formation continue Unil EPFL

www.formation-continue-unil-epfl.ch

CERTIFICATE OF ADVANCED STUDIES (CAS) | DIPLOMA OF ADVANCED STUDIES (DAS)

Sustainable Energy Systems Engineering:

Urban Energy Transition Pathways

TARGET AUDIENCE

Professionals willing to lead a sustainable urban energy transition, active in:

- Urban Governance (urban planners, sustainability officers, policymakers, etc)
- Consulting (climate and energy plans, smart city/building, environment, etc)
- Energy or Sustainability Sectors (utility providers, renewable energies developers, etc.)

ORGANISATION

- Human-Environment Relations in Urban Systems (HERUS), School of Architecture, Civil and Environmental Engineering, EPFL
- Institute of Sustainable Energy, HES-SO Valais-Wallis, Switzerland
- Energy Center (CEN), EPFL,Switzerland

INTRODUCTION

With over half of the world's population now living in urban areas, cities are key drivers for the energy transition as they consume 75% of the primary energy and resources worldwide and are increasingly vulnerable to climate change.

Whereas most cities have developed climate plans, turning their goals into local action remains complex. How can we design energy transition pathways toward net-zero cities?

OBJECTIVES

Be able to understand, model, and design an energy transition at the urban level, specifically to:

- Analyse complex urban energy systems – including production, distribution, and consumption dynamics – and identify opportunities for optimisation
- Identify key actors, drivers, and barriers influencing city-scale energy transitions across multiple levels of governance, from households to national policy
- Engage with stakeholders to co-design and quantify energy transition pathways towards net-zero in the urban environment, applying scenario modelling and multicriteria assessment

EPFL Hes·so

Certificate of Advanced Studies (CAS)

Sustainable Energy Systems Engineering: Urban Energy Transition Pathways

Certificate of Advanced Studies (CAS) in Sustainable Energy Systems Engineering: Urban Energy Transition Pathways, delivered by EPFL, 10 ECTS credits

- Programme spread over 7 months
- Blended learning combining face-to-face and asynchronous online courses
- Participants can submit their practical group project in any Swiss national language, subject to agreement within the collaborative group

From June 2026 to January 2027

- Online
- Onsite: Lausanne & Sion, Switzerland

CHF 10 000.–

Visit our website to learn more on the CAS

New programme leading to EPFL certification

The CAS in *Sustainable Energy Systems Engineering: Urban Energy Transition Pathways* is a new continuing education programme.

The cursus adopts a socio-technical perspective and a system thinking approach. It provides the necessary tools for designing the energy transition in cities considering stakeholder involvement, drivers and barrier of change, energy modelling, and assessment of city-scale energy systems.

Lead change. Shape tomorrow's sustainable cities.

An opportunity for your career

Being trained today to shape tomorrow's sustainable cities offers several strategic advantages – both for career development and for creating meaningful impact. As policies tighten (e.g., carbon neutrality targets, the EU Green Deal, local climate laws), experts who can guide organisations through complex change and operationalise energy transition plans will be increasingly in demand.

And for those aiming to pursue advanced specialisation, the CAS is also a first step into the following two advanced programmes:

- **Diploma of Advanced Studies (DAS)** in *Sustainable Energy Systems Engineering: Urban Energy Transition Pathways*
- **Master of Advanced Studies (MAS)** in *Sustainable Energy Systems Engineering*

CAS Programme

Introduction

PROGRAMME KICK OFF
Tue June 16, 2026, 5-7 pm
- Teaching staff and peers introduction
- Programme and teaching approach presentation
- Online platform starter kit

Asynchronous

ONLINE LEARNING *Self-paced from June to November 2026 , supported by academic advisors*
- **Objectives:** Develop a systemic thinking approach to urban energy transition
- **Topics:** Socio-technical transitions / Socio-technical transitions theory / Goal definition: from political goals to engineering goals/ Systems thinking and participatory methods / Energy planning: urban planning and energy Technical perspective: From methods to tools for urban energy system modeling / Evolution of energy and storage technologies: emissions, efficiency, and costs / Urban Energy Flow Analysis and LCA / Social Perspective: Drivers for sustainable change and their barriers / Households as key actors for the energy transition / Role of public actors

On-site activities

Week 1

FOUNDATIONS OF URBAN ENERGY TRANSITION PATHWAYS
Mon 7 to Fri 11 September 2026
- **Objectives:** Gain a foundational understanding of urban energy transition pathways and apply this knowledge to a real-world case study
- **Practical group project workshop:** Define the specific goals of a city's energy transition / Identify key stakeholders / Propose concrete measures to support the transition

Week 2

METHODS AND TOOLS FOR ENERGY MODELING
Mon 26 to Fri 30 October 2026
- **Objectives:** Explore various energy modelling tools and apply a selected tool to your case study
- **Practical group project workshop:** Select appropriate modelling methods and tools using a data-informed approach / Integrate technological developments from real-world systems into your transition scenarios

Week 3

ENERGY TRANSITION PATHWAYS DESIGN & ASSESSMENT
Mon 23 to Fri 27 November 2026
- **Objectives:** Understand the barriers and drivers of change in urban energy systems, as well as design and assess a transition pathway tailored to your case study
- **Practical group project workshop:** Finalise the design of your energy transition pathway / Evaluate feasibility by integrating stakeholder perspectives, barriers & drivers to ensure sustainable implementation

Practical group project & Evaluation
- **Objectives:** Collaborative work (group of 3) to gain practical experience in designing a transition pathway in an urban area by following three important steps: a) assess the current energy context b) develop transition scenarios c) project future outcomes
- **Project overview:** Research & documentation / Expert opinions / On-Site investigation / Modeling and assessment / Calculation and optimisation / Solution proposal
- **Evaluation:** Production of a group report and individual oral assessment

CAS CURRICULUM

The *Certificate of Advanced Studies* in ***Sustainable Energy Systems Engineering: Urban Energy Transition Pathways*** consists of:
- Asynchronous online teaching (~80h)
- Flipped classroom instruction (27h).
- Practical group project workshops (~60h)
- Practical group project (~120h) with a group report production
- Individual oral assessment

The on-site learning aims to guide participants in developing a transition pathway for a specific city. Each week builds on the previous one, combining theoretical input, data exploration, methodological tools, and practical applications

This *Certificate of Advanced Studies* is one of the CASs recognized in the ***Master of Advanced Studies*** **(MAS)** in ***Sustainable Energy Systems Engineering***.

Diploma of Advanced Studies (DAS)

Sustainable Energy Systems Engineering: Urban Energy Transition Pathways

Diploma of Advanced Studies (DAS) in Sustainable Energy Systems Engineering: Urban Energy Transition Pathways, delivered by EPFL, 30 ECTS credits

CAS completion (7 months) + practical project (600h)

From June 2026

CHF 20 000.– *(CAS fees and DAS application project supervision incl.)*

Visit our website to learn more on the DAS

Act toward Net-Zero cities now !

Cities are confronting major challenges—from rising energy demand and air pollution to traffic congestion and increasing climate vulnerability. As the urgency to advance sustainable development grows, the question becomes clear: how can global climate ambitions be translated into a concrete, actionable local energy transition pathway?

Power a local, actionable urban energy transition

The DAS in *Sustainable Energy Systems Engineering: Urban Energy Transition Pathways* is a true win-win project for organisations wanting to embrace energy transition, while investing in upskilling their workforce. Upon completion of the CAS programme, the participant carries out an urban energy transition practical project, ideally within their employer's organisation, while benefiting from the expert advice of EPFL and HES-SO professors.

Don't miss this unique opportunity to equip your teams with the right skills today to lead energy transition pathways tailored to local needs.

DAS Programme

Step 1

CAS PROGRAMME & PROJECT DEFINITION
June 2026 to January 2027
- **Completion of the CAS** in *Sustainable Energy Systems Engineering: Urban Energy Transition Pathways* (see above)
- **DAS application project: topic definition** E.g: Develop a climate or energy plan for an urban area / Design an energy transition pathway for an urban area or neighborhood / Identify barriers, levers and mitigation plan for renewable infrastructure , etc.
- **Setting up the framework** for project implementation within the organisation

Step 2

DAS APPLICATION PROJECT
The application project represents a minimum of 600 hours of personal work carried out within a company (estimated completion time of 6 to 8 months at 50% activity rate on the project).
- **Completion of a personal application project**, ideally within the organisation of one's own employer [1], that demonstrates the participant's ability to holistically approach an urban energy transition project.
- **Supervision and advice** from academic experts in the field
- **Evaluation:** Report and oral assessment

DAS Application Projects Call for Proposals

If your organisation (public or private) is looking to implement an energy transition project but lacks the necessary resources, you are in the right place. Sponsor and host a participant to lead a DAS application project within your company!

Contact us for more information:
sustainable.energy@epfl.ch

[1] *Candidates interested in completing the DAS but uncertain about where to undertake their DAS application project at the time of enrolment, should register for the CAS programme. They have the flexibility to secure an internship position at a later stage. Whenever possible, the programme organisers will facilitate connections with companies seeking interns.*

DAS CURRICULUM

The *Diploma of Advanced Studies* in ***Sustainable Energy Systems Engineering: Urban Energy Transition Pathways*** consists of:
- Completion of the CAS
- Application project (min. of 600h)
  - Report production
  - Individual oral assessment

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Master of Advanced Studies (MAS)

Become a leader of the energy transition

The key to a successful energy transition is to view the entire value chain as an integrated system. This requires highly skilled professionals with advanced scientific knowledge, strategic thinking skills, and the ability to take a comprehensive approach to sustainable energy systems.

Ready to build an efficient, innovative energy future?

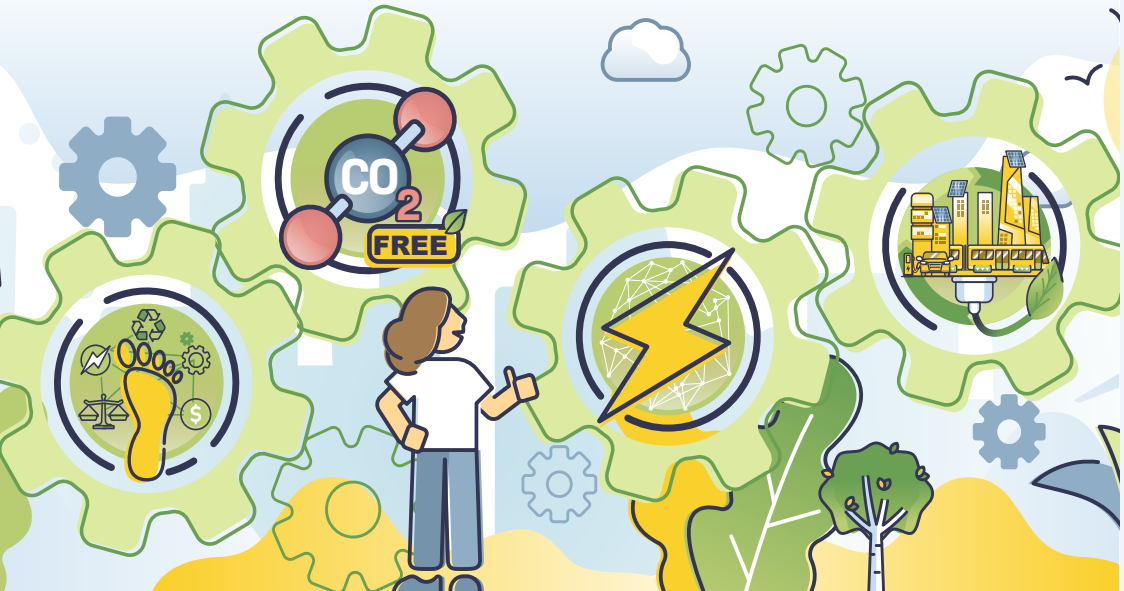
EPFL and HES-SO are jointly proposing a new Master of Advanced Studies (MAS) in Sustainable Energy Systems Engineering. The programme aims to prepare individuals for driving innovation, fostering renewable energy adoption, and implementing sustainable systems and practices across various industries through an interdisciplinary curriculum that integrates engineering, environmental science, and decision-making science.

A MAS certification designed to acquire a holistic vision

Participants begin by completing four Certificate of Advanced Studies (CAS) programmes (in any order), each lasting six months and covering vital aspects of energy systems.

- CAS in Sustainable Energy Systems Engineering: Industry Decarbonisation
- CAS in Sustainable Energy Systems Engineering: Integrated Approach to Energy Transition
- CAS in Sustainable Energy Systems Engineering: Urban Energy Transition Pathways
- CAS in Sustainable Energy Systems Engineering: Electric Power Systems

Participants then complete an individual MAS research project. The goal is to apply sustainable energy systems engineering to a real-world industrial case using a holistic approach.



Master of Advanced Studies (MAS) in Sustainable Energy Systems Engineering, delivered by EPFL, 60 ECTS credits

- Completion of 4 CAS + MAS research project

CHF 40 000.–

Visit our website to learn more on the MAS

How to enrol

Admission on file to submit to Formation Continue UNIL-EPFL

Registration deadline: March 31, 2026

Number of participants is limited

Online registration for the CAS

Online registration for the DAS

Those interested in taking the MAS must register for the CAS (registration for the MAS is only possible once the 4 CAS have been completed).

ADMISSION REQUIREMENTS

For MAS, DAS or CAS applicants:

- Master's degree from a higher education institution (EPF, HES, University), or another degree (in a field related to the programme) deemed equivalent by the Steering Committee [1]

[1] *Candidates who do not meet the above requirements may be considered for admission, provided they can demonstrate a sufficient level of qualification with another engineering degree in a relevant domain and at least 5 years' professional experience in the field.*

CAS ACADEMIC LEADERSHIP

- **CAS Sustainable Energy Systems Engineering: Urban Energy Transition Pathways**
  Prof. Claudia R. Binder (EPFL) & Prof. Jakob Rager (HES-SO)
- **CAS Sustainable Energy Systems Engineering: Electric Power Systems**
  Prof. Mario Paolone (EPFL) & Prof. Fabrizio Sossan (HES-SO)
- **CAS Sustainable Energy Systems Engineering: Industry Decarbonisation**
  Prof. François Maréchal (EPFL) & Prof. Jessen Page (HES-SO)
- **CAS Sustainable Energy Systems Engineering: Integrated Approach to Energy Transition**
  Prof. Michaël Aklin (EPFL) & Prof. Manuele Margni (HES-SO)

MAS PROGRAMME ACADEMIC DIRECTORS

- **Prof. François Maréchal**, *Head of Industrial Process and Energy Systems Engineering group, EPFL*
- **Prof. Manuele Margni**, *Institute of Sustainable Energy, HES-SO Valais-Wallis*

MAS STEERING COMMITTEE

- **Prof. François Maréchal**, *Head of Industrial Process and Energy Systems Engineering group, EPFL*
- **Prof. Manuele Margni**, *Institute of Sustainable Energy, HES-SO Valais-Wallis*
- **Prof. Gaëtan Cherix**, *Director of the School of Engineering (HEI), HES-SO Valais-Wallis*
- **Prof. Sophia Haussener**, *Head of the Laboratory of Renewable Energy Science and Engineering, EPFL*
- **Dr. Yasmine Calisesi**, *Executive Director of the EPFL Energy Center*
- **Rigas Hadzilacos**, *Deputy Executive Director of Formation Continue UNIL-EPFL*

CONTACT

For academic questions:

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