

# ParisTech

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## HOW THE MEMBERS OF PARISTECH ARE ADDRESSING THE CHALLENGES THAT PLANET EARTH IS FACING

39th Conference of Rectors and Presidents of European Universities of Technology

September 17-18, 2021



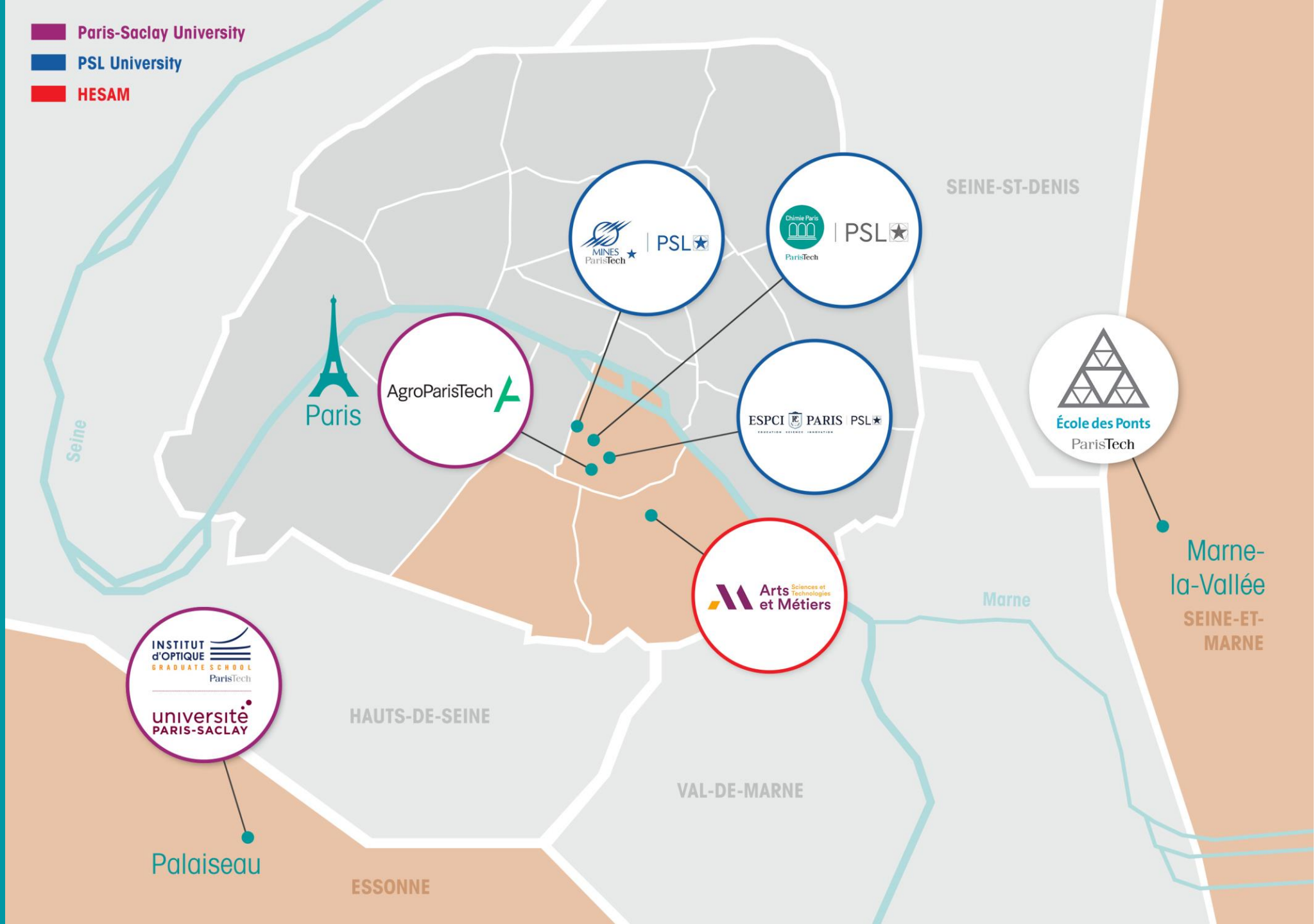
7

GRADUATE  
SCHOOLS  
IN PARIS

3

CAMPUSES

- Paris-Saclay University
- PSL University
- HESAM



INSTITUT  
d'OPTIQUE  
GRADUATE SCHOOL  
ParisTech

université  
PARIS-SACLAY

Palaiseau

HAUTS-DE-SEINE

ESSONNE

VAL-DE-MARNE

SEINE-ST-DENIS

Marne-  
la-Vallée  
SEINE-ET-  
MARNE

AgroParisTech

MINES  
ParisTech | PSL

Chime Paris  
ParisTech | PSL


ESPCI PARIS | PSL

Arts Sciences et  
Métiers Technologies

École des Ponts  
ParisTech

# A MULTIDISCIPLINARY AND COMPLEMENTARY NETWORK

## GRANDES ÉCOLES & SPECIALTIES

							
Mathematics & applications				✓			✓
Information and communication sciences and technologies				✓		(✓)	✓
Life sciences and engineering	✓		✓		✓		
Earth sciences and environmental engineering	✓			✓			✓
Physics, optics					✓	✓	✓
Chemistry			✓		✓		
Energy		✓	✓	✓			✓
Materials science, mechanics and mechanical engineering		✓	✓	✓	✓		✓
Industrial engineering		✓		✓			✓
Transport		✓		✓			✓
Economics and social sciences, management, statistics	✓			✓			✓

# ONE COMMON OBJECTIVE

## SUSTAINABLE DEVELOPMENT GOALS



Train and graduate responsible engineers with a strong research-based S&T background

- aware of the global challenges
- able to understand a complex world
- able to work in an international environment
- able to find and adapt relevant innovative and sustainable S&T solutions
- able to manage big companies & SMEs, administrations in a ecological & digital transition phase
- sharing common values: excellence, social and international openness, innovation, solidarity

# OBJECTIVE: MAKE THE STUDENTS' PROFILE SO DIVERSE AS SOCIETY

## Attract students from disadvantaged background & disabled students

- Cordées de la réussite (tutoring in high schools, support of young girls in high schools)
- Scholarships ; tutoring
- Institut Villebon-Georges Charpak: Bachelor in S&T (develop their potential)



**Attract more women** : 20-60% in ParisTech schools (ParisTech average in 2019: 35% vs. national average : 28%)

- Exhibitions, workshops, information sessions
- Promoting gender equality (e.g. negotiating a salary, fight against harassment...)
- Valuation of prizes, distinctions etc.

## Attract international students (10-30%)

→ ParisTech International Admission Program: pooling of resources to select students in Latin America (Argentina, Brazil, Colombia), Russia, Asia (China since 2000 and since 2021 also in Cambodia, Hong Kong, India, Indonesia, Japan, Lao, Macau, Malaysia, Singapore, South Korea, Taiwan, Thailand, Vietnam)



# A MULTILEVEL TRAINING OFFER

**Theory & Practice**  
Diplôme d'ingénieur



Designed, offered and delivered by ParisTech schools on their own

**Research-oriented**  
Master degree & PhD



Designed, offered and delivered by ParisTech schools on their own  
(AgroParisTech outside Paris, Arts et Métiers, Ecole des Ponts ParisTech)

*or*

in partnership with the universities they are members of



**Company-oriented**  
(executive education)  
Advanced Masters,  
certificates



Designed, offered and delivered by ParisTech schools on their own

# KEY NUMBERS



12 500  
students



1 700  
PhD candidates



70 international  
agreements



58 teaching and  
research chairs



1 500  
professors



120  
partner companies



90 000  
alumni

# GLOBAL CHALLENGES IN TRAINING



All schools' curricula aim at tackling sustainable development challenges (applied to their specialty domains): sustainable cities, life sciences, affordable and clean energy, clean water, industry, responsible production, etc.

## Curriculum

Excellent S&T research-based education in Mathematics, Physics, Chemistry, Biology and/or Computer Science...



Economics, Management, Entrepreneurship...  
Communication, Foreign Languages



Development of soft skills & professional skills through multidisciplinary studies, teamwork, internships, projects

## Extracurricular / students' initiatives

New classes & seminars on SDGs initiated by students

Conferences organised by students' associations

Sustainability-oriented Junior Entreprises

Students' associations for sustainable development (recycling on campuses, information sessions...)



communities



# GLOBAL CHALLENGES IN RESEARCH: CHAIRS

Numerous labs working on tackling sustainability challenges in all schools; incubators, Inn Labs

## Research chairs dedicated to environment and sustainable mobility



- Limit the environmental impact of buildings and neighbourhoods in a cost-effective manner
- Integrate environmental aspects in today's digital tools, in particular by making energy simulation part of Building Information Modelling (BIM)
- Increase public well-being, comfort and health, in particular by reducing urban heat islands



- Optimization of the strategic metals recycling industry
- Sorting, compatibility and rehabilitation of plastics recycling
- Development of new models for the circular economy



- Clinical innovation in orthopaedics (medical sector)
- Comfort and safety (transport sector)
- Sport and health (sports sector)

# GLOBAL CHALLENGES IN RESEARCH: LABS



Micropollutants analysis

Water governance

Resources management



Sustainable & low-cost solar panels



Non invasive detection  
of skin carcinoma =  
research results from



developed by start-up



cofunded by Institut  
d'Optique's alumni

# GLOBAL CHALLENGES IN INNOVATION: CHALLENGE-BASED START-UPS



Canopy solutions to cover the city's landscape with a modular, reversible, natural and light-weight vegetation mesh



Ultra-light (4kg) Titanium Seats for Aircrafts



Breeding and processing insects to contribute to the major challenges of our time: feeding the world's population, preserving resources and biodiversity, and fighting global warming



Zinc-Air batteries to replace lead batteries, but also the famous lithium batteries. They are inexpensive and safe, because they work in water. Aza Battery is developing new systems by improving all components (bi-functional air electrodes, separating membrane and zinc electrode)



Ultrasound medical imaging

An innovative medical technology company primarily focused on improving women's health and well-being through early detection and treatment