2022
2025

Pathways to Sustainability

Joining forces within the university and with society to discover, explore and validate pathways to just and sustainable futures for all.

Utrecht University

Pathways to Sustainability

The Way Forward

Pathways to Sustainability
2022 – 2025

Position Paper

Version 30 October 2021

Introduction

'The Way Forward' is the position paper with which Pathways to Sustainability bridges the evaluation of the successes and failures of the past funding period with the initiation of new modalities to do what the UU strategic themes are for: spur cross-disciplinary innovation in research and education and strengthen Utrecht University as an inspirational institution on crucial societal issues, for and with stakeholders.

The paper is written by a writing team consisting of Albert Meijer, Aletta Kraneveld, Jack Middelburg, Karin Rebel and Liesbeth van de Grift, and chaired by Maarten Hajer.

A first draft, taking into account the input of the 'learning evaluation' made by the current Programme Board, the reflections of the International Advisory Board, as well as the thoughts and observations of the "co-deanery', was published and circulated for comments in the larger Pathways to Sustainability community. Apart from three open meetings, we received comments by individual groups and met, on request, with several groups of scholars that wanted to utter their ideas or concerns. We also discussed the paper with the research directors of the faculty of Geosciences, the institution directors of the faculties of Law, Economics and Governance, and Science.

We would like to thank all those that took the effort to read and comment on the draft paper. This version is based on a reflection on those comments, our own observations and on the new insights into the institutional and financial parameters within which PtS will work over the next period. We also thank Femke Goutbeek and in particular Emmy Ruiter for their excellent support in registering, summarizing and structuring the many comments we received.

We hope the paper will be a source of inspiration that will motivate scholars to participate in PtS and help spur innovation, and strengthen the profile of Utrecht University as a leading institute contributing to help find pathways to sustainable futures, by means of education, research and public engagement.

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The Way Forward: Pathways to Sustainability 2022-2025

A university home to both those who take an active stance in the sustainability debate and those who energetically pursue research themes to further the science for sustainability;

A university known for welcoming key decision makers to have personal conversations with top scientists in the domain of sustainability;

A university producing breakthrough innovations in fundamental research;

A university tapping into the creative and intellectual potential of its entire academic community, yet creating new space for exploring ideas for early career scholars in particular;

A university where students from different disciplinary backgrounds are prepared for a future in which sustainability features as a key challenge and where students are actively encouraged to contribute to the mitigation of the effects of climate change and biodiversity loss;

A university community committed to help identify pathways to sustainability but that, based on its research and assessments, also dares to go against the grain by warning of potential unintended effects of policy initiatives;

A university where students understand the many dimensions of sustainability and feel the excitement of our collective effort;

An open, inclusive and supportive academic community, comprising the full spectrum of disciplines and fostering exciting academic conversations;

A university where the strategic theme Pathways to Sustainability functions as an incubator for mission-driven research;

A university fully aware of the multidimensional nature of the sustainability transition, including issues of social justice and equity.

The Strategic Themes of Utrecht University act as catalysts of innovation. *Pathways to Sustainability* (PtS) is convinced that our university has a special role to play with regards to the sustainability crisis, which is amongst the biggest challenges society faces in the 21st century.

Being the home to groups of top academics in a range of fields of sustainability research, Utrecht University now wants to take a next step. We want to use the special vehicle of PtS to create the spirit that will stimulate us to collaborate *across the disciplines* and *in collaboration with societal stakeholders* on research and education to establish pathways to sustainability.

Our goal is to foster the *radical innovation in our own practices, of research, education, public engagement and operational affairs,* to strengthen our contribution as a university to address the sustainability crisis. Radical innovations mean to accelerate change through unusual and transdisciplinary collaborations. This position paper marks the start of our new strategy departing from usual practices. It propagates a key role for the Strategic Theme Pathways to Sustainability in spurring new ways of collaborating and enhancing our impact. Our overall ambition is to develop PtS as a dynamic community that dares to break new ground in approaching the complex issues related to our sustainability crisis and inform institutional and paradigmatic change in our organization and beyond. We invite all colleagues to actively participate and contribute to this new way of working.

The Challenge

The sustainability crisis is one of the greatest challenges of our times. The warming of our atmosphere and oceans, the over-exploitation of natural resources, the loss of biodiversity, and the pollution and degradation of our soils, water and air, have created a predicament that undercuts the very reproduction of the comfortable climate circumstance that allows for a peaceful cohabitation on the planet that we have known for millennia.

Some have noted this is no longer to be seen as an 'environmental crisis'; it is not a crisis 'out there' but affects the very essence of our societal set up.[1] As academics, we are reconceptualizing our role and position, harking back to the encompassing understandings of intellectuals like Alexander Von Humboldt who saw man as operating with the broader 'web of life'. As academics, we invent new language, in which we define our age, following Paul Crutzen, as the Anthropocene; we describe our challenge in terms of global 'tipping points', 'cascading' effects, and climate sensitivity (Steffen, Lenton) because of our poor understanding of the mechanisms and properties of an evolving planetary system.[2]

We do not only stop at trying to *understand* the interaction of the natural and social systems that cause the sustainability crisis; as academics we invent and circulate concepts like 'planetary boundaries' (Rockström) or 'safe and just operating space' (Raworth) or a 'two degree target' (IPCC) to *connect science to policy*, and develop new ideas about 'eco systems of innovation' to *find pathways* out of the crisis. We discuss the extent to which our present *institutions* are able to deliver on this new ecological awareness. And, time and time again, these concepts also imply new questions for fundamental science,[3] whether it is to understand the natural system or to enhance our understanding of the social, cultural, political and economic systems in order to define pathways to a sustainable future.

Historians remind us that the ecological crisis is not a new phenomenon. George Perkins Marsh documented the history of the impact of Man on the crust of the planet, way back in 1851. And in modern times, ever since Rachel Carson's seminal publication *Silent Spring* (1962), academics have kept pointing out the ways in which industrial society undercuts the sustainable interaction between the social and natural world. In the sixty years since, we have come to a much better understanding of the systems hidden both in the natural world and within society and how the two interrelate. Yet, what is new is the magnitude of the ecological challenge that now threatens to undercut our ways of life because society has failed to readjust its modern industrial practices. Moreover, we now see an enhanced ecological awareness spreading to the heart of the financial system, where rating agencies take the vulnerability for

[1] Frank Biermann (2021) The future of 'environmental' policy in the Anthropocene: time for a paradigm shift, *Environmental Politics*, 30:1-2, 61-80, DOI: 10.1080/09644016.2020.1846958

[2] Tim Lenton et al. (2019) Climate tipping points — too risky to bet against (Comment), Nature, 27 November 2019.

[3] For the sake of brevity, we refer to 'science'. Wherever we use the word 'science', we explicitly include all disciplines of scholarship, including social sciences, humanities, medicine, and natural sciences. By doing so, we follow the definition used by the KNAW.

climate change effects into account and national banks similarly introduce checks on exposure for climate risks.

This implies a new phase, in which the *appropriate* institutional response becomes a central concern. And of course, in this very idea of 'appropriateness' lies a new dimension of debate that calls upon the universities. The issue is not *whether or not* to respond to the ecological crisis, but to understand the challenge, to critically assess how society approaches a response, and to help find points of meaningful response. While doing so, we recognize that in any response we 'co-produce' (Jasanoff) a new societal order, intended or unintended. Finding the appropriate response constitutes a new and profound agenda for research and education. But we also have to live up to our critical role as universities, raising questions where appropriate, acting on our academic independence.

Universities have come a long way. We have professional inter- and transdisciplinary associations addressing sustainability themes; we have established schools for environmental science. Slowly but steadily curricula that took the natural environment for granted are making way for new programmes, focusing on new economic models ('Beyond gross domestic product (GDP)'), on green chemistry or renewable energy systems, educating the next generations of sustainability experts. Going beyond programmes we want to prepare new students well, which implies a considerable rethink: what is the required knowledge for our alumni to fulfil their societal roles in the decades to come? What skills and attitudes do they need? Meanwhile we have developed sophisticated and varied scholarship to study and inform new environmental governance, from the local or urban level, analysing the increasing potential of cities to respond to the crisis, all the way up to the level of what has become known as 'earth system governance'. We have developed new academic theories to try and understand how the system behaves and what can be done in response, like 'circular' economies, transition studies or innovation eco-systems. And those theories have found their way to funding agencies like the EU, ERC or NWO.

It is in this new context that we position PtS for the coming years. To live up to expectations and help identify pathways to sustainability we need to take a couple of considerations into account.

Firstly, there is a growing sense that the magnitude of the intersecting crises we are facing require us to address the particular social order that produced the ecological breakdown in the first place and break with the functionalist logic of sectoralised solutions ('water', soil, air', 'energy') that dominated much of our thinking in the 20th century.[4] What is needed now is an integrated, holistic approach to address these interactions. Not only zoom in, also zoom out. Food systems, urban systems and energy systems, to name but three, strongly interrelate and we must analyse them as *nexus* issues to make sure that solutions for one do not lead to the detriment of others, requiring us to engage in new sorts of interdisciplinary research collaborations. We need to investigate the many *trade-offs* we face in trying to reach the potentially conflicting Sustainable Development Goals (SDGs). In all cases, this requires us to enhance our cross-disciplinary collaboration. Moreover, we do so in the awareness that breaking with current unsustainable

[4] Kruczkiewicz et al. 2021 Opinion: Compound risks and complex emergencies require new approaches to preparedness, PNAS May 11, 2021 118 (19) e2106795118; https://doi.org/10.1073/pnas.2106795118; Anu Ramaswami et al 2021 Carbon analytics for net-zero emissions sustainable cities, Nature Sustainability (2021), 13 May 2021.

practices implies dealing with vested interests that often have difficulty imagining a desirable future for themselves.[5]

Secondly, we recognize that any suggestion that the world can still reach the 1.5-degree target in climate policy is dependent on assumed availability of scarce resources needed for the production of new technological equipment (such as rare metals). It also opens up speculations of technological advancement, allowing elements in the mix, such as solar radiation management, that in themselves could have problematic political consequences and use the world as a laboratory without being able to predict the effects of interventions. Universities, having privileged access to understanding such potential effects, have a role in spotting and addressing such 'inconveniencies' early on and in raising awareness by sharing their insights in a manner that allows for a broader societal reflection.

Thirdly, we recognize that we need to combine understanding the natural system and derived ecological desiderata with issues of equity and fairness. Only *just* transitions have a chance of being truly sustainable. Moreover, it is hard to see how a transition would work, without taking redistributional effects into account, like for instance by thinking of regional (re)development strategies including the retraining and upskilling of workforces, that help overcome the resistance of vested interests, e.g. in moving out of coal mining. So far issues such as lifestyles have not been prominent in the political debate on sustainability. Now, far more than, say, ten years ago, we recognize the need to think about sustainability in new conceptual terms, such as 'de-growth' or 'just transitions'. The call to move from GDP to measuring economic performance in terms of 'well-being', or to be willing to examine a 'northern' and 'colonial' bias in sustainability research are echoing through the academic world.

Fourthly, we are more open to question what regimes are robust enough to come up with answers to the sustainability crisis. The notion of a 'mission-driven innovation', according to which government is to play a more prominent role in channelling innovations, is now often used, suggesting a new definition of the relation of market and society. Discourses on 'degrowth' or global inequality problematize the majority position in the sustainability debate of the past decades. It highlights the ways in which the exploitation of the natural world and the exploitation of some people by others have, historically, gone hand-in-hand. We have to be willing to allow for scholarship that addresses the deeper causes of a culture of exploitation including what explains the acceptability of an extractivist approach to nature, often coupled to the suggestion of 'entitlement' to do so.

Fifthly, we must enhance our fundamental scientific efforts not only to understand the climate system but to find solutions that allow us to find pathways to sustainability. We must invest in the full breadth of research areas; from new biobased materials, renewable energy production and energy storage to new legal instruments and policy rules that further a 'circular' economy; from finding sustainable and healthy diets to finding ways to cope with the manifestations of irreversible effects of climate change in the many cities in the deltas of our world. At the same time we are aware that technological solutions should be

[5] Bai et al. 2016 Plausible and desirable futures in the Anthropocene: A new research agenda, *Global Environmental Change,* Volume 39, July 2016, Pages 351-362.

related to thinking about redistributive effects and that a sustainable future requires us to rethink long prevailing notions of economic growth. We need more attention for what has become known as the 'deep' transition or 'societal transformation', connecting the ecological dimension to the social and political order that produced the problems in the first place.

Sixthly and finally, we have to open up to reflect on our own role. The sustainability crisis also impacts the way we organize ourselves in the academy. Coming to terms with the *relative* successes of the past 60 years spurs a debate of a new positioning of the academy. We need to build new connections between disciplines and create new fields of interaction. We need to revisit what 'sustainability' stands for, connecting natural sciences scholarship with the insights from social sciences and humanities. Moreover, we will need to attend how we interact with society. When it comes to the sustainability crisis, public engagement is crucial. Yet we are also home to scholars that study the relationship of science and society. In defining the best 'rules of engagement' we also want to draw on that scholarship, now scattered over the many university institutes. We have operated in the 'science-policy interface' under conditions that were not of our own choosing. As scientists we have been implicated in the circuits of policy making, as lead authors of IPCC or IPBES reports, as modelers or advising policy makers in various contexts more directly. But perhaps our alignment to the centre of politics, with its ever-pressing concern for the political concerns-of-the-day, has kept us from pursuing the lines of research that may open up the pathways to sustainability in the longer run. In 2021 we must help define pathways to futures that are sustainable and just for all, to come up with new perspectives that do not merely halt environmental degradation but show possibilities for restoration and improvement instead.

Drawing on these considerations, we have redefined the role and key objectives of the Strategic Theme Pathways to Sustainability.

Goals, Mission and Vision for Pathways 2022-2025

In light of the above, we propose to adjust the role and practice of the Strategic Theme Pathways to Sustainability to focus on spurring radical innovation in university practices to enhance our impact.

Pathways to Sustainability (PtS) has three main goals:

(1) Be the driver of change fostering sustainable thinking and practice, via the creation of *spaces for innovation, interdisciplinary and transdisciplinary interaction,* bringing together students and scholars from both early to established moments in their careers working on sustainability issues across the many different institutes and departments; thus

(2) Fulfilling the *critical role* that belongs to universities, not only thinking along but also critiquing developments where appropriate and coming up with *new imaginative ideas* about what sustainable futures may look like and how we could get there.

(3) *Finding new ways to connect our proven excellence in research and education to processes of societal learning*, creating more direct links with policy makers and stakeholders and society at large (transdisciplinarity).

As the planet is our canvas, we will single out clear domains in which we will seek to make a difference over the coming years.

By so doing we aim to enhance the overall impact of our UU sustainability scholarship and help find pathways to sustainable futures.

Our renewed vision, mission and leading principles read as follows:

Pathways to Sustainability 2022 - 2025

Sustainability research at Utrecht University is exceptionally strong and covers many different fields. Having the unique combination of top-notch fundamental natural science research and modelling; scholarship in innovation, transition, law, governance and sustainable finance as well as in the environmental humanities and social sciences, Utrecht University is, as a broad university, well positioned to be at the forefront of innovation in sustainability research and education.

Vision

Joining forces within the university and with society to discover, explore and validate pathways to just and sustainable futures for all.

Mission

Propel radical innovation in our university practices by creating vibrant communities fostering new collaborations in research and education, both within the university and with societal stakeholders, to enhance our impact on the exploration and development of pathways to sustainability, guided by the principle that scientific rigor meets societal relevance.

Our leadings principles

Rigor meets relevance
At Utrecht University rigor meets relevance. It is a place of discussion and scholarship, where the enhanced understanding of human-nature relationships, in all its facets, meets the active advancement of the capacity for innovation and renewal to create a sustainable and just global society.

Vibrant and inspiring community
Utrecht University is a place of invention, inspiration and community spirit. We particularly aim to create more space for early career scholars to collaborate on new lines of research and in the development of new educational practices. Pathways to Sustainability offers a home for a meeting of the minds, both from within the university and beyond. Utrecht University is a place where radical ideas are discussed and new societal strategies are born.

Ethics of Open Science
We fully embrace the principles of Open Science focusing on creating a reciprocal relationship with societal actors and being attentive to the ways in which academics can be roped into political conflicts. We believe in continuous debate and a climate where questions can and will be raised on issues of concern.

PtS as Community of Communities

Core to the theory of change of PtS is the idea that ideas can change institutions. We aim to create new ideas about how to approach sustainability, in research, teaching and societal engagement. More than before, we aim to assure that those new ideas get translated in the curricula, in research applications and are taken up in the societal debate. Crucial to the realization of breakthroughs is the active participation from scholars from different disciplines, different stages in their careers, any genders, different personal backgrounds and different connections to society. If we want to come to understand sustainability issues and help find solutions, that are both effective and fair, diversity is a precondition and a strength. The diversity of this community is something that we will actively strive to build; a community that is creative, open to all and diverse in its composition.

We see the Strategic Themes as the place to deepen the intellectual debate across the disciplines. It is here that we want to constantly step out of the everyday, focus on key issues related to sustainability problems, identify key intellectual puzzles that run through several disciplines to be solved by transdisciplinary and targeted research and education leading to radical innovations. A key question is *what kind of research and education* we need, to provide the insights society needs to work on the realization of the SDGs.

Given the scope of the programme, PtS will function as a 'community of communities'. To achieve its goals, PtS will stimulate and fund activities at the following levels:

- **PtS Core (Core team and Programme Board):**
  - ✓ Ensure that the overall quality of PtS work is cutting edge.
  - ✓ Coordination of an overarching communication strategy to generate high visibility and external positioning of UU sustainability research and education. This strategy will revolve around the PtS Communities and highlight signature projects.
  - ✓ Organisation of the intellectual debate and transdisciplinary exchange, via the annual conference, regular Sustainability Dialogues, and similar initiatives.

- **PtS Communities, led by 'troikas' from different faculties, around selected societally relevant and recognizable sustainability issues:**
  - ✓ This is where scholars group together for interdisciplinary exchange and collaboration.
  - ✓ Community members are actively involved in PtS Signature Projects, the development and implementation of PtS educational components, (the acquisition of) externally funded joint projects, and outreach/ engagement activities.

- **PtS Signature Projects, in which scholars from multiple PtS Communities collaborate around transformative, imaginative and long-term goals:**
  - ✓ Open call for large projects (up to 150k), running for four years.
  - ✓ Portfolio of smaller projects working towards a shared dot on the horizon. These projects can, but do not necessarily, work in a sequential order; one project building upon the insights of the previous one(s).

- ✓ Open for applications by interdisciplinary consortia aiming at constituting unusual and transdisciplinary collaborations to accelerate change.
- ✓ Signature projects are initially funded by the PtS programme but expected to bring in external funding.

By so doing PtS hopes to facilitate and accelerate different types of cross-disciplinary knowledge processes.

PtS Core

The PtS Core is responsible for the overarching initiatives like the annual conference in TivoliVredenburg, the Sustainability Dialogues, periodical meetings of decision makers with individual researchers, the so-called Utrecht Meetings (where researchers and stakeholders get together to think of alternative strategies for complex issues, like the usage of biobased materials, or the 'ultimum remedium' employment of strategies like geo-engineering), supports initiatives like the UYA KlimaatHelpdesk and the overall management of the programme. At programme level, the PtS Core implements an overarching communication strategy to generate high visibility of UU sustainability research and education. This strategy will revolve around the PtS Communities and highlight the PtS signature projects. This, for example, involves developing a new website and further (social) media presence. Its strategic decisions are taken in close consultation with the PtS Programme Board.

PtS Communities

We propose to replace the 'hubs' by 'Communities', emphasizing the need to collaborate and to express the open, inclusive nature: it is in the crossovers that we will find new answers. The PtS Communities are responsible for driving and deepening the inter- and transdisciplinary exchange and collaboration on key issues related to sustainability concerns. While we could easily envisage tens of Communities, resources require us to stick to a limited number. This allows us to reward both the leadership and fund some supporting staff. All UU scholars wanting to work or working on sustainability themes should feel invited and become excited to participate in one or more of these Communities.

Goals PtS Communities:

- Build on existing networks and proven excellence, further extending the active involvement of UU scholars
- Create new collaborations within and outside the university
- Set up and maintain strong networks with societal stakeholders
- Spur debate and develop new approaches

We propose the continuation of the five existing hubs and the creation of one new Community - Sustainable Oceans- based on the current NIOZ and UU collaboration. The following **thematic Communities** will focus on different aspects of sustainability:

- Energy in Transition
- Future Food

- Sustainable Cities
- Sustainable Oceans
- Towards a Circular Economy
- Water, Climate, Future Deltas

Next to those thematic Communities we suggest initiating the following Communities to further the goals of the programme:

- Critical Pathways
  This new Community is cross-cutting and will address the systemic nature of the sustainability crisis. What features stand in the way of finding a sustainable society? Critical of too easy suggestions of 'resolving' the crisis, it brings together the bright minds thinking about the deep repercussions of addressing the sustainability crisis: what are prevailing ideas and blind spots that have brought us here; to what extent do they continue to inform our understanding of the current predicaments of the planet? What sort of 'governance' might fit the challenge and can such fundamental societal transformation as is needed be seen as a 'governance issue' in the first place? What language is appropriate? The new Community aims to connect the scientific findings to re-imagining pathways to sustainability.

- Sustainability Education and Engagement
  This Community is to be the home to thinking about innovation in sustainability pedagogy, identifying graduate attributes (knowledge, skills and attitudes related to sustainability which are relevant to all UU graduates) which then may find their way to the UU curricula. The Sustainability Education and Engagement Community aims to investigate new modes of engagement to inform, educate and involve the different target groups about sustainability and enhance impact in various spheres of society. It connects PtS to the vice-deans for education and the Centre for Academic Teaching (CAT); will evaluate the existing curricula, and aims to come up with innovations in ways to teach the subject matter in accordance to the intellectual agenda of the university-wide sustainability research.

- Science for Sustainability
  This Community is the portal that brings together the many natural science researchers, actively contributing towards a more sustainable society, that thus far have not worked in collaboration with PtS. As the timescales are often markedly different, the goal here is to deepen the inter- and transdisciplinary engagement even beyond the natural sciences. PtS will be the connector between the work done in this Community and the work in the other Communities, as well as help to highlight the visibility of the Science for Sustainability Community in the outside world.

All Communities will be asked to define a set of pressing questions around which activities are focused. These questions should inspire scholars from all different disciplines to connect to the Community and to work together. Moreover, it is these questions that should resonate with societal stakeholders and partners, creating platforms for societal engagement. Communities will be asked to draw up a plan specifying goals, activities, and the deliverables they will be aiming for by the end of the next funding period. The Communities will be led – by 'troikas' – leadership teams with members from at least three

different departments and at least two different faculties. Communities are to determine who in their group will liaise with national (Nationale Wetenschapsagenda) and EU circles. Communities are also to determine who will be put forward for special skills development, e.g. in science communication and public private partnerships.

It is our hope that scholars focusing on fundamental scientific insights, whether it is on the scientific fundaments of the earth system, new materials or on issues of justice, economic order, lifestyle dynamics and behaviour, democracy or law, will feel invited to PtS Communities.

Within the Communities, specific special interest groups can be formed that are more focused and concentrate researchers from different disciplines working on specific topics. These special interest groups can also play a key role in creating connections to other strategic themes.

Signature Projects

At the interfaces both within and between Communities, we will fund Signature Projects: concentrated and guided group efforts on radical innovation accelerating change through unusual collaborations.

The idea of a Signature Project is to concentrate the effort of scholars on a highly challenging topic to initiate scientific breakthroughs or educational innovation through interdisciplinary and transdisciplinary collaborations. These can be a paper or a research proposal, creating a sustainability trajectory into the curriculum, but may also be an exhibition or a multimedia project with scholars and students. It can also be a collaboration of academics (WP) and supporting staff (OBP) on an issue like 'creating a sustainable campus'.

Signature Projects can be small or larger. The latter are typically 'dot on the horizon' projects with a focus on the long term (2050, 2100) of the development of new educational programmes. Examples of larger Signature Projects could be 'The 1.5 degree city of 2050', 'Sustainable NL2100' bringing together a range of disciplinary understandings of future challenges both in spatial terms and in terms of ways to get there, or 'Experiential learning at UU Science park' where students, faculty and supporting staff participate in creating a food forest or building of off-the-grid tiny houses. The Signature Projects will build on current strengths of Utrecht University and develop these further creating new connections between groups of disciplinary scholars.

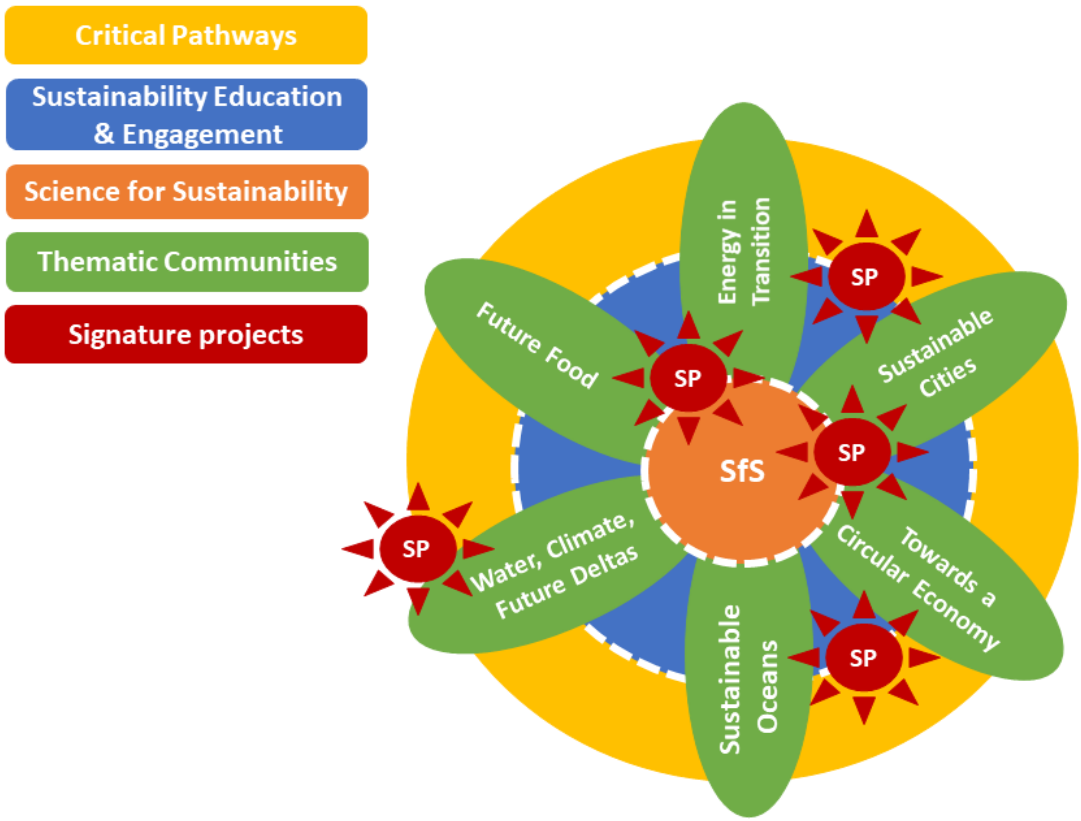
The Signature Projects are funded for a particular period of time and require a working group with members that come from more than three institutes and at least three faculties.

While the exact mechanism for funding must still be developed, we are thinking of announcing a call for proposals (twice a year), with the possibility to pitch ideas and create groups to collaborate. The sandpit model could be used to develop strong new proposals.

Resources will be made available for (young) researchers to allocate significant amounts of time to work on the proposition of the Signature Projects (see next section and figure 2).

The Signature Projects will always commit to concrete and well-defined deliverables; either creating a network, educational innovation in a programme, a written grant application, an installation for outreach or cutting-edge academic publications. Signature Projects are temporary and up for renewal after a fixed period of time, defined upfront.

Figure 1. Overview of the PtS Communities and the (illustrative) positioning of the PtS Signature Projects (SP)[6]



[6] This figure builds on the threefold image of transdisciplinary research by John Robinson, cf the Transdisciplinary Fieldguide, https://www.uu.nl/en/research/transdisciplinary-field-guide/get-started/what-is-transdisciplinary-research.

Strategies for radical innovation

Pathways to Sustainability wants to help reposition the university to maximize its impact on the sustainability crisis, one of the most pressing issues of our times. We see it as our responsibility to mobilize that what can help achieve this goal. We recognize that this is also a cultural repositioning. We align with similar initiatives such as Open Science and want to also strengthen our collaboration with the other strategic themes where relevant.

Similarly, we want to enhance the interaction between the academic community and the operational affairs of the university. Using the campuses as a 'living lab' is a very direct way in which Utrecht University can help find solutions and strategies for implementation. Linking the involvement of students, research and operational affairs is a major opportunity that requires new institutional connections.

The question is where to find the energy to cause this change in practice. We think engaging and positioning the new generation of early-career academics to follow their ideas, both in research, teaching and outreach can help achieve our goals. We hope that our senior academics will actively contribute, also by sharing their networks and allowing for open inter-generational communication.

We will do this by making PtS an open and welcoming environment. We will introduce instruments that create space, time and focus which will allow early career academics in particular to develop ground-breaking out-of-the box ideas and inter- and transdisciplinary collaborations in the context of PtS communities and Signature Projects (see figure 2). Moreover, we want to connect early career and senior academics so they can inspire and learn from each other.

We propose several different forms of open interaction, and creation of space, time and focus. Activities are related to research, teaching and/or impact.

Connecting academics by:

- On the webpage of pathways, there is a clear page on 'How can I become active within Pathways'.
- Organize UU *PtS retreats* to foster the sense of community.
- Earmark *funding for scholars* to spend on activities and events, such as a lecture series with guest speakers, seminars (early career scholars take the lead and set the intellectual agenda).
- Create *physical space* for scholars to meet and work (here we could consider collaboration with the Centre for Unusual Collaboration[7], which has indeed created its own physical space).

Creating space, time and focus in the context of Signature Projects introducing:

- Sabbaticals of 3-6 months for junior academics.
- Short-term fellowships for theme groups focusing on Signature Projects (2-3 scholars from multiple disciplinary backgrounds).

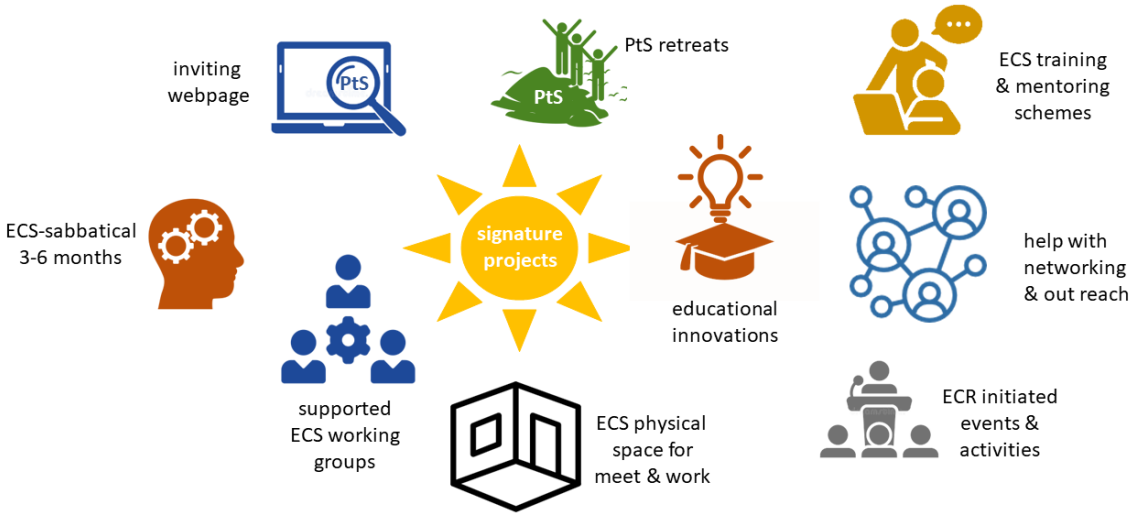
[7] https://www.unusualcollaborations.com

- Creation of working groups that work on cutting-edge, cross disciplinary research and education topics. The scholars work together for a longer period of time. They get together three times a year for two to three days, and in between have regular short meetings.
- 'A room of one's own', inspired by the Maths Duke department. Two 3-day events for scholars with intense daily human care responsibilities. For those who need some uninterrupted time. We will provide a hotel room for yourself (and care for the home front if needed) to work uninterrupted, and across PtS, others will work those days as well. Work in solidarity and solitarity.

Mentoring & training:

- Develop trainings or mentoring schemes for early-career scholars who start doing outreach/science communication. Among them media training by experienced members of the PtS community.
- Create mechanisms that help early-career academics connect with the 'outside world', including stakeholders in the networks of the strategic themes; enable them to make use of networks of senior scholars.
- Have a dedicated Sustainability education scholar to facilitate educational innovation, but also to research the effectiveness together with the academics in PtS. Most academics have little experience in educational research and Scholarship of Education and Learning (SOTL), and this mentoring programme will help to develop evidence-based innovations in education.

Figure 2. Strategy & instruments to enable team science engaging early career scholars (ECS)



On the Road

Having laid out our vision, and having discussed our draft document with many colleagues and administrators, we now look forward to getting on the road. The sustainability challenge is calling for the best of our efforts.