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European Green Deal and Sustainable Development: The Green Bonds as an Integrated Intervention Tool to Support Agribusiness in Italy

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ABSTRACT

The European Green Deal is an extraordinary pact to pursue collective sustainable development. It identifies not only key aspects that delimit the new regulatory horizons envisaged by the European Union but also those that can support initiatives from a concrete point of view. Among them, *green bonds* play a strategic role. This work aims to investigate the state of the art of *green bonds*, one of the specific financial instruments that companies of a certain size operating in the agri-food sector could use to comply with an innovative development plan in a "green" key. In the first section of the paper, the qualitative and quantitative profiles of the European Green Deal are defined in order to better understand the objectives of this policy document for the diffusion of green innovation at the European level. More specifically, both the European regulatory profiles and the direct intervention that should affect the specific sector of agribusiness were defined. In the light of this doctrinal evidence, the second section is focused on the *green bonds* – able to play a key role in green development – by considering the current state of the art, their strengths and weaknesses especially in the agribusiness domain.

Il Green Deal Europeo è un patto straordinario per perseguire lo sviluppo sostenibile collettivo. Identifica non solo gli aspetti chiave che delimitano i nuovi orizzonti normativi previsti dall'Unione Europea ma anche quelli che possono supportare iniziative da un punto di vista concreto. Tra questi, i green bond giocano un ruolo strategico. Questo lavoro si propone di indagare lo stato dell'arte dei green bond, uno degli strumenti finanziari specifici che le aziende di una certa dimensione, operanti nel settore agro alimentare, potrebbero utilizzare per conformarsi a un piano di sviluppo innovativo in chiave "green". Nella prima sezione del paper vengono definiti i profili qualitativi e quantitativi del Green Deal Europeo al fine di meglio comprendere gli obiettivi di questo documento politico per la diffusione dell'in-novazione verde a livello europeo. In particolare, sono stati definiti sia i profili normativi europei sia l'intervento diretto che dovrebbe interessare lo specifico settore dell'agroalimentare. Alla luce di questa evidenza dottrinale, la seconda sezione è focalizzata sui green bond – in grado di svolgere un ruolo chiave nello sviluppo del verde – considerando lo stato dell'arte attuale, i loro punti di forza e di debolezza soprattutto in ambito agroalimentare.

Keywords: Agribusiness, Green supply chain, Sustainable development, Corporate Finance, Green innovation, Sustainable agriculture

1 – Understanding the Sustainable Development Context through the European Green Deal

1.1 – *Analysis of objectives and criteria*

> *To deliver the European Green Deal, there is a need to rethink policies for clean energy supply across the economy, industry, production and consumption, large-scale infrastructure, transport, food and agriculture, construction, taxation and social benefits* (European Commission, 2019: 4).

The objective that the current European Commission has proposed to achieve in the five-year period, continuing the guidelines issued by the previous "Clean energy for all European package", was presented through the approval of the "European Green Deal". It consists of a pact between the Member States in continuity with the Paris Climate Agreements. This is a long process initiated by the EU – which reduced greenhouse gas emissions by 23 % between 1990 and 2018, while the economy grew by 61 % – and aimed at achieving climate neutrality and a totally "green" economy, thus decreasing CO2 emissions by 55% by 2030 and zeroing them by 2050 (European Commission, 2019). These targets are certainly ambitious and require annual investments of around € 260 billion until 2030 and the allocation of at least 25% of the EU climate budget.

The Green Deal has, therefore, the objective of making the EU economy as sustainable as possible in accordance with precise criteria:

- climate change mitigation;

- sustainable use and protection of water and marine resources;

- transition to a circular economy, including waste prevention and increased absorption of secondary raw materials;

- pollution prevention and reduction;

- protection and restoration of biodiversity and ecosystems (European Commission, 2019).

Therefore, the European Green Deal has been conceived and proposed as a plan for the continent's energy transition, considering several qualitative aspects – linked to environmental, climate and sustainable economic growth criteria – and quantitative aspects such as the mobilisation of public-private capital of €1 trillion over about ten years through a mixed system of guarantees and funds, as well as the inclusion of the local public authorities in sustainable energy development projects, production activities and infrastructure (European Parliament, 2020). The recent evolution of public sector organisations' roles has resulted in the recognition of a social and environmental element to their operations, requiring them to pursue long-term sustainable growth. However, there is an incompatibility between the central role of public sector organizations in sustainable development and its actual participation (Gazzola and Pellicelli, 2019). With the European Green Deal, European Union wants to transit from a traditional concept, which consists of analyses and perspectives mainly focused on energy and only subsequently on the various intervention segments, to an integrated vision.

In fact, the Commission is not only focusing on innovation, but is also talking substantially about private as well as public finance. The European Green Deal therefore wants and can provide a concrete impetus for Community-related projects which are developed in an integrated way.

This is a great opportunity for local rural areas because they express the most obvious interweaving of various economic, environmental and social issues, especially in Italy (Dansero et al., 2006). The European Green Deal project then allows to redefine the role those local territories can play in supporting business development. Participating members shall include

natural persons, small and medium-sized enterprises, or local authorities, including municipal governments.

The objective is to provide economic-social benefits – rather than exclusive financial benefits – to community members and, consequently, economic-environmental benefits to local areas where there is the greatest need (European Commission, 2019). For this reason, it is essential to understand which operating solutions can be successful at the Italian national level to ensure that the agribusiness sector can also benefit fully from what is foreseen by the European Green Deal.

1.2 – *The framework for European incentives linked to the Green Deal*

The "green" development project is mainly implemented through the Sustainable Europe Investment Plan. According to this plan, half of the investment will come from the EU budget (with solutions such as InvestEU 2021-2027, ERDF Regional Funds, European Social Fund EDF) while Member States will contribute around €100 billion with a further €300 billion mobilized by the private sector. The Sustainable Europe Investment Plan, in essence, follows the lines of the European Fund for Strategic Investments developed by the previous Commission, based on a system of levers focused on guarantees and facilitated financing. Among the solutions it will include the new Just Transition Mechanism, i.e. a mechanism that will activate an investment plan through grants and subsidized financing promoted by:

- Just Transition Fund to which Member States will access by identifying the territories concerned (€ 30-50 billion) (European Parliament, 2020);

- InvestEU dedicated to mobilising up to € 45 billions of private investments;

- soft financing system for the public sector in collaboration with the European Investment Bank to mobilize € 25-30 billions of investments (European Commission, 2020).

It is in this context that certain resources are important for the development not only of rural areas but also of the whole local agri-food sector. Indeed, in the context of the financing plan, the transition plan plays a key role, since it is aimed at implementing projects in the territories. The rest of the paper is laid out as follows. In section 2, we review the prospects for agricultural business in the context of strategic framework of the European Green Deal. Then, in section 3, we intend to explain the role of green bond financing as a key financial Instrument to ensure sustainable growth with a detailed descriptive analysis in order to present the latest trends of green bonds in terms of issuers, sector wise distribution globally as well as more specifically the current state of green bond market in case of Italy. The descriptive methodology is used for this study as it more feasible to identify the existing trends and determine "what" rather than "why" of the research theme under consideration (Ethridge, 2004: 24) and to shed some light on the current situation more in depth using a process of data collection (Fox and Bayat, 2007: 45). Finally, Section 4 concludes.

2 – Prospects for agribusiness in the context of the European Green Deal

Although the transition to more sustainable systems has begun, adapting to more efficient production systems in an environmentally friendly way is a challenge for most European countries. Food production still pollutes the air (Evans et al., 2019), water and soil (Martinho, 2019), contributes to biodiversity loss and climate change (Shaaban et al., 2018), consumes excessive amounts of natural resources (Merrington et al., 2002), while a significant proportion of food is wasted (Shortle and Abler, 2001). The Lower returns in agricultural sector have a significant impact on those directly engaged, the farmers, and the entire national economy, due

to the modest contribution to national income and the drop in national disposable income caused by increased taxes ultimately put more burden on the productive sectors. When the demand for agricultural products is compensated through imports due to lack of domestic output, it creates a socio-economic problem (Pohoată and Popescu, 2012). With the European Green Deal, there are new opportunities to support the agri-food chain. New technologies and scientific breakthroughs, combined with increased public awareness and demand for sustainable food, aim to satisfy all stakeholders.

In spring 2020, the Commission presented the "Farm to fork strategy" aimed at launching a broad debate among all stakeholders, analyzing the stages of the food chain and paving the way for a more sustainable food policy. The Common Agricultural Policy and the Common Fisheries Policy will continue to be two key instruments to support efforts in this direction while ensuring decent living conditions for farmers, fishermen and their families (European Commission, 2019). As the launch of the revised Common Agricultural Policy is likely to be delayed until early 2022, the Commission will work with Member States and stakeholders to ensure that the National Agricultural Strategy Plans fully reflect the ambition of the Green Deal and the "Farm to Consumer" strategy from the outset (European Commission, 2020).

Under this name, the European Commission envisages an intervention strategy aimed at:

- to reduce the use of pesticides by 50% by 2030;
- to reduce the loss of nutrients to the environment by 50% by 2030;
- to reduce fertiliser use by at least 20% by 2030;
- a 50% reduction in the sale of antimicrobials for animals and aquaculture;
- to transform 25% of total agricultural production into organic crops by 2030.

The Commission will ensure that these strategic plans, which should lead to the use of sustainable practices such as precision farming (Dalezios et al., 2019; Finger et al., 2019; Griffin et al., 2018), organic farming (Eyhorn et al., 2019; Schrama et al., 2018; Roos et al., 2018), agro-ecology (Van Hulst et al., 2020), agro-forestry and higher animal welfare standards (Marsden et al., 2020) are assessed on the basis of sound climate and environmental criteria.

With the shift in focus from performance compliance, measures such as eco-schemes should reward farmers for better environmental and climate performance, including soil carbon management and storage and more effective nutrient management to improve water quality and reduce emissions (European Commission, 2019). The Commission will identify the measures, including legislative measures, needed to achieve these reductions on the basis of a dialogue with stakeholders. The "Farm to Consumer" strategy will also contribute to the achievement of a circular economy and will aim to reduce the environmental impact of the food processing and retail sectors by addressing transport, storage, packaging and food waste.

- The CAP of the European Union therefore aims to provide Member States with the right support, flexibility and tailor-made solutions for specific national needs. In this context, the European architecture envisaged to achieve these measures considers:

- a better relationship between grants awarded and eligibility criteria;
- new schemes to cover ecological projects;
- specific investment measures in areas related to agriculture, climate and the environment,
- specific advisory services for agricultural systems geared towards "green" solutions (European Commission, 2020).

However, this strategic structure needs to be underpinned by a stronger interrelationship between local and Community actors. Indeed, the Member States must carry out a more precise analysis of their territory in order to enable the Commission to provide tailor-made solutions

that are as precise as possible. To date, many steps forward have been taken in terms of collaboration between Member States and the Commission, but a closer synergy may be essential to achieve better results in terms of:

- sustainability of products;
- change in consumer demand in terms of organic farming;
- new business opportunities for key players in the agri-food chain;
- identification of more efficient business models for greater profitability of farmers and producers in the agri-food sector;
- reduction of costs related to the adoption of innovative technologies that can reduce the need for inputs while increasing production;
- greater interaction with stakeholders in the sector and especially consumers;
- opening up new market horizons.

In order to summarize the specific framework that characterizes the European Green Deal in the agri-food sector, it is essential to remember how much the new forecasts are focused on a transformation into a "Corporate" and a "Social" key. The corporate environment expresses all the needs for the continuation of the innovative activities of the players operating in the agri-food sector. As shown in Figure 1, there are different and important aspects related to processes, outputs and innovative business systems that help to create new markets and a better relationship with the relevant stakeholders. As far as social aspects are concerned, the prospect of greater attention being paid to economic and social results together with environmental results through more careful attention to territorial needs is highlighted.

Obviously, this is closely linked to the role that local authorities will be able to play in identifying local needs by virtue of closer cooperation in development programmes, a theme that characterises the proposals in this work and which are presented below.

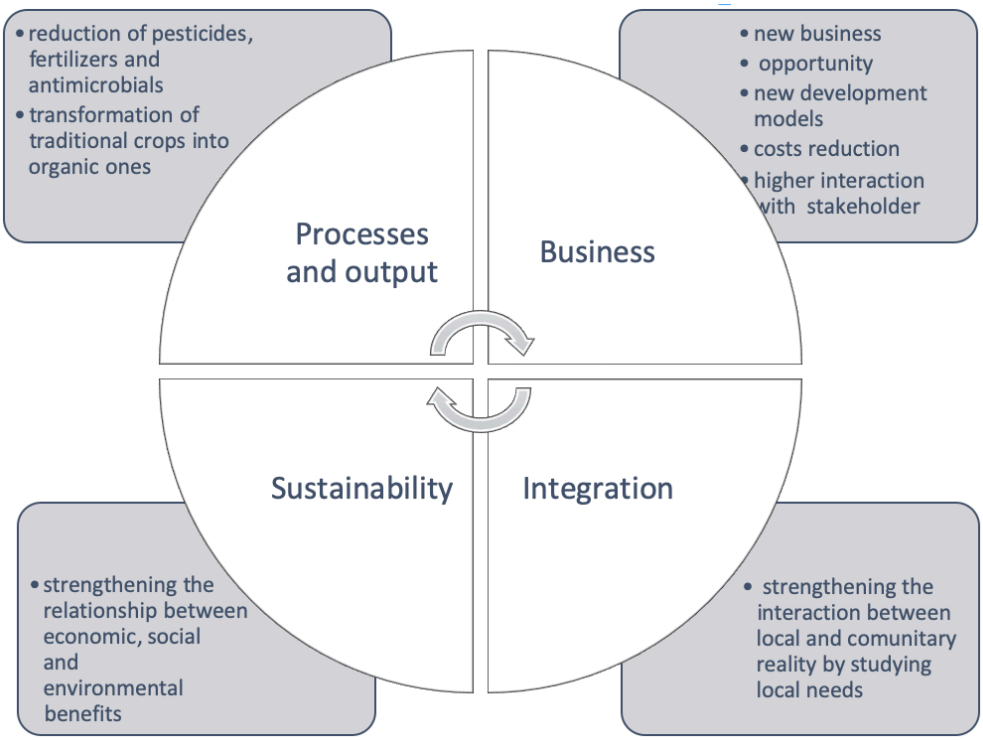

Fig. 1 – The strategic framework of the European Green Deal in the field of Agribusiness (Source: authors' elaboration)

3 – Instruments for sustainable development of the agri-food sector

To date, the financial instruments provided for the development of sustainable projects in Italy are numerous. However, if we wanted to identify the perspectives operating in the framework of sustainable development outside the medium-small companies, there are two instruments that can provide substantial elements of collective empowerment. They consist of public-private partnerships and green bonds. Given the limitations we have imposed to this work due to the consistency of both instruments, we will focus on the analysis of green bonds since they can ideally be considered as a middle way between financial instruments intended for private companies for limited projects and PP partnerships where the public aspect remains predominant.

3.1 – *The evolution of Green Bonds Financing*

In broader terms, green bonds are defined as standardized fixed income instruments whose proceeds are exclusively used towards new and existing climate or environment-related projects (ICMA, 2014). The EU technical expert group (TEG) on sustainable finance (TEG, 2019) restrictively proposed green bonds definition as

> … any type of listed or unlisted bond or capital market debt instrument issued by a European or international issuer as long as three requirements are met: (i) the issuer's "Green Bond Framework" needs to explicitly affirm the alignment with the EU-GBS; (ii) the proceeds will finance or re-finance "Green Projects"; and (iii) the alignment of the EU-GBS is verified by "an accredited External Verifier.

Since the European Investment Bank (EIB) founded the idea of first environmentally friendly bond issuance in 2007, global green bonds markets have attracted a diversified group of investors, public-private corporations enhanced the market over the past few years. However, it is still relatively small compared to overall conventional bond markets (Ehlers and Packer, 2017).

Green bonds represent just a 3% of the overall bond markets that have been argued to follow an innovation path, following a successful innovation track in the late-2000s diffused this instrument with the presence of two potential actors such as service providers comprise verifiers who provide external reviews and index providers to evaluate the eligibility criteria of the green bonds according to the GBPs. The government owned entities and regulators are another set of key participants in green bond markets (Monk and Perkins, 2020). The evolution of green bonds began with the involvement of two multilateral development banks (MDB's) such as European Investment Bank (EIB) which issued the first Climate Awareness Bond (CAB) in 2007. Initially, it was not a fixed income bond. However, introduced the idea of earmarking debt proceedings for environmental protected financing (Romani and Murphy, 2008). The world bank in 2008 is the second MDB's which issued the first labeled green bond. The diversification of issuers and standardization took place in 2013-2014 with a sole purpose to rely less on MDBs. The first issuance by one of the corporates made by Électricité de France worth €1.4 bn during this period. Later in 2014, the development in the formulation of Green Bond Principles (GBPs) came to provide set of guidelines to ensure transparency, disclosure and integrity in the green bond market (ICMA, 2014) followed by the emergence of geographic diversification of issuers in 2016 (CBI, 2016).

3.2 – *Green Bond Advantage*

One of the greater benefits derived by MDB's at the origin stage of green bonds was their ability to 'shield' through subsidizing the additional cost of due diligence while issuing green bonds

that incentivized investors to capitalize MDB's green offerings without paying market premium. Moreover, the MDB's have played a central role of financial innovation expert amongst key issuers, investors and other actors. (Klerkx and Aarts, 2013). The major key players in the development of green financing include international financial institutions, institutional investors as well as financial regulators and central banks. However, public budgets run out of required funding ultimately require private capital so private investment play a pivotal role to supplement limited public funds (Berensmann and Lindenberg, 2016). The green bonds are considered as key financial instrument to mobilize private funding towards the progressive development of global economy when banks having restricted form of lending capabilities and public budgets are strained (OECD, 2017). Additionally, high GDP economies abandon traditionally prioritized non-environmental projects to invest more in sustainable and green growth (Jänicke, 2012). Green bond provide means to achieve this aim and also offer other diversification benefits to stock investors through their comparative insulation from stock price movements (Reboredo, 2018). Such bonds are more convenient as compared to conventional bonds since they offer lower returns to the investors and better off private sectors without penalizing them financially when they issue bonds that are characterized as green. Generally, issuers get benefits of paying lower interest rate than the cost of obtaining CBI certification (Gianfrate and Peri, 2019). There are some financial incentives such as tax credits that are associated with green bonds issuance to attract investors beyond Environmental, Social and Governance (ESG) target achievement (Loschacoff, 2020).

3.3 – *Impediments in the growth of Green Bond Market*

The growth of green bonds depends on its supply side through the extensive involvement of emerging economies as well as their specific design criteria and implementation (Monk and Perkins, 2020). The absence of green bond knowledge amongst key market actors at an early stage of MDB's issuance in the late 2000s led to slow growth of the market. Most mainstream actors who might be interested to fund environment-friendly projects had a very limited information about the concept of green bonds as it is viewed as "niche" financial instrument only for ethically responsible investors (Hay, 2012). On both supply and demand side, learning is important for investors to understand the features of this financial tool to distinguish what is labelled as 'green "or not (Zhang and White, 2016). Due to lack of unified green bond standards, they are more exposed to upfront certification costs, reputational risk and information disclosures. Despite the growing green bond market, there is still a clash between Green Bond Principles (GPB) and Climate Bond Initiative (CBI) on standards creation and green taxonomy. Several frameworks now co-exist, that leads to divergence on the expected criteria without any binding.

Moreover, the issuers of green bonds are distinguished in terms of role of issuers as well as the purpose of their green bond's issuance. The financial institutions issue green bonds to provide green loan and finance other company's projects. Whereas corporate green bonds are issued for their own projects (Tang and Zhang, 2020). A corporate seeks to invest in environmentally friendly projects to advance its reputation for the purpose of reducing its financing cost and improving performance. Contrary, the goal of supranational and governments is to promote their own national or regional policies rather than profit rationales (Archer and Tournaire, 2018).

The nonexistence of corporate bond market extensiveness penalizes its potential and growth since the under-representation of green bonds financing in the sectors other than utilities such as low carbon transport, green buildings, agriculture and forestry (Deschryver and Mariz, 2020).

The fragmentation of labeling and standards is the most critical factor that will slow down the future potential of the market and creates uncertainty among investors. Jun et al. (2016)

noted some common barriers to green bond market that include the general development challenges of green bond market, lack of clear standards, frameworks and regulations, existing green bonds lack good credit rating, asymmetric risk information and an overall absence of sufficient market knowledge as well as shortage of bankable green projects. Banga (2018) identified two main obstacles (i.e., institutional and market ones) in the development of the green bond market.

The institutional ones relate to lack of knowledge of globally created existing practices and technical skills and inappropriate institutional arrangements due to contrasting goals in the implementation of public departments policies. The markets barriers comprise the size of the issue, tenure and liquidity features of green bonds, the transactional cost to obtain green label certification as well as currency related risks in the issuance since they must be issued in international currencies to capture investments in international financial markets. In 2019, the new issuers issued just 14 certified green bonds out of total 68 green bonds that only represented 20 % of green bond issuance in Europe by debut issuers in terms of certification. The highest number of both certified green bonds and green bonds issued by non-financial companies as demonstrated in (Figure 2).

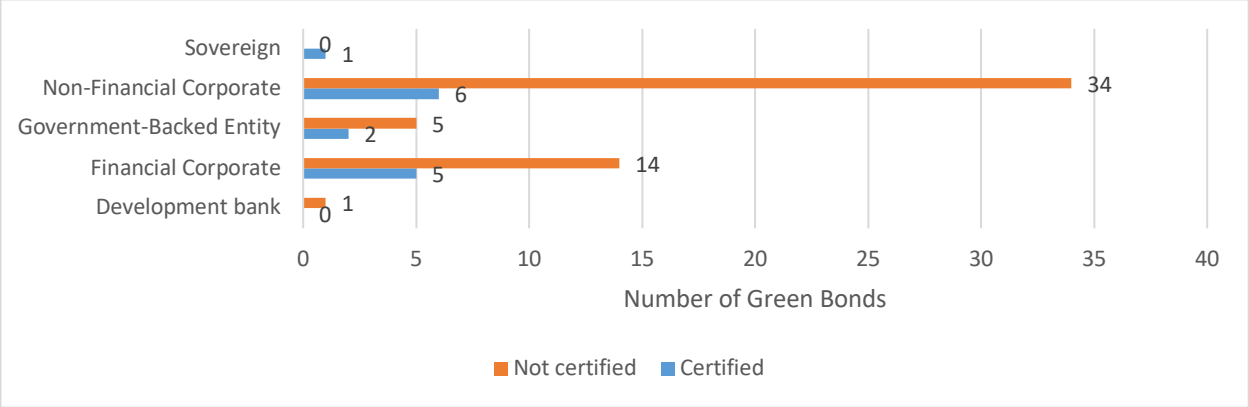

Fig. 2 – Number of Green Bonds issued by Debut Issuers: by Certification type (Source: Statista)

It is critical to understand the labelling criteria of green bonds while evaluating Environmental, social and Governance (ESG) aspects. Investors need assurance whether the green bonds proceeds are used for pure 'green' projects or not. Consequently, external reviewers initiate an independent due diligence on green bond issuance (Archer and Tournaire, 2018). There are numerous factors that differentiates the classification of green bonds as per their labelling. Labelling is mainly used as a mean to overcome the challenge of environmental risk asymmetric information to provide higher benefits in terms of lower financing cost. Hyun et al. (2020) empirically investigate the price mechanism between label and unlabelled green bonds and found that green bonds are not equally priced and the one with greater greenish information enjoy more discount than just a simple similar green bond in the market. To label bonds as pure greenish, issuers have to comply external review process, certification and third-party opinion as to ensure lower environmental risk than unlabeled green bonds. A large proportion of green bonds meet the eligibility criteria to comply with green category projects. However, they are not label as green and fall in the category of climate aligned bonds (Migliorelli and Dessertine, 2019).

3.4 – *Global and European Green Bond Market Trends*

By the end of 2020, the value of global green bonds reached totaled US$222.6 Billion, an increase of 26% compared to previous year (Figure 3).

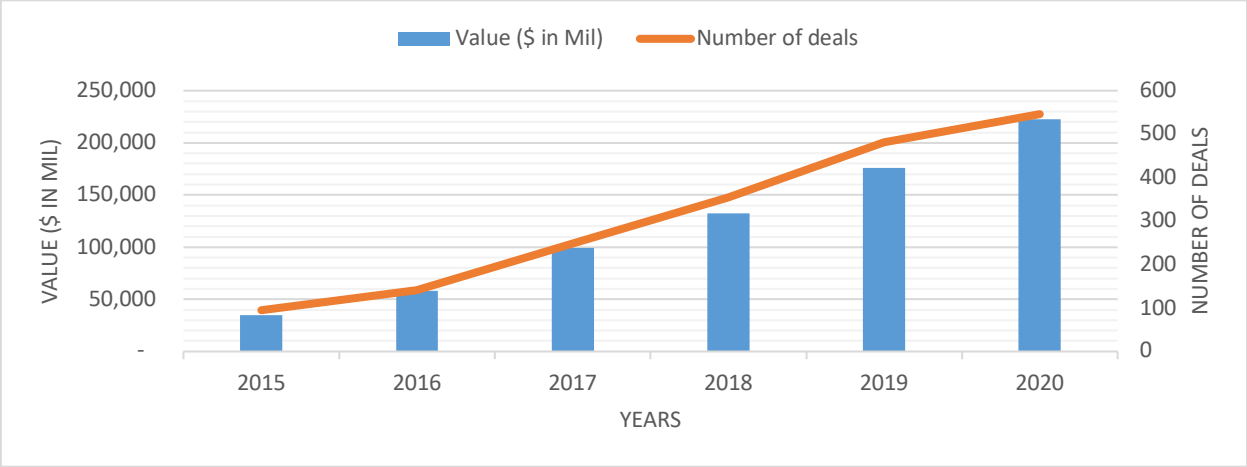

Fig. 3 – Global Green Bonds Trends from 2015 to 2020 (Source: Refinitiv)

The global proceeds in 2020 increased by 84% compared to the year 2015 when the total value was US$34.6 Billion. However, the overall number of deals also show an upward trend with 546 deals in 2020 which were just below 100 in 2015 (Refinitiv, 2021). The EU is likely to become the largest issuer of green and social bonds, the EU plans to issue €225 Billion in green bonds and €100 Billion through social bonds in the upcoming years (Furio, 2020).

During the year 2019, the non-financial companies were the biggest issuer in Europe with a share of 27% followed by public sector entities (22%) and financial companies (21%) making a total of almost 70% contribution to overall distribution of green bond issuance by issuer type (Figure 4). These investments are targeted to fund new or existing green projects in the category of renewable energy, energy efficiency, clean transportation, sustainable waste management, land use and water management (Statista, 2020).

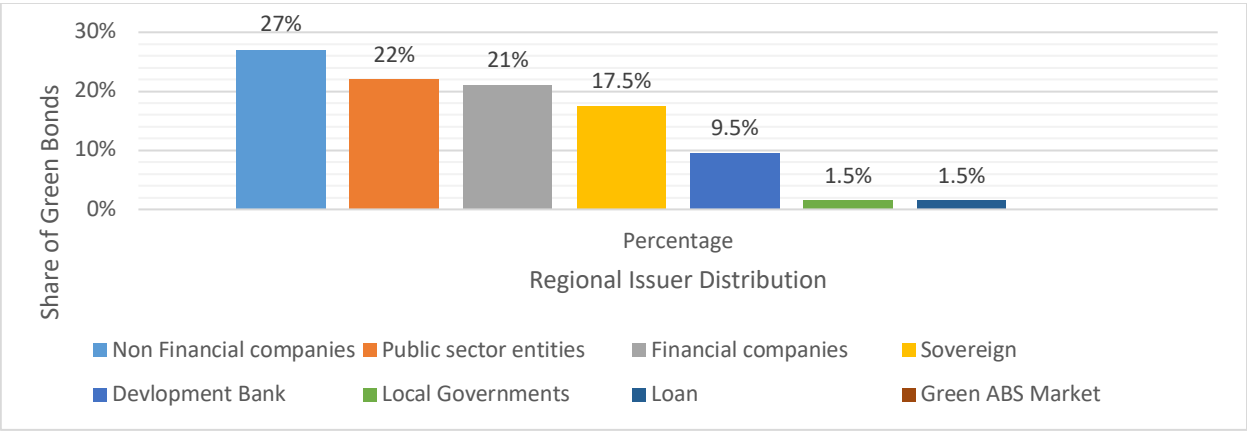

Fig. 4 – Europe Green Bond Distribution by Regional Issuer Type (Source: Statista)

In 2019, the energy and building sectors captured the substantial proportion of green bonds proceeds with a share of 61% of overall allocation, followed by transport and water sectors with 20% and 9% contribution. However, the other sector accounted for remaining 10 percent of total global green bonds issuance. The sectors such as ICT and industry just gaining ground with a small percentage of total allocation as shown in Figure 5.

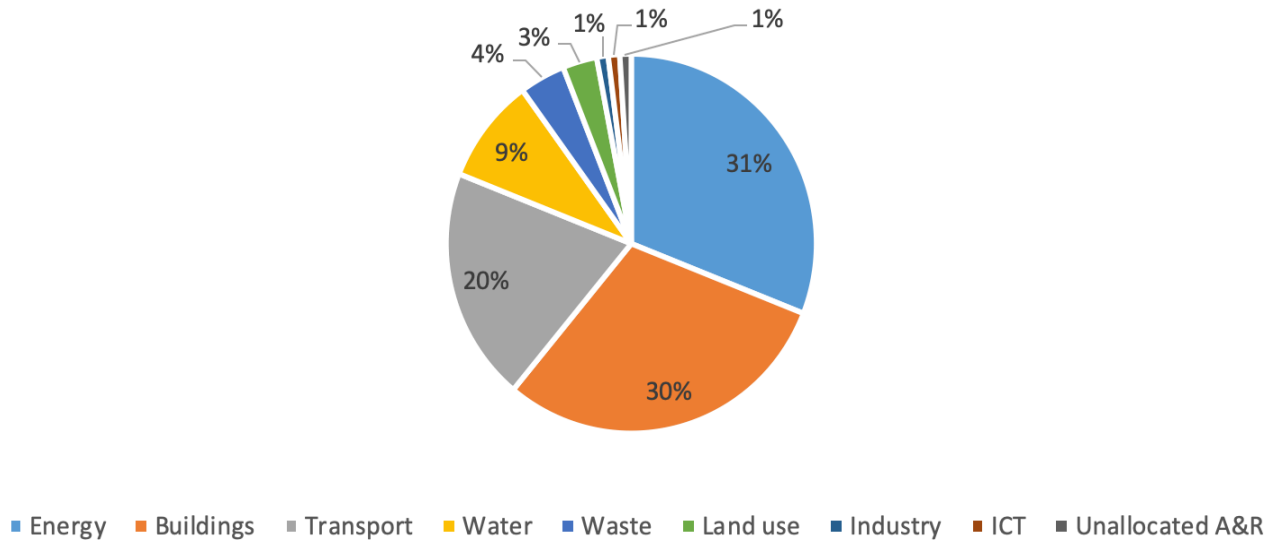

Fig. 5 – Sector wise Distribution of Green Bond Proceeds: Worldwide in 2019 (Source: CBI)

3.5 – *Current state of Green Bond Market in Italy*

The green bonds market is making growing inroads in Italy. According to the Climate Bonds Initiative CBI (2020), the Italian green bond market ranked nineth in the list of top 10th issuers by country wise as reported in (Figure 6) with a total value of just under $7 billion in issue by 10 issuers in 2019. In Italy, Borsa Italiana plays a major role in promoting the development of green bonds financing by being an active part of the Sustainable Stock Exchange Initiative and launched dedicated social and green bond lists in March 2017 (CBI, 2021).

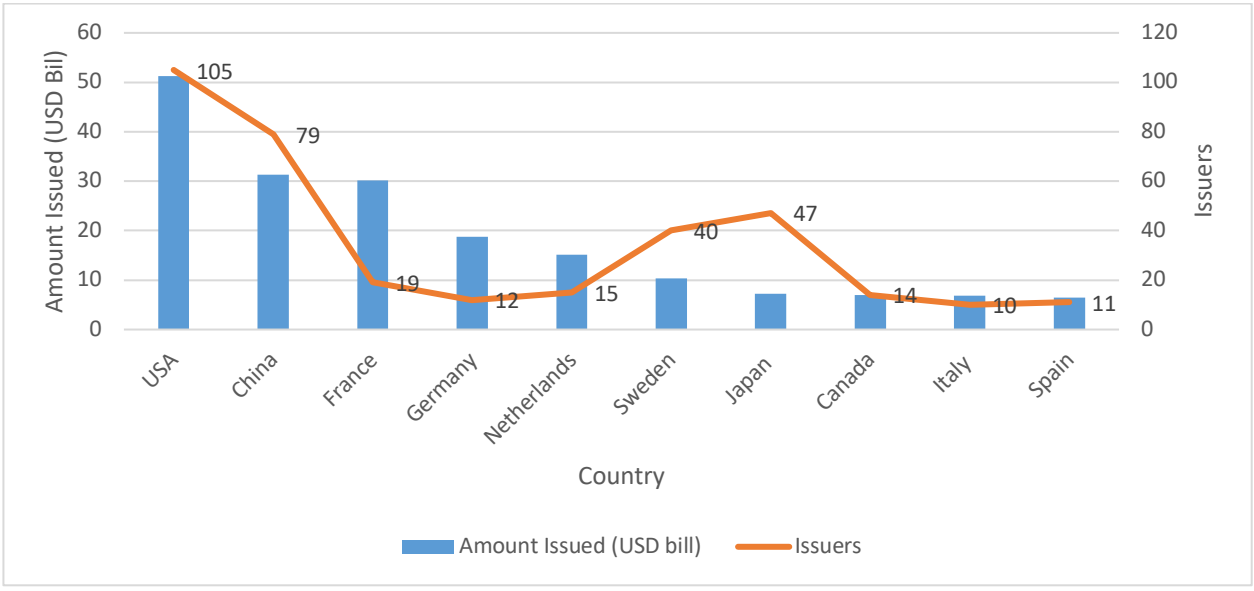

Fig. 6 – Top 10 Issuers in 2019 by Country wise (Source: CBI)

The issuers have to comply with a requirement of providing external certification from an independent third party that verify the use of proceeds with the Green Bond Principles (GBP) as well as to submit at least annual disclosure of the use of proceeds of green bonds until the

complete allocation is made. In case of lack of providing such information, the green bonds are unlisted by the Borsa Italiana.

As shown in the Table 1, we extracted some data related to the main green bonds issued by Italian corporates which are listed on Borsa Italiana. In addition to financial company green bonds (i.e., Assicurazioni Generali), Non-financial institutions mainly utilities are the most prominent issuers of green bonds in Italy. It shows that the issuance in other sector is still needed beyond utilities such as agriculture and forestry etc.

The over-reliance on some key stakeholders and some sectors (i.e., Utility and transportation), the critical environmental and climate challenges in other major sectors remain unaddressed. The "farm to fork" strategy is at the core of the European Green Deal aiming to address sustainability issues in food production systems. According to Guyomard, Bureau et al. (2020), the current EU agri-food practices lack a clear direction to achieve Green Deal objectives and quantitative targets to combat climate and environmental, health and nutritional issues in this sector.

The European Union's (EU) high-level expert group on sustainable finance has proposed revision under the EU's Non-Financial Reporting Directive for the improvement of disclosures in agri-food sector and to facilitate the re-orientation of investments towards promoting sustainability in agricultural practices (HLEG, 2018).

Issuer Name	ISIN Code	Outstanding (€ in MN)	Rating	Issued date	Maturity Date	Annual Coupon (%)	Industry
Assicurazioni Generali	XS2056491587	750	BBB-	1/10/19	1/10/30	2.124	Fin Services
Assicurazioni Generali	XS2201857534	600	BBB-	14/7/20	14/7/31	2.429	Fin Services
ENEL Finance Int	XS1550149204	1250	BBB+	16/1/17	16/9/24	1.000	Utilities
ENEL Finance Int	XS1750986744	1250	BBB+	16/1/18	16/9/26	1.125	Utilities
ENEL Finance Int	XS1937665955	1000	BBB+	21/1/19	21/7/25	1.500	Utilities
HERA	XS2020608548	500	BBB	5/7/19	5/7/27	0.875	Utilities
IREN S.p.A	XS1704789590	500	BBB	24/10/17	24/10/27	1.500	Utilities
IREN S.p.A	XS1881533563	500	BBB	19/9/18	19/9/25	1.950	Utilities
IREN S.p.A	XS2065601937	500	BBB	14/10/19	14/10/29	0.875	Utilities
Terna	XS1858912915	1000	BBB+	23/7/18	23/7/23	1.000	Utilities
Terna	XS1980270810	500	BBB+	10/4/19	10/4/26	1.000	Utilities
Terna	XS2209023402	500	BBB+	24/7/20	24/7/32	0.750	Utilities

Tab. 1 – List of main Italian Green Bonds trading on Borsa Italiana (Source: Borsa Italiana)

3.6 – *Opportunities and Challenges of Green Bond Financing in the Agricultural Sector*

The sustainable-oriented investments have grown in the energy sector more rapidly than in agri-food sector. The decision-relevant knowledge provided by science and engineering fields has supported sustainable investments in clean energy initiatives that constituted 19% of growing green bond markets, while agriculture domains only accounted for just 1% (CBI, 2017) since the sustainable investments in agri-food sector require better knowledge systems to make an easy use of measurements and to create sustainability indictors to support investment decision making process.

The agricultural sector is not considered as purely green bond issuance segment unless the investments are not based on carbon confiscation in soils. Moreover, this sector depends on local conditions compared to other sectors so generally it is difficult to formulate common standards (Cochu et al., 2016).

Clean energy sector being highly capital intensive and heavy-technology attain more investments than the fragmented, heterogeneous and complex agri-food sector. The partnerships among governments, agriculture companies and financial institutions are essential in designing Agrobiodiversity index to produce information that can integrate different scales and dimensions and to support the issuance of agro-biodiversity themed green bonds (Negra et al., 2020). A shift to sustainable food systems involves a collective approach at all level of governance including public authorities, private sector actors, non-governmental organizations, social partners across the food production and supply chain (Farm to fork, 2020).

4 – Conclusions

The future defined by the European Green Deal is full of opportunities and potential innovations in the agri-food sector. As we have seen, this implies considerable changes in processes, in the way of doing business, in the social sphere and in integration. However, in Italy there are still difficulties that are mainly anchored to preconceptions, to an overly traditional mentality and a lack of knowledge that does not allow firms to take awareness of all the tools that can help green development.

As we have described in this paper, green bonds' issue is spread in Italy; however, in the agri-food domain it is practically absent although in Italy very important companies work in the food chain and the agribusiness is one of the most important sectors of the country. The right measures should therefore be taken to address this gap in support of agri-food, so that it can support the whole economic segment and match the other domains where green bonds are exploited. In this regard, the public-private actors could play an exceptional role in demonstrating and implementing green financial securities by including environment related capabilities. This study is limited to analyse the implications of green bonds as an integrated intervention financing tool more specifically in the context of agricultural sector of Italy. The role of public private partnerships could be exploited as well as the other green financing tools that are available across various European countries need to be studied to investigate the sustainable development objectives of European Green Deal.

The creation of consistent, standardized and reliable worldwide criteria to differentiate between label and unlabeled green bond financing is needed by establishing a formal taxonomy to overcome the challenge of misuse of the labels. A strong coordination among all the major stakeholders could combat the green bonds market development issues. The agribusiness sector in green bond market is lagging behind compared to other sectors and requires a collective engagement of all major actors to strengthen the green financing in this sector. More specifically a closer collaboration between Chambers of Commerce, Local Public Entities and companies in agribusiness sector can play a pivotal role. The common objective is to strengthen local food

production chains through innovative systems, also making it possible for Italian Public Administrations to increase innovative public procurement procedures (Green Public Procurement), as well as new systems for verification and measurement of energy performance. In terms of best-practice, a closer synergy between stakeholders would give a higher degree of transparency and sensitivity to performance to companies' projects, thus encouraging the purchase of green bonds and, consequently, the development of related initiatives.

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