

Indonesia: How optimised design in the construction industry can reduce emissions

The production and processing of metals, minerals and other materials is a major contributor to climate change. In fact, according to the International Resource Panel (IRP), it accounts for almost one quarter of the world's greenhouse gas emissions. Going beyond energy efficiency and using materials more efficiently offers both environmental and economic benefits – and it's key to achieving the goals of the Paris Agreement.

In its 2020 report on resource efficiency and climate change, IRP set out seven strategies that public and private sector stakeholders can use to achieve greater material efficiency and foster climate action:



Using less material by design



Fabrication yield improvements



Product lifetime extension



Material substitution



Enhanced end-of-life recovery and recycling of materials

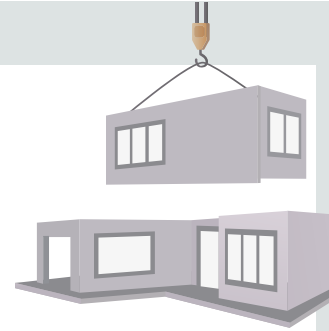


More intensive use



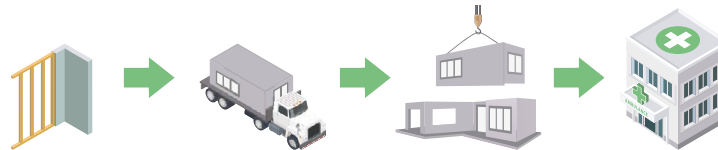
Recovery, remanufacturing & reuse of components

The Indonesian company WIKA Gedung reduces emissions by using less materials in their adapted construction process. While this is a small contribution in the grand scheme of things, the combined efforts of enterprises play a major role in addressing climate change.



Using less material by design

WIKA Gedung uses a modular system in which many building parts are manufactured off-site and assembled on-site. This method **saves up to 90% of time** and uses less concrete and steel. This in turn means that the building foundations have to support less weight and therefore need **less concrete** as well. The lighter modules require **less steel**, while still guaranteeing a safe and stable structure that complies with standard building codes.

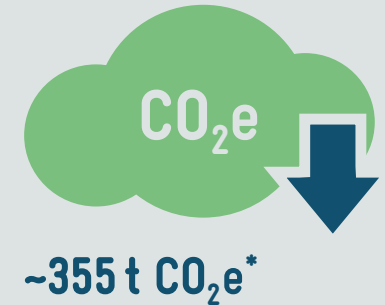


Approximately **one third** of concrete and steel saved

An example of modular construction

In a two-storey hospital built by WIKA Gedung, the modular construction method saved around one third of the concrete used for the foundation of the structure, as well as 28% of steel compared to a conventional building. This avoided 355 t CO₂e during construction - an important contribution to climate protection.

Savings through material efficiency in the construction of a two-storey building:



*Equivalent to the GHG emissions of 48 return flights from Jakarta to Berlin.

TACKLE CLIMATE CHANGE...

...by making material efficiency

part of your climate strategies.

Published by: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Registered offices: Bonn and Eschborn, Germany
Address: Köthener Straße 2-3, 10963 Berlin, Germany
www.giz.de/en

Project: Initiative Resource Efficiency and Climate Action (IREK II) on behalf of the Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV). The project is part of the International Climate Initiative (IKI).

Responsible: Elisabeth Duerr, Head of Project
GIZ is responsible for the content of this publication.

Design/Layout: kipponconcept GmbH, Bonn
Berlin 2024