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Chapter 13
Green Bonds: Debt at the crossroad between finance, law and ecology

Abstract: Green bonds are one of the latest financial instruments to join in the game of financing for climate change mitigation and adaptation. Presented as innovative, they are increasingly promoted throughout the world as a low-cost and appealing way for public and private actors to access liquidity to finance activities or projects that contribute to climate change mitigation and (although in a limited way) adaptation. However, they are just a specific way of for public and private actors to raise capital through debt. At the crossroads between law, finance, society and environment, green bonds raise important questions and offer a privileged entry point to discuss the implications of adapting mainstream financial responses, that is, debt, to address the ongoing ecological crises. This chapter provides a multi-disciplinary and critical overview of green bonds as a financial instrument that keeps together multiple actors and spaces and offers some reflections on specific cases that illuminate the manifold nature of this instrument and some of the most significant concerns that they raise. The aim is to draw an introductory framework to green bonds and enrich it with a critical assessment of green bonds' expansion, current uses and limitations.

Keywords: green bonds", debt, territories, financial accumulation, social impacts, COVID-19

Introduction: Debt for the green transition

For years, climate finance was considered a high-risk and niche territory for environmentalists and socially oriented enterprises. However, between 2010 and 2019, more than EUR 2.28 trillion went into building new renewable capacity globally, primarily solar and wind energy, demonstrating a new appetite for projects that contribute to climate change mitigation and, to a lesser extent, adaptation (United

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Nations Environment Programme 2021). More recently, the combination of the climate emergency, the COVID-19 pandemic and the global recession has strengthened the idea of privately financing green growth into mainstream political, academic and business spaces.

The normalisation and universalisation of sustainable finance is visible through the adoption of the multiple instruments and discourses that are mapped and discussed in this edited volume. All the available mechanisms, from environmental, sustainable and governance (ESG) guidelines to the EU Taxonomy on green investments, share the sense of climate urgency and the commitment to address decades of the destructive Anthropocene with the desire to maintain economic growth and the functioning of the structural premises of capitalism (Escobar 1994).

Of all the tools that green and sustainable finance uses to celebrate the marriage of decarbonisation, economic growth and finance, green bonds have been considered one of the most prominent (Park 2018). According to the definition that is adopted by most practitioners and academics working on the topic (e.g., Jones et al. 2020), green bonds are debt instruments whose proceeds are earmarked to fund projects that are associated with environmental benefits and have been described by academics and practitioners as a promising financial tool with the potential of being a straightforward and easy way of financing the low-carbon transition (Heine et al. 2019). In the year 2020, an estimated total of USD 290.1 billion was issued in green debt globally.

The most recent academic discussions about green bonds present them as a great candidate to fill the financial gap in the transition to a low-carbon economy (Campiglio 2016; Fabian 2015; Flammer 2018; Sachs et al. 2019; Weber and Saravade 2019) thanks to their potential to mobilise private capital into green investments and projects (International Financial Corporation 2016). Because bonds can be issued and bought by a multiplicity of actors (multilateral banks, states, subnational administrations, corporations, etc.), and because they constitute a safer form of investment than equity, the green bond market is thus increasingly seen as a natural fit for low-carbon and climate-resilient infrastructure (Organisation for Economic Co-operation and Development 2017).

For some authors, green bonds are also said to promote intergenerational fairness, since they allow the next generations, that is, those who are going to benefit from green investments realised today, to pay for the efforts of the current generation (Flaherty et al. 2017). Backed by this academic literature and by the work of key financial actors, green bonds now occupy a central place in the green economy narrative and political framework. Governments, cities, corporations, certifiers, institutional investors, international financial institutions and banks alike are increasingly convinced of the potential of green bonds and their markets are expanding all over the world.

In this chapter, the authors provide a general overview of green bonds as a popular and growing way of financing the green transition with the intention to highlight controversial issues that are currently dismissed by mainstream academic

discussions. This is done by relying on a literature review of the most recent academic articles on green bonds, on public documents and on reports published by different actors engaged with the green bonds market. The chapter then illustrates contentious issues with the use of specific cases whose understanding has been deepened in the context of the research conducted by the Green Bonds from the South collective, of which all authors are part. Overall, the authors provide a critical sociolegal analysis of green bonds as a debt tool at the crossroads between law, finance, ecology, past, present and future.

The chapter is structured as follows. The first section describes the financial logic behind green bonds, their origins and structures of governance, as well as the processes and actors that have turned this financial instrument into a popular form of sustainable finance. Then, it discusses the way in which green bonds operate on the ground and introduces a set of five criticalities that should be considered when actors borrow green capital from the global market. With the use of concrete examples, the five subsections engage both with the relationship between green bonds and the mechanisms of the unequal global economy and with the way in which green debt deals with the social and environmental complexity of territories where projects are realised. This approach to the real life of green bonds is used to flag existing gaps in the academic discourse around green bonds and to suggest that more attention is paid to green debt as a mechanism to think about the future of society and the economy.

The origins, financial logic and governance structure of green bond

A bond is a contract between a debtor and a creditor through which the latter (the investor) lends money to the former (the issuer), who promises to repay the sum received (principal) along with an extra sum that can be variable or fixed (coupon or interests). In general terms, a green bond is no different from any other bond, apart from one aspect: when the issuer labels or designates the bonds as green it is signalling that the proceeds raised by that bond are earmarked to fund projects that are considered to have environmental benefits. The fact that the funds will be used for green purposes is thus what distinguishes this kind of bonds from vanilla bond, – that is, debt instruments that do not characterise nor restrict the destination of the money that is collected.

From multilateral development banks to municipalities, states and corporations

The idea of issuing bonds for environmental purposes was initially linked to the work of multilateral development banks. In 2007, the European Investment Bank issued a Climate Awareness Bond whose proceeds were dedicated to renewable and energy efficiency projects (International Financial Corporation 2016). Shortly after, the World Bank responded to the demand of a group of Swedish institutional investors and issued a US 290 million debt instrument that was the first to be labelled as green and whose purpose was to raise funds for projects seeking to mitigate climate change or help affected people adapt to it (World Bank 2019). According to the data elaborated by the Climate Bonds Initiative (CBI), development banks were not only responsible for the first issuances of green bonds worldwide but backed almost all the issuance throughout the first years of the expansion of the market, being the sole issuers up to 2012 and the leading issuers up to 2016 (Data available at: https://www.climatebonds.net/market/data/).

Since the early 2010s the use of the green bonds market has experienced remarkable growth (see Figure 13.1). In particular, the signing of the Paris Agreement in 2015 represented a landmark for the rapid expansion of the green bonds market, with the twenty-first Conference of the Parties (COP21) also becoming the stage for the issuance of the Paris Green Bond Statement by a group of global investors committed to supporting policies for the development of a long-term green bond market as a climate solution (Whiley 2015). Since then, green bonds have been thus recognised as a key player in the implementation of the Paris Agreement (OECD 2017; United Nations

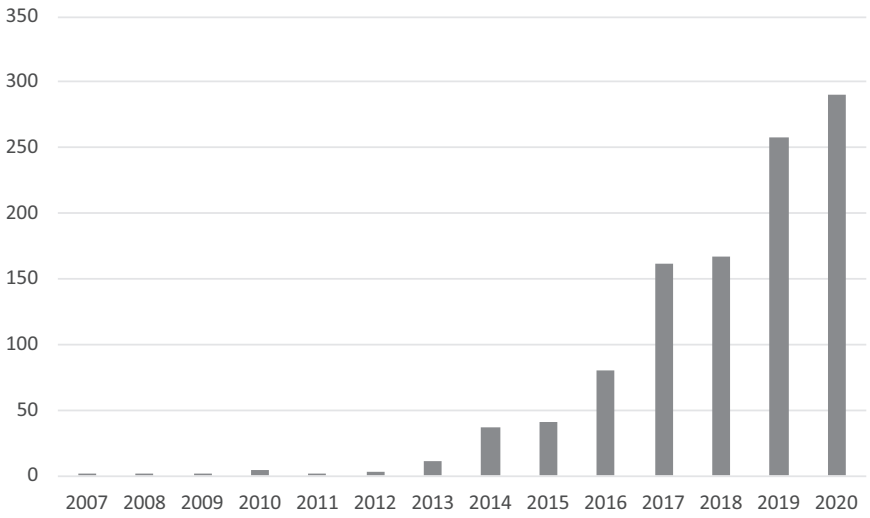

Figure 13.1: Based on data elaborated by the CBI.

2016) and, as a consequence, increasing attention has been paid to developing their normative horizon, standards and governance mechanisms (Bishop 2019).

The expansion of green bonds has occurred in tandem with the diversification of the players in the market. The year of 2013 was a hallmark in this sense. In October, the city of Gothenburg in Sweden became the first city to issue a green bond, with the proceeds being used to fund municipal projects in the areas of public transport, water management, energy and waste management projects (Nassiry 2018). In November of the same year, it was the time for the début of corporate issuers (Flammer 2018), with Vasakronan, Sweden's largest property company, issuing a green bond associated with its broader sustainability programme and commitment to reduce the company's carbon emissions and energy use (Nassiry 2018). A few years later, in 2016, Poland became the first country to issue a green sovereign bond (Whiley 2016) adding a new category of issuers and a new opportunity for the market to invest in the green transition. By now, all these broad categories of issuers – supranational developmental banks, subnational entities, corporate (financial and non-financial) and countries, – are issuing green debt with regularity and have thus contributed to the expansion of green bonds both in financial and political terms.

With the consolidation and diversification of the players, the importance of development banks has decreased. Green bonds are now a debt instrument mostly mobilised by corporations and governments (see Figure 13.2). At the same time, the consolidation of these forms of financing has proved to be appealing to public and private actors in the Global South, with an increasing share of green bonds issued in emerging markets (International Financial Corporation and Climate Bonds Initiative 2018). However, Europe and North America are still the leading regions in terms of issuance.

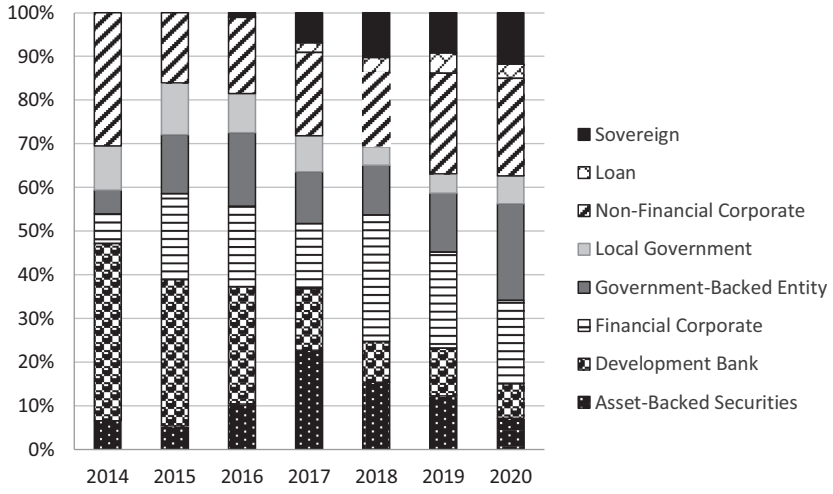

Figure 13.2: Issuer type 20142020.

By August 2021, the CBI reported that cumulative green bond issuance was US 1.3 trillion (CBI 2021a). European public and private actors had issued US 590 billion, North American US 294 billion, Asia-Pacific US 289 billion, supranational organisations US 100 billion, Latin American US 26 billion and African US 4 billion. Undoubtedly, each region has different issuers' profiles. For instance, the largest source of green debt in the US – with US 52.9 billion issued in 2020 – is represented by cities (CBI 2021c). On the contrary, in countries in the Global South, like Brazil, it is private debt that tends to occupy a higher share of the market for green bonds, with land use and forestry as two important destination for green bonds' proceeds (Miola et al. 2021).

Despite the geographical difference, green bonds issued in the North and in the South tend to share an element, that is that most of these instruments are issued in so-called hard currencies. In 2020, 85% of the issuances (in value) where done in hard currencies, with the euro as the leading currency, followed by USD and RMB (CBI 2021c). With the exception of China, one of the leaders in issuance and purchase of bonds with a green connotation, almost all of the green debt is issued and traded in the Global North, with the stock exchanges in Luxembourg, London and Amsterdam competing to become the main hub. As discussed in Section II, this poses relevant questions in terms of the legal structure of the bonds (i.e., the contracts will be submitted to a law and jurisdiction that are different from the ones of the country where the issuer is located), but also in terms of risk distribution, flow of capital and value distribution (Ferrando et al. 2021).

In terms of sectors, the CBI data platform (2021b) on climate bonds reports that green bonds have funded projects in areas such as clean energy (35%), low-carbon buildings (26%), low-carbon transportation (23%), and sustainable management of water resources (6%). Importantly, the destination of funds raised through this form of debt may not be the same of the place of issuance. An example developed in Section II is the issuance, in 2014, of a green bond by the French electric utility corporation GDF Suez to fund renewable energy which included projects in the Amazon region, something that was later criticised for its impacts on ecosystems and local Indigenous communities. As an increasingly popular thematic financial tool that is issued by a multiplicity of actors across the planet to finance projects in all continents, green bonds soon required new governance structures and, in some cases, judicial and financial arrangements that could bring new territories and actors within the sphere of finance (Ferrando et al. 2021; Miola et al. 2021).

Governance and (self)regulation of green bonds

The main difference between vanilla and green bonds is the contractual commitment by the issuer to use the proceeds to finance specific green projects. Ensuring the green nature of this commitment is, therefore, considered to be key. Although issuers can establish their own criteria and nominate as green whatever project

they want, the most common mechanism to ensure the greenness of a bond is to subordinate the issuance to the application of private or public instruments of governance such as standards, procedures, taxonomies and assessment criteria.

Because the adoption of common and legitimate denominators provide standardisation, universalisation and reduce the asymmetry of information (Bishop 2019; Weber and Saravade 2019), standards on what counts as green occupy a central space in the governance apparatus of green bonds and in most of the academic literature on the topic. It is thus noteworthy that definitions of green and procedures for certification not only regulate a pre-existing market but constitute it from within and provide the conditions for its expansion and reproduction beyond its original boundaries. After all, without accepted definitions of greenness that transcend individual transactions, there could not be a global market for green bonds.

Currently, private governance mechanisms with a voluntary character (Park 2018) occupy a central role in the establishment and governance of green bonds. Under the private label, two regulatory strategies can be identified: on the one hand, there are standards set by third-party organisations which are not part of the issuer-buyer contractual relationship and provide guidelines for issuers based on steps that shall be followed, as well as on eligible assets that can be defined as green.

One of the most prominent standards used in the green bonds market is the Green Bond Principles (GBP) developed by the International Capital Market Association (ICMA). The GBP are purely procedural standards that concern the procedures to be followed by the issuer to ensure transparency of the commitment that is being made (Park 2018). According to the GBP, a bond may be considered green if the issuer complies to certain transparency criteria, describing (i) their use of proceeds; (ii) the process for project evaluation; (iii) the management of proceeds; and (iv) publicly reporting the use of proceeds (ICMA 2021) Therefore, they do not impose 'any substantive requirements regarding what should qualify as a "green" use of proceeds' (Bishop 2019: 381) and do not enter into the details of specific economic activities that can or cannot be labelled as green. Overall, the focus is on the reduction of greenhouse gases and contribution to climate change mitigation and adaptation.

On the other hand, there are governance regimes that offer substantive standards to green bonds and identify specific activities that can (and should) be financed through these tools. They comprise green taxonomies as 'a classification system identifying activities, assets, and/or project categories that deliver key climate, green, social or sustainable objectives with reference to identified thresholds and/or targets' (ICMA 2020: 5). This is the case, for example, of the Climate Bond Standard and Certification Scheme (CBS), that comprises (i) a broad taxonomy and (ii) sector eligibility criteria, both designed for 'contributing to the rapid transition to a low-carbon and climate-resilient economy in line with the goal of the Paris Climate Agreement' (CBI 2021b: 22). As private actors that compete for the same market, service providers attempt to establish their standards as universal not only by

convincing private issuers to adopt them, but also by actively lobbying policymakers and participating in policy processes (Ferrando and Tischer 2020).

In this context, it is important to stress that second party opinion (SPO) providers often develop their own criteria and methodologies. For instance, the Centre for International Climate and Environmental Research (CICERO), the leading SPO provider in the global market, developed the shades of green methodology, which takes the GBP as an overall guide, but 'pushing much deeper on the definition of "green" to reveal potential climate and environmental risks' (2016: 3). CICERO provided the SPO for the first World Bank green bond in 2008, said to have stablished a blueprint for the market. In the operation, CICERO had an import role in translation of financial and scientific languages (World Bank 2019). In the Brazilian context, Sitawi is the most relevant SPO provider: it developed its own taxonomy which is applied whenever they are hired to assess green bonds' issuances (Sitawi 2018).

Along with *ex ante* definitions, the governance system is also composed by pre- or post-issuance reviews. Pre-issuance reviews analyse whether a specific project complies with the conditions and characteristics of a certain standard or with specific private criteria to be deemed as green. Types of pre-issuance reviews include third-party assurance, SPOs, green bond ratings and pre-issuance certifications. Post-issuance reviewing means checking whether or not the use of the proceeds effectively respected the green conditions that were assumed by the issuer. These kinds of reviews include second or third-party assurance reports, impact reporting and the post-issuance verification for the maintenance of a certification.

Although private and voluntary criteria and procedures to govern green bonds still predominate (Park 2018, 2019), public entities have slowly undertaken regulatory interventions in the area of green finance with the aim of promoting, streamlining and defining the boundaries of green bonds' issuance. This is reflected both in the adoption of public taxonomies and in the use of sovereign prerogatives to incentivise the issuance of green bonds, for example, by means of fiscal benefits (Park 2019). In Singapore and Malaysia, for instance, policies of subsidising extra costs in green bond issuance have been adopted, covering the costs of extra costs such as the cost of external reviews (Azhgaliyeva, Kapoor, and Liu 2020). In Brazil, a bill in the national congress provides fiscal benefits for certified green debentures.

For what concerns the introduction of public taxonomies, China was the precursor. Between 2015 and 2016, the People's Bank of China (PBoC) and the National Development and Reform Commission published two sets of green bond guidelines of a mandatory character (CBI 2021a). The latter applied to green domestic corporate bonds and offered several details about projects and areas to be considered as priorities for financing. The PBoC Green Bond Endorsed Projects Catalogue applied to financial entities and was less specific, but wider in reach (CBI 2019a), and was reviewed in April 2021 after critiques of greenwashing due to the reference to nuclear energy and the inclusion of clean coal, coal-fired power coal mining and coal

washing (Baiyu 2020; Boren 2016). By 'regulating the domestic market of green bond,' the PBoC aims at giving 'full play to the role of green finance in promoting structural adjustment and transformation, accelerating the ecological civilisation construction and facilitating the sustainable development of the economy' (People's Bank of China 2020: 1).

In 2017, the Securities and Exchange Board of India (SEBI), the Ministry of Environment Japan and, at the international level, the ASEAN followed a similar path and introduced voluntary guidelines for the issuance of green bonds (ASEAN Capital Markets Forum 2018; Securities and Exchange Board of India 2017). Issuers of private governance schemes such as the IMCA played a crucial role in some of this emerging regulation, mainly because of the countries' intention to implement a regulation that was aligned with internationally accepted and widely used standards and facilitate and streamline national and cross-border issuances (Kawabata 2020).

The European Union, the leader in terms of annual issuances, is going its own way. On July 6, 2021, the European Commission proposed a regulation on a voluntary European Green Bond Standard (EUGBS) as part of recently approved EU Green Deal and directly linked with the content of the EU Green Taxonomy Regulation for sustainable finance, a piece of legislation issued in 2020 and directly linked with the work of the Technical Expert Group (TEG) on Sustainable Finance (European Commission 2020; EC Technical Expert Group on Sustainable Finance 2020). The purpose of the EUGBS is to create a European homogeneous standard available to all issuers of bonds interested in using the EU green label so to increase the effectiveness, transparency, comparability and credibility markets for green bonds with the aim of encouraging market participants both invest in and issue EU green bond related products (European Commission 2021).

Despite the voluntary character, the EUGBS competes for global relevance and aims at attracting investors' appetite by relying on standardisation by adherence to the EU Taxonomy, full transparency and the requirement of a third-party review conducted by external reviewers registered with and supervised by the European Securities Market Authority. In the intentions of the Commission, the voluntary nature of the standards should be balanced by its wide adaptation and recognition, as evidenced by the Commission's statement that new EUGBS will be open to any issuer of green bonds, including companies, public authorities, and also issuers located outside of the EU (European Commission 2021).

Public support for the market may also come in the form of technical assistance for potential issuers and governments". This is case, for instance, of the technical support provided by intergovernmental organisations such as the Inter-American Development Bank (IADB) and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ, a German development agency) for financial institutions and national development banks in modelling green bonds issuances. Through the Green Finance for Latin America and the Caribbean Platform (GFL) launched in 2016, the IADB offers informational support to promote greater transparency and comparability to investors, as well

as financial support through anchor investments and guarantees to de-risk the issuance of thematic bonds and favour their adoption (Gabor 2021; GFL 2021).

A similar role is performed by national development banks that use official development aid money. A recent report by the Cities Climate Finance Leadership Alliance (2021) urges that national development banks help the development of sustainable urban projects. The report mobilises a specific example of Mexico's state-owned development bank Nacional Financiera (Nafin), which issued green bonds in 2015 and 2016 for wind and hydroelectric projects in the country and paved the way for the Mexico City issuance of green bonds. The Brazilian case appears similar, with the Brazilian Development Bank (BNDES) claiming to be the first Brazilian bank to have issued green bonds in the international market for the development of wind and solar projects in the country.

Along with the issuance of standards and taxonomies, these public interventions play a central role in structuring new markets and fostering their global reach. Moreover, they reinforce the idea that green bonds are not only a matter for the private sector, but that the public and private realm are co-constructing them, their market and the greenness of the activities that uphold them. Given that private and public actors are increasingly cooperating to put green bonds at the centre of the climate transition and given that mainstream and policy literature is generally enthusiastic about the potential of green bonds, the next section uses concrete case studies to highlight five reasons for critical scrutiny and reflection.

When green bonds touch base: Environmental and political contestation in the Global North and South

For the time being, most studies and reports around green bonds are dedicated to mapping and assessing the necessary measures to foster this market (Arruti and Bruzón 2018; Mathews and Kidney 2012). Another important stream of literature is interested in mapping the issuers, assessing the role of third-party verifiers and reflecting on yields, volatility and liquidity of green bonds (Bachelet, Becchetti, and Manfredonia 2019; Sanderson 2018). Other authors focus on the impact of issuing green bonds on firms' profitability and provide considerations on the link between credit rating and the use of this financial tool (Barua and Chiesa 2019).

Another area of intense academic debate is around the existence of the so-called greenium: the price differential between green bonds and plain vanilla bonds and the price reward for green bonds issuers who decide to commit to green debt rather than issuing plain vanilla bond. So far, the literature is not conclusive regarding this discussion and the financial case for these green instruments and whether or not going green is actually rewarding for issuers or buyers (or neither of them) (Larcker and Watts 2020).

Therefore, mainstream literature on green bonds is based on the assumption that green bonds as a financial product is desirable as well as effective in dealing with the imperatives of the climate emergency and hence has to be promoted and diffused. The question regarding which option would be best, whether change finance or less finance (Hache 2021), is seldom posed. On the contrary, green bonds tend to be characterised as an exclusively technical and unproblematic solution that has the merit to reconcile economic growth with climate change adaptation and mitigation.

A more critical literature is nevertheless emerging, one that take green bonds as a financial product that is embedded in the complexity of the socioenvironmental relationships and disputes that go beyond the contractual agreement between issuers and buyers. The next five subsections draw on the authors' own research and this emerging critical literature and illustrate key issues around the green bonds market that the authors hope will receive trans disciplinary academic attention. These five points of structural and immediate tension should be put at the centre of intellectual and political debates on the future relationship between finance, law, environment and society.

If everything can be green, what is green?

The key distinctive character of a green bond in respect to a vanilla bond is the qualification of the use of proceeds. Defining what activities or projects are green and can be eligible to be funded is a condition for a green bond to be borne and dealt with by the described governance regimes. Such definition, however, is as fundamental as potentially controversial.

In 2014, a EUR 2.5 billion green bond issued by the French electric utility corporation GDF Suez (renamed Engie in 2015) to fund renewable energy was rewarded with the Pinocchio Award (a prize promoted by Friends of the Earth, ActionAid France and CRID Research and Information Centre for Development) for the abusive and deceiving communication campaign on the environmental merits of the projects being funded. Among other projects, the proceeds had been used to finance the Jirau dam in the Madeira river in the Amazon, accused of being a destructive project with enormous and irreversible impacts on ecosystems and local Indigenous communities (Brightwell and Hurwitz 2014).

Public taxonomies can be equally problematic. In 2016, for instance, the Central Bank of China released its guidelines for establishing a green financial system, a taxonomy of project categories that could be considered green and, therefore, financed through green bonds (Yu 2016). Among the categories was the oxymoron clean coal, another way of justifying investments in coal-fired power. Not surprisingly, the guidelines were criticised for being irreconcilable with a horizon of a green economy.

According to Unearthed and Greenpeace (Boren 2016), six coal projects received roughly USD 300 million through the issuance of green bonds in China.

An equally controversial definition of green was adopted in 2017 by Repsol, the Spanish oil and gas giant when the company announced the issuance of green bonds worth 500 million euros to finance energy efficiency projects (Chasan 2017). In the issuance, Repsol explicitly endorsed the Green Bonds Principles and submitted the bond to the external review of an SPO (Repsol 2017). However, the proceeds were used in downstream activities, refineries and chemical facilities that were later criticised as being hardly compatible with a green economy (Viegas 2017).

These kinds of cases have opened the door for green bonds to be questioned as potential vehicles of greenwashing. After all, if industries such as oil and coal can be green or clean, then what is green? In response, the content of universal standards and the adoption of widely accepted definition of green have become key areas of debate. For some authors, they represent the primary challenge in ensuring the integrity of green bonds (Shishlov, Nicol, and Cochram 2018). For others, the process is central but is also characterised by risks and criticalities (Bishop 2019; Trompeter 2017).

Indeed, ensuring that a bond labelled green actually funds activities with environmental benefits has become a pivotal issue for policymakers, financial institutions and academics. One of the main practical challenges raised in the mainstream literature is precisely protecting product integrity (Jones et al. 2020) both for the planet and investors. As it is argued, if a certain level of environmental integrity is not guaranteed when a bond is qualified as green, issuers may be exposed to reputational damage, investors may turn away from them and, in the long-run, the market as a whole may not hold up and the opportunity for investors to participate in the green transition via buying lower risk tools and financially benefit from them will be reduced (Shishlov, Nicol, and Cochram 2018).

In addition, greenwashing through green bonds could be read as a breach not only of contractual clauses but also of the obligations that countries have assumed with the conclusion of the Paris Agreement. This becomes even more problematic in the case of issuances being made by public entities and of those with public benefits and subsidies.

In short, the green promise, if false, implies the financing of activities that will not reach objectives that are of public interest, having the potentially perverse effect of legitimising and facilitating environmentally harmful activities or a slow-paced transition that is incompatible with the urgency of the current situation. However, the possibility of green default, that is, that debtors are required to repay the whole sum received plus interest because of the breach of their contractual obligation to greenness and the legal relevance of green bonds *vis-à-vis* the obligations assumed by states in 2015 and with their national contribution plans are two unexplored legal terrains.

The funding of coal or oil projects may appear evidently incompatible with the layperson's notion of green, and indeed they are excluded by several of the governance regimes described above. Beyond that, however, the spectrum of greenness is a controversial space whose boundaries are defined by means of political pressure, economic strategies and visions of the future. For example, solar, wind and hydroelectric energy projects that may appear more in principle totally aligned with the notion of green may be linked with land grabbing, environmental disasters and deforestation, human rights violations and greenhouse gas emissions due to the extraction of the minerals needed for these technologies. The same issues are present in the forestry industry and other economic activities that may be generally associated with a notion of green but can be associated with several socioenvironmental problems. In Brazil, for example, several green bonds have been issued in this sector, including some that have been certified via the GBP principles and submitted to complex external reviews. This very sector, however, is subject to strong criticism by Indigenous people, civil society organisations and academics because of the promotion of detrimental monocultures, the change in use of the land, the extraction of water and the impact on Indigenous communities' rights.

What constitutes a green activity is not predetermined and should not be dissociated from territorial ecologies and dynamics. As a matter of fact, green is a social, political and cultural problem and not a mere technicality (Swyngedouw 2010). Efforts of standardisation and universalisation of green are thus facing inevitable conflicts: if a considerable degree of variation has to be accommodated, they reduce the universal nature of the standards and increase the costs of transaction. In contrast, if they endorse a standardised approach, they may lose sight with local specificities and histories. Similarly, if public and private setters of standards adopt a strict definition of what constitutes an environmentally sound activity, less activities may qualify, costs may be higher and financial returns may be limited; while a broader scope may represent an opportunity for this source of funding and investments to thrive.

Green without social: Saving an unequal planet?

A second key issue related with the global expansion of green bonds – barely touched by mainstream literature – regards their relationship with the impact that green debt has on people's livelihoods and human rights, both in terms of increasing debt and because of the materiality of the projects that are financed. In other words, the attention on the environmental character of the bonds is such that there is scarce attention to the way in which green bonds incorporate (or not) social considerations and on the social repercussions of the expansion of debt as an instrument for environmental transition.

Past work on the socioeconomic impact of debt and ongoing empirical research suggests that green bonds that are built around the urgency of addressing climate change without grasping the interconnection between environment and society and can reinforce social inequalities in the territories where the economic activities are undertaken or even generating more social and environmental conflicts on the ground. For Jenkins (2021), the history of municipal bonds in the United States is intertwined with the history of racial inequality. In particular, the subordination of the bonds' market to credit scorings and the assessment of economic and political risk meant that lending to majority-black cities was considered riskier and, as a consequence, less appealing to investors and less prone to be financed. According to Ponder and Omstedt (2019), such racialised disparity is still visible in the contemporary market of municipal bonds, with the individual median interest rates for the largest black-majority cities exhibiting a bias against these cities in comparison with the median of all municipal bonds issuers in the US. Higher interest rates mean more expensive credit and that black-majority cities still have to pay more to access funding for their basic infrastructure and for financing the green transition.

Looking at more recent situations, Bigger and Millington (2020) assess green municipal bonds issued in Cape Town and New York during the time of austerity, pointing out that they are largely associated with the recreation of existing inequalities as well as with the intensification of risk borne by poor people of colour. Similarly, Hilbrandt and Grubbauer (2020) show that the issuance of green municipal bonds in Mexico City did not have any positive effect on poor communities, thus did not address the underlying conditions of social injustice and marginalisation that make certain people more vulnerable to climate change.

Finally, Miola et al. (2021) develop a case study that goes beyond urban inequalities and looks at green bonds in the forestry sector in Brazil to argue that the construction of green bonds as merely environmental tools overlooks social and ecological struggles on the ground that cannot be ignored. In this case, the mechanistic approach behind green bonds tends to prioritise carbon dioxide reduction and transforms human rights into a risk that has to be minimised, thus ignoring the vast literature that has criticised the socioecological impact that the forestry sector has on the Brazilian territory as a complex interaction between people and nature. This is not only about excessive use of pesticides, the depletion and pollution of water resources and reduction of biodiversity that have been constantly emphasised as problematic implications of the forestry sector in the country, but about the inherent incompatibility between certain economic activities (i.e., the expansion of eucalyptus monoculture) and the lives and economies of people in those territories.

In order to avoid the reproduction of climate injustice through the expansion of green finance, it is thus essential to reflect on the capacity and will of green bonds actors (policymakers, issuers, third parties, buyers, etc.) to deal with the urgency of climate change without overlooking the social construction of the problem and the social implications of more debt as the proposed solution. For example, Paranque and

Revelli (2019) argue that green bonds must be part of a broader social project of collective governance and that finance must be re-embedded in society. Along similar lines, Tolliver, Keeley and Manangi (2019) argue for the broadening of the spectrum of green criteria to identify the role of green bonds in advancing Sustainable Development Goals and National Determined Contributions objectives.

Once more, this means that the decision of issuing green debt is not just a technical matter that depends on economic considerations and the work of engineers, but a deeply political question with potential long-term implications on livelihoods and human rights. More importantly, the emergency behind addressing climate change should not be such as to reproduce historical inequalities or sacrifice people and communities. Unless the goal is to save the planet but intensify existing socioeconomic inequality. If this is not the aim, the first step would be to subject the issuance of green bonds to social criteria that are more stringent than the mere principle of do not harm currently adopted by the European Union Green Bonds Standards. However, more is needed: climate finance should be disbursed in order to actively address socioeconomic disparity and inequality, in line with Sam Moyn's (2018) recognition that guaranteeing the bare minimum is not enough. Whether there is space for justice and equality in the vision of global private finance may be, however, no more than a rhetorical question.

Public universal standards as the solution to the privatisation of the market?

The first section discussed the existence of different standards, taxonomies, and criteria (Shishlov, Nicol, and Cochram 2018) that are at the disposal of issuers who want to characterise their bond as green (Laboratório de Inovação Financeira and Deutsche Gesellschaft für Internationale Zusammenarbeit 2021). Most of these regimes are private (e.g., see: Park 2018). These networks of private norms, largely dominated by financial actors, are currently performing crucial roles in the meaning-building of green activities (Manning and Reinecke 2016), as well as in the assessment of concrete projects being financed by green bonds.

For some, there are three main problems with the predominance of self-regulation and private standards: the privatisation of criteria away from democratic participation; the multiplication of standards and the risk of greenwashing. For these authors, the universal adoption of common public standards would represent the solution. The lack of public taxonomies or differences between jurisdictions are therefore identified as gaps to be filled. This subsection uses the example of the EUGBS to present some arguments to show how the intervention of the public sector can create other issues and, in some circumstances, intensify some of the problems that have been identified in the previous sections.

These considerations trigger three counterarguments. Firstly, public standards are not necessarily mandatory. The voluntary character of public standards, such as the EUGBS means that borrowers and investors could thus continue issuing and buying green bonds that are not aligned with the public criteria and still call them green. Secondly, a public taxonomy regulation for sustainable investments usually sets the boundaries between what can be considered green as a mere technical definition, ignoring its economic, social and political consequences. As an example, both the final report of the TEG (2020) and the first list produced by the European Commission (2021) present a taxonomy that merely clarifies what sustainable is and who are the winners (i.e., green projects that will receive funds) and losers (those who should not be funded). However, the definition of sustainability is a process that is neither neutral nor merely technical. As a matter of fact, the technical content of the taxonomy has already raised strong criticism from within the TEG that inspired the taxonomy (Ferrando and Cerrato 2020). In the last months, for example, an internal rupture within the EU sustainable finance expert groups has taken place due to the inclusion of controversial activities like wood burning for biomass (BEUC: The European Consumer Organisation 2021), while more than 250 organisations (including the CBI) signed a letter to ask for the exclusion of coal-to-gas and cogeneration (CHP) from the taxonomy.

In other words, the EUGBS example illustrates how public standards can translate the vision of a limited group of experts, in this case, the TEG, into clusters of sustainable economic activities that should be rewarded by investors and spared from criticisms. This is the vision where the urgent need for private funding, net-zero carbon emissions, decoupled growth and carbon neutrality are normalised and taken for granted. Moreover, this is the vision where the imminent character of climate change is used to justify the limited relevance of the social component of the people-nature relationship, as evidenced by the notion of do not harm rather than by more proactive considerations about fulfilling human rights and enhancing living conditions while making sure that the economy respects the planetary boundaries (Raworth 2017).

Thirdly, the adoption of public regulations by key jurisdictions like the EU or the US can have serious consequences in terms of the capacity of enterprises, cities and countries to have access to funds. Once again, the European case makes it clear: standards are not only aimed at EU players but can be applied also by issuers located outside of the EU. Therefore, the vision of sustainability suggested by the TEG and adopted by the taxonomy could progressively be transformed into a universal standard defining the activities of financial actors and the flow of resources. This has consequences in terms of competitiveness (with EU actors potentially having a comparative advantage as the first movers), but also in terms of capacity for smaller players and actors outside of the EU to adapt the standards that the TEG and the Commission have developed for EU economic activities. Of course, it could be said that high standards mean a quicker transition and the survival of the most

virtuous enterprises. However, it is important to question whether the urgency of climate change should be transformed in a way for EU and larger companies to better access funds *vis-à-vis* issuers in third countries (especially in the Global South). Nor should this become an opportunity to universalise the European vision of what is green or sustainable.

Green dots in a brown sea

Another element that is seldom discussed is that green bonds are mostly issued to finance specific activities that are part of in the context of complex value chains that cut across multiple jurisdictions and that keep together (materially and immaterially) people, territories and economic activities. Eucalyptus plantations, for example, are just the first step in a long chain of paper and pulp that also includes the transformation, transport, consumption and disposal of the products created by the plant. Similarly, green bonds that finance the installation of solar panels or wind turbines often focus on the installation phase, without addressing the long chain of activities that is needed in order for these technologies to be realised and installed, nor the way in which the energy produced is going to be used.

It is by looking at the interaction between green bond and the complexity of global value chains that the authors encountered a case study that reveals the limits of contemporary approaches to green bonds as forms of financing specific economic activities. The case regards an infrastructural programme launched by the Brazilian Ministry of Infrastructure that is aimed at authorising the construction of three railroads by the private sector. In order to facilitate the attraction of global investors the CBI developed a green bond framework to prepare future concession holders to issue CBI-certified green bonds and raise the funds needed for the projects. The public-private framework was externally reviewed by Ernst Young (Empresa de Planejamento e Logística S.A. 2020) who attested the adherence to the climate bonds standard, including the low-carbon land transport eligibility criteria (Ernst and Young 2021).

Within the concession program, the first auction concerned the Ferrogrão railroad, an infrastructure ranging 933 kilometres from the city of Sinop, in the state of Mato Grosso, to the Miritituba port, in the state of Pará. Once finalised, the railroad promises to save 77% of CO_2 emissions currently produced by the system of road transportation (Ministério da Infraestrutura (Brazil) 2021). The railroad is supposed to integrate the *Arco Norte* (Northern Arch), a logistic plan that aims to improve the infrastructure needed for the increasing exports of the grains (especially soybeans) being produced in central and northern Brazil.

What is not discussed in the green standards nor assessed, is that the construction of the Ferrogrão railroad has already generated negative socioenvironmental consequences on the Tapajós river (Instituto de Estudos Socioeconômicos 2021).

More importantly, the idea that the railroad is green(er) than the roads completely obliterates the fact that the project is associated with the expansion of soy monoculture in Brazil and the connection between these territories and the international ports located along the Amazon River and the Atlantic coast. Moreover, the Ferrogrão project is going to affect Indigenous communities, that have voiced the complaint that they have not been granted the right to previous consultation (Instituto Socioambiental 2021). Finally, the existence of a logistics route has historically increased the likelihood of deforestation and the incentives towards producing tradable goods: Ferrogrão may not be any different.

In this disputed context, the Brazilian Supreme Court (2021) granted an injunction that suspended Ferrogrão's auction in March 2021 on the basis of one of these concerns. For the Court, the outline of the new railroad cuts through the domains of the National Park of Jamanxim, which was illegally altered by a provisional measure. The judgement has not been delivered yet and no action has been taken to challenge the greenness of the bonds on the basis of the overall environmental impact associated with the value chain in which the railroad would be a key component.

Even if the project is successfully barred by the coalition of actors that are fighting against it, the case of Ferrogrão reveals a very relevant risk behind green bonds, namely, the fragmentation of projects' concept, analysis and implementation. What is interesting and peculiar here is that even when a project is meeting the criteria regarding what counts as green, and even if it was taking into consideration social impacts, the issuance of green bonds can have environmental and social consequences at other levels of the value chain that should not be ignored. In the case of Ferrogrão, as can be the case in a lot of issuances, the willing dismissal of the broad picture and the slicing of the chain into a multiplicity of isolated economic activities made it possible to obtain the green label and attract global investors.

Like a green dot in brown sea, the Ferrogrão case in Brazil shows that green bonds can fund projects that – even when they formally comply with formal requirements – can be at odds with the overall goal to prevent climate change, restore biodiversity and finance the holistic achievement of the Sustainable Development Goals. From a developmental perspective, should private investors be allowed to strategically label green pieces of larger value chains that are scantly concerned with environmental and social impacts? Does a brown commodity like soybeans not affect the colour of the logistic system that is transporting it also? Should the reduction of GHG be promoted also when it affects Indigenous communities? The extent to which the use of green bonds in key infrastructure projects should be holistically compatible with environmental and social policy approaches and development strategies – based on ESG goals, for instance – is a controversial and still little discussed topic.

Indebting cities

By 2030, there will be 43 megacities with 10 million or more people, 66 cities of 5–10 million population, 597 medium-sized cities of 1–5 million and 710 cities of 500,000 to 1 million (UN Department of Economic and Social Affairs 2018). The link between cities, climate change and a socioenvironmentally just transition cannot be overlooked (Dawson 2017: 11). On the one hand, climate change is turning cities into ovens (Simon 2021) On the other hand, cities are currently 'shelters to more than half of the world population and responsible for three quarters of global" energy consumption and greenhouse gas' (Mi et al. 2019: 582).

In this context, a specific category of green bonds, that is, green city bonds or green municipal bonds, are promoted as opportunities for cities, as some of the most carbon-intense and climate-exposed areas in the world, to raise capital to reduce their impact (mitigation) and/or to finance projects that can increase the socioeconomic resilience *vis-à-vis* the intensification of climate events (adaptation). In conferences and online, the issuance of green municipal bonds is advertised as an opportunity for cities to send a strong signal of their sustainability commitment, contribute to the pathway towards Agenda 2030 and the Sustainable Development Goals", incentivise the collaboration between different agencies within the same administrations, increase their autonomy *vis-a-vis* the national-level and promote projects with increased proximity and limited scale.

As mentioned in the first section, green municipal bonds are particularly popular in the USA, where their diffusion is underpinned by the historical use of the debt market by municipalities. But this is not all. Cities and other local authorities in the Global South are also playing their part. In 2014, Johannesburg issued a US 136 million green bond, with Cape Town, Mexico City, and La Rioja Province in Argentina following right afterwards (CBI 2017). In 2019, Chinese local government financing vehicles contributed USD 6.2 billion (RMB 42.5 billion) to total issuance, while the provinces of Guangdong, Anhui, Hubei, Jiangsu and Shandong were the top five provinces for green issuance.

All over the world, municipalities are increasingly seeking to join this market, mostly because of a context characterised by the need for more investments in reducing emissions and adaptable infrastructures, the normalisation of the idea that financial markets have a central role to play in solving the climate crisis (Reyes 2016) and an increasing demand for ESG investments on the side of financers. This latter point is evidenced by the 2014 green bond programme for New York City, according to which

> through the issuance of green debt, cities would borrow for environmentally beneficial capital projects by tapping into the growing pool of "double bottom line" institutional and individual investors – investors who not only seek quality returns, but who also want to invest in particular types of environmentally friendly projects. (New York City Comptroller 2014)

Green city bonds raise similar concerns as other green bonds when it comes to the definition of greenness, the involvement of development actors, the risk of privatisation and financialisaton of essential services, and the link between issuing green bonds and enhancing social inequality – a circumstance which has already happened in the past with municipal bonds that were mainly repaid by increasing the cost of services to African American communities in US cities (Jenkins 2021; Ponder and Omstedt 2019). In addition, the adherence of urban authorities to the green bonds market must also be analysed through the lenses of the urban-national relationship, that is, the fact that municipal finances are typically backed up by state funds, and through the inevitable competition for resources and infrastructure that they would generate not only within cities but among cities.

Leaving aside the problems that more debt may have on the budgets of cities, the question arises if those who are at the forefront of the climate emergency will have real and cheap access to climate finance through green city bonds or if their capacity to raise debt will be affected by the financial risk behind their condition of precarity? Will the mechanisms of climate finance and the vision adopted by financial investors be such to bear the risk of default in the name of the climate urgency, or will they opt for cities like Paris, Gothenburg, New York and San Francisco that are bankable and financially reliable? Or will the de-risking of buying municipal debt (Gabor 2021) and the higher costs of accessing debt be borne by public actors, such as multilateral development banks and national authorities, to the point that green city bonds become nothing else but a way to publicise losses and privatise rent? As in the previous cases, without adequate research and engagement, answers risk being merely rhetorical.

Conclusions: Indebting the green transition

Very few authors engage with the premise of relying on financial actors, and more precisely on debt, to deal with the ecological crises that finance has had a central role in creating (Quinson and Benhamou 2021) and that it continues to benefit from (Jones et al. 2020). Even if there was some agreement on granting some role to financial actors in the transition to a low-carbon economy (Castree and Christophers 2015) there are relevant shortcomings in the way in which green bonds are conceptualised, organised and governed, along with the implications that more debt can have on private and public finances. In the construction of a critical approach to the present and future of green bonds, some support is provided by Christophers et al. (2020), who discuss green bonds as a financial mechanism that relies on the shifting of risk and costs from individuals to a broader social constituency, that is, the sustainable environment, and the broader literature about green finance (Antal and Den Bergh 2016; Reyes 2016; Zhang, Zhang, and Managi 2019), and by more

critical literature on the financialization of nature (Bracking 2019; Jessop 2012)and of development (Gabor 2021). Of relevance here is also the discussion regarding the governance structure of climate finance instruments (Bracking and Leffel 2021).

In the framework of sustainable finance, green bonds are increasingly popular and utilised. Their global expansion is based on the transplant/diffusion of institutional apparatus and governance structure that are thought and produced elsewhere (mainly in the European context), but also on their (more or less significant) territorialisation and adaptation to local contexts. As the authors discuss in this chapter, the production and circulation of the institutional apparatus and the way in which these abstract financial tools touch base into specific circumstances need particular attention. Green bonds are not a technical tool. They are political, social, legal and financial relationships that have to do with the definition of what is green, the need to holistically approach social and environmental implications, the complexity of value chains and the tensions between the urgency of climate change and the risk analysis of financial investors. But this is not all.

Academic research on green bonds should never be separated by the establishment of a debtor-creditor relationship and the way in which debt has historically been used to reproduce subordination and the unequal distribution of power, value and labour. The expansion of green bonds to finance the green transition is not only a way to bind future generations to pay for a climate emergency that they have not contributed to, but also a way to favour those players who can afford the repayments and disfavour those who are already burdened by decades of indebtedness. From the perspective of the Global South, the flow of capital from the North in the form of climate-linked debt rather than grants or reparation, is a dismissal of the historical responsibilities and a way of subordinating development to the wills of creditors and the continuous expansion of the economy. Green bonds may mobilise private capital and increase investments. But is it enough to prevent the climate catastrophe if this means a social disaster (Moyn 2018)?

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