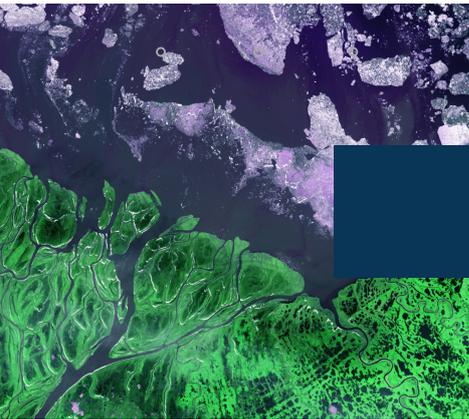


The Transition Institute 1.5

The ambition for an actual transition



A scientific response to the climate challenge

To tackle the urgent issue of climate change and pursue the IPCC recommendation of limiting global warming to 1.5°C, our societies are making variable efforts to achieve carbon neutrality. However, numerous questions remain unanswered, and there is no place in the world where this unprecedented transition is being implemented in a truly “convincing” way.

This approach, which integrates interactions in their entirety and puts people at the heart of processes, requires multidisciplinary scientific reflection that is both rigorous and exhaustive. Thanks to the diversity and excellence of its research activities, Mines Paris – PSL is equipped to provide a response. Its numerous collaborations with economic and academic spheres, and its highly decentralized operating model, possessing key assets and unique expertise, mean it can contribute in a concrete and original way to constructing the design of this transition.

With this in mind, Mines Paris and its Foundation have got together to launch a new institute with the ambition of bringing scientific responses to today’s climate challenges: TTI.5, The Transition Institute 1.5: 1.5 to echo the target put forward by the IPCC.

TTI.5 is a structure based on a shared vision put together jointly by different bodies at Mines Paris – PSL. Centered on an ambitious scientific project, the Institute interconnects in-house skills and works in association with prestigious networks. TTI.5 therefore plays both a federating and attracting role: on the one side, it gives greater visibility and clarity to technical, economic and social research and development carried out by all of those working on the transition at the School; on the other side, it positions the School as a key player in the search for a way out of the deadlocks currently impeding climate change issues.



Bringing about the much-awaited transition

Our aim is to provide decision-makers with the elements they need to build a strategy that can guarantee a bifurcation. These will need to take into account both climate and development issues to devise concerted social and economic plans.

This challenge means working on future “states of the world” in order to identify the bifurcation points that enable or prohibit carrying out this strategy. This cannot be done by simply juxtaposing statements by experts from different disciplines, intuitive conjectures, and normative judgements. Only a systemic approach that considers all multifactorial impacts and the acceptability of the measures planned is likely to identify realistic transition pathways to a low-carbon era.

For this reason, TTI.5 proposes to take a totally innovative approach to different aspects of the transition. The institute’s work is based on an original comparison of several temporal and discipline lenses. It associates engineering science with economic and social sciences, while combining empirical and theoretical approaches and disciplines that are already present at Mines Paris. The program will be broken down into technical,

economic, historical, prospective, socio-political and conceptual analyses, and will set out to establish the design of decarbonized transition subject to specific regional constraints. The challenge will involve differentiating this low-carbon transition from transitions observed in the past, which were essentially driven by an ambition to increase productivity. With this objective, we propose to consolidate the lessons learned from past and current field analyses, and their association with theoretical concepts related to the transition and bifurcation, in order to tackle the question of a future system (energy-based, political, technical, societal, economic, etc.) compatible with low-carbon ambitions.

The “design” of this transition will draw from the “low-carbon” solutions available (some of which are the object of research at the Mines Paris - PSL labs). They will be discussed systemically, integrating constraints related to: technological supply (including forthcoming technologies such as CCS, CCUS, fusion and innovative materials), vectors (including hydrogen), questions of systems operation and flexibility, spatiality, the pace of setup, land planning, lifestyle, cost and financial engineering, governance, regulation and institutional conditions, and externalities (information technologies, natural resources), all of which are subjects of predilection at the School’s laboratories.



Collaboration and influence

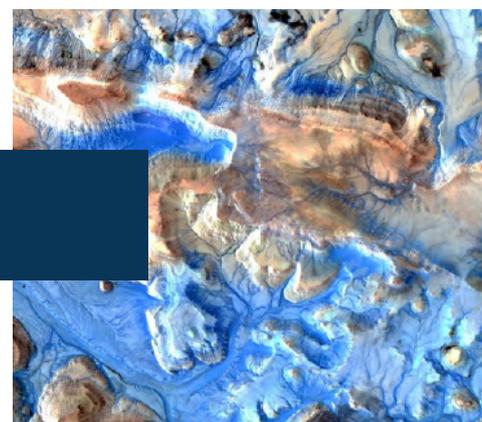
MANIFESTO

TTI.5, by integrating all of this work into its scope of reflection, will increase the visibility of the School and improve the interconnections between its contributions. This should ensure the position of Mines Paris as a place of influence that closely interacts with society, to inform public debate and decision-makers, and should also rehabilitate the voice of engineers in the face of a challenge that questions their role.

TTI.5 also has a role of structuring teaching at the School to center on the transition by setting up dedicated “tracks”. This fits in with an overhaul of the syllabus, which aims to better match the expectations of engineering, research and master’s students, many of whom want to give more meaning to their professional career in the long term.

By clearly mobilizing the School’s potential on a theme of the future, the creation of this Institute is likely to boost its attractiveness and contribute to its influence, both internally (students, researchers, staff) and externally (public and private partners, government bodies, network of alliances and national and international collaborations, etc.).

An inclusive organization



Our objective is to maintain a systemic approach and a global vision to tackle the complex question of transition. For this reason, and to guarantee a mix of disciplines, it is essential to keep all actors within the School dynamically involved in TTI.5, and add on national and international networks of excellence. Since the scope is global and the transitions to be “designed” are as numerous as the regions in which they will be implemented, pertinent regional input will need to be guaranteed. This will involve setting up a network of international partners spread throughout the different regions and tackling the same subject in a similar way (selection in process).

This approach requires devising an original format centered on exchanges between students on all of our courses. The Institute’s project is therefore focused on:

- Research students: inter-center Mines Paris and PSL theses, doctoral students from other universities, young international guest researchers (doctoral students and post-docs).
- Civil engineering students following the TTI.5-accredited transition track.

- Students taking specialized courses (advanced Masters, Masters), Mines students, PSL students.

Our vocation is to interweave our in-house skills while reaching outwards. This is reflected in our governance, which involves two levels:

INTERNAL ACTORS

BOARD

Role: (decision-making) The board is responsible for organizing the Institute and for implementing its financing. It is responsible for the scientific policy of TTI.5. The board coordinates all of the different bodies in the Institute and ensures its national and international integration. It makes all operational decisions. The director is named by the managing director of Mines Paris.

INTERNAL MONITORING COMMITTEE

Role: (decision-making) This committee is in charge of the Institute's scientific policy and ensures its implementation: it sets up selection juries, coordinates and carries out regular monitoring of the Institute's work, and validates the budget and its allocation.

Composition: Teachers / researchers and students at the School, and representatives of common departments.

INSTITUTE TEAM

Role: (executive) The team supports the board with operation, management, coordination, dissemination, and fund-raising activities.

RESEARCH LECTURERS

Acting on a voluntary basis, RLs are involved as:

- Contact people for the different research focuses
- Initiators of theses and projects
- Supervisors of doctoral and other students
- Seminar coordinators
- Authors of content
- Members of the monitoring committee

Composition: Lecturers / researchers at the School.

EXTERNAL ACTORS

SCIENTIFIC COMMITTEE

Role: (consultative) This committee meets annually. It makes recommendations on the scientific positioning of the Institute, its output, and evolution.

Composition: Scientific personalities from outside the School and representatives and academic partners of TTI.5.

TTI.5 COMMITTEE

Role: (consultative) A space for activities, exchanges and debates. The committee's discussions – centered on focal points, concrete problems, and realities on the field – provide an opportunity to challenge the Institute's research questions and interact on the ways in which results are disseminated.

Composition: Donors, observers, guest members.

TTI.5 will operate in compliance with the Ethics Charter established for the Institute.



...and outward looking

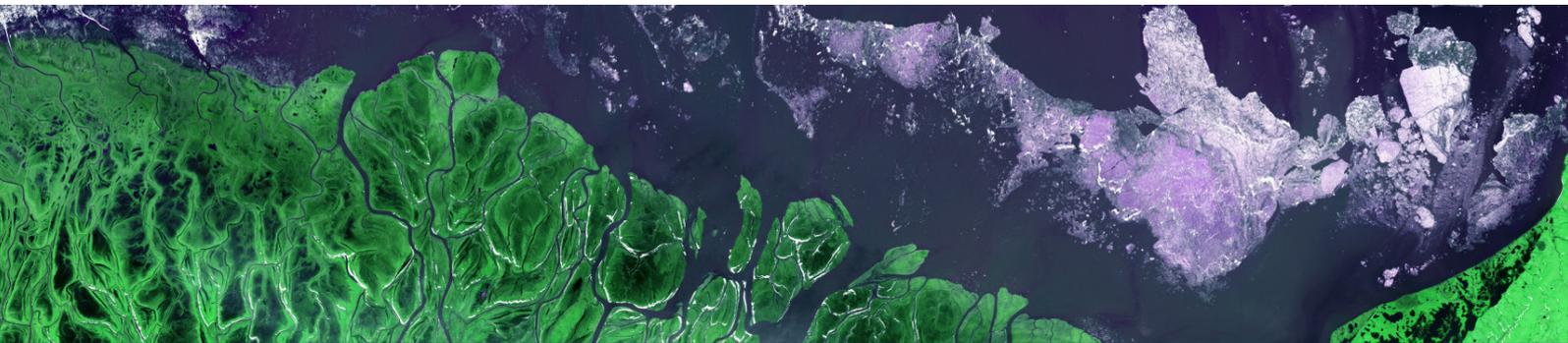
To guarantee its visibility and ensure its reputation, TTI.5 takes the community attached to the Institute outside its walls with events like:

- Reporting back on TTI.5 solutions aimed at stakeholders (companies, national and international government institutions)
- Regular scientific seminars: to ensure multi-disciplinary dialogue, in particular involving the community of students and research students

- Extending the Mines Paris – PSL summer/winter schools (short, one-week study program aimed at an international audience)

Along with standard academic output, publications and targeted dissemination will guarantee the influence of TTI.5. This includes:

- Position papers
- Training of excellence aimed at decision-makers (creation of an Institute of Higher Studies devoted to transition issues)
- Special issues of journals (Annales des Mines for France)
- Promotion of studies in partnership with the Museum of Mineralogy, the Mines Paris Library, Presses des Mines: exhibitions, publications, etc.
- Awards for the best projects (all courses)



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