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TACKLING SUSTAINABILITY IN TODAY'S BUILDING CLIMATE

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Abstract. The construction industry is composed of the entirety of our built environment, from small houses to apartment buildings, to bridges and offices and as such, it serves as the basis on which our society develops, providing context for our world. Since late 2019, with the start of the COVID-19 pandemic the world as we know it has suffered from a social, economical and political shift, as activities have halted in an attempt to stop the spread of the virus. Restrictions and regulations meant to guard our livelihood have had lots of unpredictable and unwanted consequences, and industries from across the globe, especially the building industry have deteriorated, devolved or diminished, resulting in a decrease in quality of life overall. This, combined with the effects of global warming accumulating over the years makes us really consider the importance of building sustainable and minimizing the impact of our lives over the medium we design and thrive. In this regard, the legislative bodies governing the European Union have given guidelines and suggestions on how and why everyone should build with efficiency in mind and trying to lessen the waste that the process of

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building produces. As such, from 2021 all new buildings must comply to the nZEB standard, meaning they have to be designed with sustainability as a key element. As new technology and engineering feats commence, how can architects adapt to this shift in the design paradigm? And how can this be achieved in underdeveloped countries, where there are many other factors which can be detrimental in the outcome of the built project?

Keywords: sustainability, durable development, design process, minimizing waste, technology, crisis.

1. Introduction

Sustainability is one of the most talked-about subjects in regards to architecture and engineering due to the increasingly alarming rate of pollution affecting people all around the globe. Two years later, the sanitary crisis caused by COVID-19 still leaves a scar over the industries on which we rely for perpetuating our lives. The world economy has been in turmoil, moreover affecting the livelihood of less developed countries.

The construction industry has been taking a hit for the worse, leaving a lot of projects incomplete or developers in a state of bankruptcy. As the regulations changed the way everyone works and interacts as a society, some things have been slower to adapt (infrastructure, industry production cycles, etc.) and this has had consequences that have been seen all over the media (raw metals, construction materials, even food have all increased in price by a significant amount, in turn the quality of products and constructions have been decreasing).

As such, sustainability and durable development has become one of the most sought-after traits in the architecture and construction fields of study, given the fact that as a society, people are seeing the effects of pollution and improper waste management in our daily lives.

2. Context – Industry and production cycles

Our society relies on the manufacturing industries such as the fashion industry, the construction industry, chip production industry to accomplish our daily routines, adding up slowly but surely to diminishing our planet's limited resources. Albeit being a long-discussed subject, it's only for a few years that is has been assimilated into the collective conscience through mass media and social media. Now, it is considered moral duty to pay attention and as an individual to try to improve the carbon footprint of one's surroundings, being an example and setting the bar for a brighter future.

Of course, this is only a small part of our problems, since everything we use, travel with or live in has been built using valuable resources at a grander scale. As such, the collective conscience combined with the effects of the prevailing social media have been sending signals to bigger companies

(especially visible within the fashion and food industry) to begin pushing forward with sourcing raw materials and optimizing production cycles to rely less on limited resources. But is this enough to make a dent into the devastating effects that climate change has generated upon our planet?

Pollution is the one of the causes for a lot of health conditions among individuals, and aside from chemicals that affect our respiratory system, it can present itself in forms of sound pollution as well as visual pollution, with varying degrees of importance and impact on our daily life.

According to statistics, approximately 9% of deaths worldwide are caused by air pollution (air, 2021). This is especially observable in urban areas which are rapidly evolving from an economic and social standpoint. The development of human establishments attract pollution, as a means to support the ever-growing infrastructure - a lot of our daily services are supported by heavy transportation which in turn generate a lot of greenhouse gases, having a terrible effect for our health and ecosystem. These terms are thrown a lot into the marketing materials aiding the sustainability cause, and it is for this exact specific reason: making people realize that our health and our planet's health are the primary beneficiaries of a cleaner lifestyle.

Transparency is another key word used for describing the relationship between social entities (companies, corporations, etc.) and is referring to the ability of said entities to communicate to its target audience about the way that they are conducting they businesses, from sourcing to manufacturing to distributing the end product. This has long been the focus of certain governmental and environmental groups, helping people make conscious choices based upon the grade of transparency that certain companies provide. Of course, the rising of sustainability in our society has only been so vocal for a small period of time, while the cycle of "unorthodox" methods of sourcing raw products has been going on for decades, spreading across several industries and unregulated areas.

For the paradigm shift to happen the full sustainable cycle of production of our daily necessities needs to be made progressively, so that every step of the process can adapt and therefore become more efficient than the unsustainable counterparts.

Albeit a slow process, this is the best way to tackle the progressive sustainability programs, and in the legislative management bodies within the political structures seem to agree with this. As such, the EURO norms exist as a response to the complexity of the automotive industry and are a great example of how legislation can impose certain standards of pollution mitigation throughout legal means. The car industry has been a subject of criticism in regards to the way that consumer cars and the means of passenger transport are leaving behind a huge level of pollution while running, amplified by the infamous "Dieselgate" scandal. Ever since, the European Union have been steadily increasing the emission standards, meaning that cars sold within the EU will have to hit certain targets of CO₂ emissions. This has pushed forward for one, the electric car market

and with it and second of all, a lot of manufacturers have been seeking alternatives to the supply chain of certain materials (leather, plastic) to be able offer the same comfort but with much less effect on the environment. There is a whole other discussion to be had about the principles of planned obsolescence in today's consumer market, which drives right back the discussion about sustainability and durability, but this doesn't particularly apply to all kinds of products. In general, planned obsolescence is the practice of making a product's life purposefully limited by design, to encourage sales and ultimately leading to improper leverage over the span of said product. Planned obsolescence is a better suited subject to a discussion about the technology and appliance market rather than the construction industry, albeit it (the construction industry) still tied to technological fields like device engineering, for example.

3. Sustainability as responsibility, not as choice

Being past the "honeymoon" phase of globalization, we learned how states can work together to achieve a greater overall good, make more products and technologies available to the masses. Efforts are of course amplified when political forces join together to achieve a greater goal. But the byproduct of globalization and the availability and affordability that comes is destruction and exploitation of the third world country workforce, making it harder for governments to implement sustainable competitive policies (Schuftan, 2003).

All of these related aspects are relevant to the construction industry as well, given the fact that it is so complex, encompassing many a process which imply a plethora of successive processes, from the drawing board to design, evaluation and then the actual on-site construction. As sustainability has become more of a concern in the last few years, building codes and legal fundamentals have had to play catch up to the available technology.

The European Union is trying to push forward legislation and mandatory regulation regarding production cycles, as they overlook industries that govern the well-being of the population. One of these is obviously the construction industry, which in turn is responsible for approximately 23% of greenhouse gas emissions (Banu Sizirici, 2021), and the ways that we build, combined with the buildings themselves can be vastly improved. Circling back, the construction industry is a place where transparency is a key element, to prevent undermining of the building codes and regulations by private enterprises for profit and minimizing parasitic losses of the building cycle.

The aforementioned losses happen because planning and building our environment is a very laborious task, requiring a plethora of concentrated efforts poured into concepts, which then are translated into the living bodies that are called "buildings". As such, they know various shapes and sizes, all of which require careful planification to coordinate the practical aspects (the function) and the aesthetical ones (the form). Architect Louis H. Sullivan enunciated the

famous catchphrase “form follows function”, which is widely used today to describe the process of conceptualizing a building and thinking about it more than just a necessity of society, but a opportunity to enhance the environment around it. From sourcing raw materials, to transporting them on site and molding them into palpable elements creates lots of unwanted pollution, making the disposal of material an even worse offence for the environment. All of these processes translate into the total cost of the building, similar to how code is converted to binary in programming. Similarly, though, both processes (programming and building) can be optimized even from their infancy.

The fact is that now, the functioning part of a building becomes a more central part in the design of the overall architecture, as new technology emerges and makes way for a more mixed, less rigid design, a far cry from the usual “engineering grid” type of buildings that architects are trying to break through in search of their magnum opus.

What we have to understand is that the function of sustainability in construction does not account for either engineering prowess nor spectacular form, but for the impact that the object of architecture has over its resource management as well as its impact both short term and long term, thus becoming an additional item on the creator’s bucket list.

Tackling the sustainability problem has been subject to numerous architecture conventions, but the practical sense, in the real world is a bit different in countries that are not so developed, in the sense that breaking the laws regarding the building conduct doesn’t have any kind of severe repercussions. Especially obvious in 3rd world countries, but also within countries which are in full development, where the European Union is injecting funds, trying to support economic progress, like Romania for example. It would be unfair to tag everything along these lines though, because the problem of sustainability does not necessarily lie within the overall development of government funded buildings, but also within the mental collective of the country’s residents. To better understand the problem, we can look to real life common examples of how society deals with sustainability versus comfort or expense, and make the analogy with the construction industry.

Living sustainably does trickle down to the choices made every day, where thinking about the cycle of long term investment should be imperative – whether people buy a more expensive pair of jeans that can outlast 2 or even 3 pairs of lower quality but cheaper jeans, or the same people turn to the 2nd hand car market for an alternative given the higher prices and high waiting times for new cars – choices like this do have an impact on one’s life and can objectively be good for the environment, but are not always grounded in reality. For this case, small choices like the ones that have been mentioned are often linked to lack of expertise or lack of finances, or even ignorance and lack of scrutiny.

4. The effects of present events

That being said, the aforementioned example is somehow relevant to our subject because of the way that we people can relate to it to better understand it. It is easier to see through simple ordinary examples like these how small changes can have a link to bigger ones, as usually we as a society through mainstream media speak and emphasize about the CO₂ emissions, global warming and resource depletion. Building sustainable is after all still a choice in capitalism which relies on several important factors. Now more than ever, to build for the people goes beyond satisfying the immediate needs of the user, the resources that the construction uses throughout the building process and post-construction have a direct impact, which is now being felt by the us, the end user. Natural gas prices, still the primary source for most household heating and lighting needs have been notoriously increased, and with the conflict between Russia and Ukraine there seems to be no end in sight for price uprising. Russia is one of the largest sources of gas for Europe, encompassing around 45% of the exported natural gas in the union (IEA, 2022). Given the fact that the source of the conflict is somewhat recent, and worldwide political measures are being taken to alleviate the impact of war so close to east-European territories.

As such, the effect that the political tension of a full-fledged war over the way we build, given its dominance over a very important natural resource cannot yet be quantifiable, but it can be somewhat predictable as we've seen with the price increases. Furthermore, the microchip shortage has been devastating for the tech industry world-wide, encompassing a wide variety of domains and disrupting the production cycle with delays caused by over demand and underdelivery. Microchips are the powerhouse of most technology devices we use today, ranging from computers in cars to computers in our kitchen appliances and smart switches. Taking the car industry as an example, not only prices of new cars have increased (Wile, 2022), the delivery times for new cars has increased as well, pushing buyers to seek alternatives in the used car market. Thus, older car prices have increased in accordance to the law of offer and demand, even further pressuring people into difficult financial decisions. The car market is again a relatable example, as such prices have been going up beyond the point of inflation in a lot of countries which don't have sources of production for construction technology and tools, along with increased prices for spare parts as well. Thus, pressure is put over the investor, which obviously has to push forward more cost cutting measures, decreasing overall quality in spite of financial gain.

Not only that, prices of raw materials as mentioned before have been skyrocketing due to the unpredictability brought upon by the sanitary crisis which has put its lockdowns in place in mid-2020, leaving factories empty and halting production and building sites without supplies, driving up the demand for materials to meet deadlines or at least finish different phases in ongoing projects. The "work-from-home" culture has become more popular, even after the

lockdowns have been lifted, driving up prices in the residential sphere, as for example people want more comfort and space to adjust to remote working. Small businesses have been shutting down, slowing down the flow of money collected through taxes, driving up inflation but not wages. (Fairlie, 2020). This means that cities have less fund coming in from the economic chain to spend on infrastructure and quality of life construction, which encompasses a plethora of actions involving construction, rehabilitation and efficiency of buildings. As a consequence, the quality standards are getting lower and lower, resulting in poorly implemented non sustainable projects, which in long term perspective might need even more time and capital to prolong it's use. Furthermore, the increase in raw materials prices, combined with a further increase for the handling and building operations themselves, without providing an increase in the service offered.

The sudden increase in raw material cost has halted lots of ongoing projects, delaying the project deadlines and thus modifying and "cheapening" certain architectural and engineering details. Here lies one of the more obvious roadblocks in trying to inject sustainability into the construction industry: the pressure that is being directed to architects and engineers to create fully sound, safe, sustainable, functional and good-looking buildings with little budget to spare and unreasonable time constraints. Furthermore, the lack of time management regarding the conceptualization and actual design process within the architecture firms is propagating a toxic workplace environment, which in and of itself is not a sustainable practice but alas, this subject is straying away from the topic at hand.

5. Taking steps towards a better future

Circling back to the construction industry, we need to establish that first of all sustainability has already become a central part in the overall design of our built environment, and the current world events have been all but pointing to obvious flaws in the way the space around us is built. Second of all, we also have to take into consideration that aside the building design, there are lots of overarching factors which can be roadblocks in the process of actually implementing solutions such as poor administration decision, budget constraints and poor project management.

These are further responsibilities that sadly, architects and engineers have to succumb to, as to keep the quality standards high, and also to provide for their specific communities, as they take into consideration design ideas that can have an effect over large amounts of people.

This brings us to the question is: how do architects and engineers tackle sustainable building in the post-pandemic year of 2022? Economical prospects have not been well looked upon since the sanitary crisis, and now war is another topic glooming upon the financial stability of the European Union. The answer is

obviously not that simple as architects and engineers have been searching for solutions that have the power to bring energy independence, to harvest renewable sources of energy and bring them into our homes. The European Union has been grinding its gears into pushing forward legislation with hopes of reducing the overall carbon footprint of the built environment through the Near-Zero Energy Buildings, seeing it as a first step towards full passive architecture. As suggested by the nomenclature, the nZEB standard refers to the energy performance of a building, putting emphasis on certain amounts of used energy per year. Obviously, the smaller the amount of energy that a building uses, the better it is for the environment and for the end user, as cost of use goes down over time. Even though it sounds very promising, this comes usually at a higher up-front cost, which is the biggest downside for the moment.

But alas, the first step towards being energy independent is reducing the overall consumption required for a building to operate without compromising its basic functions, and this is achieved through information spreading, accessibility of resources and ease of implementation. This is the first step that must be taken by the architects, as their purpose is not only to build, but to care for the environment and now, more than ever to educate and set an example throughout their actions.

Amidst the crisis, educating people has been easier, as more individuals are becoming aware of how their finances are behaving, generating an aura of precaution regarding investments and spending money on their ongoing or desired future projects. This usually means that before investing or considering to invest in building a space or rehabilitating one, more research goes into the “why?” or “how?” of sustainability and then, decisions are being made. Now more than ever information is plenty, and people are constantly catching up with new inventions and technologies, and comparing them to what is standard in the present day. For example, there are a plethora of videos (Țiglă fotovoltaică în România - Costuri și caracteristici, 2022) which are showcasing the advantages and disadvantages of common building practices and how can you choose a solution which is tailored to the needs of the end user. A lot of times, there is a balance that is struck between building normally (often defined as the most simple and cost-effective way of building the house, without considering or pursuing much energy savings and sustainability metrics) and building to passive house standard. The difference (obviously) comes down to economics. The cheaper for the client the better, provided it ensures a decent enough comfort standard, when thinking about the upfront cost.

Of course, the story is more nuanced than this, as people who have made conscious sustainable decisions in the past, say 3 or 4 years ago, when the worldwide situation that we’re in now couldn’t even be fathomed, are now seeing a good return on investment on their more expensive and advanced solutions - like off the grid houses and even passive houses (cheap and expensive are relative terms, revolving around one’s budget and to the overall economy, but are used to

convey understandable concepts). Furthermore, the general public has to be educated in regards that sustainability in building is not an “all or nothing” principle and there are always better choices to be made. This is why EU is pushing forward the nZEB standard of building, as it is a more environment-friendly way to pursue the paradigm shift. Our duty as builders, designers, engineers and architects is to pave the way and endorse ourselves with the knowledge of what makes a house a near-zero energy building, and how can architects try to educate their clients that long term perspective is imperative in such context.

This is easier said than done though, especially since in less developed countries, where most of the construction work is done under the pressure of budget and time constraints, and even if the project is well made, cut corners and unpredictable situations can easily undo most of the design work. Of course, with architecture being so diverse it's hard to create a pattern or a set of rules which to apply to the designers and builders to minimize the losses of each project. Moreso, as mentioned before, it all boils down to bringing down the cost of construction by all means, which lessens the quality of the final product, and this can be applied to many things in today's climate like technology, automotive industry, design, etc.

As such, the economical side of the argument in regards to opening the general public up to sustainability in their household is more than just an architecture catch-phrase, and it really challenges the field of architecture, branching into more practical aspects than the technology it pursues for achieving energy savings. The design, concept and solutions of a building are first to be discussed with the beneficiary (either individuals or councils alike) as a means to satisfy their intended purpose. To be able to make conscious decisions, they have to take multiple factors into consideration, and architects play a key role in exposing certain strong or weak points of the projects, and offer options in regards to budget and time constraints, usually also meaning getting involved within the construction system to be able to adapt and adopt certain solutions for the good of the project. As such, communication is rapidly becoming one of the most important skills, along with technical knowledge imposed by the connected fields of study and adaptability. Thus, it can quickly be seen how architects are bound to become one-man orchestras. This is especially true in less developed countries, in which private independent building enterprises try to maximize profits, making cuts in the project management and communication departments which are supposed to create a flow of communication between architect, engineer and builder.

Keeping pace with increasing amount of knowledge, building designers and architects must be wary of technological advancements at all times. Technology is one of the buzzwords which often come into play as the engine for progress, and interest for efficient, bigger volume, advanced solutions for optimizing energy use has been growing, with companies having great incentives

for developing in-house technologies for both household and larger scale use. This, combined with the added efficiency brought on by the tech leap in heating and cooling technology, should be one piece of the nZEB puzzle for the next generation of high efficiency building.

Efficiency is a term that can be used in different scenarios as well. Being efficient as a building designer, or architect can be a detrimental quality, as managing resources is after all the quintessential part of the job. Management of time in the building design phase resides in the phases that are usually key to achieving the project goal: the concept phase, the adaptation phase, the drawing phase and finally the compilation phase, which is arguably the most important one as it culminates with the agreement between the engineers and architects, the balancing act on which the project's architectural qualities faces the functional aspect.

By organizing an efficient workflow, an architect must be able to initially evaluate the project and realize a cost-benefit analysis and decide how time is allocated. It is quite unusual to think this way about a project, especially from outside the industry, but being time-efficient with the tasks at hand makes for a better developed project. For example, if an architect has decided to take onto a rehabilitation project, he can outsource the 3d scanning process for a accurate depiction of said building in both 3d and 2d form instead of taking his team out the office to do this manually, meaning the team has more time to focus either on the concept phase or even other projects in the meantime. After all, time is money and both are an immensely valuable aspect of any industry. This way, by allocating more time to certain tailored aspects of a project, an architect can prioritize tangible aspects that affect the building process, thus making conscious decisions to minimize confusion, waste and deliver a clear message throughout the whole project.

To further improve our carbon footprint, we need to look towards our built environment itself. The existing building stock is composed by stacking layers upon layers, giving away a blend of architectural styles which often bind in our conscience the feeling of cultural identity. Demolishing buildings often generate unwanted waste and it is done carelessly in search of a faster way to build and return on investments. Perhaps looking down upon the existing building stock as devoid of use in our ever-evolving needs. Retrofitting is the nomenclature given to the process of breathing new life in older buildings (not necessarily historical ones, as restoration is the correct term used for these types of constructions) and bringing them to modern standards and building codes. This can be done and should be done after thorough inspection by advised professionals, while obviously dedicating chunks of time to study and evaluate their particularities and searching for the best ways to tackle the retrofitting project with minimal resources. This often times require more money and more time, as previously mentioned, which are valuable resources and in less developed countries we can see results of less-than-ideal examples of bad

retrofits. This is akin to a vicious circle, in which architects are caught in the middle of a pressured work environment, where they have to decide how money is being spent while under peer pressure from external sources such as limited funding, very slow bureaucratic approval processes and very little time to flesh out projects. This is a fundamental problem in our society and it is very visible in the field of work within less developed and thus, less regulated states.

6. Conclusion

We live in a time of social and economical turmoil, brought upon us by the fierce measures of the COVID pandemic and its effects over many aspects of our life, most of which everyone is feeling in the present day. Moreover, conflict has been brewing at the eastern gate of Europe, leaving us with more uncertainty in times where healing was supposed to occur.

As such, it is a time for society to challenge in terms of managing our planet's resources.

Out of all industries, the construction industry is one of the culprits for huge CO₂ emissions, greenhouse gas emissions and waste. Architects and engineers are at the forefront of our society's building fabric, and as such they have to carry the responsibility of taking decisions which affect a large group of people throughout their designs.

By updating their knowledge base, building designers can become more open to better, more efficient solutions for our environment and guided by a good legislation and regulation bodies, nZEB buildings and passive buildings can begin to flourish, all for the comfort of its users and the environment as well. Moreover, by constantly searching of new ways to implement good solutions and practices, architects and engineers can educate and speak through their clients and colleagues the ethics of a sustainable world, showing empathy towards the environment which is so valuable to us as a society.

REFERENCES

- air, S. o. G., *Global Health Impacts of Air Pollution*, <https://www.stateofglobalair.org/health/global#:~:text=Air%20pollution%20accounts%20for%20more,risk%20factor%20for%20death%20globally,2021>.
- Andy Ford, A. G. P. M., *Sustainable energy and energy efficient technologies*. Future Energy, 2020, pp. 611-630.
- Banu Sizerici, Y. F. C.-S. C. I. Y. Y.-J. B., *A review of Carbon Footprint Reduction in CO_nstruction industry, from Design to Operation*. Sustainable construction Materials - From paste to concrete, 2021.
- Fairlie, R., *The impact of COVID-19 on small business owners: Evidence from the first 3 months after widespread social-distancing restrictions*, Wiley Public Health Emergency Collection, 2020.

- IEA, *How Europe can cut natural gas imports from Russia significantly within a year*, <https://www.iea.org/news/how-europe-can-cut-natural-gas-imports-from-russia-significantly-within-a-year>, 2022.
- Khan, M. A., *Performance-Based Design and Retrofit Methods for Buildings*, Earthquake Resistant structures, 2013, pp. 317-351.
- Matic D., J. C. M. T. M. E. M. B., *Cost-Effective Energy Refurbishment of prefabricated buildings in Serbia*. Cost-effective energy efficient building retrofitting, 2017, pp. 455-487.
- Muhsin Kilic, A. F. A., *Achieving Green Building standards via Energy Efficiency Retrofit: A case study of an industrial facility*, Exergetic, energetic and environmental dimensions, 2018, pp. 55-69.
- Schuftan, C., *Poverty and Inequity in the Era of Globalization: Our need to change and to re-conceptualize*, International Journal for Equity in Health, 2003.
- Țiglă fotovoltaică în România - Costuri și caracteristici*. 2022. [Film] Directed by Marius Soflete. Romania: Marius Soflete.
- Wile, R., *Prices for new vehicles hit all-time highs amid rising interest rates, energy prices*, <https://www.nbcnews.com/business/consumer/consumer-spending-buying-cars-more-expensive-interest-rates-rcna22322>, 2022.

SUSTENABILITATEA ÎN CONTEXTUL ACTUAL

Industria construcțiilor este alcătuită din întregimea mediului construit, de la casele unifamiliale mici la blocuri, poduri, clădiri de birouri și alte asemenea, servind drept bază a societății în cadrul căreia ne desfășurăm activitatea de zi cu zi. La sfârșitul lui 2019, odată cu începutul pandemiei de COVID-19, societatea a suferit o schimbare drastică de regim, cu închiderea multor activități în scopul combaterii împrăștierii virusului. Restricțiile menite să protejeze însă au avut efecte mai puțin prevăzute și benefice pentru diferitele industrii pe care le știm, cum ar fi și industria construcțiilor, care au suferit multe pierderi, închideri, amânări de proiecte, lucru care duce la o scădere a calității de viață per total. Acest lucru, combinat cu efectele încălzirii globale care s-au acumulat de-a lungul anilor, ne fac să reconsiderăm importanța sustenabilității în viața noastră la nivel de societate. Corpurile legislative recunosc acest lucru și încearcă de ceva ani încoace să elaboreze legi și directive asupra industriilor țintă ale căror activitate poluează la un nivel înalt. Din 2021 toate clădirile noi construite vor trebui să fie compatibile cu standardul nZEB și proiectarea acestora se va face luând în considerare dezvoltarea durabilă ca un factor cheie. Pe măsură ce tehnologia avansează, arhitecții și inginerii vor trebui să facă un pas către a-și schimba paradigma de proiectare, astfel încât să poată ține pasul cu vremurile și în același timp să pună mai mult preț pe aspecte conexe ale clădirilor pe care le proiectează.