How to make cob a mainstream building material

Lizzie Crook | 24 July 2025 | 3 comments

Despite its huge environmental benefits, cob is an extremely niche construction material. As part of our Building with Cob series, architecture editor Lizzie Crook explores what it would take to change that.

"Cob really is the perfect regenerative material," said architect Alice Hardy of building charity Global Generation.

"Its excellent environmental credentials come from its ability to be sourced locally to a site, the fact that it can be recycled and used again and again, and that it can last an exceptionally long time."

According to cob-brick innovator Tavs Jorgensen, cob "has all the advantages that you would want in a building material".

"Cob building is a method we've forgotten to use, and it has an enormous potential in terms of low-carbon construction," he told Dezeen.

"As long as there's clay, sand and fibre, then cob buildings can be done and should be done."

Waste earth "there for the having"

Used for millennia, cob is a type of unfired earth-based construction material made from clay-rich earth, specifically subsoil, mixed with fibrous material such as straw and water. Sometimes, sand or aggregate is added to give greater compressive strength.

It fell out of use with the rise of mass-produced fired bricks during the Industrial Revolution. But there is a renewed interest in cob today because of its material makeup, which means it is low-carbon, non-toxic and ubiquitous, as well as compostable and reusable.

Cob is also celebrated for its thermal mass and moisture-regulating properties, which can help create comfortable interior environments – a quality many conventional construction materials, including fired brick, do not offer.

Plus, a cheap, highly sustainable source of cob's main ingredient is readily available in the form of waste earth from construction sites, the vast majority of which currently goes to landfill.

"We should be banking this earth for future construction, because, excuse the pun, it's dirt cheap – it's there for the having," said architect Anthony Hudson.

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Hudson Architects create a house using CobBauge. Photo by Joakin Borén

For these reasons, its proponents believe cob should be reintroduced as a sustainable alternative to concrete, breezeblocks and fired bricks in construction, particularly in house-building.

But despite the benefits, only a tiny number of modern cob buildings have been constructed. So what's holding the industry back?

"Cob's big problem has always been that it hasn't got huge insulation value," said Hudson.

"To meet current building regulations, you'd have to build a house with walls 1.5 metres wide, if it were just cob."

To address this issue, an international team including researchers at the University of Plymouth developed CobBauge – a contemporary version of traditional cob.

CobBauge is a composite wall system that is made of two grades of cob bonded together. A dense version is used for the outer wall, and a more lightweight version for insulation.

Further innovation needed

It also helps overcome another problem with traditional cob: it can be slow to build with, which means the cost of labour is high.

CobBauge utilises a mesh formwork that helps speed up the dry time – approximately a week and a half – before the mesh is raised and reused for further layers.

However, even CobBauge is not well-suited to the commercialised and fast-paced construction industry to which we have become accustomed, largely because of its seasonality.

"You can start earliest in late February and go on to October," Hudson explained. "It gets to then and you've got too much humidity, so cob never dries out, and you can't build on top of it because it would just collapse."

Therefore, some proponents think further innovation is needed to facilitate a cob comeback.

Researchers are now turning their focus to standardisation and prefabrication, including the CobBauge team, which is also looking into flying factories and utilising automation.

Tavs Jorgensen is developing cob bricks. Photo courtesy of CFPR

Another example of standardisation of cob is Jongesen's extruded bricks, and Strocks – a type of cob-based brick by HG Matthews, which makes the material accessible.

"We're making great progress in terms of what we've achieved so far, but there are still some challenges left to address to make a production at an industrial kind of output level, but it absolutely can be done," said Jorgensen.

"It's a question of us investing in the research and development of using it on a mass level."

Global Generation's architect Hardy, who is currently building a cob classroom in King's Cross, believes these kinds of innovations could eventually lend themselves to a hybrid system.

"I can imagine a panelised prefabricated cob system being used in which panels are prefabricated in timber panels that are delivered and used on site," she said.

Regulatory frameworks need to "catch up"

Projects such as CobBauge also aim to address a major hurdle for traditional cob: it is non-compliant with current building regulations in England, largely over concerns about its strength and durability, as well as the insulation challenges.

Tom Morton, a founding member of charity Earth Building UK and Ireland (EBUKI), is confident that traditional cob is safe and viable.

He believes building regulations – written for materials that are fired or chemically bound, such as bricks and concrete – require updating.

"Like others in the family of nature-based and bio-composite materials, we are all waiting for the regulatory frameworks and financial incentives to catch up with the climate and nature emergency and create the sector environment where we can invest in scale change," said Morton.

"It is all possible, but we are still currently at the stage of relying on a limited pool of experts, rather than having mainstream pathways to compliance. It's a question of scaling up."

CobBauge House, the first home built using the material, completed in Norfolk in 2023, had a "straightforward" passage through planning and building control and even obtained a mortgage, according to Hudson, its architect.

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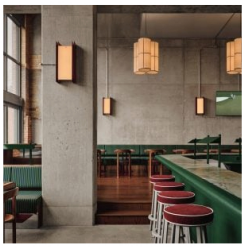
Cob can be "a mainstream building material once again" say Cella

It was able to gain approval in large part because of the extensive research and testing carried out by the CobBauge developers.

As a result, to gain greater acceptance for cob, EBUKI and the CobBauge team are heavily focused on improving education about earth-based materials among architects, engineers and contractors.



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According to CobBauge project lead Steve Goodhew, more needs to be done to overcome the misconceptions of cob as only suitable for whimsical "hobbit houses" that can only rise to a single storey.

"We physically built two full-size CobBauge walls and put a floor on, and then we filled the upper space with sandbags, put two hydraulic jacks on it, and got 12.3 tonnes sitting on these two walls, which is the equivalent of two African elephants sitting on it, and there wasn't a crack," he said.

"That meant that it would take all the loads stipulated in the Building Regulations Part A for structural safety, but it would also take a complete second storey."

As evidence of cob's endurance, he points to the birthplace of Elizabethan-era explorer Walter Raleigh in Devon – a three-storey cob building that has stood for more than 500 years.

Cob revival part of "renaissance in earth building"

Not every cob advocate is focused on making the material more suited to the modern construction industry. Some feel that doing so could compromise an essential part of its value as a natural method.

Clay specialist Adam Weismann, who has been working with cob since 2001, believes it can become a mainstream building material again by "going back to the basics".

"People want to get away from modern buildings, people want to get away from cement and from living in a square box," said Weismann, who now directs clay-plaster manufacturer Clayworks.

"I think that does something really positive for our wellbeing, and not only the material being a natural material, but also the way that it's formed and the walls and the ceilings, and then the way that makes you feel."

He hopes renewed interest and focus on cob in the industry is part of "a renaissance in earth building" more broadly.

Even CobBauge inventor Goodhew agrees that there is an important place for traditional cob.

Global Generation is using waste earth to create a cob classroom. Photo by Global Generation

"If you built your own house with your own hands, there is something that person is getting from that process that you will lose if you are looking to take the material and trying to broaden its appeal," he said.

Design collective Cella argue that both greater innovation with cob and a revival of ancient building methods are needed – from clom in Wales and mud-walling in parts of Scotland and Ireland to adobe in the Americas.

"Each is shaped by responding to the material landscape of that region and the distinct relationship between people and place," said Cella member Millie Green. "The clay content of the soil in a particular place will tell you whether to use cob, earth blocks, or rammed earth."

"It's really the geology of a place which should set the rules on how we build."

Fellow Cella member Felix Sagar added that, ultimately, bringing back cob and unfired earth into our toolkits should be part of a wider focus on construction materials and processes that are less detrimental to the planet.

"To live on this earth sustainably, we must live in harmony with our context," he said.

"We will need a sustained and impassioned effort to undo this damage and remember a way to design with reciprocity and care, and unfired earth will surely play a crucial part in this unlearning process."

The main photo is by Joakin Borén.

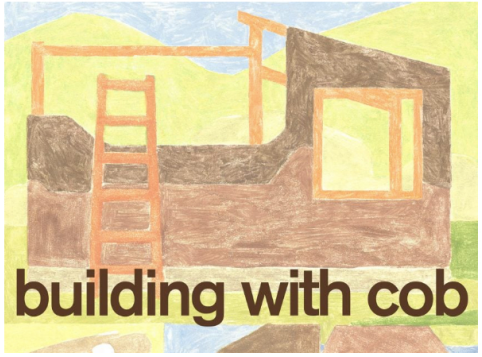

Illustration by Laura Coutinho

Building with Cob

This article is part of Dezeen's Building with Cob series investigating modern uses of cob – an ancient building material made from clay-rich soil, straw and water – and exploring whether it can become a mainstream alternative to planet-damaging construction methods.

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