



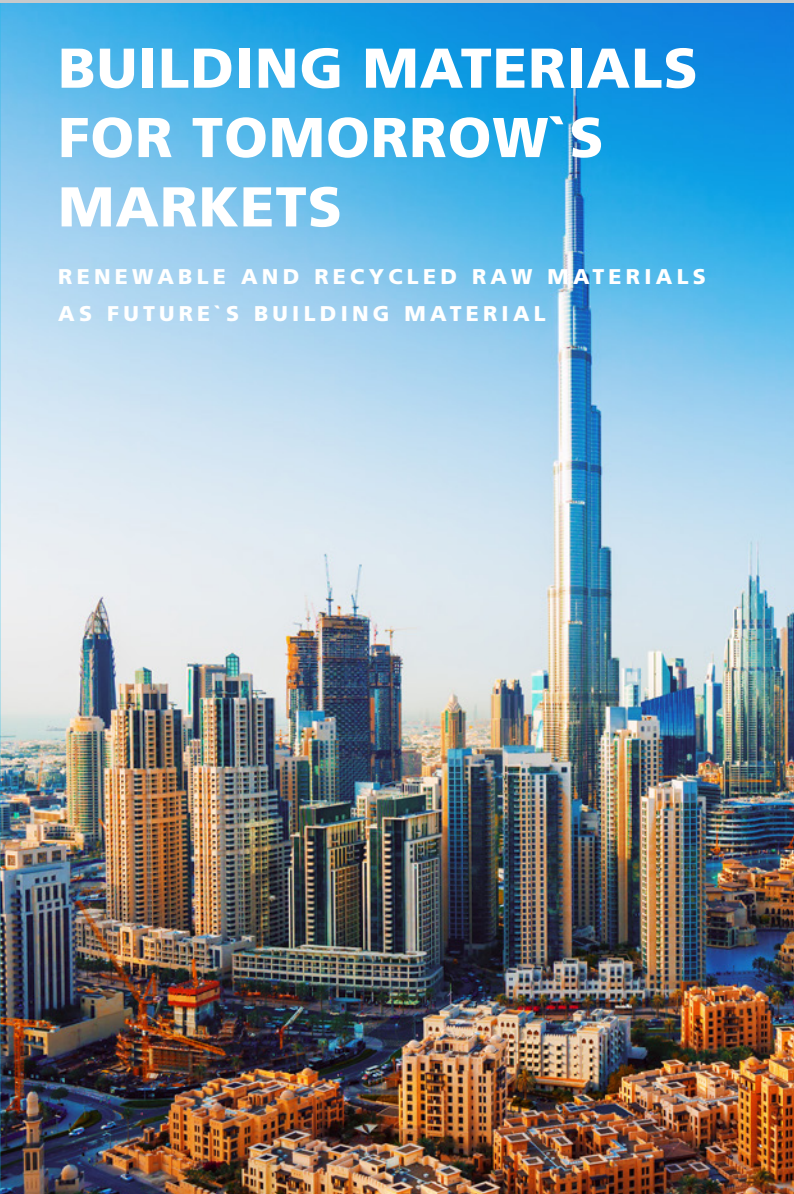
**Fraunhofer**

**IBP**

**FRAUNHOFER INSTITUTE FOR  
BUILDING PHYSICS IBP**

# **BUILDING MATERIALS FOR TOMORROW'S MARKETS**

**RENEWABLE AND RECYCLED RAW MATERIALS  
AS FUTURE'S BUILDING MATERIAL**



2



## RESOURCES ARE RUNNING LOW

Tremendously fast demographic growth, urbanization and increasing prosperity are causing scarcity of resources in almost all industry branches, which is true for the construction sector as well.

Due to increased demand, wood prices have already skyrocketed, and supply bottlenecks and further price appreciations are foreseeable.

Even construction sand, a seemingly unconditionally withdrawable material, is running low throughout the world. Building the Khalifa in Dubai implied transporting sand more than 10.000 km from Australia.

**1** *Fine-grained building rubble replacing sand in building material.*

**2** *RC-Autoclaved Aerated Concrete with sand-lime-brick and concrete.*



1

# ALTERNATIVES FOR THE CONSTRUCTION INDUSTRY



Novel procedures allow turning remnants, which would have ended up at landfills so far, into marketable products. Likewise, due to the climate change, increasing pressure is driving agriculture to switch over to hitherto lesser widespread plants, in order to ensure certain levels of biodiversity. Those changes are offering entirely new options to building material makers, thanks to recyclable and renewable raw materials.

Therefore, it is all the more important to consider specific boundary conditions right from the start, such as availability (production and transport costs), raw material quality variations, legal requirements as well as the needs of the market as to sustainability of building materials, and to develop new and solid business models on this basis.

## COOPERATION

We will assist you with advice and support during the entire process of material development, from TRL 1 to TRL 8, which means, starting from the development of ideas through to proof of functionality in real areas of application, thus enhancing your innovation capacity, always keeping an eye on the whole value chain.

## ANALYSIS OF POTENTIAL

Supported by our broad network of experts from agriculture, material processing, construction material science and business development, we will check the potential of your idea in advance.

### Our services

- Market analysis and directed poll of target customers and industry experts
- Evaluation of boundary conditions, such as product requirements, legal regulations, availability of natural resources etc.
- Wording of value propositions
- Marketing strategy concepts and customized recommendations for product roll-out
- Life cycle analysis (LCA)

**3** *Cattail (lat. Typha) is due to its enormous productivity predestined as a raw material for industrial use.*

**4** *Building material made from typha, with fine static and insulating properties.*

## MATERIAL DEVELOPMENT AND CUSTOMIZATION

In our facilities and laboratories in Holzkirchen and Stuttgart, we will develop and test products for you, matching previously defined requirements. If necessary, we will involve further research partners in order to ensure the latest findings of any given technology area.

### Our services

- Development and test of formulations and laboratory prototypes
- Simulation of material performance to determine capabilities and limits of application
- Material analysis and assessment of durability
- Product development, from the idea through commercial launch
- Quality control
- Industry-related prototyping and material testing in line with demand
- Performance proof by demonstration (outdoor field tests)
- Projection of usability and durability

## MARKET ACCESS

Only a product successfully introduced into the market turns an idea into true innovation. This is why we use to start considering an idea's marketing from the beginning and always observe the specific challenges of the building material market.

### Our services

- Know-how licensing support
- Business model development on the basis of relevant boundary conditions
- Setup of networks and utilization management structures
- Advising on sponsorship options
- Scientific publication of results supporting marketing operations

## Contact

Fraunhofer Institute for Building Physics IBP  
Holzkirchen Branch  
Fraunhoferstrasse 10  
83626 Valley  
Germany

Dr. Volker Thome  
Department Inorganic Materials and Recycling  
Phone +49 8024 643-623  
[volker.thome@ibp.fraunhofer.de](mailto:volker.thome@ibp.fraunhofer.de)

Prof. Dr. Hartwig Künzel  
Department Hygrothermics  
Phone +49 8024 643-245  
[hartwig.kuenzel@ibp.fraunhofer.de](mailto:hartwig.kuenzel@ibp.fraunhofer.de)

## Image sources

Title: Shutterstock/RastoS  
Image 1: Shutterstock/Perfect Lazybones  
Image 2: Fraunhofer IBP  
Image 3: Shutterstock/Fahroni  
Image 4: Fraunhofer IBP  
Image 5: Fraunhofer IBP