



Urban Agenda Platform

The global platform for sharing progress, action and knowledge on the implementation of the New Urban Agenda to achieve sustainable urban development.

GREEN BUILDING & INFRASTRUCTURE

Award Scheme

Themes

Sustainable Development Goals

Others

Waste Management

Goal 11 - Make cities and human settlements inclusive, safe, resilient and sustainable

Summary

Cities that incorporate green building initiatives and recycled products in public works projects and public procurement set a precedent for their communities. **TARGET USERS:** Individuals, Businesses, Industry, Government **KEY CONSIDERATIONS:** By the year 2050, current projections anticipate two-thirds of the world's population will live in cities, making sustainable urban development more important than ever.

Background and Objective

According to the World Economic Forum, the engineering and construction industry is the world's largest consumer of raw materials. Construction and demolition waste accounts for 25%–30% of all waste generated in the EU and causes about 2% of the overall environmental footprint of a building. Plastics are prevalent in modern building practices, as insulating materials, surface coverings, window frames, weather stripping, water barriers, among many other uses. This plastic waste stream must be diverted by adopting circular models. Sources: European Commission, "Construction and Demolition Waste (CDW)", August 2018

Actions and Implementation

A circular economy requires systemic innovation throughout the value chain and across important life-cycle stages of a building: (1) material and component manufacture, (2) design and planning and (3) end-of-life. While building and construction represents around 20% of the demand for plastic materials, it currently generates only 6% of plastic waste, a direct result of the materials long service life. Plastics are durable, often weather resistant, require low maintenance, lightweight and are design flexible. These qualities make plastics ideal products for construction, with recycled plastics providing circular economy benefits. When cities choose construction materials made from recycled plastic for public works projects, they are not only helping to divert plastic waste from entering our shared environment, but are also sending a powerful message that ecological materials are the right choice for the future of their communities. Projects such as the Polystyrene Loop, a cooperative aiming to recycle polystyrene foams such as XPS from building and construction uses, keeps plastics from the building sector in circulation in the building sector, reducing end-of-life impacts by recycling to extending the useful life of plastics. GREEN BUILDING PROGRAMMES Leadership in Energy and Environmental Design (LEED) for Cities LEED is the most widely used green building rating system in the world, certifying 1.85 million square feet of construction space everyday. LEED certification provides guidance and independent verification of a building or neighbourhood's green features, allowing for the design, construction, operations and maintenance of resource-efficient buildings. LEED for Cities and Communities helps local leaders create responsible, sustainable and specific plans for natural systems, energy, water, waste, transportation and many other factors that contribute to quality of life. Nearly 200 cities and communities across the globe are using LEED for Cities and Communities. (see the full list here: <https://www.usgbc.org/articles/leed-cities-and-communities-around-world-february-2020>) EDGE EDGE brings speed, market intelligence and an investment focus to the next generation of green building certification in more than 170 countries. The International Finance Commission (IFC) created EDGE to respond to the need for a measurable and credible solution to prove the business case for building green and unlock financial investment. EDGE includes a cloud-based platform to calculate the cost of going green and utility savings. The state-of-the-art engine has a sophisticated set of city-based climate and cost data, consumption patterns and algorithms for predicting the most accurate performance results. GREEN BUILDING PLASTIC MATERIALS Recycled Plastic Lumber Recycled plastic lumber is an alternative to traditional building materials like wood, metal and concrete. Bedford Technology recycled plastic lumber is sourced from post-consumer and post-industrial recyclables like milk jugs and laundry detergent bottles and is manufactured from recycled content. Not only is it recycled, but it is also recyclable. At the end of the project life-cycle, the material can be reused and re-purposed. Bedford Technology products fall under the Building Design and Construction LEED category and Materials and Resources subsection for green building certification. Ecobricks EcoBricks are building bricks made using a mixture of wet cement and shredded plastic laminates, more commonly known as sachets. Ecobricks are used by local governments, schools, and companies in construction projects. With support from Nestle Philippines, Green Antz Builders developed EcoBricks to provide an "aesthetically superior, stronger, and more cost-effective" alternative to regular hollow blocks, while addressing the solid waste management problem of plastic sachets. Green Antz has partnered with local government units, schools, communities, and even cooperatives to collect sachets and other plastic laminates. In exchange for two and half kilos of plastic sachets, a person can receive one EcoBrick. Other products of Green Antz include eco-pavers or pervious pavers for pathways as well as eco-casts or hollow block-size precast for building fences. See <http://www.greenantz.com/products#home> for more information.



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Ecotiles Ecotiles are a composite material made from carefully selected recycled plastics combined with sand and UV stabilizing pigments and are manufactured through a well-researched proprietary extrusion process to produce highly durable building materials. Ecotiles patented manufacturing process uses temperatures exceeding 220°C, ensuring that Ecotiles can withstand extreme sunlight. Furthermore, we have done tests in The Netherlands that showed our tiles withstanding exposure to UV light and maintaining its strength over a long duration of time. Ecotiles are primarily made from recycled plastics. A typical 3-bedroom house will consume at least 1.5 tons of plastics that would otherwise have ended up in the environment. These tiles are 100% recyclable at their end life and provide indirect employment opportunities to informal waste pickers who are the key suppliers for the input material. See <https://www.ecoblocksandtiles.co.ke/> for more information. Greenrail Greenrail is an Italian company founded by Giovanni Maria De Lisi's, that develops a sustainable railway sleeper, one that provides better technical, environmental and economic features, when compared to the present standard sleepers in the sector. Greenrail produces railway sleepers with secondary raw materials, using a blend of rubber collected from ELTs (End of Life Tires) and plastic from urban waste. The intellectual property of Greenrail's technology is protected in more than 70 patent offices around the world, and they are capable of designing and developing products to meet the rail specifications in each country. Key facts: For every kilometre of rail, 1670 Greenrail sleepers use up to 35 tonnes of End of Life Tires (ELTs) and plastic from urban waste. The technical characteristics of Greenrail sleepers allow the ordinary maintenance costs reduction by up to 2 – 2,5 times, compared to the traditional sleepers in concrete. Greenrail sleeper has a longer lifespan compared to the traditional sleepers in concrete. This advantage allows reduction of not only the costs related to the raw materials, but also the energy consumption during the industrial production, with considerable savings throughout the railway sector. Greenrail is the only sleeper able to incorporate different systems and devices, such as photovoltaic panels for solar energy harvesting (Greenrail Solar) and devices for safety and diagnostic data transmission (Greenrail LinkBox). Visit <http://www.greenrailgroup.com/en/home/> for more information. The PlasticRoad KWS, a VolkerWessels company, Wavin and Total are working on the development of plastic roads, also known as the PlasticRoad. Every component of the PlasticRoad is being designed to make its application completely circular, with the goal of using recycled plastic as much as possible. Imagine that constructing a road would take days instead of months. That roads would last three times as long. That maintenance and traffic disruption are things of the past. And that cable and piping problems as well as the urban water problem are solved overnight. The PlasticRoad concept consists of a prefabricated, modular and hollow road structure based on (recycled) plastics. The prefabricated production, the light weight and the modular design of the PlasticRoad make construction and maintenance faster, simpler and more efficient compared to traditional road structures. The PlasticRoad has a hollow space that can be used to (temporarily) store water, thus preventing flooding during extreme precipitation. The hollow space can also be used for the transit of cables and pipes, thus preventing excavation damages. And there are numerous other conceivable applications, including the installation of sensors or the electric charging of vehicles. The PlasticRoad is a completely circular product that is based on recycled plastics. It has a significantly smaller carbon footprint than traditional road structures thanks to the longer lifespan and the reduction of transport movements involved in its construction. Visit <https://www.plasticroad.eu/en/> for more information.