

# AEEP Energy Talks **Spotlight**

## Financing Energy Efficiency in Buildings for a Green Recovery in Africa:

### Health, Jobs and Climate

Key findings from the AEEP Energy Talks on 1 December 2020<sup>1</sup>

#### SUMMARY OF POLICY CONSIDERATIONS

Green buildings have significant benefits for health, climate and a green recovery. Drawing on experiences from the health sector, patients' well-being, staff satisfaction and cost savings are immediate benefits of green buildings. In addition, green buildings can strengthen local employment and economy to support the economic recovery after COVID-19. There is an excellent opportunity for further collaboration between Africa and the EU to include green buildings in green recovery strategies, set up green building programmes, mainstream green buildings in construction or renovation projects in the health sector, but also other sectors. Research collaboration on innovative approaches for green, local building materials, such as green concrete, clay bricks and straw panels can create economic growth and employment.

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<sup>1</sup> The AEEP acknowledges the contributions from Anna Zinecker and Sarah Levihn of the Programme for Energy Efficiency in Buildings (PEEB) in creating this Spotlight.

The AEEP is supported by its Steering Group:



## Introduction

The second AEEP Energy Talks on 1 December 2020 were jointly organised with the [Programme for Energy Efficiency in Buildings](#) (PEEB) and brought together experts from Africa and Europe to discuss “Financing Energy Efficiency in Buildings for a Green Recovery in Africa: Health, Jobs and Climate”.

Moderated by **Ms Safiatou Alzouma Nouhou**, Head of the Independent Implementation Unit (IDU), African Renewable Energy Initiative (AREI), the AEEP Energy Talks commenced with opening remarks by **Ms Anne-Charlotte Bournoville**, Head of Unit, International Relations and Enlargement, DG ENER, European Commission (EC) and **Dir Cheikh Bedda**, Director, Infrastructure and Energy, African Union Commission (AUC). In her speech, Ms Bournoville, emphasised the importance of supporting energy efficiency measures for decarbonising the economy of both continents. In the context of the European Green Deal, the Renovation Wave Strategy is targeting the modernisation of 35 million buildings, aimed at creating 160 000 local green jobs and assisting the economic recovery from the COVID-19 pandemic in Europe. In Africa, the EU is supporting the uptake of new energy efficiency policies through the research programme Horizon 2020, through supporting the AUC and member states in developing minimum energy performance standards for appliances, and through the new DESIREE initiative.

In his opening remarks, Dir Bedda, acknowledged the importance of energy efficiency in Africa, not only for the pursuit of economic efficiency and climate stability, but also for more people to access electricity. He underlined that the AUC recognises the huge role energy efficiency can play, which is why the African Electrotechnical Standardization Commission, AFSEC, was inaugurated in 2008.

Thereafter, **Mr Hendrik Engelmann-Pilger**, Senior Energy Specialist, Energy Development, European Investment Bank (EIB), introduced the three focus areas of the upcoming EU and EIB flagship initiative Demand side management, Social Infrastructures, Renewables and Energy Efficiency (DESIREE). He explained that the project will concentrate on, firstly, the creation of public and private Super Energy Saving Companies (ESCOs) in order to coordinate the large-scale implementation of energy efficiency projects, secondly, on demand-side management to address the large potential of consumers to invest in energy efficiency in the domestic space, and thirdly, the electrification of social infrastructure. Mr Engelmann-Pilger noted that the 102 million-euro programme will start to engage with five countries, out of which three are African. The programme includes technical assistance, grants and financial instruments to de-risk and accelerate investment in that energy efficiency space.

Experts from Senegal and Tunisia shared concrete examples from the health sector. **Dr Adrien Sonko**, PASME, Ministry of Health, Senegal presented green rural health centres that benefit patients and carers, and save costs. **Mr Samir Amara**, Head of Department for Rational Energy Use, National Energy Management Agency (ANME) and **Ms Amira Gader Jaziri**, Chief Architect, Ministry of Health Tunisia shared their experience in paving the way for large-scale construction of green hospitals and pointed out a potential to reduce energy consumption by 50 percent. This was followed by a presentation by **Ms Anna Zinecker**, Advisor, Programme for Energy Efficiency in Buildings (PEEB), in which she shared recommendations and suggestions for boosting green buildings as a COVID-19 recovery measure. She noted that there is a lot of untapped potential in Africa with regards to green buildings. Local value chains and industries for green buildings are emerging in Africa, but they have not yet been mainstreamed, and this presents an excellent opportunity for Africa-EU collaboration by supporting local industries to innovate solutions that can be used and shared globally. Furthermore, she highlighted three approaches for boosting green buildings. Firstly, to implement green building programmes that stimulate investment, secondly, to focus on public infrastructure investments and thirdly, to support local sustainable construction industries.

**Mr Georgios Grapsas**, Team Leader for Sustainable Energy, DG INTPA, European Commission, continued the webinar by presenting more details around the project DESIREE. He underlined that there is a serious underinvestment in energy efficiency and that the focus on the DESIREE programme is to enable investment and long-term action that will catalyse and start different pools of energy efficiency.

In the panel discussion Ms **Elizabeth Wangeci Chenge**, Chairperson, Kenya Green Building Society, began by underlining the importance of building the capacity of young Africans in order to utilise local skills and local sustainable materials for green building. She referred to the Green Building Councils in the Africa regional network and said that the transfer of skills, data, knowledge and best-practices through these, and similar networks, present the best way of collaboration and enables the promotion and building of affordable, green housing.

Emphasising the benefits of Super ESCOs, **Mr Jalel Chabchoub**, Chief Investment Officer, African Development Bank (AfDB), called them the super solution and said that the AfDB is committed to supporting all African counties in implementing them.

**Mr José Lopez**, Programme for Energy Efficiency in Buildings (PEEB), Agence Française de Développement (AFD) urged for a change in scale and approach towards energy efficiency. He suggested that energy efficiency should be reflected in all investment decisions, because it is not only an energy sector issue, but rather the responsibility of all sectoral policies.

**Mr Robert Kirchner**, Advisor, Covenant of Mayors Sub-Saharan Africa (CoM SSA), concluded the answers from the panel by listing three key lessons for financing energy efficiency in times of the pandemic. He stressed the importance of, first, understanding the market and local context of each country, second, learning from pilot projects and using them as evidence for development on a national level, and third, scaling up projects and pool investments though, for example, a fund approach where financiers can pay and work on a more local level.

Based on the webinar, the following three sections outline more key learnings from the health sector and future outlooks for energy efficiency cooperation between Africa and Europe for a green post COVID-19 recovery.

## Human health and the climate: The importance of building energy efficiency in the health sector

Being comfortable in a building is essential for human health. A healthy environment requires sufficient fresh and clean air and light, and comfortable in-door temperatures. In the health sector, green buildings<sup>2</sup> can make a substantial contribution to the well-being of patients and medical staff. They have a positive effect on patients' health, as well as the motivation of staff. Achieving comfortable conditions without mechanical cooling is also extremely relevant for off-grid health centres.

Energy efficiency can massively reduce the energy consumption and associated cost of medical facilities, which often have a high energy consumption. Investments in energy efficiency have high returns on investment, with short payback times<sup>3</sup>. Cost savings through energy efficiency can be reinvested to reinforce capacities of the health sector, into equipment, personnel or drugs. For example, the health sector in Tunisia features a current building stock of more than 5,000 buildings (from large university hospitals to local health posts, private clinics and laboratories) with a surface of almost 800,000 m<sup>2</sup> and a capacity of 5,600 hospital beds. They not only deliver health services to the Tunisian population, but also represent 5% of total energy consumption in the buildings sector<sup>4</sup>.

The issue of energy efficiency in buildings goes beyond the benefits of the individual hospital or health centre. The 21<sup>st</sup> century is characterised by massive growth in construction. Globally, it is expected that the building floor area will double by 2060. On the African continent, growth rates are even higher (see figure 1 below).

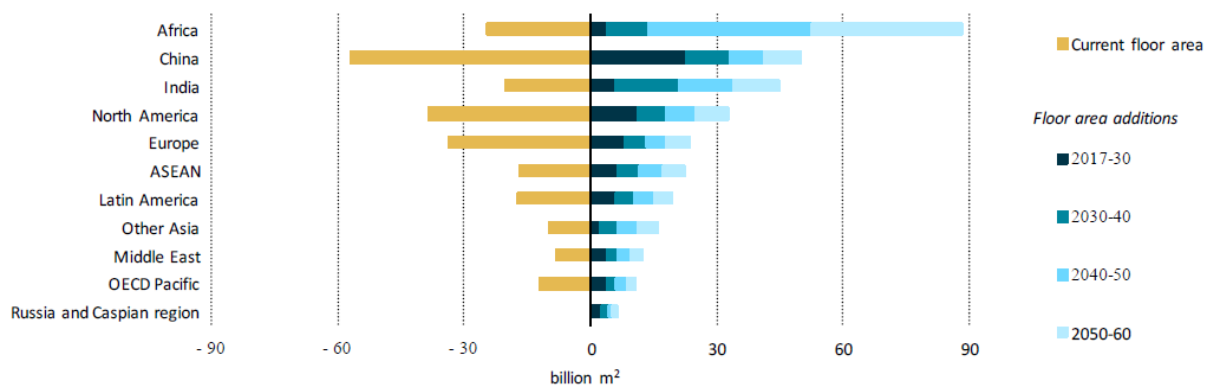


Figure 1: Floor area additions to 2060 by key regions (Source: Global Status Report (GABC) 2017)<sup>5</sup>

<sup>2</sup> “Green buildings” is used throughout this text to refer to buildings that are energy-efficient and resilient, but also include further sustainability and urban planning criteria. Cf. [https://www.peeb.build/imglib/downloads/PEEB\\_criteria\\_june%202019.pdf](https://www.peeb.build/imglib/downloads/PEEB_criteria_june%202019.pdf), accessed on 15 February 2021

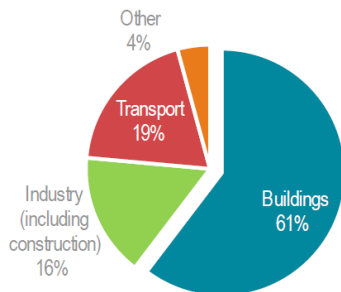
<sup>3</sup> SmartMarket Report, 2018, World Green Building Trends 2018, <https://www.worldgbc.org/sites/default/files/World%20Green%20Building%20Trends%202018%20SMR%20FINAL%2010-11.pdf>

<sup>4</sup> Mapping of the Tunisian Building Sector, National Energy Management Agency (ANME), in collaboration with PEEB, UNESCWA and KfW, cf. <http://www.peeb.build/news-events/hospitals-in-tunisia>

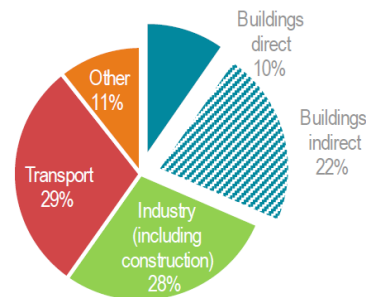
<sup>5</sup> UN Environment, 2017, Global Status Report, p.8, [https://www.worldgbc.org/sites/default/files/UNEP%20188\\_GABC\\_en%20%28web%29.pdf](https://www.worldgbc.org/sites/default/files/UNEP%20188_GABC_en%20%28web%29.pdf)

Energy use from buildings is rising rapidly. In Africa, the building sector accounted for 61% of the energy consumption and 32% of process-related CO<sub>2</sub> emission in 2018 (see figure 2).<sup>6</sup>

Buildings' share of total final energy consumption Africa, 2018



Buildings' share of total CO<sub>2</sub> emissions in Africa, 2018



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Figure 2: Share of buildings' final energy and emissions in Africa, 2018 (Source: IEA/GlobalABC: Regional Roadmap for Buildings and Construction in Africa)<sup>7</sup>

Additionally, the healthcare sector needs access to cooling for safe medical clinics and the secure transport and storage of vaccines and medical products.<sup>8</sup> Green buildings, equipped with efficient and affordable appliances, can make a substantial contribution to achieve “Cooling for All”.

Cooling is the fastest-growing end use in buildings.<sup>9</sup> Africa is predicted to have a very strong increase in ownership of cooling devices considering the currently very low levels of ownership of cooling devices, a growing population, economic growth and rising average temperatures due to climate change.<sup>10</sup>

As a result, the energy consumption from buildings in general, including the health sector, is expected to grow rapidly, putting extra pressure on electricity systems already under strain to fulfil demand. At the same time, the negative effects of climate change on Africa are expected to be severe through high temperatures and increases in extreme weather events. This will impact health, as extreme high air temperatures contribute directly to deaths from cardiovascular and respiratory disease, while increasingly extreme weather events and floods may destroy homes, medical facilities and other essential services.<sup>11</sup> This underlines the need for resilient green buildings as part of adaptation strategies. Buildings that keep cool naturally present an important strategy to adapt to rising temperatures and protect from overheating.

<sup>6</sup> GlobalABC, 2020, GlobalABC Regional Roadmap for Buildings and Construction in Africa, p 9, [https://globalabc.org/sites/default/files/inline-files/GlobalABC\\_Roadmap\\_for\\_Buildings\\_and\\_Construction\\_in\\_Africa\\_FINAL2\\_0.pdf](https://globalabc.org/sites/default/files/inline-files/GlobalABC_Roadmap_for_Buildings_and_Construction_in_Africa_FINAL2_0.pdf)

<sup>7</sup> ibd., p22

<sup>8</sup> SEforALL, Cooling for All, <https://www.seforall.org/cooling-for-all>, accessed on 10 February 2021

<sup>9</sup> GlobalABC, 2020, GlobalABC Regional Roadmap for Buildings and Construction in Africa, p 86, [https://globalabc.org/sites/default/files/inline-files/GlobalABC\\_Roadmap\\_for\\_Buildings\\_and\\_Construction\\_in\\_Africa\\_FINAL2\\_0.pdf](https://globalabc.org/sites/default/files/inline-files/GlobalABC_Roadmap_for_Buildings_and_Construction_in_Africa_FINAL2_0.pdf)

<sup>10</sup> IEA, 2019, Africa Energy Outlook 2019, <https://www.iea.org/reports/africa-energy-outlook-2019>, accessed on 10 February 2021

<sup>11</sup> WHO, 2018, Climate change and health, <https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health>, accessed on 15 February 2021; WHO Housing and health guidelines, 2018, <https://www.who.int/publications/i/item/9789241550376>

## Examples of green buildings in the health sector

Building green in the health sector is possible and can be done in all building projects. Traditional buildings in hot climates used to achieve comfortable conditions without electricity. Building design has a major impact on the need for mechanical cooling. Long roof overhangs, exterior shading elements, thick walls and green courtyards provide shade to buildings and reduce solar heat gains. During the planning phase, massive improvements to energy consumption and well-being can be made by taking a few simple considerations into account (cf. figure 3).

Existing projects in the health sector have achieved excellent results. For example, the Surgical Clinic and Health Centre in Burkina Faso, uses a modular system to reduce costs and speed up construction, with large overlapping roofs that protect the raw clay walls during the rainy season as well as shade them from the hot daytime sun.<sup>12</sup> Another example from Frankfurt, Germany, shows how hospitals have also been built to the passive house standard.<sup>13</sup>

In Tunisia, a guide for energy efficiency in the health sector<sup>14</sup> outlines the large energy savings potential and gives concrete guidance on the conceptual approach to obtain high-performance buildings. This includes recommendations on the building envelope, as well as on technical installations, including heating, cooling and ventilation, and sustainable energy supplies.

### 'Quick wins' for all buildings

- Building **orientation** aligned from **west to east**.
- Low **window-to-wall ratio**, adapted to the climate zone.
- **External shading** above windows, exterior doors and vents.
- **Natural ventilation** where possible and adapted to climate zone.
- **Vegetation** for shade and evaporative cooling.
- **Roofs** with **thermal insulation**.
- Light-coloured and reflective **coatings** on **roofs and façades**.
- **Ceiling fans** before considering air conditioners.

Figure 3: 'Quick wins' for all buildings (Source: PEEB, 2020)

"Cool buildings" work with the climate, not against it. Building designs need to be adapted to the local context, with different strategies for humid or dry climates and different temperatures. By factoring in orientation, insulation, design, and using local and bioclimatic materials, buildings can increase thermal comfort and achieve massive energy savings. For example, high-performance thermal building envelopes (foundations, external walls, roofs and external doors) can reduce the cooling demand by 30% to 50%. Figure 4 shows an example of a building for hot and humid climates without the need for air-conditioning.<sup>15</sup>

<sup>12</sup> Kéré Architecture, Surgical Clinic and Health Centre, <https://www.kerearchitecture.com/work/building/surgical-clinic-and-health-centre>, accessed on 15 February 2021

<sup>13</sup> The Construction Specifier, 2020, World's first Passive House hospital is a step closer to certification, <https://www.constructionspecifier.com/worlds-first-passive-house-hospital-is-a-step-closer-to-certification/>

<sup>14</sup> PEEB, Tunisia: A guide for energy efficiency in healthcare facilities. <http://www.peeb.build/news-events/peeb-tunisia-hospital-guide>

<sup>15</sup> PEEB, 2020, Better Design for Cool Buildings, [https://www.peeb.build/imglib/downloads/PEEB\\_Cool%20Buildings\\_Working%20Paper\\_August%202020.pdf](https://www.peeb.build/imglib/downloads/PEEB_Cool%20Buildings_Working%20Paper_August%202020.pdf)

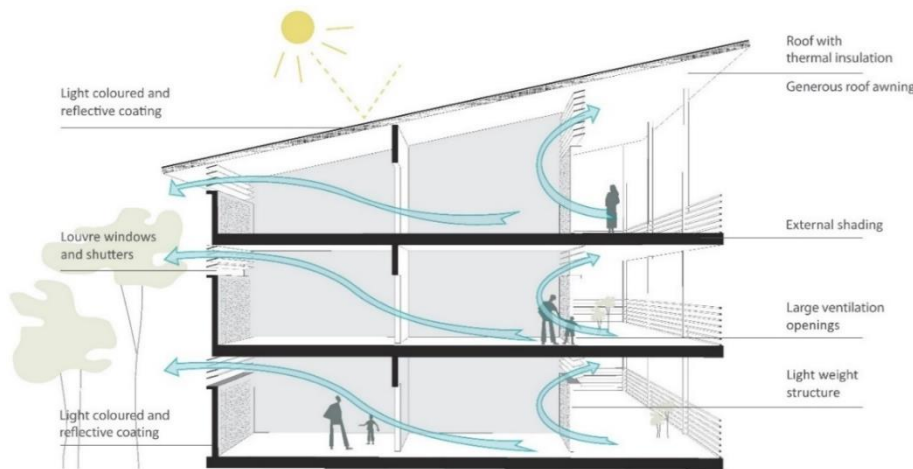


Figure 4: Example of an open building, suitable for hot and humid climate, without air-conditioning (Source: PEEB. 2020)

Sustainable building materials are an important element of green buildings. They can provide comfortable indoor conditions, while reducing the high reliance on – often imported – materials with a high carbon footprint<sup>16</sup>. A local industry for green building materials, including innovative solutions such as green concrete, insulation panels made from sustainable materials<sup>17</sup>, or clay bricks, is nascent in Africa and needs to get into the mainstream.

By following a three-step approach, buildings can become energy-efficient: avoid – shift – improve.

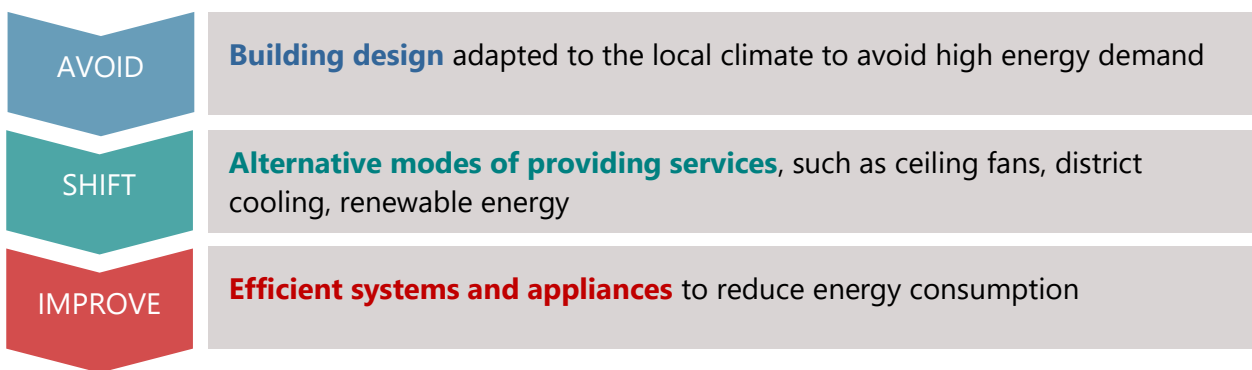


Figure 5: Avoid-Shift-Improve Approach (Source: PEEB. 2020)

<sup>16</sup> World Green Building Council, 2019, Bringing Embodied Carbon Upfront, <https://www.worldgbc.org/embodied-carbon>, accessed on 12 February 2021

<sup>17</sup> Including invasive plants, e.g. <http://www.tyccao-typha.org/wp-content/uploads/2019/10/TyCCAO-program-flyer-eng-2019-1.pdf>

## Building back better: Green building opportunities for a green recovery

Besides its benefits for health, energy and climate, promoting green buildings is a major strategy to respond to the negative economic impacts that follow the global COVID-19 pandemic. The European Union has made the “Renovation Wave” a key pillar of their strategy to respond to the crisis with the EU Green Deal<sup>18</sup>.

The construction sector can rapidly create large amounts of jobs and involves far-reaching value chains of small and large businesses with high local economic impact. The green building sector holds the potential for a double win: providing a powerful tool to stimulate the economy, while moving the whole sector to a new and greener state. For small extra investments, green buildings can achieve massive long-term savings of cost and reduce greenhouse gas (GHG) emissions<sup>19</sup>.

Examples of successful green stimulus programmes from eight countries, including Colombia, France, Kenya and Peru, have been collected as case studies to show the benefits in terms of value for money, economic impacts, job creation and climate benefits<sup>20</sup>.



Figure 6: Stimulus Programmes for Green Buildings (Source: GlobalABC. 2020)

<sup>18</sup> European Commission, 2020, Renovation Wave, [https://ec.europa.eu/energy/topics/energy-efficiency/energy-efficient-buildings/renovation-wave\\_en](https://ec.europa.eu/energy/topics/energy-efficiency/energy-efficient-buildings/renovation-wave_en), accessed on 12 February 2021

<sup>19</sup> IISD, 2020, COVID-19 Stimulus Spending for Green Construction Means Building Back Better, <http://sdg.iisd.org/commentary/guest-articles/covid-19-stimulus-spending-for-green-construction-means-building-back-better/>, accessed on 12 February 2021

<sup>20</sup> GlobalABC, 2020, Stimulus Programmes For Green Buildings – Best Practice Examples, <https://globalabc.org/resources/publications/stimulus-programmes-green-buildings-best-practice-examples>, accessed on 12 February 2021



Green building stimulus programmes can target different aspects of green buildings:

- Residential or commercial energy efficiency programmes for new buildings or refurbishments that use public funds to leverage private investments, through instruments such as subsidies, grants or concessional loans.
- Public procurement programmes for energy efficiency in public buildings through retrofits or new construction, for example, in schools, hospitals or administrative buildings, can additionally improve hygienic standards.
- Replacement programmes for equipment and appliances, such as boilers, energy-efficient lighting or household appliances through bulk purchasing or installation programmes, which provide financial incentives, like subsidies or tax exemptions, to suppliers (supply-side) or households (demand-side).
- Renewable energy generation in buildings, providing incentives to households or private investors.

The IEA estimates that investing in buildings efficiency has the highest job potential compared to intervention in other sectors. For every million dollars invested into retrofits or efficiency measures in new buildings 9-30 jobs in manufacturing and construction would be created<sup>21</sup>.

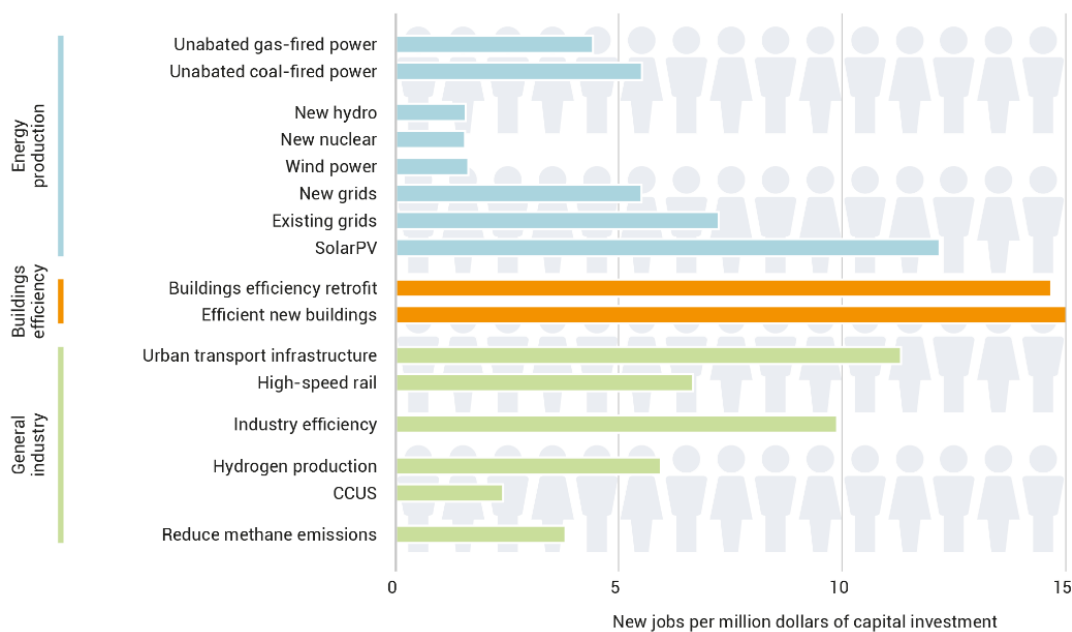


Figure 76: Jobs created per million dollars of capital investment and spending by measure (Source: Global Status Report (GABC) 2020)<sup>22</sup>

<sup>21</sup> GlobalABC, 2020, 2020 Global Status Report, pp. 26-30, [https://globalabc.org/sites/default/files/inline-files/2020\\_Buildings\\_GSR\\_FULL\\_REPORT.pdf](https://globalabc.org/sites/default/files/inline-files/2020_Buildings_GSR_FULL_REPORT.pdf)

<sup>22</sup> GlobalABC, 2020, 2020 Global Status Report, p.10, [https://globalabc.org/sites/default/files/inline-files/2020\\_Buildings\\_GSR\\_FULL\\_REPORT.pdf](https://globalabc.org/sites/default/files/inline-files/2020_Buildings_GSR_FULL_REPORT.pdf)

## Existing Programmes

Many existing bilateral and multilateral cooperation programmes between Africa and the EU target the energy sector and urbanisation. This includes joint ventures between European and African firms, for example, to produce sustainable building materials. Other examples of programmes are:

- The [Programme for Energy Efficiency in Buildings \(PEEB\)](#) supports partner countries through financing for large-scale projects and policy advice. In Tunisia, this includes policy advice in the health sector, as well as extensive energy efficiency measures in two large regional hospitals.<sup>23</sup> In Senegal, PEEB supports the integration of energy efficiency in three rural health centres.<sup>24</sup>
- [Africa-Europe BioClimatic buildings for the XXI century \(ABC21\)](#), under the EU programme Horizon 2020, started in 2020, promotes African and European local material and bioclimatic designs for sustainable buildings<sup>25</sup>, together with Austria, Morocco, Portugal, Senegal, Togo, France.
- [MEDENER](#): the Mediterranean Association of National Agencies for Energy Management brings together agencies in charge of energy efficiency, including through increasing the skills of actors in the construction sector in the Mediterranean common standards for energy displays, a platform for monitoring energy efficiency indicators.
- [MeetMED](#), in collaboration with MEDENER and The Regional Center for Renewable Energy and Energy Efficiency (RCREEE), started a second phase in 2021 to accelerate the clean energy transition by a massive deployment of renewable energy and energy efficiency measures in building and appliances' sectors in the Southern Neighbourhood.
- [DESIREE](#) investment envelope, will support the participation by the EIB in high-risk projects in African, Caribbean and Pacific (ACP) countries, contributing to greater investments in energy efficiency and electrification of social infrastructure such as schools and hospitals. The operation aims at fostering inclusive socio-economic growth and developing sustainable business models for the provision of clean, climate-friendly and energy-efficient solutions, in line with the developmental goals promoted by the DESIREE blending platform.
- [African Energy Efficiency Programme](#): the African Energy Commission (AFREC) in collaboration with United Nations Environment Programme (UNEP) - United for Efficiency (U4E) programme are working together to provide technical assistance to all African countries targeting on African region per year. The aim of the programme is to transform Africa towards a harmonised regional market for energy efficient lighting, refrigerators, air conditioners, motors and power distribution transformers.

<sup>23</sup> PEEB, 2020, Tunisia: Green Hospitals, <http://www.peeb.build/news-events/hospitals-in-tunisia>

<sup>24</sup> PEEB, 2020, Senegal: Energy Efficiency in the Health Sector, <http://www.peeb.build/news-events/energy-efficiency-in-health-sector-senegal>

<sup>25</sup> European Commission, Africa-Europe BioClimatic buildings for XXI century, <https://cordis.europa.eu/project/id/894712/de>, accessed on 11 February 2021

## Outlook for enhanced Africa-EU collaboration on energy efficiency in buildings

Building on the existing programmes and intensifying collaboration between the EU and Africa with a view to promote green buildings promises significant benefits in terms of health, climate and green recovery. The following opportunities can further enhance building cooperation:

- Include green buildings in **strategies for climate mitigation and adaptation, as well as green recovery.**
- **Set up green building programmes** that incentivise green buildings, while promoting local economy and job and contributing to adaptation.
- Mainstream and include **energy efficiency standards and criteria for green buildings in construction or renovation projects in the health sector and other sectors**, including **low-income housing**, to ensure ‘cooling for all’ and reduce energy poverty.
- Increase **research collaboration between Africa and EU**, (e.g. on innovative approaches for green building materials such as green concrete, clay, straw panels) and support the local **sustainable construction industry.**
- Support the **adoption of ambitious regulation**, including building energy codes for new buildings and renovations and **build capacity** among policy and private stakeholders.

### About

The Africa-EU Energy Partnership (AEEP) connects the two continents to accelerate universal access to sustainable energy and climate stability. With an unmatched overview of the political processes and initiatives across both continents, the AEEP maps, monitors and convenes relevant actions and stakeholders.

Providing a gateway for knowledge sharing, political dialogue and expert connections, it enables Africa and Europe to make progress on their path to a sustainable energy future for all.

The AEEP is supported by its Steering Group:



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