

Planning for climate change and rapid Urbanisation

Continuing Professional Development, Lecture Series for Professionals

lecture notes

- Lecture title : **Introduction to the UN 2030 Sustainable Development Goals**
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summary

2020 marks the start of a Decade of Action to deliver the UN 2030 Agenda for Sustainable Development, as expressed in the 17 Sustainable Development Goals and reflected in a number of important international agreements. In this lecture, Mina Hasman provides an overview of these agreements, and explains the important role for built environment professionals if we are to achieve a more sustainable future for all.

learning outcomes

By the end of this lecture, students will:

- be informed on the global climate change context as it relates to built environment and people,
- have insights on the international commitments that aim to address climate change,
- understand each of the UN 2030 Sustainable Development Goal's mission, and see case studies from around the world, that demonstrate how each Goal can be addressed in practical terms.

key concepts

Sustainable Development Goals, Climate Change Agreement, Disaster Risk Reduction, Climate Action

links to further information

[UN 2030 Sustainable Development Goals](#), [UNFCCC The Paris Agreement](#), [UNEP 2019 Emissions Gap Report](#), [UNDRR Sendai Framework for Disaster Risk Reduction](#), [Addis Ababa Action Agenda](#)

speaker notes (to be read in conjunction with the presentation)

- **Slide 3:** In this presentation, we will be talking about the United Nation's 2030 Sustainable Development Goals, and how these Goals are applied from principles to practice.
- **Slide 4:** The aim of this presentation is:
 - to inform you on the global climate change context as it relates to the built environment and people,
 - to give you insights on the international commitments that aim to address climate change, and
 - to provide a detailed understanding of the United Nations' Sustainable Development Goals for 2030.

- **Slide 5:** The global climate change context has never been clearer.

With the consistent evidence presented by the various climate change scientists and experts around the world, we know that our Planet has now been pushed into an uncharted territory.

- **Slide 6:** where extreme events, such as heatwaves, floods and even extreme colds are some of the anomalies we face; more frequently now than ever.

As these climate anomalies become more frequent, we see the growing impacts of climate change emerge in many areas around the globe – causing significant disruption to daily lives, and resulting in major displacements as well as migrations from the most vulnerable countries – which are already seeing the devastating impacts of climate change today.

- **Slide 7:** Heightened vulnerability and exposure to sudden-onset hazards, such as storms, floods, droughts and wildfires, have just in the last year, resulted in over 17 million disaster displacements in 144 countries and territories around the globe.

It is inevitable that these adverse impacts of climate change will only get worse as the world faces other, global changes in parallel. These include population growth and rapid urbanisation.

- **Slide 8:** It is expected that within the next 30 years, the global population will reach to 2.4 billion, with the majority of people living in cities.

Our cities are equally densifying to address the demands of this rapid population growth.

- **Slide 9:** It is anticipated that in the next 35 years, over 230 billion square meters of buildings will be constructed and/or renovated in cities worldwide.
- **Slide 10:** This is an area equal to the entire current global building stock.
- **Slide 11:** This growth will only exacerbate global warming – if drastic measures are not taken – because buildings account for nearly 40% of the annual, global Greenhouse Gas emissions.
- **Slide 12:** We also need to recognize, that although growing cities can bring benefits with their organisation and efficiency, failure to manage rapid urbanisation well, will bring risks of profound social instability, with increased poverty, inequality and vulnerability in societies around the world – as this unprecedented transition from rural to urban areas continues unplanned.
- **Slide 13:** As our cities continue to be densified, health risks will only become a growing concern – as we currently experience with the global health crisis with the COVID-19 pandemic. The impacts of climate change will only continue to amplify such risks.

World Health Organisation predicts that climate change will cause approximately 250,000 additional deaths per year between 2030 and 2050 – due to heat exposure in elderly, malaria and childhood under-nutrition, among other factors.

- **Slide 14:** So, our responsibility as built environment professionals is enormous: as designers, architects, engineers, urban planners – creators of the future cities, we need to engage with the challenges faced all around our cities today – and strive to make a positive change for a better future.
- **Slide 15:** Over the last years, we have seen an upsurge in the data and (scientific) evidence collated by many international organisations on the global, climate change context, and the guidance delivered (by these organisations), outlining key ambitions to be met at specific milestones – in order to mitigate the adverse and permanent impact of climate change.

These leading, international organisations, that have become the main source of knowledge, include United Nations, World Green Building Council and the Global Alliance for Buildings and Construction, among others.

- **Slide 16:** These leading organisations – which have become the voice of the international community – have formulated a range of agreements to tackle the unprecedented, existential challenges the humanity faces – in relation to climate change, displacement, migration, rapid urbanisation, and resource depletion – as mentioned before.

The United Nation's 2030 Agenda for Sustainable Development, the Paris (Climate) Agreement – followed by the Inter-governmental Panel on Climate Change's Special Report of "Global Warming of 1.5 Degrees Celsius" and the United Nations' Environment Programme's "Emissions Gap Report", - the Sendai Framework for Disaster Risk Reduction, and finally, the Addis Ababa Action Agenda for Humanity – are among the most notable of such agreements.

- **Slide 17:** The UN 2030 Agenda for Sustainable Development is a plan of action for people, planet, and prosperity. It is an Agenda of unprecedented scope and significance. And it is accepted by all countries and is applicable to all, considering different national realities, capacities and levels of development as well as respecting national policies and priorities.
- **Slide 18:** Established in 2015 at the 21st Session of the Conference of Parties – as it is called COP21 – the Paris Agreement, brings all nations into a common cause to undertake ambitious efforts to combat climate change, and adapt to its effects – by accelerating and intensifying actions and investments needed for a sustainable, low carbon future.

The Agreement's central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise, in this century, well below 2 Degrees Celsius above the pre-industrial levels, and to pursue efforts to limit the temperature increase even further down to 1.5 Degrees Celsius.

The Agreement requires all Parties to put forward their best efforts through nationally determined contributions (NDCs) to achieve these long-term goals. These contributions embody efforts by each country to reduce national emissions, and to define pathways to strengthen these efforts in the years ahead.

Although the Paris Agreement strives to – at a minimum – limit the global warming to below 2 Degrees Celsius (above the pre-industrial levels), there is overwhelming evidence that urge the world to limit the global temperature rise below 1.5 Degrees Celsius – citing the vast devastation the half a degree temperature increase will bring to our planet and society – including droughts, floods, extreme heat and poverty for hundreds of millions of people.

- **Slide 19:** Launched in October 2018, 3 years after the Paris Agreement, the IPCC's Special Report on Global Warming of 1.5 Degrees Celsius highlights this urgent call to action very clearly.

It references "deep emissions' reductions" and the "rapid, far-reaching and unprecedented changes that would be required in all aspects of society" to limit global warming to 1.5 Degrees Celsius.

- **Slide 20:** The global warming has so far been estimated to reach 1.1 Degrees Celsius, and if drastic measures are not taken, the global temperatures will continue to rise to 3.4 Degrees Celsius at the end of the century.

As mentioned previously, limiting global warming to 1.5 Degrees Celsius will be challenging – it will require rapid and far-reaching transitions at an unprecedented rate – and it will rely on the global economy reaching to net zero carbon by 2050, with the built environment sector needing to transition to net zero carbon much sooner.

This reality renders the next 10 years ahead of us the most critical 10 years of our time. In this Decade of Action (as the United Nations defines it), we all need to accelerate sustainable solutions – mobilizing more

governments, civil society, businesses and calling on all people around the globe, to deliver the transformation needed – fast and at scale.

- **Slide 21:** The latest Emissions' Gap Report – presented by the United Nations Environment Programme, tracks the global progress on climate action, and further emphasizes the need to drastically increase the existing ambitions.

It highlights that although an ambitious, global effort is underway to deliver the 2030 promise, we are simply not yet advancing at the speed and the scale required.

And in fact, the gap to meet the 1.5 or even the 2 Degrees Celsius Paris Agreement target is continuing to increase. Considering this, the report concludes the need of a five-fold increase in the current collective commitment with significant cuts to be made in the use and sourcing of energy – in the power, transportation and buildings' sectors, as well as increasing efficiency in the use of materials, such as iron, steel and cement.

- **Slide 22:** As we observe the agreements the international community has established – especially since 2015, the Sendai Framework for Disaster Risk Reduction plays a crucial role in providing concrete actions to protect the development gains from the risk of disaster.

Aligned with the other United Nations' 2030 Agenda agreements, this Framework advocates for substantial reduction of disaster risk and losses in lives, livelihoods, health, assets, businesses, communities and countries around the world.

It recognizes that the State has the primary role to reduce disaster risk, but that responsibility should be shared with the local government, the private sector and other stakeholders.

- **Slide 23:** Followed by the Sendai Framework, Addis Ababa Action Agenda builds a strong foundation to support the implementation of the 2030 Agenda for Sustainable Development.

It provides a global framework for financing sustainable development, and it includes a comprehensive set of policy actions that draw upon all sources of finance, technology, innovation and trade – to support the achievement of the Sustainable Development Goals.

- **Slide 24:** As mentioned before, the 2030 Agenda for Sustainable Development, provides a shared blueprint for peace and prosperity for people and the planet, now and also into the future.

At the heart of this Agenda lies the 17 Sustainable Developments Goals defined as an urgent call for action by all countries in a global partnership.

These Goals are universal, and they are about integration and transformation – for a more prosperous world.

Although it may not be immediately apparent at first, all the 17 Goals can be directly and/or indirectly impacted by the choices and decisions we make within the built environment sector.

So, lets see how the principles of the 17 United Nations Sustainable Developments Goals have in the recent years, been translated from principles to practice – in various examples around the world.

In this section of the presentation, I will walk you through each one of the Sustainable Development Goals – explaining their mission, formulating the key questions, we as built environment professionals should be asking ourselves as we deliver our work, and showing case studies that respond to their specific mission.

- **Slide 25:** The first United Nations 2030 Goal is “No Poverty”.

This Goal's mission is to end poverty in all its forms and dimensions by 2030, everywhere around the world.

- **Slide 26:** When designing (but also constructing, and operating) a built environment, the key question we should be asking ourselves – to address this Goal – is: How can this design contribute to the goal of ending poverty in all its forms and dimensions?

- **Slide 27:** Volontariat Home for Homeless Children by Ray Meeker and Anupama Kundoo is an exemplary project which delivers on the mission of the first United Nations’ 2030 Sustainable Development Goal.

Located in Pondicherry, India (and completed in 2013), this mud house is a proof of how innovative and creative thinking as well as testing and experimentation of new approaches, vernacular technologies and solutions can provide a decent, and affordable housing that is well made with local craftsmanship and materials.

- **Slide 28:** The second United Nations 2030 Goal is called “Zero Hunger”. This Goal’s mission is to end all forms of hunger and malnutrition by 2030, making sure all people—especially children – have enough and nutritious food all year round.
- **Slide 29:** As built environment professionals, the key question we should consider – to address this Goal – is: How can this design contribute to ending hunger, and encouraging the transition to sustainable agriculture?
- **Slide 30:** The Michigan Urban Farming by the Michigan Urban Farming Initiative is a great example of a built project which delivers on the “Zero Hunger” Goal’s mission – by engaging the local community in sustainable agriculture.

Located in the United States, in Detroit’s North End Neighbourhood, the Michigan Urban Farming campus is a proof of how radical thinking in the design of urban neighbourhoods can empower urban communities by using agriculture as a platform to promote education, sustainability, and community, while also simultaneously reducing socio-economic disparity.

- **Slide 31:** The third United Nations 2030 Goal is “Good Health and Wellbeing”. This Goal’s mission is to ensure healthy lives, address inequalities and promote well-being for all at all ages – by deploying multi-sectoral, right-based and gender-sensitive approaches.
- **Slide 32:** When designing a built environment, the key question we should be asking ourselves – to address this Goal – is: How can this design help ensure healthy lives and wellbeing for all, at all ages?
- **Slide 33:** Konditaget Luders by JaJa Architects is an exemplary project which delivers on the mission of the third of the United Nations’ 2030 Sustainable Development Goal.

Located in Copenhagen, Denmark (and completed in 2016), the project presents a park and a play hybrid, fitness park, optimizing urban space into a public amenity – which is especially needed as urban, public spaces continue to become scarce, and compete for multiple functions.

- **Slide 34:** The fourth United Nations 2030 Goal focuses on “Quality Education”. This Goal’s mission is to ensure inclusive, equitable quality education, and promote lifelong learning opportunities for all.
- **Slide 35:** To address this Goal when delivering our work, as built environment professionals, the key question we should be asking ourselves is: How can this design support quality education and lifelong learning?
- **Slide 36:** The Zaa’tari Classroom which resides in the “community dome” in Zaa’tari Village, Jordan is a small-scale example of how the “Quality Education” Goal’s mission can manifest itself in the design of a built environment.

Inspired by the vernacular, beehive house structures of Syria, and built by the local workers out of adobe, this small building not only offers a learning space for the Syrian refugee children, but also increases the livelihoods

of the local community – as they get trained to build low-cost, energy-efficient, and adaptable buildings for the reconstruction of their village.

- **Slide 37:** The fifth United Nations 2030 Goal is “Gender Equality”. This Goal’s mission is to achieve gender equality and empower all women and girls.
- **Slide 38:** When designing a built environment, the key question we should be asking ourselves – to address this Goal – is: How can this design advance gender equality and the empowerment of women and girls?
- **Slide 39:** Kachumbala Maternity Unit by HSK Architects is a unique project which delivers on “gender Equality” Goal’s mission.

Located in eastern rural Uganda, (and completed in 2017), this project demonstrates how a built environment caters to the priorities of an impoverished region with limited access to healthcare, where high maternity death threatens the lives of many women and girls on a daily basis.

- **Slide 40:** The sixth United Nations 2030 Goal is “Clean Water and Sanitation”. This Goal’s mission is to ensure availability and sustainable management of water and sanitation for all.
- **Slide 41:** As designers and built environment professionals, the key question we should consider – to address this Goal – is: How can this design help ensure the sustainable management of water and universal access to sanitation?
- **Slide 42:** The Wild Mile project is a unique case study where the sixth United Nations’ 2030 Sustainable Development Goal’s mission manifests itself in the design of a new, 17-acre floating eco-park - which is envisioned to create a new environment for habitat, education and recreation on the Chicago River, in the US.

This project advances a community-led vision of renewed urban ecology which helps strengthen neighbourhood connectivity, generate cleaner water and support more vibrant ecosystems.

When completed, the Wild Mile will transform the formerly industrialized, human-made branch of the Chicago River (along Goose Island) into an eco-park that serves people, wildlife, and the environment. With a series of floating gardens, forests with public walkways, kayak docks, and other amenities, the project is designed to restore the river as a public trust.

- **Slide 43:** The seventh United Nations 2030 Goal focuses on “Affordable and Clean Energy”. This Goal’s mission is to ensure access to affordable, reliable, sustainable and modern energy for all.
- **Slide 44:** When designing a built environment, the key question we should be asking ourselves – to address this Goal – is: How can this design contribute to a sustainable energy transition?
- **Slide 45:** Mount Sinai Kyabirwa Surgical Facility in Uganda is an exemplary project that showcases how an integrated design approach which couples local architectural elements and techniques with advanced technologies such as the solar panels used in this building can effectively deliver on the seventh Goal’s mission.

Designed by Kliment Halsband Architects, this building serves as a prototype for future, independent, self-sustaining, ambulatory surgical facilities that can offer life-saving treatments in under-served parts of the world.

- **Slide 46:** The eighth United Nations 2030 Goal is “Decent Work and Economic Growth”. This Goal’s mission is to promote sustained, inclusive, and sustainable economic growth, full and productive employment as well as decent work for all.
- **Slide 47:** To address this Goal when delivering our work, as built environment professionals, the key question we should be asking ourselves is: How can this design promote decent work for all?

- **Slide 48:** The Tourist Burma Building is a unique case study when we consider built projects around the world that address the vision and the mission of the eight United Nations 2030 Sustainable Development Goal.

Designed by Feilden Clegg Bradley Studios and located in Yangon, Myanmar, this is a renovation project with the ambition to create an economically-sustainable, cultural hub – to benefit and inspire the people of Yangon.

Acting as a market hall, café, workshop, teaching space and a gallery, this building secures its future – for many decades to come – as a space to showcase and promote Myanmar’s craft industries.

- **Slide 49:** The ninth United Nations 2030 Goal is called “Industry, Innovation and Infrastructure”. This Goal’s mission is to build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation.
- **Slide 50:** When designing a built environment, the key question we should be asking ourselves – to address this Goal – is: How can this design advance sustainable industrialization and innovation, especially in those places that do not have access to modern industry?
- **Slide 51:** Madinat Al Irfan Masterplan takes the mission of catalysing change through innovative thinking to a much bigger scale.

Designed by Allies and Morrison in collaboration with Arup, the masterplan is a vision of a 40-year plan for a new, low-carbon city district in Muscat, Oman.

The project’s design vision aims to address the most critical challenges currently faced by Oman – which include the need for economic diversification, public transport, responsible resource consumption and long-term environmental protection.

- **Slide 52:** The tenth United Nations 2030 Goal focuses on “Reduced Inequalities”. This Goal’s mission is to reduce inequality within and among countries.
- **Slide 53:** As designers and built environment professionals, the key question we should consider – to address this Goal – is: How can this design help to reduce inequality within and among countries?
- **Slide 54:** With the ambition to create the most accessible office building in the world, the Disabled People’s Organization in Denmark has built a headquarters in Taastrup.

Designed by Cubo Arkitekter, this building sheds light on the need of universal design, and demonstrates how with an integrated, accessible design approach, a building can create a work environment which is equal for all – regardless of disabilities. This is the true reflection and delivery of the tenth Goal of the United Nations 2030 Sustainable Development Goals.

- **Slide 55:** The eleventh United Nations 2030 Goal is “Sustainable Cities and Communities”. This is the one Goal that all the built environment professionals can see direct links to in the work they deliver on a day-to-day basis. This Goal’s mission is to make cities and human settlements inclusive, safe, resilient and sustainable.
- **Slide 56:** When designing a built environment, the key question we should be asking ourselves – to address this Goal – is: How can this design make our cities more inclusive, safe, resilient, and sustainable?
- **Slide 57:** We see a great example of a built project in Cape Town, South Africa – that delivers on this goal’s mission.

A housing project by Urban-Tink Tank, called “Empower Shack” brings safe, low-cost housing to residents of South Africa’s informal settlements. The project offers a scalable, transparent, and replicable housing model that addresses both the real demand, market dynamics and municipal planning objectives.

- **Slide 58:** Another, very built environment sector-related Goal is the twelfth Goal of “Responsible Consumption and Production”. This Goal’s mission is to ensure sustainable consumption and production patterns.
- **Slide 59:** As designers and built environment professionals, the key question we should consider – to address this Goal – is: How can this design transform production and consumption patterns, to make them more sustainable?
- **Slide 60:** Mjøstårnet by Voll Arkitekter is an exemplary project which delivers on the “Responsible Consumption and Production” Goal’s mission.

Located in Brumunddal, Norway, this building currently holds the title of the world’s tallest timber structure. The wood used to create the cross laminated timber for Mjøstårnet’s construction is locally sourced in the area, which is known for its forestry, and its wood processing industry.

- **Slide 61:** The thirteenth United Nations 2030 Goal is called “Climate Action” – which has been the main focus of this presentation. This Goal’s mission is to take urgent action to combat climate change and its impacts.
- **Slide 62:** When designing a built environment, the key question we should be asking ourselves – to address this Goal – is: How can this design be part of the urgent action that is needed to combat climate change and its impacts?
- **Slide 63:** Qún lì Stormwater Park by Turenscape is an exemplary project, which delivers on the mission of the thirteenth Goal.

Located in Harbin City, China, (and completed in 2014), this project demonstrates how, in this instance, ancient Chinese water systems and knowledge from traditional farming methods have informed the creation of climate-adaptive landscapes in the country’s urban areas.

Facing periods of drought, sea level rise and increased rainfall, China has created the Sponge City Movement. As part of this movement, the Qún lì Stormwater Park is establishing precedents for future developments – on how to ‘retain, adapt, slowdown and reuse’ water in urban areas in various ways.

- **Slide 64:** The fourteenth United Nations 2030 Goal focuses on “Life below Water”. This Goal’s mission is to conserve and use the oceans, seas and marine resources for sustainable development.
- **Slide 65:** As designers and built environment professionals, the key question we should consider – to address this Goal – is: How can this design be part of caring for our oceans and seas?
- **Slide 66:** The Wadden Sea Centre by Dorte Mandrup Architects is an exemplary project which delivers on the “Life Below Water” Goal’s mission.

Located in Jutland, Denmark (and completed in 2017), this project demonstrates how designing a building in harmony with the surrounding context, can accentuate the goal of a project to create awareness and understanding of that building’s specific environment – in this case, the surrounding marshlands and the sea.

- **Slide 67:** The fifteenth United Nations 2030 Goal is called “Life on Land”. This Goal’s mission is to protect, restore and promote sustainable use of terrestrial ecosystems. And also, to sustainably manage forests, combat desertification, halt and reverse land degradation and cease biodiversity loss.

- **Slide 68:** When designing a built environment, the key question we should be asking ourselves – to address this Goal – is: How can this design help to protect and restore ecosystems and preserve biodiversity?
- **Slide 69:** Q in Huángdào Red Ribbon Park by Turenscape is an exemplary project which delivers on the mission of the fifteenth Goal.

Located in Q in Huángdào City in China, (and completed in 2009), this project demonstrates how a park's integrated design can provide a balance of (minimal) intervention and preservation of the natural environment in a densely populated city. It also showcases how human presence in natural environment can be carefully managed to support both the human experience and the natural wildlife.

- **Slide 70:** The sixteenth United Nations 2030 Goal is “Peace Justice and Strong Institutions”. This Goal's mission is to promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable, and inclusive institutions at all levels.
- **Slide 71:** As designers and built environment professionals, the key question we should consider – to address this Goal – is: How can this design contribute to the development of peaceful, inclusive, and just societies?
- **Slide 72:** Further to the South, a vibrant community center in Manica, Mozambique sits in harmony with its local context, and becomes a part of the area's cultural landscape.

The project aims to optimize local building techniques using regional materials to modernize the construction processes in the area, without a rupture in the know-how of populations.

- **Slide 73:** The seventeenth United Nations 2030 Goal is built on “Partnerships for the Goals”. This Goal's mission is to strengthen the means of implementation and revitalize the global partnership for sustainable development.
- **Slide 74:** When designing a built environment, the key question we should be asking ourselves – to address this Goal – is: How can this design advance the global partnership needed to achieve all of these goals?
- **Slide 75:** The Climate Tile by Third Nature is an exemplary project which delivers on the mission of the seventeenth United Nations 2030 Sustainable Development Goal. Located in Copenhagen, Denmark (and completed in 2018), this project demonstrates how cross-disciplinary partnership and collaboration between architects, drainage technicians, technical researchers, philanthropic associations and consultants, can create a new, scalable and innovative product, in this case, a tile system – in order to help cities effectively respond to the impacts of climate change.
- **Slide 76:** United Nations' 2030 Sustainable Development Goals are truly a powerful tool to create change. We must, therefore, collectively embrace their principles and carry them to our practice.
- **Slide 77:** Run Video
- **Slide 78:** As mentioned before, key international organisations are catalysing global leadership within the built environment sector to accelerate the transition to a regenerative future.

With their global network and rigorous work in the fight against climate change, the World Green Building Council and the Global Alliance for Buildings and Construction aim to lead the way – with their roadmaps that provide a clear and long-term direction in the steps the industry must make.

- **Slide 79:** World Green Building Council's Advancing Net Zero is the organization's global project, which aims to promote and support the acceleration of net zero carbon buildings to 100% by 2050.

In this project, World Green Building Council brings together the expertise and experience of the key, international stakeholders within the buildings and construction sector – to inform on a roadmap on how to achieve net zero emissions by 2050.

This roadmap is defined with four key principles:

1. Measuring and disclosing carbon emissions,
 2. Continuously and consistently reducing energy demand,
 3. Generating balance from renewables – which relies on supplying the energy demand of buildings with on-site and/or off-site renewable energy sources, and
 4. Improving verification and rigour – with consistent tracking and improvement.
- **Slide 80:** Like the World Green Building Council, the Global Alliance for Buildings and Construction aims to connect governments, organisations and private sector to drive the transformation towards a zero-emissions, resilient and efficient buildings, and construction sector.
 - **Slide 81:** It strives to deliver on this mission through:
 - raising the level of ambition – across the sector – to meet the Paris Agreement goals,
 - mobilising all actors along the value chain – with policy frameworks informing and influencing the design, construction, demolition, and operations of the built environments, and
 - connecting with key stakeholders both in the private and public sectors.
 - **Slide 82:** When we take a close look at the Global ABC's recent Global Roadmap for Buildings and Construction, we recognize the pathway to 2050 embraces capacity building, multiple stakeholders' engagement and financing – in order to make the transition towards zero emissions possible.

As it can be seen on the diagram on the right-hand side, this global roadmap highlights the need of a co-ordinated approach at multiple sectors, and levels, and it directly relates to activities in 8 key areas of the buildings and construction sector. These include:

1. Urban planning
2. New buildings
3. Existing buildings
4. Building operations
5. Building systems
6. Materials
7. Resilience
8. Clean energy

The work presented here is meant to give the built environment professionals the confidence that the far-reaching zero emissions' goal is achievable, and that with the right tools and knowledge we equip ourselves with, as architects, we can be the standard-bearers in the fight for the future of our planet.

- **Slide 83:** Our collective action is what will make the difference – we must be bold enough to demand meaningful change, and inventive enough to make it a reality.
- **Slide 84:** Further content that can help you deliver change will be presented in the next lectures. Thank you.

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