

NEST – Exemples concrets et conseils pour l'achat

Reto Largo, Empa
Directeur NEST

Conférence sur les
marchés publics
durables 2024
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Accélérateur d'innovation

Reto Largo

Empa, Managing Director NEST

Entrepreneur et intrapreneur expérimenté avec 28 ans d'expérience dans les secteurs de la construction, des énergies renouvelables, de la fabrication, de la logistique et des ICT. Mes domaines d'expertise sont les ventes et le marketing, la gestion de l'innovation, la pensée en réseau et hors des sentiers battus, le coaching de startups, les nouveaux modèles d'affaires et la modération entre la recherche et l'industrie. Et notamment dans le lancement et la gestion d'écosystèmes d'innovation.

Ma passion est le réseautage, rassembler les gens et les accompagner afin de créer quelque chose de nouveau.



<https://www.linkedin.com/in/retolargo/>



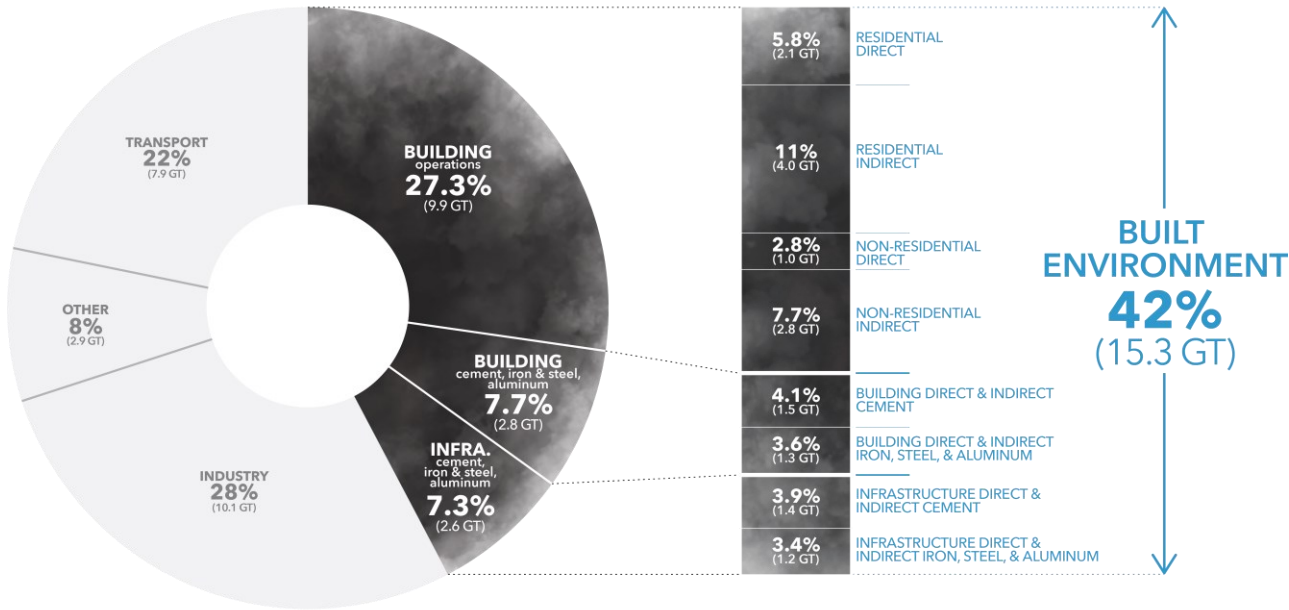
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150 Partenaires de la recherche, de l'économie, des pouvoirs publics

NEST
virtuell
erkunden

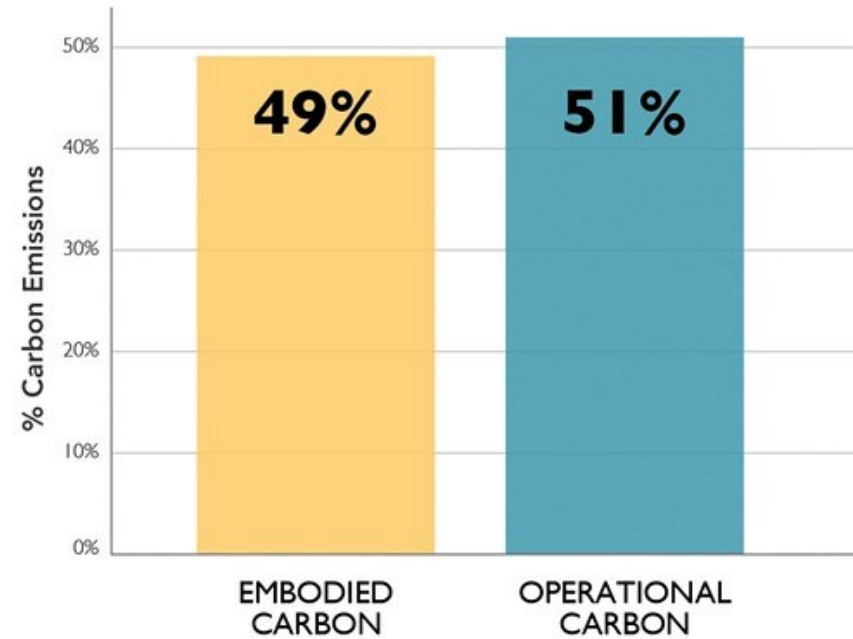
Situation de départ

TOTAL ANNUAL GLOBAL CO₂ EMISSIONS
Direct & Indirect Energy & Process Emissions (36.3 GT)



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Analysis & Aggregation by Architecture 2030 using data sources from IEA & Statista.

Total Carbon Emissions of Global New Construction from 2020-2050
Business as Usual Projection



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Self-learning predictive control through physics-informed Machine Learning



20-40% less energy
and improved
thermal comfort

compared to state of industry controllers.

1-2 weeks of
training time

compared to multiple months with pure
Machine Learning methods.

Ready for demand
response

due to computationally efficient predictive
control algorithms.

viboo



31% Heating Cost Reduction in Dübendorf.

At the Empa Campus in Dübendorf, viboo's technology was integrated with 140 Smart Thermostats. After operation for two heating periods, the project achieved a 31% reduction in heating energy consumption utilizing viboo's Self-Learning Predictive Control. The reduction was accomplished without compromising predetermined comfort conditions. The result translates to annual savings of 29,000 kWh in heating energy, and significant CO₂-equivalent emissions reduction.

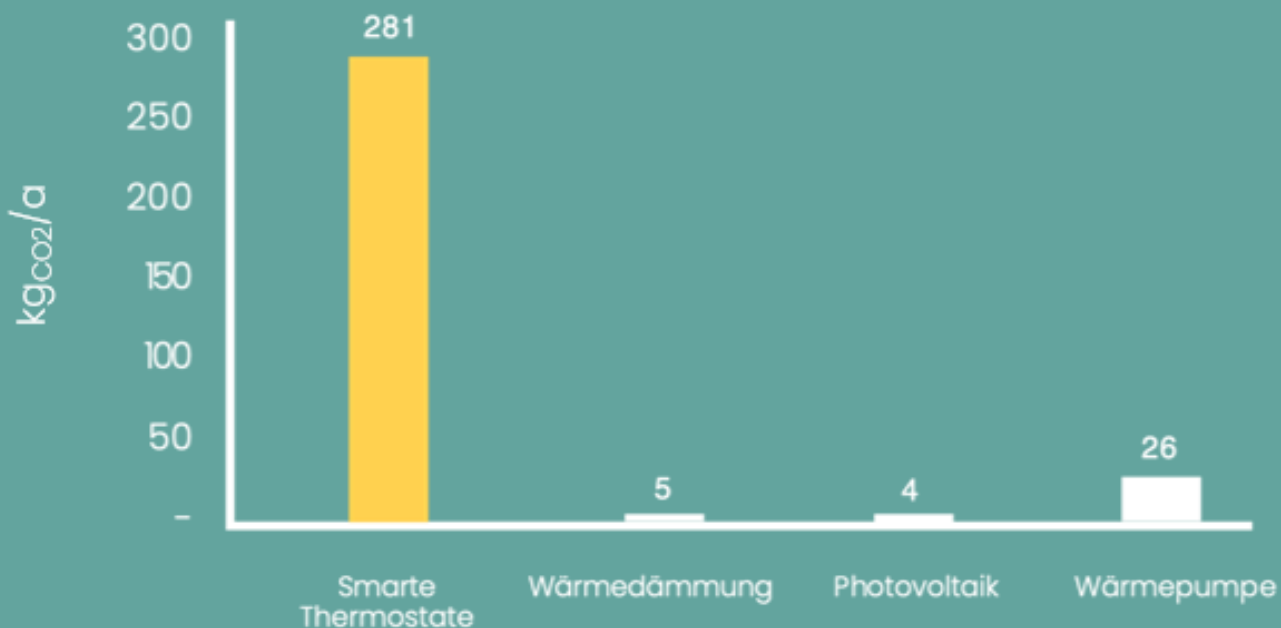
[Read Case Study](#)

Männedorf Municipality's Step Towards Energy Efficiency

In collaboration with the municipality of Männedorf, viboo conducted a project within the local school. Focused on both sustainability and practicality, the existing thermostats were updated with smart ones in a few hours. viboo's algorithms reduced the heat consumption by 27%. This real-world application demonstrates how thoughtful integration of technology can lead to meaningful energy conservation without altering daily comfort. For a detailed insight into this project, feel free to explore the full case study.

[Read Case Study](#)

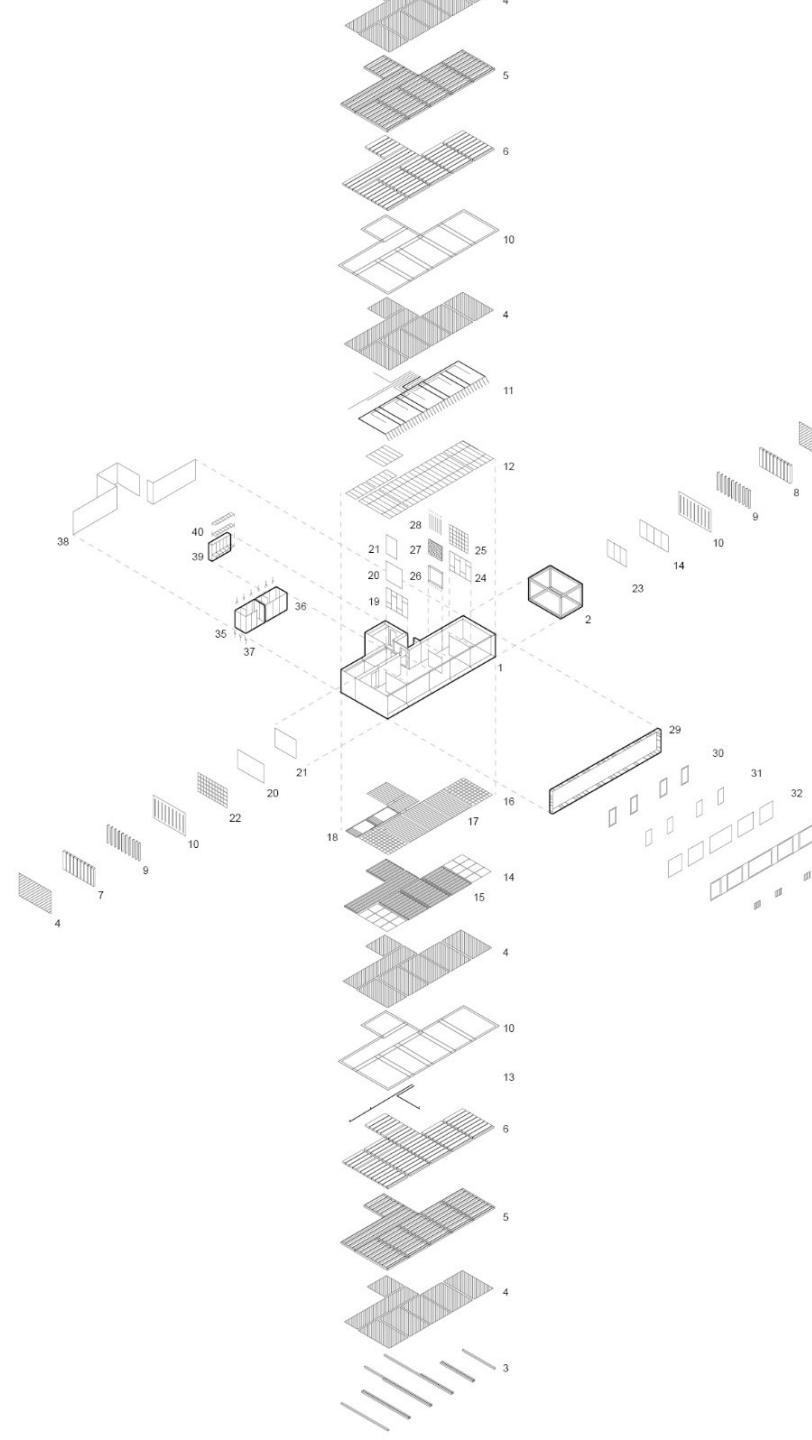
Jährlich Eingespartes CO₂ pro eingesetzten 100€



*Studie von [Gemserv](#) in EU und UK, Begutachtet von Dr. Tim Forman, Senior Associate für Nachhaltigkeit, Universität Cambridge

**Smarte
Thermostate
sind der
günstigste*
Weg Energie
zu sparen.**

**Tout est
séparable**

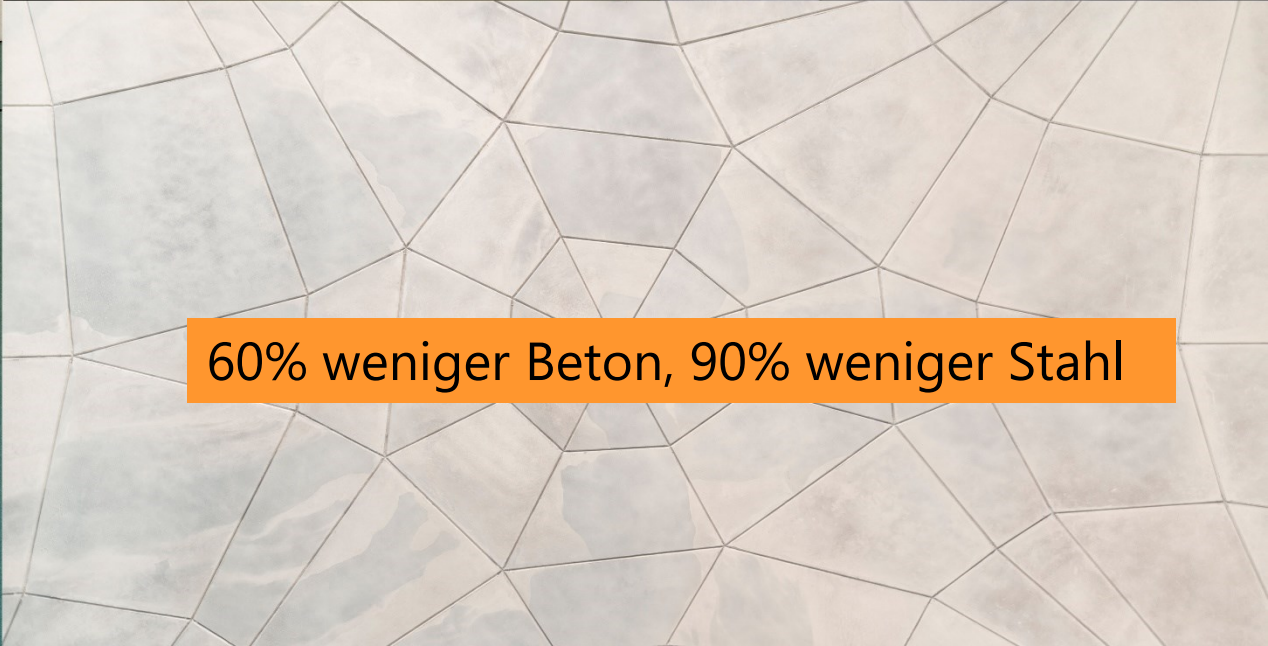
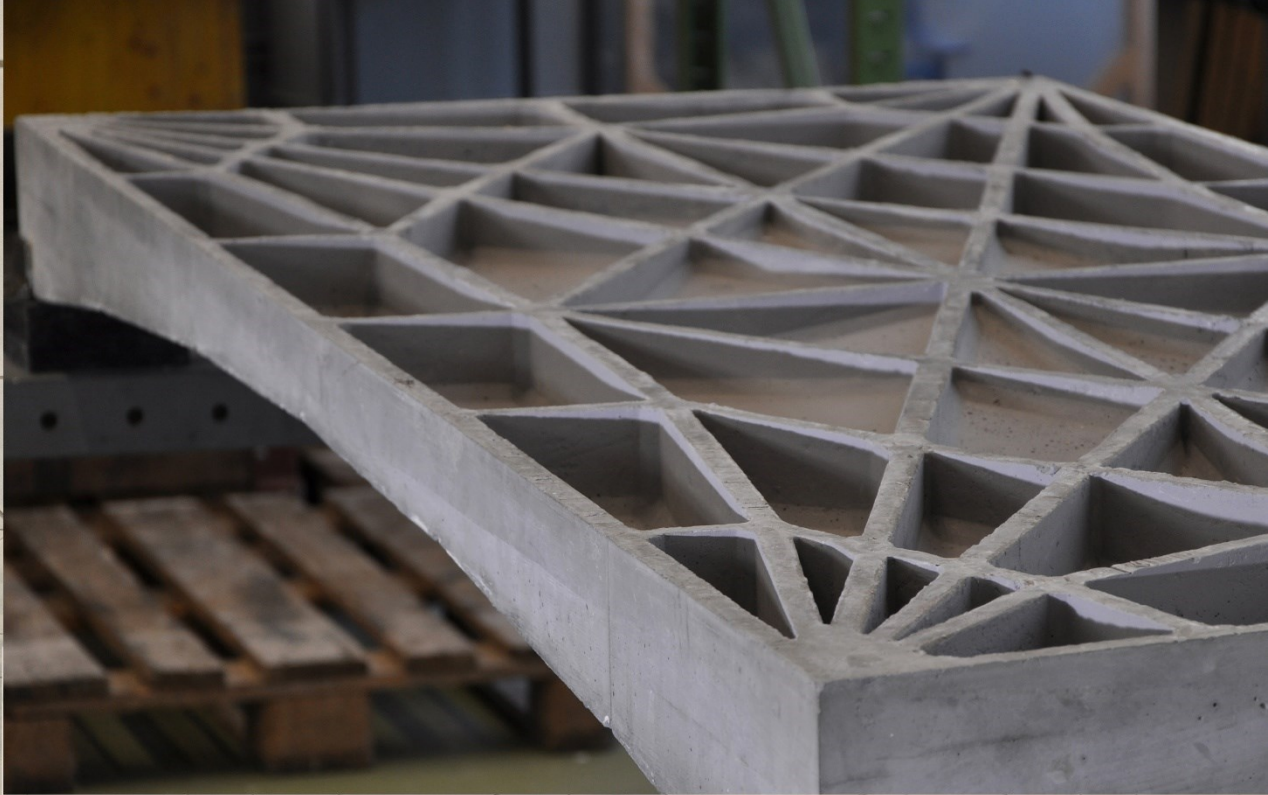






Économie de matériaux





60% weniger Beton, 90% weniger Stahl



**>50% weniger
Emissionen**

Réutilisation de matériaux



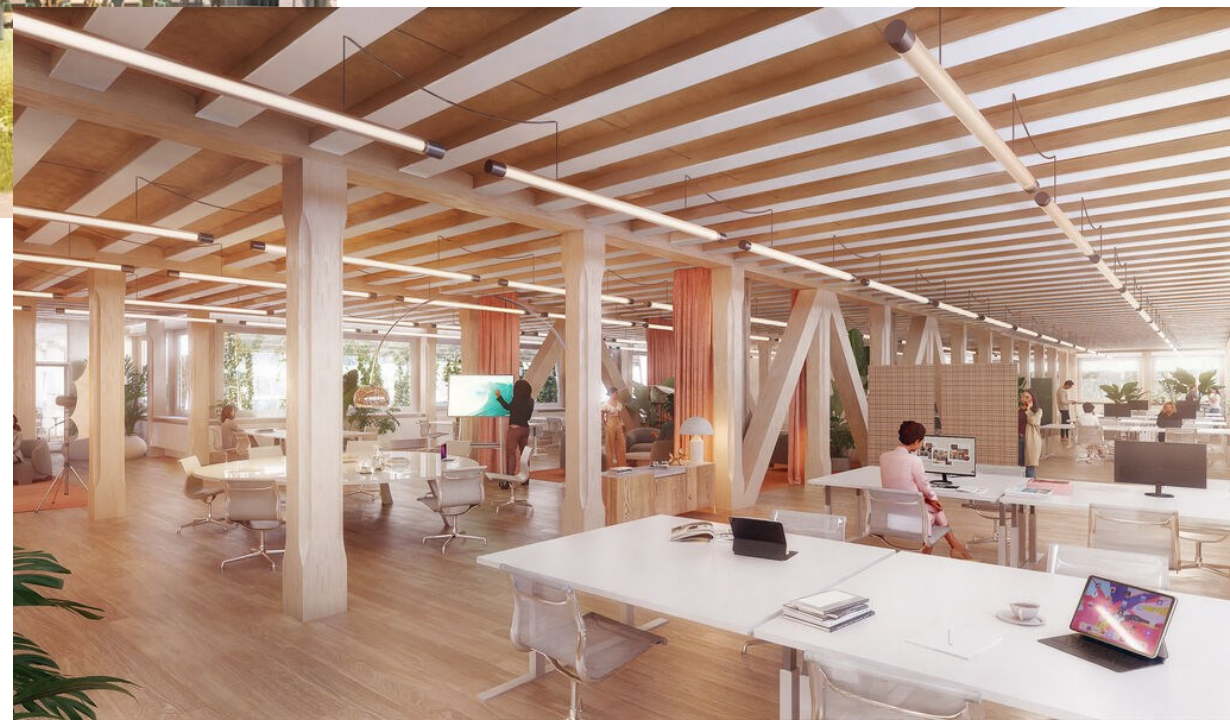






abo +

HORTUS



Earth-Timber Floor Slab

Patented, Certified, Ready to Build in Switzerland

Price Competitive

...to the industry standard reinforced concrete.

- use of less of the expensive timber as earth shields the timber from fire (50% earth, 50% timber)
- earth is 10x cheaper than concrete and 30x cheaper than timber
- efficient compressing of earth with robotics

Highly Sustainable

More sustainable than current timber solutions as we use less timber (CO₂, embodied energy).

- fully circular
- 75% less embodied carbon and 60% less embodied energy than standard reinforced concrete
- reduction of the total energy and CO₂ mortgage of buildings by up to 50%

3-layer panel solid timber beam rammed earth



High Performance

Same or better performance than concrete and optimized for the largest market which is residential.



payload

engineered to meet high payloads of up to 5kN/m²



fire protection

REI 60, REI 90 possible



sound protection

airborne sound: R'_w ≥ 53dB
impact sound: L_{n,w} ≤ 53 dB
depending on flooring



room climate

humidity regulating | 40% < σ < 60%
activatable thermal mass | 235 kJ/m²K
antiseptic and odor neutralizing



Verzicht auf:

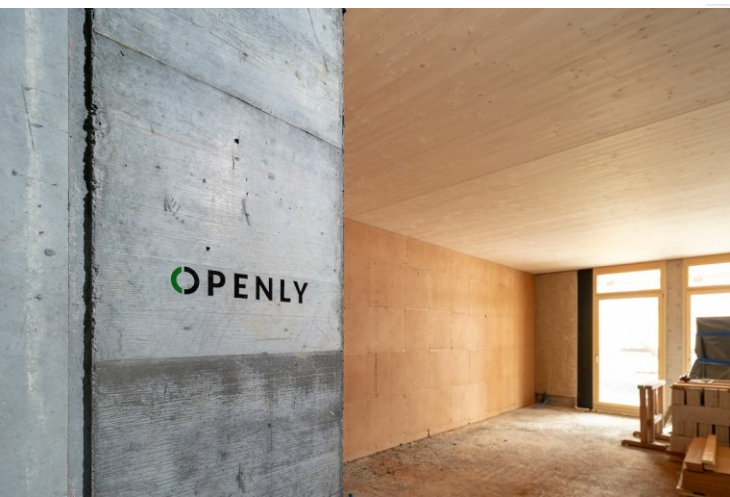
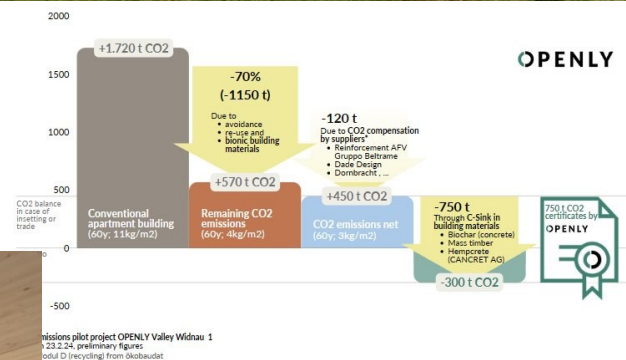
- Beton (wo nicht zwingend)
- Estrich & Rigips
- Kunststoffe inkl. Fermacell
- Klebstoffe
- Metalle als Oberflächen
- Nicht heimische Produkte

Fokus auf:

1. Plane an gut erschlossenen Lagen & erhalte die Substanz
2. Plane Plusenergie
3. Baue so wenig Haus wie möglich, insb. verzichte auf Untergeschosse & Installationen
4. Baue kompakt (<30% Fensterfläche)
5. Baue für 100 Jahre, Fokus auf Regelmass und langlebige Details
6. Spare Holz

OPENLY Valley Widnau breaks records

- Largest "hemp house" in Europe
- Savings of approx. 1000t CO2 (-70%) compared to a conventional building according to [SIA 2040](#)
- First apartment building in Europe to be built completely CO2 neutral. CO2 capturing with certificates of 750t.
- Largest [biochar concreting stage](#) (300m³ on 21.8.2023)
- Largest project in Switzerland with re-use of steel beams
- First project in Switzerland with 100% recycled and [100% neutralized reinforcing steel](#)
- 400,000 kg clay fill in the ceilings & 48,000 kg clay building boards
- First CO2 neutral kitchens
- 20 bathrooms with heat recovery and CO2-neutralized appliances from the manufacturers



De la prise en compte de l'énergie à l'analyse des émissions

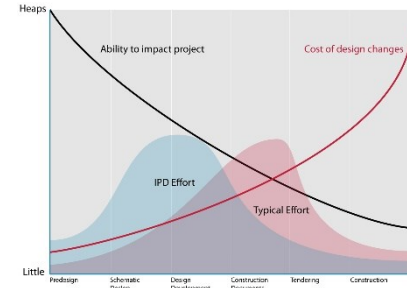
Cycle de vie - Contemplation
Cycles de vie

Créer des conditions-cadres

**Prix/valeur CO2 pour la réduction
du CO2**

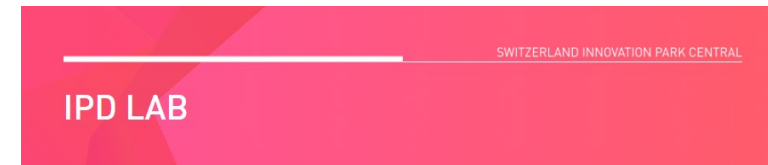
**Valeur pour la construction
circulaire**

De nouveaux défis exigent de nouveaux processus



MacLeamy Curve, 2004

Guide concernant la procédure d'adjudication avec dialogue pour les prestations d'études et de réalisation dans le domaine de la construction



Contrat d'alliance de projet

Faire un appel d'offres pour la structure porteuse

Contrats-cadres, appels d'offres pour plusieurs bâtiments

pour permettre l'émergence de nouvelles technologies.

Pour optimiser.

pour économiser des coûts et des ressources.

Ne le faites pas seul



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<https://cbcharta.ch/>

Soyez courageux, «just do it»

La passion, c'est le plaisir



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