscape are related to ongoing conservation programmes of the government and NGOs, specifically related to peatlands and existing protected areas.

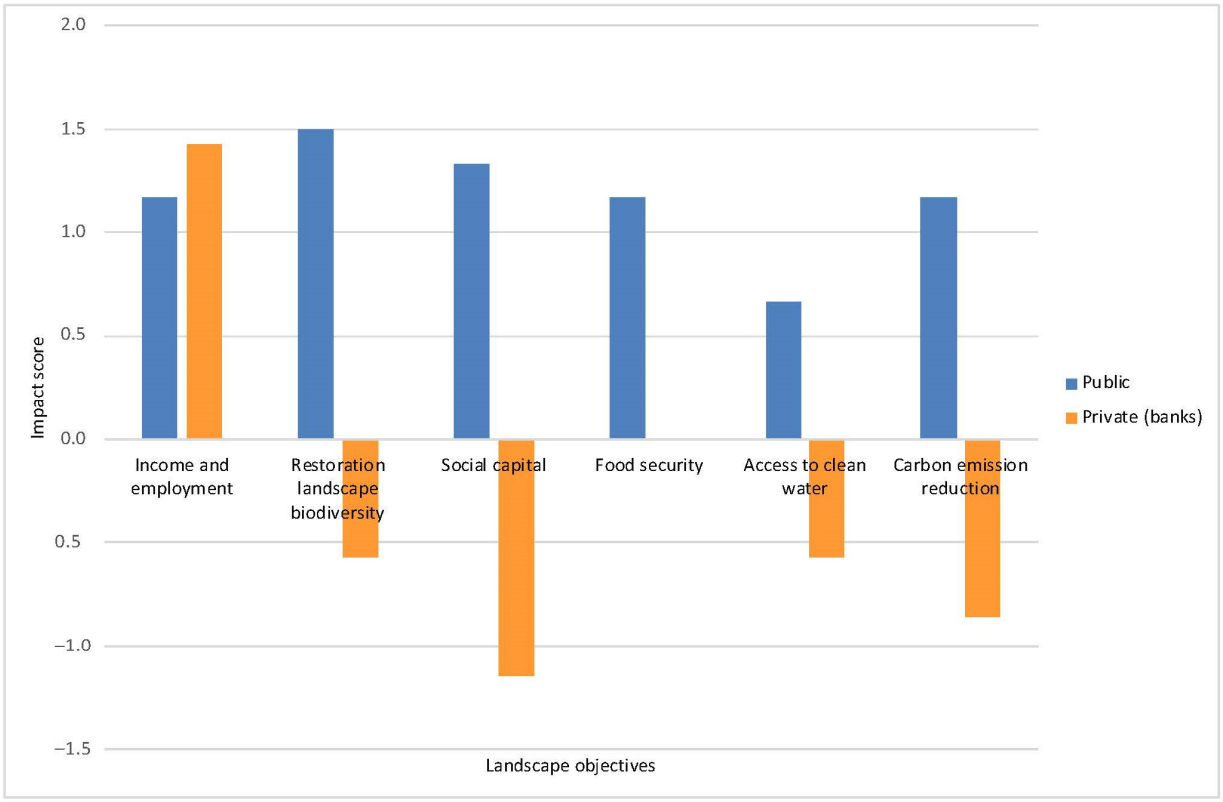


**Figure 3.** Perceived average impacts per land unit of public and private investments on landscape objectives in the Ketapang-Kayong Utara landscape (adjusted from Rossanda et al., 2020 [18]).

The results suggest that private financial flows create economic benefits for local people (objective 1) but currently have negative effects on all the other objectives. This is specifically the case for private financial flows (mainly loans) towards oil palm production and processing and mining, which are considered to degrade the environment and cause social conflicts. The public flows (mainly grants or in the form of technical assistance) are all considered to contribute positively to landscape objectives, but the private sector overall spends much more money on activities with negative impacts than there is public money for the ones with a positive impact. Redirecting such private finances or improving its impacts was, therefore, seen as one of the priorities for achieving a climate-smart landscape.

By using the LAFF pilot, stakeholders in the KKU landscape became more aware of the potential of private financial institutions to influence landscape objectives. Following up on the assessment, the implementing partner initiated collaboration with a local credit union servicing at least 27,000 people in the landscape, which the LAFF had identified as a key private financial flow with the potential to contribute positively to landscape objectives. This then resulted in the credit union adopting several environmental, social and governance (ESG) criteria in their formal credit policies. It shows that the LAFF methodology can be a first step towards transforming local financial flows. LAFF results were later combined with a climate vulnerability and adaptation assessment [20] to inform a landscape climate action plan (LCAP), focusing on strengthening the business cases of smallholder farming and community forestry activities and drawing private finance towards these activities. In particular, LAFF showed that bank finance reached smallholders mainly through oil palm companies, reducing the options for smallholder investments in other types of land uses. LCAP focusses on seeking alternatives for smallholder finance, including greater collaboration with local financial institutions and credit unions.

### *3.2. Juabeso-Bia and Sefwi-Wiawso (JBSW) Landscape, Ghana*

The Juabeso-Bia and Sefwi-Wiawso (JBSW) landscape is located in Western Region, Ghana. It comprises four administrative districts: Juabeso, Bia West and East and Sefwi-Wiawso. The landscape is a major cocoa producing area with moist and semi-deciduous vegetation that also houses forest reserves and two protected areas and is important for elephant migration. Illegal logging and mining activities, together with occasional bushfires, poaching and encroachment of land, pose a threat to the existence of forests. In the JBSW landscape, the following objectives were identified: (1) reduce deforestation and enhance forest cover; (2) conserve biodiversity; (3) reduce emissions in various sectors; (4) strengthen capacity to adapt to climate change; (5) increase food and nutrition security; (6) improve local economies; and (7) increase inclusiveness in decision-making processes. Figure 4 presents the perceived impacts of private and public financial flows on these objectives. As in the Indonesian case, most public money flows to conservation initiatives. Private flows are mainly linked to cocoa farming, timber harvesting and (illegal) mining.

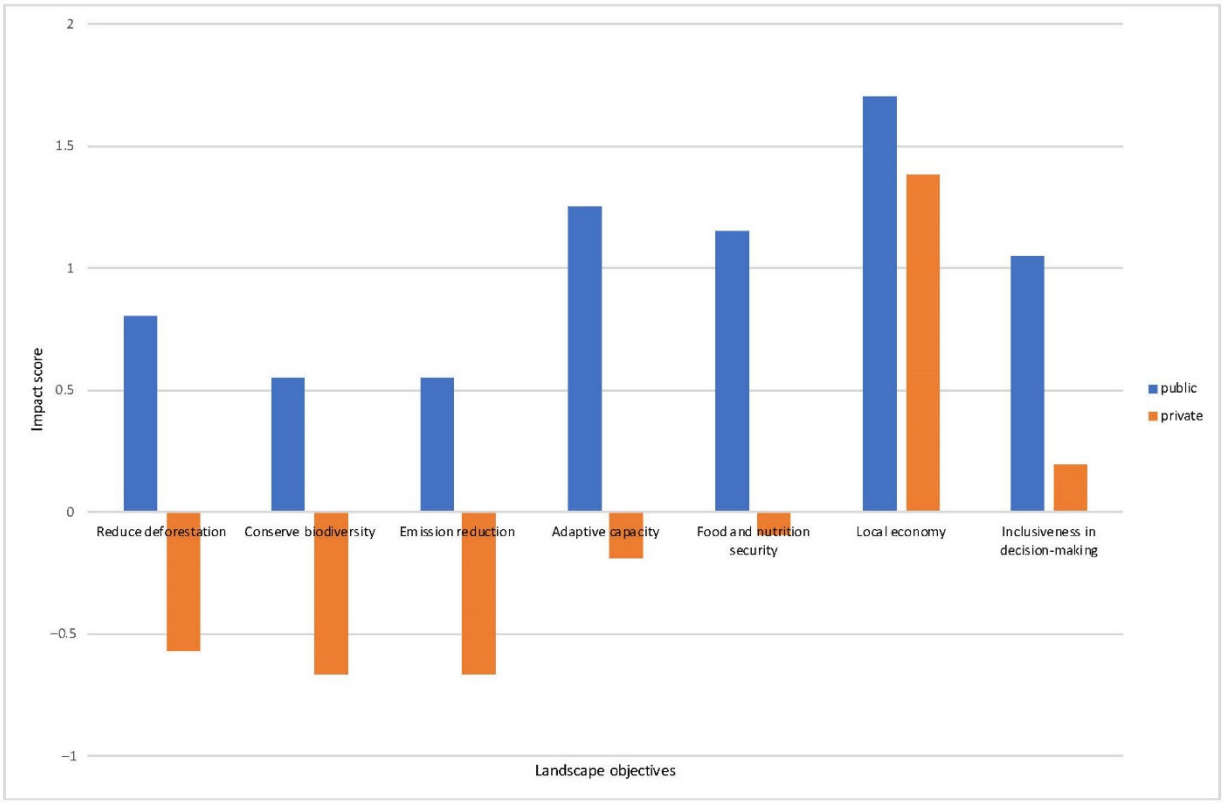


**Figure 4.** Perceived average impacts per land unit of public and private investments on landscape objectives in the JBSW landscape (based on Pamerneckyte et al., 2020 [17]).

Private flows in the JBSW landscape were perceived to have a positive impact on local incomes (which was the main criteria used to assess the contribution to the local economy) as well as on inclusiveness in decision-making processes in the landscape. The latter is due to an ongoing programme of a large international cocoa trading company, using private funds to strengthen farmers' associations and local NGOs in support of sustainable cocoa production by smallholders in the landscape. Negative impacts of private flows are mostly related to investments in the timber sector, which is plagued by irresponsible logging practices and inadequate management and in the mining sector. Flows in the cocoa sector were perceived to be more sustainable than those in the timber and mining sectors. Concerning public funds, LAFF focal group participants stressed the importance of district-level government agencies but argued that these agencies do not receive enough

money from the national government to adequately address the negative impacts of private investments on non-economic landscape objectives.

According to the LAFF focal group participants in the JBSW landscape, linking financing conditions to certain sustainability standards could help in achieving landscape objectives. This is considered especially urgent in the timber sector, but in the cocoa sector such standards can play a positive role too. For example, a cocoa-purchasing company and a bank have set up a loan scheme where the company is guarantor for bank loans to farmers. The terms and conditions of these loans could be adjusted so that they support landscape objectives. Based on the LAFF results, the cocoa–forestry programme coordinated by the cocoa company was identified as the most promising flow and became the focus of more detailed follow-up studies, in close collaboration with the flows' sources and recipients. As in the Indonesian case, the results were combined with a climate vulnerability assessment and fed into the development of a landscape climate action plan.

### *3.3. Srepok River Basin (SRB) Landscape, Vietnam*

The SRB landscape is located in the Dalak province, which is part of the Central Highlands—a priority region for the national REDD+ Action Plan. The province has a surface of 1,306,200 ha, of which 40% is covered by forests. These forests house many rare and vulnerable plant and animal species. The area of oil-bearing fruit crops (coffee, rubber and pepper) increased sharply over the years, especially for pepper and coffee, and despite considerable increases in per hectare productivity, cultivation areas continue to expand, threatening the existing forests. The province's master plan seeks a green and sustainable economy with a key role for renewable energy, agriculture (coffee, rubber, pepper and cashew) and forestry. Focus group participants identified over 200 financial flows within these sectors and then selected 46 for a more detailed analysis. Derived from the province's development plans, eight landscape objectives were identified: (1) forest conservation and restoration; (2) improved income; (3) improved living standard/basic services; (4) food security; (5) improved water conservation and water availability; (6) (social) resilience to climate change; (7) reduced social conflicts; and (8) soil protection. The emphasis on social conflicts stems from the displacement of local subsistence farmers belonging to minority groups by the agricultural expansion of (coffee) farmers, which are mainly migrants and belonging to the majority ethnic group, resulting in deforestation in the early 2000s [21].

In the SRB landscape, private flows are perceived to contribute to a greater range of landscape objectives than in the SJBW and KKU landscapes, and for the combined private and public flows, net impacts were all perceived to be positive (Figure 5). The contribution of private flows to the objectives of forest, water and soil conservation and to resilience of local stakeholders, however, was considered less positive than that of public flows. Out of the forty-six flows analysed, only seven originated from public sources. Private finance flowing from banks, traders or processing companies to individual farmer households in the coffee and forestry sector had net negative impacts on conservation-related landscape objectives, particularly affecting water availability. Considering these results in a context of climate change placing additional stress on water resources, the stakeholders of the SRB landscape agreed that private finance needs to be diverted towards coffee production in agroforestry systems (which is better in terms of water conservation compared to coffee in monoculture) and that financial mechanisms need to be developed to attract private finance for water, soil and forest conservation and restoration activities. Private investors have been focussing on the exploitation (rather than conservation) of natural resources, sometimes with negative effects for local communities in the SRB landscape. The development of hydropower plants, for example, has resulted in increased floods in the rainy season and increased droughts in the dry season.

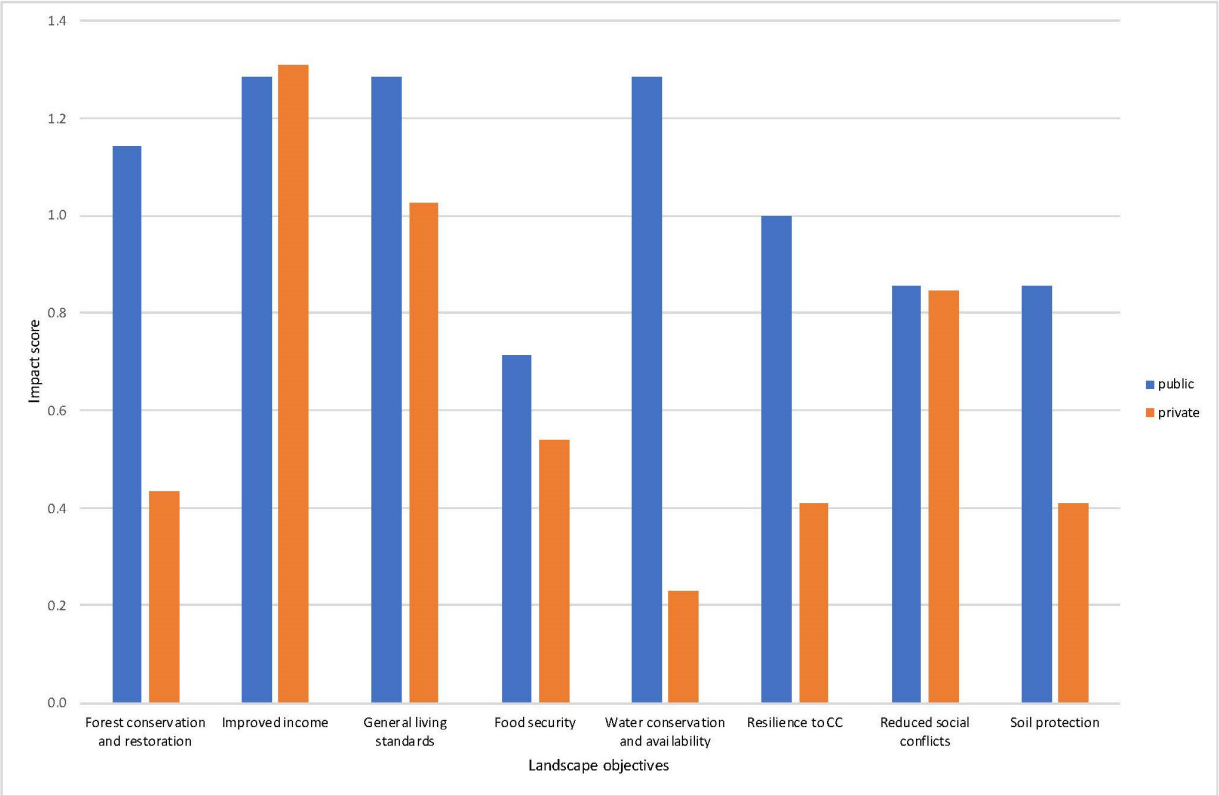


**Figure 5.** Perceived average impacts per land unit of public and private investments on landscape objectives in the SRB landscape (based on Tropenbos Vietnam forthcoming [19]).

## 4. Discussion

### *4.1. The Value of Understanding the Impacts of Financial Flows in the Landscape*

In order to achieve sustainable landscapes, financing must be aligned with landscape objectives [22]. Currently, financial flows to unsustainable activities remain much larger than those going to sustainable ones. This was also confirmed in the landscapes of our pilots and particularly for the flows derived from private commercial sources, many of which are related to production processes for the export of timber, coffee, cacao, oil palm and minerals. Furthermore, most investors—private or public—are not investing with a landscape context or landscape goals in mind. Despite rising interests in 'green' or sustainable finance, investors still largely pursue models that focus on a single objective, such as agricultural production, ecosystem health, forest restoration or climate change adaptation or mitigation.

Households and communities may have access to finance from both private and public sources. The combined impact at the landscape level depends on how the local stakeholders apply these resources and on their interest in and awareness of issues beyond their farm, such as interdependencies, conflicts, spatial connectivity or the synergies needed to achieve landscape ambitions at the appropriate scale. In the pilot applications of LAFF, there was little coordination between the different sources of finance in terms of the combined impacts on the landscape objectives.

Throughout the tropics, it is difficult to find mechanisms that coordinate investments at a landscape scale [6]. An innovative platform such as the Tropical Landscape Finance Facility (www.tlffindonesia.org/projects, accessed on 4 October 2021) is more directed towards improving the resource areas of specific agrocommodity crops and emission reduction through renewable energy projects than towards financing an integrated approach towards landscape management. In cases of financial mechanisms for forest landscape restoration, different sources of finance support different phases of investments and restora-

tion needs [23]. LAFF type assessments before implementation of such investments could improve the impact of such mechanisms, which allow building upon and complementing existing local initiatives and financial flows and addressing local needs and the driving forces behind landscape degradation.

In cases documented elsewhere [8,23], there are opportunities for local, landscape-wide platforms to identify local financing gaps, attract finance from different sources and either channel the resulting funds to meet the needs and objectives of all stakeholders or to establish guidelines that help orient these financial flows towards meeting those needs and objectives. The LAFF tool can facilitate the integration of agrocommodity value chains with landscape approaches for addressing some of the challenges for such integration, as mentioned by Ros Tonen et al. (2018; p. 1), "balancing multiple objectives, equitable inclusion of all relevant stakeholders, [ . . . ] adaptive management based on participatory outcome monitoring, and moving beyond existing administrative, jurisdictional, and sectorial silos," and for which functioning multistakeholder platforms are considered to be key [24].

LAFF could be a tool for such platforms to identify local actors, the financial flows between them and the opportunities to build on the flows with most positive impacts on the different landscape objectives.

LAFF may also help understand the strengths and weaknesses of the functioning of the local financial sector. This usually consists of formal and informal institutions, from banks and companies across the supply chain to members of social networks and family members. A well-functioning financial sector is needed to assess the risks of the investments and to efficiently mobilize funds to activities and actors that contribute to the goals of the landscape stakeholders. During the pilot LAFF applications, it was observed that value chain companies played an important role in providing access to finance from banks for smallholders, but this created socially less acceptable dependency relations and, in some cases, lack of transparency in the financial transactions. In other cases, smallholder farmers were part of locally owned associations (such as village savings and loan associations in Ghana and credit unions in Indonesia), which promoted savings and allowed for loans that could not be obtained from the formal financial sector (e.g., because of a lack of collateral). These company supported but locally owned associations helped farmers to build relations of understanding and trust with local banks. Building such relations over time has been instrumental in facilitating green financing in some European countries [25]. However, smallholders indicated that production risks reduced their appetite for loans which they later might not be able to pay back due to crop failure. Thus, access to finance will need to be accompanied with reducing production risks (such as caused by pests and diseases or extreme weather events) as well as by facilitating access to markets to ensure an income for the farmers. Interestingly, financial flows that were perceived to provide most promising contributions to landscape objectives were a value chain approach in Ghana and credit unions in Indonesia, either one of these providing finance as well as technical assistance and support in marketing.

Too often, externally initiated programmes serve mainly externally prioritized objectives and only address a few local priorities. For example, the application of national or international regulations for green credits uniformly apply to all credits, independent of their local context. This may create barriers for smallholder farmers and SMEs to access finance due to their inability to transform their operations to meet the requirements for green finance, while companies are able to adjust to the regulations [26]. This may strengthen the power imbalance already present in such landscapes [27]. On the other hand, programmes that are able to match external and local objectives are more likely to be successful in the long term [28]. LAFF can foment dialogue needed to identify those financial flows and related regulations that meet both locally defined landscape objectives and national and international priorities.

During the pilot applications, the LAFF process generated several spin-offs, as the multistakeholder platform meetings raised the interest of participants and led them to

initiate in-depth follow-up studies of financial flows in which they were directly involved. These follow-up studies aimed at identifying the aspects of flows that could be improved in order to increase their contribution to objectives considered to be important by the stakeholders in the landscape, other than only economic ones [29,30].

### *4.2. Balancing Trade-offs between Participation and Level of Detail*

Tracking financial flows is more commonly performed by using databases of financial transactions, statistical data or financial statements of organizations and enterprises [31,32]. This is usually linked to specific sectors or types of investments that are, for example, related to climate adaptation [33]. Due to the nature of the available data, it is seldom performed at the level of landscapes. Standard methodologies provide good indicators of general financial flows but less so for local individual flows and their impacts on local socio-economic systems. The LAFF methodology is meant to address that gap, while at the same time aiming at a different set of decision makers, i.e., those with a direct influence on land-use decisions in tropical landscapes, including farm and forest producers, communities, civil society organizations, local authorities and local financial institutions. It, therefore, has to deal with situations of little availability of quantitative data and stakeholders with a great variety of financial literacy, while at the same time being relatively low cost.

For the effective implementation of LAFF, broad participation of stakeholders is required. Its major drawback is that it does not provide quantitative data on flows and impacts, making it difficult to estimate the absolute impact that the flows have on the landscape. This may allow biases in the identification of priority areas for interventions. In order to validate the reliability of the data in the stakeholder forum meetings at the end of the analysis, it is quite important to select the major stakeholders influencing each financial flow in the landscape and to represent each of the selected sectors in the stakeholder forum.

Evaluations of the pilots suggest that there were trade-offs between ensuring broad stakeholder participation (to capture more different perspectives on the financial dynamics in the landscape) and the level of technical and quantifiable detail that could be acquired. In other words, increasing the depth of the analysis would imply that fewer people could meaningfully participate. There were also trade-offs between depth and costs of the analysis. In planning the application of this methodology, therefore, one needs to carefully consider the desired balance between the amount of data to be collected, accuracy, level of participation and costs. In addition, stakeholders may decide to follow up with more in-depth investigations, directedly involving the sources and recipients of particular financial flows.

The implementing partners, who facilitated the assessments, chose to maintain a high level of participation of a wide variety of stakeholders. This was considered a priority, especially in the second phase of the LAFF, where the effects of financial flows on landscape objectives were assessed based on participants' perceptions. For this, it was important to have the active participation of as broad a range of stakeholders as possible. Moreover, wide stakeholder participation was considered important in light of the main purpose of the LAFF methodology, which was to help multi-stakeholder partnerships with developing ideas for collective action. In each of the landscapes where LAFF was piloted, participants in the different workshops and focus group discussions highlighted this aspect as most valuable for them. LAFF helped them in looking at their landscape through a different lens, convened stakeholders who normally may find it difficult to communicate with each other and allowed them to identify priority areas for future interventions.

## 5. Conclusions

The LAFF methodology can be used for general assessments of financial flows in a landscape. If applied correctly and with the appropriate guidance, it can help stakeholders to better understand the make-up of the landscape economy, including the most important financial flows and their impacts on livelihoods and the environment. Based on that, they can identify potential financial resources to support strategic projects and activities,

identify existing financial flows that will need to change and identify challenges to the landscape's financial system (e.g., key gaps in services) that are critical for obtaining landscape objectives. This, in turn, can be used by multi-stakeholder partnerships (and other landscape initiatives) to develop action plans to steer financial flows in ways that contribute to landscape objectives. The LAFF methodology can also be used to identify the flows of finance that meet both local and external (national, international or value chain determined) goals. Policy and decision makers can use such information to identify the investments that are more likely to be supported locally and, therefore, will have a more lasting impact.

During pilots in Indonesia, Ghana and Vietnam, we found that it was not possible to gather precise quantifiable data on the size of different financial flows and their impacts. Care should, therefore, be taken in the selection procedure of the flows to be analysed, as well as in the interpretation of the results, and LAFF should be observed as a first analysis of the flows that helps narrow down attention to the specific flows that stand out in the analysis. In the landscapes where the pilots were implemented, governmental capacities to guide land use are limited, and land use is principally determined by private financial flows (e.g., markets and financial credit) and access to technical assistance. A major added value of the methodology was related to its contribution to a common understanding and to facilitating stakeholders in discussing both private and public financial flows and their impacts and to identifying flows that could potentially reduce their negative impacts or increase their positive impacts. The results were then used by the multi-stakeholder partnerships to develop action plans and to initiate collaborations with the providers of private financial flows with potentials to contribute to landscape objectives (a credit union in Indonesia and a cocoa trading company in Ghana). The LAFF process, thus, functioned as a trigger for action and could be used in support of governmental development programmes to identify private flows that best complement the governmental programmes. Moreover, by working together on the analysis, implementing the LAFF methodology helped strengthen the landscape partnerships themselves.

Finally, implementing the LAFF tool results in a basic understanding of the financial flows in a landscape and their impacts on landscape objectives. However, the LAFF methodology does not provide insight into the impacts of financial flows beyond the landscape level. For this, additional studies are required

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