DIGITAL DEGROWTH BUSINESS: A HOPE OR A POSSIBILITY? A CASE STUDY OF ECOSIA

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Abstract

The degrowth movement is perceived by many as the best alternative to the current capitalist system from an environmental sustainability viewpoint. However, there is still some ambiguity about degrowth's perspective on business and most specifically digital businesses. In order to shed light on how digital businesses can approach degrowth, this paper uses Hankammer et al (2021) business degrowth criteria to find out where Ecosia, a search engine that uses the profit made from internet searches to plant trees, fits in the degrowth discourse. By doing so this study links up the concepts of degrowth and digital business that are usually perceived as incompatible.

INTRODUCTION

The degrowth movement was initiated in France in the last two decades under the name of *décroissance* (Fournier,2008). This movement stands as an opponent of the neo-liberal understanding of economic development and growth (Fournier, 2008). Although degrowth is still a "concept in the making" (Petridis et al, 2015 p.176) and debates are ongoing about what it actually entails, degrowth authors agree about its central values. These core values are founded on findings by scientific bodies showing that a breach in the planetary boundaries of the earth will have irreparable consequences (Steffen et al., 2015). First and foremost, degrowth signifies a critique of growth and calls for an abolishment of growth as a social objective (Kallis et al, 2015). In addition, the degrowth movement is also an avid critique of capitalism, but more precisely of gross domestic product (GDP) and of commodification, the process of conversion of social products and social-ecological services and relations into commodities with a monetary value (Kallis et al, 2015). The degrowth movement points out the inanity of an economic system based on growth, which can be illustrated by the fact that ecological disasters, wars, cancers, or obesity all contribute to economic growth due to the increasing consumption in cleaning services, weapons, or medical insurance and products these will engender (Fournier, 2008).

Multiple literature bodies have proved the link between growth and environmental deterioration, which highlights the need to deviate from economic growth (Daly, 2019; Kallis, 2019). However, the question of what it entails for the agents fostering economic growth, namely businesses, is still unclear. Several studies have focused extensively on linking degrowth to businesses with the ultimate

aim of making business models deviate from the pursuit of infinite growth and hence become more sustainable, but these studies left out digital business which is perceived as different from conventional business due to its dependence on advanced information technology (IT) systems (Laudon & Laudon, 2006). The exclusion of technology in previous business degrowth studies is as a result of the historical link of technological progress and economic growth (Haucke, 2018). However, acknowledging the ubiquitous role of digital technology in our current society and economy (Dufva & Dufva, 2019), it is important to understand the ways digital businesses can approach degrowth and sustainability. To this, Ecosia, a search engine that is widely recognized as a sustainability icon (Ivanov, 2006) and whose mission and vision can be argued to have many similarities with degrowth, is analyzed using business degrowth criteria formed by Hankammer et al (2021). These business criteria provide a reliable tool to understand *where Ecosia's business model and practices fit in the degrowth discourse.*

Answering this research question creates connections between the concept of degrowth and digital businesses, which are usually perceived as incompatible (Kallis et al, 2015; Latouche, 2009). Most importantly, the results from this study can also provide new insights for digital firms aspiring to make their business model more sustainable. It is also expected to shed light on areas for future research aiming at improving the existing business degrowth criteria so as to better account for digital businesses.

In order to guide the reader through a well-structured process to answer the research question, the paper is structured as follows. The next section introduces the key concepts and the theoretical framework for this research. The third section discusses the methodology employed. The fourth section describes the findings, while the last section

discusses these findings with the aim of answering the research question. A last section, summarizes the findings and provides suggestions for future research.

CONCEPTS

Degrowth and Related Concepts

When referring to degrowth, it is often assumed that it is a synonym of negative GDP. However, this is not the case. Our current economy is dominated by one system, capitalism, which only permits a future consisting of growth (Kallis et al, 2015). The objective of degrowth is to dismantle this automatic association between the notions of economy and growth by promoting a collective downscaling process of production and consumption to increase human-well being and enhance ecological conditions both at the local and global level and both in the short and long run (Schneider et al, 2010). Degrowth is therefore a provocative slogan to challenge and escape the ideology of growth (Hamilton, 2004). The emphasis of degrowth is not on doing "less", such as by decreasing growth or "green growth", but rather on doing "differently" (Asara, Otero, Demaria, & Corbera, 2015). Degrowth and negative GDP are therefore not synonymous since degrowth highlights the necessity to re-think economic relations, identities, and activities in different terms (Fournier, 2008), while negative GDP refers to a business-as-usual situation with a diminution in business growth.

By re-thinking economic relations, identities, and activities, degrowth wishes to construct a world that centers around the reproductive economy of care and the creation of new commons (Helfrich & Bollier, 2015).

Sustainable Business Modeling

Before defining sustainable business modeling, it is first important to understand the term at its core, namely business

modeling. According to Magretta (2002, p.87) a business model is central to a business, it is "the story that explains how the enterprise works". A business model should answer the following questions: 1) Who is the customer? 2) What does the customer value? 3) How will the business make money? 4) What is the underlying economic logic that explains how we can deliver value to the customers at an appropriate cost? (Magretta, 2002).

Acknowledging that a business must make profit to be viable, it is important to understand how activities that are beneficial to society and to the environment can be integrated with the core for-profit approach of a company (Schaltegger, Lüdeke-Freund, & Hansen, 2012). According to Schaltegger et al (2012), a sustainable business case needs three requirements. Firstly, the company has to realize a voluntary activity with the intention to contribute to the solution of societal or environmental problems. Secondly, it must create a positive business effect on corporate success. Lastly, it should create economic success through a certain environmental or social activity. In other words, a sustainable business models should assist in the achievement of sustainability by following major principles for sustainability" (Wells, 2013)

Digital Firms vs. Brick-and-Mortar Firms

Laudon and Laudon (2006) are some of the most prominent researchers calling for a clear distinction between digital business and traditional business, or as they call them "brick-and-mortar business". Brick-and-mortar business refers to companies possessing or leasing retail shops, factory production facilities, and warehouses for their production. This term is used to include firms like H&M, Volkswagen, Coca-Cola, but also the neighborhood baker or the Thai restaurant in the city center. In opposition to

brick-and-mortar firms, digital firms place an emphasis on the digitalization of their business process and services by using advanced information technology. Such technology creates a wide range of possibilities for digital firms to enhance customer interactions and experience, decentralize their operations, increase efficiencies across a variety of business functions, and accelerate market readiness and responsiveness (Laudon & Laudon, 2006). Firms like Google, Facebook, PayPal, and the case study of this paper, Ecosia, just to name a few, are digital businesses.

Degrowth and Business

Degrowth is rarely referred to in the context of business activity. This can be traced to the obvious conflict between degrowth's focus on reducing GDP in countries on the one hand and the role of businesses in GDP growth on the other. For these reasons, most previous research on degrowth opted for a macro-economic and politicized approach. Therefore, the understanding of the role of formal organizations (e.g. producing firms) in a degrowth society remains very limited (Hankammer & Kleer, 2018). Understanding the implementation of degrowth at a micro level is imperative as businesses are socially and politically unassailable as the primary organization able to bring structural change (Wells, 2018). There is therefore a strong need to understand how degrowth could be implemented within a business.

Three studies in particular have focused on the operationalization of degrowth at the business level (Hankammer et al., 2021; Khmara & Kronenberg, 2018; Nesterova, 2020). Drawing on past literature, all three assessed what degrowth can add to the business model for sustainability, and formed sets of degrowth business criteria. From these literature

bodies, the Hankammer et al (2021) set of criteria suits this research best. First, having been written after the other two researches, Hankammer et al (2021) were able to include the findings of both into their own criteria. Secondly, the criteria formed by Hankammer et al (2021) were used successfully to assess five B-Corp certified firms, a certification that Ecosia has also been rewarded with in 2014. This provides additional assurance that these are the most appropriate criteria to analyze Ecosia.

As seen on Table 1 (see Appendix A), Hankammer et al (2021) degrowth business criteria are divided into eleven categories. Each of the overarching criteria also contains a set of sub criteria. These criteria were formed to analyze brick-and-mortar businesses: due to the notable differences between these and digital businesses, it was expected that some criteria, especially the ones that relate to tangible products, would not be fully suited to analyze all aspects of the Ecosia business model. Those non-suited criteria provided an insight for future research to adapt the criteria to fit digital firms.

Insert Table 1 about here

Conceptual Framework

The nature of degrowth is to promote sustainability. Degrowth is considered by some as a directed and necessary response to the triple environmental, social, and economic crisis our world currently faces (Schneider, Kallis, & Martinez-Alier, 2010). Researchers like Hankammer et al (2021) have been able to translate the key premises of degrowth into operationalized criteria for aspiring degrowth entrepreneurs wishing to build a sustainable business model. However, as mentioned earlier, these criteria were formed to analyze brick-and-mortar businesses and have not yet been applied to digital firms such as Ecosia. Applying them

to a digital firm that has many similarities with the degrowth discourse enables this paper to understand where this company stands within the degrowth discourse and point out the business degrowth criteria that may be missing to fully analyze a digital business.

METHODOLOGY

Case Study: Ecosia

This paper focuses on the case of Ecosia, a Berlin-based company founded in 2009 by Christian Kroll. Ecosia provides its users with a search engine similar to the one provided by Google but differentiates itself from other search engines by donating about 80% of its profit to non-profit organizations engaged with reforestation. This firm was picked as the case study for this paper because it is widely recognized as a sustainability icon (Ivanov, 2019) and that many of its business practices are thought to be in accordance with the degrowth discourse (Ecosia, n.d).

This paper opted for a single case study because of the considerable advantages it offers in studying the "complex and relatively unstructured and infrequent phenomena that lie at the heart of the subfield" (Bennett & Elman, 2007 p.171). In other words, by choosing this specific methodological approach, this paper aims to concentrate on the uniqueness of the case and to develop a deep understanding of its complexity (Bryman & Bell, 2011), which in turn, will hopefully provide a basis for future researchers aiming to further dig into the compatibility of degrowth and digital businesses.

Data Collection Methods

Prior to assessing Ecosia's business model and practices using the framework provided by Hankammer et al (2021), it was important to develop an in-depth understanding of Ecosia's business model by collecting data. This research is mainly

based on secondary data. Although it was initially intended to collect primary data through interviews, Ecosia declined the request to be interviewed (Henderson, persn. comm., March 9th). This meant that the data had to be gathered using a different method. However, it became apparent that Ecosia, having pledged full transparency over their business, most information concerning their business model and practices could easily be retrieved from their website, reports, blog and FAQ section. One could rightfully question the veracity of the information gathered through these channels arguing that only positive elements would be made publicly available due to public relation filters. To counter this argument, it should be noted that Ecosia is a certified B-Corporation. This certification verifies every three years that the social and environmental performance objectives of the firm are met. Any misinformation that would be released by Ecosia concerning their business practices could result in not being recertified (B-Corporation, n.d). There is, therefore, a very limited risk that the information posted on the different channels is not genuine.

As seen on Table 2 (see Appendix B), most data is gathered directly from Ecosia's digital channels, such as their blog page, financial reports, YouTube channel, podcast and FAQ page. Additionally, past research, newspaper articles, and interviews are also used. Lastly, a series of email communications with Ecosia provided further information about elements of their business model and practices that necessitated further details. These employees gave their consent for the data shared in the email communications to be used in this research.

Insert Table 2 about here

Method of Analysis

For the analysis, five categories based on Hankammer et al (2021) business criteria were used to analyze the data. These categories are society, environment, customer, employees and management, and communities. Under the umbrella of these five categories, there are eleven criteria, as seen on Table 1. For each of these criteria there are also a number of sub-criteria.

Following the methodology illustrated on Figure 1 (see Appendix C), the data gathered was compared, matched and filled under the criteria and sub-criteria that it fitted best. The data gathered that was going against the Hankammer et al (2021) business criteria were directly transferred to a category of "incompatible elements to degrowth". However, in certain instances missing criteria in Hankammer's framework implied that available data could not be analyzed. These missing criteria were as a result of specificities of digital business in comparison to brick-and-mortar businesses. In such cases, the data was moved to a sixth category that was referred to as the "non-fitting category". This category held unorganized and sometimes unrelated pieces of data; it was therefore of the utmost importance to arrange it into different groups before analyzing it. To do so, the axial coding technique was used. This coding technique is usually used to code interviews (Theron, 2015). However, it was especially useful in this research to identify the recurring trends or keywords within the data. The different information with similar trends or keywords were regrouped and each newly formed category was compared to the degrowth literature to see if there was a possible compatibility and/or new criteria to consider.

Insert Figure 1 about here

Limitations of Methodology

There are some clear limitations to the methodological approach of this paper. The most important one refers to relying mainly on secondary data. However, as explained earlier, the veracity of the secondary data obtained through Ecosia's channel is assured by its B-Certification.

Another notable limitation stems from the decision of using a single-case study approach: this approach strongly limits the potential for generalization as one case cannot necessarily be representative of all other cases (Bryman & Bell, 2011). This is true, the findings about Ecosia's position in the business degrowth discourse are singular to the case study. However, instead of attempting to generalize the findings to any other digital firm, this study aims at finding a link between two concepts, degrowth and digital business, that were thought as unlinkable. Doing so may open new doors for future researchers who could attempt to find the compatibility of degrowth with other IT firms involved in more technology intensive sector such as artificial intelligence

Lastly, it is important to note that although this paper tries to discuss Ecosia's business model and practices in relation to degrowth, it was faced with certain restraints (time and word count) that only allowed it to focus on the bigger picture.

FINDINGS

This section concentrates on providing results of the analysis of Ecosia's business model and practices with Hankammer et al (2021) business model criteria. These results are essential to discuss where Ecosia stands in the degrowth discourse. To provide the reader with a coherent explanation of the findings, each of the five categories formed by Hankammer et al (2021) is discussed singularly. A sixth category, discussing the "non-fitting"information, is provided at the

end. It focuses on the different aspects of Ecosia that could not be analyzed using Hankammer et al criteria.

Ecosia's Impact on Society (Criteria 1 & 2)

One of Ecosia's most noticeable aspects is the importance of the environment and society in its business model. In fact, since its creation Ecosia has been based on an "hybrid business model", a new breed of business model resulting from the mixing of charities and for-profit organizations (Hockerts, 2015). In the case of Ecosia, 80% of its profits are donated to organizations involved in the reforestation of biodiversity hotspots (Schmidt, 2011). To this day, in collaboration with different organizations Ecosia has planted more than 120,000,000 trees and wants to grow the business further in order to "ultimately plant hundreds of millions of trees" (Henderson, 2021, persn. comm., April 30th).

The trees are planted according to three overarching principles (Ecosia, 2017). The first one is that Ecosia principally works in the poorest areas of the world and focuses on the thirty-five global biodiversity hotspots (Ecosia, 2017), which include for instance the Amazon Forest, Madagascar, and the South of Spain. The second principle holds that the trees should bring value to nature (Ecosia, 2017). To ensure this, Ecosia concentrates on projects that plant trees in areas that were once forested (deforested areas having welcomed a thriving biodiversity in the past, they carry the right conditions for trees to be able to grow again, which increases the chance of success). Additionally, only native species are planted which ensures that the natural process is respected (Ecosia, 2017). The third principle is about bringing value for people; it entails that local communities must benefit from the trees being alive rather than cut down. To ensure that this is the case, the local

populations are included and empowered during the entire project.

Ecosia's Impact on the Environment (Criteria 3 & 4)

Acknowledging that Ecosia is a digital search engine, not many resources are used to "create" their service unlike firms that produce a tangible product derived from raw material. The resource that Ecosia is most reliant upon is electricity, which is essential to fuel their servers and the different computers to ensure the well-functioning of their search engine (Joshi, 2019). Servers and computers are very energy-consuming and, if grey electricity is used, can be very polluting. This is, however, not the case of Ecosia as additionally to planting trees, it has also built two solar plants in Aue and Schinne (Germany), which cover all its servers' energy consumption (Joshi, 2019). Due to the fact that Ecosia plants trees, that are by nature CO_2 absorbers, and does not produce CO_2 to fuel its servers, Ecosia is a carbon negative firm (Joshi, 2019) and claims that that for every search made by its users on Ecosia, one kilo of CO_2 is taken out of the atmosphere.

One thing that should be highlighted is that Ecosia's main business partner is Bing, a Microsoft-owned company. This collaboration lays on the fact that due to financial restrictions Ecosia is not able to run its own search engine (Schmidt, 2011). This collaboration essentially means that Ecosia does not manage the underlying technical services: rather, Ecosia just provides a different interface to Bing's search engine - although for the end user Ecosia seems like a fully-fledged search engine (Ruch et al, 2011). In other words, when making a search on Ecosia, one is actually using Bing's search index. This collaboration also entails that Bing's server and electricity are also put at use when

searches are made on Ecosia. However, Ecosia highlighted that the energy surplus created from its solar plants actually covers its electricity consumption on Bing's servers (Tual, 2020).

Additionally, in order to encourage its users to click on the website links of organizations with sustainable goals, Ecosia established two icons on their search page, the green leaf icon and the fossil fuel icon. The green leaf icon is placed next to the links of organizations recognized as "sustainable" by Ecosia, while the fossil fuel icon is placed next to the links of firms that are involved directly or indirectly in coal mining, the most polluting fossil fuel (Joshi, 2019). The purpose of these icons is to promote organizations with a positive impact both on the earth and society, while demoting organizations involved directly or indirectly in coal mining.

Ecosia's Impact on Customers (Criteria 5 & 6)

The users of search engines and in this case Ecosia, are not their actual customers. Instead, Ecosia's customers are firms that wish to use Ecosia's visibility with its millions of users worldwide to promote their services and/or products (Ruch et al 2011). Currently, most firms using Ecosia to promote their services and/or products are SMEs and multinationals. Ecosia welcomes and encourages any firm to be promoted on their search engine, acknowledging its dependence on advertising for growth. In fact, any firm can very easily start a promotion campaign on Ecosia with a few clicks.

This being said, Hankammer et al (2021) created the criteria related to impact on customers referring to customers which, for most companies, are also their users. Therefore, among these results, it is also

important to discuss the impact that Ecosia has on users. It can be first highlighted that Ecosia puts effort in intimating its relationship with its users. This is done through different "online" and "offline" channels. Ecosia communicates online with its users through its YouTube channel, its blog page, and its podcast, while it communicates offline with its users at different events (such as climate protest) but also by collaborating with different organizations such as We Love Green with whom they organized the first sustainable festival in France where, alongside music shows, there was a think-tank scene to discuss ideas about sustainability (Joshi, 2019).

It can be further acknowledged that unlike peer-to-peer search engines such as YaCy, Ecosia has opted for a user-server model whereby the user's requested search comes from a centralized server. This entails that the users are in no way essential to the well-functioning of the search engine (Mager, 2014).

However, Ecosia still has significance for its users as its search engine is free of charge. This enables anyone that has a smartphone, computer, tablet and an internet connection to have access to an inestimable amount free of information. Anyone that wishes to expand his/her knowledge or skills can do so by searching through a search engine such as Ecosia. Having access to such information empowers people and encourages them to learn, while also benefiting the earth and society by planting roughly one tree for every 45 searches done (Ecosia FAQ).

Ecosia's Management and its Impact on Employees (Criteria 7 & 8)

Although Ecosia's founder, Christian Kroll, is initially from a business background, all changed for him after a long trip abroad, where he realized the deep

impact of deforestation on poorer communities around the world (ChangeNow, 2020). His initial goal of becoming a millionaire eventually turned into the wish of becoming a millionaire of trees, and paying himself a salary lower than 1000 euros per month (Schmit, 2011). Christian Kroll was also committed to make Ecosia fully transparent with the public and to lead by example, that is why in 2015 Ecosia started publishing their financial reports on a monthly basis.

Alongside Ecosia's transparency, the ownership and voting rights at Ecosia are not held by Kroll singularly. Instead he owns 51% of the voting rights while Tim Schumacher, the angel investor of Ecosia owns 49% of the voting rights and the Purpose Foundation owns 1% but is the only one to enjoy a veto right (Purpose, n.d) given in 2018 alongside 99.9% of Ecosia's shares (Kroll, 2018). This audacious action of handing out most shares and providing a stewardship role to the Purpose Foundation was a way to safeguard Ecosia's core value and, in doing so, ensuring that no profits would leave the company in the form of dividends, that the company could not be bought and that a person who does not work at Ecosia could lead the company.

The B-Corporation is another third party involved with Ecosia. This corporation is not involved in the decision-making at Ecosia, but it oversees their business and provides the B-Corporation certification which assesses the impact of the company on its workers, their communities , and the planet. So far Ecosia is well-rated and has received multiple B-Corp world honoree prizes in the community category (2015, 2016, 2017, 2018, 2019) and changemaker category (2018).

Ecosia has about 120 employees worldwide, treating them correctly also lies at its core. A few innovative policies were

put in place to create an atmosphere which empowers employees and promotes a better work-life balance. First of all, employees are provided with flexible working hours (Henderson, persn. comm., June 2nd) and Tuesdays and Thursdays are "no meeting days", which allows the employees to work from home (Ecosia, 2019). Workers are also encouraged and supported to take part in after work activities aiming at supporting marginalized groups, for example by improving gender diversity in the technology sector (Ecosia, 2019). In addition to this, Ecosia pushes workers to be aware of their impact on the environment and to make their voice heard by participating in climate protests (Ecosia, 2019). Therefore, Ecosia's employees are allowed to participate in climate protests during their working hours while still benefiting from their full salary. Workers at Ecosia are also given the opportunity to visit the different tree planting projects around the world in order to have first-hand experience of what their work has been put into. Lastly, informal meetings are also encouraged for the workers to be given the chance to communicate between each other outside work boundaries. A vegetarian brunch is set every Wednesday, with the whole Ecosia team taking part. According to one of the workers at Ecosia, this is "the most important non-meeting of the week" (Ecosia, 2019).

Ecosia's Impact on the Community (Criteria 9, 10, & 11)

At the local community level in Berlin and Germany, Ecosia's impact is rather restrained. One of Ecosia's impact on its local community, is that Ecosia's workers are encouraged to participate in after-work activities benefiting the local community. Ecosia also attempts to positively impact its local community by investing in different local firms that have strong sustainable

goals, such as TreeCard a credit card provider that plants trees through the same channels as Ecosia with the profits they make. One of Ecosia's attempt to benefit the German society, was in 2018 when it offered 1 million euros to the firm RWE to buy the ancient Hambach forest that was going to be cut down in order to mine coal (Kroll, 2018). The offer was unfortunately rejected, and the project went ahead; however, this proved that Ecosia is not only focused on improving the environment and life of communities in foreign countries.

Ecosia's impact is mainly seen overseas in poorer communities. To be as impactful as possible in those communities, Ecosia focuses on the low-tech and affordable activity of planting trees and collaborates with a dozen organizations worldwide with whom it shares financial resources and benefits in return from their expertise. With these organizations, Ecosia is engaged in projects, such as in in Burkina Faso where it supports the organization Hommes et Terre in order to create a green belt to restore desertified lands in the attempts to bring the soil back to its past fertility and make it easier for the local population to grow crops. Ecosia values empowering the local population by including it in the entire project process from choosing the trees to plant, nurturing the trees, and eventually planting them (Joshi, 2017). This also provides local employment opportunities. By collaborating in this way, Ecosia promotes a certain degree of autonomy for the local communities and at the same time benefits from local knowledge about the specificities and challenges of the region.

Ecosia also collaborates with its "user community". The most noteworthy example is the *Ecosia on Campus Campaign* initiated in 2018, whereby Ecosia encourages loyal student users to create student associations to encourage more

students to use Ecosia and to advocate their university to make Ecosia the default search engine on computers available on campus (Fred, 2019). So far, this way of getting its community involved to promote its product has been a success, as 250 campaigns took place globally with 200,000 trees planted as a direct result, and seventeen universities globally having made Ecosia their default search engine (Ecosia on Campus, n.d).

Non-Fitting Category

As discussed earlier in this paper, it was expected that the Hankammer et al (2021) degrowth business criteria could not fully serve to highlight Ecosia's business model and practices, due to the fact that they were designed to analyze brick-and-mortar businesses. In fact, two main aspects of Ecosia could hardly be analyzed.

The first aspect refers to the technology used by Ecosia for its entire business activity. This includes the powerful servers and computers that provide the functionality for searches, the developing software that allows employees to manage Ecosia's platform, and the different tools that help employees to make sense of all the data that they continuously have access to (Ruch et al 2011). However, business degrowth criteria from Hankammer et al (2021) do not provide information on the compatibility of such technologies with the degrowth discourse.

Under the umbrella of technology lies another element of Ecosia that was hardly analyzable with Hankammer et al (2021) criteria. It refers to what Ecosia does with the personal data of its users. Unlike brick-and-mortar firms, digital firms have access to lots of user data (Zuboff, 2019). In the case of Ecosia, this includes its user's IP address, name, sex, age, and searches made in the past seven days, just to name a few (Bauer, persn. comm, May 4th; The Ecosia

Podcast). This aspect is very singular to digital businesses (Zuboff, 2019).

DISCUSSION

This section aims to discuss the results and find out where exactly Ecosia stands on the degrowth discourse. To do so, it is divided into three parts. The first part discusses which results are in line with the degrowth discourse, the second part discusses Ecosia aspects that are clearly not aligned with degrowth, while the third part discusses Ecosia's aspects that cannot be clearly considered as compatible or incompatible with degrowth.

What Makes Ecosia a Degrowth Company?

At first glance, Ecosia seems like a traditional search engine such as Google, Yahoo! or Bing, however, it is drastically different. Its main difference being that it is based on a hybrid business model, whereby at least 80% of profits are donated to organizations involved in reforestation (Criteria 1).

By donating to reforestation projects, Ecosia planted more than 125,000,000 trees worldwide so far, a clear contribution to combating climate change and to (re-)creating a right environment for biodiversity to thrive in identified areas (Criteria 1 & 3). Ecosia went a step further to protect the environment by only using electricity produced from their solar plant for its servers (Criterion 3). This makes Ecosia a carbon negative firm. Planting trees also brings value to the local populations (Criterion 9), specifically poorer communities and farmers who benefit from employment opportunities related to the low-tech activity of planting trees and are supported to grow healthier and more nutritious crops (Criteria 1 & 10). Indeed, trees drastically improve soil quality, and a healthier soil produces healthier crops which

results in higher yields for the local population (Criteria 1 & 9). Business degrowth authors highlight the importance that the environment and society should be given in the business model of a firm. In fact, the well-being of the environment and society lies at the core of the degrowth movement (Kallis et al, 2015), hence a firm neglecting these could not be considered as degrowth (Nesterova, 2018). Ecosia's impressive track record in creating positive externalities as a for-profit-non-profit business, is unquestionably aligned with the degrowth discourse (Speth 2012; Bloemmen et al; 2012, Nesterova 2018).

Another important aspect of Ecosia which is arguably in line with the degrowth discourse, is the fact that the company is not privately owned, as the Purpose Foundation owns 99.9% of its shares, and has a veto right on any decisions that could undermine its stewardship role. By doing this, Ecosia's management further highlighted the importance of their environmental and social core values and assured that the company would not bend to financial incentives. Such a decision is encouraged by the degrowth movement, as organizations with democratic ownership structures are less likely to externalize their cost (Johanisova et al, 2013) (Criterion 7). Alongside its democratic ownership, Ecosia also pledged full transparency of its business practices by making its monthly financial reports available to anyone with an internet access (Criterion 7). This goes far beyond expectations of business degrowth authors like Khmara et al (2018) who suggested that a degrowth business should hand in their financial reports if requested. Doing so is a way for Ecosia to foster trust with their users, and, most importantly, to demonstrate leadership by example towards firms aspiring to more social and environmental responsibility.

Furthermore, Ecosia encourages more businesses to follow its ways of conducting business by spending 5% to 10% of its revenue on green investments in firms that have strong "sustainable goals" (Criterion 2). For example, Ecosia has created in collaboration with French permaculture farmer and YouTuber, Richard Perkins, a competition for alternative farming projects to win 50,000 euros (Wolfgang, 2019).

Ecosia does not only encourage firms but also their users to be more conscious of the impact that they have on the environment and on society (Criteria 2 & 11). This has been done encouraging their users to click on the links of sustainable organizations next to which green leaf icon was placed (Criterion 5). Moreover, Ecosia is putting effort into making the relationship with its users more intimate through the use of different digital channels (Criteria 2, 5, & 11), but also by collaborating with different organizations such as We Love Green (Joshi, 2019). Furthermore, Ecosia also intimates their relationship with their users by allowing them to be more than users and become promoters' of Ecosia through different campaigns, such as the Ecosia on Campus campaign.

In a way, Ecosia has taken an activist role externally in educating aspiring firms and their users about beneficial actions that can be taken for the environment and society (Hauke, 2018; Khmara et al) (Criterion 2). Taking up an activist role is also encouraged internally among employees to promote a better work-life balance (Criterion 8).

A last feature of Ecosia that is well aligned with the degrowth discourse is its use of users' personal data. User data gathered by digital firms can be used for two different purposes (Zuboff, 2019). The first one is to improve the user's experience. This is arguably compatible with degrowth in the case of Ecosia, as it allows users to

indirectly support Ecosia's designers and engineers to create a strong, sustainable firm and consequently also improves the longevity of the service (Lizzaralde & Tyl, 2018). The other potential use of user data is for commercial purposes. Digital firms can create "profiles" of their users, to be traded on highly specialized markets with third party firms (Zuboff, 2019). This use of user personal data is undoubtedly not compatible with the degrowth discourse as it goes against the idea of a de-emphasis on profit maximization (Johanisova et al, 2013). Ecosia only uses personal data to improve user experience (Criterion 3). This data is encrypted and stored on a highly secure database for seven days only (Bauer, persn. comm., May 4th). No data is sold to third parties. Hence, although the topic of user data in the degrowth perspective may still require further research, so far nothing in Ecosia's use and management of user data was identified as going against degrowth.

Features Making Ecosia an Usual 'Growth' Company

The first aspect of Ecosia's business model that is incompatible with the degrowth discourse is their dependence on advertising (Spash and Doberning, 2017) (Criteria 4). The topic of advertisement is still debated among degrowth scholars, with some suggesting that non-coercive advertising for essential products and services could be a part of the degrowth discourse (Bocken and Short, 2016), and others stressing that the purpose of advertising being to increase (unsustainable) consumption does not have a place in the degrowth discourse (Spash and Doberning, 2017).

In any case, Ecosia's entire business model is monetized by advertisement. Without advertisement Ecosia would not be financially viable. The cost of this dependence is that any firm, even the most

polluting ones such as large car manufacturers or companies in the petroleum industry, are given a platform on Ecosia to promote their products and services. This is undoubtedly not in line with the degrowth discourse, as one of the aims of degrowth is to reduce absolute demand and limit demand for unnecessary resource use (Bocken and Short, 2016). Additionally, Ecosia uses advertisement methods that are based on what their users have searched for. For example, if a person types "shoes" in the Ecosia search bar, that individual will be offered an extensive number of advertisements based on that exact search (see Annex 1 for the actual search). This is of course a targeted and effective approach that increases the chance of the user clicking on the link and acquiring the product or the service.

Lastly, Ecosia's partnership with Bing, a Microsoft owned company, is also not quite compatible with the degrowth discourse. Collaboration between different organizations is deeply encouraged by different degrowth authors (Trainer, 1995). However, this specific collaboration raises two interlinked questions. The first concerns Ecosia's future development and ability to continue planting trees, which depend on Bing's willingness to continue the partnership since without Bing Ecosia does not have a functioning search index (Mager, 2014). In 2010, Google, which provided Ecosia with their search index, decided to put a stop to the collaboration. This led to an erratic search by Ecosia to find a new large search index willing to collaborate, eventually finding Bing. In case Bing decides to put an end to the collaboration, Ecosia will have to renegotiate the conditions or to find another search index for its service -but Google and Bing being the two biggest and most reliable search indexes- Ecosia would struggle to find another appropriate search index. Whichever

the case, Ecosia's planting trees capacity and longevity would potentially be negatively affected. For Ecosia to never find itself in such a position, it should invest into creating its own search index, which no doubt requires an investment far beyond Ecosia's current capacities.

The other question that this collaboration raises is about the nature of the collaboration. By collaborating with a multinational, Ecosia supports a capitalist firm to thrive. Although Microsoft puts effort into making its business more environmentally friendly by being carbon neutral since 2012 and aiming to be carbon negative by 2030 (Smith, 2020), in terms of the societal and community aspect of the degrowth movement, Microsoft lags far behind. This suggests that although Ecosia puts nature and the society at the heart of its business model and attempts to lead by example to inspire other firms, it engaged in a trade-off by collaborating with a firm with different, capitalistic values. This paradox is in contradiction with the degrowth movement that supports collaboration with like-minded companies only (Hankammer et al, 2021).

Dubious Features of Ecosia with Regards to Degrowth

Although many aspects of Ecosia's business model are well-aligned while some are not aligned at all with the degrowth discourse, for several of its business practices there is a certain hesitance about their compatibility.

A first feature that this paper is hesitant about is Ecosia's motivation to grow (Criteria 1). Liesen et al (2015) explain that degrowth businesses should aim to remain a certain size in order to maintain corporate values and the quality of the service high. This is, however, not the case of Ecosia that has been growing rapidly and is not planning to put a stop to it anytime soon

(Henderson, persn. comm., April 30th). In Ecosia's defense though, their growth is not motivated by financial incentives, but by the fact that they want to be able to plant more trees and increase their impact (Henderson, persn. comm., April 30th). Their underlying motivation to grow resembles more the one of an NGOs that wishes to increase their impact rather than a traditional firm that wishes to grow in order to pursue greater financial gains (Schmit et al, 2012). Therefore, it is difficult to decide whether Ecosia's motivation to grow makes it an 'usual' company or not in the context of this dissertation: this should be examined in a further study.

The second feature of Ecosia, which this paper is also hesitant about is Ecosia's high dependence on information technology (IT). As noted in the previous section, this aspect could not be analyzed using criteria from Hankammer et al (2021). Different degrowth authors still debate on the topic of information technology. On one hand, authors like Schumacher (1993) and Trainer (1995) suggest that where possible, simplified technology should be used because more powerful technologies create more environmental degradation and are also disruptive of habits and emotions (Daly, 1973). This side of the debate also supports open-source technologies in order to democratise technology (Fournier, 2018) (Criteria 11 & 5). On the other hand, some authors believe that it is unlikely that our current society will abandon technology (Nesterova, 2018) for this reason Mortiary and Hennery (2017) suggest that a firm approaching degrowth should use technology for the purpose of solving "real issues" (such as climate change or deforestation) rather than focusing on profit maximization. Ecosia relies on very complex and powerful technologies such as computers, servers, and algorithms, which are not open source nor peer-to-peer. Its

technologies are however used to alleviate societal crises such as climate change and desertification. In fact, Ecosia finds itself in a paradoxical position: on one hand, the technology used for its search engine supports reforestation projects that are part of the solution to societal problems, while on the other hand, the same technology is used to promote firms, including multinationals that worsen these societal crises. Thus on this aspect too, it is difficult to state whether or not Ecosia should be considered as a 'growth' or a 'degrowth' company. This too could be further investigated.

CONCLUSION

The purpose of this paper was to understand different ways in which a digital business can deviate from a growth paradigm. To find out, Ecosia, a firm that is widely recognized as sustainable and whose business model has common elements with the degrowth discourse, was chosen for the research.

The findings can be summarized in three main points. The first is that Ecosia is in line with degrowth in many ways, starting with its central concern for the environment and society, but also because of its democractic ownership, the empowerment of poor local communities overseas, improvement of work-life balance for its employees, and the way it deals with its users' personal data.

The second point is that several aspects of Ecosia are incompatible with the degrowth discourse, namely the role that advertising plays in its business model, which contributes to increasing absolute demand and (unsustainable) consumption, and its reliance on Microsoft's search indexes for the functioning of its search engine.

Third, for some of Ecosia's business practices it was not possible to determine

whether they are compatible or incompatible with degrowth. For instance, Ecosia seeks to grow when degrowth encourages companies to remain at a certain size. However, Ecosia's reason to grow is to plant more trees and benefit society, not for financial gains. Its approach to growth therefore resembles more that of an NGO seeking to be as impactful as possible. The degrowth movement is yet to elaborate more on such specificities. This and other dubious cases reveal areas where further investigation is needed.

Thus, although Ecosia tremendously benefits the environment and society through its different tree planting projects, and despite the fact that its governance model is compatible with a degrowth approach, the monetization of Ecosia's search engine which is what the entirety of Ecosia business model relies upon is not compatible with the degrowth discourse: Ecosia can therefore not be considered as a degrowth firm.

Digital entrepreneurs who aspire to apply degrowth principles can learn from Ecosia's case by applying its practices that are in line with the degrowth discourse, while improving on those that are not. Essentially, this paper suggests aspiring digital degrowth firms to only collaborate with like-minded organisations and not to depend on advertisement. Additionally, it is also encouraged for digital degrowth firms to use open-source and peer-to-peer technologies and make sure that these technologies result in positive societal and environmental externalities.

To end, the following areas were identified for further research:

- Degrowth business criteria developed by Hankammer et al (2021) having been mainly applied to small local organizations; it would

be interesting to investigate how to enlarge these criteria in order to analyze firms that are conducting business on a more global scale and thus have a larger environmental and societal impact;

- It would also be interesting to allocate a specific weight to each of the eleven criteria according to their relative importance, to enhance results;
- The compatibility of a hybrid business model with the degrowth discourse and how to consider cases when positive externalities are generated through a growth-based business model should be further explored;
- Different approaches to the management and use of user data should also be analysed in order to highlight which are in line with the degrowth discourse and which not;
- Finally, assessing the compatibility of artificial intelligence with degrowth emerges as an interesting future research area.

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Appendix A:

Table 1. Hankammer et al (2021) Degrowth Business Criteria

Principle	Corresponding Claims and Potential Means of application
Society 1) Repurpose the business for the environment and society	· Different understanding of success and de-emphasis of profit maximization (Johanisova et al., 2013) · The company is driven by a social mission: benefiting the community and stakeholders as central goal (Speth, 2012; Bloemmen et al., 2015; Johanisova and Wolf, 2012) · Satisfying 'real needs' as main objective of the company (Johanisova and Wolf, 2012) · Measure success by the environmental benefits resulting from a company's activities (Liesen et al., 2015) · Growth of an enterprise that externalizes its costs is not suitable in a degrowth society (Schneider et al., 2010) · A growth imperative is neither inevitable nor are growth mechanism always operative (Leonhardt et al., 2017) · Important to consider how profits are distributed and shared (Wells, 2018) · Keeping size of business at a certain level to maintain corporate values and/or high quality of products and/or services (Liesen et al., 2015) · Limit to smaller niches (Hörisch, 2015)

2) Promote the societal acceptance of degrowth thinking	· Promotion of a future beyond materialism, away from the 'more-is-better' paradigm (Lorek and Fuchs, 2013; Schneider et al., 2010) · Recognizing the vision and value enhancing role of companies (Hörisch, 2015) · Oppositional activism and educational campaigning (Khmara and Kronenberg, 2018; Haucke, 2018) · Internal and external communication of corporate values (Bocken and Short 2016; Hörisch, 2015) · Social marketing initiatives focused on moderating sales rather than manipulative over-selling (Bocken, 2017; Bocken and Short, 2016) · Increasing sustainability expectations of consumers by providing information about sustainability effects of products/services (e.g., providing background information about products/services to raise awareness) (Haucke, 2018) · Engage in real issues and talk about relevant values (Lorek and Fuchs, 2013) · Promote alternative models of social organization (Lorek and Fuchs, 2013) · Stronger coalition-building to contribute to a joint normalization of new behavior (Lorek and Fuchs, 2013) · Promote lifestyle movements (Dedeurwaerdere et al., 2017) · Using communication and information technology to enhance movement to post-growth initiatives (Haucke, 2018)
Environment 3) Reduce the environmental impact along the value chain	· Reduction of absolute resource use (Liesen et al., 2015) · Applying CE initiatives (e.g., creating value from waste, closed-loop, cradle to cradle) (Bocken and Short, 2016; Hobson and Lynch, 2016; Liesen et al., 2015) · Using recycled and/or renewable materials (Khmara and Kronenberg, 2018) · Using renewable energy (Khmara and Kronenberg, 2018) · Enhancing full life cycle efficiency and sufficiency (Lorek and Spangenberg, 2014)

4) Promote product and service design for sustainability	· Enhancing product longevity and repairability (Lizarralde and Tyl, 2018) · Offering a modular product architecture to facilitate maintenance during the usage phase (Hankammer and Kleer, 2018) · Price premium model (Bocken and Short, 2016) · Offering co-creation/co-design possibilities to customers (Kostakis et al., 2018) · Shared funding (Hankammer and Kleer, 2018)
Customers 5) Encourage sufficiency	· Reducing or moderating the absolute demand by influencing consumer behavior to limit overconsumption and unnecessary resource use (Bocken and Short, 2016) · Phasing out unsustainable consumption options (Lorek and Fuchs, 2013) · Normalizing new behavior through coalition building (Sekulova et al., 2013; Lorek and Fuchs, 2013) · Taking efforts to turn consumers into prosumers (Hankammer and Kleer, 2018) · Intimating relationships to consumers (Bocken and Short, 2016)
6) Enable usage and sharing of products	· Facilitating sharing of products rather than delivering ownership (e.g., renting, leasing, shared use) (Hobson and Lynch, 2016) · Peer-to-peer services (e.g., car sharing, home sharing) (Hobson and Lynch, 2016) · Offering additional service solutions next to the product (e.g., repair services) (Bocken and Short, 2016; Bocken, 2017) · Demand reduction services (Liesen et al., 2015) · Promotion of reuse of products (e.g., by creating second hand markets) (Bocken and Short, 2016)

Employee & Management	
7) Demonstrate leadership commitment and implement democratic governance	· Democratic ownership structure (Kunze and Becker, 2015): 'one-member-one-vote' principle (Johanisova and Wolf, 2012) · Promotion of participatory decision making through peer governance (Kostakis et al., 2015) · Strong commitment to corporate values and to oppose the trends of business-as-usual (Bocken and Short, 2016) - Strong personal moral philosophy and values of top management (Bocken and Short, 2016) · Transparency of practices and policies (Leonhardt et al., 2017; Khmara and Kronenberg, 2018)
8) Improve the work-life balance of employees	· Promoting collaborative work and creating a working atmosphere based on trust and equality (Bloemmen et al., 2015; Rommel et al., 2018) · Providing flexibility in working time and place (Liesen et al., 2015) · Reduction of working hours and work productivity (Nørgård, 2013; Speth, 2012) and/or enabling job sharing (Sekulova et al., 2013) · Training mindfulness to reduce stress and develop attitudes and creativity (Siqueira and Pitassi, 2016)
Communities	
9) Be locally embedded and community-based	· Benefiting the local community as central goal (Liesen et al., 2015) · Using local resources and products (Kostakis et al., 2015) · Generating positive externalities to the local community (Hankammer and Kleer, 2018; Kostakis et al., 2018) · Localized provisioning patterns (Hobson and Lynch, 2016; Liesen et al., 2015) · Local production and manufacturing (Hankammer and Kleer, 2018) · Enabling autonomy and conviviality of local communities (Hankammer and Kleer, 2018) · Supporting collaborative creation at a local level (Kostakis et al., 2015)

10) Enable autonomy and capacity development	· Supporting capacity development of disadvantaged populations (Pansera and Owen, 2018; see also Peredo and Chrisman, 2006) · Focusing on low-tech affordable and autonomous solutions (Pansera and Owen, 2018) · Frugal innovation as important part of enabling autonomy (Bocken and Short, 2016)
11) Be open to sharing resources	· Creating global knowledge networks and partnerships (Bloemmen et al., 2015) · Following an open design strategy and sharing the product design or technology (Haucke, 2018; Kostakis et al., 2015; Wells, 2018) · Exchange of skills and knowledge between organizations and society in general (Kostakis et al., 2018)

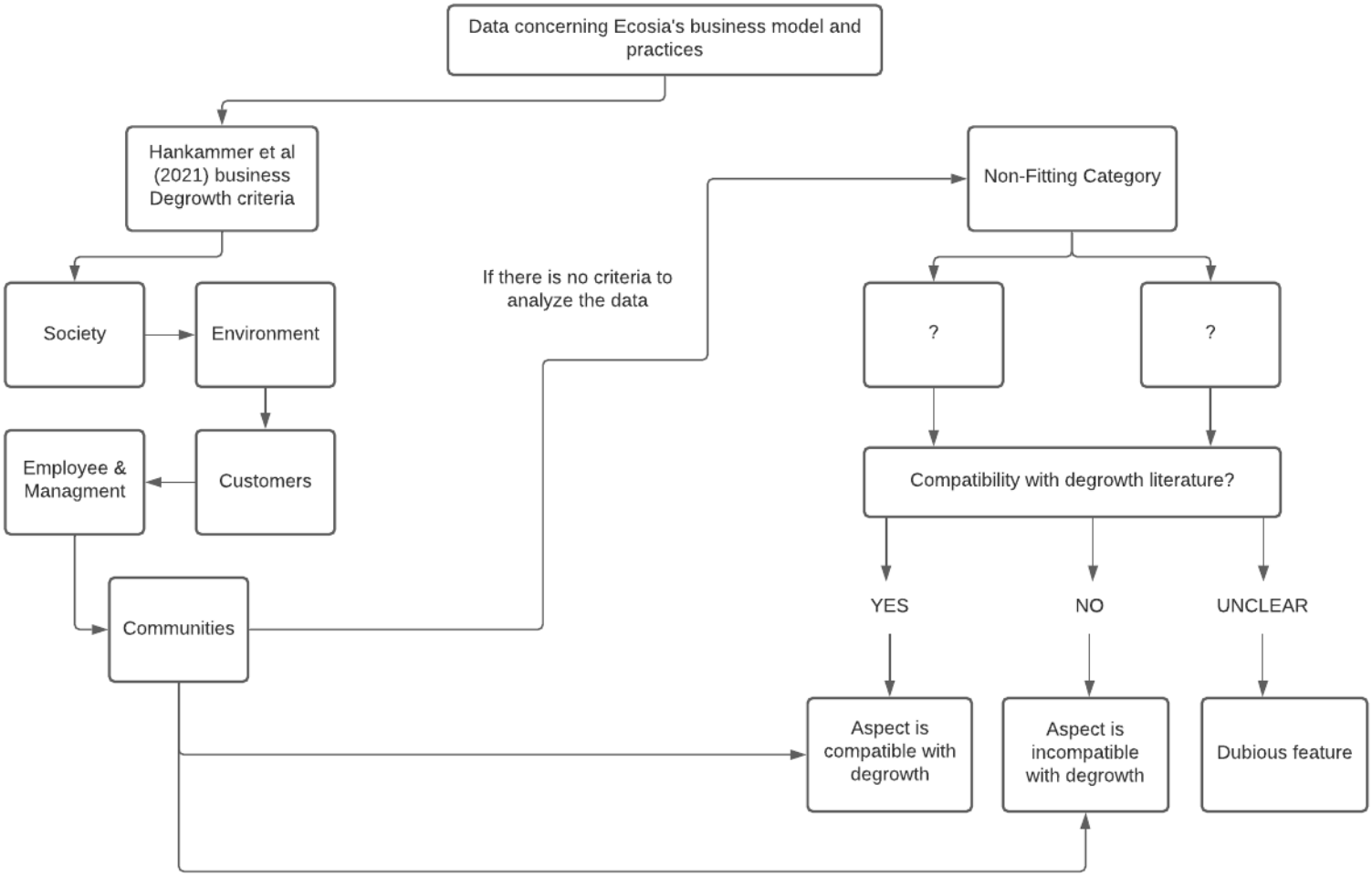
Appendix B:

Table 2. Data Gathering Methods

Data Collected	Type of Data
Ecosia's website, blog, FAQ page, podcast	Secondary data
Interviews and articles conducted by medias	Secondary data
Previous research	Secondary data
Communication by email	Primary data

Appendix C: Methodology

Figure 1. Methodology



Annex 1: "Shoes" search on Ecosia

Note that the first three links are all advertisements.