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International
Energy Agency

Special Session: The GlobalABC Africa Roadmap

Buildings: Maxine Jordan, IEA and Ian Hamilton, UCL Energy Institute

Pretoria, Tuesday 15th October 2019

Buildings energy efficiency sessions in partnership with:

UCL ENERGY INSTITUTE

UCL

Energy Efficiency Training Week: Buildings programme

1. Where to start: Energy use in buildings
2. Where to start: Energy efficiency potential in buildings
   Special session: GlobalABC Regional Roadmaps
3. Toolkit: Energy efficient building design technologies
4. Toolkit: Energy efficient building system technologies
   Special session: Green Building in Africa – *Elizabeth Chege, KGBS*
   Special session: The GlobalABC Africa Roadmap for buildings and construction
5. What are the steps? Determining the current status of policies
6. Toolkit: Energy efficiency policies and target setting *with guest speaker: Hlompho Vivian, GBC SA*
7. What are the steps? Implementing codes and standards
8. What are the steps? Building operations and procurement *with guest speaker: Christelle Van Vuuren, Carbon Trust*
   Special session: The multiple benefits of energy efficiency
9. Did it work? Evaluation and energy efficiency indicators
   Special session: Financing energy efficiency in buildings
10. Buildings quiz

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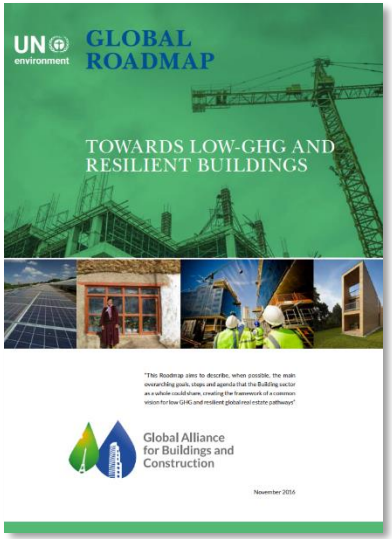
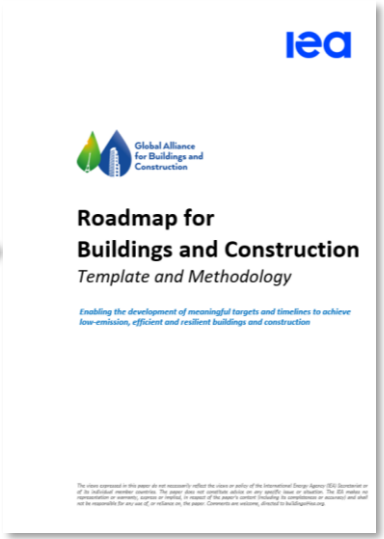
Why regional roadmaps?

Global Roadmap, 2016



Template and methodology, 2018-2020



3 Regional Roadmaps, 2018-2020

Africa

Asia

Latin America

Meaningful targets and timelines to achieve low emission, efficient and resilient buildings in three major regions.

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Roadmap outputs include targets for 8 key areas

	Baseline status (2019)	Short-term (2030)	Medium-term (2040)	Long-term (2050)
Urban planning	Minimal sustainable buildings planning	Achieve: 25% sustainability plans Aspire: 50% sustainability plans	Achieve: 50% sustainability plans Aspire: 75% sustainability plans	Achieve: 75% sustainability plans Aspire: 100% sustainability plans
New buildings	<5% net zero ready buildings	Achieve: 50% net zero ready Aspire: 50% net zero buildings	Achieve: 75% net zero ready Aspire: 75% net zero buildings	Achieve: 100% net zero ready Aspire: 100% net zero buildings
Building retrofits	<10% sustainable building renovation	Achieve: 30% renovation Aspire: 50% renovation	Achieve: 50% renovation Aspire: near zero renovation	Achieve: near zero renovation Aspire: net zero renovation
Building operations	Minimal use of energy and sustainability management	Achieve: 20% coverage Aspire: 40% coverage	Achieve: 40% coverage Aspire: 60% coverage	Achieve: 75% coverage Aspire: 100% coverage
Systems	Less-efficient lighting, appliances and equipment	Achieve: 50% MEPS coverage Aspire: >25% of current BAT	Achieve: 75% MEPS coverage Aspire: >50% of current BAT	Achieve: 100% MEPS coverage Aspire: >100% of current BAT
Materials	Significant energy, emissions and global warming potential	Achieve: 10% GHG + GWP decrease Aspire: 50% GHG + GWP decrease	Achieve: 30% GHG + GWP decrease Aspire: 80% GHG + GWP decrease	Achieve: 50% GHG + GWP decrease Aspire: 100% GHG + GWP decrease
Resilience	Minimal adaptation	Achieve: 50% of new buildings Aspire: 50% of all buildings	Achieve: 75% of new buildings Aspire: 75% of all buildings	Achieve: 100% of new buildings Aspire: 100% of all buildings
Clean energy	Significant use of fossil fuels and carbon-based electricity	Achieve: 33% zero on-site emissions Aspire: 33% clean energy	Achieve: 66% zero on-site emissions Aspire: 66% clean energy	Achieve: 100% zero on-site emissions Aspire: 100% clean energy

- Key actions and targets
  - Overall
  - Technologies
  - Policies
  - Capacity Building
  - Finance
  - Multiple benefits
- Achievable & Aspirational targets
- Definition of indicators and metrics

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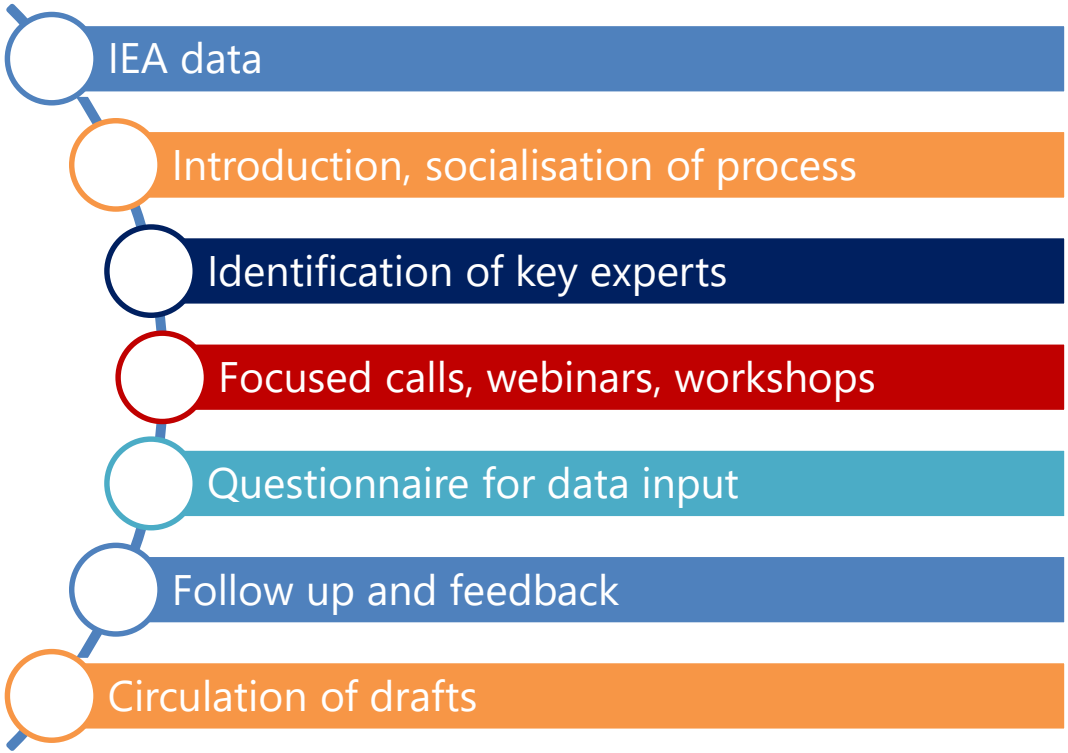
The process: the importance of collective discussion and input



Global Alliance for Buildings and Construction

WORLD RESOURCES INSTITUTE

WORLD GREEN BUILDING COUNCIL

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Envelope technologies

		Baseline status (2019)	Short-term (2030)	Medium-term (2040)	Long-term (2050)
Insulation is the main component of the overall thermal transfer value, which reduces the flow of heat through the building envelope	**Insulation** (countries where insulation is uncommon)	Insulation is not commonly available	Achieve: insulate 20% of new build Aspire: insulate 75% of new build	Achieve: 40% Aspire: 100%	Achieve: 60% Aspire: 100%
	Insulation (countries where insulation is common)	Insulation is commonly available	Achieve: insulate 50% of new build Aspire: insulate 100% of new build	Achieve: 70% Aspire: 100%	Achieve: 90% Aspire: 100%
Low-e and low SHGC windows helps in reducing the thermal transfer through windows enabling lower solar heat gain while allowing natural ventilation and enabling daylighting	**Windows** (countries where low-e windows are uncommon)	Low-e windows are not commonly available	Achieve: low-e for 5% of new build Aspire: low-e for 20% of new build	Achieve: 20% Aspire: 40%	Achieve: 40% Aspire: 60%
	Windows (countries where low-e windows are common)	Low-e windows are commonly available	Achieve: low-e for 40% of new build Aspire: low-e for 70% of new build	Achieve: 60% Aspire: 85%	Achieve: 80% Aspire: 100%
External shading helps prevents direct sunlight from entering into the building by reflecting the solar radiation	**External shading**	Countries with external shading uncommon	Achieve: 15% external shading Aspire: 45% external shading	Achieve: 40% Aspire: 65%	Achieve: 60% Aspire: 100%
Select materials based on life cycle assessment of the energy and emissions of the materials. Design for long life and adaptation.	**Circular economy**	Minimal lifecycle information and adaptation	Achieve: __% plan circular economy Aspire: __% plan circular economy	Achieve: __% plan circular economy Aspire: __% plan circular economy	Achieve: __% plan circular economy Aspire: __% plan circular economy

Technologies for heating, cooling and lighting

		Baseline status (2019)	Short-term (2030)	Medium-term (2040)	Long-term (2050)
Use of efficient heating equipment and distribution system to reduce energy use	**Space heating**	Typical: __ COP Exceptional: >__ COP	Achieve: __ COP Aspire: __ COP	Achieve: __ COP Aspire: __ COP	Achieve: __ COP Aspire: __ COP
Use of efficient cooling equipment and distribution system to reduce energy use	**Space cooling** (room air conditioners)	Typical: 3 to 4 W/W SEER Exceptional: ≥ 6 SEER	Achieve: 4 SEER average Aspire: 6 SEER average	Achieve: 6 SEER Aspire: 8 SEER	Achieve: 8 SEER Aspire: 10 SEER
	Space cooling (centralised cooling systems)	Typical: __ W/W SEER Exceptional: > __ W/W	Achieve: __ SEER average Aspire: __ SEER average	Achieve: __ SEER average Aspire: __ SEER average	Achieve: __ SEER average Aspire: __ SEER average
Incorporate efficient solutions such as hybrid cooling or energy recovery for mechanical ventilation system	**Ventilation**	Typical: no energy recovery Exceptional: natural	Achieve: 10% recovery Aspire: 50% hybrid or natural	Achieve: 30% recovery Aspire: 75% hybrid or natural	Achieve: 60% energy recovery Aspire: 75% hybrid or natural
High efficiency systems can be implemented by using renewable energy, using waste heat or cogeneration	**Water heating**	Typical: __ COP Exceptional: >__ COP	Achieve: __ COP Aspire: __ COP	Achieve: __ COP Aspire: __ COP	Achieve: __ COP Aspire: __ COP
More efficient lighting with improved lumens/watt to reduce energy consumption	**Lighting**	Typical: <100 lumens/watt Exceptional: >200 lumens/watt	Achieve: __ lm/w Aspire: __ lm/w	Achieve: __ lm/w Aspire: __ lm/w	Achieve: __ lm/w Aspire: __ lm/w

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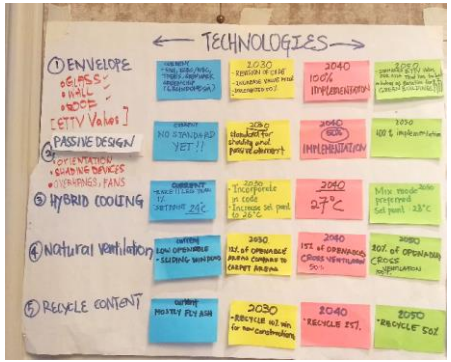
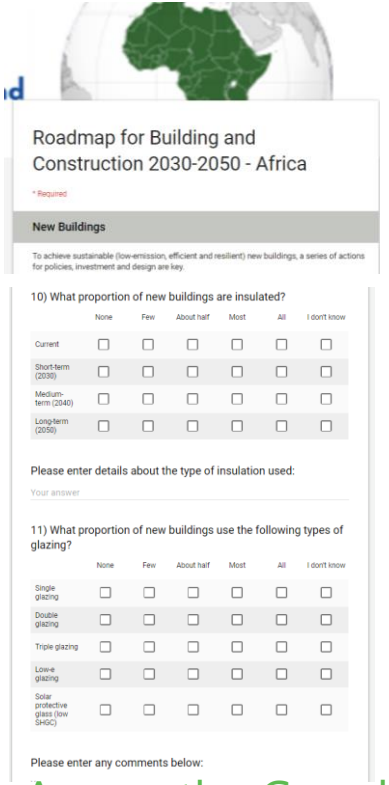
A collaborative process

- Workshops, webinars, surveys





Access the Google Forms here

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Where are these technologies at today

Technologies for:

- New buildings
- Retrofits
- Systems

> Think about the status of the key technologies you identified as they are today, in terms of performance and availability.

	Commonly available	Better	Best
Technology 1 Building design	___	___	___
Technology 2 System	___	___	___

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