



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

Sustainable Energy Systems Engineering: Integrated Approach to Energy Transition

TARGET AUDIENCE

Professionals (decision-makers, specialists, entrepreneurs, etc) working in energy transition, territorial development, environmental planning, or sustainable investing within:

- communal / cantonal / federal authorities
- environmental or engineering consultancies / associations
- companies in the energy sector or in the clean tech industry
- financial and investment institutions
- private or public organisations aiming to engage in sustainable net-zero pathways

ORGANISATION

- Industrial Process and Energy Systems Engineering (IPESE), School of Engineering (STI), EPFL Valais Wallis, Switzerland
- Institute of Sustainable Energy, HES-SO Valais-Wallis, Switzerland
- Energy Center (CEN), EPFL, Switzerland

INTRODUCTION

Understanding and addressing the complex challenges associated with transitioning to a sustainable energy future requires a holistic and systemic approach. How can we lead the energy transition while balancing economic viability, social acceptability, and environmental sustainability?

The Sustainable Energy Systems Engineering: Integrated Approach to Energy Transition programme enables participants to adopt a multidisciplinary approach, integrating the technical, economic, environmental, social, and ethical skills needed, to assess sustainability performance with a systemic perspective across the entire value chain.

OBJECTIVES

- Understand holistically the energy system and its sustainability challenges (energy markets & economics, planetary boundaries, health and environmental impacts, circular economy, public policies & legal frameworks, renewable energy technologies, etc.)
- Analyze and model energy transition pathways through system integration and optimization at a territorial level
- Acquire life cycle assessment (LCA) expertise to assess the environmental impacts of energy conversion, storage and distribution technologies
- Evaluate social impact and acceptance of energy projects
- Design strategies and public policies to activate a sustainable energy transition within the constraints imposed by economic, social and political factors



Certificate of Advanced Studies (CAS)



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



- Programme spread over 5 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 October 27, 2025 to March 2026



- Online
- Onsite: Energypolis, Sion, Switzerland



CHF 10 000.–



Visit our website to learn more on the CAS



Diploma of Advanced Studies (DAS)



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



CAS completion (5 months) + practical project (600h)



From October 27, 2025



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



Visit our website to learn more on the DAS



New programme leading to EPFL certification

The CAS in *Sustainable Energy Systems Engineering: Integrated Approach to Energy Transition* is a new continuing education programme.

By integrating technical, economic, social, and environmental dimensions into a holistic framework, its cursus is designed to equip participants with systems thinking to view energy related aspects with a multidisciplinary perspective.

Through practical projects, real-world case studies, and interdisciplinary teaching, participants will develop the ability to design and lead comprehensive energy transition strategies, considering economic viability, social acceptability, and environmental impact.

An opportunity for your career

Completing the CAS is a real opportunity to advance your career, as there is a significant need for professionals trained in an integrated approach who can develop robust solutions for a sustainable energy future. Multidisciplinary problem-solvers will be invaluable to identify sustainability trade-offs and support organizations navigating complex transitions.

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

- **Diploma of Advanced Studies (DAS)** in *Sustainable Energy Systems Engineering: Integrated Approach to Energy Transition*
- **Master of Advanced Studies (MAS)** in *Sustainable Energy Systems Engineering*

Gain holistic skills to lead a sustainable energy transition

CAS Programme

Day 1

WELCOME DAY

Oct 27, 2025, Energypolis

- Teaching staff and peers introduction
- Programme and teaching approach presentation
- Online platform starter kit

Asynchronous

ONLINE LEARNING *Self-paced from October 27, 2025 to March 2026, supported by academic advisors*

- **Objectives:** Develop a systemic thinking approach to energy transition
- **Topics:** Renewables: potential & challenges / Energy systems integration & optimization / Life cycle assessment (LCA) / Economics & energy markets / Resilience in energy planning & transition / Environmental & social impact assessment / Energy & climate public policies & regulatory frameworks / Industrial ecology & circular economy / Data gathering, analysis, interpretation & visualization / Net-zero roadmaps (SBTi, GHG protocols, etc.)

Week 1

SUSTAINABLE ENERGY TRANSITION & INTEGRATION

Mon. November 10 to Fri. November 14, 2025, Energypolis

- **Flipped class:** application of online learning
- **Practical group project workshop:** Net-zero pathways / Systemic modelling tools / Integration & optimization at a territorial scale of multi-energy sources & multi-demand sectors / Swiss energy transition / Material-energy-nexus / Resilience of energy systems / Energy systems integration: levers & constraints

Week 2

LIFE CYCLE PERFORMANCE OF ENERGY TECHNOLOGIES

Mon. December 8 to Fri. December 13, 2025, Energypolis

- **Flipped class:** application of online learning
- **Practical group project workshop:** Economic development, climate impacts & resilience / Sustainability challenges of energy systems and human development / Energy efficiency & footprint of renewable, fossil & nuclear technologies / LCA / Energy services value chain: conversion, storage, distribution / Systems thinking approach

Week 3

SOCIO-ECONOMICS & REGULATORY FRAMEWORK

Mon. January 19 to Fri. January 23, 2026, Energypolis

- **Flipped class:** application of online learning
- **Practical group project workshop:** Market dynamics / Public policy tools (feed-in tariffs, renewable auctions) / Cost-benefit analysis / Costs of decarbonisation / Social impact assessments / Social acceptance of new technologies / Stakeholder engagement methods / Regulatory frameworks / Land use planning

On-site activities

Practical group project & Evaluation

- **Objectives:** Collaborative work (group of 3) to gain practical experience in assessing energy technologies & systems, and designing sustainable transition pathways
- **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: Integrated Approach to Energy Transition** 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

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

Sustainable Energy Systems Engineering: Integrated Approach to Energy Transition

Turn energy transition into opportunity for growth

For an organisation, investing in energy transition isn't just a matter of compliance – it's a strategic move to secure financial resilience, competitive advantage, and long-term viability.

Power your growth through the energy transition

in upskilling their workforce. Upon completion of the CAS programme, the participant carries out an 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 ensure your business thrives in tomorrow's economy.

The DAS in *Sustainable Energy Systems Engineering: Integrated Approach to Energy Transition* is a true win-win project for organisations wanting to embrace energy transition, while investing

DAS Programme

Step 1

CAS PROGRAMME & PROJECT DEFINITION

October 2025 to February 2026

- **Completion of the CAS** in *Sustainable Energy Systems Engineering: Integrated Approach to Energy Transition* (see above)
- **DAS application project: topic definition** E.g. define decarbonisation roadmap for local, cantonal or federal authorities / Identify barriers, levers and mitigation plan for renewable infrastructure / Frame opportunities and risks of decarbonisation technologies in a business plan, 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 employer¹, that demonstrates the participant's ability to holistically approach an 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: Integrated Approach to Energy Transition** consists of:

- Completion of the CAS
- Application project (min. of 600h)
 - Report production
 - Individual oral assessment

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.

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

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 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



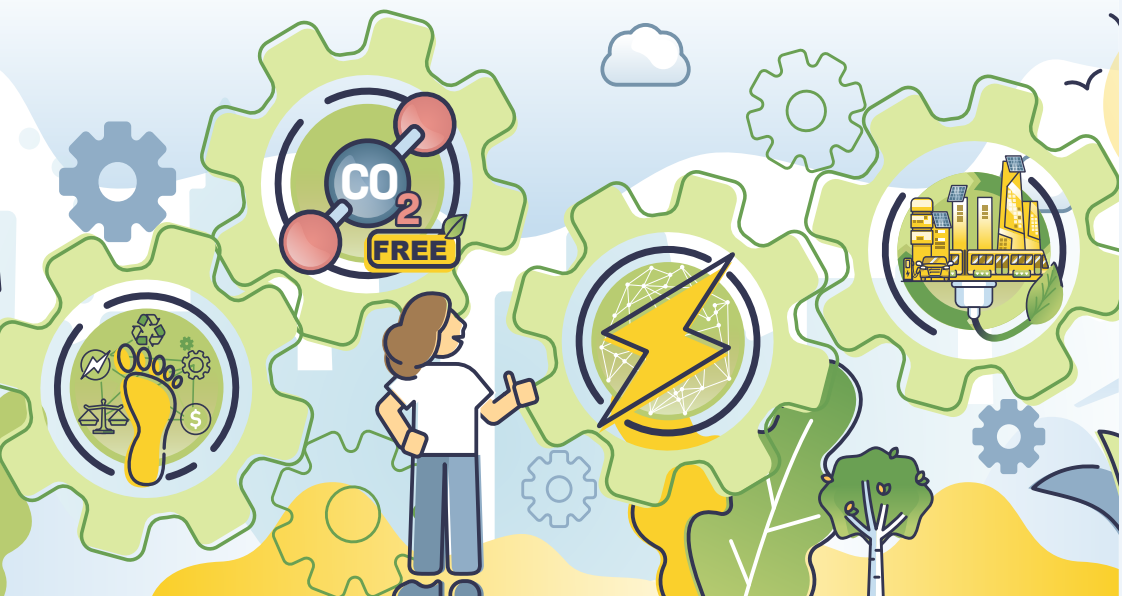
• Completion of 4 CAS + MAS research project



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: June 27, 2025

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 Committee¹

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.

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*

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*

CAS ACADEMIC LEADERSHIP

- **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 Aklín (EPFL) & Prof. Manuele Margni (HES-SO)
- **CAS Sustainable Energy Systems Engineering: Urban Transition Pathways**
Prof. Claudia Binder (EPFL) & Prof. Jakob Rager (HES-SO)
- **CAS Sustainable Energy Systems Engineering: Electric Power Systems**
Prof. Mario Paolone (EPFL) & Prof. Fabrizio Sossan (HES-SO)

CONTACT

For academic questions :

Dr. Jean-Marie Fürbringer,
Programme Executive Director of
MAS, DAS and CAS Sustainable Energy
Systems Engineering

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