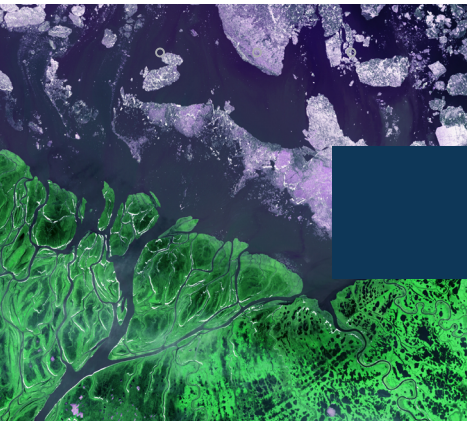


The Transition Institute 1.5°

An ambition for real 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

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 organization which is both inclusive...

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 also 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. In our view, the most promising channel to guarantee exchanges between the School's centers and the international network is the students. The institute will therefore be based on:

- Inter-center theses, which it will finance
- Association of doctoral students from other universities
- Visiting fellows (doctoral or post-doc) from target regions
- Civil engineering students following the TTI.5-accredited transition course
- Students following specialized courses (master's, specialized master's), students from Cords des Mines, PSL students, etc.

An institute team will be responsible for operation, management, coordination, dissemination and fund-raising. To integrate the dimensions of

internal interconnection and consolidation between the School's centers, and ensure its external influence, the institute will operate through wider governance. To this end, two levels of monitoring are planned:

- Mines de Paris - PSL monitoring committee: made up of lecturers/ researchers and students from different centers and programs at the School, it will establish the scientific policy of the Institute and ensure its implementation: it will set up the juries for selecting PhD thesis applicants, regularly follow up on the institute's work, and validate the budget and its allocation.
- A scientific committee made up of external members: meeting annually, it will produce consultative opinions on the Institute's position, production and evolution.

The Institute operates on the principle of patronage and its method of financing is subject to the PSL Ethics Committee.



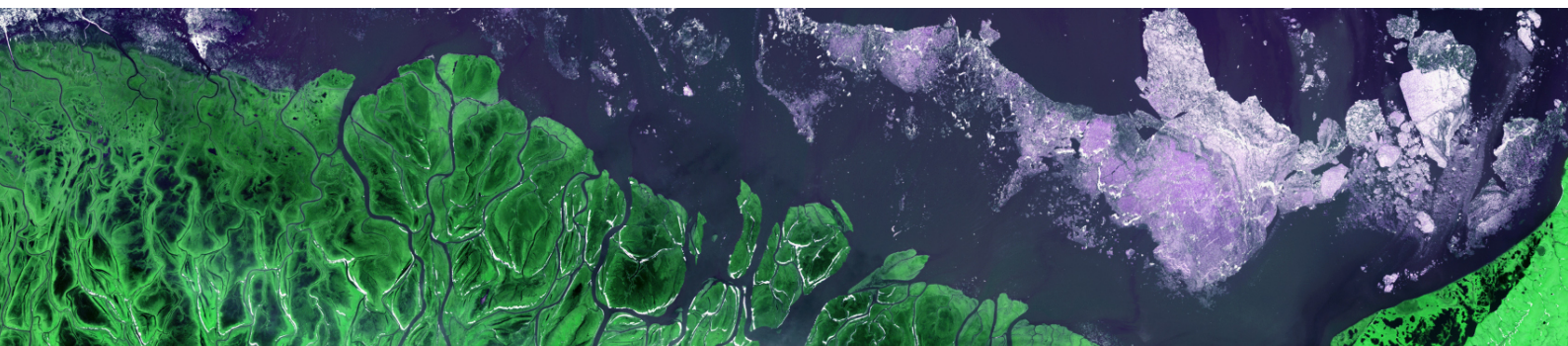
...and outward looking

To guarantee its visibility and ensure its reputation, TTI.5 will coordinate the community attached to the Institute beyond its walls with different events:

- A program reporting on TTI.5 solutions dedicated to stakeholders (companies, governmental, national and international institutions)
- Regular scientific seminars: to ensure multidisciplinary dialogue, in particular setting up a community of students and research students involved
- Extending the offer for summer/winter schools (one-week teaching programs targeting an international audience) at Mines Paris - PSL

In addition to standard academic output, publications and specific dissemination will guarantee the influence of TTI.5, including the following:

- Position papers
- Top-level training course aimed at decision-makers (creation of an institute for advanced studies centered on transition issues)
- Special editions of journals (Annales des Mines for France)
- Showcasing of work in association with museums/libraries/press: exhibitions, publications, etc.
- Awards for the best work (all courses combined)



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