KEA Charrette 2024

What is sustainable?

Sustainability Catalogue

October 6–11

International Design Workshop

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COPENHAGEN SCHOOL OF DESIGN AND TECHNOLOGY


SUSTAINABILITY
IN IT AND DIGITAL
DESIGN

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Sustainable Web Design: Alan Engelhardt and Jonas Holbeck

For many years, the students and developers of digital design has not worried about sustainability – bolstered by a rapid digitalization of society and the development of such practices as the paperless society, free E-mails and later "the cloud", web designers have not had to worry about the environmental consequences of their work. Only in the past few years has it become obvious that digital design and the use of digital solutions contribute significantly to the world's CO2 production and global warming.

The project: In the Multimedia Design program at KEA, we were affected by this realization and wanted to contribute to solutions to the environmental impact of web design and we started a project to 1) raise awareness about the issue among ourselves and students, 2) collaborate with agents in the field who work on this and 3) incorporate our findings in our elective on Frontend Design and use it in a project.

We and our students have worked with the Communicaiton Bureau Forte Advice in the development of a digital tool that would help start the sustainability dialogue with customers who want certain digital solutions. We also worked as "sustainability consultants" for University of Copenhagen when they needed to redesign their web site.

The Dilemmas: The dilemmas when working with sustainable IT solutions are often not that different from what you might meet in other businesses/areas: The difficulty in changing production systems and best practices in an industry that has quick turnaround and is in rapid development. The most significant dilemma we found in this specific area is the discrepancy between the customer's expectations to design, content and (partially) functionality and the web designer's ambition to minimize the environmental impact of their work. A typical example of this is the use of videos and decorative pictures on websites as these present a challenge when trying to do environmentally friendly web designs. The use of such items in web design has been growing in the later years and that also means that customers and users have started to expect them in the end product - A web site without decorative images is simply not accepted. A similar example is the use of user tracking – something that also contributes significantly to the resource spending on web solutions.

Learn more:

This website gives you a ling list of useful and easily accessible sources on the topic of sustainable web design.

Do also check out this website from KEA lecturer Marie Christiansen who focuses on sustainable web design (in Danish)

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Social Sustainable UX: Steen Carlsen and Peter Tolstrup

Digital design absolutely plays a part in the larger issues of this era: General well-being, climate change and Information wars. One way that digital design plays a part in these problems, is connected to personalized marketing, behavior manipulation and the use of new technologies such as generative AI in creating profit for commercial businesses.

These mechanisms are often used to create deceptive or dark patterns. Deceptive patterns are used to deceive or entice users to buy extra items, downloading non-essential programs, binge-watching, or giving up personal data – and hence adding to mass consumption.

In an effort to combat deceptive patterns, EU Directives such as GDPR, DSA, ESG and CSRD attempt to get companies to take on a social responsibility and use due diligence and sustainable measures. These directives are marketed as social responsibility but are not actually reflected in the digital user experiences.

The project: There is a great need to develop socially responsible user experiences and use methods that can recognize and avoid deceptive patterns and design empowerment patterns. Designing empowerment patterns means to give the end-user ways to avoid or detect deceptive patterns.

Dilemma: The dilemma within this topic is how you design digital user experiences that both create economic growth for the businesses and at the same time are beneficial to people, climate, and society. Another dilemma within this, and more broadly within sustainability, is to think about how responsibility for change is being placed: EU directives are telling us that businesses need to take more responsibility for their web design, but in reality, much of the responsibility is put on the consumer. If you are a business that wants to sell products, will you be the first to create a platform that doesn't use deceptive patterns? Or would that put you out of business?

Learn more:

A History of Patterns in User Experience Design – Erin Malone.
A general Introduction to Design patterns in UI/UX

Dark Patterns: Inside the Interfaces Designed to Trick You – Harry Brignull.
An introduction to Deceptive Design Patterns by Harry Brignull – the originator of the term.

Deceptive Patterns in UX: How to Recognize and Avoid Them – Maria Rosala.
A newer article on Nielsen Norman Group's blog.

Deceptive Patterns
Website by Harry Brignull. Lists of deceptive patterns with examples.

Deceptive Design
A page from the Norwegian Consumer Board on how they work with deceptive (dark) patterns. Look also at this report called Deceived by Design

Guidelines 03/2022 on deceptive design patterns in social media platform interfaces: how to recognise and avoid them
A thorough and useful report from EU about the use of decetive patterne on social media.

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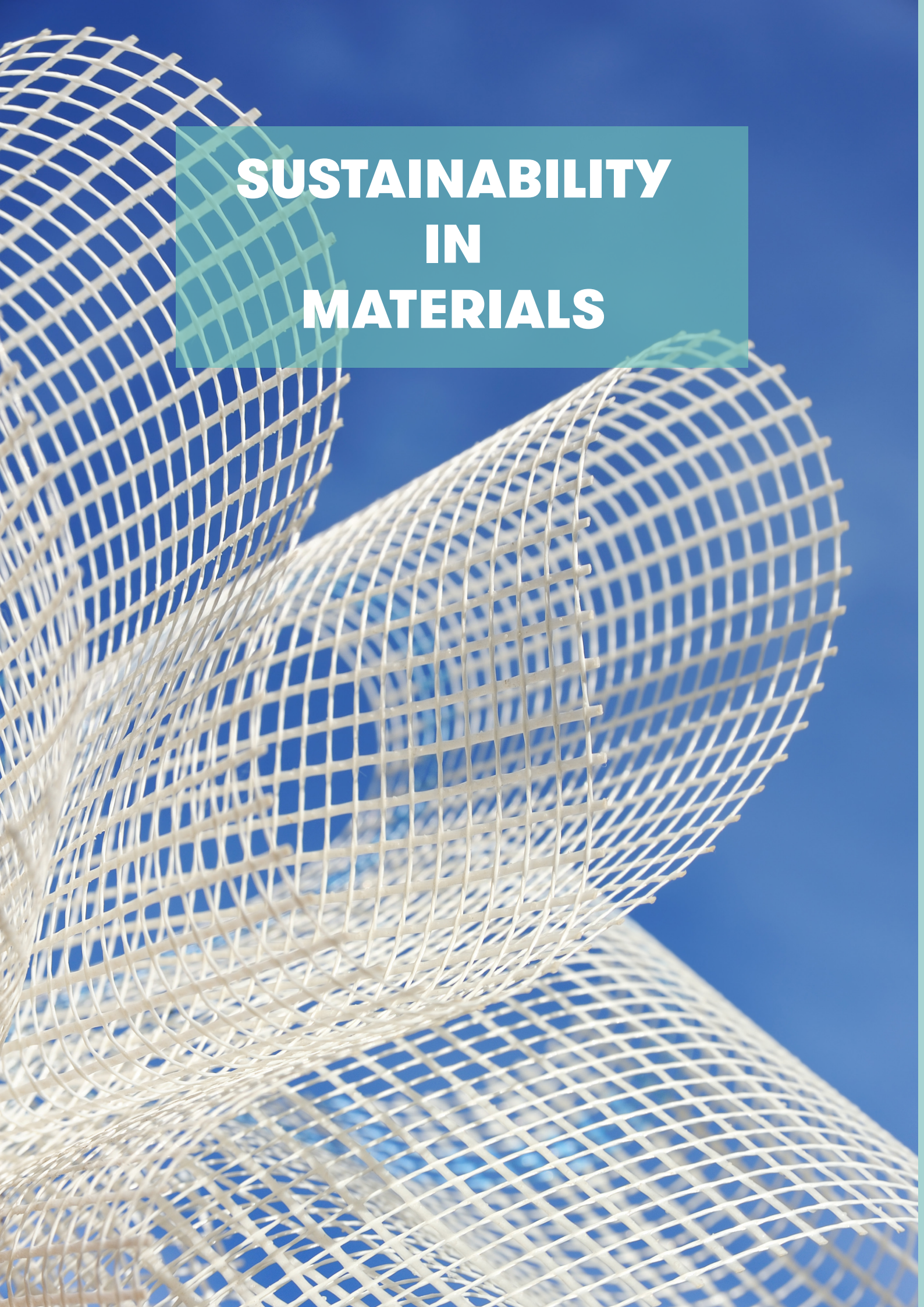
SUSTAINABILITY IN MATERIALS



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Data Driven Sustainability: Kristian Colvey

“80% of a product’s environmental impact can be influenced during the design stage”. Just think about that for a minute, of the products that we all use, most of their main impacts on the environment are determined before the product even comes to the world. They are determined by design, material selection, and the business model of the products that we develop. But often times these three elements stand at odds with one another. The interplay between environmental impacts, future mitigation, and economic tradeoffs is complex for most products. It is so complex that at times the only ways consumers can navigate the environmental impacts of a product are when choosing what to do with them at the end of the product’s life: “Can I trade it?”, “Can I resell it?” “Should I recycle it, or can I just throw it away?

The project: At KEA, especially in AP Production Technology and BA in Product Development and Integrative Technology, we subscribe to a data driven sustainable mindset, meaning that we understand that our decisions related to designing, redesigning or optimizing a product must be founded in having as much and as accurate data as possible, both from the point of view of what meets the demands of the user, the market and the societal and political landscape. To do so, we make use of the Ashby material selection methodology and Full Life cycle assessments of products as ways to understand the full impacts of the interplay between materials and their environmental impact and product lifecycles. These methods are valuable but time-consuming and often times only based on already known materials.

The Dilemma: Data driven sustainable design can drive the designer to make better and more sustainable decisions when creating products. However, it relies heavily on data from well-known products and is not always geared towards incorporating new and innovative materials as well as re-used/re-created materials. The question is how do we take the best of both worlds? How do we draw on the reliability of accurate material eco data and combine it with new innovative materials to drive our sustainable product development into the future? Data Driven Design seems to answer the question: what is actually sustainable? However, it can become a hindrance when innovating materials and recycling. How far can you compromise valid data to innovate product design with new or recycled materials? It is perhaps ok if you design a small item, but what if you start building high-rises.

Learn More:

GRANTA Edupack: An industry standard materials database, containing extensive physical, mechanical, and eco data for up to 4000 differing materials commonly used in manufacturing and production. NOTE: Students from KEA Product Development have access to his database.

Material Connexion: This is both a physical and digital ever-changing library with some of the world’s newest and most innovative materials from various small and large suppliers containing new and interesting natural materials

Business Perspective (From Deloitte)

Life Cycle Assessments (LCA) Basics.

Material Driven Design (MMD): A Method to Design for Material Experiences (article).

When Matter Lead to Form: Material Driven Design for Sustainability (article)

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Lotte Jørgsholm Nerup: Sustainable Fashion Tech

Most countries in the western part of the world reached the 'overshoot day' in the first half of 2024[1]. Additionally, six out of nine planetary boundaries were crossed in 2023[2]. This illustrates a global trend of using more resources than the Earth can sustainably manage, resulting in significant environmental impacts. With this overload of resource consumption, it is essential to keep resources in use for a longer time to conserve them and reduce environmental impact. One approach to achieving this is to adopt a more circular perspective, viewing resources as part of a broader system—the circular economy.

The project: The Circular Economy system diagram, also known as the butterfly diagram, illustrates the continuous flow of materials in a circular economy. There are two main cycles: the technical cycle and the biological cycle. In the technical cycle, products and materials are kept in circulation through processes such as reuse, repair, remanufacture, and recycling. In the biological cycle, nutrients from biodegradable materials are returned to the Earth to regenerate nature[3]. The project here becomes how can we keep waste in the technical cycle for as long as possible?

The dilemma: To keep waste in the technical cycle for as long as possible, it is necessary to view waste as a resource and consider how waste resources can add value in new circular systems.

- Using waste as a resource offers great opportunities but also raises many questions:
- What waste resources are available and where are the waste resources located?
- How can waste resources be transformed to add value for companies and users?
- Where and how can the transformed waste resources be sold/used?
- What environmental impact does the transformed waste have?
- How can the transformed waste resources be integrated into the technical cycle of the butterfly diagram as a new ressource and at the end of life?
- How can we create a cultural change, so people see new materials rather than waste?

Sources:

[1] https://overshoot.footprintnetwork.org/newsroom/country-overshoot-days/. Localised May 27th 2024.

[2] The evolution of the planetary boundaries framework. Licenced under CC BY-NC-ND 3.0 (Credit: Azote for Stockholm Resilience Centre, Stockholm University. Based on Richardson et al. 2023, Steffen et al. 2015, and Rockström et al. 2009). Localised May 27. 2024 at https://www.stockholmresilience.org/research/planetary-boundaries.html

[3] Circular economy systems diagram (February 2019). Localised May 27th 2024 at: https://www.ellenmacarthurfoundation.org/circular-economy-diagram

[4] Miljøministeriet. 2024. Localised May 27.th at: https://mst.dk/erhverv/groen-produktion-og-affald/affald-og-genanvendelse/affaldshaandtering/affaldshierarkiet

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SUSTAINABLE BUSINESS PRACTICES

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Carralina Suszy Svenningsen: Socio-economic businesses

A new EU directive will be rolled out in 2024 to ensure that all bigger companies in the EU will report and assess their sustainability efforts in the same way in an effort to create more transparency for investors and consumers alike. The reporting system is called ESG-reporting. ESG stands for environment, social and governance, meaning that how sustainable a business is will be assessed along three axes: their environmental impact, their social impact and how business is conducted. This way of doing assessments and defining categories begs the question, what is sustainable? When is a business sustainable? Can a business be sustainable by only delivering on one of the three?

The project: At Entrepreneurship & Design at KEA, micro and socioeconomic businesses have always been a part of the education process either as collaboration partners or as hosts for internships. As socioeconomic businesses are put into the world to alleviate a social ill in the world, they are often socially sustainable and as most socioeconomic businesses are also micro businesses and deliver a service rather than a product their environmental impact is also often a fraction of bigger businesses. But the fact is that only 10% of socioeconomic businesses in the Greater Copenhagen area have an outspoken stand on environmental sustainability.

The dilemma: In asking what is sustainable, we are also asking who is sustainable? By defining what is sustainable through different procedures for certification and governmental reporting we are creating 'right kinds' of sustainability and 'wrong kinds' of sustainability. Is it enough to be only socially sustainable? Can socioeconomic businesses be assessed on the same terms as big business?

Learn more:
Social Enterprise in Denmark: Historical, Contextual and Conseptual Aspects

A new European Socioeconomic Perspective: Jean-Louis Laville (Article)

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Bettine Ortmann: Sustainable Brands in an entrepreneurial context

Sustainable branding is the new buzzword within marketing, and even though hardly no one is allowed to call their brand sustainable, sustainable brands are being celebrated. This is examplefied in the company SB Insight sustainability award that they award to the most Sustainable Brand, and more brands are enrolled every year. But are these brands truly sustainable? And what is a sustainable brand?

As more and more brands claim to be sustainable, there has been a growing media debate about Greenwashing and Greenhushing. Greenwashing is when companies are misleading the customers to believe that the brand is more sustainable than it is. Greenhushing is when a company doesn't promote what it is doing to be better for the environment, which is also a problem as customers don't acknowledge either problems or solutions, which is a must if consumer cultures should change. Patagonia is a well-known example of a sustainable brand. Patagonia is known for inspiring their customers to take care of the environment and to inspire to change habits in a more circular direction.

The project: Many new sustainable brands come from entrepreneurial passionate individuals who disrupt business, traditional business models and ways of doing. We need an entrepreneurial mindset if we are to change businesses in a more sustainable direction. An entrepreneurial mindset includes willingness to envision another future and to act also in circumstances of uncertainty.

The Dilemma: We need entrepreneurial brands that incorporate sustainability in the design phase like the Danish furniture company Whelers which produces chairs out of insulin pens from Novo Nordisk and electronic waste from Austria, and brands that use new and sustainable business models like Lala Toys which has introduced subscription toys for families with children. But many entrepreneurs still struggle to how to communicate and build a sustainable brand that both resonates with consumers and lawmakers. In this the questions e.g. become: What could be the future role of branding if any? What role can entrepreneurs play in building sustainable brands? Can sustainable branding help change consumer culture for the better?

Learn More:

Green Claims - New Criteria to stop companies from making misleading claims about environmental merits of their prroducts or services.

New EU rules to empower consumers for the green transition enter into force (News article: March 2024)

Sustainable Brand Index. (Report)

SUSTAINABLE CONSTRUCTION CONSULTING

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Rados Nenadovic Carsten Tørnes, Peter Topsøe: Sustainable Construction Consulting Practices

In Denmark, the construction industry itself believes that they are extremely sustainable. But how sustainable are they in reality?

Consulting firms, like architects and engineers, promote themselves as being sustainable, but what exactly do these firms do to be sustainable?

Is it even justifiable for consulting firms to call themselves sustainable if they do “business as usual?” Can the consulting companies document that the buildings they project over their entire lifetime from cradle to grave do not impair the opportunities of future generations to meet their needs – which is a requirement to market themselves as sustainable.

The project: The task becomes to investigate and identify where sustainability is not being practiced in the consulting companies’ planning, and to come up with solutions for how to work on a more sustainable planning methodology. There is generally a large gap of knowledge between the certification and regulation creators, the consulting companies and (in the end) the implementors.

The dilemma: There is a great need for advisors and consults in the industry that can guide the transition, and be watch dogs of the industry. Certifications is a great tool to ensure change, but it quickly becomes watered down to just a sticker without action. The dilemma comes to the surface because we can doubt if the consulting firms, architect and engineer offices are in fact as sustainable as they say they are. If we cannot trust the experts in sustainable building practices, what do we do?

Learn more:

Greenwashing: Nye regler klargør grænserne for hvornår man må kalde noget grønt (article)

Greenwashing: Bliver du snydt af løfter om bæredygtighed? (taenk.dk)

Awareness and Practice of the Principles of Circular Economy among Built Environment Professionals: Amudje et.al. (Article)

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