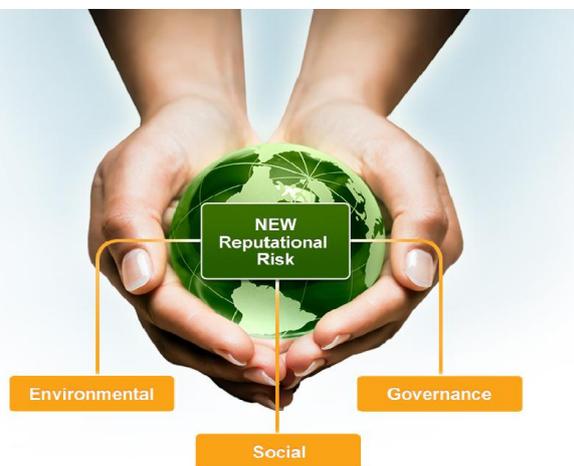


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EarthRate ESG White Paper – Green Buildings

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EarthRate's ESG White Paper about Green Buildings and real estate responsible investments it's a survey about the ratings in this field, the investor point of view to the real estate investments and the trends laying in this field at the moment. It also showcases an integrated construction process, a Wood City in Helsinki, Finland, solar plan and grid integrator SolarMax and the Green League by US Embassies. The study also highlights the state of Green Bonds as new financial tools to accelerate Green Building to mitigate climate change. These are tools how investors can reduce the systemic risk to an unsystemic one, at least part of the risk.

1. Green Buildings – legislation, industry and investors

Property markets have been very favorable during the year 2014. The sentiment for European real estate has helped for example big property investors to enter to the markets and form new real estate funds and indices. Investors are primarily interested in the central business districts of the largest cities and shopping malls. For long-term responsible investors property is expected to provide diversification and long-term sustainable income.

In the financial markets Construction & Buildings Indices have gained. For example the Nordic NasdaqOMX Construction and Materials have risen about 4 % this year and 26,7 % last year. Eurozone real estate PMI have risen to new highs during the Feb 2014. This reflects the shift to new buildings and a huge renovation projects.

There will be major legislative changes in the European real estate markets, primarily which reflect the energy efficiency and materials. For example in the UK new energy efficiency legislation from 2017 is expected to affect about a fifth of Britain's commercial building stocks. This is estimated to be about 100 billion pounds according to the UK Green Building Council.

EU's Energy Efficiency Directive which member states must implement by June 2014, is expected to reduce EU's energy consumption by 200 billion euros. This directive requires that all EU-28 countries have to use energy more efficiently at all stages of the energy chain. According to this directive public sector has to renovate 3 % of buildings owned and occupied by the central government and include energy efficiency considerations in public procurements.

In the UK the climate change mitigation is targeted so that all new build homes are zero carbon by 2016. This mandate was effective from April 2014 and it includes that a 6 % reduction in carbon emissions for new build homes (UK Building Regulations, April 2014). This also reflect an uplift in efficiency standards of 9 % for non-domestic buildings.

In Finland there is government backed working group developing “nearly zero-energy building” standard. This FinZEB project will have its first event during the summer 2014 and the aim is to build the standard for national definition during this year.

The UK Renewables Heat Incentive (RHI) will be launched also in the spring 2014 aims to develop the overall heat strategy for the UK- covering air & ground source heat pumps, biomass and solar thermal. It also takes account the payback time, the effectiveness of different technologies and how they can solve the cost-effective solution to low and zero-energy.

One of the reasons for investors to appetite for sustainable buildings is that they offer good rental yields, cost savings and higher premiums in sales. ESG-factors also help investors to mitigate regulatory, market and physical risks related to global trends.

In order to progress Green Buildings and Sustainable Construction it means very tight co-operation between real estate developers, asset managers and investors.

During the lifecycle of a building, about 80 % of its energy is used during the use. The rest of the energy consumption is related to the materials and functions in the house. These include for example the insulation, lightning, overall floor plan, windows and the smart technology of heating, cooling, air conditioning and safety.

IPCC’s climate change 2014 report says that in 2010 building sector accounted for 32 % final energy use and 8,8 Gt CO₂ emissions. This include direct and indirect emissions. According to this organization CO₂ emissions are expected increase by 50-100 % by mid-century in baseline scenarios. This growth reflects the improvements in wealth, lifestyle and urbanization.

Investors are increasing their asset allocation in properties

According to the United Nations Environmental Protection’s Financial Initiative (UNEP FI) Sustainable Buildings and Climate Initiative, the energy cost of buildings is one third of the total energy consumption globally.

It is important to understand the whole life cycle – Cradle to Cradle – of the buildings and their impact on climate change and greenhouse gases (GHG). This element has put more emphasize of investors to tackle the rising energy consumption of property investments and also to find new energy sources like solar power plants and other renewables in the heating and cooling of the buildings.

According the UNPRI, which represent over 1000 asset managers and assets worth of 34 trillion dollars globally, property is popular among the PRI signatories. In general property investments in listed and non-listed real estates have grown during the couple of years as more buildings are being certified and more information about the benefits of green buildings as an investments opportunity have risen.

About 40 % of UNPRI signatories have invested in non-listed real estate and 23 % invested in listed real estate. In non-listed real estate investments the ESG-factors have been integrated into the decision process better than in the listed real estate. The investor categories include pension funds (corporate and governments), insurance companies, foundations, government funds and development banks.

Several studies show that green buildings mean higher rents and higher sales prices. For example McGraw Hill Construction has studied that the sales premium in Australia is 9 %, in the US it is 4, 8 % with Energy Stars –ratings and 8 % in the UK with Breeam-ratings.

According to the study from Professor Gary Pivo (Responsible property investing) there are two kind of responsible investment strategies in property investment: no cost and value added strategies. No cost strategy is related to a situation, where an investor wants to improve social or environmental performance of their properties at zero added expense. Turning out of lights in unoccupied areas for example is a no-cost strategy that mitigate the climate change.

Value added strategies require some financial resources but they pay for themselves by either increasing net incomes (higher rents or lower running costs) or reducing risk premium (lower environmental risk, less depreciation or less market risk). For example investments in ground source heating pumps or solar panels to minimize the energy consumption are examples of this strategy.

CDP, the non-profit organization for climate change, and Cities40, world megacities taking action against climate change, said that 110 cities reported on their climate change data to CDP in 2013. Cities varied for example from San Jose to Salvador, Basel to Sydney and Moscow to Johannesburg. Two thirds of reporting cities said that they account city-wide emissions. Together these cities account for just 1 billion tonnes of greenhouse gas emissions. This is as much as Japan, the world third largest economy and fourth largest emitter of greenhouse gas emissions. From Nordic countries Stockholm, Copenhagen and Oslo were also participating this survey.

According to the survey, in Europe 11 cities reported sea level rise and 23 cities of temperature increase. Floods very reported in 16 cities in North America and in 9 cities in Europe. For insurance companies this information give guidance of the climate change risks in different geographical locations and this is also a tool to change a systematic risk to an unsystematic one, or part of the risk.

CDP estimates that carbon reductions will lead to ROI of 33 %, which means a value of 15 billion US dollars. CDP's Carbon Action Initiative is backed by 190 investors and according to the non-profit organization the heaviest polluting industry sectors globally are Electric Utilities (17,4 % of global reported to CDP) followed by Oil & Gas (16,8%) and Metals and Mining (13,8%)

The US President Obama's Climate Data Initiative will give more information about the sea level rise and coastal flooding among businesses and public in all the US coastal cities. For example Microsoft, Google, Intel and ESRI have said that they will support the Initiative. The dataset is publicly available at data.gov/climate.

2. The biggest trend in the building sector is BIM

The biggest trend in the building industry is the BIM (Business Information Modelling), which offers savings in time spend in designing the building and finding the right & optimal designs & solutions for the overall use of the building. BIM is one of the biggest elements where architects, building specialists and project managers can work together for a more sustainable buildings, infrastructure and logistics.

BIM projects are widely used by governments and in the UK Government requirements is that by year 2016 all Governments projects should use BIM to save designing and the overall life cycle costs in the project and far most: to save energy as expected in the designing of the project. BIM is seen as a tool to meet all the energy and building performance targets and a way to commit to climate change mitigation.

BIM is used in large infrastructure projects

BIM is used also in big infrastructure projects like city transportation, logistics, highways, hospitals and other government buildings. This sector is expected to grow rapidly and the OECD estimates more than 40 trillion dollars could be spent on infrastructure projects worldwide by 2030.

In the UK National BIM survey found that BIM is moving from niche to process adopted. More than 1000 respondents replied to the survey and half of them were architects or architectural technologists. They said that over 50 % had used BIM on at least one project during last year. The UK Government mandated that BIM 2 level must be used on all large publicly funded projects. The survey results were published in April 2014.

BIM Level 2 requires the use of protocols for sharing data and so called 5 D information that integrates physical design with construction sequencing and cost data. One of the software programs that would enable this kind of work is the US Autodesk.

Singapore is also following UK saying that all the projects with gross floor over 5000 square meters should use BIM. In architectural projects BIM is already in use in Singapore.

For Building industry the next Building Smart event in Beijing in May will be important. This international meeting will decide the polices and processes to deliver standard for business processes and data exchange to transform the construction and facilities management industries across the world.

3. The most important KPIs for building industry

The most important ESG KPIs for Building & Materials industry in their whole lifecycle by EarthRate:

Environment	Social	Governance
<ul style="list-style-type: none">• Energy efficiency, during the design, construction & use & at the end• Building materials• Water• Waste• Logistics• Biodiversity• Issue & natural resource communications & Reputation	<ul style="list-style-type: none">• Human rights• Society• Human capital• Occupational health and safety• Employer branding & Reputation	<ul style="list-style-type: none">• Economic value in the life cycle• Ownership• Good governance• Code of conduct• Risks/crisis management• Supply chain management• Company/product /service branding & communications & Reputation

Environmental KPIs reflect the nature of building sector with major emphasizes in energy, building materials, water and waste. As new KPIs there are the communications aspects of issues and natural resources. For construction companies natural resources in the whole value chain is important topic and thus need communications skills and resources.

In the Social KPIs employer branding in general is one of the biggest issues. Of course safety and health regulations in the industry is a must.

In Governance side the KPIs are related to the good governance (for example anti-corruption), supply chain management and overall branding and code of conduct. In all the ESG areas Reputation is a core element.

For companies these ESG KPIs are important for several reasons:

- to develop their corporate responsibility strategies
- help to integrate the sustainability issues to all business levels
- determining the reporting KPIs
- determining the payment criterias
- these indicators help to follow up the development of the corporate responsibility actions taken
- to communicate about these issues to different stakeholders
- these are also the main points to enhancing the overall Reputation & Brand experience and brand promise in building & construction sector

For investors & asset managers these KPIs help to analyse the ESG performance between different companies and to make their investment decisions based on ESG issues.

Sustainable Building & Materials Case example: Sputnik Engineering, Solar Max plants

A Swiss company named Sputnik Engineering has been developing and producing its grid-connected solar inverters for more than 20 years. Company is one of the leading actors in its field globally. According to the company the SolarMax product range covers every need from detached houses or multiple dwellings via agricultural and industrial buildings up to solar energy power plant in megawatts range.

The growth of large solar power plants is continuing, the company says. According to the Swiss company utility-scale power plants are large ground-mounted plants implemented either using central inverters or decentralised string inverters.

For residential and for medium and large companies SolarMax offers web portal to monitor the solar output and give alarms in the event of failures. (www.solarmax.com)

Sustainable Building & Materials Case: League of Green Embassies by US

Green League of Embassies is a US based initiative for energy efficiency in embassy buildings. One of the leading buildings is the US Embassy in Helsinki, which has LEED Platinum certification.

The renovation started in 2010 and the emphasis was on modern design, safety, security and accessibility. By the Department of State's Bureau of Overseas Buildings Operations (OBO), Ambassador Bruce Oreck and the embassy staff, the Innovation Centre was born. The aim was to use sustainable and green design technologies reducing the embassy's consumption of energy and resources. Also the environmental aspect was taken into account in the landscaping of the area with more trees.

The Innovation Centre is open to public organizations for different kind of events and happenings. During the year 2013 more than one thousand visitors visited the Centre. (www.leagueofgreenembassies.org)

Sustainable Building & Materials Case: Wood City –the world biggest wood city?

Wood City is a joint venture of Finnish construction company SRV and forest company Stora Enso. The aim is to build residential buildings and form an urban wooden quarter in Helsinki. The construction will start in spring 2014 and according to the companies these buildings are the first massive-wood buildings in Europe based on modular technology that reach into eight stories.

The service functions in the buildings have been developed in different working groups to provide the best working environment. Service concepts are based on users' needs for hotel and office facilities. (www.woodcity.fi)

4. Green Bonds to accelerate sustainable building

Green Bonds by real estate companies are now a growing financial trend in the real estate markets. The aim of the bonds is to target money to sustainable projects to lower climate change impact in buildings and lower energy use. The use of corporate bonds is growing as an investment tool while the new regulations, Basel III, will affect the banking sector in general.

During the year 2013 and now in 2014 there have been several different green corporate bonds. For example issuers have been Vasakronan, Toyota Financial Services, Unibail-Rodamco and Unilever. All have issued green bonds to enhance sustainable investments in their operations. According to Dealogic the amount of green bonds is 7, 4 billion dollars.

Swedish biggest real estate company Vasakronan has issued the first corporate green bond to finance its sustainable buildings projects. The bond amounts 1, 3 billion Swedish kronas and the lead banks were Scandinaviska Enskilda Banken and the World Bank. The bond has the same terms and conditions as the other bonds issued by Vasakronan. According to the company, at the moment the company invests 8,4 billion Swedish kronas in new construction and renovation projects, which all aim high environment standards. The company is owned by four AP-funds in Sweden.

Green Bonds are also used to finance large infrastructure projects. One of the examples could be cleantech companies to provide renewable energy for the growing demand. The World Bank has for example issued two major green bonds to invest in infrastructure projects and the Government of India is considering government-backed green bonds to fund clean-energy projects. According to Bloomberg News, India is planning to double its clean-energy capacity to 55 gigawatts by 2017. Lack of affordable financing has been the bottle neck for the cleantech companies to develop new technologies.

This tool is also seen to help to finance sustainable land use. Climate Bonds Initiative Advisory Panel sees there growing demand, especially related to REDD+ financing in forestry and agriculture.

One of the world biggest sovereign wealth fund, the Norway's Oil Fund, is expected to double their investments in renewables and raise also property allocation. According to the new structuring of the Oil fund, the fund is now responsible itself to determine the responsible investment targets they want to invest in.

Publicly traded real estate funds to face sustainability requirements

Publicly traded real estate funds are facing new shareholder proposals from institutional investors. For example in the US several Real Estate Investment Trusts (REITs) and development companies have received shareholder proposals requesting annual sustainability reporting, greenhouse gas emissions reductions goals and linking executive pay to ESG performance (Ceres).

Growing transparency requirements for listed companies

The European Parliament approved a Non-Financial Reporting Directive in April 2014. This means corporate reporting (for listed and certain unlisted companies with 500 or more employees) on environmental, social, employee, human rights, anti-corruption and bribery, and board diversity issues. The Directive is an amendment to existing accounting legislation that will impact over 6,000 EU-companies. The implementation period is for two years and there are no requirements for an outside assurance or auditing.

Ceres with the World Federation of Exchanges are discussing about developing sustainability disclosure requirements for listed companies. The focus in this initiative is that all listed companies should report their ESG information according to these categories. This would mean comply/explain approach in each item:

- Governance and Ethical Oversight
- Environmental Impact
- Government Relations and Political Involvement
- Climate Change
- Diversity
- Employee Relations
- Human Rights
- Product and Service Impact and Integrity
- Supply Chain and Subcontracting
- Communities and Community Relations

5. Sustainable Ratings - drivers for investors

One of the important drivers in this field have been the green ratings. There are several sustainable building ratings, but one of the best known is the US Green Building Council's LEED standard. It is about the energy efficiency, waste management, water use, logistics, transportation and land use. The LEED standard is divided to four categories: certified, silver, gold and platinum.

This certification has been known for its certification of energy efficiency in office buildings. Now the organization is expanding to other sectors like data centers in IT-sector and warehouses in retail sector and homes. The new LEED 4s includes also such impact indicators like climate change, biodiversity and natural resources. According to the organization, there is over 10,6 billion square feet of certificated buildings globally.

The UK Breeam rating is used primarily in the UK and in Ireland. Then there are also several national certifications such as Haute Qualite Environmentale (HQE), Deutsche Gesellschaft fur Nachhaltiges Bauen (DBNB), Griha in India, Nabres in Australia, Minergie in Switzerland and Promise in Finland. The difference in the ratings is for example in the energy calculations.

The Global Real Estate Sustainability Benchmark (GRESB) is committed to assess the sustainability performance of real estate portfolios. The benchmark is used by institutional investors.

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About EarthRate:

EarthRate, founded in 2011, is a privately held company. Headquarter is located in Helsinki, Finland, but the company has a global focus with presence also in the US and New Zealand. EarthRate specializes in rating and researching Environmental, Social and Governance (ESG) performance and assessing companies by their Reputation Management.. The company is developing an ESG rating and index from market perceptions.

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