Austrian Technology Days 2024

CONSTRUCTION
Hong Kong

Dipl.Ing. Susanne Formanek

(21.03.2024)

RENOWAVE.AT

GRÜN STATT GRAU

Vienna in Austria

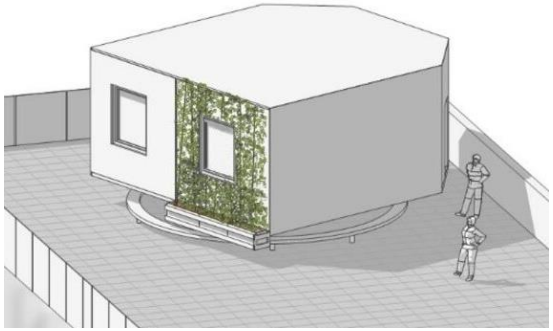
The city is built

New Challenges!

Ecological building materials, Circular Economy, Renovation

Ecological building materials
© ACR/schewig-fotodesign

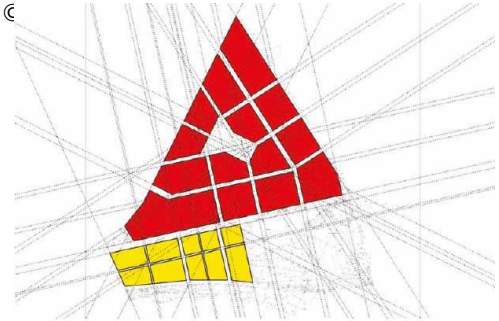
Circular Economy
© Enzberg



Energy and comfort monitoring
©

Building acoustics
© Franz Dolezal

Renovation
© Tobias Steiner

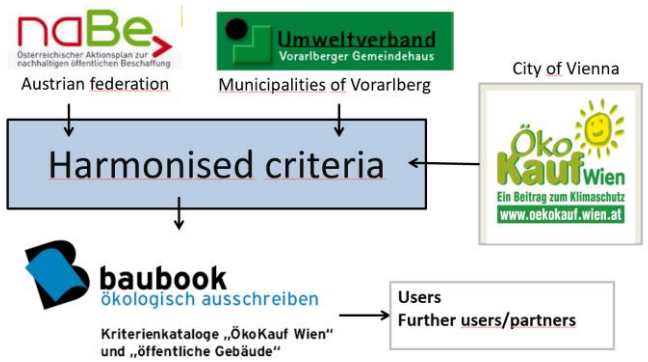


Cities and districts
© Kleboth und Dollnig ZT GmbH

Instruments - > Climate neutrality

Green public procurement

Harmonised criteria for green public procurement



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Regulations

Building Code OIB 6,
OIL-fired Heating fortbidden in most counries, energy pass, energy efficiency law; MISSION 100 cities

Strategies Programs

climate,-energyprogramm (KEP)
waste-reducing construction methods, new energy R&D innovation Strategie, Urban Heat Island Strategy, Open Innovation

klimaaktiv

Fundings -> Innovation!

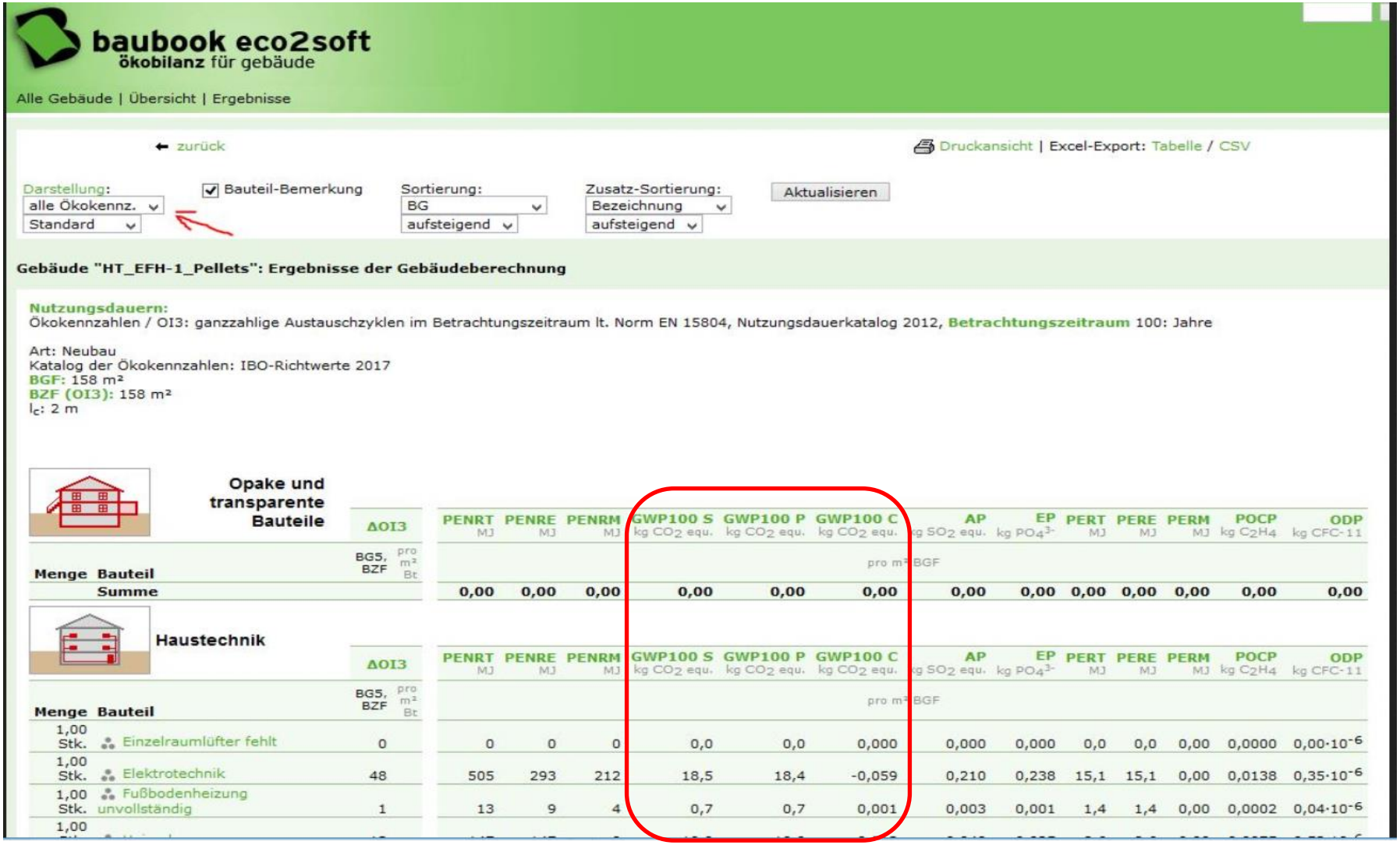
Subsidies / Incencitives, R&D, new instruments fundings – Innovation Lab

FFG

Benchmarks

Assessment, criteria, Labelling:
International and national rating systems: LEED, BREEAM, DGNB and EU Green Building
TQB and IBO ÖKOPASS
Austrian Sustainable Building Council (ÖGNB)
klimaaktiv: the climate protection initiative of the Federal Ministry of Environment

Baubook - online construction component calculator an online life cycle assessment for buildings



baubook eco2soft
ökobilanz für gebäude

Alle Gebäude | Übersicht | Ergebnisse

← zurück

Druckansicht | Excel-Export: Tabelle / CSV

Darstellung: alle Ökokennz. / Standard | Bauteil-Bemerkung | Sortierung: BG / aufsteigend | Zusatz-Sortierung: Bezeichnung / aufsteigend | Aktualisieren

Gebäude "HT_EFH-1_Pellets": Ergebnisse der Gebäudeberechnung

Nutzungsdauern:
Ökokennzahlen / OI3: ganzzahlige Austauschzyklen im Betrachtungszeitraum lt. Norm EN 15804, Nutzungsdauerkatalog 2012, **Betrachtungszeitraum** 100: Jahre

Art: Neubau
Katalog der Ökokennzahlen: IBO-Richtwerte 2017
BGF: 158 m²
BZF (OI3): 158 m²
l_c: 2 m

Opake und transparente Bauteile

Menge	Bauteil	ΔOI3 BG5, BZF pro m² Bt	PENRT MJ	PENRE MJ	PENRM MJ	GWP100 S kg CO_2 equ.	GWP100 P kg CO_2 equ.	GWP100 C kg CO_2 equ.	AP kg SO_2 equ.	EP kg PO_4^{3-}	PERT MJ	PERE MJ	PERM MJ	POCP kg C_2H_4	ODP kg CFC-11
			pro m² BGF												
	Summe		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**

Haustechnik

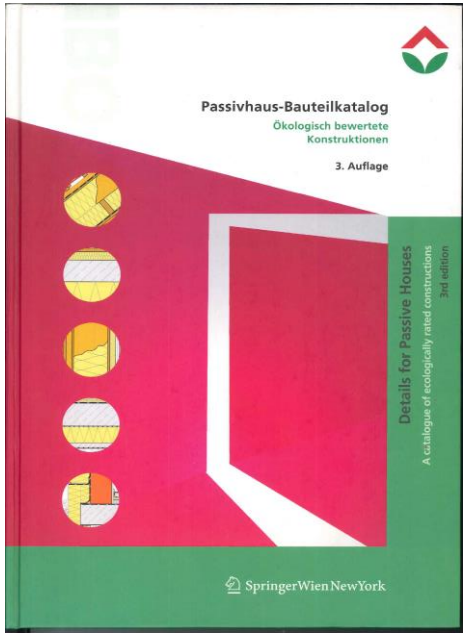
Menge	Bauteil	ΔOI3 BG5, BZF pro m² Bt	PENRT MJ	PENRE MJ	PENRM MJ	GWP100 S kg CO_2 equ.	GWP100 P kg CO_2 equ.	GWP100 C kg CO_2 equ.	AP kg SO_2 equ.	EP kg PO_4^{3-}	PERT MJ	PERE MJ	PERM MJ	POCP kg C_2H_4	ODP kg CFC-11
			pro m² BGF												
1,00 Stk.	Einzelraumlüfter fehlt	0	0	0	0	0,0	0,0	0,000	0,000	0,000	0,0	0,0	0,00	0,0000	$0,00 \cdot 10^{-6}$
1,00 Stk.	Elektrotechnik	48	505	293	212	18,5	18,4	-0,059	0,210	0,238	15,1	15,1	0,00	0,0138	$0,35 \cdot 10^{-6}$
1,00 Stk.	Fußbodenheizung unvollständig	1	13	9	4	0,7	0,7	0,001	0,003	0,001	1,4	1,4	0,00	0,0002	$0,04 \cdot 10^{-6}$
1,00															

Building elements

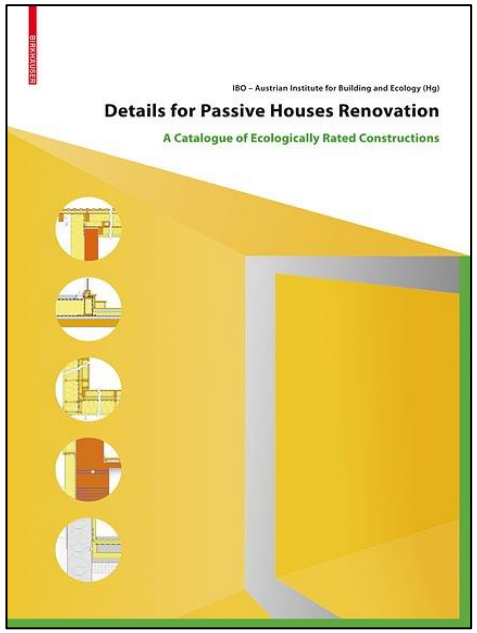
IBO Passivhaus Catalogue: Details for Passiv Houses

Collection of building elements
➡ in passive house standard level
with technical descriptions of:

- physical parameters
- ecological life cycle analysis
- suitability
- construction process
- maintenance
- structural discussion



for new buildings



for refurbishments

Innovation LABS

INNOVATION -> LABS

1. Natur Based Solutions

2. resources, that will exist and last in the future

Federal Ministry
Republic of Austria
Climate Action, Environment,
Energy, Mobility,
Innovation and Technology

FFG
Forschung wirkt.

acr austrian cooperative research

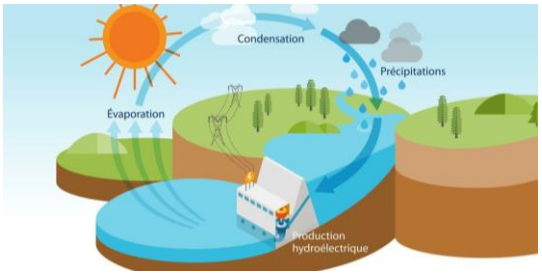
INNOVATION LAB 1 “GREEN instead of GREY”

„GREEN INSTEAD OF GREY“

Graphics/Design/Awareness

Spatial planning, laws, regulations

Water management, cultural engineering



Project/management

Landscape,-architecture

Smart Building/EE/Physic, Materials

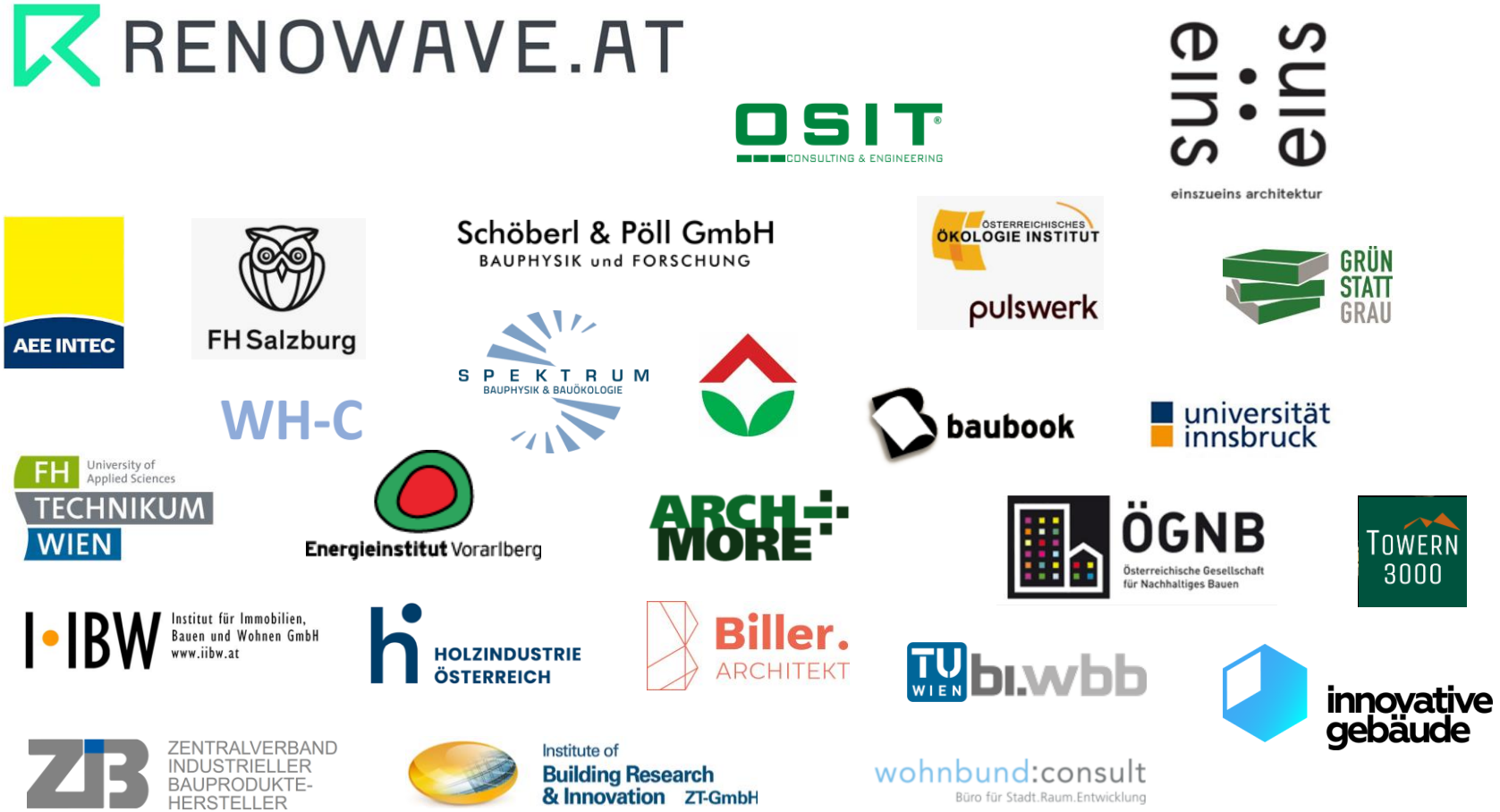
competencies and interdisciplinarity

INNOVATION LAB 2 "RENOWAVE.AT"

RENOWAVE.AT

is the innovation laboratory for climate-neutral building and districts renovation in Austria

Partners



2 Innovation Labs -> 500 partners!

RENOVATION & NBS

MA 48 in Vienna: The facade of the office building creates the rather untypical impression of a colorful "herb meadow" in the middle of the Gürtel.

[Vertikalbegrünung fürs Klima: MA 48-Grünfassade feiert 10. Geburtstag - Vienna Online]

RETROVIT & NBS

New Regulation in City Vienna!

climate-sensitive planning

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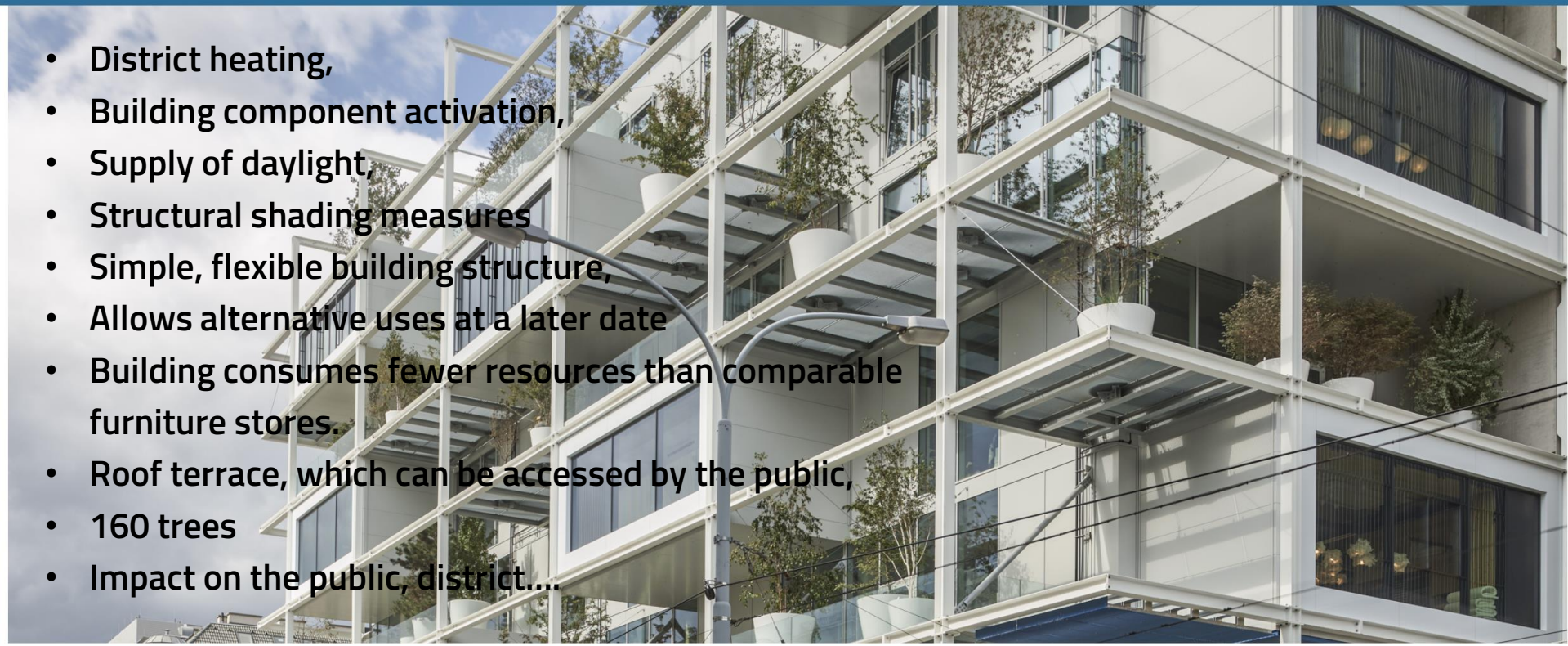
RETROVIT & NBS

klimaaktiv

Ikea Wien Westbahnhof

Europaplatz 1, 1150 Wien

klimaaktiv Gold, Fertigstellung, Neubau



- District heating,
- Building component activation,
- Supply of daylight,
- Structural shading measures
- Simple, flexible building structure,
- Allows alternative uses at a later date
- Building consumes fewer resources than comparable furniture stores.
- Roof terrace, which can be accessed by the public,
- 160 trees
- Impact on the public, district....

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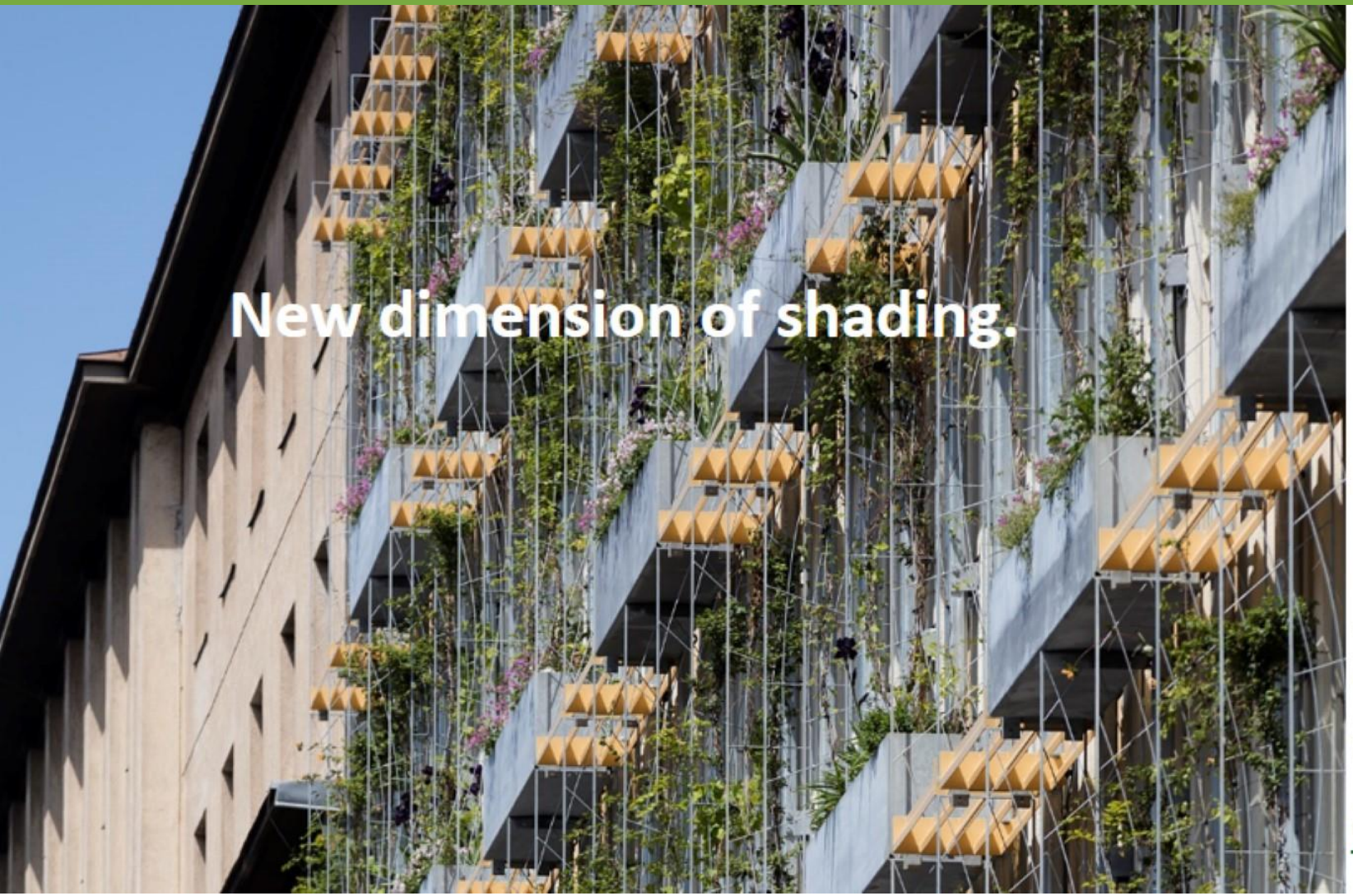
RETROVIT & NBS

GRÜN STATT GRAU

RENOVATION & NBS

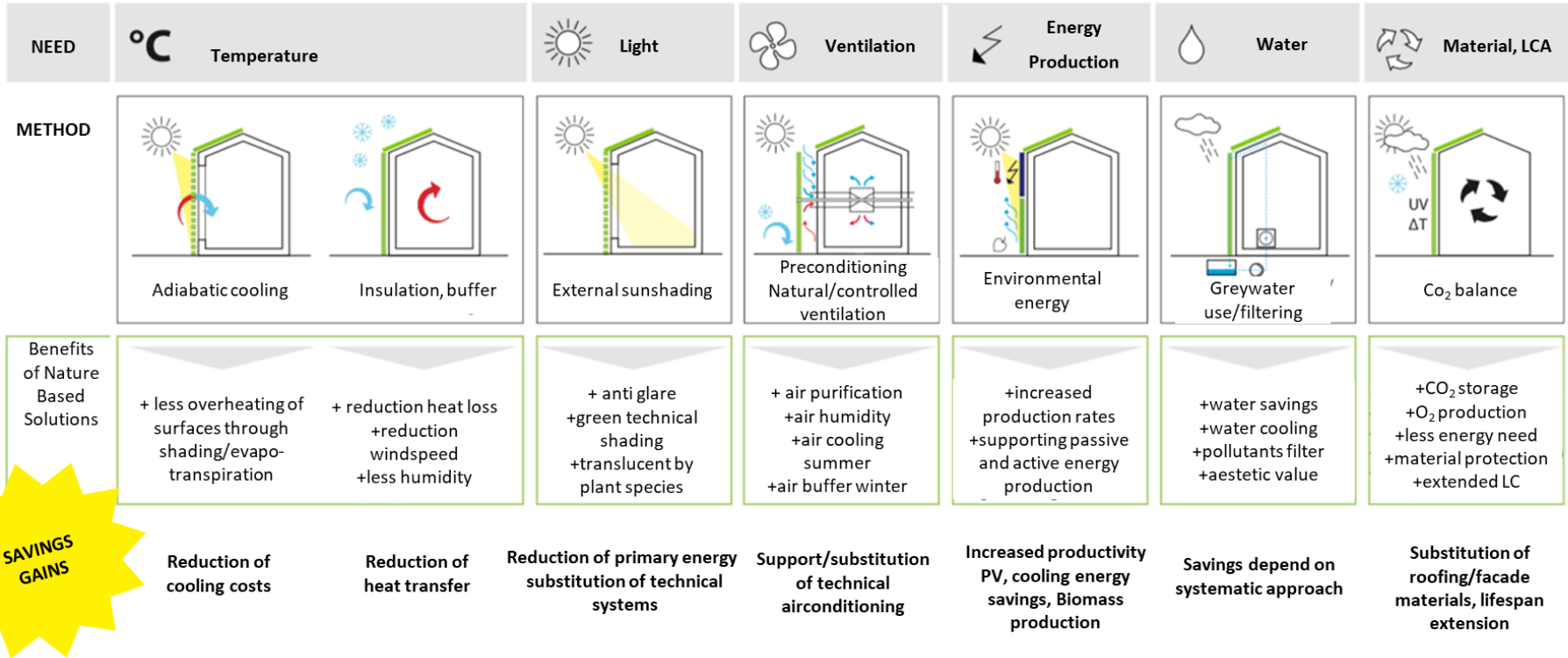


Building technology & NBS

BUILDING GREENING

WHY?

© Pfoser



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Use existing building envelopes

Synergies instead of competition, Districts instead of buidlings

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Gründach- und Solarpotentialkataster (© Stadt Wien)

IBO
Austrian Institute for Healthy
and Ecological Building

SOLAR & NBS

Am Weiher Salzburg

BAUDER
making roofs secure.

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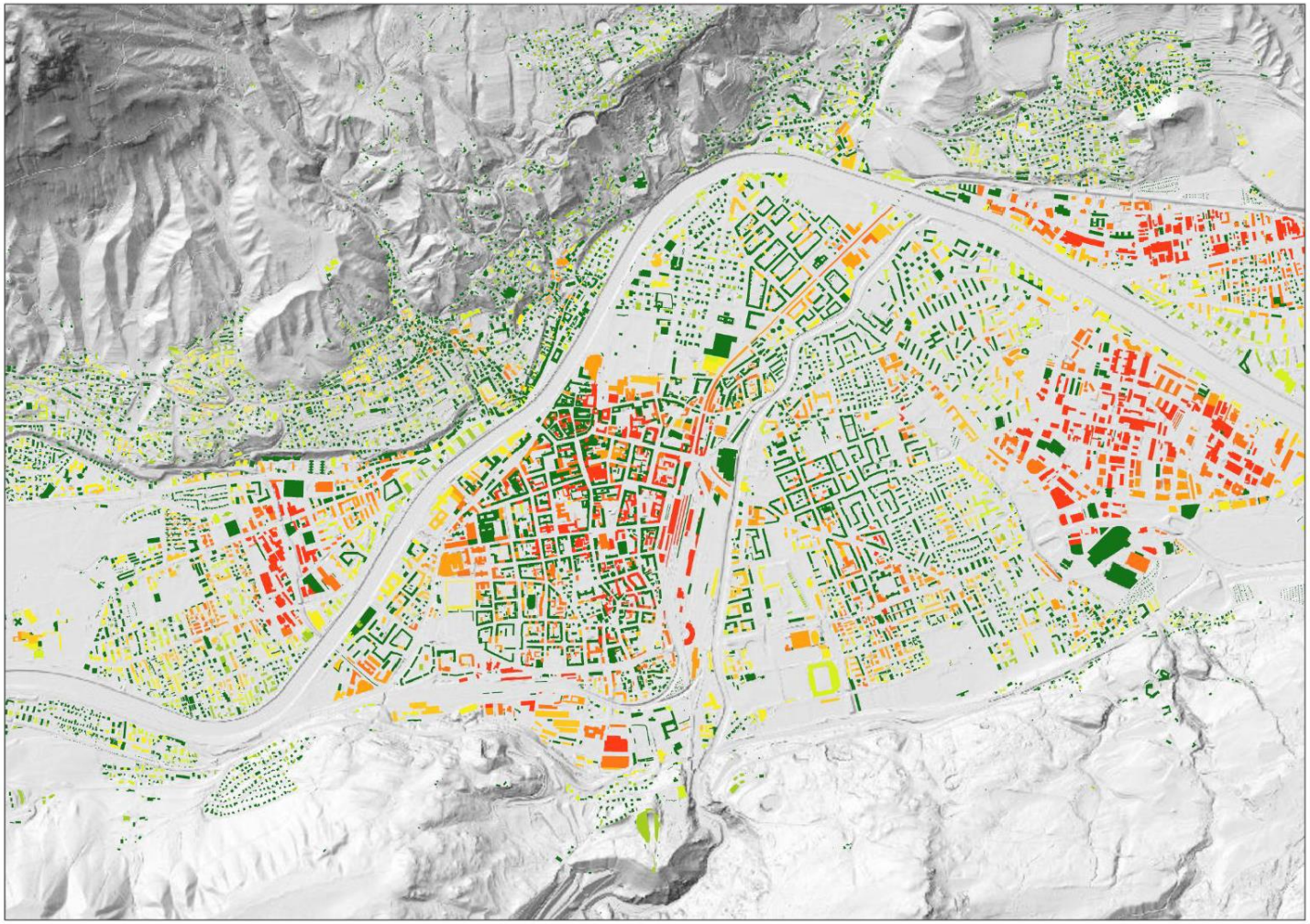
SOLAR & NBS

- protects against increased wind load
- Bifacial solar cells (produce energy even when the sun shines on the back)
- 80% retention of annual precipitation
- Silver-leaved plants (thyme, sunflower) mixed with white gravel
- -> reflection: performance increase of 16%

Solarfuchs

CO2 Capture & Renovation



Green roof impact score

Green Roof Impact Score describes the impact of retrofitting a house with a green roof based on Land Surface Temperature and surrounding Greeness.

GRImpScore
- 0.00
- 0.01 - 57.10
- 57.11 - 71.75
- 71.76 - 78.95
- 78.96 - 83.41
- 83.42 - 86.94
- 86.95 - 91.33
- 91.34 - 100.00

VISUALISATION

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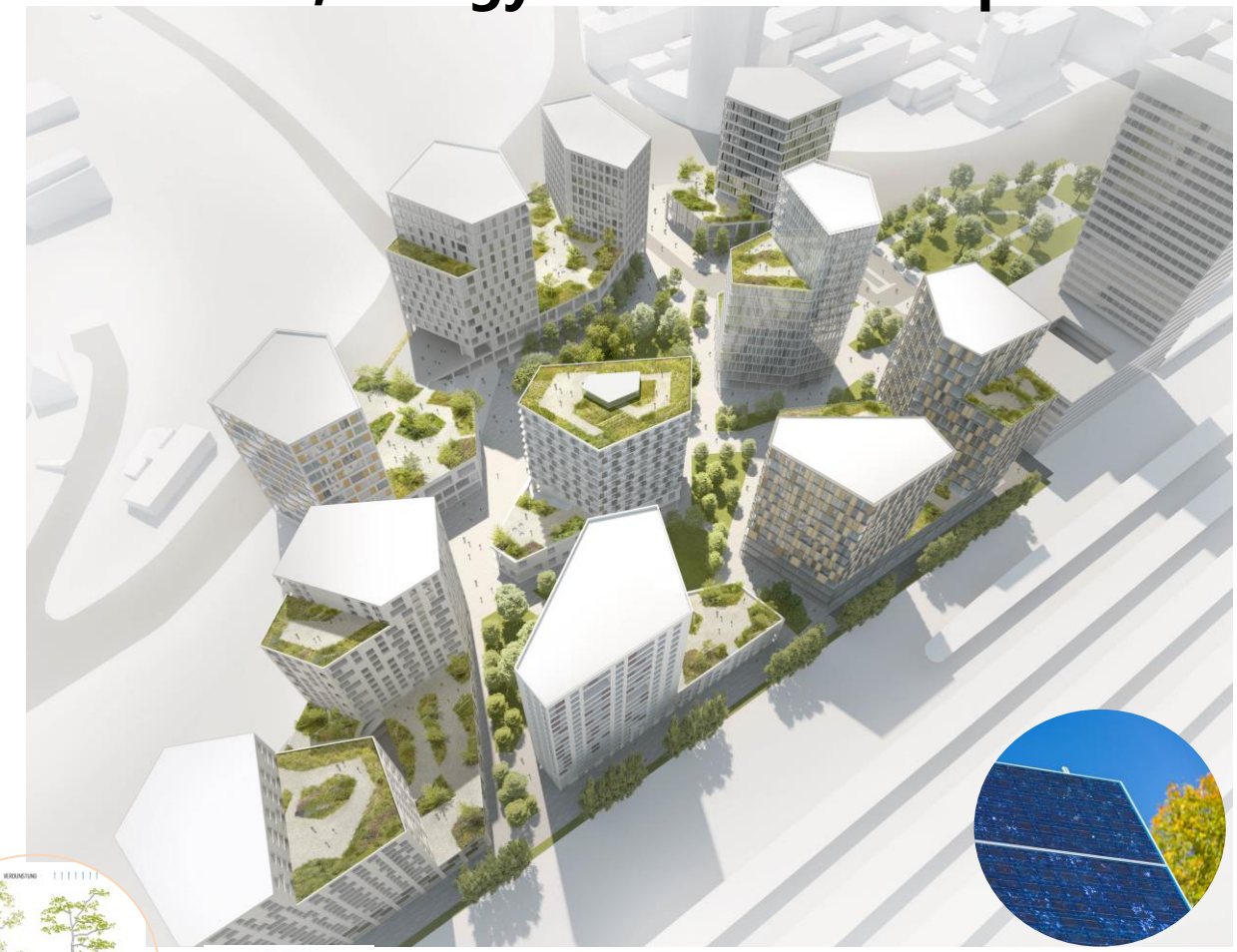
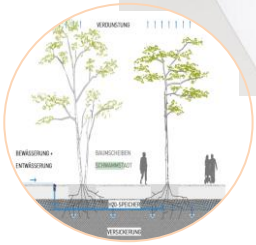
Animal Aided Design©

„ R&R Post City Linz - a biodiverse, energy-flexible urban quarter“ Green.Diversity.Linz

- Sponge City elements
- Animal aided design©
- and biodiversity in urban areas,
- animal-friendly construction
- Sustainable rainwater management
- Combination/interacti on of PV and greening





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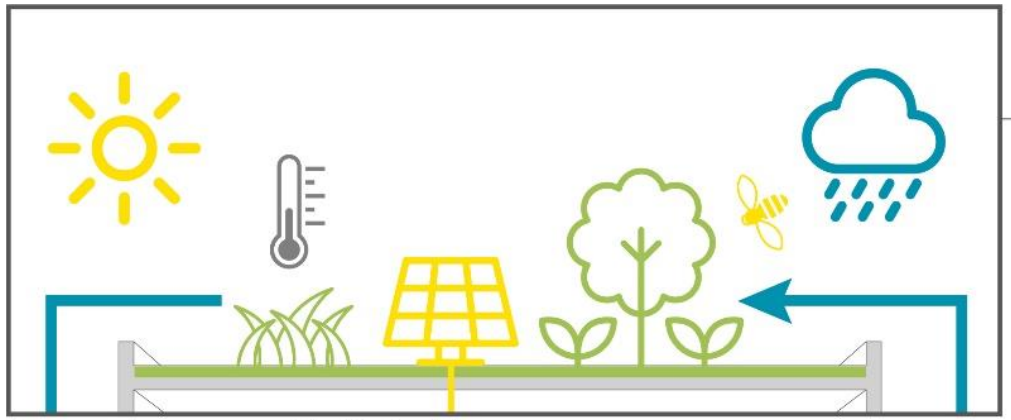
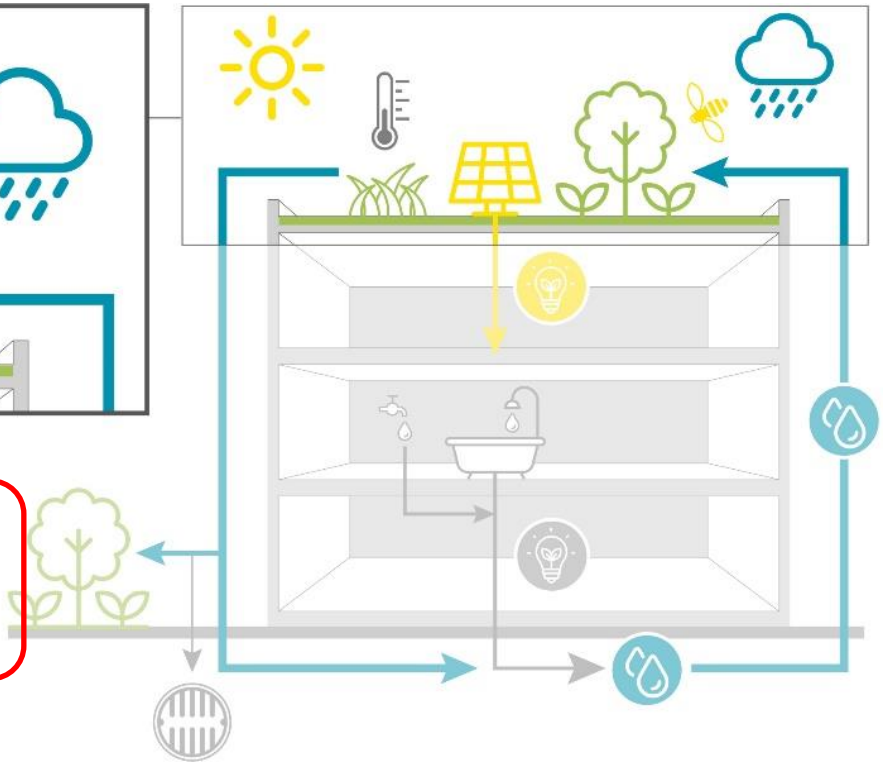


Systemabgrenzung NaNu3 - Konzept



- Retentions Potential
- Greywater Potential
- PV-Potential
- Microclima
- Biodiversity
- Climate adaption

© AIT

Szenario 1 (S1)

intensives Gründach [215m²]
Photovoltaik mit extensiver Begrünung [57m²]
Grauwasseraufbereitung [25m²]

66,2% Performance

Szenario 2 (S2)

extensives Gründach [138m²]
aufgeständerte PV über Grauwasseraufbereitung [25m²]
Dachterrasse [134m²]

42,8% Performance

AIT AUSTRIAN INSTITUTE OF TECHNOLOGY · GRÜN STATT GRAU · IBO · BABEG · transarch biomimetics + transdisciplinary architecture

Bundesministerium Digitalisierung und Wirtschaftsstandort

Bundesministerium Klimaschutz, Umwelt, Energie, Mobilität, Innovation und Technologie

FFG

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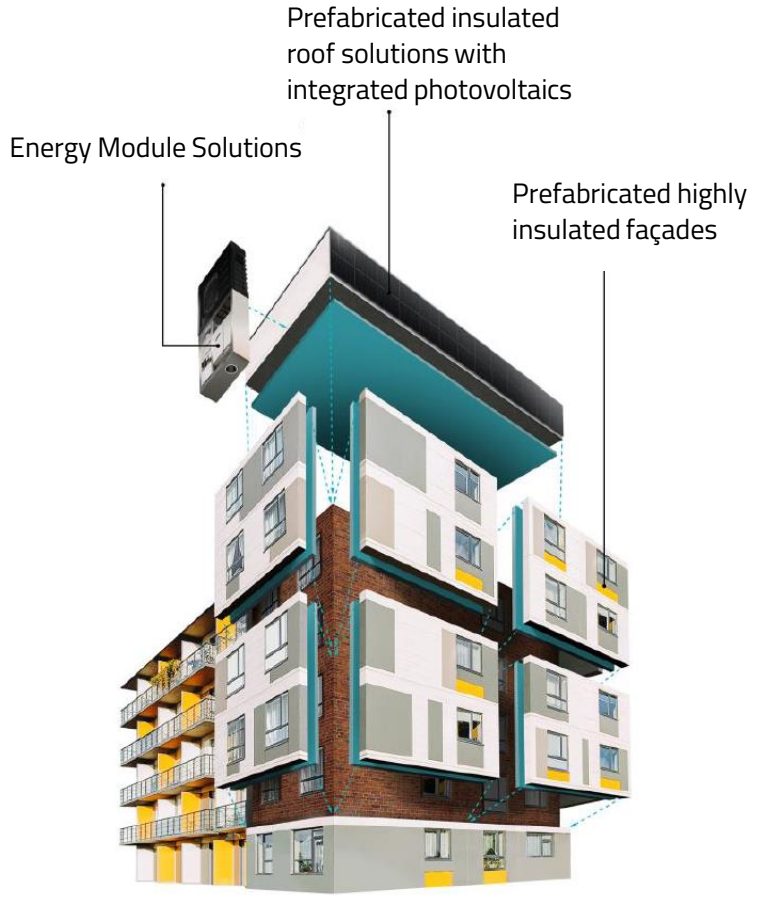
ENERGIESPRONG APPROACH

Prefabricated insulated roof solutions with integrated photovoltaics

- whole house approach to retrofit
- Homes are fully insulated using offsite manufactured wall and roof panels
- conjunction with pre-assembled energy supply (PV-panels) an integrated ventilation system possible (>ENERGIESPRONG)
- Possible result: Homes with a minimum net-zero energy standard



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Invitation to Vienna

International annual congresses since 2001:
“BauZ! Vienna Congress on Sustainable Building “

- Approximately 300 participants
- Collaboration with international delegations
- Partnership with Green Building Council Canada

https://www.wko.at/aussenwirtschaft/greentech-days-future-of-building

- Congress schedule includes: lectures, workshops, an excursion, an evening reception and a „come toghether“ session

Save the date: BauZ 2024 on 15th - 16th April!
https://www.bauz.at

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