EUTOPIAWEEK
21–25 November, 2022
Ljubljana, Slovenia

University of Ljubljana and Sustainability Development – challenges and an activity roadmap

Lecture with a follow-up discussion of the participants

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Overview of the presentation

- A bit on Higher Education challenges
- Strategic documents in Slovenia & UNESCO UNITWIN Networks & Chairs program
- Worldwide Sustainability ranking
- Pilot project ULTRA 2022 - 2026
- Project UL Sustainable Development Concept 2022 – 2025(6)
- EUTOPIA Sustainability & TU Graz case study
- Discussion

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UNESCO UNITWIN Networks & Chairs - I

- Launched in 1992, the UNITWIN/UNESCO Chairs Programme, which involves over 850 institutions in 117 countries, promotes international inter-university cooperation and networking to enhance institutional capacities through knowledge sharing and collaborative work. The programme supports the establishment of UNESCO Chairs and UNITWIN Networks in key priority areas related to UNESCO's fields of competence – i.e. in education, the natural and social sciences, culture and communication.
- Details: https://www.unesco.org/en/education/unitwin
- List of UNESCO Chairs: https://en.unesco.org/sites/default/files/list-unesco-chairs.pdf
- List of UNESCO Networks: https://en.unesco.org/sites/default/files/list-unesco-networks.pdf
- Links to web page of Category 2 Institutes and Centres under the auspices of UNESCO: https://en.unesco.org/international-networks/category-2-institutes

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UNESCO UNITWIN Networks & Chairs - II

- In Slovenia there are 4 UNESCO Chairs and 1 UNESCO Category 2 Centre **under the auspices of UNESCO**:

UNESCO Chairs
UNESCO Chair on Karst Education (2014), University of Nova Gorica (1070)
UNESCO Chair on Open Technologies for Open Educational Resources and Open Learning (2014), The Jožef Stefan Institute, Ljubljana (1080)
UNESCO Chair on Water-Related Disaster Risk Reduction (2016), University of Ljubljana (1134) - https://www.unesco-floods.eu/
UNESCO Chair on Education for Enhancing Heritage Approaches (2021), University of Primorska, Koper (1495)
UNESCO Category 2 Center
The International Research Centre on Artificial Intelligence (IRCAI), The Jožef Stefan Institute, Ljubljana - https://ircai.org/

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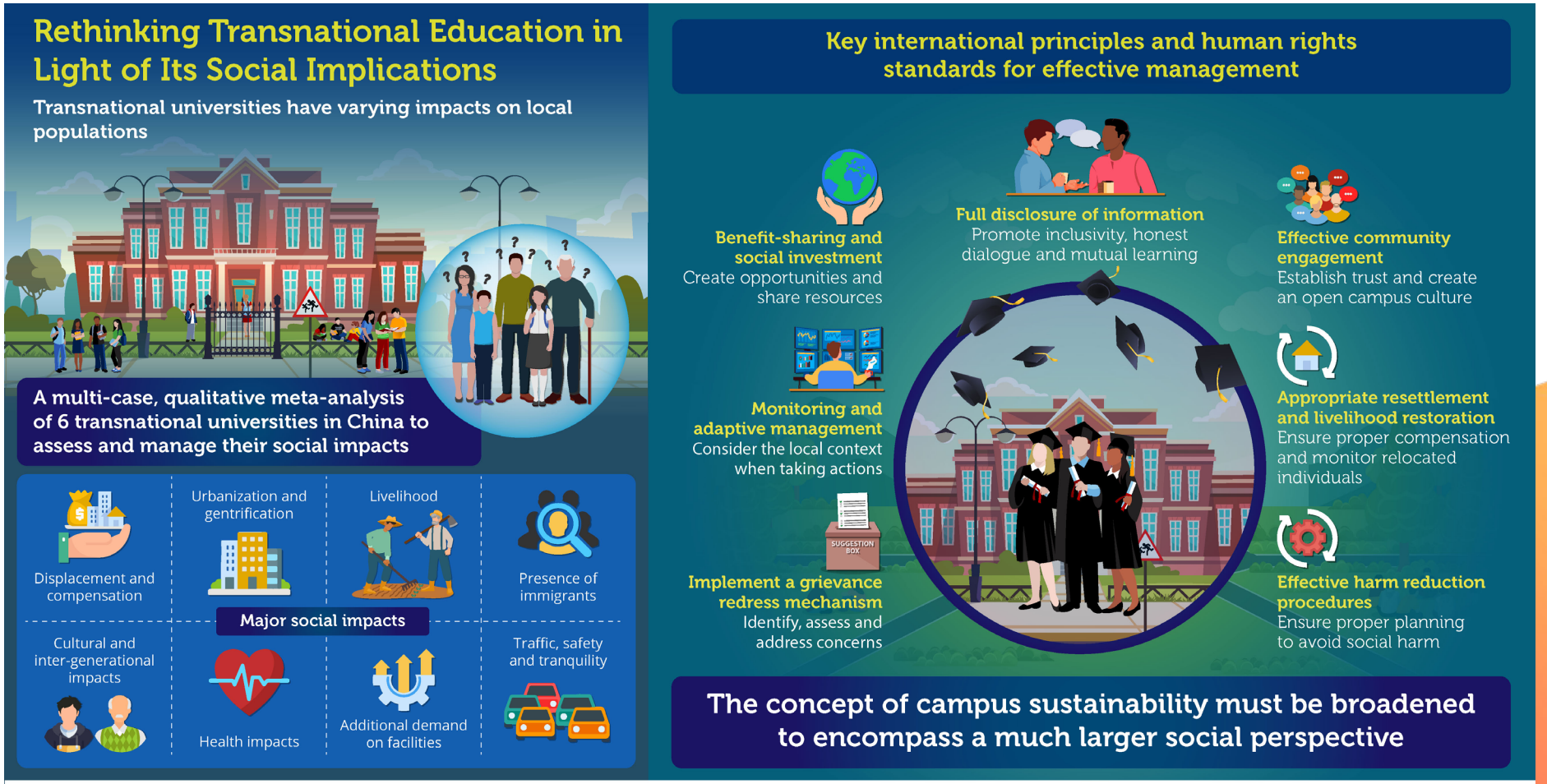
Higher Education Challenges - I



Transnational universities, host communities and local residents: social impacts, university social responsibility and campus sustainability
International Journal of Sustainability in Higher Education
Chen *et al.* (2021) | DOI: 10.1108/IJSHE-10-2020-0397

emerald PUBLISHING

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Higher Education Challenges - II

Figure 1. Chilean Cleaner Production Agreement for sustainable campuses goals.

Claudia Mac-lean, Pablo Núñez-Cárdenas, Bárbara X. Rodríguez & Cristian Aldea (2022) Green buildings in Chilean public higher education: a trend or a must-have in university strategic guidelines? International Journal of Sustainable Development & World Ecology, 29:8, 756-770, DOI: 10.1080/13504509.2022.2095452

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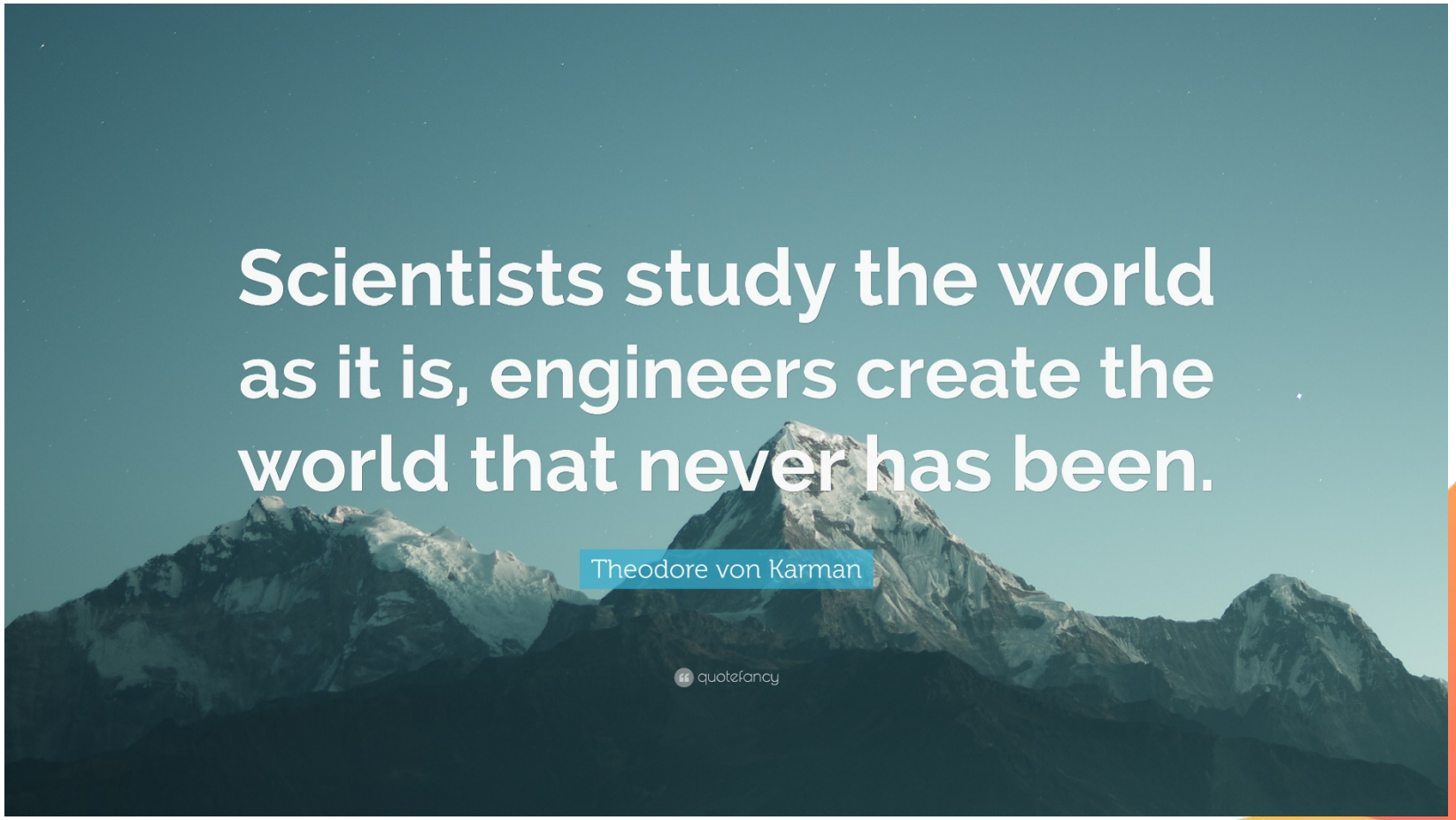
Higher Education Challenges - III



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Higher Education Challenges - IV

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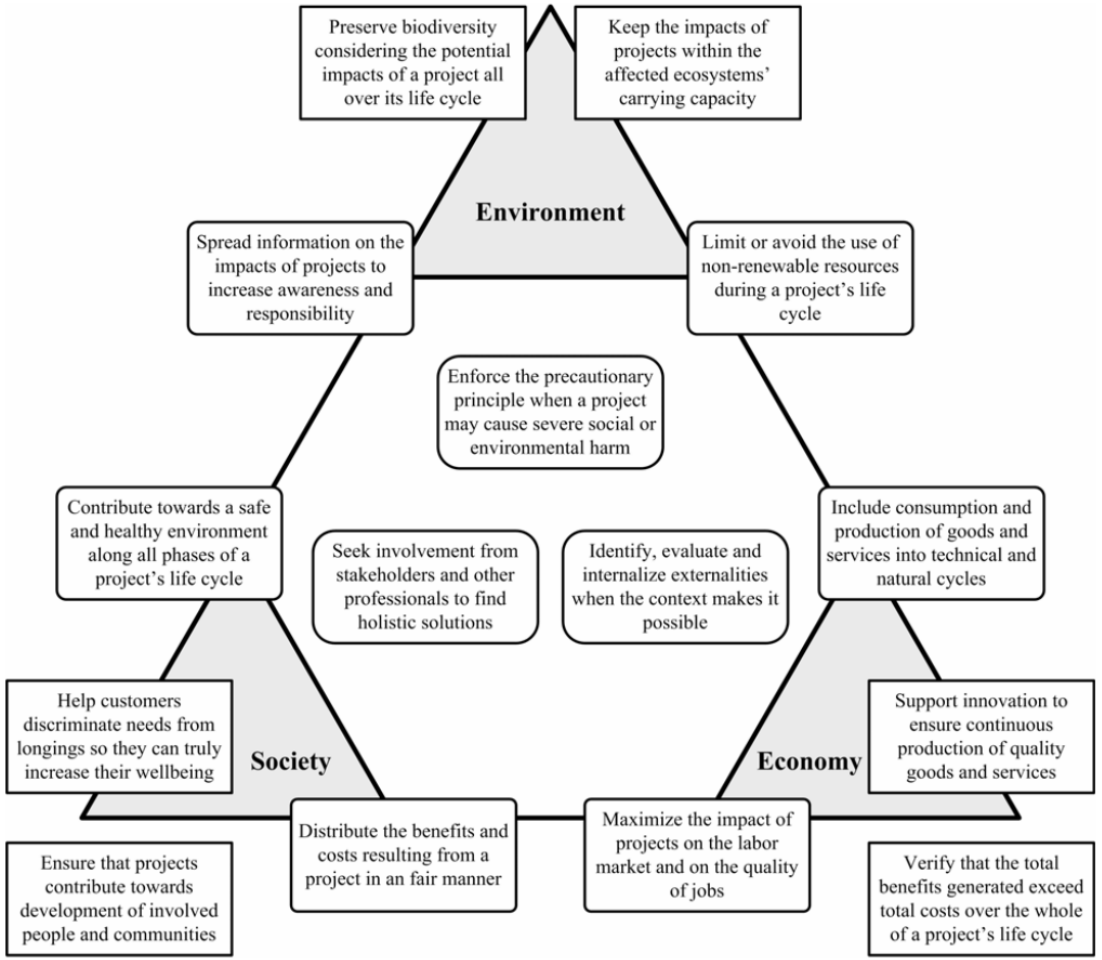

Figure 2. Proposed sustainable engineering principles

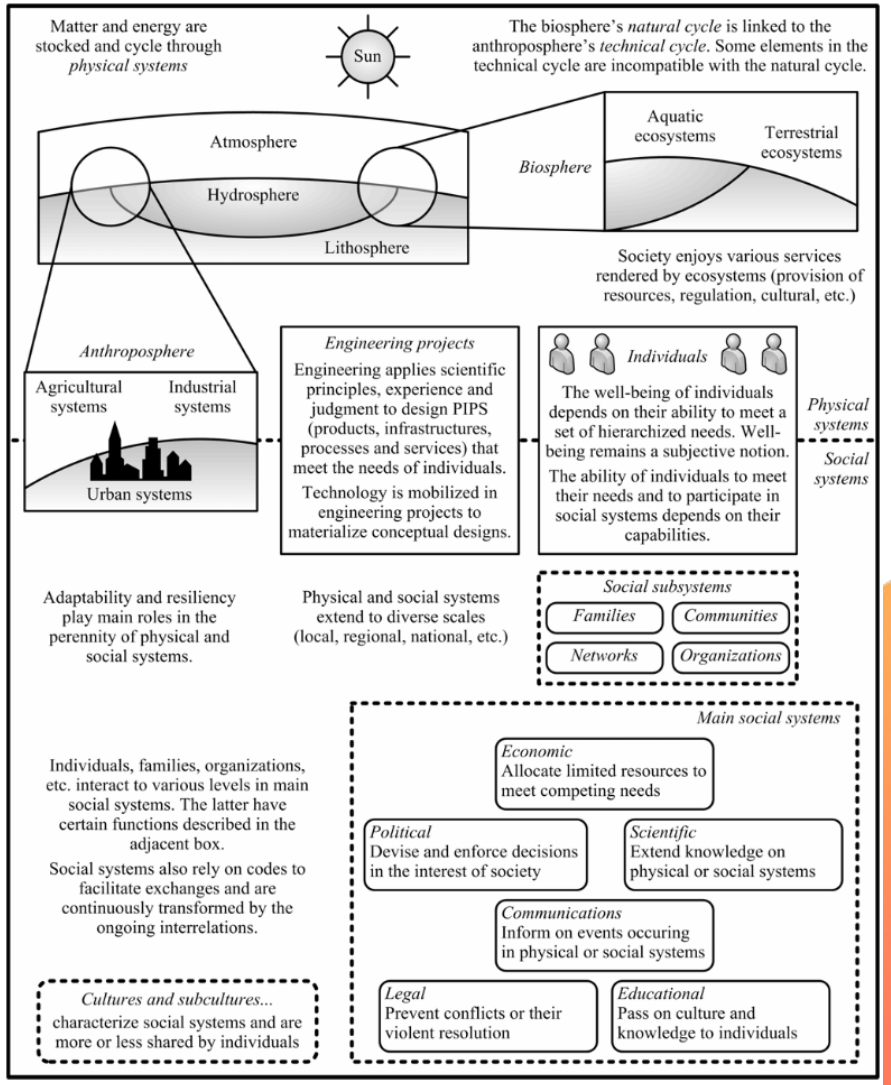

Figure 3. Sustainability framework for engineering

Gagnon et al. (2008) Sustainable development in engineering: a review of principles and definition of a conceptual framework, Working Paper 08-18, GREDI U Sherbrooke, 20p.

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Higher Education Challenges - V

Table 3.1 When country member organisations joined Eco-Schools (Sharma et al. 2019)

Launch year	Country
1992	Denmark (pilot in 1992, launch in 1994)
1994	France, Germany, Northern Ireland, Scotland, Wales
1995	England, Greece, Turkey
1996	Bulgaria, Portugal, Slovenia, Spain, Sweden
1997	Ireland
1998	Croatia, Cyprus, Finland, Italy, Norway
1999	Romania
2001	Iceland
2002	Malta, Russia
2003	Kenya, Latvia, Netherlands, South Africa
2004	Lithuania, Slovakia
2005	Czech Republic
2006	Morocco
2007	FYR Macedonia
2008	Belgium, Brazil, Dominican Republic, Japan
2009	Bahamas, China, Jordan, Uganda, USA
2010	Iran
2011	Malaysia, Mongolia
2012	Serbia, UAE
2013	Singapore
2014	Australia, Bermuda, Ghana, India, Poland
2015	Tanzania
2016	Estonia, Montenegro, Switzerland, Thailand, Ukraine, US Virgin Islands
2017	Comoros, Madagascar, Mauritius, South Korea, Zanzibar
2018	Qatar
2019	Canada, Chile, Bosnia & Herzegovina
2020	Burundi, Georgia

Eco-Schools

Fig. 3.3 Eco-Schools seven step framework (from Andreou (2020)).

Andreou N. (2020) Towards a Generation of Sustainability Leaders: Eco-Schools as a Global Green School Movement for Transformative Education. In: Goughh A. et al., Green Schools Globally, Springer.

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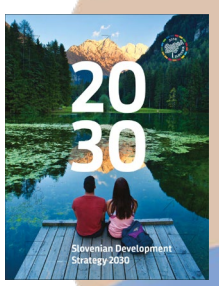
SI Strategic documents



- Vision of Slovenia 2050 (Vlada RS, 2016)
- Slovenski prostor 2050 – Vizije prostorskega razvoja Slovenije (MOP, 2016)
- Slovenian Development Strategy 2030 (2017)
- Resolution on the Slovenian climate long-term strategy 2050
- National Energy and Climate Plan 2020
- Slovenia‘s National Recovery and Resilience Plan 2021 - 2026 (RRP = NOO)
- UL Strategy 2022 – 2027

www.Slovenija2050.si
https://www.gov.si/assets/ministrstva/MOP/Publikacije/50565d3ef6/slovenski_prostor_2050.pdf
https://www.fao.org/faolex/results/details/en/c/LEX-FAOC177135/
www.pisrs.si/Pis.web/pregledPredpisa?id=RESO131
https://www.energetika-portal.si/dokumenti/strateski-razvojni-dokumenti/nacionalni-energetski-in-podnebni-nacrt/dokumenti/%23c965
https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility/slovenias-recovery-and-resilience-plan_en
www.eu-skladi.si/sl/po-2020/nacrt-za-okrevanje-in-krepitev-odpornosti
www.uni-lj.si/o_univerzi_v_ljubljani/strategija_ul/

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UL Strategy 2022 - 2027

- Many stakeholders were involved into the preparation of the strategy: employees, students, and (other) users, such as industry, public sector etc.
- An important part of the strategy was the preparation of the so-called the Materiality Matrix.
- Global Reporting Initiative (GRI) defines: 'Materiality' are "those topics that have a direct or indirect impact on an organization's ability to create, preserve or erode economic, environmental and social value for itself, its stakeholders and society at large".
- A materiality analysis is a methodology a company can use to identify and estimate possible Environmental, Social and Governance (ESG) risks, which might impact the business and its stakeholders.

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UL Strategy 2022 - 2027

Univerza v Ljubljani

Figure 1: Materiality Matrix for University of Ljubljana

1. Encouraging creative and critical thinking and pedagogical approaches to problem-solving complex challenges.
2. Developing excellent professionals, artists and scientists who will be agents of progress and wider societal well-being based on ethical values.
3. Responding rapidly to societal needs and developing programmes and competences for the professions of the future.
4. Openness and flexibility in the involvement of external national and international experts, students, professors and researchers.
5. Strengthening the importance and role of science and the arts, professional and scientific argument.
6. Sustainable operation of the University in appropriate, safe, healthy and modern facilities.
7. Co-creating an innovative society through interdisciplinary cooperation, developing modern technologies, entrepreneurship and networking with partners.
8. Clear positions on the fundamental values for the future of society: preserving national and cultural identity, the welfare state and environmental protection.
9. Active social responsibility and engagement on important national and global issues.
10. Integration of environmental, spatial and other sustainability themes in study programmes and research, with an emphasis on interdisciplinarity.
11. Active pursuit of internationally comparable funding.
12. Ensuring equal opportunities and respect for diversity in all dimensions of our work.
13. Systematic support for cutting-edge research in the arts and sciences.
14. Strengthening the organisational, financial and personnel autonomy of the UL and academic freedom.
15. Strengthening the visibility of UL in the wider environment and the affiliation of students to UL, employees and alumni.

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UI GreenMetric 2021 - I

- The UI GreenMetric World University Ranking is a ranking on green campus and environmental sustainability initiated by Universitas Indonesia in 2010.
- Through 39 indicators in 6 criteria, UI GreenMetric World University Rankings prudently determined the rankings by universities' environmental commitment and initiatives.
- The Rankings have seen a dramatic increase of participants from 95 universities in 35 countries in 2010 to 956 universities in 80 countries in 2021 – 265 universities in Europe. UI GreenMetric Rankings 2022 are due in December 2022.

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UI GreenMetric 2021 - II

Rank	University	Country	Total Score	Setting & Infrastructure	Energy & Climate Change	Waste	Water	Transportation	Education
1 - NA	U California - Davis	USA	8750	1300	1650	1725	950	1450	1675
22	U of Warick	United Kingdom	8325	1125	1500	1650	700	1625	1725
90	Babes Bolyai U	Romania	6775	975	1025	1125	450	1650	1550
144	U Maribor	Slovenia	5475	575	975	1200	600	1000	1125
158	Nova U Lisboa	Portugal	5175	825	975	1125	400	850	1000

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THE Impact Rankings 2022 - I

- Global Universities' progress towards the Sustainable Development Goals revealed in THE Impact Rankings 2022.
- The world's only rankings measuring universities' contributions to the United Nations' (UN) Sustainable Development Goals (SDGs), the THE Impact Rankings assess university commitment to sustainability across four broad areas: research, stewardship, outreach and teaching. Progress is measured for each of the individual 17 SDGs, as well as across the goals as a whole.
- A record 1,524 institutions from 110 countries/regions have participated across the rankings in 2022, a 23 per cent increase since 2021, reflecting the growing importance of the SDGs within higher education institutions globally.

THE IMPACT RANKINGS 2022

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THE Impact Rankings 2022 - II

101–200	University of Gothenburg, Sweden	4 78.8	13 75.0	8 70.9	17 92.0	SDG Descriptions	82.1–88.5
101–200	NOVA University of Lisbon, Portugal	9 90.8	5 73.0	16 71.3 – 78.4	17 92.4	SDG Descriptions	82.1–88.5
201–300	Pompeu Fabra University, Spain	16 80.9	5 66.7	13 68.1	17 76.7 – 83.0	SDG Descriptions	76.9–82.0
301–400	Babeş-Bolyai University, Romania	4 76.6	5 59.6 – 65.9	13 54.7 – 66.0	17 58.8 – 70.2	SDG Descriptions	72.0–76.7
801–1000	CY Cergy Paris University, France	10 55.1 – 62.4	4 49.8 – 58.0	11 38.9 – 53.3	17 50.2 – 58.7	SDG Descriptions	50.3–57.2
801–1000	University of Ljubljana, Slovenia	3 63.7 – 68.6	9 57.6 – 69.8	4 41.7 – 49.7	17 41.5 – 50.1	SDG Descriptions	50.3–57.2

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QS Sustainability 2023 - I

- QS first rankings focused on social and environmental sustainability performance in higher education institutions.
- Featuring 700 universities, this first edition of the rankings uses a methodology comprised of indicators designed to measure an institution's ability to tackle the world's greatest environmental, social and governance (ESG) challenges.
- Indicators are split into environmental sustainability measures – including sustainable institutions, sustainable education and sustainable research – and social impact measures, which includes equality, knowledge exchange, educational impact, employability and opportunities, and quality of life.
- The eight indicators that determine the QS Sustainability Rankings are split into two sections that consider the relevant and important aspects that students care about.

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QS Sustainability 2023 - II

Environmental impact

The environmental impact rankings reflect the outward impact a university is making when it comes to building a sustainable institution, engaging in relevant and impactful research and embedding sustainability in the curriculum.

- The sustainable institutions indicator considers whether a university holds membership in officially-recognised climate action or sustainability groups, has a publicly available sustainability strategy and energy emissions report, has student societies focused on environmental sustainability, and a published commitment to becoming NetZero.
- The sustainable education indicator looks at alumni outcomes and academic reputation within earth, marine and environmental sciences courses, and the availability of courses that embed climate science and/or sustainability within the curriculum. If a university has a research centre dedicated to environmental sustainability, further points are gained.
- The sustainable research indicator assesses the university's research activity around the United Nation's Sustainable Development Goals and whether the government is funding research and development in this area.

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QS Sustainability 2023 - III

Social impact

How seriously do institutions take their role in creating a more equal, fair and just world? As well as environmental impact, the QS Sustainability Rankings also considers university impact around today's biggest social issues.

- The equality indicator assesses institutions on a variety of measures including the proportion of female students and faculty, the availability of public equality, diversity and inclusion policy, and the disability support available.
- The knowledge exchange indicator measures universities on their commitment to knowledge transfer in collaboration with less-economically-supported institutions, and a university's inclination to partner with other institutions and organisations.
- Impact of education looks at the university's research into quality education, alumni impact and academic reputation in relevant social subjects, and how free students and academics are in pursuing their research without censorship.
- The employability and opportunities indicator gives each university an employer reputation score and an employment outcomes score, based on how prepared students are for successful careers. Universities are also assessed on research into work and economic growth, and peace, justice and strong institutions, as well as the rate of unemployment within the country they're based in.
- Quality of life is the final social impact indicator, used to understand an institution's commitment to wellbeing within and outside of the university. We also look at research activity into quality of life, health options on campus and air quality in the region, for example.

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QS Sustainability 2023 - IV

Overall Rank		EUTOPIA University	Environmental Impact Rank	Social Impact Rank
=28		University of Gothenburg	=48	=61
221 - 240		University of Warwick	501+	60
241 - 260		Vrije Universitaet Brussel (VUB)	=410	=182
301 - 320		Universidade Nova de Lisboa	=410	=268
321 - 340		Ca'Foscari University of Venice	=237	=492
321 - 340		Babes-Bolyai University	=355	=437
401 - 450		*University of Maribor*	*=423*	*501+*
401 - 450		Technical University Dresden	501+	=275
501 - 550		University of Ljubljana	501+	413
551 - 600		Universitat Pompeu Fabra	501+	=311

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Pilot Project ULTRA - I

- ULTRA = Univerza v Ljubljani za TRAjnostno družbo
- ULTRA = University of Ljubljana for Sustainable Society
- Financed by the European Union program NextGenerationEU
- Part of the Slovenia's National Recovery and Resilience Plan 2021 - 2026 (RRP = NOO)
- RRP aims also at „Pilot projects for the reform of higher education for a green and resilient transition – investment"

  The objective of the investment is to prepare higher education institutions for increased demand for skills reflecting new societal needs through the development and implementation of more inclusive and flexible learning approaches. The investment will include the implementation of pilot projects to integrate green and digital skills in higher education. The investment will also support the adaptation of vocational study programmes for the professions of the future and labour market needs.
- In total 56.98 mio EUR from RRP – 25.62 mio EUR for UL (2022 – 2025) – for 29 study programs
- Extensive evaluation is foreseen

https://www.bruegel.org/dataset/european-union-countries-recovery-and-resilience-plans

https://www.eu-skladi.si/sl/po-2020/nacrt-za-okrevanje-in-krepitev-odpornosti

https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility/slovenias-recovery-and-resilience-plan_en

Pilot Project ULTRA - II

- ULTRA comprises 11 pilot projects from:

  1. Natural resources and food … 4. Sustainable Space ….

  11. Sustainable and digital University of Ljubljana

- The project 4. Sustainable Space estimated costs are 2+ Mio EUR and the project runs from 9.2022 to 12.2025 (3.2026 for expenses)
- Eight UL members are involved: Faculty of Civil and Geodetic Engineering (FGG), Faculty of Mechanical Engineering (FS), Faculty of Computer and Information Science (FRI), Faculty of Electrical Engineering (FE), Faculty of Architecture (FA), Faculty of Health Studies (ZF), Faculty of Maritime Studies and Transport (FPP), School of Economics and Business (EF) – covering 6+ professional study programmes (3 years, 180 ECTS)

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Pilot Project Sustainable Space

- Project 4. Sustainable Space encompasses 3 projects – leading UL member is UL FGG:
  - 4.1 University of Ljubljana Sustainable Development Concept
  - 4.2 Development of a study program on Sustainable Railway and Airway Mobility
  - 4.3 Sustainable Construction of Buildings – Demonstration Centre
- The project rules are quite strict, how (eligible) expenses can be planned within the framework of the project: their structure (man/months + overhead, material, services & equipment, VAT) as well as their planning in project years and among project partners.
- Project run from 9.2022 to 12.2025 (3.2026 for expenses).
- Project Working plan & Deliverables.

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UL Sustainable Development Concept - I

- Project 4.1 UL Sustainability Development Concept has 3 Work Packages (WP)
  - WP1: Coordination – Dissemination – Promotion
  - WP2: UL Spatial Development Concept
  - WP3: UL Sustainable Development Strategy
- WP1 Activities: coordination among 3 projects in the pilot, regular project and pilot meetings, project administration
- WP1 deliverables: diverse reports, web page, publications in media and serials (journals) & at conferences

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UL Sustainable Development Concept - II

- WP2 Activities - UL Spatial Development Concept:
  - Organisation of new student workshop(s).
  - Design of the spatial development of UL.
  - Summary of European and national legislation guiding and determining the renovation and reconstruction of buildings.
  - Overview of existing European and national professional bases for the spatial planning and construction of buildings.
  - Proposal for a procedure for the renovation or reconstruction of UL building(s).
  - Alignment of the verification of the earthquake resistance of buildings and the requirements for energy, environmental and other renovation of buildings - prioritisation and ordering.
  - Coordination of the proposed guidelines with the UL spatial development concept.
  - Preparation and adoption of the guidelines.
  - Formal adoption of the UL Spatial Development Concept 2050.

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UL Sustainable Development Concept - III

- WP2 Deliverables - UL Spatial Development Concept:
  - The document "Spatial Development Concept of the University of Ljubljana until 2050".
  - The document „Guidelines for the planning and implementation of the renovation and reconstruction of the present UL buildings“.
  - The document „Guidelines for the construction of new buildings at UL“ – incorporating:
    - the New European Bauhaus initiative supporting EU Green Deal
    - the European Urban initiative
    - EC Mission for 100 Climate Neutral & Smart Cities

https://www.urban-initiative.eu/

https://new-european-bauhaus.europa.eu/about/about-initiative_en

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UL Sustainable Development Concept - IV

- WP3 Activities - UL Sustainable Development Strategy:
  - Study examples of good practice in the introduction of the concept of sustainable development at universities abroad (EUTOPIA members & University of Graz and Austria & TU Delft).
  - Preparation of a process for the development of the concept with broad participation of all stakeholders (staff, students and external stakeholders).
  - Preparation and implementation of stakeholder workshops, preparation of a Materiality Matrix and concrete contents of the development concept and specifically strategy.
  - Drafting of the concept and formal adoption of the Strategy by the working bodies of the Members and the UL.
  - Design of the new elective (generic) study course on sustainability and verification of the content during and after implementation and final approval of the course.

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UL Sustainable Development Concept - V

- WP3 Deliverables - UL Sustainable Development Strategy:
  - The document „Sustainable Development Concept of the University of Ljubljana until 2030 and beyond".
  - The curriculum of a new elective course on sustainable development, offered to all students at UL – incorporating engineering, technology and innovation for sustainable development incorporating SDGs, adaptation to climate change and society resilience to natural hazards.

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UL Sustainable Development Concept - VI

- UL Reporting:
  - UL corporate Environmental, Social and Governance (ESG) management
  - UL Sustainability reporting options
  - UL is implementing SAP solution for the backbone of its Academic Business and Information System (slov. APIS) – in 2023 we will go to its Phase 2 – this is a good starting point for non-financial & ESG reporting
  - SAP has its own solutions for sustainability (non-financial) and ESG reporting
  - SAP Cloud for Sustainable Enterprises: SAP Sustainability Control Tower
  - „Plan B“: various standardised methods can be used for reporting, such as GRI (General Reporting Indicators), or SDGs or else
  - An ISO Standard for SDG reporting is under way, could be used after 2025
  - EUTOPIA MORE: Future Sustainability is a part of the joint efforts
  - Visiting EUTOPA MORE partners is vital to learn best practices from partners and to build upon their experiences

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EUTOPIA Sustainability – I

https://www.fct.unl.pt/en/about-fct/sustainable-fct-nova

https://www.unl.pt/en/innovation/nova-smart-campus-living-lab

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EUTOPIA Sustainability – II

https://warwick.ac.uk/sustainability/

https://warwick.ac.uk/sustainability/environment

https://warwick.ac.uk/sustainability/reporting-and-performance/

https://warwick.ac.uk/sustainability/sustainability-on-campus/

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EUTOPIA Sustainability – III

https://www.upf.edu/web/responsabilitat-social

https://www.upf.edu/web/responsabilitat-social/agenda-2030-ods

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EUTOPIA Sustainability – IV

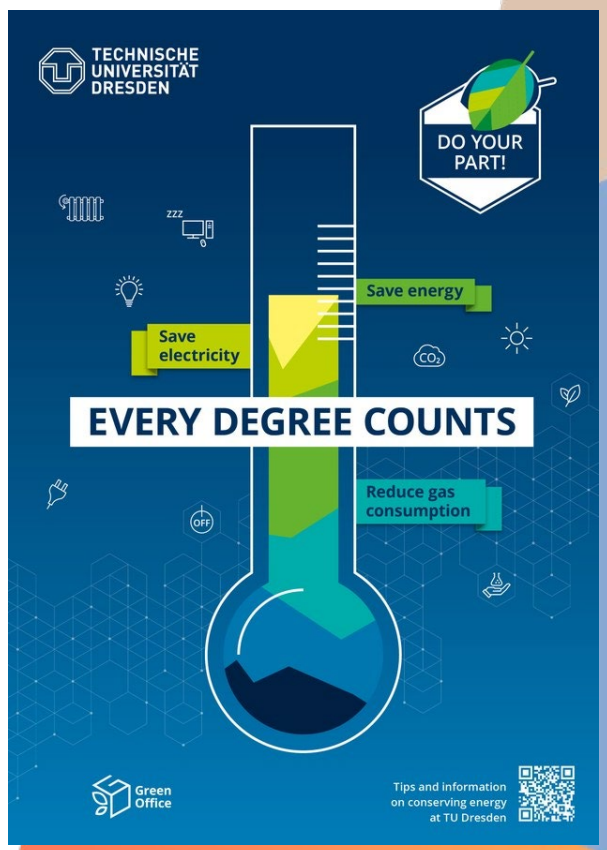
https://tu-dresden.de/tu-dresden/nachhaltigkeit#

https://tu-dresden.de/tu-dresden/nachhaltigkeit/energie

https://tu-dresden.de/tu-dresden/nachhaltigkeit/governance/strategien-leitlinien-1/umweltleitlinien

https://tu-dresden.de/tu-dresden/nachhaltigkeit/governance/akteur-innen/greenoffice

https://tu-dresden.de/prisma



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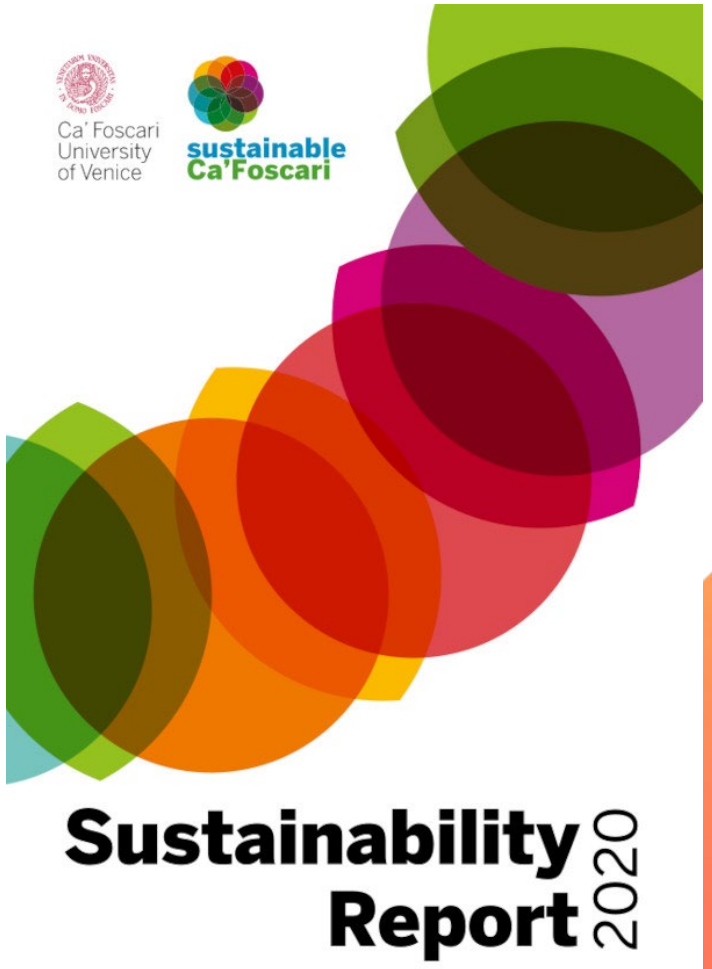
EUTOPIA Sustainability – V

https://www.unive.it/pag/18359/

https://www.unive.it/pag/18350/



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EUTOPIA Sustainability – VI

https://www.vub.be/en/about-vub/vub-university-future/towards-sustainable-and-climate-neutral-university/our-sustainability-research-vub

https://www.vub.be/en/studying-vub/all-study-programmes-vub/bachelors-and-masters-programmes-vub/sustainability

https://www.vub.be/en/about-vub/vub-university-future/towards-sustainable-and-climate-neutral-university

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TU Graz Sustainability

- TU Graz has adopted an ambitious roadmap for its path to climate neutrality by 2030.
- TU Graz takes its social responsibility in climate protection seriously and is pursuing an ambitious roadmap for achieving the climate targets – with very concrete measures and with the assistance of all staff and students. With the programme, TU Graz is one of the pioneers among Austria's universities.
- The basis for the roadmap is a fully comprehensive greenhouse gas (GHG) balance of TU Graz, from the university infrastructure to the mobility behaviour of all employees.
- Based on this GHG balance, a roadmap was defined with numerous individual measures to achieve climate neutrality within the next decade.
- Bundle of Measures of TU Graz by 2030: Mobility Management, Energy, Trips, Buildings, Materials / IT / Cafeteria, Compensation

https://www.tugraz.at/en/tu-graz/university/climate-neutral-tu-graz/climate-neutral-tu-graz

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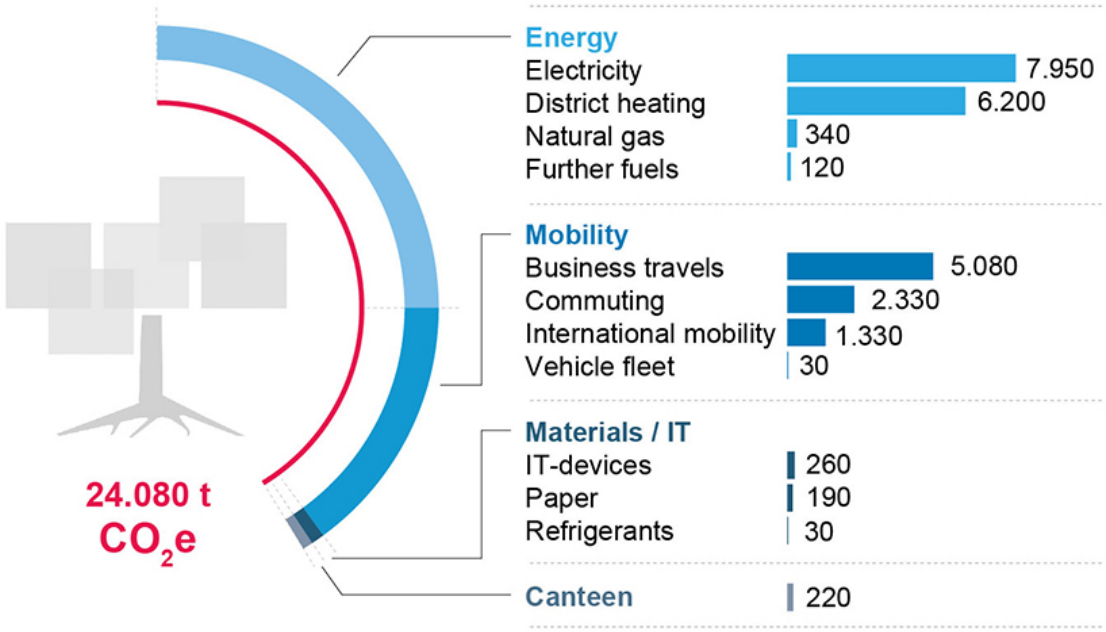
TU Graz Sustainability – I

Greenhouse gas (GHG) emissions TU Graz 2017

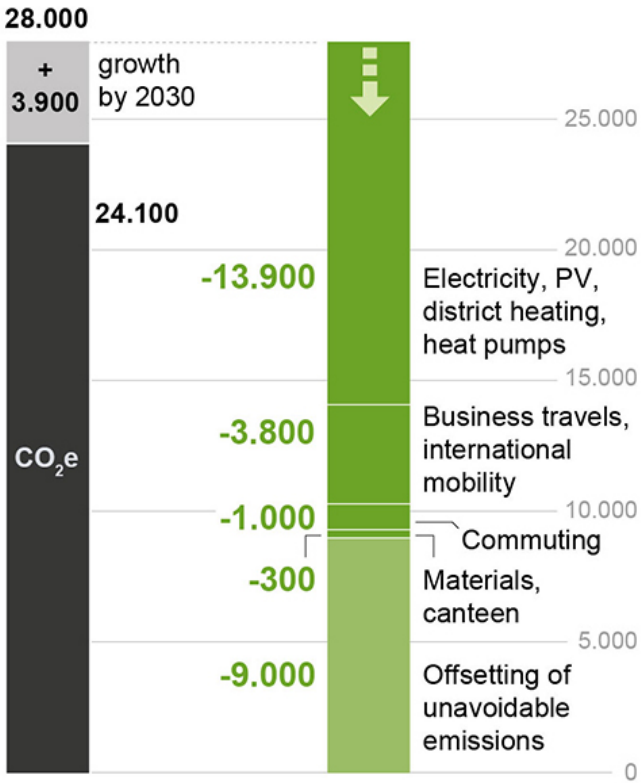
in tons CO_2-equivalent (CO_2e)

— *Annual baseline GHG-emissions 2017 of Roadmap to Net Zero TU Graz 2030*



Roadmap to Net Zero TU Graz 2030

in tons CO_2e



Source: TU Graz (2021): THG-Bilanz TU Graz 2017. BOKU, TU Graz, UBA (2019): ClimCalc 2017. Range ± 3%
Client: TU Graz / www.klimaneutrale.tugraz.at

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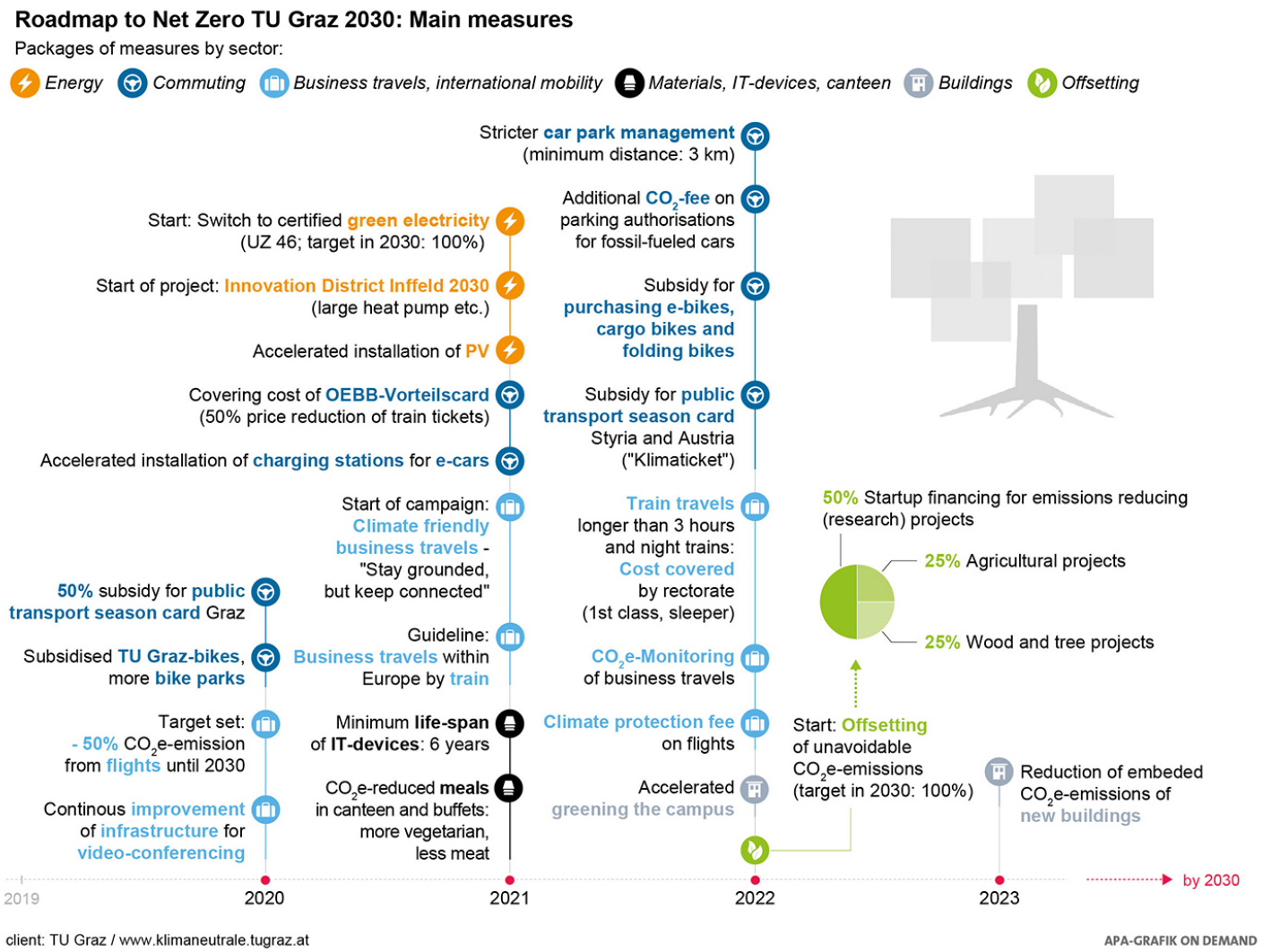
TU Graz

TU Graz Sustainability – II



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TU Graz Sustainability – III

GHG-emissions, TU Graz 2017, 2020 and 2021 (Scope 1,2 and 3)

in tons CO_2-equivalent (CO_2e)

Total emissions

	2017	2020	2021	2022	2023
Energy					
Electricity	7.950	6.330	6.800		
District heating	6.200	5.060	5.640		
Natural gas	340	430	450		
Further fuels	120	80	80		
Mobility					
Business travels	5.080	650	570		
International mobility employees	280	210	30		
International mobility students	1.050	340	420		
Commuting employees	1.140	810	1.000		
Commuting students	1.190	500	490		
Vehicle fleet	30	30	30		
	24.080	15.240	16.310		
Materials / IT					
IT-devices	260	200	200		
Paper	190	210	210		
Refrigerants	30	210	200		
Canteen					
Food	140	100	100		
Electricity	60	40	40		
District heating	20	40	50		

Sources: (1) TU Graz (2022): THG-Bilanz 2020, und Vergleich mit 2017. (2) TU Graz (2022): THG-Montoring 2021, und Vergleich mit den THG Bilanzen 2017 und 2020. (3) BOKU, TU Graz und Umweltbundesamt: ClimCalc 2017 und ClimCalc 2019. Range ±3%
Client: TU Graz / www.klimaneutrale.tugraz.at

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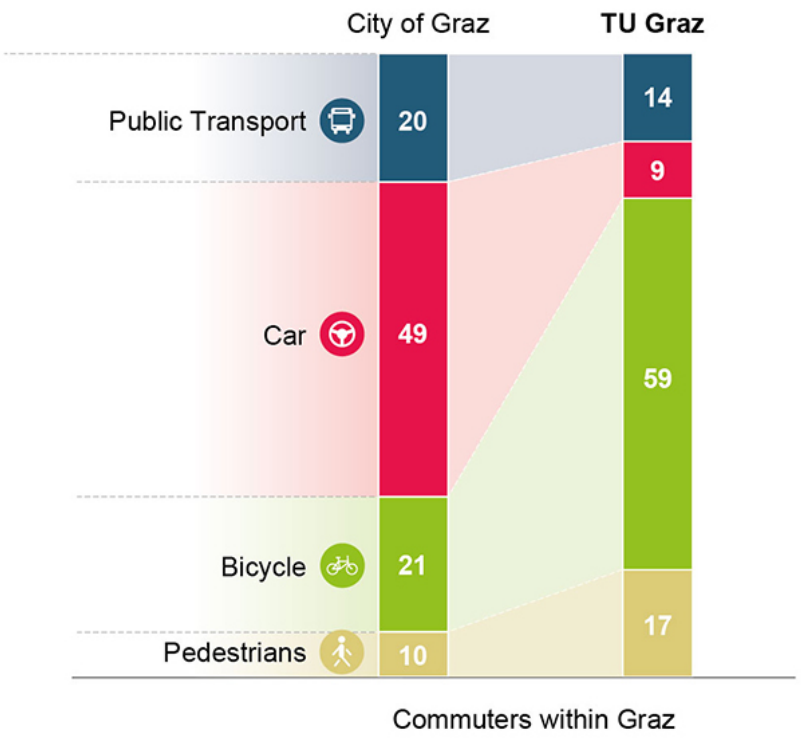
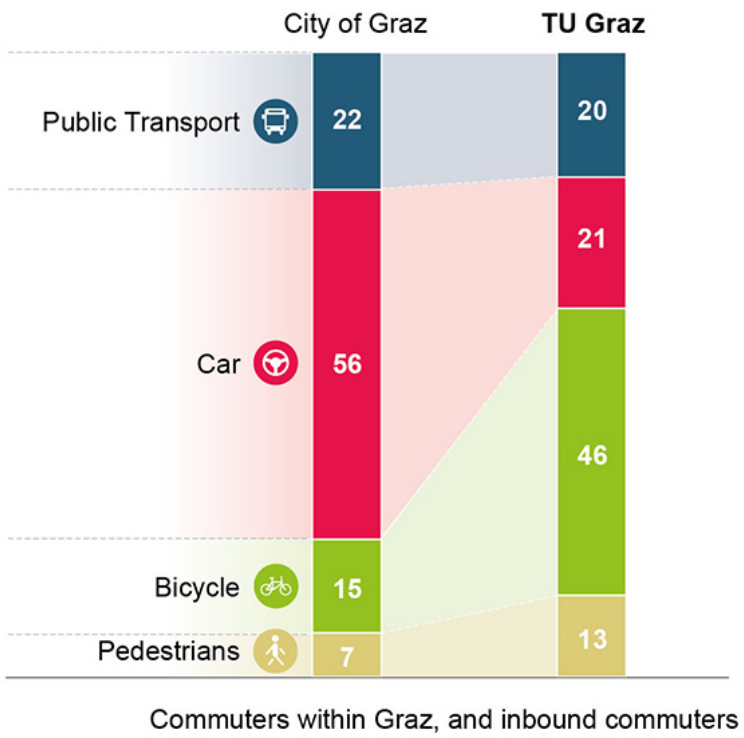
TU Graz Sustainability – IV

Comparison of Modal Split: Commuting employees, city of Graz vs. commuting employees, TU Graz

Share of means of transport (percent)





Sources: Forstner, J. (2021): Vergleich der Mobilität zwischen der TU Graz und österreichischen Städten (Raw data: BMVIT et al.: Österreich unterwegs 2013/2014 und Verkehrserhebung TU Graz 2019). ZIS+P (2019): Mobilitätsverhalten der Grazer Wohnbevölkerung 2018
Client: TU Graz / www.klimaneutrale.tugraz.at

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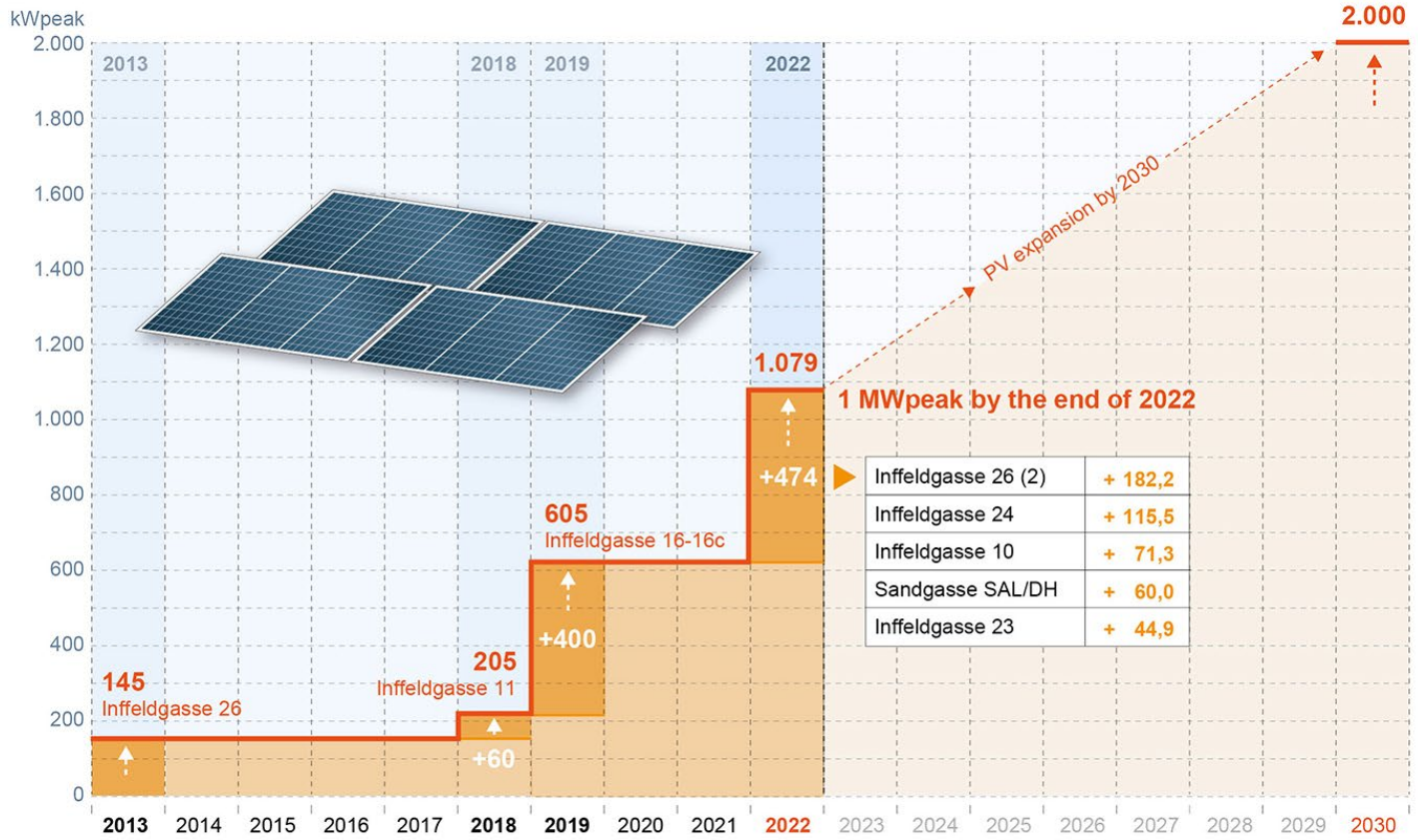
TU Graz Sustainability – V

Photovoltaic expansion at TU Graz

Addition of photovoltaics and the respective total generation capacity in kWpeak



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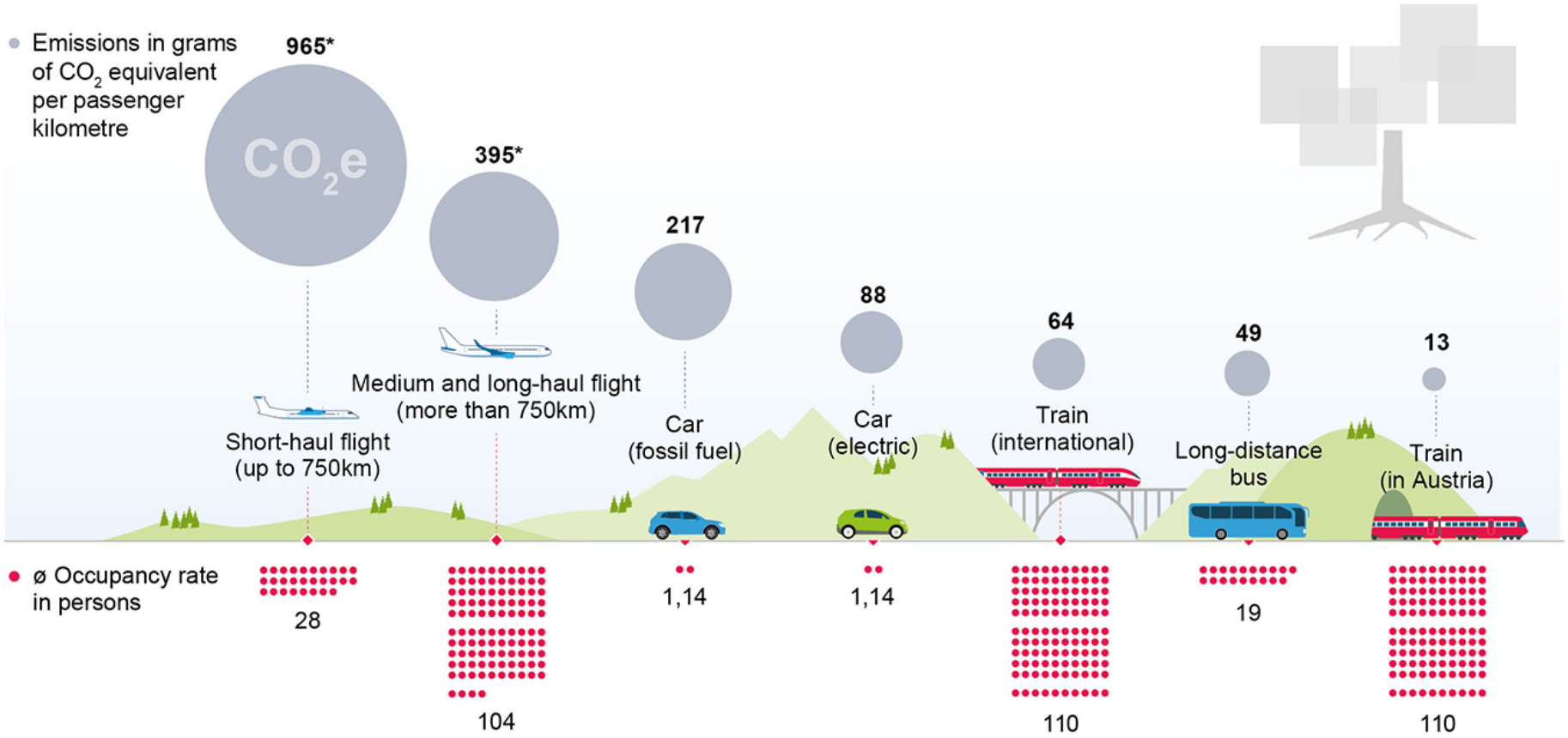
TU Graz Sustainability – VI

Business trips, and international staff and student mobility: Comparison of CO_2e-emissions of transportation means



* *taking into account a Radiative Forcing Index (RFI) of 2.7*

Commissioned by: TU Graz / www.klimaneutrale.tugraz.at, source: Umweltbundesamt (2020 and 2021): ClimCalc 2018 and ClimCalc 2019

APA-AUFTRAGSGRAFIK

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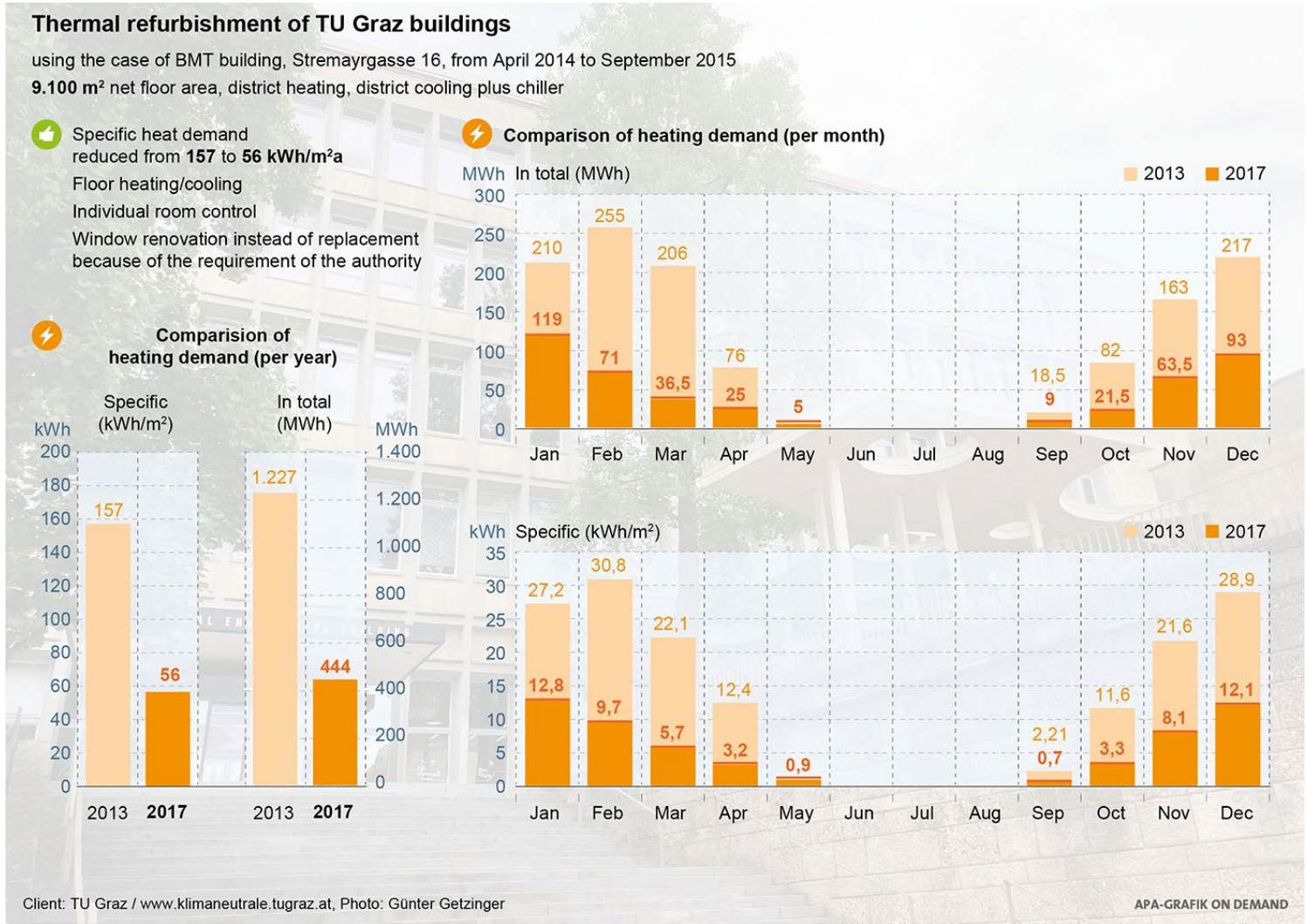
TU Graz Sustainability – VII



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DISCUSSION

Q&A from the floor & online