



**ABSTRACT AND SUGGESTIONS
of Public Union “Interstate Consultants Engineers Guild”
to the United Nations Environment Programme (UNEP)
and Yale Center for Ecosystems + Architecture
“Building Materials and Climate: Building a New Future”**

The buildings & construction sector is the largest contributor to global greenhouse gas emissions at a massive 37%, reducing embodied carbon in building materials to net zero is achievable by 2060.

This is stated in the new report by UNEP & Yale Center for Ecosystems + Architecture “Building Materials and Climate: Building a New Future”.

Despite progress in decreasing operational carbon emissions of the construction sector, we must pay special attention to the “embodied” carbon emissions from the most common building materials.

The report emphasises the urgent need for innovative collaboration to decarbonize the industry. Key strategies should include:

- Avoiding unnecessary extraction & production.
- Shifting to regenerative materials.
- Improving decarbonization of traditional materials.

The focus is on the transition from traditional non-renewable materials to more sustainable and renewable counterparts by improving technologies, production methods and recycling capabilities.

Rapid global urbanization highlights the urgent need for a more sustainable approach to the use of building materials. Despite some progress in reducing operational carbon emissions from building heating and lighting, we are lagging behind in tackling emissions from the production of materials such as cement, steel and aluminium.

The report identifies three key pathways to sustainable development in the construction industry:

1. Reducing extraction and production through new design approaches and an emphasis on reusing existing structures and recycled materials.

It is at the initial stages of planning and design that architects and builders should focus on the concept of “design for disassembly”, which facilitates the path to reuse or recycling of materials and, as a result, will lead to a significant reduction in greenhouse gas emissions. This will allow dismantled buildings to be transformed into material reservoirs for new construction. Additionally, the looming challenge in developed economies is the vast amount of concrete infrastructure that is near the end

of the lifecycle. To address this issue, it is necessary to develop technologies for the careful deconstruction, storage and repurposing of materials. According to the authors such a model not only contributes to the development of a circular economy but also promises ample employment opportunities.

2. Focus on renewable materials. This means switching to bricks, wood, and other bio-based materials that are produced sustainably. Not only do they have a smaller carbon footprint, but they also encourage modern ethical manufacturing practices.

Today, non-renewable materials continue to dominate circular (recyclable) materials. Addressing this imbalance requires a paradigm shift. To do so, the use of materials derived from renewable sources in forestry and agriculture should be encouraged. The authors of the report note that combining the production of building materials with responsible management of forest and agricultural resources provides excellent synergies and many benefits, from reducing the risk of forest fires to boosting the health and productivity of lands.

3. Decarbonize traditional materials such as concrete, steel, and aluminium, and use them only when essential.

Cement, concrete, and steel production account for more than 14% of global carbon emissions. In this regard, the authors of the document propose to focus on using of renewable energy, electrification and decarbonization of technologies, using of modular concrete structures, recycling of metal and aluminium, which will reduce 60 to 90 percent of energy consumption, and improvement of plastic and glass production.

For effective implementation of the policies, it is necessary to take into account the entire life cycle of building materials from production to disposal. This will include certification, compliance with ethical production practices, control of the origin of raw materials, and prevention of greenwashing.

The report also has a separate section on existing tools and standards that can be used to assess emissions throughout the life cycle of materials and services, including the Product Environmental Footprint (PEF) and Organization Environmental Footprint (OEF), which have been implemented by the European Commission since 2012.

The authors believe that the main driving force for the sustainable development of the construction industry should be governments, which should provide political and financial support for decarbonization processes, create conditions for attracting investment in research and development, improve building codes, stimulate the production of reusable and recyclable materials, and promote cross-border cooperation, dissemination of best practices and technologies, exchange of experience, etc.

The approach to decarbonization will differ across regions. Developed countries will focus more on renovating existing structures, while developing nations will need to address the demands of their rapidly urbanizing populations. The crux remains the same: prioritize sustainability at every stage of the building process.

Given the ambitious Ukraine Recovery Plan, we believe it is advisable for the Government to consider stimulating the development of a sustainable construction sector, namely:

- Develop standards and a certification system for "sustainable buildings".
- Develop state housing programs to provide preferential lending for housing that meets the above standards. *Despite the higher cost of green and sustainable buildings, they will have significant economic benefits in the future. Numerous studies on this topic show not only a reduction in operating costs and harmful effects on the physical and psychological state of residents, but even an increase in labor productivity.*
- Allocate part of the reconstruction funds to insure the risks of investors who will invest in new and modernized production of construction materials that are lacking in the Ukrainian market and are imported. *According to recent studies of the construction materials market, Ukrainian producers will be able to meet the expected demand for cement by 86%, PVC profiles by 77%, mineral wool by 70%, and concrete by 56%; at the same time, the need for glass is 100% met by imports.*
- Finalize the legislative framework and launch the Ukrainian green bonds market that will allow public and private enterprises, as well as municipalities, to raise investments to environmental infrastructure, production, and housing projects. *According to the Climate Bonds Initiative, the market for green and related bonds crossed the USD 4 trillion mark in the first quarter of 2023.*
- Enact laws to prioritize the procurement for public and municipal funds of materials that meet environmental requirements.
- Start the process of implementing the European Sustainability Reporting Standards, published by the European Commission in July 2023, which will affect Ukrainian companies operating in the European market or included in the production chains of European goods.

