

# SWEET DeCarbCH

## Decarbonisation of Cooling and Heating in Switzerland

SCCER CREST FINAL CONFERENCE, Basel, 10 September 2021

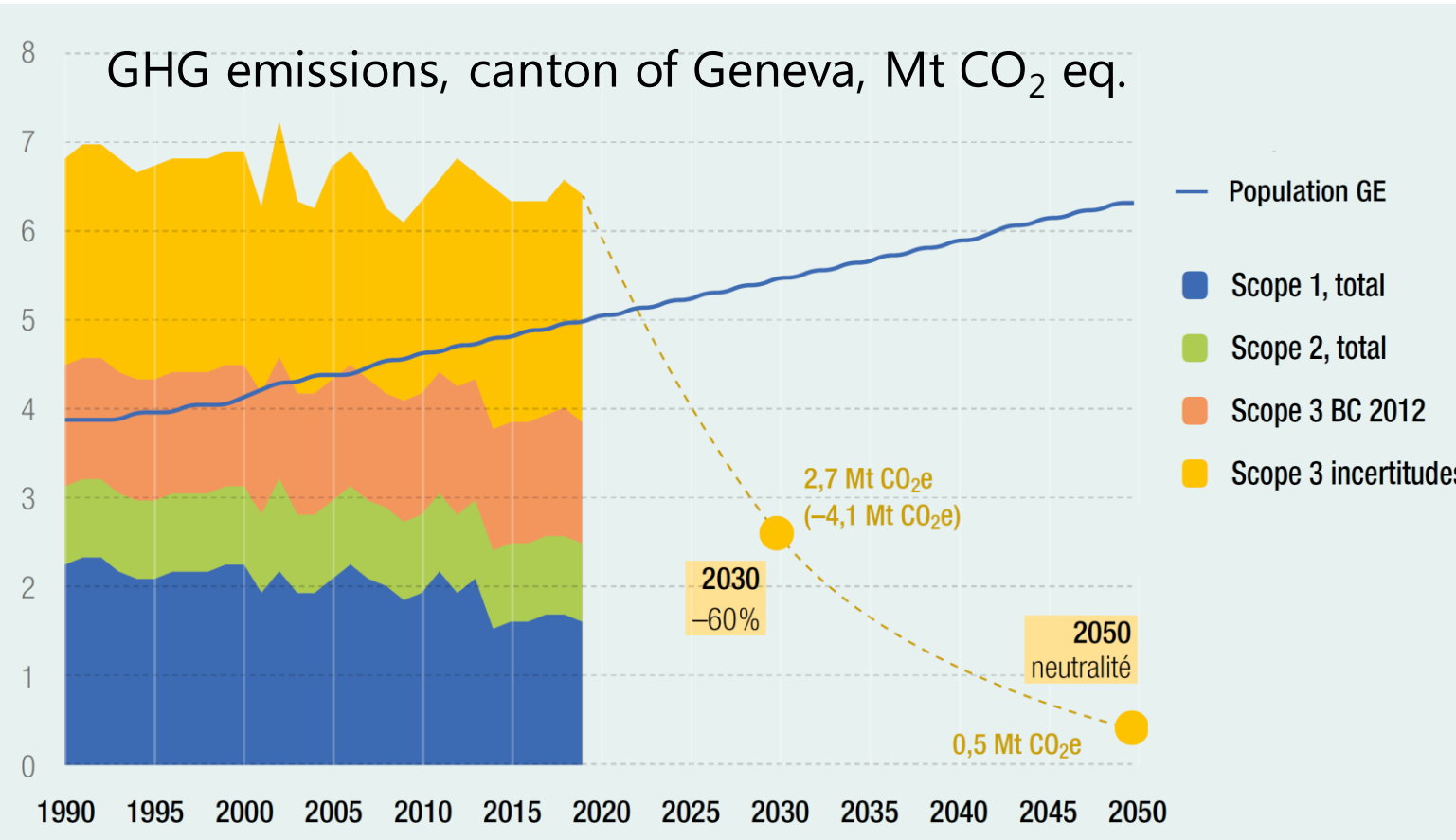
Prof. Martin K. Patel, University of Geneva,  
Institute for Environmental Sciences (ISE) and Department F.-A. Forel  
[martin.patel@unige.ch](mailto:martin.patel@unige.ch)



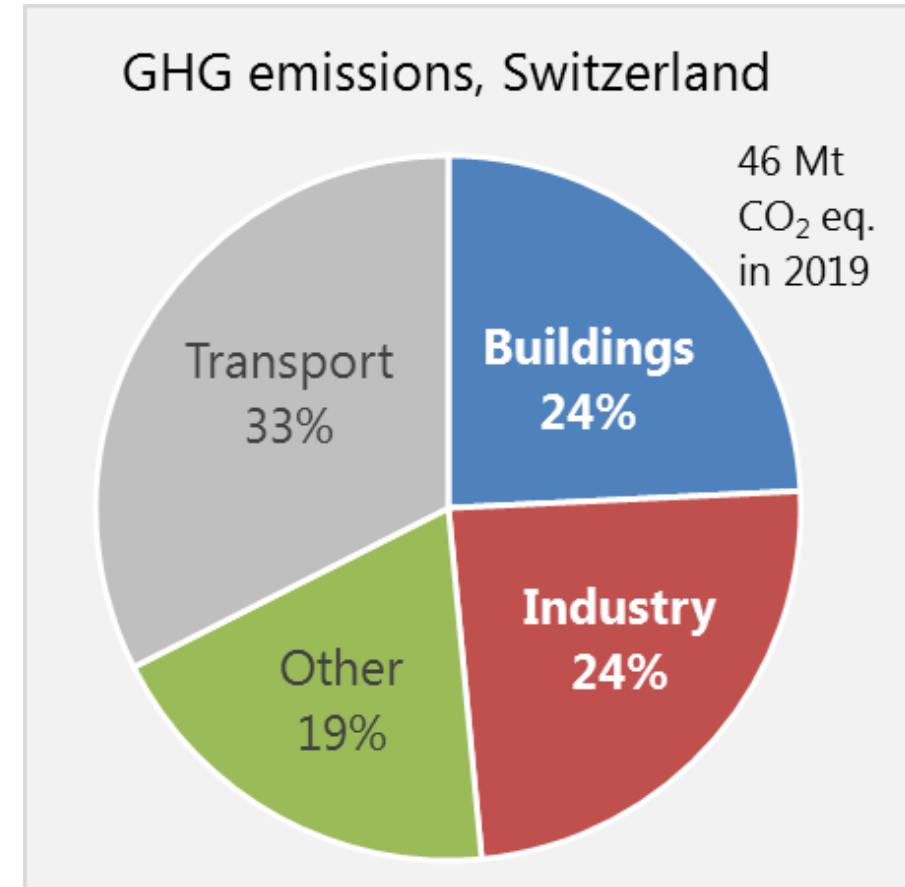
Zürcher Hochschule  
für Angewandte Wissenschaften



# Background



Canton of Geneva, Masterplan Energy (Plan Directeur de l'énergie), 2020



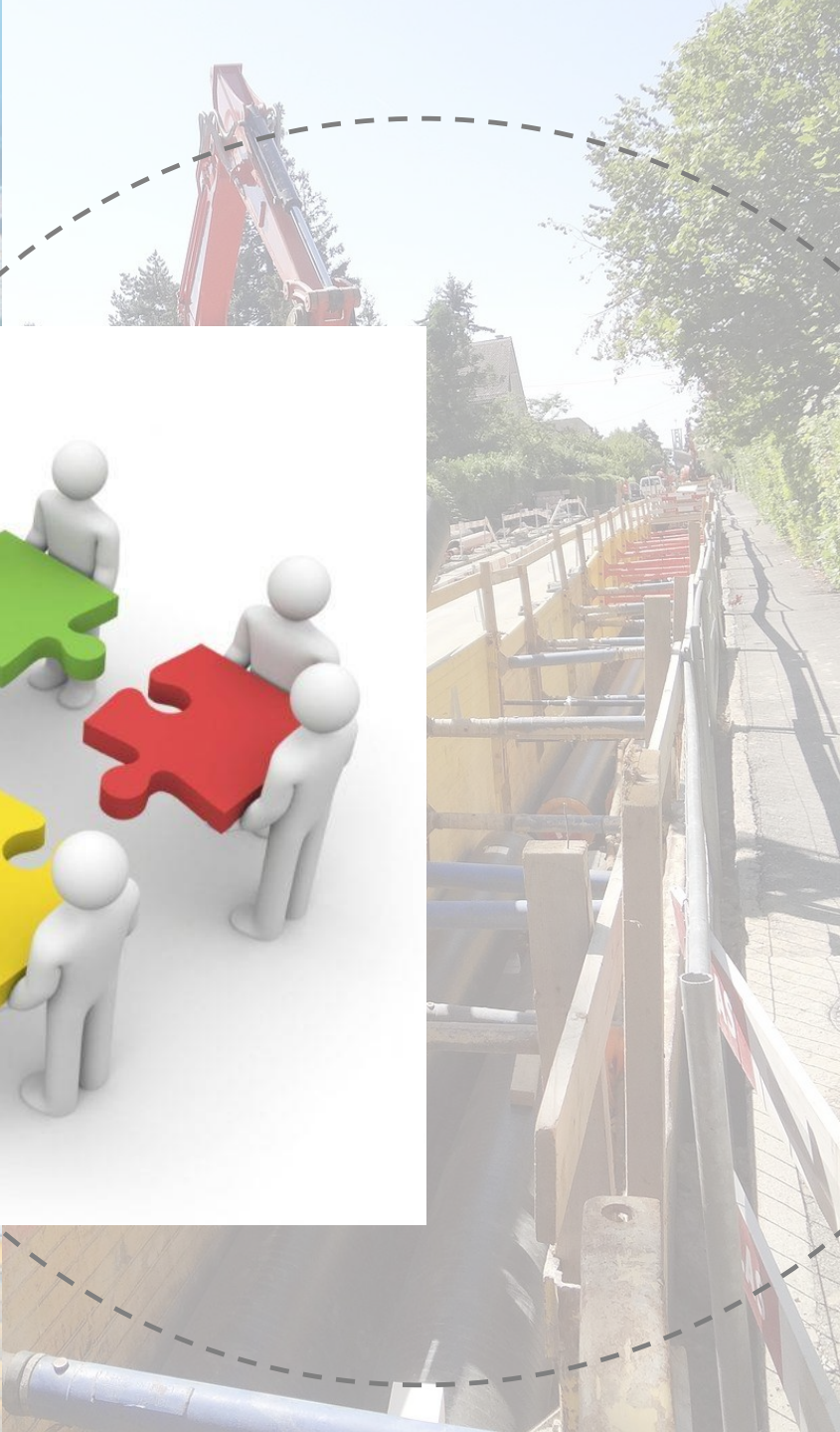
FOEN, CO<sub>2</sub> statistics, 2021

## Fossil → Renewable:

- 900'000 residential bldgs.
- Non-residential buildings and industry
- 50'000 oil & gas boilers to be replaced per annum
- More and more cooling



Images: [https://www.t-online.de/heim-garten/wohnen/id\\_57727708/anhaltender-baulaerm-ist-grund-fuer-eine-mietminderung.html](https://www.t-online.de/heim-garten/wohnen/id_57727708/anhaltender-baulaerm-ist-grund-fuer-eine-mietminderung.html)  
<https://www.zdf.de/nachrichten/heute/urbaner-verkehr-in-der-sackgasse-100.html>  
[https://www.youtube.com/watch?v=Kk3QPF76f\\_Y](https://www.youtube.com/watch?v=Kk3QPF76f_Y)  
<https://www.hfgproject.org/stakeholder-communication-for-uhc/>



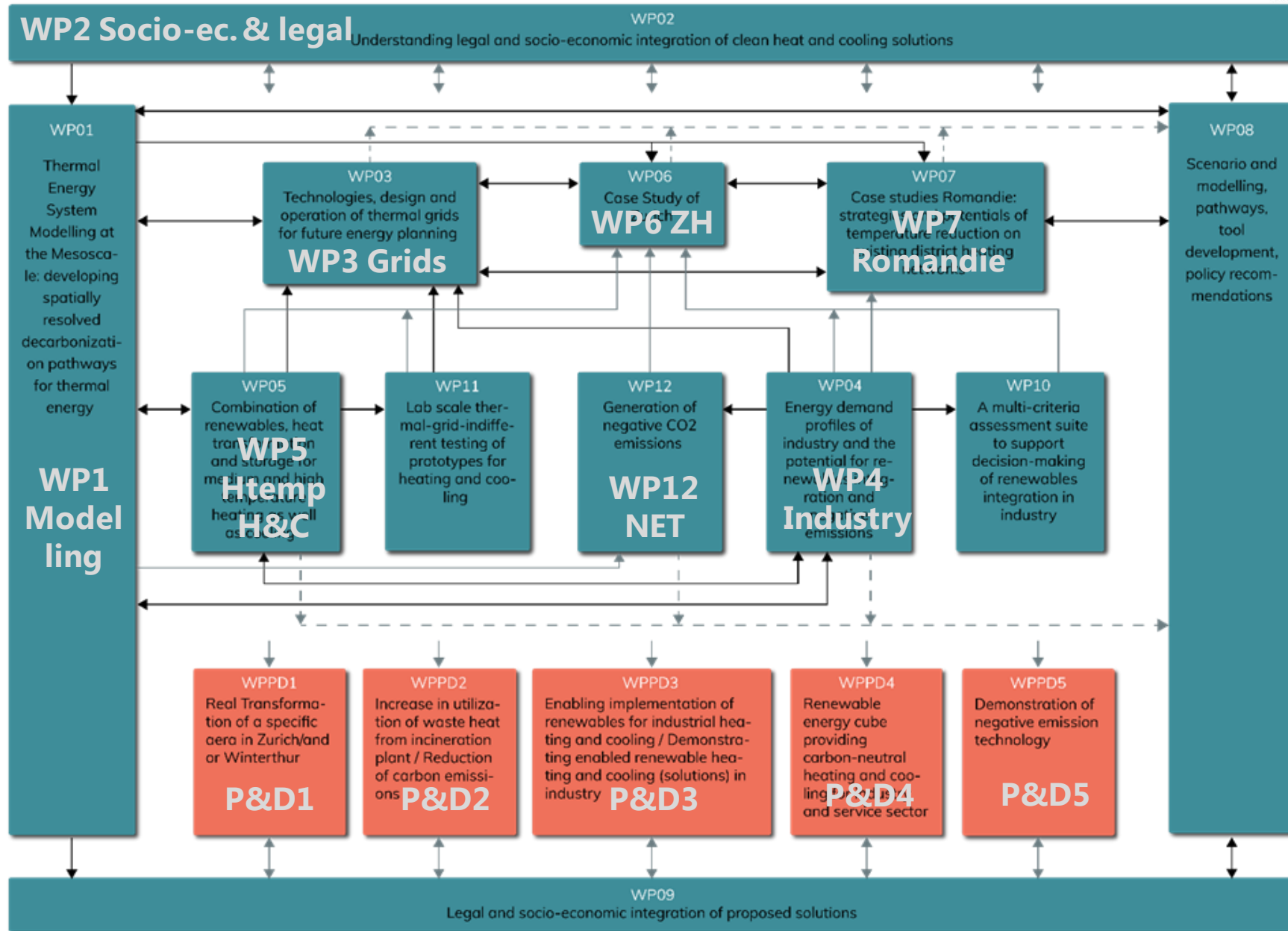
# Overall objectives



## **Facilitate, accelerate and de-risk the implementation of renewables for C&H**

- Combination of technologies
- Model-based analyses
- Developing, piloting and demonstrating
- Evidence-based guidance on how to enable the implementation

# DeCarbCH by WPs



# Core, associate and cooperation partners

## 10 Core

1	Université de Genève	UNIGE (UNIGE-EE, Patel)
2	Eidgenössische Material- und Prüfungsanstalt	EMPA (Orehounig)
3	Eidgenössische Technische Hochschule Zürich	ETHZ (Guidati)
4	Hochschule Luzern	HSLU (HSLU-IGE, Mennel/Sommer)
5	Hochschule Luzern	HSLU (HSLU-TES, Worlitschek)
6	Hochschule Luzern	HSLU (HSLU-TEVT, Wellig)
7	OST Hochschule für Technik Buchs	OST (OST-IES, Bertsch)
8	OST Hochschule für Technik Rapperswil	OST (OST-SPF, Rittmann-Frank)
9	Zürcher Hochschule für Angewandte Wissenschaften	ZHAW (ZHAW-INE, Eberle)
10	Zürcher Hochschule für Angewandte Wissenschaften	ZHAW (ZHAW-ZOW, Abegg)

## 6 Associate

11	Centre de Recherches Energétiques et Municipales	CREM (Ragers)
12	Haute Ecole d'Ingénierie et de Gestion du Canton de Vaud	HEIG-VD-IGT (Duret, Krummenacher)
13	Institut für Nachhaltigkeits- und Demokratiepoltik	INDP (Bolliger)
14	Scuola universitaria professionale della Svizzera italiana	SUPSI (Curti)
15	Université de Genève	UNIGE (UNIGE-GE, Moscariello)
16	Université de Genève	UNIGE (UNIGE-SE, Hollmuller)

**+ 40 Cooperation partners**

## WP01 – Thermal Energy System Modelling at the Mesoscale: Spatially resolved decarbonization pathways for thermal energy

- Team: UNIGE-EE, OST-SPF, ETHZ, ZHAW-INE, Empa, UNIGE-GE
- Objectives
  - **System-level model** of thermal energy service provision
  - Explore **decarbonization pathways** with different technical, economic, policy impacts
  - Quantify the value of both renewable heating and cooling as well as of **negative CO<sub>2</sub> emissions**.
- Approach
  - Collect technical and **cost data** on different technology options
  - Develop techno-economic model at **high spatial resolution** integrating a range of technologies
  - Test **technology, policy options** using model
  - Link with **whole energy system model** and explore implications

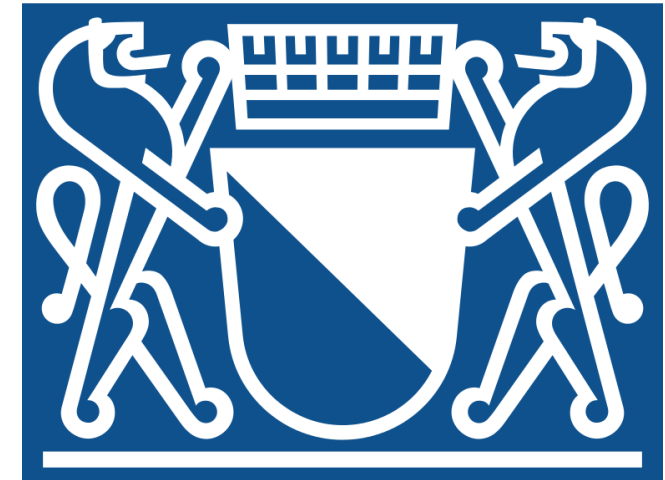


# WP02 – Understanding legal and socio-economic integration of clean heating and cooling solutions

- Team: ZHAW-INE, ZHAW-ZOW, ZHAW-Arch, HSLU-TEVT, OST-SPF, INDP
- Objectives
  - Understand the **actor ecosystem and value network** in local heating / cooling systems and the socio-technical system
  - Identify the **perceived drivers and barriers** for implementation of different solutions under different (structural, socio-economic) contexts
  - Identify **suitable, context-specific strategies** for the implementation of clean and efficient heating / cooling systems
  - Analysis of **legal requirements** on the building permit & the exclusive use of thermal infrastructure and recommendations on **procedures**
  - Proposals on **more efficient procedures** / how to **increase acceptance** regarding building thermal / cooling infrastructure
- Approach
  - Empirical data collection methods (e.g. Delphi surveys, focus groups, expert interviews)
  - Value Network Analysis
  - Link to socio-technical transition frameworks
  - (Social / Business model) Innovation
  - System Dynamics Modeling
  - Identification of the applicable law on thermal infrastructure, suggestions on new regulation

## WP06 – Case Study of Zurich

- Team: ZHAW-INE, ZHAW-ZOE, Empa-UES, HSLU-IGE, INDP
- Objectives
  - **Apply, test, validate tools** and results from other WP
  - Integrate findings in real environment of a city, interaction with the projects of the city
  - Gain insights into the **barriers and success factors**
  - Learnings for other cities, scaling up/multiply results
  - **Feedback to other WP**, backward and forward



## [www.sweet-decarb.ch](http://www.sweet-decarb.ch)

- Mission, content, partners, ...
- Collaborative spirit
  - Management team: B. Wellig (HSLU), S. Bertsch (OST), G. Guidati (ETHZ), M. Patel (UNIGE)
  - Adding further interested cooperation partners
  - Connecting with other SWEET and non-SWEET consortia
- Communication and outreach
  - Newsletter (subscribe!)
  - Lunch talks (register!)
- [info@decarb.ch](mailto:info@decarb.ch)



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