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Research article

Rich forests, rich people? Sustainable finance and its links to forests☆

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ABSTRACT

Investment products labelled as sustainable, as well as regulations on sustainable finance, such as the EU taxonomy for sustainable activities, are on the rise globally. While some of these products and regulations include forests and forestry, the forest–sustainable finance nexus is largely unexplored in academic research. This paper systematically analyses the emerging expert debate spanning across the financial and forest sectors. We conducted 51 in-depth qualitative interviews with experts from financial institutions, timberland and impact investors, international organizations, civil society organizations and academia. We chose mainly experts from Europe, as one of the regions spearheading the topic globally. Based on these, we identify five main narratives on the nexus between sustainable finance and forests. These narratives are strikingly different regarding such dimensions as emphasis on risks versus opportunities, preference for public versus private governance and investments, as well as on the sustainability of forest-related investments per se. While financial sector experts are mainly concerned about financial risks, and only partially about deforestation risks, forest sector experts with financial expertise promote investment opportunities either for the asset class, or to increase private investment in tropical forests. In contrast, some experts from both the forest and financial sectors explicitly exclude forests as investable assets for the private sector, seeing them instead as pure public goods. We conclude with underlining the importance of more cross-sectoral dialogue, but also research, to both critically assess and advance the role of sustainable finance policy and practice in supporting forest conservation, restoration, and sustainable management.

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1. Introduction

During COP 26, 30 financial institutions, including banks, asset managers, insurance companies, and pension funds, committed to eliminate agriculture-driven deforestation activities of companies from their lending and investment portfolios by 2025 (UNFCCC, 2021, COP 26 Call for Climate Action Announcements from Private Finance Institutions). In addition, eleven countries and the EU announced their ambition to increase forest finance by, inter alia, transitioning towards sustainable financial markets that leverage private investment in Sustainable Forest Management (SFM), forest protection and sustainable deforestation-free agriculture (UK COP26 2021 Global Forest Finance Pledge (objective 5.3)). These commitments stand in contrast to the current economic model and financial markets, which are described as viewing nature as an asset available for exploitation, possibly resulting in abuse and destruction (Deutz et al., 2020). While profit maximization, shareholder value, and short-term gains prevail in many parts of the financial sector, calls have been made to reform the global financial architecture so as to avoid future health, climate, and biodiversity crises, and to serve sustainable development (United Nations, 2021). These calls have yet to be heard by large parts of the financial sector though (Loorbach et al., 2020).

In principle, the financial system is in a position to drive a transition towards greater (corporate) sustainability. Banks and investment funds decide which sectors and projects are eligible for lending and investment. They can also influence corporate board decisions (Schoenmaker and Schramade, 2019). Investors' legal duties to protect the interests of their beneficiaries, so-called "fiduciary duty", are starting to change

☆ The title is an allusion to Nancy L. Peluso's well-known book "Rich forests, poor people: Resource control and resistance in Java" (1992).

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worldwide to include **E**nvironmental, **S**ocial, and **G**overnance (ESG) considerations (UNEP Finance Initiative and UNPRI, 2019). The market for investment products labelled "responsible" and/or "sustainable" is growing continuously (Deutsche Bundesbank, 2019; Global Sustainable Investment Alliance and GSIA, 2020). Currently, a plethora of voluntary standards, initiatives, and investment approaches exist (Fullwiller, 2016; Schoenmaker and Schramade, 2019). The EU is amongst those worldwide spearheading the regulation of sustainable investments, to increase transparency and catalyse private finance for achieving its climate commitments (Climate Bonds Initiative, 2021; European Commission, 2021). While it remains unclear what will arise from this ongoing EU policy process, both sustainable finance as a concept and the related evolving policy framework potentially have considerable implications for forests. Currently, finance contributes to deforestation by directly or indirectly investing and lending to companies involved in the production, trade, manufacturing, or sale of forest-risk commodities (esp. beef, palm oil, soy, timber). Such potentially unsustainable finance could be addressed by implementing new policies and changing investment and lending practices (Global Canopy, 2021a; Tropical Forest Alliance, 2018). In addition, opportunities through new investment products – such as green and forest bonds (McFarland and McFarland, 2018), impact and institutional investing, or project finance blending public and private sources (Rode et al., 2019) – could be harnessed to close the identified finance gap for forest conservation, sustainable management, and restoration (FAO and UNCCD The Global Mechanism, 2015; Fuss et al., 2020; Löfqvist and Ghazoul, 2019, UNEP Finance Initiative and UNPRI, 2019). While the potential of sustainable finance for forests is obvious, the concept of sustainable finance remains fuzzy at this stage (Cunha et al., 2021). Specifically, it remains unclear how it connects to forests in practice.

This paper explores how different actors involved in the forest and financial sectors perceive the importance of the emerging sustainable finance concept for forests. Drawing on 51 expert interviews, we investigate what sustainable finance means in relation to forests in the eyes of distinct stakeholders. We apply a narrative analysis to single out different categories of understanding in relation to the concept. Furthermore, we aim to discover knowledge gaps in order to explore future research avenues connecting across sectors and disciplines.

2. Concepts and state of research

To our knowledge there is no academic literature specifically looking into the importance of sustainable finance for forests. Our study thus draws on related forest finance as well as climate/biodiversity finance and sustainable finance grey and academic literature to introduce basic concepts and capture the current state of research.

2.1. Sustainable finance

Academic research on sustainable finance has developed considerably in the last few decades. Most of the work originates from North America and Europe, focusing mainly on sustainable finance in these continents respectively (de Carvalho Ferreira et al., 2016; Kumar et al., 2022). Overall, research is described to be fragmented and influenced by different thematic research waves, making it challenging to get an overview of the relevant literature, as well as to distinguish sustainable finance from "traditional" finance (Cunha et al., 2021). While responsible investing has been a prominent topic since the 1980s, recent international policies, especially the 2015 Paris Agreement and the Sustainable Development Goals (SDGs) have triggered sustainable finance research to grow exponentially (Kumar et al., 2022). Current research focusses mainly on SDG finance, impact investing, and innovative financial instruments (ibid.). A main concern of sustainable finance research is the financial performance of sustainable investments. While positive economic effects in comparison to traditional investments (i.e. financial materiality) have been shown (Clark et al., 2015; Friede et al., 2015), the sustainability of sustainable finance and its impact on society and the environment (impact materiality) is so far less addressed. An interdisciplinary theoretical underpinning and conceptualization of the sustainable finance concept is necessary to better understand the sustainability impacts of such investments (Cunha et al., 2021; Kumar et al., 2022).

Sustainable finance is a broadly categorized concept with no universally excepted definition so far (Cunha et al., 2021). While different related terminologies exist in parallel, sustainable finance is the broadest term amongst them, encompassing environmental aspects as well as social, economic, and governance ones (UNEP, 2016). Green finance can be conceived as a subcategory of sustainable finance but is similarly undefined and thus is often used interchangeably, especially in an environmental context (Lindenberg, 2014). Climate and biodiversity finance can be seen as subcategories of green finance (Buchner et al., 2019, Huwyler et al., 2016, see Annex A for an overview of sustainable finance categories). Within the EU, sustainable finance aims at channelling private finance into the transition towards a "climate-neutral, climate-resilient and resource-efficient economy" (European Commission, 2021). It is defined as "(..)the process of taking due account of Environmental Social and Governance (ESG) considerations when making investment decisions in the financial sector, leading to more long-term investments into sustainable economic activities and projects" (European Commission, 2022).

The EU is currently developing a policy framework on sustainable finance. At its core is a taxonomy, a classification scheme to define sustainable environmental activities. A new disclosure regime, consisting of several disclosure regulations mainly for financial institutions and companies, as well as different tools such as the EU green bond standard (EUGBS), apply the taxonomy (see European Commission, 2021). Similar regulatory actions with varying scopes are taking place, for instance, in the UK, China, and South Africa, while the US has only begun taking first steps under the Biden administration (Climate Bonds Initiative, 2021; Petraki, 2022). These policies can be seen as a response to different past voluntary initiatives and standards, such as the UN Principles for Responsible Investments (UN-PRI), the Global Reporting Initiative (GRI) and the Climate Bond Initiative (CBI), that are regarded as insufficient alone to foster the desired substantial transformation (Urban and Wójcik, 2019). While global markets for investments labelled as sustainable grew by 55% from 2016 to 2020, representing 36% of total assets under management for 2020 (Global Sustainable Investment Alliance and GSIA, 2020), greenwashing is considered to be prevalent in sustainable finance markets due to various and vague standards, and a lack of implementation of voluntary commitments (Azzouz and Merle, 2021; Galaz et al., 2015). Within Europe in 2020, investments labelled as sustainable made up 42% of the total managed assets, representing 34% of global sustainable investing for that year (ibid.). While Europe has been spearheading sustainable investing globally for many years, the new taxonomy and disclosure regulations have recently resulted in a sudden decline of the proportion of sustainable investing assets in Europe, presumably due to the changed accounting rules of what is considered sustainable (Global Sustainable Investment Alliance and GSIA, 2020; Satista, 2022).

Sustainable investment strategies have changed in ambition over the years and can be broadly differentiated into three phases:

Until 2018 the most commonly used strategy was negative screening: excluding companies, sectors, or securities that do not comply with preset criteria (Global Sustainable Investment Alliance and GSIA, 2020). Labelled a "risk approach" by Schoenmaker (2017), this phase can be understood as the first step of a transition of financial markets towards sustainable finance (Busch et al., 2021; Schoenmaker and Schramade, 2019). While profit maximization remains the focus, two overarching types of risk are normally considered: (1) social risks arise from changes in social preferences, regulations, or other socially constructed sanctions; (2) physical risks relate to changing conditions threatening economic activities, for instance climatic change (Crona et al., 2021).

Within an environmental context, this strategy focusses mostly on removing carbon-intense companies from investing/lending portfolios, while forest-related risks such as deforestation are seldom addressed (Global Canopy, 2021a; Nicholls, 2021).

The second phase is ESG integration, which advances the sustainability dimension of investments by internalizing so-called "externalities", e.g. climate change and other ESG criteria, into decision making (Schoenmaker and Schramade, 2019). It is currently the most prominent sustainable investment strategy globally (Busch et al., 2021; Global Sustainable Investment Alliance and GSIA, 2020). However, as Busch et al. (2021) note, most mainstream financial markets using ESG factors do not consider how far their investments contribute to achieving positive environmental and social sustainability effects but focus instead on avoiding ESG-related risks.

The third phase, identified as the "opportunity approach" by Schoenmaker (2017), include active investments that serve a common good and that value and contribute to sustainable development directly (impact materiality). Those include i.a. impact investing and green bonds. Impact investing can be understood as investing "(..) with the intention to generate positive, measurable social and environmental impact alongside a financial return" (Bass et al., 2019). It has gained momentum in the last couple of years but is connected to a severe risk of greenwashing as the concept is understood and practiced variously (Höchstädter and Scheck, 2015; see Bush et al., 2021 for an impact investment typology). Green bonds to raise funding for climate and environmental projects grew by 49% in the 2016–2021 period (ibid., Investopedia, 2021). Yet less than 3% of all green bonds have a biodiversity and sustainable land use focus, while almost 80% target the dominant sectors of energy (including buildings) and transport, and 17% other remaining sectors (Chahine and Liagre, 2021; Climate Bonds Initiative, 2020; see also Environmental Finance, 2021, McFarland and McFarland, 2018). Some authors see this as a too narrow focus that does not reflect the broader needs for sustainable development and investments in nature (Galaz et al., 2018).

2.2. Private finance affecting forests

Financial flows affecting forests are manifold depending on the type (public/private), geographical dimension (international/domestic), sector (e.g. agriculture, tourism, energy), product or service (e.g. timber, watershed protection, biodiversity benefits), and financial instrument (e.g. equity, debt for private finance) (Singer, 2016). The following provides an overview of the current state of knowledge on private finance affecting forests.

2.2.1. Forests as an asset class

Looking at the financial market as a whole, so-called "timberland investments" – institutional investments into natural or plantation forests – are probably the most substantial private asset class, especially for long-term investors such as pension funds (World Bank, 2020). Overall, this asset class has grown from 10 to 15 billion USD in the early 2000s to over 100 billion USD in 2019 (UNPRI, 2019). This trend is expected to continue in the wake of increasing volumes of most land investments due to population growth and loss of arable land resulting in land prices that are, at least until recently, increasing at higher rates than inflation (Cubbage et al., 2020).

Current investment practices include investments into publicly traded securities – bonds or equity traded publicly on the stock exchange. These are, however, comparably small scale (Fu, 2021). Family offices and private individuals often favour self-investing by buying timberland, while institutional investors prefer Timber Investment Management Organizations (TIMOs) to invest on their behalf. TIMOs are management group companies that act as brokers managing timberland portfolios (Investopedia, 2021). As a spinoff of these investment possibilities, timberland funds-of-funds – a fund that invests in a variety of timberland funds – emerged in the mid-2000s (Chudy and Cubbage, 2020).

Regarding geographical distribution, forestry as an asset class has been concentrated so far in the US, currently representing 66% of all institutional timberland investments (Mei, 2019; TimberLink, 2018). As the US market matures, investments have diversified towards other markets such as Australia and New Zealand (19%), Latin America (9%) and Canada (3%). Asia, Africa, and Europe contribute only 1% each thus far (ibid.). Investment returns from timber plantations are the highest, on average, in South America and Asia, a bit smaller in the US South and Oceania, and lowest in Europe (Cubbage et al., 2020). The most important timberland investors are public pension funds (50%), followed by corporate pension funds (12%) and insurance companies (10%) (Fu, 2021).

Most timberland investments are used to generate soft- and hardwood for purposes such as building and construction, pulp and paper, bioenergy as well as woody biomass products (Fu, 2021). Non-timber markets valuing other ecosystem services are often not considered in timberland investments, besides in some country- or regional-specific markets (ibid.). This concentration on industrial wood production has raised questions on the sustainability of timberland investments, which are seen to be less climate-positive than other forest conservation and reforestation investments (Campanale and Rhein, 2008; Guarnaschelli et al., 2018). In the context of sustainable finance, TIMOs are increasingly asked to demonstrate their sustainability performance, which is challenging due to diverse reporting and monitoring criteria (Brand et al., 2020; Fu, 2020).

2.2.2. Alternative private investments into forest and forest-related activities

Next to timberland investments, alternative approaches are promoted to stipulate private investments in forests, especially in developing countries and emerging economies. These include finance for SFM and forest finance for rural development supported by UNFF, FAO and the World Bank (Pettenella and Masiero, 2014; Singer, 2016; UNFF, 2016) as well as finance for REDD+ (Norman and Nakhooda, 2014; Wolosin et al., 2016). Lately, finance for (forest) landscape restoration has been a prominent topic in policy practice (Besacier et al., 2021; Shames and Scherr, 2021), but little research on those investments is available (Löfqvist and Ghazoul, 2019). In the widest sense, forest investments are promoted as one part of investing into "nature-based solutions" (Capital for Climate, 2021; UNEP Finance Initiative and UNPRI, 2019).

These concepts can potentially include investment streams beyond traditional forestry by leveraging market-based instruments such as payments for ecosystem services, offsetting/compensation schemes, and actions under the 'Reducing Emissions from Deforestation and forest Degradation' (REDD+) framework. Such market-based instruments target non-timber ecosystem services such as carbon storage, watershed protection and biodiversity conservation (Donofrio et al., 2019, Tobin-de la Puente and Mitchell, 2020). In recent years, agroforestry, ecotourism, and sustainable smallholder agriculture have become additional prominent targets for alternative investments (Capital for Climate, 2021; Guarnaschelli et al., 2018).

Overall, these alternative asset classes are much lower in size than timberland investments (Guarnaschelli et al., 2018), hampered, inter alia, by comparably low returns in comparison to other asset classes, investors' preferences for developed markets – including those of impact investors - as well as socio-economic barriers in many tropical countries (Bass et al., 2019; COWI, 2018; Sarshar et al., 2012). The exception is carbon offsetting, as carbon credits are seen as a tradable and profitable entity by financial institutions – hitting records in 2020 and 2021 (Donfrio et al., 2021). For this reason, timberland investors have started to couple investments, combining timber and carbon revenue streams (Guarnaschelli et al., 2018).

Due to its limited attractiveness for investors, especially in the tropics, alternative asset classes often require "enabling finance" provided

by public and philanthropic investors that can take on higher risks and do not necessarily expect a return on investment (FAO and UNCCD The Global Mechanism, 2015). Another way to leverage private finance is so-called "blended finance", a structuring approach that can be defined as "(..) the use of catalytic capital from public or philanthropic sources to increase private sector investment in sustainable development" (Convergence, 2021). This has become a rapidly growing financial instrument to mobilize private sector finance as part of EU development finance (Mah, 2018). Thus far, however, there is only limited research on blended finance approaches that address forests or the wider agriculture, forestry, land use, and land use change sectors (Louman et al., 2020).

2.2.3. *Unsustainable and illicit private finance for forest-risk commodities*

Financial markets are prone to unsustainable finance, causing deforestation and forest degradation by financing the production, trade, manufacturing, and sale of forest-risk commodities (especially beef, soy, palm oil and timber) (Tropical Forest Alliance, 2017; 2018). In addition, they can drive illegal activities and forestry crime, financing terrorist groups and enabling corruption and violence (Interpol, 2020). Illicit and unsustainable finance can be intertwined and amount to big business: the illegal timber industry is estimated to be worth around 152 billion USD annually, encompassing about 10% of the global timber trade (World Bank, 2006), while forest-risk commodities (including timber) comprise a market of around 180 billion USD annually (Interpol, 2020, Tropical Forest Alliance, 2017). While the latter can be legal – but is problematic in terms of sustainability – the former is illegal in any case, and accounts for up to 90% of (tropical) deforestation in some countries (ibid.).

Today around 45% of the forest risk commodities produced in Latin America, Southeast Asia, and Sub-Saharan Africa are exported outside of the sourcing country; this number is likely to grow due to shifting global agriculture production towards the tropics (Tropical Forest Alliance, 2017; 2021). Involved financial institutions might thereby be increasingly exposed to deforestation and forest degradation risks, depending on the level on which they operate as well as on the type of operation (Tropical Forest Alliance, 2018). Regional and national banks mainly finance smaller growers and producers, whereas large financial actors possess significant corporate control globally, giving them leverage to influence trade and economic patterns (Galaz et al., 2018, Tropical Forest Alliance, 2018).

To counteract their risk exposure, some financial institutions have committed to fund only deforestation-free supply chains. However, thus far, 95 of 150 major banks and institutional investors[1] have yet to publish any policy on forest risk commodities/zero deforestation to reduce their risk exposure (Global Canopy, 2021a).

3. Methods

Following the literature review, we conducted 51 interviews with experts working on sustainable finance in general, or specifically, forests or green finance (including conservation and climate finance). Interviewees were purposefully selected to meet a list of criteria. Specifically, we aimed for a good representation of: 1) public, private, and hybrid financial experts from Europe; 2) experts with a sectoral focus on a) forests and forest-related topics (climate change, biodiversity protection), b) sustainable/green/climate finance, c) both; 3) experts with long-standing expertise/senior positions in their work field; 4) gender; 5) innovative and/or leading companies/investors, frontrunners in their field that have a sustainability strategy/approach in place. We identified experts by using a mix of sources such as expert recommendations, snowball method, Forest 500 ranking of the Global Canopy, observations from conferences, workshops, and webinars. We mainly selected interviewees based in Europe, corresponding with the EU's prominent role in developing policies on the issue (for full expert list see Annex B; for an overview of experts' backgrounds see Annex C).

Owing to the Corona pandemic, we conducted all interviews online. We followed a standardized interview questionnaire covering four main areas corresponding to the concepts and state of research described in chapter 2 (see further explanations in Annex D). These are: 1) basic understanding of sustainable finance in relation to forests; 2) the transformational potential of sustainable finance for forests and their management (incl. barriers and opportunities); 3) sustainable finance and the interviewee's role/operations; 4) sustainable finance and international (forest/finance) policy (see Annex E for full questionnaire). The questions were slightly adapted for each interview to gain deeper insights into the individual's main work area, their special expertise, and the main work focus of their organization/company. Interviews lasted approximately 1 h.

All interviews were fully transcribed, resulting in 558 pages of transcripts. Subsequently, all transcripts were coded by two researchers independently to achieve inter-coder reliability. For the coding we used MAXQDA software and followed a combined (deductive and inductive) approach starting from a set of codes based on the response categories of the questionnaire, but inductively coming up with new codes as the analysis progressed. Subsequently, to structure the high diversity of coded statements, we then conducted a narrative analysis (see Annex F flowchart on the data gathering and narrative analysis process). Narratives can be understood as comprehensive stories to provide meaning to the issues at hand, identifying a main problem, and implying a preferred solution as well as responsibilities to act (Gottweis, 2003; Winkel et al., 2017). For the narrative analysis we used a matrix based on the categories put forth by Winkel et al., (2017). We first grouped all interviews according to their problem and solution preferences and compared similarities and differences among them. Subsequently, we developed Table 1 showcasing the 5 key narratives identified through the analysis. To ensure consistency, the 5 narratives were cross-checked by two researchers and four external forest and financial experts who confirmed the interpretation. Afterwards, we grouped the narratives in relation to the risk-versus-opportunity dichotomy of sustainable finance as proposed by Schoenmaker (2017) (see chapter 2.1).

4. Results

Most respondents associate sustainable finance with contributions to social and environmental outcomes, often related to the SDGs or the Paris Agreement, alongside economic ones. In relation to forests, only a few experts reject the importance of the concept in general. Some of these are explicit in not considering forests to be an asset class at all, or they reject the idea of private finance for forests as they consider forests to be a public matter only. Notably, for most interviewees, sustainable finance is connected to the idea of transitioning finance to eventually change the financial system. In relation to the geographical scope, the interviewed experts confirm the perspective arising from the literature that sustainable finance policy is largely a European concept, while they perceive less political interest in the topic in other world regions. Within Europe, interviewees see strong regional differences: while it is an important concept in the Netherlands and Scandinavia, it is less so in other parts of Europe.

Concerning private forest investments in general, all interviewees are concerned about the high number of critical bottlenecks to enable such investments. These include economic barriers such as a mismatch of long forest growth rates and short investment time horizons, as well as high investment scales and limited project capacities. Furthermore, in comparison to other sectors, the forest sector is perceived by financial experts to be very complex. Also, governance challenges such as insufficient regulatory frameworks for sustainable forest investments are

[1] Based on Forest 500 ranking of the Global Canopy. The 150 selected financial institutions are identified by selecting those that are directly financing the 350 key companies as part of the Forest 500/company ranking.

often mentioned. Furthermore, developing countries and emerging economies are seen to face special challenges (especially access to finance as well as informal economies that are creating substantial legal uncertainties).

Besides these challenges, we observe a high divergence of views on the interconnection between sustainable finance and forests. 61% of the experts think that there is no shared perspective on what sustainable finance means in relation to forests amongst corporations, financial institutions, development practitioners, and researchers. 18% of the experts see some common elements, and 21% believe that there is a shared perspective. When asked concretely, this latter group gave, however, very differing responses about what this shared perspective is.

Altogether, the divergent understandings of the sustainable finance–forest nexus can be categorized into five narratives (Table 1; for full version see Annex G):

Narrative 1 challenges the notion that private finance can overcome the existing funding gaps for forests by stating that "*Private sustainable finance is no solution for unsustainable public forest finance*". Forests are considered as public good, and a focus on private finance is seen as distracting from reforms of public forest finance as well as effective national and international environmental/forest regulation. This narrative is shared by selected experts from the forest and financial sector alike.

Narrative 2 calls for "*sustainable finance to mitigate climate change risks for the financial sector*". Forests are considered to be of only marginal importance for sustainable finance (only for philanthropic activities or to offset emissions), as they would be risky and non-attractive investments. Hence, the main approach towards sustainable finance is to incorporate climate-related risks into investment strategies and financial regulations to support this.

Narrative 3 focusses on deforestation risks resulting from the financial sector, stating that *"unsustainable finance destroys forests"*. Financial institutions are seen to be in a prime position to stop deforestation as they are investing or lending to companies that convert forest land in the tropics. The focus in this narrative is on excluding (deforestation) risks and not to further forest positive investments (opportunities). This narrative is voiced by many civil society and some financial sector experts.

Narrative 4 states that *"public finance should enable more private forest finance"*. Voiced mainly by tropical forestry experts, it considers a lack of established business cases as well as underlying socio-economic barriers in the tropics to be major obstacles for private investments. Concessional, sustainable finance blended with public grants as well as a stronger cooperation between public and private sectors are considered necessary for increasing forest impact investing in the tropics.

Finally, *Narrative 5* promotes *"forests are an attractive asset class"*. Voiced preliminary by European timberland and impact investors, sustainable finance is here seen as an opportunity to direct (sustainable) finance into forestry. More collaboration between sectors, new sustainable investment products as well supportive public regulation are

Table 1
Narratives on the connection of sustainable finance (SuFi) and forests.

Narrative headline	1. Private (sustainable) finance cannot resolve the problem of unsustainable public forest finance	2. Sustainable finance means mitigating climate change risks for the financial sector	3. Unsustainable finance destroys forests	4. Public finance should enable more private forest finance	5. Forests are an attractive asset class
Main expert groups using this narrative	Selected forest and financial sector experts	Mainly experts from financial institutions, but also from philanthropic & international organizations	Mainly experts from civil society and financial institutions with a corporate zero deforestation policy	Mainly experts focusing on tropical countries; international & philanthropic organizations, impact investors, researchers	Mainly timberland and impact investors; experts from Finland or Germany
Focus	n.a.	**Risk approach**		**Opportunity approach**	
Connection SuFi-forests is …	Objected	Weak	Medium	Strong	Strong
Problem(s)	Public finance affecting forests is insufficient in terms of volume and sustainability impact Forests are public goods to be financed publicly	Climate change risks are threatening the financial system Forest investments are only considered for philanthropic activities or offsetting emissions, as they are risky and unattractive	Unsustainable finance contributes to deforestation by investing or lending to companies and their suppliers that convert forest land	The private sector should fill gaps in public forest finance Lack of established business cases, and underlying socio-economic barriers, esp. in developing countries, impede private investments	The potential of investments in forests as a trigger to increase sustainability in the economy is untapped A too high risk-perception & limited knowledge on forest investments by financial institutions
Solution	Transitioning private and/or public finance towards various sustainability goals				
Main transition goal	Make public finance sustainable	Minimize climate-related risks for the financial sector	Stop unsustainable finance	Enhance available finance for tropical forests to stop deforestation in the long-term	Further establish forests as an asset class
Who is responsible to act?	Public finance actors	Mainly financial institutions, especially institutional investors	Mainly financial institutions (esp. banks + institutional investors), but also public sector and civil society	Mix of actors: 1) public finance & philanthropic actors, 2) impact investors, 3) institutional investors,4) national/local financial institutions	Forest sector actors and financial institutions
Where to act?	All countries	Mainly European countries and emerging economies	Financial Institutions in Europe that lend/invest to/in tropical countries	Especially in tropical countries, but also in Europe	Mainly European countries
What forest investments are considered sustainable?	Forests are no private investment case Mixed views concerning the sustainability of different forest management types and conservation	Forests are not considered as investment case, except for carbon offsetting or charity Avoidance of deforestation risks for reputational reasons	Focus on avoiding deforestation in the tropics by excluding direct or indirect investments/lending in high-risk commodity supply chains	Investments in agroforestry, SFM, forest landscape restoration, and certified plantations are preferred Mixed views on conservation through strict protection and ecotourism. There is no	Focus on forestry (biomass production, SFM), certified plantations and agroforestry; to a lesser extent forest landscape restoration Strict protection and

(*continued on next page*)

Table 1 (*continued*)

Narrative headline	1. Private (sustainable) finance cannot resolve the problem of unsustainable public forest finance	2. Sustainable finance means mitigating climate change risks for the financial sector	3. Unsustainable finance destroys forests	4. Public finance should enable more private forest finance	5. Forests are an attractive asset class
Main strategies to act	**Public finance/public sector** needs to: • a) provide sufficient finance, b) be sustainable (e.g., by reforming harmful subsidies) • abandon undesirable expectations towards private investments, which will not increase due to a) increasing financial risks due to climate change, b) comparably low attractiveness of the asset • provide strong environmental regulation that prioritizes forests and regulates trade-offs with other sectors	**Financial institutions** need to: • incorporate environmental and social externalities into investment strategies mainly to mitigate financial, reputational, legal risks • exclude companies from investing/lending that do not comply with sustainable finance standards The **public sector** needs to: • provide regulation for sustainable investments and a market for emission trading with "proper" prices	**Financial institutions** need to: • consider deforestation risks in investment decisions • assess and minimize risk exposure by a) applying zero deforestation corporate policies, b) engaging in a dialogue with investee companies, using voting rights in shareholder meetings, c) exclusion/ divesting from companies that are violating zero deforestation policies **Public sector** needs to: • establish strong regulations tackling unsustainable commodity investments **Civil society/science** needs to: • a) act as watchdog, b) promote zero deforestation corporate policies, c) call for strong regulation **All actors** need to: • enhance transparency of supply chains	support for biorefinery investments The **public sector and philanthropic organizations** need to: • increase enabling and blended finance to lever impact investments • facilitate dialogue between finance and forest actors • mitigate risks by providing governance framework for investments The **international donor community** should: • flank sustainable finance for forests with a) technical assistance and b) insurances for forest investments • build up capacities to implement/monitor projects **Private finance** needs to: • provide sustainable finance blended with public grants and cooperate with the public sector to accelerate impact investing • build up capacities of financial institutions, esp. in developing countries • increase institutional investments to follow impact investments • design new sustainable investment products • modify return expectations **Civil society** needs to: • support development and implementation of innovation **Science/researchers** need to: • showcase success stories and failures to improve practices	ecotourism are not considered The **forest sector** needs to: • enhance collaboration with the financial sector • provide advice on risk mitigation (e.g., geographical selection) **Financial institutions** need to: • increase forest asset investments to support a circular bioeconomy **Together, the forest sector and financial institutions** need to: • establish more innovative investment products (e.g., green/ forest bonds) • define criteria for sustainable forest investments • use an intermediary to facilitate dialogue between sectors **Public sector** needs to: • regulate the economy, price all forest functions and establish functioning Emission Trading System to support private forest investments **Science/researchers** need to: • contribute scientific knowledge

considered a prerequisite to achieve such investments.

While all narratives share the same solution - to transition private and/or public finance towards sustainable finance – they differ substantially regarding the different transition goals. Specifically, they assess the connection between forests and sustainable finance very differently, ranging from objection (forests are no investment case) to strong connection (forests as perfect sustainable investment case). The narratives can further be grouped with reference to the risk versus an opportunity focus in sustainable finance proposed by Schoenmaker (2017) (see chapter 2.1): Financial sector experts are predominantly taking a risk approach, emphasizing financial and partially deforestation risks (Narratives 2 and 3). On the contrary, forest sector experts emphasize the opportunity approach, seeing mainly investment opportunities (Narratives 4 and 5). Experts that use the latter often have knowledge on risk narratives (2 and 3) but not vice versa.

Most interviewees, however, agree that there exist some basic challenges connected to sustainable finance for forests. These include insufficient knowledge and data, a lack of collaboration between the financial and forest sectors, and standardization gaps. Interviewees are unsure about what kind of and how many sustainable investments are being made towards forests. Furthermore, financial sector experts are in general seen to have no or very limited knowledge on forests and how the forest sector works, and significant communication barriers are found between the forest and the financial sectors. Overcoming these

barriers is perceived to be difficult as financial institutions are seen to have too few staff in sustainability departments and too little knowledge capacity on forests/deforestation. Consequently, many experts plea for a standardization of sustainable forestry investments to ease investment decisions.

5. Discussion

The findings above illustrate a considerable diversity and major differences in the views of forest and finance sector stakeholders and experts regarding sustainable finance and its connection to forests. In the following, we will reflect on these differences along some key dimensions, and hence contribute to the conceptional understanding of sustainable finance in this field.

5.1. Risks versus opportunities

As indicated above, the interviewed experts differ substantially regarding their risk and opportunity thinking when it comes to sustainable finance and forests. Specifically, many representatives of financial institutions focus on avoiding *financial risks* rather than considering larger environmental or societal issues (Narrative 2) (Dyllick and Muff, 2016). They acknowledge the financial materiality of climate change risks and focus on risk avoidance, inter alia by avoiding forest investments, but do not consider their own contribution in exacerbating climate change risks (Crona et al., 2021). In contrast, other financial institutions (Narrative 3) show a wider risk perspective and have zero-deforestation policies in place, thereby acknowledging responsibility in tackling also environmental risks. These are most common in Europe, where exclusion of deforestation risks is one of the preferred investment strategies (Global Canopy, 2021b; Nicholls, 2021). So far, however, only a few prominent investors openly communicate related investment decisions, e.g. to divest from harmful agribusiness. For instance, the Norwegian Government Pension Fund Global has recently placed commodity trader Mafrig on its observer list as a warning before exclusion from investment (Norges Bank, 2021). In most cases, however, implementation of such policies remains a "black box". Investigations carried out by NGOs and journalists reveal how financial institutions remain invested in commodity traders with high deforestation risk exposure despite having commitments in place, thereby outlining the difference between policies and their implementation (Global Canopy, 2021a; Harris and Strott, 2021, Trase Finance 2020). This practice – to not divest, at least not quickly, despite a respective policy or announcement – is also visible under Narrative 3. Specifically, two main distinct stakeholder groups – civil society and financial experts – indicate different strategies to address unsustainable finance driving deforestation: 1) financial sector experts emphasize active ownership, which means using their influence as investors to educate/pressure companies via shareholder meetings or dialogue to change unsustainable practices, and divesting only in tough cases; 2) civil society experts emphasize the importance of strong regulations and divesting in cases of environmental damage. This points at some tension amongst experts sharing this narrative, between a preference for strong state intervention and private sector self-regulation. This tension is also visible in the development process of sustainable finance policy in Europe overall (Ahlström and Monciardini, 2021).

In contrast to financial experts' focus on risk mitigation, many forest sector experts with financial expertise emphasize *opportunity* thinking connected to sustainable finance and forests (Narratives 4 and 5). They see an unjustified neglect of finance opportunities relating to forests and argue for facilitating investments to generate (sustainability) impact. Impact investors are then of critical importance to kickstart and implement forest project finance, while they are considered to be much less important in other narratives. These variations mirror the different perceptions in the literature about the potential of impact investments varying from unprofitable by "traditional" investors to "game-changing" by improving the sustainability of the financial system as put forth by impact investors (Lindenberg and Pöll, 2015; Schwartz and Finighan, 2020).

Furthermore, narratives following an opportunity perspective (Narratives 4 and 5) do perceive also risks and entail risk mitigation strategies, albeit often selectively. E.g., they consider investment risks relating to climate change or weak governance, whereas other risk factors such as scarcity of fertile land and conflicts with local communities are not addressed (Boudreaux et al., 2017; Fu, 2021; Lambin and Meyfroidt, 2011). Notably, limiting the geographical focus of investments is considered as a risk mitigation strategy (Narrative 5); especially Scandinavia was mentioned here. Other European regions are seen to be more affected by climate change, increasing risks of severe losses in the economic value of forest land (Hanewinkel et al., 2013). Further suggested methods to reduce risks include portfolio diversification and extended climate disclosure reporting by timberland investors (New-Forests, 2020; West et al., 2021).

Summing up, the narratives on sustainable finance and forests nicely mirror the spectrum from risk avoidance to opportunity seeking that Schoenmaker (2017) outlines for the transition towards sustainable finance in general. We do not see, however, a transition idea voiced in those narratives (i.e. a trend observed from short-term risk to long-term opportunity thinking). Rather, risk-versus-opportunity thinking seems connected to distinct units of greatest concern (finance versus forests), related risk and opportunity perceptions, and distinct sustainability emphases.

5.2. Sustainability in forests and for forest investments

Another striking observation is the diversity of (often implicit) understandings of what sustainability in sustainable finance does refer to. While most financial sector experts relate sustainability to financial modalities, e.g. more long-term, continuous finance that sustains itself or the project/business model over time, forest sector experts and some financial sector experts' do (also) consider sustainability in relation to forests and their management.

As for the latter, for many experts, deforestation and its harmful impacts on biodiversity and climate are the most prominent sustainability concern (e.g. in Narrative 3). Yet, beyond deforestation, there are strikingly different views on the importance of (private) sustainable finance for the (sustainable) exploitation of forest resources in contrast to (unsustainable) deforestation: Forest sector experts adhering to Narrative 5 promote forestry for woody biomass production as a sustainable investment opportunity; for them, the character of timber investments as naturally regrowing resource seems sufficient to label forest investments as sustainable, which may include plantation forestry and large-scale industrial wood processing investments. In contrast, Narrative 4 addresses different forest ecosystem services and is critical of large-scale biomass and biorefinery investments. Finally, Narrative 1 disregards all private investments as forests are seen as a public good, implying a sustainability perspective that renders forests as natural treasure to be excluded from market-based exploitation. These strikingly different sustainability emphases mirror perspectives found in the often-controversial debates about forest use and conservation (Davenport et al., 2010; Winkel and Sotirov, 2016; Winkel et al., 2021). While a lack of knowledge on forests and forestry is often seen as a bottleneck regarding sustainable finance and forests, especially by forest experts, these fundamentally different sustainability foci suggest that more knowledge alone will not lead to a convergence of conflicting viewpoints, as these may be rooted in fundamentally different perspectives on forests and their sustainable management (see Winkel et al., 2017).

5.3. Publicly driven versus privately driven governance and investments

Next to divergent views on risks versus opportunities and sustainability, a third distinctive dimension of the five identified narratives

concerns the role of public and private actors, mirroring long-lasting debates in global forest governance about the importance of private (market) versus public governance (Arts, 2021, see also Begemann et al., 2021; Cashore, 2002; Rosenau and Czempiel, 1992; Willets, 2001). This dimension also touches upon macro societal debates on the role of the financial sector as servant or master of society (Hansen, 2014).

The narratives in our study address both state and private governance to distinct degrees. Market-based tools such as innovative investment products or emission and carbon trading are favoured by Narratives 2, 4, and 5. Here, the public sector is seen to have a mainly supporting role to facilitate private investments, also by setting common standards (Narratives 2 and 5), or by enabling private investments e.g. through blended finance (Narrative 4). In contrast, the financial sector is seen to be in a master position in bridging funding gaps or increasing available finance for forests (opportunity narratives 4 and 5). Other non-state actors such as civil society and researchers can have assisting functions, e.g., by developing and evaluating projects or providing scientific knowledge (Narratives 4 and 5). A different and more prominent role is given to the public sector in Narratives 3 and especially 1: Here, the public sector is asked to stop unsustainable commodity investments through effective regulation (especially by civil society actors voicing Narrative 3). Narrative 1 fully objects to the private sector's role in sustainably financing forest issues and as such to the idea of the financial sector as a master of society (Hansen, 2014). This narrative criticises the commodification and privatization of nature: forests are perceived to be a "public good" (Dempsey and Suarez, 2016) and the "financialization of sustainability" (Bracking, 2019) is considered to have little or even harmful social and environmental impacts while furthering financial gains. In addition, it points to the important role of public finance for forests that can, e.g. through harmful subsidies, lead to a mismatch of economic development and achieving environmental goals (Albrecht et al., 2021). Similar to "green economy narratives", states are the central actors in this narrative and in the driving seat to foster a sustainability transformation through regulations (Guske et al., 2019). Interestingly, Narrative 1 is shared by some experts from both the financial and forest sectors; it also considers such challenges as land scarcity and land grabbing, issues that have been disregarded by other narratives (see extended narrative table in Annex G).

6. Conclusions

This study is the first to investigate the forest–sustainable finance nexus which is yet a widely undiscovered field for research but also for society at large, despite the emergence of new policies on sustainable finance, such as the EU taxonomy, and growing consumer interests in sustainability. Our results show that, under the surface of a widely shared "metanarrative" that a transition towards sustainable finance is per se desirable, a complex narrative landscape exists that includes basic disagreements regarding the focus (risk avoidance versus opportunities), substance (different understandings of sustainability in relation to forests) and interventions needed (state regulation versus private sector self-governance) for the envisaged sustainability transformation.

Harnessing sustainable finance for resolving major sustainability challenges connected to forests hence requires not only resolving technical and communication related issues connecting across the forest and the finance sector, but even more it requires a deeper conceptual underpinning, by means of interdisciplinary research and cross-sectoral dialogue, to clarify core aspects relating to the understanding of sustainability, including trade-offs, and subsequently related supporting policies at the interplay of public and private governance. Such efforts are needed to ensure that sustainable finance in relation to forests is not only economically profitable, but also generates positive impacts for nature and people. By depicting different understandings and pointing out potential lines of disagreement, our paper aims to increase transparency, enable better dialogue and navigation trough opposing views, as well as to inform policy making on the importance of fundamentally different interests and world views, particularly regarding the meaning of sustainability. Navigating sustainable finance related policies such as the EU taxonomy through the narrative landscape analysed in this paper, and connecting economic interests (e.g. in risk mitigation) to substantial policy goals in view of a sustainability transition of both the financial and the forest sectors, will be a major challenge. Research can assist in this matter by analysing possible transition pathways in light of the different interests and value orientations of stakeholders as well as to assess social, economic and environmental impacts of policy shifts in Europe and beyond. In other words: liaising rich forests and rich people will require both ideological and institutional learning, as well as decision-making that faces competing sustainability transformation visions. The narrative map drawn in this paper is meant to facilitate this future transition process by mapping out those visions, thus providing leverage for future policy work and research.

Author contributions

Anna Begemann: conceptualization, investigation, formal analysis, writing original draft; Camilla Dolriis: investigation, formal analysis; Georg Winkel: Co-writing, review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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Appendix A. Supplementary data

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