



Certification Check

Product Book

Content

The document contains a detailed product description for the greenpass (Pre-)Certification Check.

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(Pre-)Certification Check

What is the (Pre-)Certification Check?

Certified real estate & open spaces in terms of climate resilience, sustainability & ecology with the international standard

The greenpass (Pre-)Certification Check is part of the Environmental Impact Kit and enables the (pre-)certification of climate-fit real estate and open spaces. The software-based & scientifically developed (Pre-)Certification Check analyzes real estate & open spaces as a whole with regard to 6 urban challenges + 4 bonus challenges:

- Climate
- Water
- Air
- Biodiversity
- Energy
- Cost
- Ecology
- Resources
- Social
- Mobility



Official (pre-)certification & proof of quality for climate-fit buildings & open spaces



Digital twin as single source of truth (SSOT) for Environmental Impact Kit & expert simulations



Scientific KPIs & effective measures with cost/benefit efficiency for successful climate change adaptation



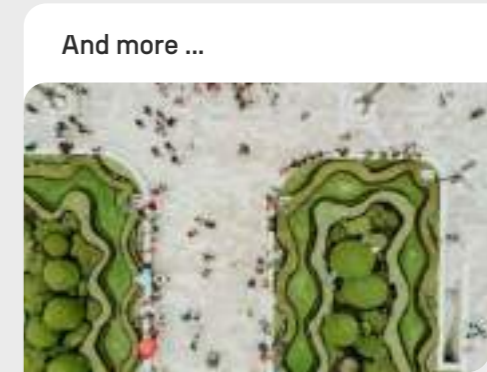
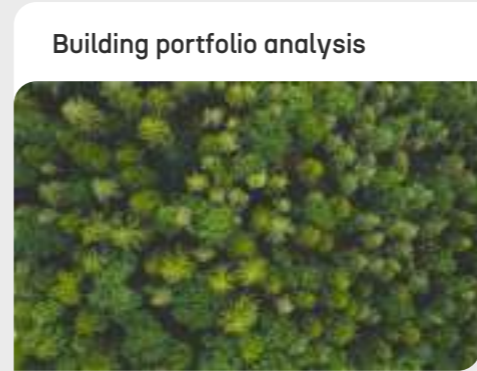
environmental
impact
kit





Find your use case

(Pre-)Certification Check use cases



Where can I use the (Pre-)Certification Check?

Global certification standard for climate resilience, environment & sustainability

The (Pre-)Certification Check can be used in new buildings as well as in existing buildings and for a large number of use cases worldwide. For individual buildings or projects as well as entire districts and districts with a size of up to approx. 200 ha.

In addition, the regulatory requirements and criteria of the EU Taxonomy can be met with the EU Taxonomy Check.

The (Pre-)Certification Check can be modularly combined with other checks from the Environmental Impact Kit. In the case of new developments, it is advisable to optimize projects as early as possible before the (Pre-)Certification Check with a Climate Check and Wind Check. With the Pre-Certification Check, developments can be optimized in terms of cost/benefit and officially pre-certified before projects can be officially certified with the Certification Check during or after construction completion.



New



Stock



What does a (Pre-)Certification Check bring?

Official (pre-)certification & proof of quality for climate-fit real estate & open spaces worldwide

The greenpass Certification Check brings many advantages for everyone involved. The official certification serves as proof of quality for implemented climate-fit real estate and open spaces. With a pre-certification check, projects can be optimized in terms of cost/benefit in order to get better financing conditions for projects or to actively use the results in ESG communication and marketing. Climate-fit real estate and open spaces can achieve a real estate value that is up to 20% higher, bring a substantial market advantage and are a future and investment security.

In addition to the advantages mentioned, a large number of essential ecosystem services are achieved through the successful implementation of adaptation measures. The (Pre-)Certification Check shows & quantifies the many advantages in everyday life.

(Pre-)Certification Check benefits



Official (pre-)certification & proof of quality



Cost/benefit optimization



Up to 20% higher real estate value



Higher customer satisfaction & lower fluctuation



Green Financing & ESG



Communication & Marketing



Climate-fit real estate & open spaces



Future & investment security



Higher climate resilience & quality of life



How does the (Pre-)Certification Check work?

International state-of-the-art certification standard for climate resilience, environment & sustainability

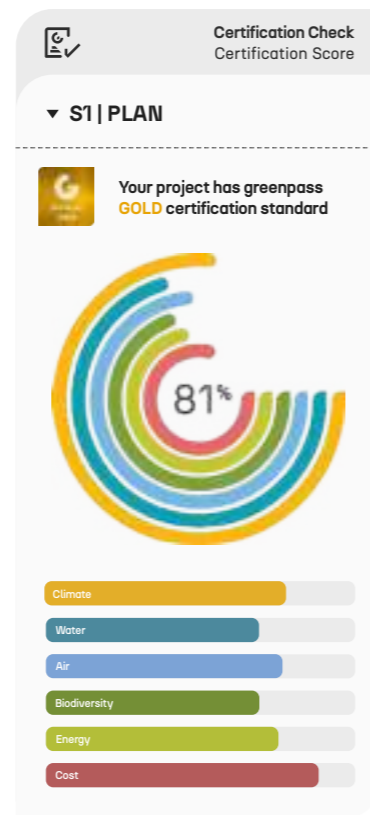
The (Pre-)Certification Check includes a data-driven & holistic 3D impact analysis with meaningful KPIs. The check is based on a digital twin from the greenpass editor software and a 3D microclimate simulation (powered by ENVI-met) in combination with area analyses.

Projects can be pre-certified with the Pre-Certification Check, while the Certification Check is applied at or after construction completion. In order to achieve the greatest leverage, it is advisable to start as early as possible and to check and optimize the project or planning in terms of effectiveness and the certification result.

Based on a standardized process, the (Pre-) Certification Check enables:

- a quantitative impact assessment
- a scenario comparison
- a performance optimization
- a quantitative & qualitative proof of quality

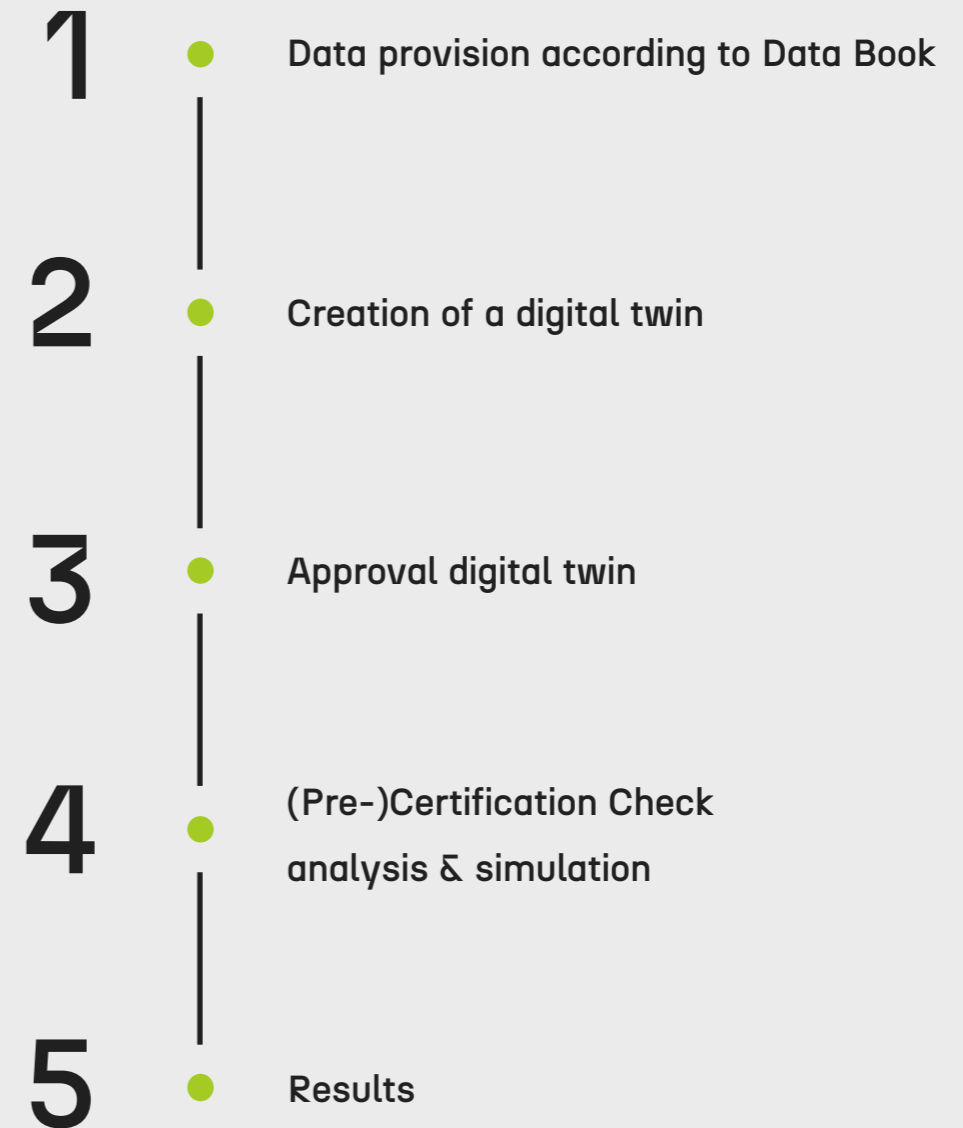
The assessment is site-related and based on standardized reference scenarios (worst to best case). Depending on the quality, evaluation points are awarded for each indicator, which together add up to a degree of fulfillment and subsequently a certificate level from certified (at least 35%), silver (from 50%), gold (from 75%) to platinum (from 90%) means.



powered by
ENVI-MET

You can find more information and examples of how to use the (Pre-) Certification Check in the Use Case Book and the Reference Book.

(Pre-)Certification Check process



optional: further add-ons

recommended: optimization loop with workshop & re-simulation



What do I get from a (Pre-)Certification Check?

Comprehensive analysis, evaluation & (pre-)certification of real estate & open spaces with regard to environmental impact



The (Pre-)Certification Check includes a comprehensive evaluation & official (pre-)certification with impact figures, graphics and optimization recommendations, which are summarized in an easy-to-understand report. The analysis is based on a high-resolution microclimate expert simulation (ENVI-met) for a hot day with LOD 2. The level of detail of the analysis or the report varies depending on the scope of services or the selected add-ons - e.g. a recommended optimization round for the Pre-Certification Check.

Fact-based results including effective optimization recommendations enable real estate and open spaces to be increased with ease in terms of their effectiveness. The reference scenarios show the relative effectiveness of projects for the location. The Pre-Certification Check includes pre-certification in digital form, while the Certification Check provides an award package including certificate plaques and certificate.

(Pre-)Certification Check product features



Official (pre-) certification check for buildings & open spaces



6 urban challenges + 4 bonus challenges climate, water, air, biodiversity, energy & costs



28 meaningful & numerical KPIs + 26 bonus indicators for climate resilience & sustainability



Digital twin as single source of truth (SSOT) for expert simulation & area analysis + 3 reference scenarios (worst, moderate & best case)



Level of Detail (LOD) 2 for digital twin & assessment



High-resolution microclimate expert simulation for a hot day with ENVI-met



Clear optimization recommendations for successful climate change adaptation



Clear graphics & heatmaps for a targeted optimization of the effectiveness



Easy to understand & transparent report with all results including certification and certification award package with 2x certificate plaques + 1x certificate



Get your kit

editor 

What is the greenpass editor?

The greenpass Editor (GP.e) software is the basis for the Environmental Impact Kit & digital twin

The greenpass editor is a 3D & GIS-based software for a digital twin of real estate & open spaces. The digital twin serves as a uniform basis and single source of truth (SSOT) for the greenpass Environmental Impact Kit and the Impact Checks & allows a holistic and valid assessment of the environmental impact of real estate & open spaces around the world.

You can find more information and specifications for the necessary data basis for the (Pre-)Certification Check in the Data Book.



3D & GIS-based modeling software for real estate & open spaces with import of common planning data (e.g. CAD, GIS)



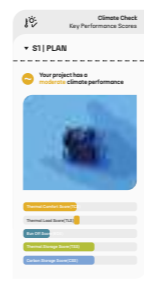
Easy & fast modeling of projects with comprehensive database of 100+ materials & all types of vegetation



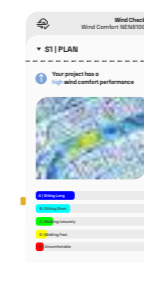
Digital twin as a single source of truth (SSOT) for environmental impact checks & high-resolution expert simulations



Climate Check



Wind Check



Certification Check



EU Taxonomy Check





What is assessed at a (Pre-)Certification Check?

Full assessment & (pre-)certification for the environment, climate & people

The (Pre-)Certification Check standard scope includes an assessment and certification of a selected scenario (planning draft or status quo situation) for a standardized hot day (approx. 30°C). The (Pre-)Certification Check evaluates 28 meaningful numerical key performance indicators (KPIs) from 5 urban challenges as well as a further 26 bonus indicators from 4 bonus challenges of ecology, resources, social and mobility.

Additional add-ons can be used to tailor the standard scope of the (Pre-)Certification Check to individual requirements and needs.

(Pre-)Certification Check Key performance indicators (KPIs) + Bonus

Climate

- TCS | Thermal Comfort Score
- TLS | Thermal Load Score
- PET | Phy. Equivalent Temperature
- RAD | Radiation
- ALB | Albedo
- EVA | Evapotranspiration
- SAF | Shading Area Factor
- NTC | Night-Time Cooling

Water

- ROS | Run-Off Score
- SG | Sealing Grade
- WS | Water Storage
- WD | Water Demand GI
- WDT | Water Demand GI/TCS

Air

- CSS | Carbon Storage Score
- WF | Wind flow

Biodiversity

- LAR | Leaf Area
- GAR | Green Area
- SI | Shannon Index

Energy

- TSS | Thermal Storage Score
- CDH | Cooling Degree Hours Building

Cost

- CI | Investment Cost GI
- CIM | Investment Cost GI/m²
- CIT | Investment Cost GI/TCS
- CIC | Investitionskosten GI/Red. Cooling DH
- CIC | Investment Cost GI/Red. Cooling DH
- CM | Maintenance Cost GI
- CMM | Maintenance GI/m²
- CWD | Water Usage/m²

greenpass (Pre-)Certification Check

Pre-Certification Check Certification Check

Your project has greenpass **GOLD** standard.



Project
KUHLIO Frankfurt
ID
DE-2020-004
Certification
23.12.2020



| | |
|----------------------------|----------------|
| Points | 149/240 |
| Bonus points | 13/26 |
| Total points | 162/266 |
| Certification score | 81% |

| Indicator | Weighting | Points | Bonus Indicator | Bonus Points |
|--|-----------|--------------|---------------------------------------|--------------|
| Climate 75% | | 46/80 | Biodiversity 5/12 | |
| > Thermal Comfort Score (TCS) 100% | 10/10 2 | 20/20 | > Biological Diversity 1/1 | |
| > Thermal Load Score (TLS) 85% | 8/10 2 | 16/20 | > Vegetation Structure 1/1 | |
| > Thermal Performance (PET) 85% | 8/10 2 | 16/20 | > Habitat Structure 1/1 | |
| > Radiation (RAD) 85% | 8/10 2 | 16/20 | > Species-rich Herb Layer 1/1 | |
| > Albedo (ALB) 49% | 3/10 1 | 3/10 | > Species Protection Plants 0/1 | |
| > Evapotranspiration (EVA) 37% | 3/10 1 | 3/10 | > Species Protection Animals 0/1 | |
| > Shading Area Factor (SAF) 23% | 1/10 1 | 1/10 | > Honey Plants 1/1 | |
| > Night-time Cooling (NTC) 43% | 3/10 1 | 3/10 | > Bird Pasture 0/1 | |
| > Nesting Sites 0/1 | | | > Breeding Sites 0/1 | |
| > Breeding Sites 0/1 | | | > Animal-friendly Light Sources 0/1 | |
| > Animal Trap Prevention 0/1 | | | > Animal Trap Prevention 0/1 | |
| Water 70% | | 34/50 | Resources 5/7 | |
| > Run-off Score (ROS) 85% | 8/10 2 | 16/20 | > Recycling 1/1 | |
| > Sealing Grade (SG) 57% | 6/10 1 | 6/10 | > Grey Water Use 0/1 | |
| > Water Storage (WS) 69% | 6/10 1 | 6/10 | > Rainwater Treatment 0/1 | |
| > Water Demand GI (WD) 62% | 6/10 1 | 6/10 | > Smart Lighting Systems 1/1 | |
| > Water Demand GI/TCS (WDT) 62% | 6/10 1 | 6/10 | > Smart Irrigation Systems 1/1 | |
| > Sustainable Materials 1/1 | | | > Sustainable Materials 1/1 | |
| > Sustainable Energy Production 1/1 | | | > Sustainable Energy Production 1/1 | |
| Air 74% | | 12/20 | Social 1/3 | |
| > Carbon Storage Score (CSS) 62% | 6/10 2 | 12/20 | > Private Open Space 1/1 | |
| Biodiversity 74% | | 22/30 | > Community Space 0/1 | |
| > Leaf Area (LA) 62% | 6/10 1 | 6/10 | > Barrier Free Space 0/1 | |
| > Green Area (GA) 76% | 8/10 1 | 8/10 | > Public Transport Connection 1/1 | |
| > Shannon Index (SI) 86% | 8/10 1 | 8/10 | > Footpath & Bike Path Connection 0/1 | |
| > E-Mobility Support 0/1 | | | > E-Mobility Support 0/1 | |
| > Bicycle Rack 1/1 | | | > Bicycle Rack 1/1 | |
| Energy 30% | | 9/30 | Bonus points 13/26 | |
| > Thermal Storage Score (TSS) 34% | 3/10 2 | 6/20 | | |
| > Cooling Degree Hours Building (CDH) 28% | 3/10 1 | 3/10 | | |
| Cost 84% | | 26/30 | | |
| > Cost Invest GI (CI) 76% | 8/10 1 | 8/10 | | |
| > Cost Invest GI/m ² (CIM) 76% | 8/10 1 | 8/10 | | |
| > Cost Invest GI/TCS (CIT) 82% | 10/10 1 | 10/10 | | |
| > Cost Invest GI/Water Storage (CIW) 76% | 8/10 1 | 8/10 | | |
| > Cost Invest GI/Red. Cooling h (CIC) 76% | 8/10 1 | 8/10 | | |
| > Cost Maintenance GI (CM) 82% | 10/10 1 | 10/10 | | |
| > Cost Maintenance GI/m ² (CMM) 76% | 8/10 1 | 8/10 | | |
| > Cost Water Demand/m ² (CWD) 82% | 10/10 1 | 10/10 | | |

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What are the results?

Briefly & comprehensibly summarized and all information at a glance

The results of the (Pre-)Certification Check are transparently summarized and documented in the form of a clear and readable digital report. The scope of the (Pre-)Certification Check report depends on the scope of services and is typically around 50-150 pages.

The Certification award package consists of a certificate + frame (A3), two official certificate plaques including mounting material (A4 - 1x inside + 1x outside), a USB stick with the digital results as well as marketing materials and a few greenpass goodies.

The report contains the following chapters or summarizes the following content in an overview:

- Intro
- Project information
- Scenarios incl. reference scenarios
- Results in form of
 - Numbers
 - Heat maps
 - Graphics
 - Score matrix
 - Certification result
 - if possible - comparative graphics
- Optimization recommendations
- Executive summary
- Annex
 - Wiki



(Pre-)Certification Check reporting





Choose your add-ons

Can I extend my (Pre-)Certification Check?

One kit with add-ons for all your needs & requirements

In addition to the combination with other checks of the Environmental Impact Kit, the standard scope of the (Pre-)Certification Check can be expanded with add-ons as required - e.g. an optimization round, a reference scenario (status quo), further planning & climate scenarios, additional evaluations such as e.g. thermal comfort for youths or seniors, and much more.

Simply select your add-ons & assemble your Environmental Impact Kit modularly & tailor-made for your situation.

The add-ons for the (Pre-)Certification Check are divided into the following categories:

- **Scenarios**
additional scenarios & variants such as optimization, planning, status quo
- **Conditions**
extended analysis conditions such as future climate scenarios or seasons
- **Analysis**
additional analysis evaluations such as building physics module or PET additional analyzes for specific target groups
- **Services**
additional services such as processing time

Our trained greenpass partners and the sales team will be happy to support you in finding your ideal environmental impact kit for your situation and requirements.
contact@greenpass.io

(Pre-)Certification Check add-ons

Scenarios

- Add-On: Optimization - normal size (<=10.000m2)
- Add-On: Optimization - large size
- Add-On: Planning scenario extra - normal size (<=10.000m2)
- Add-On: Planning scenario extra - large size
- Add-On: Reference scenario Status Quo - normal size (<=10.000m2)
- Add-On: Reference scenario Status Quo - large size
- Add-On: Reference scenario Worst Case - normal size (<=10.000m2)
- Add-On: Reference scenario Worst Case - large size
- Add-On: Reference scenario Moderate Case - normal size (<=10.000m2)
- Add-On: Reference scenario Moderate Case - large size
- Add-On: Reference scenario Best Case - normal size (<=10.000m2)
- Add-On: Reference scenario Best Case - large size

Conditions

- Add-On: Future climate scenario SSP2.6
- Add-On: Future climate scenario SSP4.5
- Add-On: Future climate scenario SSP6.0
- Add-On: Future climate scenario SSP8.5
- Add-On: Spring scenario
- Add-On: Autumn scenario
- Add-On: Winter scenario

Analysis

- Add-On: Climate Resilience Handbook
- Add-On: Building physics module
- Add-On: Indoor air temperature module
- Add-On: PET - Child male
- Add-On: PET - Child female
- Add-On: PET - Youth male
- Add-On: PET - Youth female
- Add-On: PET - Senior male
- Add-On: PET - Senior female
- Add-On: Extra analysis level

Service

- Add-On: Time-of-Service - Priority (within 4-5 weeks)
- Add-On: Time-of-Service - High Priority (within 1-3 weeks)

Can I combine the (Pre-)Certification Check with other certifications?

Expanding & synergetic for holistic sustainable real estate development

The (Pre-)Certification Check can be used together with other sustainability certifications with clear added value. Building certifications focus primarily on the inside of the building, while climate resilience certifications primarily look at the outside space. Together, the systems allow, promote & confirm sustainable real estate development. Some of the Greenpass indicators and results can also be used in other systems to credit evaluation points.

Find out more information about the differences & joint application with other certification systems in the respective books.



Building certification



Climate resilience certification

| Parameter | klimaaktiv | ÖGNI/DGNB | BREEAM | LEED | greenpass |
|--------------------------------|--|--|---|---|--|
| Topic | Building certification | Building certification | Building certification | Building certification | Climate resilience certification |
| Origin | AT | AT/DE | UK | US | AT |
| Evaluation | DIY declaration | Audit | Audit | Audit | Audit & Digitaler Zwilling |
| Exterior/Interior | partially/yes | partially/yes | partially/yes | partially/yes | yes/partially |
| Greenery/ Building greenery | partially/ partially | partially/ partially | partially/no | partially/ partially | yes/yes |
| Indicators | 30 | 37 | 56 | 55 | 28 + 26 |
| Certification levels | 3 levels • Gold • Silber • Bronze | 4 certificates • Platin • Gold • Silber • Bronze | 6 stars • Outstanding • Excellent • Very Good • Good, Pass • Unclassified ***** | 4 levels • Platinum • Gold • Silver • Certified | 4 certificates • Platinum • Gold • Silber • Zertifiziert |



What is behind the (Pre-)Certification Check?

Developed scientifically and practically in cooperation with universities and experts

The greenpass (Pre-)Certification Check was developed in more than 10 years of research and development with international universities and experts. Behind the greenpass technology are more than 16 national & international research projects as well as more than € 6 million in investments & funding.

Find out more information about the development of greenpass in the official Validation Book.

12+

years of research & development

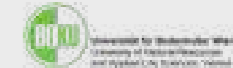
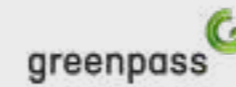
16+

R&D projects

€6.0m

investment & fundings

Technology Development Partner



Network Partner





Abb. 1: Dr. Stockhamnergasse 8 in Neunkirchen - greenpass silver certified residential building

Lots of green space & high quality of stay

A social housing building in the Dr. Stockhamnergasse in Neunkirchen (Lower Austria) was inaugurated as a climate-resilient and sustainable property in the presence of Lower Austria Provincial Councilor Martin Eichtinger, PhD awarded the greenpass silver certificate. The construction project thus makes an important contribution to adapting to climate change and ensures a high level of comfort. The modern residential building includes 28 subsidized rental apartments and 8 condominiums on the top floor and was built by the non-profit housing company Arthur Krupp and planned by Kadlec Architektur. Grünplan landscape architects, in cooperation with GRÜNSTATTGRAU, worked conceptually on the greening of the building in advance. On behalf of Gewog Arthur Krupp, already in the planning phase of the project development in the Dr. Stockhamnergasse 8 in Neunkirchen/Lower Austria optimized the environmental impact of the construction project by Grünplan landscape architects using the innovative greenpass technology. The subsidized residential units are equipped with balconies or gardens, which are managed ecologically in the sense of 'nature in the garden'.

Generous and generally accessible green areas as well as a large children's playground in the inner courtyard are available to residents. A special feature is a special greening concept that was created in cooperation with the innovation laboratory GRÜNSTATTGRAU and green plan landscape architects: Ground-based facade greening, roof greening in combination with photovoltaics and new trees function as natural air conditioning and ensure shading, cooling and increased quality of stay.

'Ecological criteria play an important role in the Lower Austrian housing model. I am pleased that this was particularly successful with the extensive greening in this social housing project and that the climate-resilient performance was confirmed with the greenpass certificate.'

Martin Eichtinger, PhD
Lower Austria provincial council for housing



Real Estate Developer
• Gewog Arthur Krupp

Architecture
• Kadlec Architekten
Landschaftsarchitektur
• grünplan Landschaftsarchitekten
Support
• GrünStattGrau
• Natur im Garten

greenpass partner & Urban Climate Architect (UCA)
• DI Markus Hötschl
Grünplan Landschaftsarchitekten



Dr. Stockhamnergasse

Climate fitness in social housing

Project type
Building

Area
approx. 0.3 ha

Location
Neunkirchen
Austria

Customer
Gewog Arthur Krupp

Certificate
Silver

Completion
Autumn 2022

Use Cases
Project development
Official certification



Book
a demo



Greenpass is a Viennese ClimateTech company founded in 2018 for climate-fit and sustainable real estate & open spaces. We are an interdisciplinary team of highly qualified & passionate climate resilience experts.

Get in touch & find your local Urban Climate Architect (UCA)

| | | |
|---|--|--|
| <p>220+ climate-fit developments</p> | <p>180+ happy customers</p> | <p>50+ trained UCA partners</p> |
|---|--|--|



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in f

urban
climate
architect



design **climate-fit real
estate & open spaces**
for the future now!



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