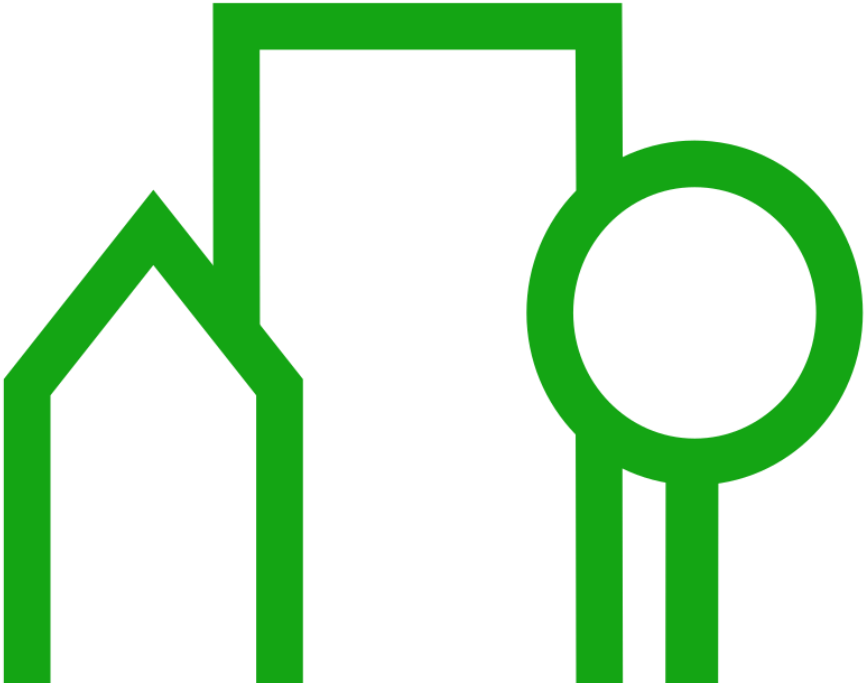
Construcții și renovări cu cele mai bune tehnici posibile pentru climă

31.08.23 Michael Burchert @ https://bauwende.de

BAUWENDE



Densitatea din ghidul de construcție cu paie este ceea ce contează: Tehnica prefabricată simplă pentru module potrivite pentru case pasive, instalând ultimii 4 baloti de paie deodată, folosind „Flutschies”.

Clădire din paie tencuită direct a fost aprobată în Germania 2014, Fachkraft Strohbau, Lehmbau (paie, pământ) Ateliere Halle 57/ NZNB | https://biwena.de

Clădire din paie tencuită direct a fost aprobată în Germania 2014, Fachkraft Strohbau, Lehmbau (paie, pământ) Ateliere Halle 57/ NZNB |https://biwena.de

Tineri arhitecți pe acoperișul Centrului pentru Construcții Durabile din Germania de Nord, Verden,

Norddeutsches Zentrum nachhaltig bauen

NZNB, Norddeutsches Zentrum für Nachhaltiges Bauen http://nznb.de Faza de construcție.

Norddeutsches Zentrum nachhaltig bauen

Înălțimea și densitatea potrivite? NZNB, Baudokumentation: https://www.youtube.com/watch?v=ZHI8n42AJzE

Norddeutsches Zentrum nachhaltig bauen

NZNB, Norddeutsches Zentrum für Nachhaltiges Bauen http://nznb.de Cea mai înaltă clădire de paie cu tencuială directă din Europa, lume? Entwurfsverfasser: Architekten für Nachhaltiges Bauen, Dirk Scharmer, Thomas Isselhard, Frido Elbers

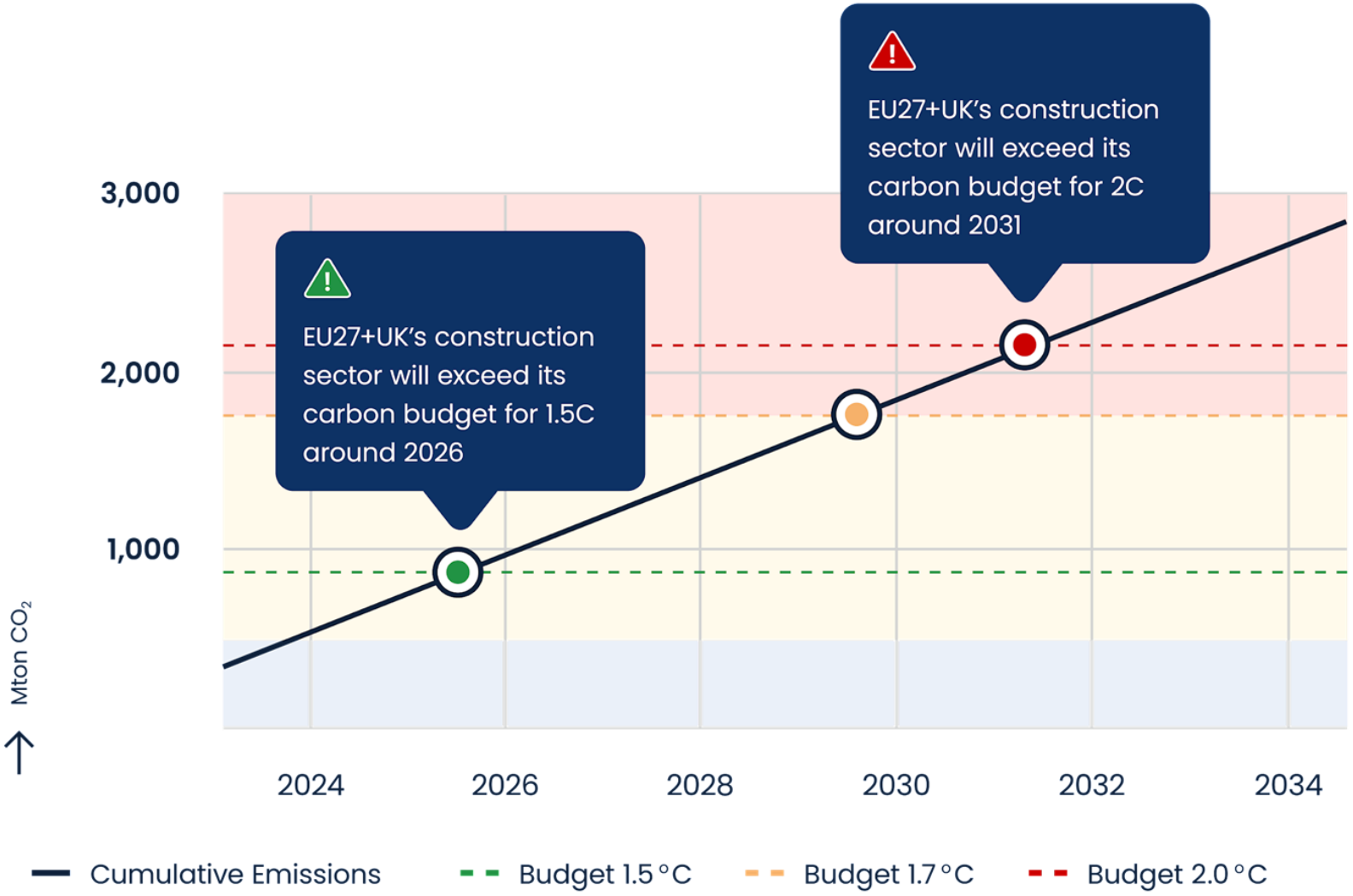
Norddeutsches Zentrum nachhaltig bauen

Atliere finanțate de ESF ,Berufsbildung für Nachhaltige Entwicklung. Formare profesională pentru dezvoltare durabilă @ https://ziel13.pzph.de

Direct de pe teren, atelierul de șantier în Schleswig Holstein

Direct de pe teren, atelierul de șantier în Schleswig Holstein

Ocupând locuri de parcare: Prefabricare cu refugiați în Berlin pe stradă.

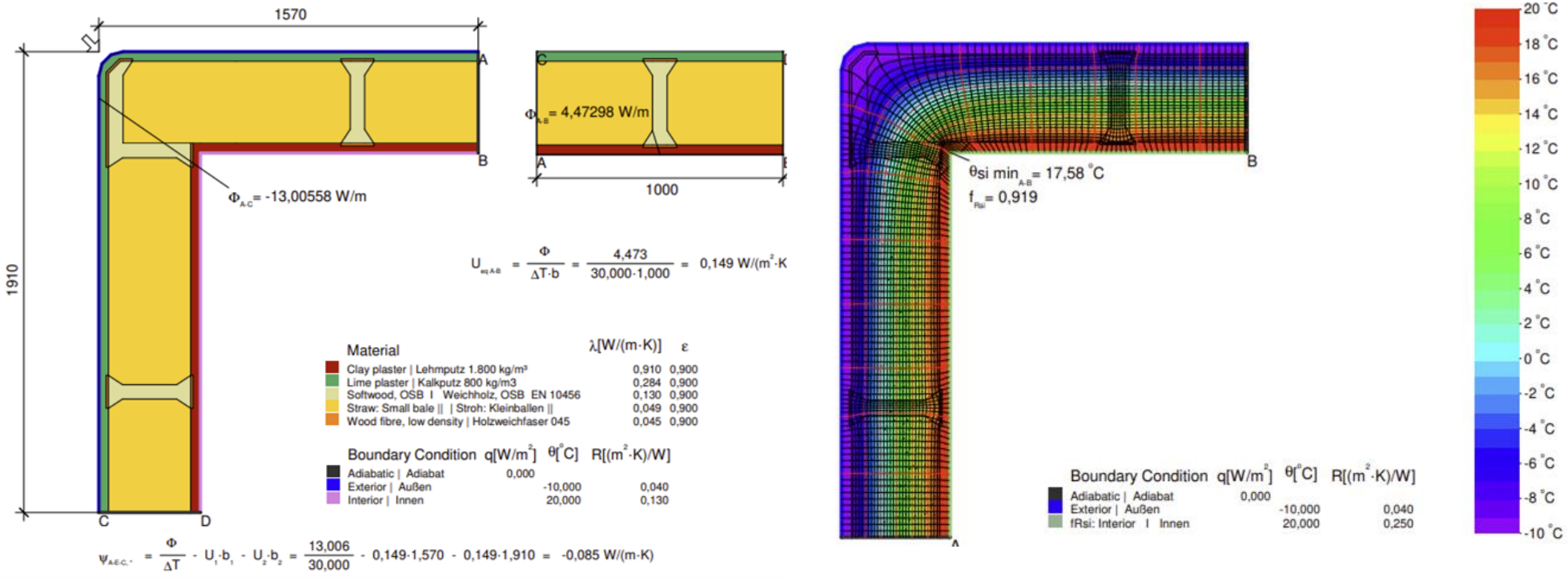


Circular Building Coalition https://www.metabolic.nl/news/circular-buildings-coalition-paves-the-way-for-a-circular-transition-in-the-european-built-environment/

Totuși, de ce paie?

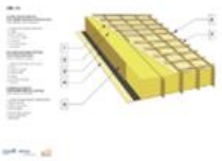
Cel mai bun material de construcție nu trebuie să fie produs, este deja disponibil.

Passivhaus-ready



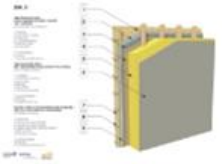
Passivhaus Institut, https://bau-mit-stroh.de/waermebrueckenkatalog-fuer-strohballenhaeuser/

SBR10 – Straw Bale Infill Roof 10



Archicad Model / Sketchup Model other models on bimobject.com

SBW01 – Straw Bale Infill Wall 01

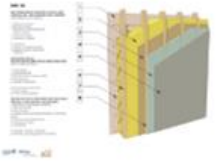


Archicad Model / Sketchup Model other models on bimobject.com

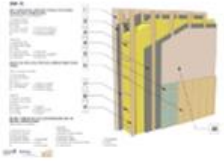
SBW06 – Straw Bale Infill Wall 06

Archicad Model / Sketchup Model other models on bimobject.com

SBW02 – Straw Bale Infill Wall 02



SBW03 – Straw Bale Infill Wall 03



SBW07 – Straw Bale Infill Wall 07

#THERMAL INSULATION #trainer
#UP STRAW Project
#WRAPPING & RENOVATION

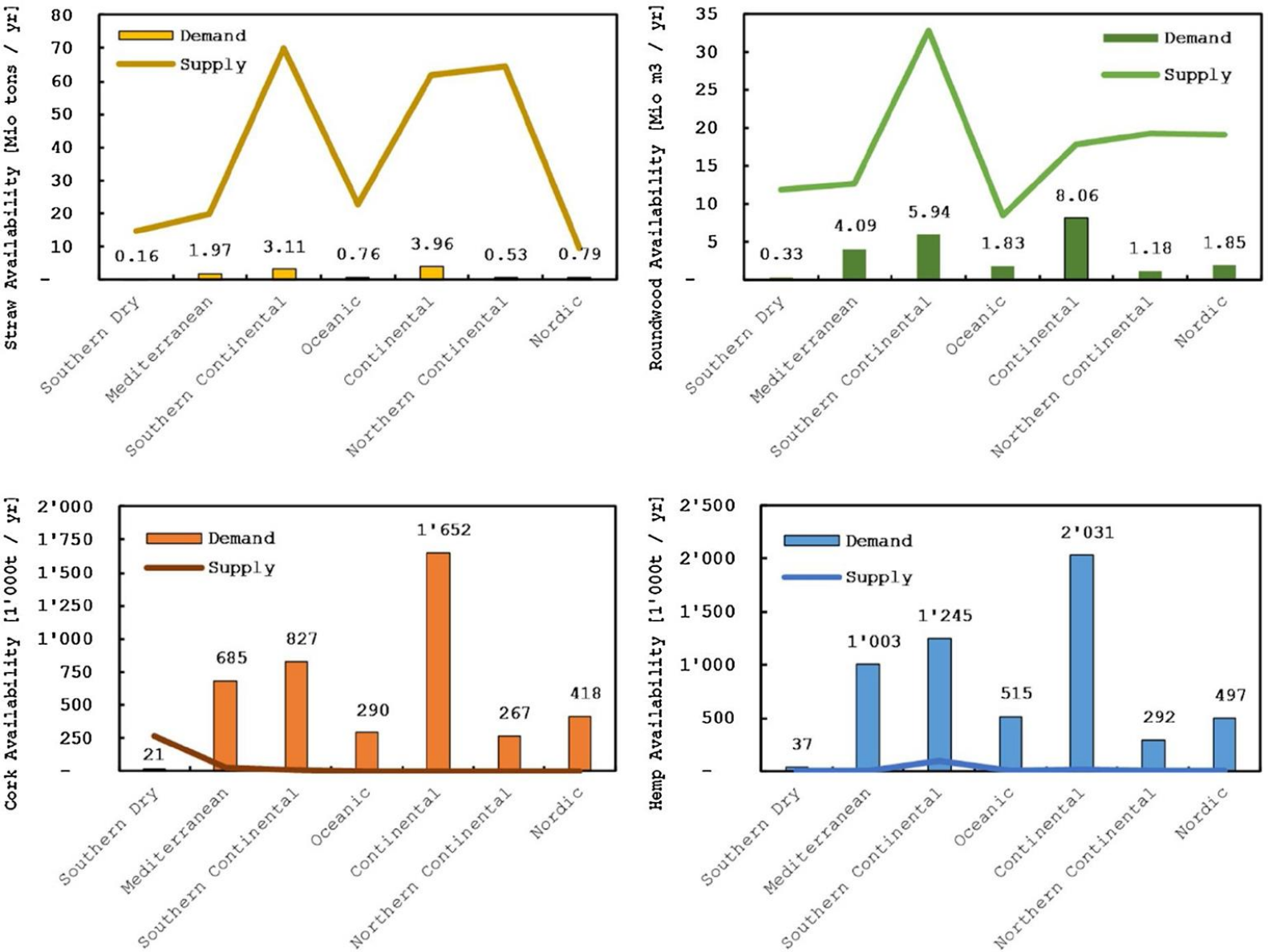
Documentație etc. https://strawbuilding.eu/bim-models-for-straw-bale-building/

Pentru cei care nu pot construi cu paie, nu vă faceți griji.
Alte plante pot fi bogate in fibre...

Dar avem destule

...

Da, dar...

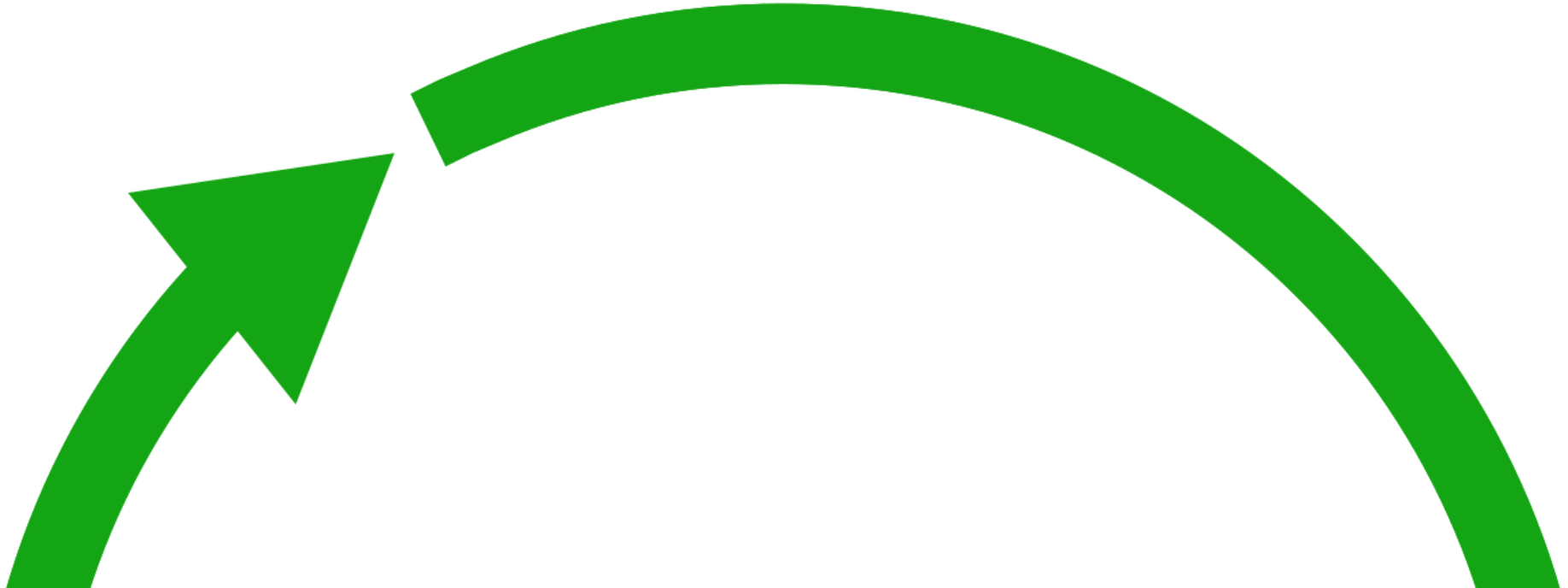


Göswein, 2021, Disponibilitatea terenurilor în Europa pentru o schimbare radicală către construcții bazate pe bio p.8

https://www.sciencedirect.com/science/article/pii/S2210670721002158?via%3Dihub

Tema pentru acasă: potențialul național de paie, vă rugăm să descărcați și să alegeți cota de recoltă dorită sau stocarea CO2

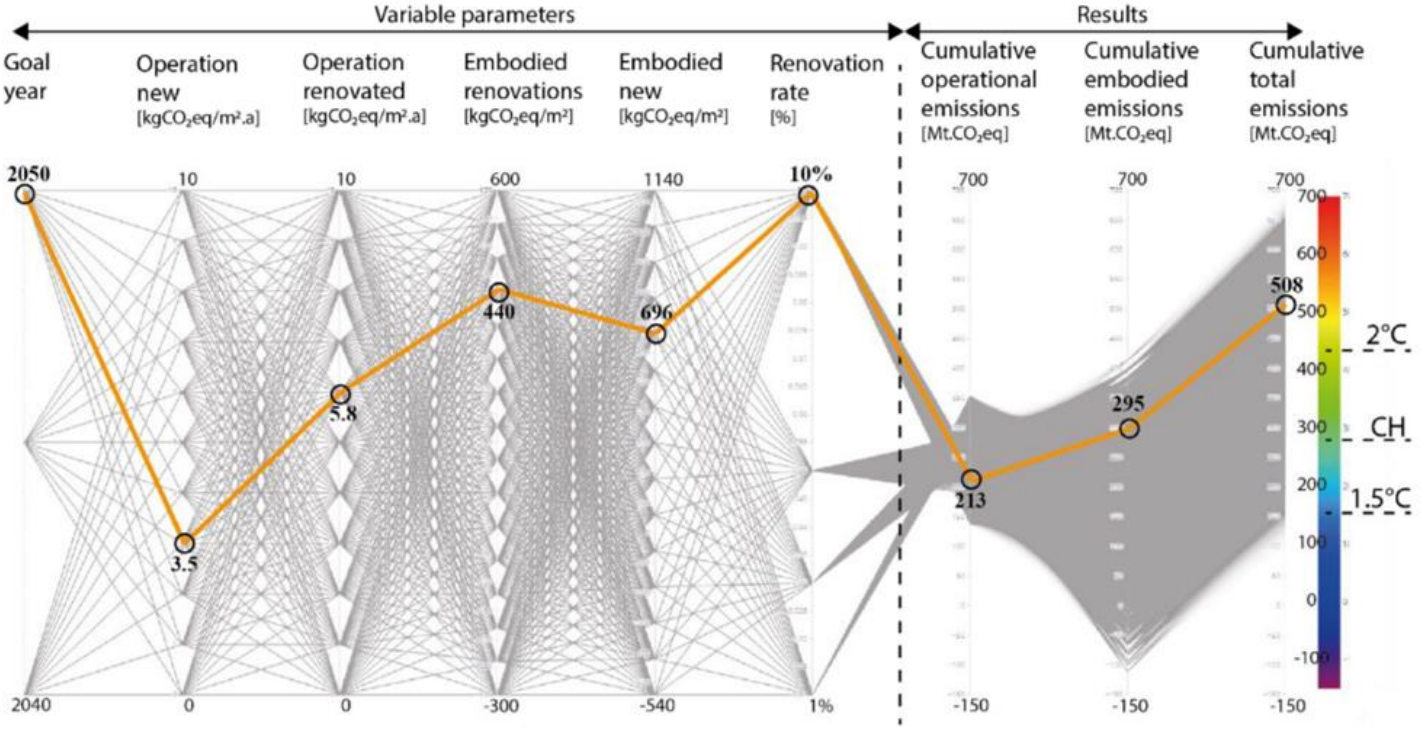
https://docs.google.com/spreadsheets/d/1WGmCwrm3KkOINmJ8VkyIPAPMy-rGjJYrodSSQIRqTRQ/edit?usp=sharing



What is the best renovation scenario?

If we increase renovation rate

(which is currently the EU and Swiss green deal strategy)



We don't change anything compared to business as usual

Sce: Priore et al. 2020. Exploring long-term building stock strategies in Switzerland in line with IPCC carbon budgets. IOP Conf. Ser.: Earth Environ. Sci. 1078 012023

The only strong contraint to stay below 1.5°C is to control embodied emission

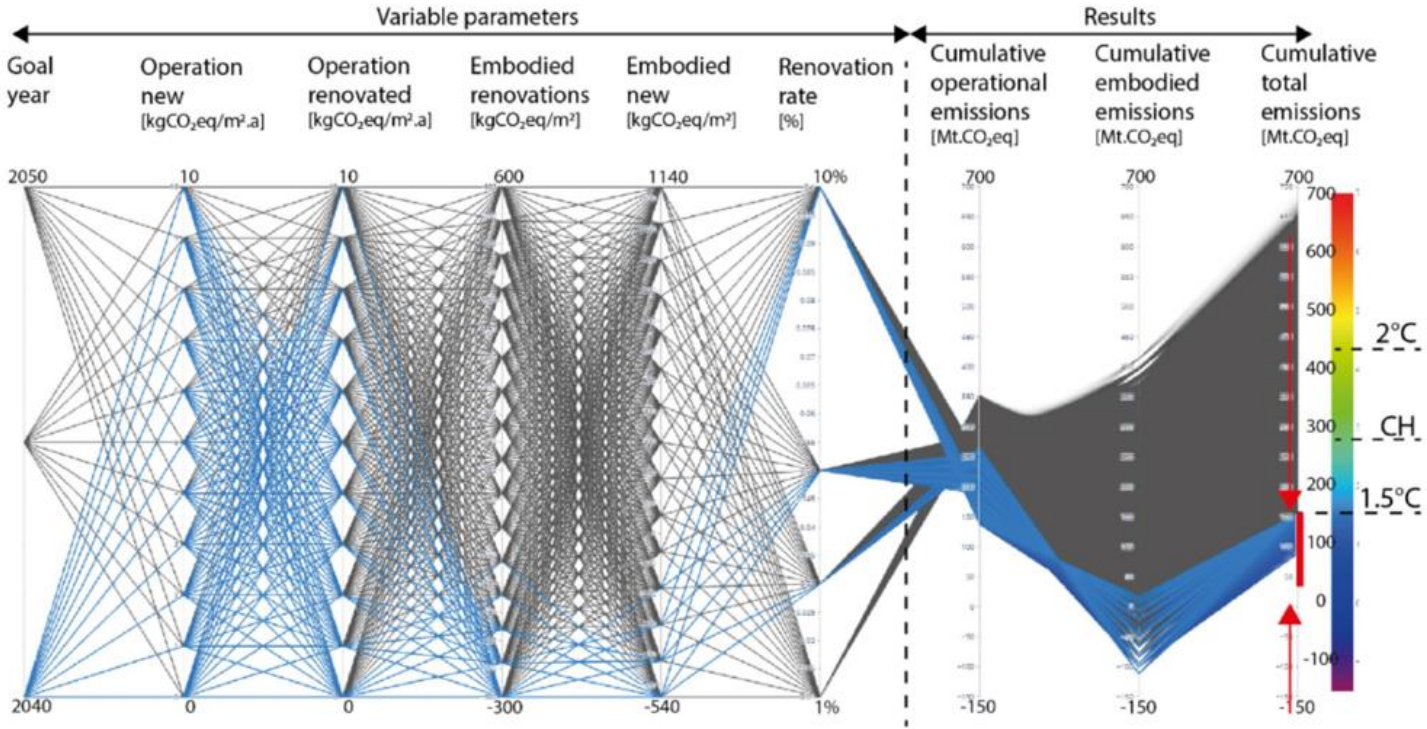
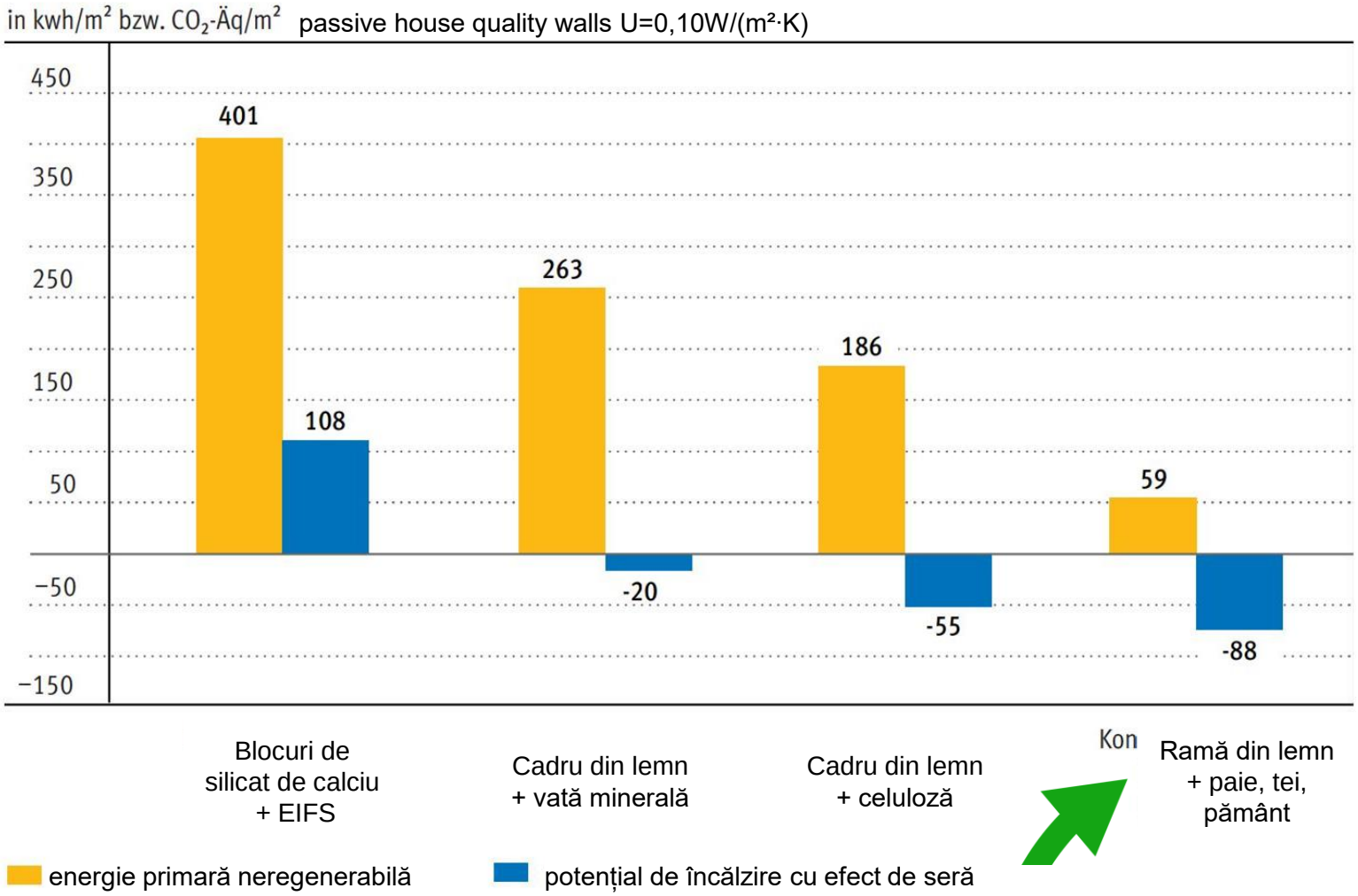


Table 4. Range of possible values for a 1.5°C goal.

	Goal year	Operation new	Operation ren	Embodied ren	Embodied new	Renovation rate
Max	2040	10	10	-120	-180	10%
Min	2040	0	0	-300	-540	3%

Sce: Priore et al. 2020. Exploring long-term building stock strategies in Switzerland in line with IPCC carbon budgets. IOP Conf. Ser.: Earth Environ. Sci. 1078 012023

ÖKOBILANZVERGLEICH



Strohgedämmte Gebäude, FNR 2014 https://docplayer.org/56257792-Strohgedaemmte-gebaeude.html

It's possible to build climate neutral buildings

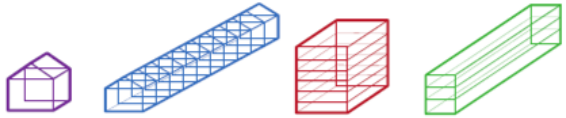
We just have to change our material diet

Less carbon intensive material, more vegetables..

optimised
Reinforced concrete

+ 50 - 100 cm
Straw walls

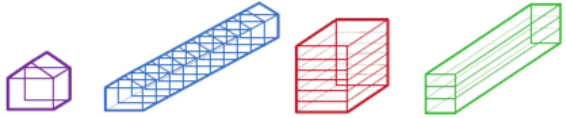
= Climate neutral building



Timber
structure

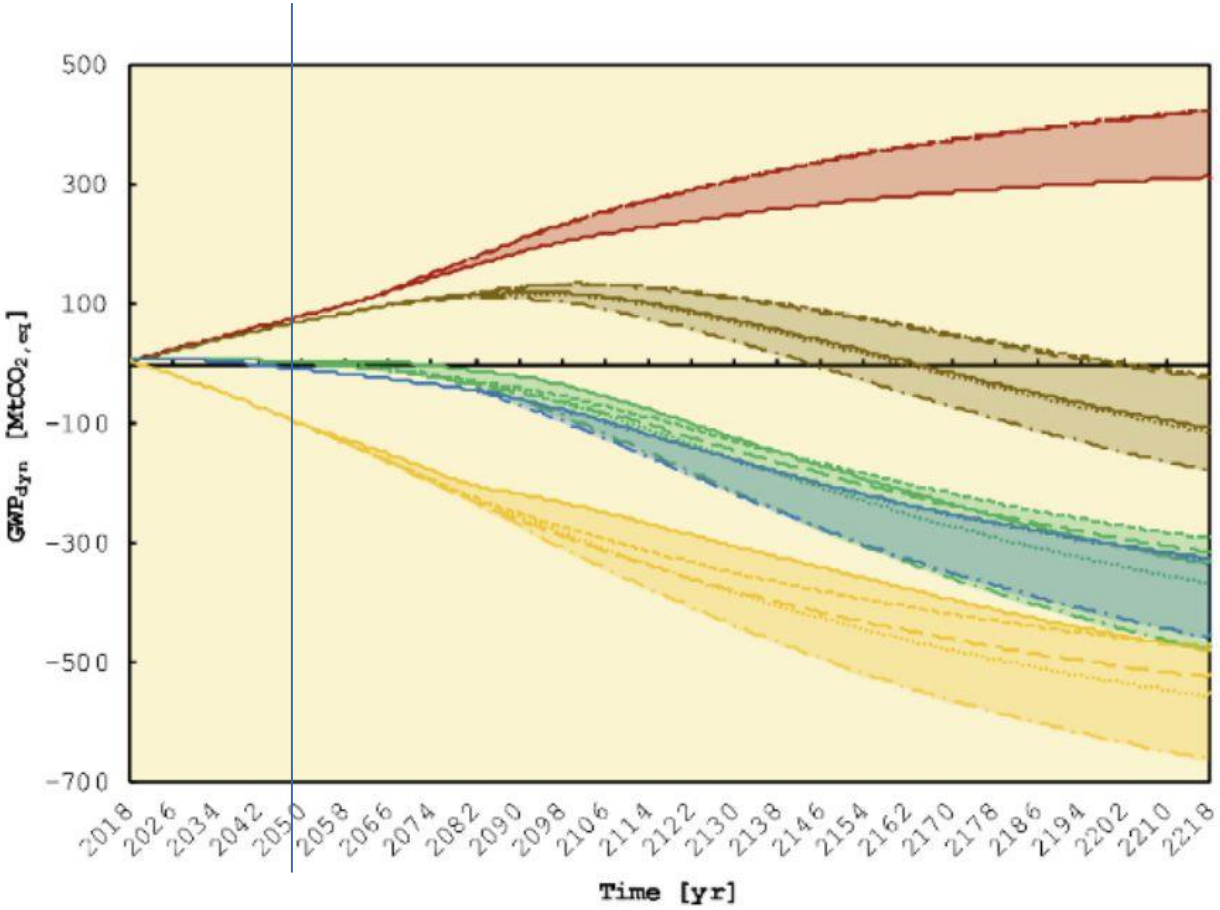
+ 30 - 60 cm
Straw walls

= Climate neutral building



Adapted from: Carcassi et al., 2022. Material diets for Climate-Neutral construction. *Environmental Science and technology*

What if...



EPS*

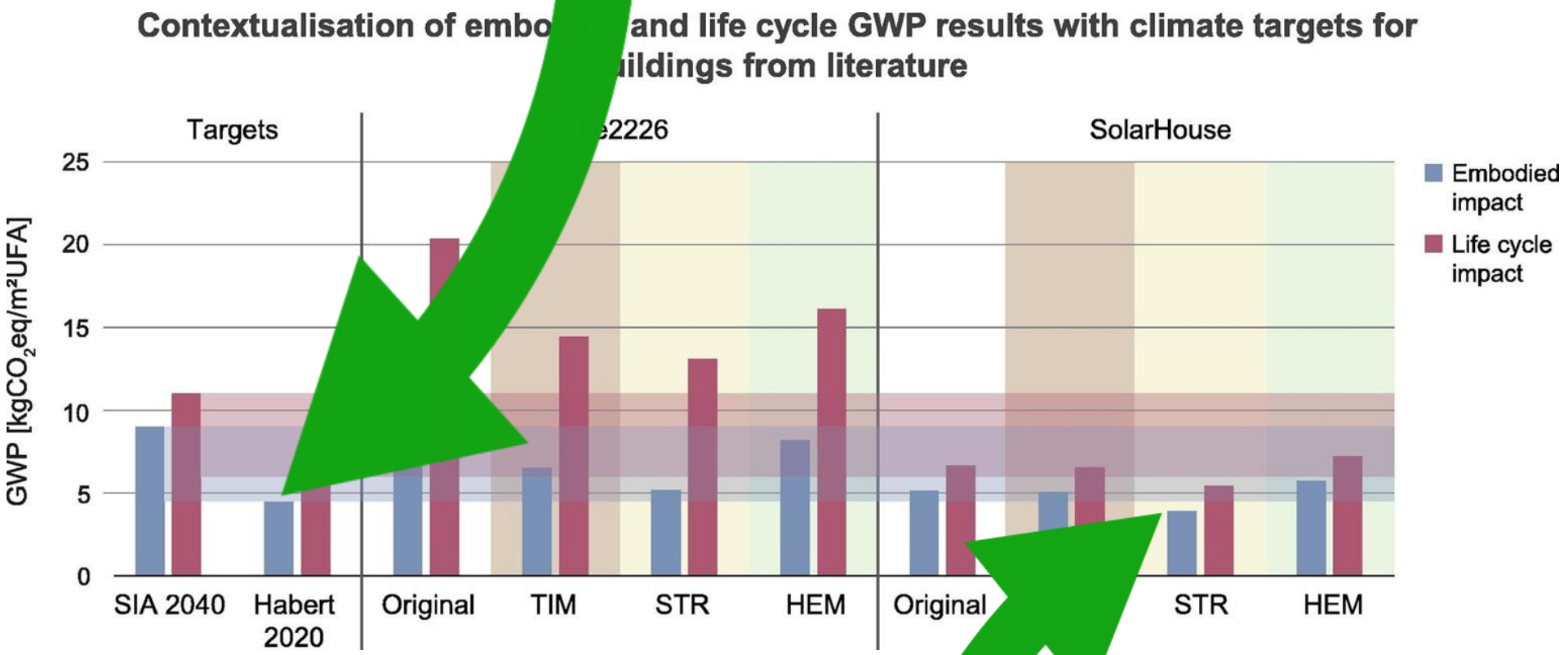
Cherestea*

*Beton de canepa

Paie*

Paiele au arătat cel mai promițător potențial, fiind singurul capabil să elimine până în 2050 3% din CO2 emis din toate sectoarele în 2015“

*Functional Units, see article
Figure 4. Dynamic GWP for all scenarios
Pittau 2019, A Life-Cycle Approach to Building Energy Retrofitting: Bio-Based Technologies for Sustainable Urban Regeneration
https://iopscience.iop.org/article/10.1088/1755-1315/290/1/012057/pdf

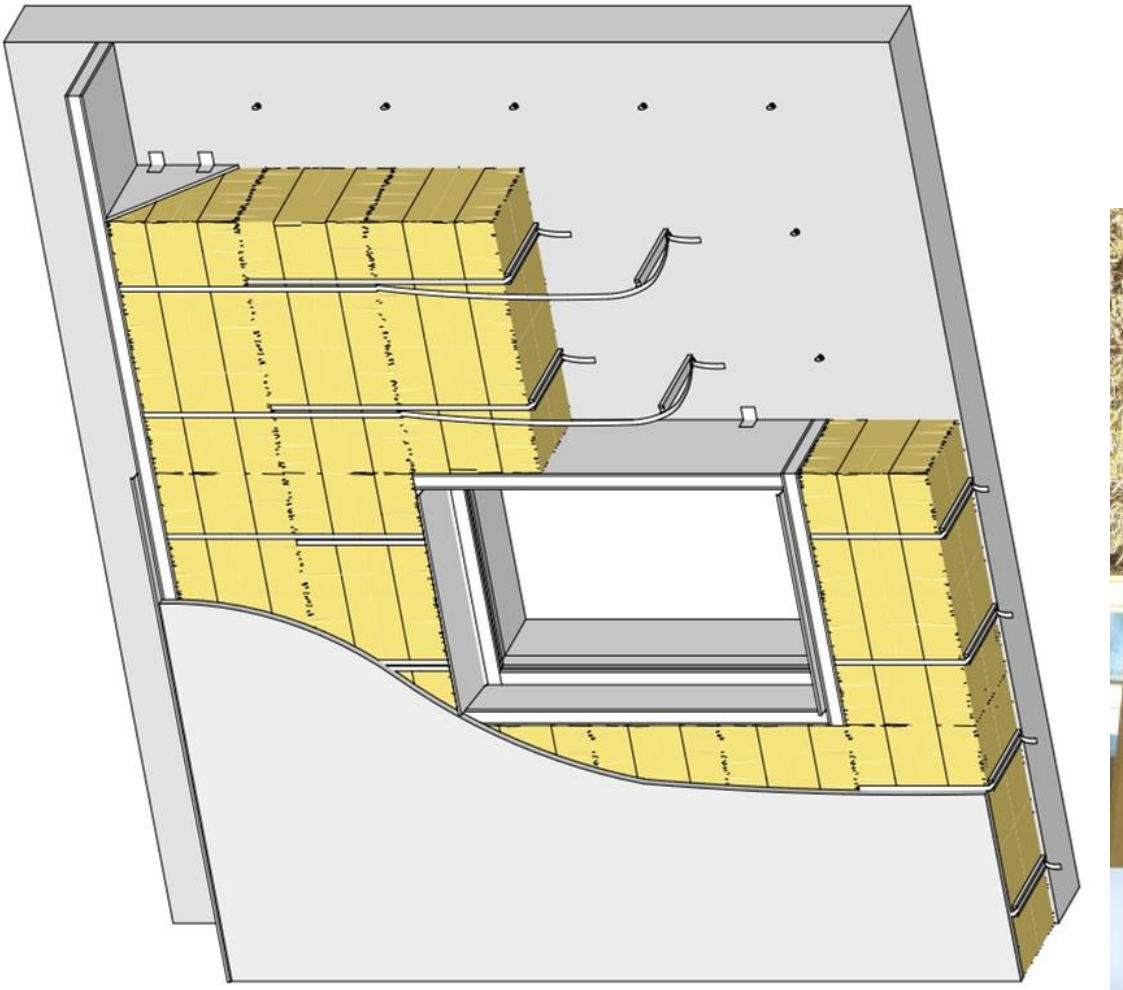


Luise Mouton, Damien Trigaux, Karen Allacker, Martin Röck,
Low-tech passive solar design concepts and bio-based material solutions for re g life cycle GHG emissions of buildings – Life cycle assessment of regenerative design strategies (2/2),Energy and Buildings,Volu 2,2023,112678,ISSN 0378-7788,https://doi.org/10.1016/j.enbuild.2022.112678.



Atelier Werner Schmidt, Fotografii: Lucia Degonda / AWS https://www.atelierschmidt.ch/sanierung-susch

https://lorenzsysteme.de și https://www1.wdr.de/nachrichten/ruhrgebiet/stadt-oberhausen-daemmt-schwimmbaeder-mit-stroh-100.html



https://www.batirama.com/article/34010-de-la-paille-pour-l-isolation-par-l-exterieur-d-un-immeuble-existant-en-plein-paris.html **and** https://iledefrance.constructionpaille.fr/blog/le-chantier-dite-paille-fait-sa-rentr%C3%A9e/

Materiale de construcție biogenice Arhitectură tectonica, Cinark, Academia Regală Daneză 2023
https://issuu.com/cinark/docs/til_issuu_23.03.2023_biogenic_construction_bg_fina/1?ff&experiment=last-page

HANFFASER
UCKERMARK

https://www.hanffaser.de/uckermark/index.php/bauvorhaben/an-wanddaemmung

HANFFASER
UCKERMARK

https://www.hanffaser.de/uckermark/index.php/bauvorhaben/an-wanddaemmung

Ups, sorry!


Schönthaler
Betonsteinwerk und
Baustoffhandel seit 1964.
Manufatti in cemento e
Commercio materiali edili dal 1964.
DE Home
Pflastersteine
Betonfertigteile
Deckensysteme
Betonsteine
Regalsysteme
Schalungssysteme
Betonpfähle
Hanfsteine
Baustoffe
S A L E - günstig einkaufen
Neue Produkte
Kontakt
IT Home
Mattonelle
Manufatti in calcestruzzo
Sistemi solaio
Blocchi in calcestruzzo
Scaffalature
Sistemi per casseforme
Schönthaler
Betonsteinwerk und
Baustoffhandel seit 1964.
Manufatti in cemento e
Commercio materiali edili dal 1964.
Vinschgauer Straße 33
I - 39023 Eyrs
Tel.: +39 0473 739 937
info@schoenthaler.com

Better.


Schönthaler
Betonsteinwerk und
Baustoffhandel seit 1964.
Manufatti in cemento e
Commercio materiali edili dal 1964.
DE Home
Pflastersteine
Betonfertigteile
Deckensysteme
Betonsteine
Regalsysteme
Schalungssysteme
Betonpfähle
Hanfsteine
Baustoffe
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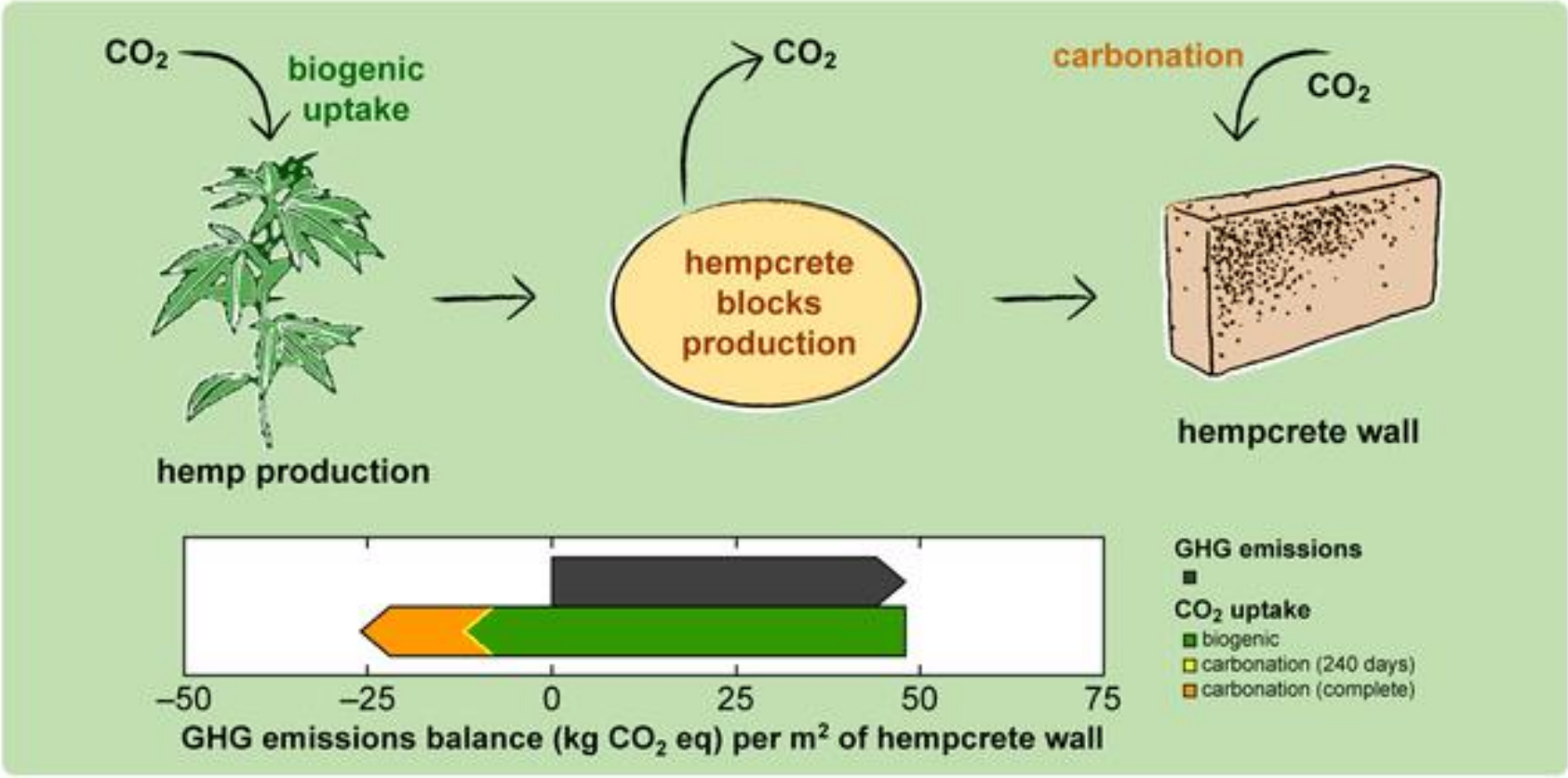
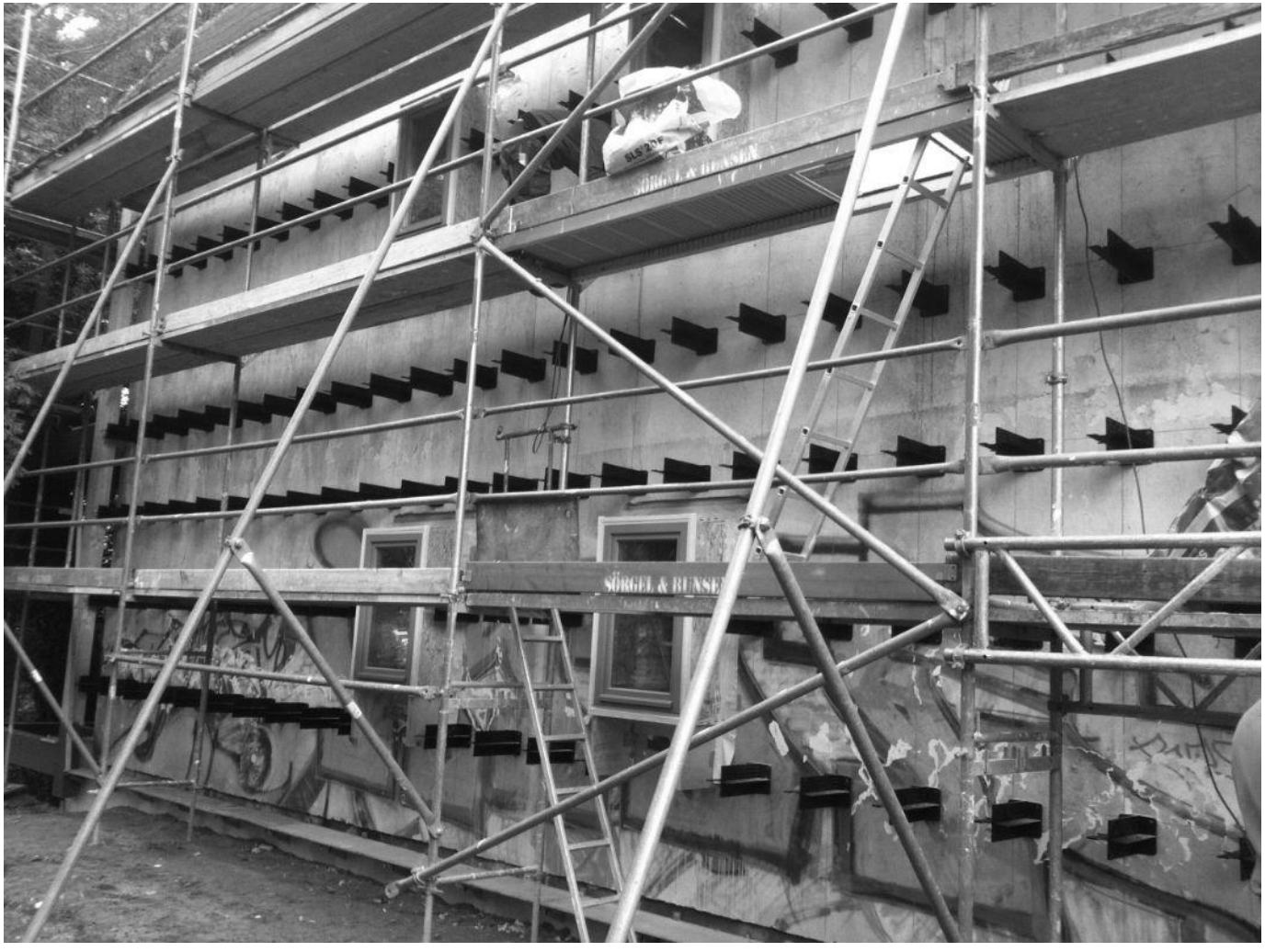


https://www.researchgate.net/profile/Alessandro_Arrigoni and
https://www.researchgate.net/publication/313961941_Life_cycle_assessment_of_natural_building_materials_the_role_of_carbonation_mixture_components_and_transport_in_the_environmental_impacts_of_hempcrete_blocks/link/5bc0313492851c88fd652462/download

Ext or Int wall insulation system https://www.huppenberger-naturbaustoffe.de/fileadmin/huppenberger-naturbaustoffe/4-0-Referenzen/strohdaemmplatte_schamer_altbausanierung_entwurf.pdf



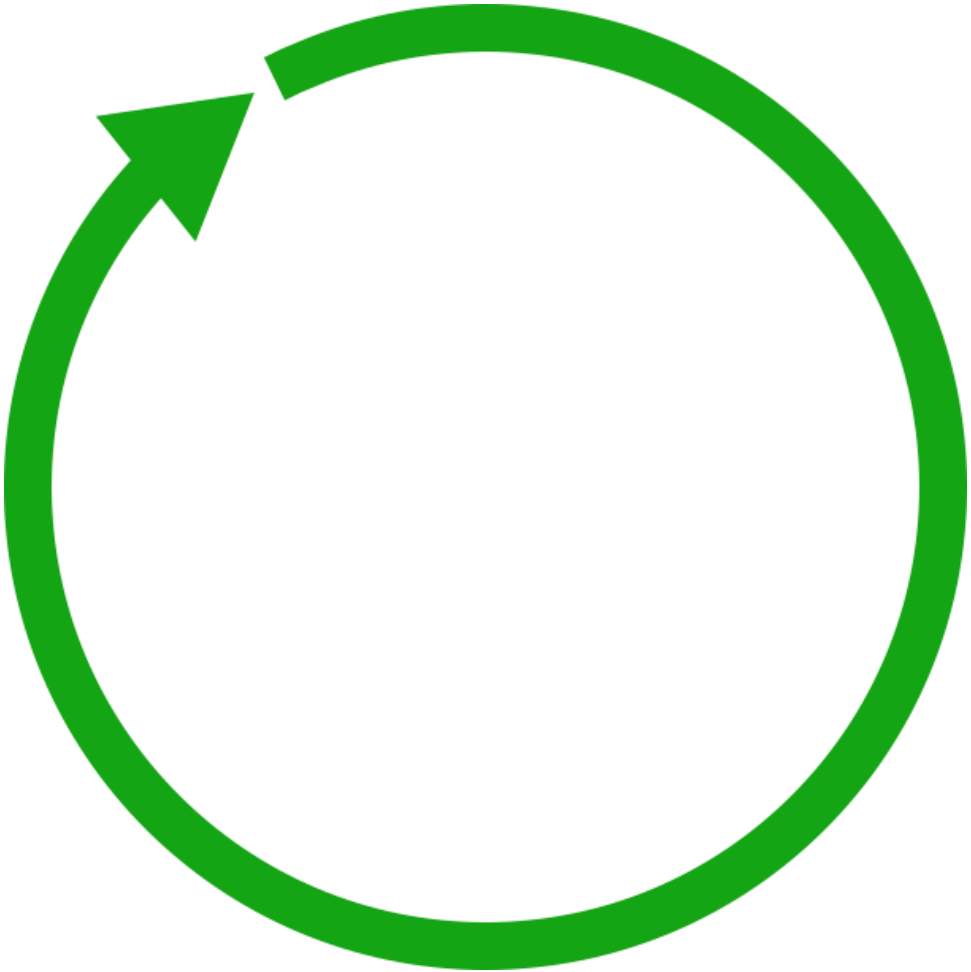
Provocarea stocurilor de clădiri. Strohbauanker https://Schelfbauhuette.de

Provocarea stocurilor de clădiri. Strohbauanker https://Schelfbauhuette.de

Provocarea stocurilor de clădiri., Strohbauanker https://Schelfbauhuette.de

Provocarea stocurilor de clădiri. , Strohbauanker https://Schelfbauhuette.de

Deep Retrofit Complemedis GmbH https://www.atelierschmidt.ch/



BAUWENDE

Michael Burchert | burchert@bauwende.de | https://twitter.de/@burchertmichael

STEP Training and practical workshops and further technical information:

STEP Training: https://baubiologie.at/strohballenbau/step-straw-bale-trai

Practical-Workshops: https://www.strohnatur.at/next-workshops-how-you

Registration-Form in general: https://baubiologie.at/strohballenbau/step-

Registration-Form in Detail: https://forms.gle/xp8e4v8RqBbq4GyT6

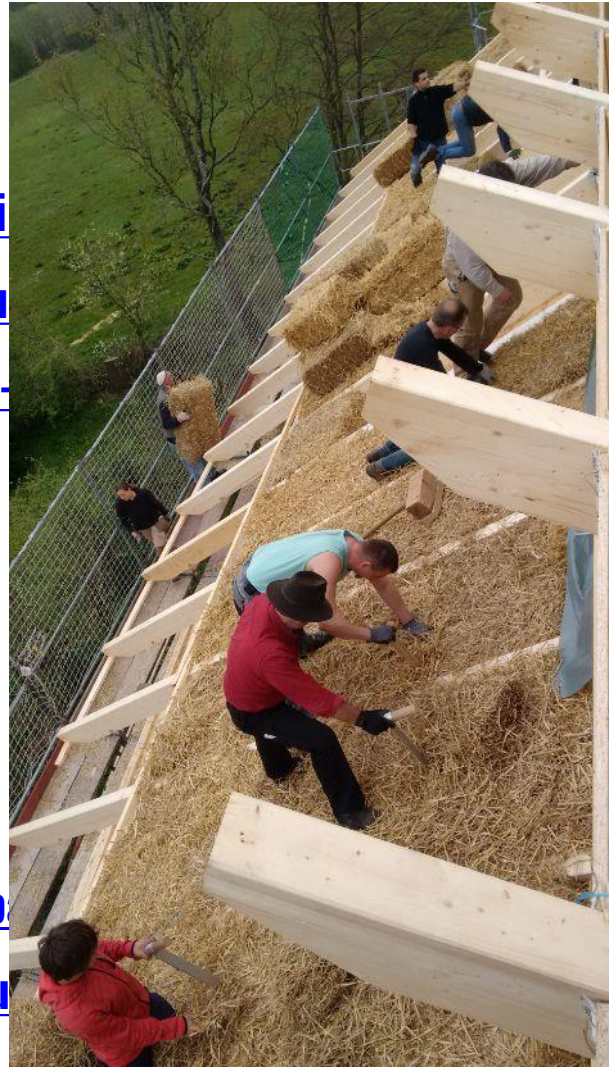
YouTube-Info about STEP: https://youtu.be/ciKRw5vFcXM

Workshops in Germany: https://biwena.de | https://nznb.de

German Strawbale Building Association: https://fasba.de

Construction Material authorization for Strawbales in Germany: https://b

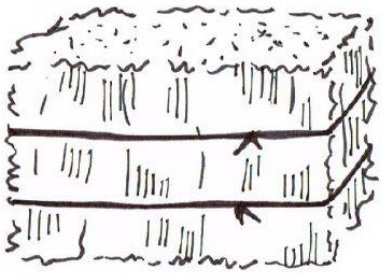
Further Technical Information: https://www.zotero.org/groups/2187655/u



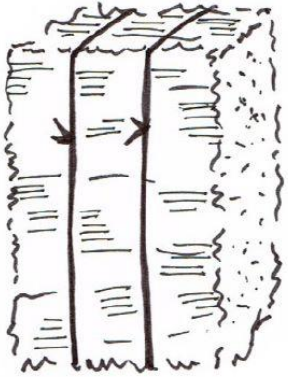
https://fasba.de STRAW BALE BUILDING GUIDELINES 2020,

key takeaways, you can do it:

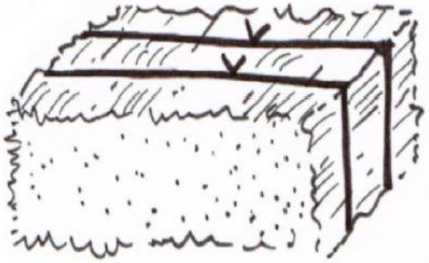
- >85kg /m³ Strawbale = class E
- Tencuială de argilă > 8 mm pe ambele părți = B, s1, d0 în peretele de cherestea, mai mult cu var (până la F90-B)
- λR, Germania = 0,049 W/(m·K) cu orientarea tulpinii predominant verticală pe fluxul de căldură. Deci Bale vertical sau orizontal pe Edge (...nu plat)
- grâul și secara sunt deosebit de potrivite, în timp ce ovăzul trebuie privit ca nepotrivit
- Lățimea știftului <1m
- +10% compresie în cadru
- Gapless, dovada de decontare!
- Miroase bine
- Site curat, site fericit



vertical on edge



horizontal on edge



flat

Reziliență, reguli clasice de construcție din lemn:

- Large Hat
- High Boots

- new:
- Warm Coat
- Plan with future water damage