SUSTAINABILITY & ETHICS

PROTECT OUR PLANET

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BRIEF

TUTOR CATARINA SPOSTO

Report about the understanding of sustainable design and how we can move forwards in the future with our design thinking and think smarter and greener. Critically studying design problems and their social impacts.

WHAT IS CLIMATE CHANGE

People are calling it the crisis of our time, and it is! But it's easy to get lost in this story, the science is dense, and politics get in the way. People are calling for concrete action, like Greta Thunberg said "the empty promises are the same and the inaction is the same" so what exactly are we doing wrong and how do we fix it?

Looking at graphs of the carbon dioxide in our atmosphere from years back but there was a huge spike in carbon dioxide that took off during the industrial revolution, we started breaking CO_2 records in 1950, and we haven't stopped since. Why? Well scientists say there's a 95% chance that human activity is the cause. We have been burning more and more fossil fuels like oil and coal, which release CO_2, to power our homes, factories, airplanes, and cars. There's also a lot more of us. The global population has tripled in the past 70 years and we're consuming more products from animals that release another pollutant called Methane

All those gases are rising into the air, and when the sunlight gets to the earth's atmosphere, some of the heat gets trapped, and the planet gets warmer, and that's why they call it the 'greenhouse effect. But the concern is not that the earth is getting warmer it's that it's happing far too fast. Its actually the warmest temperature on earth since the last ice age, 10 thousand yeast ago.

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- *Damage to your home*
- *Outdoor could become unbearable*
- *Water quality could suffer*
- *No clean air*
- *Natural disasters will increase*

We are already getting a taste of the future with climate change. Climate change is here. Climate change is happing and we are well into the 6th mass extinction event already. The sea levels are rising about 3 millimeters every year, because seawater expands as temperatures get warmer and melting ice sheets and glaciers, adding trillions of tons of freshwater into our oceans, people are already losing their homes, entire coastal cities could be underwater within 80 years, like Miami in the US or Osaka in Japan. The effect is very real and we can already see the consciences it has on our planet with all the natural disasters happing everyday around the world.

HOW DOES IT EFFECT US

HOW ARE ARCHITECTS PART OF THE PROBLEM

Architects play a huge part in why we have such big problems with climate change. Global energy is devoted to buildings and construction the percentage is so high that 22% stems from residential, 8% from nonresidential usage, and 6% is the construction industry. By the year 2050, experts say that the gas emissions from buildings will have doubled since 2017. This will largely be due to new floor space requirements. We as interior architects need to find and use other ways for the future otherwise we might not have one.

What is the plastic age?

Our harmful tendency of exploiting the world for commercial goals had been rapidly increasing long before COVID-19. This period is known as the Plastic Age because endless plastic has infected our seas, landfills, freshwater water sources, and all living creatures. This is only one environmental catastrophe, and much of it has occurred since the industrial revolution, especially with the mid-century introduction of plastics. Plastic was traditionally just supposed an optimistic and futuristic material, it capable of producing strong, lightweight, and long-lasting items. Plastic, on the other hand, has become a problematic material today, as it is usually perceived as cheap, a throwaway, and contaminating harmful raw chemicals.

Redesign the Plastic Age

Sustainability is being embedded in the education and behavior of the new generation of young designers. One emerging design style is "Bio-Based," in which designers look for natural methods to manufacture, oil-based materials that don't biodegrade, the consequences are now present a major challenge in our environment. Bio fabrication can be used to replace the production of synthetic materials like plastic. Plastic-free items should be demanded in all areas, including cosmetics, food packaging, clothing, home goods, interior and construction materials.

Heal our relationship with nature

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How will we evolve designing products?

SUSTAINABLY

How do we move forward?

First step
Realize & act on the idea

Think biophilic
Circularity is critical

Distribution
Materials need to be dematerialized

Biodegrade
Materials need to be rethought

Transparency
Shift to low or no-impact materials

WHAT CAN WE LEARN FROM THEIR MISTAKES?

UNITE D'HABITATION, LE CORBUSIER

1

Made after
Post war

Location
Marseille, France

Completed in
1952

Floors
18

Architects
Le Corbusier
David Jenkins

ANALYSIS

The Marseilles Mayor asked Le Corbusier to assist them in solving their housing crisis at the end of the war, providing him with a full-scale opportunity to achieve one of his life's dreams. After two decades of paper planning and manufacturing of developmental projects. This architecture and the concepts behind it have perhaps sparked more debate than any other structure since the war.

WHAT WERE THEY TRYING TO DO?

He was, though, much misunderstood. Le Corbusier wanted city dwellers to live in superbly designed blocks of bright high-rise flats set on concrete 'piloti', or stilt-like columns, over lush garden landscapes. It took him, though, until 1947 – when he was sixty years old – to win a commission to design an ideal block of flats for families bombed out of their homes during World War II

WHY DIDN'T IT WORK?

When looking at the different apartments, le Corbusier made some questionable decisions. Like random height differences, it looks rather rubbish. Le Corbusier ignored the benefits they could bring to the communal space of corridors, any communal joy had to be on the roof. This was not a socially responsible decision given that the purpose of the Unités d'Habitations was supposedly a social housing. Another weird decision, both ends of the building would have been the obvious place for Emergency exit stairs. The decision to not have them there (for the above reasons) meant that the interior layout had to be seriously compromised and the number of apartments reduced to allow space for these stairs.

WHY WAS THERE SO MUCH DEBAT?

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Unite D'habitation

SOCIAL IMPACT

Sustainability is the responsibility of the people. We have an impact on our organizations, surroundings, business, environment all created through social terms. Making sure people understand why they should be sustainable is one issue that could potentially be solved one day, what I mean by that is, one day there could be a plan where everyone is heavily influenced into being sustainable through learning and studying and making sure there is some kind of understanding from the teaching so moving forward everyone knows how to tackle the situation. So the new generation can learn from our mistakes and help create new ways to be sustainable and innovative unfortunately we can't control how they think or what actions they take in the future. We can only change people who want to be changed the rest is an impossible solution.

STRATEGICS

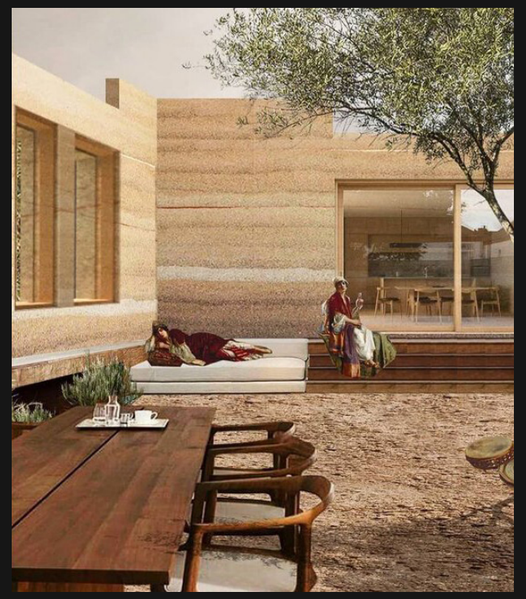
WHAT IS ANTHROPOCENE

Throughout human history, we have been capable of understanding environmental conditions and adapting them to our changing requirements, nevertheless, we have been unable to do the opposite. Anthropocene is used to understand the history of humans on earth and how we have been operation over the years. It's a way to study our plante and its changes and if they are good or bad. "Being able to pinpoint an interval of time is saying something about how we have had an incredible impact on the environment of our planet," Dr. Colin Waters, principal geologist at the British Geological Survey and WGA secretary.

We are in a crisis with global warming and its important to look at the changes, looking back can give us the solution to the perfect lifestyle that we should have moving forward. Anthropocene is The current geological age is viewed as the period during which human activity has been the dominant influence on climate and the environment. How did global warming explode to this extent that it's at now, industrial times, have a huge side effect from the use of materials being used to the huge sumptions of materials in so little time. It's a perfect example of how we can study the past to understand what we did wrong to learn from the mistakes and how we need to change.

CHAPTER

SUSTAINABLE DESIGN



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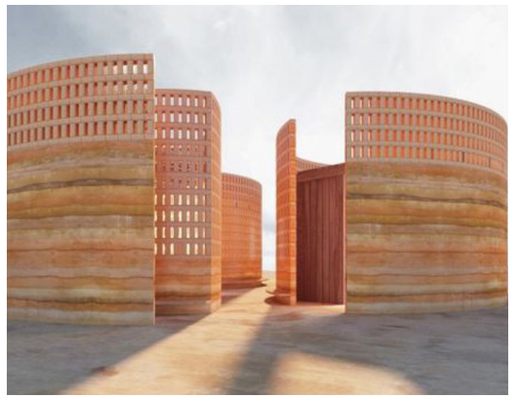

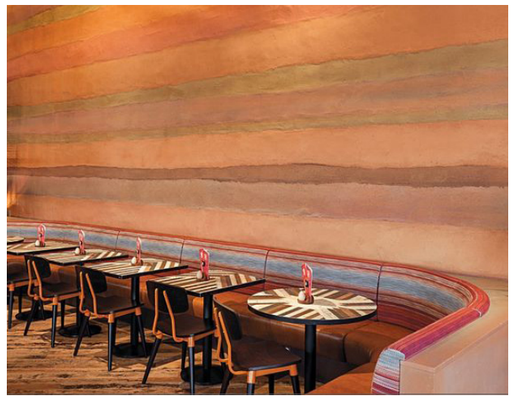

RAMMED-EARTH

Rammed earth walls are constructed by ramming a mixture of selected aggregates, including gravel, sand, silt, and a small amount of clay, into place between flat panels called formwork. Traditional technology repeatedly rammed the end of a wooden pole into the earth mixture to compress it.

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Rammed earth buildings are a minimum of (300mm) hick for excellent protection from extreme climates. Because the material is so thick and dense it keeps the temperature of the building internally stable when hot or cold. Another benefit from its thickness is that noise-reducing to any load noise from the traffic to it brings a quieter ambiance to the building and use

Rammed earth is a strong and durable material for strong winds and climates, at this point, we have 30 years of experience with rammed earth, scientific testing has backup how strong the material is ensuring maximum strength and durability for every project. The material shouldn't need any further care for at least 10-20 years, which is very low maintenance for a natural material.

Rammed earth is amazing for hot climate because it doesn't burn if there would ever be a fire inside or around the building, the material will never burn, rammed earth is from the ground and the earth doesn't burn. Rammed comes from the earth meaning the soli will change and the rammed material will look different dementing on where you took it from, the material is unique and beautiful without the need to add art or paint to the material, rammed earth is customizable to every project because it has so many varieties.

DECORATION

Rammed earth is used mostly used for exterior because it's so strong but its also used for decoration because of its beautiful soli layer in the materials

SUSTAINABLE MATERIALS

ALGAE

SUSTAINABLE MATERIALS

MYCELIUM

SUSTAINABLE MATERIALS

CLAY

SUSTAINABLE MATERIALS

CORK

SUSTAINABLE MATERIALS

words by minimalisme
Photography by minimalisme

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THE 5 DIFFERENT SCENARIOS

The primary cause of global warming is electricity production, which comes from what is called non-renewable resources, meaning they are not sustainable souse of energy. What we want is for future buildings t be fully capable of being replaced by natural ecological cycles, like Solar energy from the sun, Geothermal energy from the heat inside the earth. Wind energy, Biomass from plants, or Hydropower from flowing water and the list goes on. When we have the opportunity to use renewable energy we should.

Passive design strategies help us maintain a comfortable temperature inside a building without the use of electricity as heating and cooling require a lot of that. When applying passive design strategies to a building you need to look at the geography of the building, depending on the yearly climate changes it might need more passive cooling strategies or more passive heating strategies, or even both

Ways to apply passive effects can be the orientation and shape of the building, including the thickness of the wall, windows, and their size and where they are placed all play a factor in creating a temperature. It's all about where to have the shading and having the perfect airflow within the building. Both cooling and heating strategies need to focus on the materials on the architecture and interior. Materials have a huge impact on how the inside temperature feels, depending on if the material attracts heat or not.

LONGEVITY & FLEXIBILITY

ENVIRONMENTAL IMAPCT

WASTE REDUCTION

HEATHY ENVIRONMENT

ENERGY EFFICIENCY

THE 5 PRINCIPLES OF SUSTAINABLE DESIGN

BIOPHILIA DESIGN

Practice of creating a closer connection to nature through the ways building and landscapes are created and built

Love of life or living things

NATIVE PLANTS:

PASSIVE SUSTAINABLE DESIGN:

ACTIVE SUSCAINABLE DESIGN:

RENEWABLE ENERGY SYSTEM

GREEN BUIILDING MATERIALS AND FINISHES:

Why should we use biophilic in interior architecture and design? Well, design is creating environments and things for people which means our clients will most often always be humans when starting to design we always look at whom we are designing for and what their needs are. When it comes to humans we don't actually know that best for us or at least we don't care.

People are truly in more need of nature. We are constantly in environments where there is no light, bad airflow, no greens, and nothing to stimulate our 5 senses, all these things lead to long-term damages and have effects on how we thrive. Humans need nature to breathe and eat. That should be enough motivation to respect and protect our nature, but for some reason, it's just not a good evolve motive for humans to stop cutting trees and ´polluting the plants ruining our ecosystem for not only use but our animals and environments we live in.

To change this behavior we need to change our ways of designing and looking inwards to see what we did wrong and how to fix it. Biophilic is the best option in design to heal/fix our planet and stabilize our footprint. Biophilic design includes 5 different design strategies that can be applied to our design now and in the future.

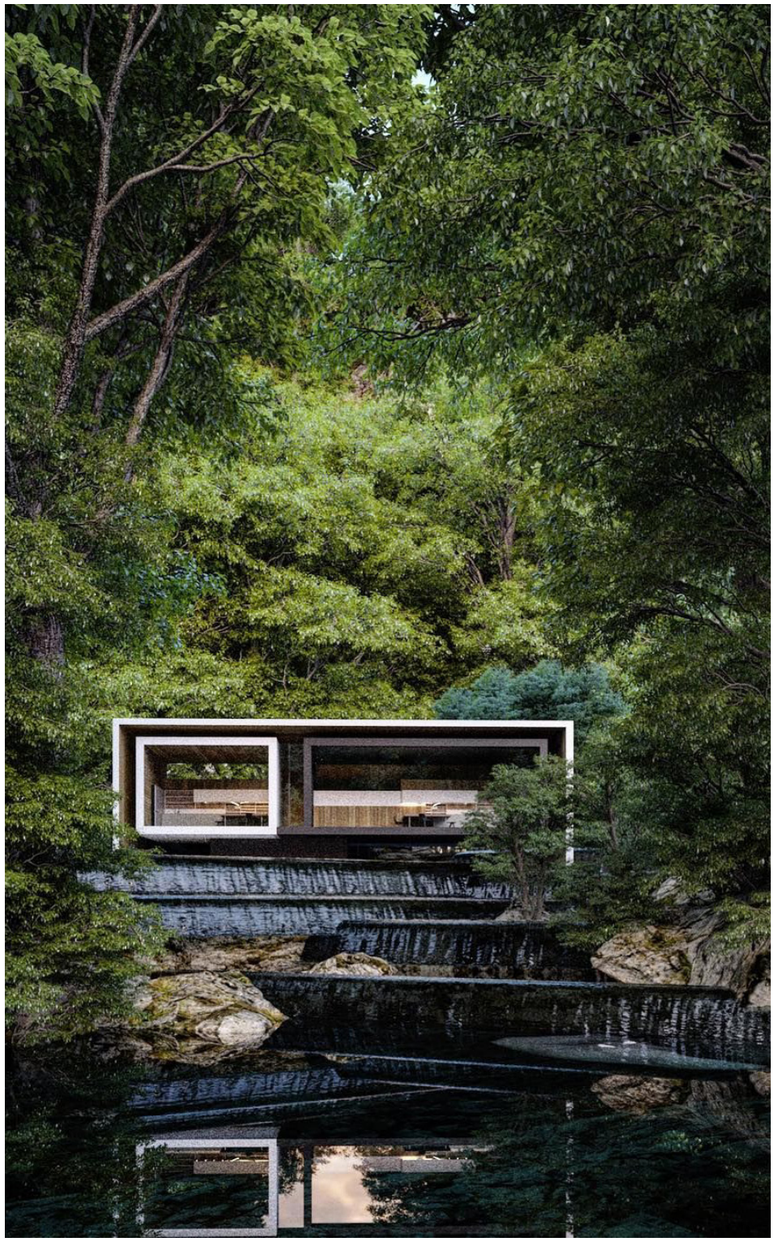
Not only is it great for the environment to apply biophilic design to our building for animals to thrive around us, but we have already taken so must from neighbors - animals, stealing huge amounts of land with no comprises for other living creatures around us, making it impossible for them to live in. We need to watch how our planet and see how its changing and how fast and how animals are going instincts faster than ever before.

Nature doesn't need us we need them to live. Biophilic design brings us back to a place of rethinking ways to design, from understanding the way nature works long term, we build buildings just to take them down 50 years later. Design changes and that is a beautiful thing just like nature it grows and changes. The human species have evolved so must over thousands of years but because we learned how to create and produce so fast, I feel as if we lost our heads in the process of evolving we forgot our natural needs for nature, nature is one of the key souses of nature. Now are sit all day on the phone and computer without breathing fresh air. We have become so addicted to what we can have and achieve without a care for nature, today its all about money and status, and people will do anything to try to get it

The only solution is to make biophilic the new black, what I mean by that is, we need this to be something people prioritize when designing, and as designers, it's our job to advise for greener buildings, and show the path of how it will look better, feel batter and other all benefit everyone. Most often clients don't care for the environment if they can get something else cheaper they will always choose that. We have to show them that it is possible and convince them that this is the only way.

NO HOUSE SHOULD EVER BE ON A HILL OR ANYTHING. IT SHOULD BE OF THE HILL. BELONGING TO IT. HILL AND HOUSE SHOULD LIVE TOGETHER EACH THE HAPPIER FOR THE OTHER

FRANK LLOYD WRIGHT



THE PAST

has a huge impact on the future

e need to study history to enable us to develop a better understanding of the world in which we live. Building knowledge and understanding of historical events and trends, especially over the past century, enables us to develop a much greater appreciation for current events today and can potentially reveal where we are headed. History gives us a very clear picture of how the various aspects of society, such as technology, governmental systems, and even society as a whole, worked in the past so we understand how it came to work the way it is now. Finding new ways to be innovative keeps us curious for the future and gives us pressure to learn from past our mistakes.

Studying history allows us to observe and understand how people and societies behaved, also had an effect on shaping our world and our global political system today. If we want to truly understand why something happened, in any area or field, such as politics or major change in the number of smokers and depressed people which are very different areas but can all benefit from looking at our past and how we ended here to then left us out of that crises in the future — you need to look for factors that took place earlier. Only through the study of history can people really see and grasp the reasons behind these changes, and only through history can we understand what elements of an institution or a society continue regardless of continual change.

Being curious about our past gives us the ability to use ancient tools that can work today's design. We should always transform design, design is an ongoing project that can never stop developing, and using those past projects can make us rethink our way of creating and recreating our designs to fit the lifestyle we have today and in the future.

THOSE WHO CANNOT LEARN FROM HISTORY ARE DOOMED TO REPEAT IT.

words by GEORGE SANTAYANA

GREEN DESIGN

PASSIVE AND ACTIVE DESIGN

3

PASSIVE DESIGN STRATEGIES

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Passive design refers to any technologies or design features adopted to reduce the temperature of buildings without the need for power consumption

Location

Orientation/ shading

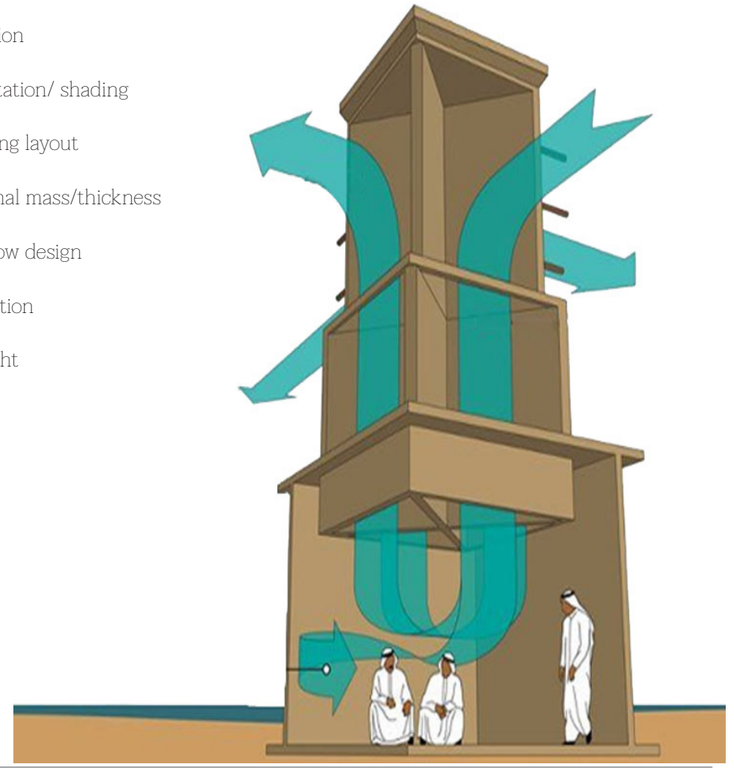
Building layout

Thermal mass/thickness

Window design

Insolation

Skylight



ACTIVE DESIGN STRATEGIES

Active design strategies use purchased energy (including electricity and natural gas) to keep buildings comfortable. These strategies include mechanical system components such as air-conditioning, heat pumps, radiant heating, heat recovery ventilators, and electric lighting.

Power grid system is one smart, when the electricity generation exceeds the amount required, the system supplies the excess power to the utility grid which when the energy can be used else where. We all know wind power from windmills its another amazing way to harvest energy and covert it into electrical energy

Water drained into heat recovery is one way to save energy and money on hot water, the pipp basically preheats the water reducing the energy needed to heat the water to the set temperature. Graywater re/use is way to re/use water, bathwater, and the water you use to wash your hands can be used to flush the toilet inset of using fresh clean water.

Reversible ceiling fans are used by taking the circulating indoor air and can be used both heating and cooling seasons from just pushing the air around.

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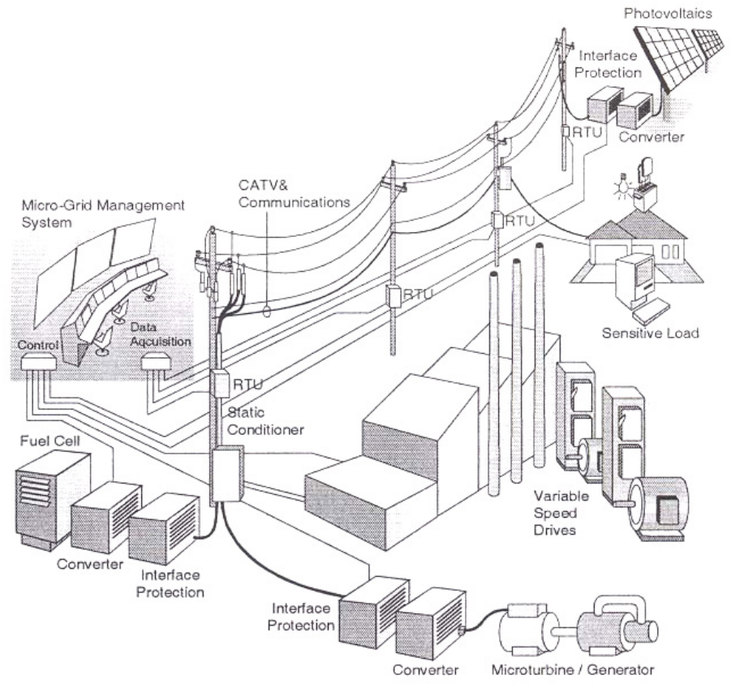

CHAPTER

GREEN RATING SYSTEM

Green rating systems offer guidelines and metrics that improve collaboration and provide a framework that defines “sustainability”

4

LEED

US GREEN RASTING SYSTEM

LEED stands for (Leadership in Energy and Environmental Design) and iis the most widely used green building rating system in the world currency. Its evaluation is available for virtually all building types, LEED provides a structure for healthy, highly efficient, and cost-saving green buildings. LEED certification is a recognized symbol of sustainability achievement and leadership.

LEED grades with a pointing system, divided into 4 different categories certified level meaning you just passed, and silver, gold, and platinum. Platinum is so hard to get which also pushes people to try harder at creating greener buildings.

GREEN STAR

AUSTRIAN GREEN RASTING SYSTEM

Green Star Buildings is Australia's leading rating tool for new buildings and major refurbishments. Green Star Buildings sets out the criteria that must be met to deliver healthy, resilient, and positive places for people and nature. It aims to meet current and future demands on the built environment with aspirational benchmarks for addressing the key issues of the next decade: Climate action, resource efficiency, and health and wellbeing.

Green star grading system from 1-6 stars they earned from how well you have completed the differents steps - management, indoor environment quality, energy, transportation, water, materials, land use and ecology, emissions, and innovation.

BREAM

UK GREEN RASTING SYSTEM

BREEAM measures sustainable value in a series of categories, ranging from energy to ecology. Each of these categories addresses the most influential factors, including low impact design and carbon emissions reduction; design durability and resilience; adaption to climate change; and ecological value and biodiversity protection.

Bream are graded in pass/good/very good/excellent/outstanding in how well they performed in the different categories - energy, heath and wellbeing, innovation, land use, materials, management, pollution, transport, waste and water.