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# Towards low carbon economy – green bond and asset development

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**Abstract.** Green Bonds are an instrument for driving the environmentally friendly and low-carbon economy. Green Bonds are bonds whose proceeds are earmarked for and transparently channelled to environmentally-friendly projects and activities. The real estate industry has a multi-decade track record of addressing environmental impacts through the use of rating systems certified by independent third parties. Green building certification systems address multiple environmental impacts and measure outcomes across all asset lifecycle phases. Using bonds for such investments is not new but in an effort to improve transparency and increase opportunities both for issuers and investors it can take a more active role in combating climate change. The goal of this paper is to describe how property developer can use Green Bond as one instrument in sustainable life cycle management and continuous development of properties. The method used is a case study of Finnish property owner company, which commits to invest the funds raised in certified, environmentally responsible and energy-efficient projects. The single case study method employed in this study captured the process of case organization towards Green Bond initiative. More precisely the data was gathered by qualitative document analysis (QDA). The results show that company begin the process with focusing on environmental sustainability especially putting the effort in the first phase to energy efficiency. The Green Bond initiative provided a new avenue towards economic sustainability. Additionally, issues like shared use of facilities was discussed from social sustainability perspective. The results are interesting for property owners who are interested in systematic development towards regenerative built environment.

## 1. Introduction

Institutions of higher education have long-served society as leaders and innovators in research, discovery, and social responsibility. Now, they are assuming a leadership role in environmental responsibility, sustainability, and campus sustainability in particular. [1] The studies about universities' sustainability have indicated that there are many factors, such as psychological needs, physical facilities, personal motivations, public perception, price mechanisms and policies, for engaging the campus community in sustainability. [2] Campus asset management intends to use the proceeds of the bond to develop campus in a way that delivers positive environmental and social outcomes.

In more general level the underlying economic conditions and the need for growth, due to the growing population, have to include environmentally sustainable policies in order to address the problem in accordance with a healthy environment. In an effort to face the needs of our society we



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have to move from the idea of circular economy towards regenerative economy. [5] The climate change and the irreversible consequences it brings with, become a matter that concerns all the economic players e.g. property owners of university campus

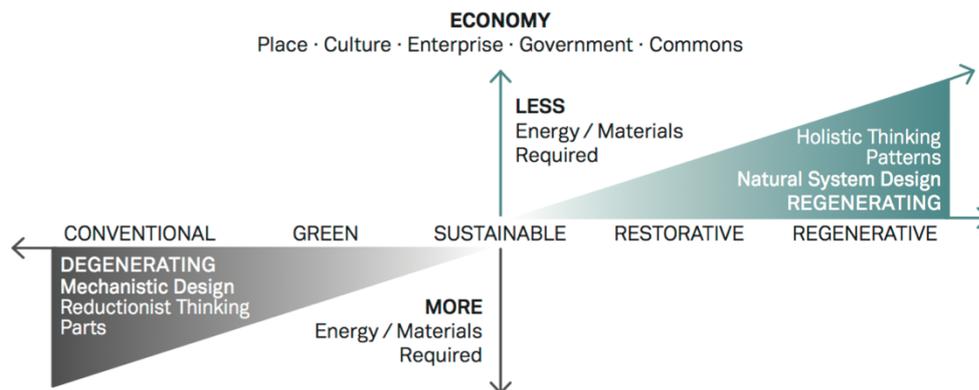
This papers aims to describe a process towards a regenerative economy by presenting the Green Bond case of university property owner in Finland. The question responded is how property developer of university campus can use Green Bond as one instrument in sustainable life cycle management and continuous development of properties towards stronger sustainability.

## 2. Sustainable campus

In terms of university campus sustainability, the College Sustainability Report Card is a useful operational list of criteria. It is an initiative of the Sustainable Endowments Institute in Cambridge, Massachusetts, USA. The criteria are organized by the four types or categories of sustainability [1] (Table 1).

<b>Ecological criteria</b>	<b>Economic criteria</b>	<b>Institutional criteria</b>	<b>Energetic criteria</b>
Food and recycling: dining services policies, including recycling and composting programs	Endowment transparency: accessibility to endowment investment information and shareholder proxy voting records	Administration: sustainability policies and commitments by school administrators and trustees	Climate change and energy: energy efficiency, conservation commitment to emissions reductions, use of renewable energy on campus
Green building: campus-wide green building guidelines and green building design for new and existing buildings	Investment priorities: prioritization of return on investment, investment in renewable energy funds, and investment in community development loan funds	Student involvement: student participation in sustainability initiatives and support for these activities by school administrators	
Transportation: alternative transportation for students, faculty, and staff; alternative fuel or hybrid technology for campus fleets			

Different Green Lease and Green Bonds are part of the economic criteria. However, such decisions and actions require the green buildings in campus portfolio. This is supported e.g. by environmental certification of building projects and e.g. by the Better Buildings Partnership (BBP), a collaboration of property owners working together to improve the sustainability of existing building stock [3]. Green bonds can mobilize resources from domestic and international capital markets for climate change adaptation, renewables and other environment-friendly projects. Such economic approaches enhance all stakeholders to include sustainability issues at a different level in economic considerations. [4] In Figure 1 the path from more conventional to regenerative economy is presented, showing that regeneration goes far beyond sustainability. [5]



**Figure 1.** Towards regenerative economy - From Business as Usual to Regenerative Sustainability [5]

### 3. Green Bond

The term green bonds refer to bonds aimed at financing investments with an environmental benefit or a focus on reducing vulnerability to environmental changes. The focus is on investments relating to mitigating or adapting to climate change. This enables to broaden funding base by gaining access responsible investors, who include a broad range of non-economic criteria, including social, environmental and governance, in their investment choices. Green Bonds are fixed income securities which finance investments with environmental or climate-related benefits. Green Bonds are an integral component of “green finance” more generally, which aims to “internalize environmental externalities and adjust risk perceptions” for the sake of increasing environmentally friendly investments. [6;7] The Green Bond market has grown exponentially over the past few years. It is often seen as a financial instrument that may help overcome the low-carbon investment challenge. Green Bonds can mobilize resources from domestic and international capital markets for climate change adaptation, renewables and other environment-friendly projects. They require that the proceeds will be invested in projects that generate environmental benefits. In its simplest form, a bond issuer will raise a fixed amount of capital, repaying the capital (principal) and accrued interest (coupon) over a set period of time. The issuer will need to generate sufficient cash flows to repay interest and capital. This is how United Nations include Green Bonds in their development program. [7].

Green Bonds can help investors implement their long-term climate strategies and enable responsible investors to have alternatives to broaden their delete portfolios. In turn, Green Bonds can help bond issuers communicate their sustainability strategies, create internal synergies between financial and sustainability departments, and expand and improve relationships of borrowers with debt providers. Additionally, Green Bonds can support the implementation of national climate policies – through improved awareness and more efficient capital allocation, especially in the perspective of redirecting capital towards low-carbon and climate resilient projects. The investors are looking at corporates’ sustainability/ESG (Environmental, Social and Governance) performance to better understand which ones are well positioned to transition to a green economy. Corporates with higher levels of sustainability performance and with a lower policy risk are attractive to investors. [11]

Investors are often looking for more transparency when gathering the details of the bond. This includes use of proceeds, project evaluation criteria, management of proceeds and issuers reporting on the Green Bond. A second-party opinion by a trusted and a respected evaluation firm provides a clear assessment of the issuer’s Green Bond framework. [8] As an example of such stakeholder CICERO is a climate research institute based in Oslo and the leading provider of second opinions. It evaluates the issuer’s framework for both project selection and investment. [9]

Financing of investments through Green Bonds has grown rapidly in recent years. But definitions of what makes a bond “green” vary. Various certification mechanisms have evolved to allow more

granularity as well as continuity in assessment [10]. While the Green Bond is still the phenomena in development there are some challenges: question of environmental integrity of Green Bonds is related to definitions and procedures: how to define “greenness”, which ultimately depends on the objectives of the use of Green Bonds. The second challenge is how market-driven and public support measures may help increase the tangible financial contribution of Green Bonds to the low-carbon transition. The Green Bond market is increasingly seen as having important potential to contribute to the systematic labelling of financial assets financing LCCR (low-carbon, climate-resilient) investments. Enhanced transparency of information provided by Green Bonds can unlock a number of benefits for issuers, investors and policymakers supporting the growth of the market. While there is an increasing consensus that this additional transparency brings added value, there are however neither harmonized definitions and taxonomies, nor a common reporting framework for labelled Green Bonds. To ensure its meaningful contribution to the low-carbon transition through improved transparency of information, public and private market actors will need to address these challenges and guarantee the environmental integrity of Green Bonds and improve climate-related disclosures for other financial products. [11] It is important to learn about the process of applying the Green Bond framework in different asset segments and in different cultures. The following case study focus on university properties and Green Bond.

## 4. Case Study

### 4.1. Company description

The case company, University Properties of Finland Ltd (SYK) is a nationwide owner and developer of higher education campuses outside of the Helsinki metropolitan area. SYK’s portfolio of properties include buildings used for various purposes and are categorized as office and educational buildings. Altogether SYK owns 1.1 million square meters of space and yearly turnover is about 150 million euros. According to organization’s vision it aims to be the most valued campus developer in Europe. Organization is owned by the Government of Finland and nine Finnish universities.

### 4.2. Methods

The single case study method employed in this study captured the process of case organization towards Green Bond initiative. More precisely the data was gathered by qualitative document analysis (QDA). It is a research method for rigorously and systematically analyzing written materials. The material before (2013-2018) and after (2019) the Green Bond initiative was analyzed by researcher. Material included meeting memos, organizational policies, sustainability reports and strategy documents. This was compared with Regenerative Economy (Figure 1) framework. Although documents alone can by no means give a complete picture of an organization’s approach and activity, they are strongly indicative of where efforts and aims are focused.

The workshops for the internal group (Green Bond Committee) of the Green Bond preparation (3 workshops) and implication (2 workshops) was conducted and followed by author in order to understand the specifications. The workshop participants included both asset management and property management experts from the case company. The secondary data included the interviews with stakeholders in the Green Bond preparation phase. The interviews were supplementary data for Green Bond decision making of the case company.

### 4.3. Analysis of the phase 1 Steps towards from green to sustainability 2013-2018

The case company has paid attention to environmental issues since its founding in 2009. It covered sustainable development as a part of its strategy and documented its long-term sustainability vision (until 2030). Company signed 2011 the TETS agreement, Finnish Property and Building Sector Energy Efficiency Voluntary Agreement, that municipalities or private companies can sign to support meeting national commitments.

2013 the company made a decision to aim to certificate the largest construction projects by using BREEAM-certification (Building Research Establishment Environmental Assessment Method). Concretely, the first BREEAM certification achieved with Kampus-areena in Tampere, which is a 15 000 gross square meter building and was finished on August 2015. The eight floor building consists of bigger three floor base and five floor tower. 60% of the premises are used by the university and 40% is rented to an office and business premises. It is a platform for students, researchers and industry professionals to collaborate.

From 2013 to 2018, case company has reduced its CO<sub>2</sub> emissions from energy by 12,9 %. Until year 2018 the company has succeeded on planning and constructing nine buildings with a grade of “Very Good”. On June 2017 the case company was selected by the Ministry of the Environment as the best commercial property owner in Finland regarding completed energy savings during the years 2010 – 2016. This was also the year when the company established an internal Green Bond Committee to prepare the Green Bond initiative. The Green Bond Committee consisted of four members: Chief Financial Officer, Director of Project Management, Environmental Engineer and Controller. The phases are summarized in Table 2.

**Table 2.** From energy efficiency to wider scale of ecology.

2009	2011	2013	2015	2017	2018
Setting goals	Signing voluntary Finnish Property and Building Sector Energy Efficiency Agreement (TETS)	Making decision of all major construction being BREEAM certified	The first BREEAM certification achieved with Kampus-areena building in Tampere	Green bond preparation started	Nine BREEAM certifications achieved  First Green Bond released in November

The company reports on responsibility in accordance with the GRI (Global Reporting initiative) principles and they publish an integrated report in the GRI database.

This phase from 2009 to 2018 included many green initiatives, which improve the energy efficiency in building portfolio. This was ensured by using environmental certification systems. After the first success in environmental certifications the asset management initiatives for economic sustainability was the interest of the property owner and the first Green Bond was released in 2018.

#### 4.4. Eligible projects

In order to achieve Green Bonds to be used to finance new Eligible Projects the company had to fit into one of the following five categories:

- BREEAM certification with a certification level of at least Very Good and an energy use that is at least 15% lower than that required by the Finnish national building code
- Existing buildings with BREEAM In-use certification (two parts out of three: Asset and Building Management) with a certification level of at least Very Good
- Energy efficiency projects leading to a reduction of energy use of at least 25 per cent.
- Technical solutions utilizing renewable energy of solar, geothermal or wind power to satisfy the energy needs of properties.
- Clean transportation infrastructure for electric vehicles.

In addition, case company’s Green Bonds will not finance fossil fuel generation projects.

Eligible Projects were evaluated and selected by companies Green Bond Committee. The Green Bond Committee approved Eligible Projects in consensus.

The division of the allocation of Green Bond proceeds between new projects and refinancing will be included in company's annual Green Bond Investor Letter including: a list of the all projects financed including allocated amount, a brief description and expected impact and information about the division of the allocation of Green Bond proceeds between new projects and refinancing

The project 1 was Medisiina D in Turku, Finland. It is a multi-user building and hub of medical development that serves the needs of the Hospital District of Southwest Finland, the University of Turku and Turku University of Applied Sciences. In addition to each of the three having premises of their own in the building, there are shared information, restaurant, teaching and meeting spaces as well as some shared laboratory facilities. Equipment supply premise have been consolidated in a single unit, compared to 15 locations previously. Shared use reduces the need for space and resources and creates cost savings.

The project 2 was Aurum Building also in Turku, Finland. It is still under construction. Aurum's main users will the Faculty of Science and Engineering of Åbo Akademi University and the Department of Chemistry of University of Turku. Other users include the Biodiversity Unit and the Library of the University of Turku. The spatial solutions support joint activities and shared services. This contributes to a high rate of utilization and the economical use of space.

The third project is Verso in Lappeenranta, Finland. The objective of Verso project in Lappeenranta was the increased sharing of space between Lappeenranta University of Technology and Saimaa University of Applied Sciences. The Verso project will involve upgrading the university's main building and two laboratories, adding more premises for businesses and modernizing building services. Efficiency will be improved by more streamlined operations and higher rates of utilization. The projects are described in Table 3.

**Table 3.** Eligible Projects.

	<b>Project</b>	<b>Location</b>	<b>Project status</b>	<b>Project finalized</b>	<b>Total estimated project costs, €m</b>	<b>Allocated proceed 31.12.2018, €m</b>
New projects	Medisiina D	Turku, Finland	In use	13.3.2018	72	36
	Verso Project	Lappeenranta, Finland	In use	20.10.2018	40	40
	Aurum Building	Turku, Finland	Under construction		80	7
<b>Total</b>					<b>192</b>	<b>83</b>

The case company established a dedicated account for the net proceeds of issued Green Bonds. The allocation of funds from the proceeds will be monitored by company treasury and verified by external auditor annually. If the account has a positive balance, funds will be deducted and added to company's lending pool in an amount equal to all disbursements made from that pool during the quarter in respect to Eligible Projects. Unallocated funds may be invested in liquidity reserves and managed accordingly. If, for any reason, a financed Eligible Project no longer meets the eligibility criteria, the project will be removed from the eligible pool of projects financed with Green Bond proceeds.

#### *4.5. Phase 2 Steps from sustainability towards regenerative approach*

The company reports on its green bonds through its annual Green Bond Investor Letter. The letter will cover a list of all projects financed, including their allocated amount, a brief description and expected impact. Reporting includes also the division of allocation of financing between new and refinanced projects. The company aims to report on the type and level of certification, energy use and CO2 emissions when relevant and potentially other environmental benefits. The Annual Investor Letter will make use of the continual monitoring that company performs on its consumption and emissions and

report on the actual ex-post impacts when feasible. Emissions are based on the relevant emissions conversion factors from the local grid in question. It is recognized that it is difficult to define quantitative indicators for old buildings with a wide range of uses. The annual letter, together with the statement of external verification, will be made publicly available online on company's website.

Transparency, reporting, and verification of impacts are key to enable investors to follow the implementation of Green Bond programs. Procedures for reporting and disclosure of Green Bond investments are also vital to build confidence that Green Bonds are contributing towards a sustainable and climate-friendly future, both among investors and in society. Company's Green Bond Framework, together with its Sustainability Framework, Energy Management Framework, Environmental review and guidelines of company, Sustainability Vision 2030 and its approved Energy Efficiency, Carbon Neutrality and BREEAM Policy, aims to support the transition to low carbon and climate resilient growth.

Company aims to reduce energy consumption with 7.5% in 2025 compared to 2016, with an interim milestone set for 4% reduction by 2020. Company has the following comprehensive set of energy efficiency and emissions targets for new and retrofitting building construction:

- 1) energy efficiency rating E-number of best A class (which requires 20% higher energy efficiency than under Finnish regulations);
- 2) less than 150 kWh/sqm/a purchased energy;
- 3) at least 75 % of energy used in building coming from renewable energy sources; and
- 4) less than 25 kg CO<sub>2</sub>/sqm/a emissions.

It will fulfill BREEAM certification grade of "Very Good" for new construction as well as for major renovations but has ambitions for achieving the grade of "Excellent" for new buildings. The intention is to put effort also to BREEAM-In-Use certifications in various university campus. Similarly, they have set the aim for carbon neutrality by 2030. These future visions have been summarized in Table 4.

**Table 4.** Future development from sustainability towards regeneration.

2020	2021	2023	2025	2030
Carbon neutral goals by compensation	Biodiversity principles for design and maintenance	Potential of Social Bond	Updating Energy Efficiency targets based on Finnish Property and Building Sector Energy Efficiency Agreement (TETS)	Carbon neutral goals without compensation

The company has defined the most important sustainability topics which support the business and strategy in company level. Additionally, it is currently working to define more precise metrics to indicate the development. This future path from 2020 have the following regenerative initiatives: goals for carbon neutrality and social bonds. The property and asset management portfolio is more interlinked. When the goals are achieved they provide more good to build environment instead of only improving it.

## 5. Conclusions

The results show that company begin the process with focusing on environmental sustainability especially putting effort in the first phase to energy efficiency of property portfolio. The second phase included already more conscious and systematic intention to achieve the interlinkage between the

property and asset management by Green Bonds. Additionally, issues like shared use of facilities was discussed from social sustainability perspective. The future visions include more ambitious goals towards regeneration. This makes the company also more dependent on the ecosystem around it.

University campus as part of sustainable and even regenerative society is a central matter. In the case study Green Bonds along reasonable trajectories avoids CO<sub>2</sub>-emissions corresponding to the total emissions in national level. This is part of societal impact of university in general. Also education and research can be beneficiaries in various ways. The benefits of the use of Green bonds are multiple. The common purpose to help the environment or to invest in a positive social outcome brings in an outstanding cohesiveness to the stakeholder relationship.

The Green Bonds market is expected to progress over the coming years on a large-scale. In order to make this shift happen, there must be some changes inside the market. The requirements of Green Bond projects will be higher and more aligned. Transparency and common frameworks are essential in the future.

The transition to a sustainable global economy requires scaling up the financing of investments that provide environmental and social benefits. Next to Green bonds e.g. Social Bonds can play an essential role also in the case study organization. This paper is providing one example of steps towards regeneration by using economic and ecological goal settings. The next step is to identify the potential of Social Bonds and provide new perspective to responsible property owner and regenerative actions.

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