

NATURAL CONNECTIONS

EMBED SOCIAL SCIENCES AND HUMANITIES RESEARCH
IN INNOVATION



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The office is located at:

Prins Willem-Alexanderhof 20

2595 BE Den Haag

The Netherlands

t. +31 (0)70 311 09 20

e. secretariaat@awti.nl

w. <https://www.awti.nl/english>

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Summary

The Netherlands faces a number of complex challenges. Innovation is a vital element in addressing those challenges, but is not yet producing complete solutions. That is partly due to a lack of attention for the social and cultural aspects of societal challenges and innovation. That is precisely the focus of social sciences and humanities (SSH) research, which is world-class in the Netherlands. SSH research also generates many relevant innovations; and in fact, SSH research itself is sometimes the innovation.

If we wish to address complex challenges adequately, input from the social sciences and humanities is essential. This places a heavy responsibility on government, line ministries and SSH researchers. The question on which AWTI focuses in this advisory report is: 'What needs to happen to enable complex challenges to be addressed more effectively, given the importance and potential of social sciences and humanities research for innovation?'

Advice: Embed social sciences and humanities research in innovation

The Advisory Council for Science, Technology and Innovation (AWTI) believes it is essential to embed social sciences and humanities (SSH) research more firmly in innovation practice. At present, SSH research is not an automatic component of innovation; the present research and innovation policy does not adequately cover the field and even throws up obstacles. Conversely, innovation (or innovating) is not sufficiently embedded in the social sciences and humanities.

AWTI believes that this embedding should lead to a much-needed acceleration and consolidation of developments that are already in train. Given the urgent challenges facing Dutch society and the disruptive technological developments taking place around the world, there is a need for closer attention and a more decisive and vigorous approach. Innovation is about introducing and implementing the 'new', whether that be new products, new services, new concepts, new rules or new systems. There is a need for a more general awareness that innovation always has social, legal, cultural and ethnical dimensions, and that SSH research needs to be a more or less permanent component of innovation. The idea that this leads to delays in technological development and innovation is misplaced; in reality, it is precisely the failure to acknowledge and address those social, ethical, cultural and legal aspects which leads to delays.

Three recommendations for embedding SSH research in innovation

Social sciences and humanities (SSH) research thus needs to be more firmly embedded in innovation in order to be able to address complex challenges. But how? AWTI has three recommendations for achieving this. They are aimed at different actors: the government, SSH researchers, SSH educators and knowledge institutes, and line ministries. Following these recommendations involves striking a balance between facilitating and challenging. In other words, on the one hand AWTI argues for a broader interpretation of innovation, which is reflected in policy and practice and which allows for greater involvement of SSH researchers, whilst on the other hand recommending that the SSH field should itself also be challenged to make further progress in bringing about a culture change, thereby creating a sense that the SSH field is more involved in innovation.

Recommendation 1: Adapt research and innovation policy to incorporate relevant SSH research

AWTI calls on the government to take steps to ensure that SSH research is better aligned with and more involved in Dutch innovation policy. One way of doing this would be to gear the funding conditions more closely to the nature of SSH research, and to encourage better valorisation and impact in the Dutch knowledge and innovation system, incorporating a broad interpretation of innovation. AWTI recommends the following actions:

- ▶ Action 1. Broaden the definition of innovation in research and development policy.
- ▶ Action 2. Launch a development programme or facility for broad-based valorisation.
- ▶ Action 3. Facilitate a more inclusive and more systemic approach to innovation.

Recommendation 2: Challenge SSH researchers to focus more on innovation

A culture change is already under way in the social sciences and humanities (SSH), and this needs to continue: SSH researchers must take more emphatic ownership of innovation as a concept and apply it in a way that is appropriate for their disciplines. This could for example be done by devoting more attention to innovation in teaching and by establishing a link with design disciplines. AWTI recommends the following actions:

- ▶ Action 1. Strengthen the links between SSH research and practical application and innovation.
- ▶ Action 2. Strengthen the link between SSH and arts and design disciplines.
- ▶ Action 3. Make SSH teaching at universities more innovative.

- ▶ Action 4. Strengthen SSH expertise in higher professional education in order to increase innovative capacity.

Recommendation 3: Line ministries should actively involve SSH research in addressing complex issues

This recommendation calls on the government to make more and better use of SSH research and researchers in policy to address complex issues. Beyond the traditional research and innovation policy, complex issues are addressed in many areas within government, for example agriculture, care, safety and geopolitics. There is an explicit or implicit link here with research and innovation, and SSH research needs to inform this policy. A systemic approach requires acknowledgement of the complexity of the current challenges and a clear delineation of those challenges. It is crucial to ask the right questions here, and SSH research can inform this process.

- ▶ Action 1. Apply a systemic approach in the policy for complex issues.
- ▶ Action 2. Utilise SSH research by public knowledge institutes to inform policy.

Background: Current challenges are not being adequately addressed

Innovation plays a key role in addressing the complex challenges facing the Netherlands. However, insufficient headway is being made in resolving those challenges, partly due to a lack of attention for their social and cultural aspects. Social sciences and humanities (SSH) research focuses precisely on those aspects, and Dutch research in this field is world-class. Yet the Netherlands is not yet able to make full use of this strength. The government, line ministries and researchers have a major responsibility to improve this. But what needs to happen to bring this about?

1.1 Innovation can solve problems, but also cause them

The complex issues facing the Netherlands are many, and unless they are addressed adequately they pose serious risks to the well-being and welfare of the Netherlands. Examples include the growing health differentials in Dutch society,¹ the energy transition, the disruptive emergence of artificial intelligence, the declining authority of the government,² the care crisis,³ and migration.⁴ Addressing these kinds of issues requires innovation. Innovation - or innovating - is about introducing and implementing the 'new',⁵ whether this concerns new ideas, new products, new technology, new rules, new services or new policy.⁶ This renewal is needed in order to find answers to those challenges: new (partial) solutions, a new perspective or a new approach. Problems cannot be solved by using the approach which caused them.

There are any number of examples to illustrate the importance of innovation: digital forms of care, such as remote consultations, which help make care more accessible, for

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1. According to a report by the National Institute for Public Health and the Environment (RIVM), the difference in 'life expectancy in perceived good health' between people with a low and high socioeconomic status is 18 years (RIVM, 2023).
 2. See the work on this topic by the Council for Public Administration (ROB) (ROB, 2022).
 3. The Dutch health care system is becoming increasingly clogged up as demand for care outstrips the ability to provide it (Van Lonkhuyzen & Weeda, 2022; Van Fenema, 2023).
 4. See e.g. the work of the Advisory Council on Migration (Adviesraad Migratie, 2023).
 5. (Katz, Levin & Hamilton, 1963; Janssen, Stoopendaal & Putters, 2015; OECD, 2021; Mahringer, 2024)
 6. The concept of innovation has always been subject to evaluation (Godin, 2015). For most of history, innovation was seen as something negative; put simply, harmony and stability were regarded as important, and innovation disrupted this. Today, there are different models of innovation, which is generally regarded as something positive (Godin, 2017).

example.⁷ Innovation can also help by bringing about organisational renewal. An example is the energy cooperative, in which citizens are involved in the investments in and decision-making on energy generation, thus speeding up the energy transition.⁸ Examples of innovation at policy level are the introduction of mission-driven innovation policy or the concept of 'broad welfare'. All this can contribute to finding answers to these complex challenges.

But it is also the case that innovations in the past have sometimes been the cause of today's problems.⁹ Examples include the climate problem, which in reality is a result of innovations which made possible the large-scale extraction and burning of fossil fuels; or software developers using psychological insights and suggestive design to nudge customers into making particular choices that they may not wish to make (also referred to as 'dark patterns').¹⁰ The development and use of pesticides which harm insect populations is another example.¹¹

Although innovation plays an indispensable role in addressing the complex challenges facing Dutch society, then, the relationship between those challenges and innovation is not simple or straightforward. Innovation in whatever form can help in addressing problems and offer new opportunities, but this is not an automatic process.

Using innovation to address complex issues requires a considered view of innovation, because those issues often require transformation of existing systems (system innovations).¹² The direction (or success) of these transformations demands breadth of vision. The climate crisis has made this clear; there are no guarantees that the transformation needed to address climate change will succeed. Technical innovation is part of the story, for example circular production methods, use of alternative energy sources or new, recyclable materials,¹³ but success also depends on social, economic, institutional and ethical innovations. The development of the European carbon trading system is an example of a non-technical innovation. Another important example is the notion of 'climate justice', which is concerned with how the costs and benefits of the

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7. An example is the American company Omada, which offers 'virtual first' care founded on evidence-based social science research (Carey, 2020).
 8. (De Bakker, Lagendijk & Wiering, 2020)
 9. Also referred to as the dark side of innovation. (Coad *et al.*, 2021, 2022; Meijer & Thaens, 2021)
 10. (Kollmer & Eckhardt, 2023)
 11. (Van Der Sluijs *et al.*, 2013; Kunin, 2019)
 12. See also the recent AWTI advisory report 'Shaping the future' (AWTI, 2023).
 13. These 'technical' innovations also go hand in hand with behavioural adaptations and organisational change. A good example is the fact that recycling of smartphone batteries is technically straightforward, but difficult to organise.

transformation are shared.¹⁴ This is an innovative concept which has an impact on decisions and developments.

Transformations demand not only a change in ways of doing things (new products, modified rules, new policy) but also a change in thinking. Different mental or system models are needed regarding how 'things' relate to each other. It is logical that (new) social values are reflected in rules on technology, that the role of science in society changes, as does the relationship between politics and citizens. This implies a systemic approach in which system boundaries and goals are reformulated.

1.2 A one-sided view leads to problems

When considering these complex challenges and the responses to them, therefore, it is important to look not just at the technical dimensions, but also at the social, economic, ethical, legal and cultural aspects. Failure to do this (sufficiently) could give rise to societal problems.¹⁵

Reducing societal issues to their technological aspects moreover leads to an emphasis on 'cure' instead of 'prevention'. This leads to 'firefighting' instead of tackling the underlying structural problems.¹⁶ An example is the lack of capacity in youth mental health services; many young people are dealing with mental health problems and the waiting lists are long.¹⁷ However, before expanding youth mental health services, we first need to ask ourselves whether capacity is actually the problem, or whether we should be focusing on the underlying reason why so many young people need help.

Against this backdrop, in this section we use a number of recent examples to show that the Netherlands is currently unable to address complex issues adequately, partly because of a one-sided approach. We draw examples from the nitrogen crisis, the rise of artificial intelligence and the Covid pandemic, all of which symbolise a wider problem.

Narrow approach to the nitrogen crisis does not work

Problems with nitrogen have been around for decades.¹⁸ Although nitrogen emissions have fallen since the 1990s and regular successful interventions have been made, many

14. (Davidson, 2021; AIV, 2023; WRR, 2023b)

15. AWTI makes this point in (AWTI, 2020b, 2022d, 2023).

16. An example is the focus on medical and care innovation rather than lifetime education or a healthier living environment. See also (SER, 2023b).

17. As noted by the Health and Youth Care Inspectorate (IGJ) at the Ministry of Health, Welfare and Sport (IGJ, 2023).

18. The Netherlands has a very large livestock population, and emissions of nitrogen compounds per hectare are four times the European average. Other sectors also contribute to these very high emissions (Mouissie, 2022).

norms are still being exceeded, negatively impacting nature and our environment. The government has tried to intervene several times in recent years, partly in response to judicial rulings. These interventions have been made from a primarily 'technical' perspective, as illustrated by the fairly technocratic formulation of the policy objectives (e.g. a specific reduction in NH₃ and NO_x emissions), the analysis of the problem (using quantitative models and charts) and the proposed interventions (buying up farms, installing innovative animal stall systems, other technological solutions, extensification and management measures).¹⁹ Much less attention has been given to cultural aspects such as the identity and 'framing' of the countryside. The same applied for the socioeconomic dimension, with little regard for earlier measures which forced farmers to invest but which produced underwhelming emission reductions (thereby also undermining farmers' trust in the government). There was also insufficient attention for the legal dimension of the problem, namely the freedom and individual rights of farmers. The result was stagnation in resolving the nitrogen problems and great resistance against the agriculture policy. This in turn led to social unrest and rebellion, occasionally violent. Well-organised and robust knowledge about the cultural, socioeconomic and legal dimensions of agricultural innovation could have fostered greater understanding between policymakers and farmers. There have for example been dozens of farmer revolts in the past,²⁰ which have been the subject of much historical research, from which lessons could be learned for today. It is plausible that the lack of attention for these non-technological aspects of the problem helped to fuel the unrest.

Disruption by artificial intelligence

Another example of a narrow view of complex issues concerns artificial intelligence. This system technology has long been driven from an academic perspective by the question of how human intelligence could be imitated. In recent years, financial and economic opportunities have also provided an enormous boost for this technology, which offers opportunities for the energy transition, science and productivity in a general sense. But technology and innovation are not automatically 'good'; in the case of artificial intelligence, the technology has really taken off (partly thanks to the billions invested in it by venture capitalists²¹), but has also given rise to serious problems.²² Governments are competing with each other to try and attract innovative activities around artificial intelligence, for example by creating favourable conditions and light-touch regulation. This competition for the most favourable (and least restrictive) conditions makes it difficult to

19. (Pedroli & during, 2019; Adviescollege Stikstofproblematiek, 2020; Albers, 2022; Janssen, 2022)

20. See <https://nl.wikipedia.org/wiki/Boerenopstand>

21. (Amdur, 2023)

22. (Crawford, 2021; Passchier, 2023)

regulate the technology where needed.²³ Identified challenges include the systematic bias inherent in artificial intelligence and the fact that its use can lead to misinformation and disinformation.²⁴ The enormous influence of lobbying by technology companies also creates risks for democracy²⁵ and for the privacy and position of the weaker members of society.²⁶ Given the technological and financial opportunities, the speed of developments is so rapid that it threatens to displace the attention for the social, ethical and legal effects of this system technology.

Covid pandemic: little attention for the social consequences of policy

Our third example draws on events from recent years. The Covid-19 pandemic made a lot of people sick and laid bare the inadequate capacity of the health care system. The Netherlands was plunged into an acute crisis, along with the rest of the world.

Understandably, the focus was initially on protecting public health: in other words, the medical perspective dominated. This response to the outbreak was made possible among other things by the availability of a large body of existing research on infectious diseases and how to combat them. Since then, a broad consensus has evolved that the social effects of the Covid pandemic were neglected for too long, despite numerous warnings.²⁷

The Royal Netherlands Academy of Arts and Sciences (KNAW), for example, notes that there was ‘no systematic attention for knowledge from the social sciences on matters such as compliance with imposed measures’.²⁸ More generally, international research has also shown that the translation of insights from social science and humanities research into policy was slow and relatively ineffective.²⁹ The negative consequences of the neglecting of non-medical aspects of the crisis are significant, and include learning gaps, mental health problems among the young, or older people who died alone and lonely.³⁰ Here again, it is plausible that well-organised and robust knowledge about the socioeconomic, legal and social dimensions of health crises would have led to a greater understanding of and attention for the non-medical aspects of the crisis. This is also the conclusion of the Dutch Safety Board in its study of the way the pandemic was tackled: *“The handling of the pandemic was [...] as much an epidemiological as a behavioural issue. Knowledge and expertise were available in the social sciences to study and*

23. Regulation is one of the missions formulated by the WRR (WRR, 2021, p. 195).

24. AI-generated faces can no longer be distinguished from real faces, and are moreover more trusted (Nightingale & Farid, 2022). And several AI systems appear to have their own political preferences (Feng *et al.*, undated).

25. See the recent news reports on this (Bronzwaer, 2023; Djurickovic, 2023).

26. See also the book ‘Doe zelf normaal’ (Februari, 2023).

27. E.g. from the Netherlands Institute for Social Research (SCP) and the Council of Public Health & Society (RVS, 2020; Putters, 2021; OVV, 2023).

28. (Dykstra *et al.*, 2022, p. 43)

29. (Bardosh *et al.*, 2020)

30. (SCP, 2021; André, Reeskens & Völker, 2022; OVV, 2023)

*respond to this issue. The government made virtually no use of this expertise in designing measures or in order to build public support. As a result, insights from the social sciences played a limited role in tackling the crisis”.*³¹

1.3 Social sciences and humanities crucial for innovation

Employing innovation for addressing complex societal problems requires an acknowledgement of the sociological, organisational, economic and institutional aspects that are inherent in innovation. Social sciences and humanities (SSH) research accordingly plays an important and diverse role in innovation. See the Box below for a characterisation of this research field. SSH research generates many relevant innovations – and is sometimes itself the innovation – and also contributes to responsible and vigorous development and diffusion of technology and innovation in general. Innovations can take place at various ‘levels’: the practical level (e.g. a solar panel or carbon tax) or at system level (e.g. the transformation of the energy system). And it is precisely at that system level that SSH research also plays a key role.

What is social sciences and humanities research?

Social sciences and humanities (SSH) research is a collective name for a range of research disciplines such as psychology, social studies, economics, law, cultural studies, well-being and philosophy. The focus is on social interactions, human behaviour and the cultural products of humanity, such as the law, the market, language or technology.³² SSH research takes place not just at universities but also at universities of applied sciences, national research institutes,³³ civil-society organisations³⁴ and private companies. Companies carry out internal SSH research, for example in marketing and human resources. They also offer this research as a commercial service (research agencies and consultancies). Another way of approaching SSH research is organisational, through the departments, faculties or institutes where such research is carried out.³⁵ There are also authors who highlight

31. (OVV, 2023, p. 214)

32. (AWT, 2007; Callaert *et al.*, 2011; LERU, 2014)

33. Including government agencies such as the National Institute for Public Health and the Environment (RIVM) and the Netherlands Institute for Social Research (SCP), KNAW institutes or TNO.

34. E.g., NIVEL, Waag Futurelab, Kennisland or Movisie.

35. (Van Bavel *et al.*, 2022)

the SSH-specific culture,³⁶ methods and alliances.³⁷ Annex 3 provides a description of the SSH domain.

The scientific literature consulted by AWTI for this advisory report helped us to develop this broader view of innovation (see Box below, in which we set out how SSH research plays a role in different forms of innovation.³⁸ This gives rise to a range of different forms of 'SSH innovation', demonstrating its diversity and value.

AWTI uses relevant SSH research

A good deal of research, from various disciplines, has been carried out in recent decades on the role of social sciences and humanities research in innovation. The insights from that research have been used in this advisory report. We distinguished between five research fields in the literature. First, we drew on the literature on valorisation, research evaluation and impact pathways (see also Annex 4).³⁹ That research shows how and via which 'pathways' research ends up in society, and demonstrates that this is related among other things to the research domain concerned. Second, we described the significance of innovation based on philosophy (of technology).⁴⁰ This improved our understanding of the breadth of the concept of innovation. Third, we studied the literature on the diffusion of innovation, a tradition which goes back to the 1950s.⁴¹ This revealed diffusion of innovation to be an inherently social process. Fourth, we acknowledge the importance of the work on Constructive Technology Assessment, which emerged in the 1980s and 90s and in which the Netherlands holds a relatively strong position.⁴² The insights this produced show how important it is to engage in societal dialogue at an early stage on new technology and innovation. Finally, we drew on the literature on industrial revolutions, transformations and system innovation.⁴³

36. (Snow, 1990)

37. (Berends *et al.*, 2006; Trowler, 2012; Colavizza, Franssen & Van Leeuwen, 2019)

38. These are in line with the OECD definition of innovation, namely: "the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method" (OECD, 2013; OECD & Eurostat, 2018).

39. Mainly to be found in journals such as *Research Evaluations*, *Research Policy*, *Science and Public Policy* (Spaapen & Van Drooge, 2011; Van Drooge *et al.*, 2011; Van Drooge & De Jong, 2015; Muhonen, Benneworth & Olmos-Peñuela, 2019; Jong *et al.*, 2020).

40. (Verbeek, 2014; Lemmens & Hui, 2021; Blok, 2022; Swierstra *et al.*, 2022)

41. (Katz, Levin & Hamilton, 1963; Rogers, 2003; Greenhalgh *et al.*, 2004)

42. Relevant journals include *Science and Engineering Ethics* and *Journal of Responsible Innovation* (Schot & Rip, 1997; Krabbenborg, 2013; van Lente, Swierstra & Joly, 2017; Hennen *et al.*, 2023).

43. (Freeman & Louçã, 2002; Arthur, 2011; Loorbach, 2014; Bakker, 2017; Perez, Johnson & Kleiner, 2017; Nuvolari, 2019)

SSH plays a significant role in product and services innovation

An example of a product based on SSH research is the Diagnostic and Statistical Manual of Mental Disorders (DSM-5-TR).⁴⁴ This innovation helps psychiatrists and psychologists in diagnosing and treating people with psychological complaints. A very different example is the development of new public services (service innovation) driven by research on public organisations. Research on the digitalisation of government services, for example, has produced very specific developmental guidelines for an 'open government'.⁴⁵ Service innovation⁴⁶ naturally also includes many of the services developed in relation to insurance, accountancy, consultancy, legal and financial service delivery. They build on SSH research in fields such as financial, actuarial, organisational and management studies.

Technological product or service innovation is also regularly driven in part by SSH research.⁴⁷ Examples include the generative language model Chat-GPT, which is based among other things on research on language and linguistics. An example of a new service based on social science research is the 'virtual first' care offered by the American company Omada (a form of care which offers the choice of providing the initial care by telephone, computer or tablet).⁴⁸

SSH also generates institutional innovation

In addition to these product and service innovations, SSH research also plays a key role in institutional innovation, i.e. innovation involving a significant change in a set of norms, values, laws and rules.⁴⁹ An example is the development of the concepts of 'crimes against humanity' and 'genocide' (see Box).

44. In this way, SSH research generates a number of ontologies: words, definitions, characteristics and categories to help understand the world.

45. Defined as an 'improvement in the access to government information; accountability to society; promoting active and open cooperation by the government with society' <https://www.rijksoverheid.nl/onderwerpen/digitale-overheid/open-overheid>. See the research by (Meijer, Curtin & Hillebrandt, 2012).

46. (Van Der Aa & Elfring, 2002)

47. In fact, SSH research does not only generate 'good' innovations; insights from psychology were for example used by the company Cambridge Analytica, which was hired to influence the elections in the United States and other countries via Facebook. See sources on influencing people in elections via social media (Confessore, 2018), or the philosophical thinkers who inspire autocratic leaders (Hendricks, 2017).

48. (Carey, 2020)

49. (DiMaggio & Powell, 1983; Hargrave & Van De Ven, 2006; Battilana, Leca & Boxenbaum, 2009)

SSH innovation in the aftermath of war

War research can produce a new perspective on existing concepts and lead to the development of new concepts. Such conceptual developments are almost by definition an SSH innovation.⁵⁰ An example are the Nuremberg trials in 1945-46, where for the first time in history individuals were held criminally accountable by an international court; previously, this had only been possible for the state as a collective entity. In his book *Galicische wetten*, Philippe Sands explores the concepts of 'crimes against humanity' and 'genocide', both researched and developed by SSH researchers. The former, first applied in Nuremberg, was a new category of crimes. The other, genocide, focused not on the individual but on the group as victims. This concept did not fall within the jurisdiction of the Nuremberg Tribunal, yet the plaintiffs still used the term. The concept was developed further, resulting among other things in the Genocide Convention of 1948. Today, genocide is included as a crime in international law. This demonstrates how war research can have consequences for jurisprudence and how its aftermath can bring about a conceptual change. The example makes clear – against the backdrop of present-day wars – how important the innovative capacity of SSH research is.

Another example of institutional innovation concerns concepts such as 'gross domestic product' (GDP). This economic construct has a far-reaching influence on the perception of progress and therefore on countries' economic policy and the strategy of companies all over the world. Yet in addition to measuring material prosperity, GDP has also produced serious negative effects, including harm to the environment. A new innovation, 'broad welfare', is therefore emerging, which, as well as the economic dimensions of well-being, also takes into account social and environmental aspects. It builds on research from the disciplines fields of economics, sociology, environmental studies and care.⁵¹

At the interface where technology meets philosophy, sociology and law, research is carried out into the ethical, social and legal implications of new technology. Insights from the philosophy of technology and 'science and technology studies', for example, contribute to a critical reflection on issues such as artificial intelligence, immersive technology⁵² or biotechnology. This conscious perspective on research and innovation can be placed in the tradition of '(Critical) Technology Assessment' and was a core

50. (Guilfoyle, 2016; Sands, 2018)

51. (Bavel, Hardeman & Rijpma, 2019)

52. <https://www.rathenau.nl/nl/immersieve-technologie>

element of the Horizon 2020 programme.⁵³ The outcomes of such research can provide input for a public debate on technology and associated legislation and regulations.

SSH can generate organisational and process innovation

Organisational innovation and process innovation are concerned with the development and implementation of a new or improved organisational model or process. Among other things this includes ‘business model innovation’: a different way of organising work (sometimes called ‘social innovation’ in the Netherlands).⁵⁴ An example is the emergence of platforms such as Airbnb, Facebook or TikTok, Peerby in the Netherlands, Uber and much of the Dutch shopping site Bol.⁵⁵ These innovations involve bringing together people and resources, whereby the platform – and sometimes the participants – earn money through transactions or advertising. The power of these platforms can grow rapidly and can easily lead to a market monopoly, with negative consequences for consumers and citizens. The EU is for example currently looking at ‘gatekeeper platforms’ (large technology companies which control access to online consumer markets), partly based on SSH research.⁵⁶ Another example: research on energy cooperatives⁵⁷ or new business models⁵⁸ contributes to the understanding, further development, promotion or regulation of these new organisational forms. And research in political science and public administration can generate knowledge on alternative democratic processes such as citizen councils, participation, co-creation or better tendering rules.

SSH also leads to policy innovation

An example of policy innovation⁵⁹ is the research by the European Joint Research Centre in Seville, which carries out socio-economic and techno-economic research in support of EU policy. Then there is the European Emission Trading System (ETS) referred to earlier, one of the most successful instruments for reducing emissions. It drew heavily on insights from economic research (e.g. game theory) and administrative research.⁶⁰ Policy innovation can also arise because an advisory body makes recommendations to government based on SSH research. For example, the Netherlands Scientific Council for Government Policy (WRR) recently advised the government on climate justice, partly based on a philosophical working paper. If the government follows the recommendation for a fair distribution of climate costs, this will be a form of policy innovation stemming

53. (van Lente, Swierstra & Joly, 2017)

54. (AWT, 2014; SER, 2023)

55. (Hagel, 2015; Frenken, 2016)

56. (Europese Commissie, 2022)

57. (De Bakker, Lagendijk & Wiering, 2020)

58. (Osterwalder, Pigneur & Clark, 2010)

59. See <https://oecd-opsi.org/> for detailed information on innovation in the public sector.

60. (Dinar, Albiac & Sánchez-Soriano, 2008; European Commission, 2021)

from SSH research. Another example is how the research carried out by the Netherlands Institute for Social Research (SCP) on 'human perceptions and policy'⁶¹ can hold up a mirror to policymakers and subsequently lead to policy adjustments. Academic research can also serve as input for policy innovation (see Box).

Promoting sustainable behaviour

Social sciences and humanities (SSH) research finds its way into society for example through practice-oriented research at universities of applied sciences. An example is the work carried out by the Psychology for Sustainable Cities research group at Amsterdam University of Applied Sciences. This research investigates how people develop sustainable behaviour – i.e. behaviour which causes minimal or no environmental damage. The methodology, drawn from the behavioural sciences, provides recommendations that can be applied in practice, for example on how to encourage energy-efficient behaviour in people's own homes or on reducing fuel poverty in large cities.⁶²

Under the banners 'behavioural insights' and 'policy experiments', behavioural insights can make a positive contribution to policy development. A Dutch example is the Behavioural Insights Network Netherlands (BIN NL).⁶³ Internationally, the work of the winners of the Nobel Prize for Economics, Abhijit Banerjee and Esther Duflo, provide an example of how social experiments and observations can increase the understanding of the economic and social complexities around poverty.⁶⁴ Their work resulted in small but significant improvements in policy.⁶⁵

SSH plays an important role in system innovation

Innovation is not only relevant at a practical level (a product, service, process or policy instrument), but also at system level. Here, innovation is about how specific things relate to each other or are organised in practice.⁶⁶ There have been several periods in the past when new systems arose, for example during industrial revolutions or the emergence of

61. (Gebhardt & Feijten, 2022)

62. Professor Reint Jan Renes is a winner of the Deltapremie prize from the Taskforce for Applied Research SIA (Regieorgaan SIA). This prize is awarded for work showing where research, practice and education come together in an innovative and impactful way.

63. (BIN NL, 2019)

64. (Banerjee en Duflo, 2019)

65. (Ravallion, 2012)

66. System innovation is concerned with the reconfiguration or restructuring of systems, such as the food system or the energy system (OECD, 2016; Blok, 2020; WRR, 2021). It involves changes within the system, but also a change in the relationship between the system components. System innovation is also referred to as transformation (AWTI, 2023).

the consumer society.⁶⁷ The invention of the steam engine and the discovery of electricity led to a complete restructuring of society. System changes such as these give rise to a new order based on new values, organisation and technology. The old is destroyed ('creative destruction'⁶⁸).

Continuing this argument, we can say that the development and diffusion of solar panels contributes to the energy transition and at the same time disrupts the existing order of earlier innovations based on fossil fuels.⁶⁹ Another example is the development of artificial intelligence (AI): an innovation (creation) at the practical level, but one that also has a destructive effect at system level, disrupting the order of innovations based on human intelligence.⁷⁰ This can cause technologies or processes that are embedded in a human logic to change or even disappear. Legal scholars, for example, warn about the prospect of 'robot judges' dealing with large volumes of standard cases".⁷¹ As well as opportunities, artificial intelligence also creates new risks and dilemmas (see also Box on next page). The reason that processes based on human logic could partially disappear is that the order or system in which they had meaning and fulfilled a role has disappeared.⁷² Innovation as a process at this system level is also referred to as transformation.⁷³ The vision, direction or mission of that transformation is the new order, or the outcome at system level.

SSH research plays an important role at system level. System changes can be disruptive and lead to considerable tensions. Several SSH disciplines, such as philosophy, sociology and economics, help with thinking about system innovation or transformation, and therefore in steering these developments.⁷⁴ The literature on transformational innovation policy helps the government to develop policy that can drive and steer transitions. A discipline like 'system thinking' is crucial for identifying 'leverage points' for system change⁷⁵ (points in the system such as groups of people, companies, networks or

67. (Freeman & Louçã, 2002; Johnson, 2015; Perez, Johnson & Kleiner, 2017)

68. (Schumpeter, 1934)

69. These levels of innovation are interrelated and can even be interdependent: innovation of a specific artefact (practice) always stems from the existing order (system). The process of innovation thus takes place within the existing order, but the outcome can destroy that order and create a new one.

70. AI is therefore also described as a system technology (WRR, 2021).

71. (Prins & Van der Roest, 2018)

72. (Blok, 2020)

73. (Weber & Rohrer, 2012; Loorbach, 2014; Schot & Steinmueller, 2018; AWTI, 2023)

74. See e.g. the book by the economist Richard Nelson entitled 'The Moon and the Ghetto' (Nelson, 1977), which explores the question of why humanity was able to put a man on the moon but is incapable of eliminating poverty. This conceptual distinction between moon missions and ghetto problems is relevant, and crops up in the thinking about transitions (Mazzucato, 2018; Wanzenböck *et al.*, 2020; Minister van EZK, 2023).

75. (Meadows, 2015)

particular policy, where interventions can be made).⁷⁶ Concepts such as 'broad welfare'⁷⁷ or 'modernity'⁷⁸ help in understanding the (desired) changes, talking about them and aiming for them. SSH research thus has the power to critically deconstruct societal topics and developments, in the sense that it exposes preconceptions such as hidden values or morality. This can sometimes feel uncomfortable, but is crucial if an innovation is to succeed at the level of the system, in other words a transformation.

Demystifying artificial intelligence

Philosophy of technology is a subdiscipline of philosophy, in the humanities. It is concerned with the relationship between people, technology and the world. The research focuses on how society and technology shape each other. An important insight here is that technology not only leads to improvements, but can also exacerbate existing problems or create new ones. Philosophy of technology also teaches us that we must not be naïve in our thoughts and actions about technology: for example, we must not think that people are always in control of developments, or that technology consists of neutral instruments.⁷⁹

These insights, together with insights from other disciplines such as ethics, sociology and law, help in channelling new technological developments in the desired direction. The Netherlands Scientific Council for Government Policy (WRR) published an advisory report on AI in 2021 ('Opgave AI' ('Mission AI')) looking at how to deal with the rapid developments around artificial intelligence. The report was based in part on insights from philosophy of technology.⁸⁰ One of the five 'missions' identified for the government was to 'demystify' the new technology, helping to create a realistic picture of what a technology can and cannot do, in order to temper high expectations or doomsday scenarios.⁸¹

1.4 What needs to happen?

SSH research has the potential to play a (more) important role in innovation and thus in addressing complex issues. That role has received too little attention, even though the

76. (Spitz, 2023)

77. (SER, 2023a)

78. (Latour, 1993)

79. (Swierstra *et al.*, 2022; Beerends, 2023)

80. A related example is how insights from ethics can lead to the formulation of principles around AI (Van Wynsberghe, 2020).

81. (WRR, 2021, p. 144)

scientific achievements of SSH research in the Netherlands are among the best in the world.⁸² AWTI accordingly addressed the following request for advice:

What needs to happen to address complex issues more effectively, given the potential of social sciences and humanities research in the Netherlands?

This advisory report takes the complex challenges facing the Netherlands as a starting point and reflects on the role of SSH research in innovation to address those challenges. It is worth emphasising that (scientific) research and innovation are not able on their own to resolve the challenges: political and societal choices also have to be made.⁸³ The problem on which this advisory report focuses is a design problem, as it were: how do we organise the approach to complex problems in such a way that the different components (research, innovation, politics, etc.) each contribute from their own strength and role? In particular, this advisory report is concerned with how we can ensure the most effective deployment and utilisation of SSH research in addressing these issues.

Advisory councils generally direct their advisory reports to the government and parliament, but in this report AWTI also makes recommendations aimed at other actors, such as researchers and knowledge institutes.

Creation of this advisory report

This advisory report was created in a number of steps (see Annex 1 for more details). AWTI carried out a policy analysis, studied four case studies, spoke to more than 30 experts, attended meetings and organised a series of roundtable meetings itself. Annex 2 contains a list of the people interviewed for this report.

The policy analysis explored how research and innovation policy influences the (under)utilisation of SSH research for innovation, in the light of the challenges we face as a nation.⁸⁴ The four research and innovation case studies served to expose the implications of this policy and practice.⁸⁵ Among other things, we looked at possible obstacles preventing SSH research from contributing to innovation. We also studied various facts and figures about the SSH domain (see Annex 3 for a brief overview).

Three roundtable meetings were organised with support from The Argumentation Factory (De Argumentenfabriek). These meetings were attended by (SSH) researchers and

82. (Vennekens, 2022)

83. See e.g. (Clinton, 2023).

84. We reflect on Dutch research and innovation policy on the basis of six policy instruments. See Annex 5 for a brief description of the approach and the policy.

85. We studied the following case studies. The Robust Programme for responsible artificial intelligence; the Convergence Programme on 'resilient deltas'; the Prevent programme focusing on preventative healthcare in the community; and research on the Netherlands' colonial past and its impact on the present. a brief description can be found in section 2.3.

practitioners or potential 'consumers' of knowledge. The central question addressed in these roundtable meetings was: 'How can we make better use of SSH research for innovation?' The insights gained in these meetings were assessed by the Council and used as input for this report. The information map created on the basis of these meetings can be found on the AWTI website.

In the final phase of the preparation of the report, the text was submitted to two external referees,⁸⁶ who were asked to reflect on the consistency of the draft report and highlight any gaps. The referees' comments were incorporated in the report under the responsibility of the Council.

Project group

This report was prepared by a project group consisting of Council members Marleen Stikker (chair), Jolanda Kluin and Koenraad Debackere, and staff members Chris Eveleens, Bart Gulden, Jeffrey de Hoogen, Anna Walsweer and Maartje Dingemans.

86. Namely Lotte Krabbenborg and Evert-Jan Velzing.

Advice: Embed social sciences and humanities research in innovation

AWTI believes it is vital to embed the social sciences and humanities (SSH) more firmly in innovation practice. Chapter 1 showed that SSH research delivers many innovations which can help in addressing complex problems, but this potential is not being fully utilised. Current government research and innovation policy draws too little on SSH research in relation to innovation, and other (sectoral) policy could also make better use of SSH research. Conversely, innovation is insufficiently embedded within the social sciences and humanities. To break through this impasse, embedding SSH research in innovation is of great importance.

The embedding advocated by AWTI implies a need to step up and strengthen a development that is already under way.⁸⁷ Technological, economic, sociological, institutional and organisational dynamics are always interwoven with the development and diffusion of innovation.⁸⁸ A more general realisation is needed that innovation *always* has social, cultural and ethical dimensions, and that SSH research should be a more or less permanent component of this process. The idea that this will slow down technological development and innovation is incorrect; in fact, it is precisely failing to acknowledge the social, ethical and legal aspects of innovation which leads to delay.⁸⁹ Incorporating SSH can avoid policy that is counter-productive, slows down good developments unnecessarily or makes solutions needlessly complex.

The prevailing overly narrow perception of innovation means there is too little emphasis on the relevance, input and visibility of SSH research.⁹⁰ This underutilisation and lack of visibility in turn sustains the limited, narrow perception of innovation. Breaking through this vicious circle requires a stronger embedding of SSH research in innovation (and thus a broadening of the concept of innovation). It is important that the dynamics in different SSH research fields are taken into account in the domain-specific implementation of the

87. This call is a logical next step in line with the advice given by AWTI, which defines innovation broadly; see e.g. (AWTI, 2020b, 2022c; RVS, 2022; AWTI, 2023).

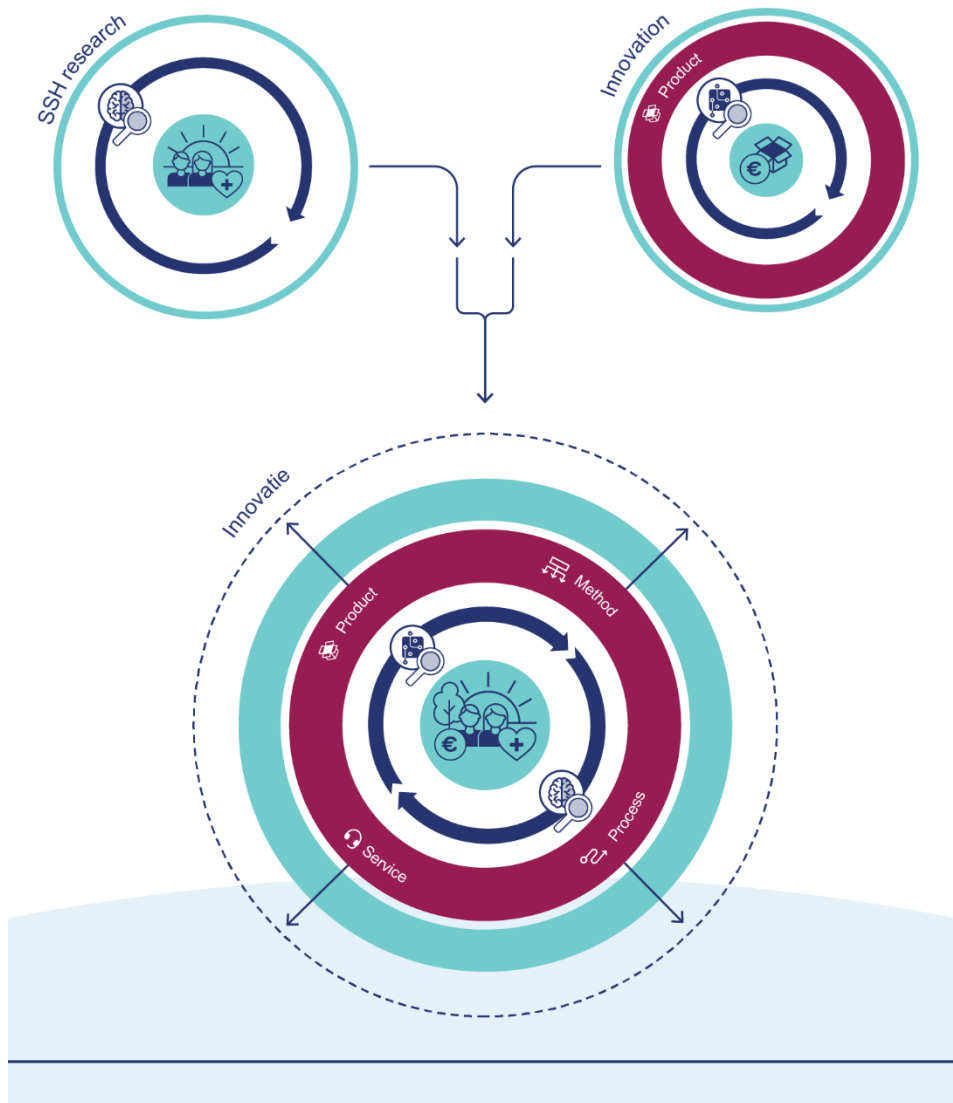
88. By way of illustration, see the MIT Press book series 'Inside Technology', which provides an insight into the systemic dimensions of technology development and how it is interwoven with economic, sociological and institutional dimensions. See <https://mitpress.mit.edu/series/inside-technology/>

89. Examples include the formulation of standards and regulations in relation to technology development (the domain covered by SSH) which ultimately largely determine the success of every technology variant (Blind *et al.*, 2023).

90. (Callaert *et al.*, 2011)

AWTI recommendations. Ultimately this will enable complex issues to be addressed more effectively.

Embed SSH research in innovation to address societal challenges.



This chapter fleshes out the AWTI advice to embed SSH research more emphatically in innovation (Chapter 3 explains how this embedding can be achieved). Section 2.1 argues that too little use is currently made of SSH research in innovation and that policy measures exacerbate this problem. Section 2.2 shows that better use could be made of SSH research not only in research and innovation policy, but in other policy too. Finally, section 2.3 argues that the SSH domain itself is also insufficiently focused on innovation and making an impact.

2.1 Research and innovation policy makes too little use of SSH research

As chapter 1 showed, SSH-research can play a significant role in a broadly interpreted innovation, provided sufficient scope is allowed for SSH-research in policy and practice. Although we have seen a broadening of the interpretation of innovation and valorisation in recent decades, thus creating more scope for SSH research, a broad, systemic view of innovation is still not commonplace. Instead, we see policy measures which actually stand in the way of the contribution that SSH research can make: forcing research into a project-based structure ('projectification'), use of inappropriate indicators or the usual requirement of co-funding. So, although a trend is under way towards a broader interpretation of innovation, valorisation and impact, it is striking that in current policy practice innovation is still predominantly seen as a technological artefact with a financial return.

Three policy impediments to SSH innovation

The present innovation policy is optimised for specific forms of research and innovation. A first impediment to SSH innovation is that research today is mainly organised in the form of projects and programmes, which are moreover time-limited. This 'projectification of research and innovation is appropriate for research where the setting can be readily controlled and where the results are tangible and measurable. It is however questionable how well this aligns with the gradual character of innovation stemming from SSH research, which often delivers 'results' more indirectly and more in the long term.⁹¹ An example are the changes in people's behaviour or beliefs, in line with the transformations that are currently under way. There is moreover a heavy emphasis on original outcomes from research projects, leaving relatively little room for replication. Although SSH researchers can also work in delineated projects and other disciplines are also subject to

91. An example is the gradual nature of progress delivered by health research, environmental research or social research (Berman & Fox, 2023). See also (van IJzendoorn, 2023), who shows how complicated it is and how long it takes to develop an evidence-based psychological therapy.

'projectification', this is still an impediment to the utilisation of SSH research for innovation.

A second problem is the way in which impact is visualised. The way this is usually done is mainly suited to specific types of research and innovation, with a preference for tangible, material results in the short term. Although this focus on short-term results is understandable in many fields, and is sometimes also appropriate in SSH, it generally leads to a mismatch with the nature of SSH research, the results of which typically manifest themselves only in the longer term.⁹² This is a problem which was mentioned in many of the interviews held in preparing this report, though it does not apply exclusively for SSH research. In socially relevant SSH research (academic, applied or practice-oriented), impact often arises purely by doing the research, in practice, with people. One way that impact could be made measurable in this case would be to look at the growth in the (research) network and the involvement of external parties. Another way of quantifying impact is through the built-up expertise in a given topic area (for example training courses offered or field labs). For SSH research generally, there are opportunities to increase impact for example by organising roundtable meetings with administrators and policymakers. Impact can then be achieved and made visible in a way that is appropriate for SSH research.

A third characteristic of the current policy is that it generates social relevance through the financial involvement of potential users of the knowledge generated. Obtaining (private) co-funding is therefore a typical condition for research. Although this is an excellent condition for research which can generate a financial return (e.g. for companies), it is not a good fit for research which focuses on non-financial values. Research on curing diseases, for example, can often attract co-funding, but research on preventing those diseases cannot because businesses are not able to earn money from it. While it is true that governments should be able to fund research using the money saved through prevention, in practice researchers mainly have to rely on private co-funding.⁹³ Many research and innovation programmes moreover expect cooperation between formal research institutes and actors such as companies, civil-society organisations and governments. This is understandable given the importance of transdisciplinary research; this form of knowledge development incorporates practical knowledge and the results are

92. See e.g. the book 'Gradual', which shows that, given sufficient time, apparently small steps can lead to significant change (Berman en Fox, 2023).

93. In principle, the non-financial value of innovations can be expressed in monetary terms, creating an incentive to invest in them, especially for a government. K but the government consists of many different entities, and the government actors which are in a position to invest and intervene in a given problem are not always the same as those stand to gain financially from the solution. U for example, the promotion of prevention and well-being is often a task for local authorities, whereas the savings on care budgets are seen at national level.

immediately embedded in practice. But where companies, and sometimes governments, can make capacity available for this – because it is ‘earned back’, as it were – this is not always possible for civil-society actors – precisely the actors with which SSH research needs to collaborate.

Conceptual broadening is taking place

If we look over a longer period of time, we observe a growing trend towards a broader interpretation of innovation, valorisation and impact. This increases the potential for SSH research to contribute to innovation. In 2007, the then Advisory Council for Science and Technology Policy (AWT) noted that ‘it is good to view valorisation in a broader perspective’.⁹⁴ Its report on the social sciences and humanities (‘Alfa en gamma stralen’) called for the incentivising of and support for ‘valorisation from the humanities and social sciences’. Several years later this was elaborated in the report ‘Waardevol’ (‘Valuable’), which focused on indicators for valorisation.⁹⁵ The report showed that – depending among other things on the research domain – both quantitative and qualitative data are needed to properly measure the broad impact of research. This broadening of what we regard as valuable research outcomes (or quality) is also reflected in the discussion on recognition and evaluation⁹⁶ and in the report by the Royal Netherlands Academy of Arts and Sciences (KNAW) on scientific values.⁹⁷ There is growing attention for the diversity of impact pathways, i.e. ‘routes’ or narratives about how research and its outcomes impact on society. As stated, the impact and/or results of SSH research tend to be more indirect and manifest themselves over the longer term.

In the current policy, this broadening in the perceptions of innovation is reflected in what research funders ask of researchers, for example a ‘theory of change’, i.e. a narrative on how the research can lead to change in society. This theory of change plays an important role in the calls stemming from the Knowledge and Innovation Covenant (KIC) under the Mission-driven Top Sector and Innovation Policy, and also in the National Research Agenda (NWA) programme. This creates scope for indirect, non-economic and long-term forms of impact and innovation. Moreover, these programmes have been set up in response to societal missions or questions, so that SSH researchers, together with researchers from other fields and practitioners, should in principle be able to make a valuable contribution to knowledge development and innovation. It is worth noting the

94. (AWT, 2007, p. 5). Valorisation is the utilisation of knowledge, or the process of creating value from knowledge. The term originally had a financial/economic connotation, though this has become broader.

95. (Van Drooge *et al.*, 2011)

96. (VSNU *et al.*, 2019; Mitchell, 2021; AWTI, 2022b)

97. (KNAW, 2022)

broadening of the definition of well-being and welfare in the broader policy.⁹⁸ This engenders more attention for non-financial outcomes of research and innovation, an area where SSH research plays a key role.

But: narrow interpretation of innovation still dominant in policy

At the same time, in current policy practice innovation is predominantly seen as a technological artefact with a financial return. This is particularly evident in the Mission-driven Top Sector and Innovation Policy (MTIB) and in the National Growth Fund (NGF), which in terms of impact and budget account for a very large slice of Dutch innovation policy (see Annex 5 for a broader overview of relevant policy).

The MTIB focuses on economic opportunities in societal challenges. Economic growth is the driver and translates into expectations regarding which type of research and knowledge is likely to contribute to this – and therefore which research is funded. This is made clear in the following passage from a letter to the Dutch parliament entitled ‘Towards Mission-driven Innovation Policy with Impact’ (‘Naar Missiegedreven Innovatiebeleid met Impact’) from 2018.⁹⁹

‘Scientists can use missions to begin new research on diseases, new technologies or data. Businesses can use this knowledge for the development of tangible products. The government’s intention is to make it easier to develop groundbreaking innovations and to shorten the time between development and market. The intention is that these solutions, innovations and technologies help resolve global societal challenges.’¹⁰⁰

The passage highlights that knowledge generated from research is regarded as useful for the development of tangible technological products. It thus adopts a fairly narrow conception of innovation, the impact of which is tangible and direct.

The MTIB was recently recalibrated, but the interpretation of innovation has not changed significantly.¹⁰¹ Although the relationship between economic growth and societal missions appears to be more in balance, the prime focus of the minister is on ‘valorisation and market creation’, a reference to the above letter to parliament.¹⁰² The direct route from research to innovation via the business community remains dominant in this policy. Measurable economic effects are a condition for support.

98. (SER, 2023a)

99. (Minister van EZK, 2018)

100. <https://www.topsectoren.nl/innovatie>

101. (Minister van EZK, 2023, p. 2)

102. (Minister van EZK & Minister van OCW, 2022)

It is worth noting here that the Knowledge and Innovation Agenda for Social Earning Capacity (KIA MV) forms an interesting exception to this techno-economic focus.¹⁰³ The Agenda calls for 'new methods and indicators for valuing economic, ecological, societal and social returns'. In taking this approach, the KIA is aiming to encourage innovations with a societal objective which are often only (economically) viable over the longer term. It is telling that this type of research and innovation has been placed in a separate agenda.

Like the MTIB, the National Growth Fund does not always make optimum use of SSH research in innovation. Despite the Fund's focus on economic growth, some SSH research can play a role in the projects financed by the Fund; examples include SSH research which can lead to innovation in the services sector and therefore to economic growth, or research on the labour market and labour market participation, such as the project 'Meer uren werkt' ('More hours works!')¹⁰⁴ This project, in which project partners such as TNO, the Future of Work Hub from Utrecht University and the Ministry of Social Affairs and Employment, 'is aimed at developing and implementing (new) evidence-based interventions to increase the labour participation rate of part-time workers in order to increase the labour supply.' SSH research plays a significant role here.¹⁰⁵

Given the original focus on economic growth, however, much SSH research will have little chance to play a role in this policy instrument. The contribution to social and cultural dimensions of well-being and prosperity generally receives less attention; savings in societal costs through preventative care, more effective poverty policy or more sustainable behaviour by companies is for example generally not regarded as contributing to economic growth.¹⁰⁶ Yet these are policy themes for which SSH research is eminently suitable. It is known that since the creation of the National Growth Fund, increasing account is taken of this broad approach to growth, reinforced by the introduction of the 'departmental route' (in which applicants can develop a plan in collaboration with a government ministry). In practice, however, the plans funded by the Growth Fund are predominantly technological in nature, with financial and economic outcomes. SSH is thus not specifically excluded in advance, but in practice plays a subordinate role. The demand for demonstrable economic growth forces the emphasis onto the short term and tangible, generally material research outcomes. An example is

103. <https://maatschappelijkverdienvermogen.nl/>

104. <https://www.nationaalgroeifonds.nl/overzicht-lopende-projecten/thema-onderwijs/meer-uren-werkt>

105. There are also several projects in the field of education in which SSH research plays a role.

106. If economic growth is defined as sustainable and inclusive (broad), this scope does appear.

However, when setting up the Fund it was decided that the contribution of proposed projects to economic growth had to be determined based on the increase in GDP. It is now recognised that a contribution to GDP is often impossible, and instead use is mainly made of a 'theory of change' approach to assess the anticipated impact.

the 'GroenVermogenNL' ('GreenCapacityNL') project, in which six of the seven modules are focused on the technological, spatial and material aspects of a green economy. Only the seventh element is focused on 'socioeconomic aspects and implementation of hydrogen'.¹⁰⁷

2.2 Other policy could also make better use of SSH research

The foregoing looked mainly at the government's research and innovation policy and how it facilitates or inhibits SSH research and innovation. However, the interviews, case studies, roundtable meetings and a number of reports showed that SSH research could be used more effectively in other forms of policy as well, in both government and parliament.¹⁰⁸ An example is sectoral policy, which addresses complex issues and is the responsibility of line ministries: the nitrogen policy handled by the Ministry of Agriculture, Nature and Food Quality, the policy on climate and energy under the auspices of the Ministry of Economic Affairs and Climate Policy, or the policy around digitalisation handled by the Ministry the Interior and Kingdom Relations are all good examples. Although we are seeing an increase in activities which promote the utilisation of SSH knowledge in policy, this is not yet happening enough.

More activities to make better use of SSH knowledge

A number of improvements have been made to raise the knowledge level of the Dutch parliament, for example the 'science test' and research fact sheets produced by the Parliament and Science partnership. The Parliamentary Analysis and Research Department has also been strengthened.¹⁰⁹ Efforts are also under way to strengthen the knowledge position of government ministries with the help of Chief Science Officers and the Knowledge Directors, who focus on strategic knowledge development and promoting a culture which accords a more prominent place to utilisation of knowledge.¹¹⁰ The Knowledge Centre for Policy, part of the Ministry of Justice and Security, also promotes better use of knowledge, for example via the Policy Compass.¹¹¹ Yet another way in which SSH and other research could be used more effectively for policy is through the thematic programming of the National Research Agenda (NWA), which can be used by government ministries as a vehicle for posing questions that are relevant for policy

107. As this policy takes economic earning capacity as a starting point, there is little scope for questioning this principle at system level. SSH research could play a key role here, for example by investigating how innovation in an economic sense can also lead to new problems, as described in chapter 1.

108. (AWTI, 2021b; ROB, 2022; Werkgroep versterking functies Tweede Kamer, 2023)

109. <https://parlementenwetenschap.nl/>

110. (Rijksoverheid.nl, undated)

111. <https://www.kcbr.nl/beleid-en-regelgeving-ontwikkelen/beleidskompas>

development. For example, the Ministry of Education, Culture and Science and the Ministry of Social Affairs and Employment have developed a three-million-euro programme focusing on how vulnerable women can be helped to become and remain independent. Government advisory bodies and other government knowledge institutes also have a key role to play in providing relevant SSH and other knowledge for policy. The Behavioural Insights Network Netherlands (BIN NL), for example, has the mission of ‘promoting the further application of behavioural knowledge within government.’¹¹² Finally, the government advisory councils, such as the Scientific Council for Government Policy, the Council for the Environment and Infrastructure, the Health Council of the Netherlands, the Council for Public Administration and AWTI can all press for better utilisation of SSH research for policy.

Yet utilisation of SSH research for policy is improving

The knowledge culture that is needed at government ministries – something to which AWTI referred in its advisory report ‘State of Knowledge’ (‘Rijk aan kennis’) – has not yet been achieved.¹¹³ Moreover, despite improvements, ministries are still not always sufficiently able to utilise behavioural insights to help with issues such as the energy transition.¹¹⁴ Identified barriers include a lack of embedding in working methods, lack of stimulus from managers, lack of available behavioural expertise and lack of reward. Despite the many Dutch actors who are involved in utilising knowledge for policy, in a joint project (with the Netherlands as a partner), the OECD and the European Commission Joint Research Centre still see room for improvement.¹¹⁵

Finally, several interviewees and participants in the roundtable meetings highlighted the importance of ‘asking the right policy questions’. SSH research, in combination with political and societal leadership, has an important role to play here. One example referred to earlier is the observed capacity shortage in youth mental health services; before deciding to increase the capacity, it is important first to investigate what is causing it.

112. The network was established in 2014 in response to advisory reports from the WRR (WRR, 2017) and others, and comprises 2820 members. In 2019 the Behavioural Insights Network Netherlands BIN NL published a report on behavioural insights for government (‘Rijk aan gedragsinzichten’) (BIN NL, 2019).

113. The rate of job rotation has diminished, but is still high, and can form an impediment to knowledge-building (ABD, 2017; Van der Steen *et al.*, 2021); and in many vacancies, subject knowledge is subordinate to process knowledge and political sensitivity, or is not mentioned at all (De Vries, 2023).

114. (Paradies *et al.*, 2023)

115. The Netherlands finds itself in the paradoxical situation of having a rich, well developed landscape for the utilisation of knowledge for policy, whereas the actual utilisation of knowledge for policy is limited (WRR, 2023a). According to the researchers, this is due among other things to the knowledge absorption capacity of policymakers, but also to a lack of understanding on the part of knowledge providers about how policy is made.

Another example are the missions referred to earlier in the Mission-driven Top Sector and Innovation Policy (MTIB). The goals and associated research and innovation projects are established in consultation between companies, government and knowledge institutes; there is no input from civil-society organisations or citizens. However, these projects are often not focused on the future, but on reinforcing existing positions.¹¹⁶ Critical reflection on the hidden values underlying the question formulations in the projects could be helpful here. Or take the development of new, sustainable energy technologies for achieving climate objectives; other ways of consuming could also be considered to achieve the objectives, for example 'true pricing'¹¹⁷ of services and products, setting an example, or utilising citizen participation to bring about a paradigms shift.¹¹⁸ These are all policy interventions (innovations) which stem from (concepts in) SSH research, such as the behavioural sciences, economics and philosophy.¹¹⁹

2.3 SSH also needs to be more emphatically engaged with innovation

Embedding SSH research more firmly in innovation helps resolve societal issues, but also increases the innovative capacity of SSH researchers and institutes themselves. The culture and practice of SSH research is moving towards innovation, interaction and having an impact, but needs a new impulse to increase the innovative capacity of this research domain. It should be said that this applies to a lesser extent for the research carried out at universities of applied sciences, which is already highly practice-oriented and impactful. It is essential for all SSH research that it does not focus on a narrow interpretation of innovation, but rather 'stretches' this interpretation.

Much is already happening: SSH increasingly focused on innovation and impact

First and foremost, it is worth noting that a great deal is in fact already happening, and societal impact is increasingly becoming a central focus in SSH research. Enterprising researchers in numerous locations and from different disciplines are willing and able to contribute to diverse forms of impact and innovation (see Box on next page). There is a visible development in thinking about and practising innovation in this domain.¹²⁰

There is also growing attention for the type of skills that this engagement requires, ranging from integration and collaboration with other disciplines to knowledge about

116. (AWTI, 2023)

117. <https://www.milieuentraal.nl/bewust-winkelen/true-price/>

118. (Paradies & van den Brink, 2023)

119. (Meadows, 2015)

120. (Engersen *et al.*, 2022; Van Bavel *et al.*, 2022; Sociaal Wetenschappelijke Raad, KNAW, and SGW-NWO, SSH-Raad)

research communication and how to perform research together with experts from practice (transdisciplinary research). Collaboration with civil-society actors and companies (externally funded or otherwise) helps in the performance of SSH research focusing on innovation, just as it helps in other research domains.

Occasional connections are also being established between creative education programmes (such as the arts and engineering studies) and SSH research; this kind of interdisciplinary collaboration combines the critical and analytical aspects of SSH research with the creative power of the arts. The Creative Humanities Academy at Utrecht University, for example, has the aim of '*connecting cultural professionals and makers with researchers and students for mutual development and inspiration*'.

One way in which SSH research has an impact is via the service economy. Business services, trade and hospitality are major sectors in the Dutch economy.¹²¹ The Netherlands is relatively strong in the area of knowledge-intensive services, as illustrated by their share in total exports.¹²² A substantial proportion of workers in these sectors have a background in SSH disciplines (see Annex 3), and the close interrelationship between research and higher education means they hold all manner of insights from SSH research, demonstrating once again that people are important carriers of knowledge.

Four examples of SSH research and innovation

Use of artificial intelligence (AI) in addressing societal challenges

The SSH disciplines were deliberately involved in technology development in ROBUST, a large research programme focusing on AI. This research on the reliable and sustainable use of AI is based around public-private 'labs'; one is the 'RAIL lab', in which AI is used to improve logistics and planning on the railways. Researchers are also studying the interaction between human logistics planners and AI planners to see where AI helps human activity and where it impedes it.¹²³

Shaping collaboration

How can collaboration between researchers from different disciplines be put into practice, and how can knowledge from non-academic partners be integrated? The Resilient Delta – Convergence programme focuses on these methodological

121. See figures on employment structure from Statistics Netherlands (CBS).

122. This is an indicator in the European Innovation Scoreboard 2021 on which the Netherlands scores relatively highly (Hollanders, Es-Sadki & Rantcheva, 2021; Sleuwaegen, 2022).

123. (Website UvA, 2023)

questions in one of its research projects.¹²⁴ The programme entails collaboration between Delft University of Technology (TU Delft), Erasmus MC and Erasmus University Rotterdam with a view to addressing societal challenges (such as climate change, rising sea levels and inequality in delta regions). There are three 'Gluon researchers' tasked with playing a linking role between the different disciplines within the programme. These researchers are a tangible example of a form of collaboration in which an integration specialist takes the lead in promoting and stepping up the collaboration between different disciplines. There are also 'living labs' around Rotterdam and Delft focusing on interdisciplinary research, co-creation and developing new education programmes.¹²⁵

Better quality of life and community in cities

The Prevent programme aims to increase the quality of life and community in the urban environment. It is an eight-year programme in which six professors from Utrecht University of Applied Sciences and four from Amsterdam University of Applied Sciences work together with more than 30 partners (knowledge institutes, partners from policymaking and practice, and residents' organisations).¹²⁶ Together they focus on integral neighbourhood prevention at the interface of health and well-being. This is an example of far-reaching integration of disciplines and close integration with practice. Prevent is one of the 17 recipients of a SPRONG grant awarded by the SIA regional body,¹²⁷ part of the Knowledge and Innovation Agenda for Care.

Research on the history of slavery and emancipation in the Atlantic world

A good deal of research has been carried out in this field in recent years, from human trafficking and smuggling and emancipation strategies for enslaved people to transformations in the thinking about slavery and emancipation. As well as carrying out research and teaching, a researcher such as Karwan Fatah-Black also takes an active part in the public debate about the Dutch colonial past and history of slavery and about racism. Through numerous advisory assignments and projects, he works on translating research into understanding and societal change. He does this among other things by recalibrating the 'Canon of the Netherlands', an overview of the most important events from Dutch history. Research on the role of different organisations in historical slavery also not infrequently leads to an acknowledgement of the past and

124. <https://convergence.nl/resilient-delta/>

125. (Website Convergence, undated)

126. (Website HU, 2021). For a list of research groups and researchers involved, see <https://www.hu.nl/onderzoek/projecten/prevent-integrale-wijkgerichte-preventie>

127. <https://husite.nl/prevent/> (Website Regieorgaan SIA, 2021).

to new phenomena such as the commemoration year for historical slavery.¹²⁸ These are forms of cultural innovation and policy innovation.

Greater involvement of SSH domain is needed

The foregoing notwithstanding, there is room for improvement. There is an acknowledgement from the SSH domain itself that, in order to make a bigger contribution to innovation, attitudes to innovation (and to impact) need to evolve further. This is necessary in a number of areas.

First – and this is not unique to SSH – there is a primary focus on generating scientific impact. Recent research by the Erasmus Centre for Entrepreneurship reveals a number of structural and cultural barriers to an entrepreneurial attitude by researchers.¹²⁹ A focus on scientific impact fits in with specialisation; and while a specialism is generally seen as a ‘higher’ form of knowledge, when pursuing innovation and impact it is often necessary to work across the boundaries of individual specialisms.

Second, (academic) SSH research is characterised by a more contemplative, reflective and deconstructive approach. This implies a certain reticence among some SSH researchers to raise their external profile, whereas it is precisely the interaction with civil-society actors which contributes to the potential impact that a researcher can make. SSH researchers are generally trained in terms of reflection and distance, which means they cast a critical eye (from a distance) on problem formulations. Research within this domain is often critical or deconstructive, for example exposing preconceptions such as hidden values or morality. This can make it difficult to reconstruct and/or make a direct translation into a positive outcome. The challenge here is therefore to make insights from SSH research ‘activating’ or constructive, leading to innovation. Several interviewees couched it in terms of having too little striking power or ‘escalation’; reflection causes intervention to fade to the background. While it is true that this does not apply to all SSH research and, as stated, it is also not unique to this domain, it nonetheless emerges as a pattern in numerous case studies and is endorsed by both SSH and non-SSH researchers. What SSH researchers can learn through collaboration with researchers from technical fields or from the arts is a willingness to focus on practical application.

128. (Oostindie, 2023; Van der Kris, 2023)

129. The authors conclude that, “interviewees identify potential barriers related to policies, regulations, and governmental support systems for academic spinoffs, specifically for SSH [Social sciences and humanities]. Implementing innovative programmes or interventions often involves engaging with government agencies, policymakers, or other institutions. However, navigating bureaucratic processes (including current IP ownership structures), securing necessary permissions, or ensuring policy alignment can be challenging and discourage (aspiring) academic entrepreneurs.” (Fuligni *et al.*, 2023, p. 27).

Finally, SSH research programming is often inspired and motivated by societal trends. But several interviewees, including those active in SSH, reported that 'the SSH' is not always sufficiently aware of the need for knowledge in society. The case studies showed that many researchers are aware of the urgency of and need for collaborative action, but that it is often difficult in practice to deliver socially robust knowledge. It is now apparent, for example, that some of the research outcomes in social psychology are not reproducible.¹³⁰ This makes them unreliable and therefore unsuitable for use in practice. Apart from the content of the research, the form in which knowledge becomes available also needs to be better aligned with practice. One interviewee reported that SSH researchers often offer a more nuanced view of the problem, whereas other actors in society, such as policymakers and companies, have to make practical and pragmatic choices. Nuance can be necessary, but is not helpful in making such choices. Research on the operation and effectiveness of a proposed policy instrument, for example, is likely to lead to certain margins of uncertainty and nuancing factors (depending on the individual case); but ultimately a policymaker has to decide whether or not a measure will be introduced.

SSH research in higher professional education more focused on innovation and impact, but could sometimes be more critical

It is worth noting that many of these points apply to a lesser extent to SSH research carried out at universities of applied sciences. The research here is more focused on practice, and carrying out the research and teaching on it already has impact. Practice-oriented research begins with a question from practitioners and research outcomes can consist not just of written text, but also of prototypes, protocols, models or lesson material.¹³¹ Internships and minor programmes are also ways of incorporating practice into education. Higher professional education (at universities of applied sciences) automatically takes an interventionist stance, for example through collaboration with companies or civil-society organisations.

This does not however mean that higher professional education is without challenges; but they are different from the challenges faced by SSH research at universities and research institutes. Collaboration with companies or civil-society organisations can lead to an overly case-specific problem definition or give the impression that the partner's perspective is the only one. It is then important to have a critical attitude to the formulation of problems. Tactical research and innovation can be enriched here by creating more

130. Psychologists refer to a 'replication crisis' (<https://osf.io/ezcuj/>) (Giner-Sorolla, 2019; Berkman & Wilson, 2021).

131. See the national platform Publinova, where the results of practice-oriented research are shared: <https://www.surf.nl/diensten/publinova>

scope for reflection on the ethical, social and legal aspects, thereby increasing the impact.

There are several examples of this, such as the Responsible IT research group at Amsterdam University of Applied Sciences or the Ethics and Technology research group at Saxion University of Applied Sciences. A new phenomenon in education is the cross-sectoral Master's programmes, in which teaching is provided across different research domains, although the value of these programmes has yet to be proven.

More innovation, but taking account of the nature of SSH

It is important to emphasise that the intention is not that SSH should align with the existing logic around research-led innovation. There are key differences between research domains, which should be recognised. For example, the nature of the work of SSH researchers and the practice with which they are engaged requires a different phasing and speed in the innovation process than in the case of the introduction of a technical artefact. Think of the behavioural change that is needed to ensure successful innovations; that change can often only be secured with longer-term, multiple interventions and monitoring.¹³² Moreover, the research topics in SSH are more often politically and societally sensitive than those in other domains – issues relating to migration, for example, or the colonial past, or gender (in)equality. The public debate around topics such as these illustrates the relevance of research on them, but placing the results of that research in the public domain does require specific knowledge and skills.

It is also important to acknowledge the nature of the field when considering the form taken by research results. There is a risk of behaving as if the often non-material innovations emerging from SSH research should resemble innovations developed from a technical/material perspective. An example is where attempts are made to measure every new insight using quantitative parameters, for example asking how much it contributes to the economy, or where SSH insights are only acknowledged if they support a technical or medical innovation. While it is sometimes possible to attach a 'value to SSH knowledge in a way that corresponds with technical/economic innovations,¹³³ this must not become a straitjacket for 'SSH innovation'.

132. (Muhonen, Benneworth & Olmos-Peñuela, 2019; Berman & Fox, 2023)

133. See e.g. the importance of non-material innovation in knowledge-intensive services as a share of Dutch exports (Sleuwaegen, 2022).

Three recommendations for embedding SSH research in innovation

How can SSH research be more firmly embedded in innovation so as to make a contribution to addressing complex issues? AWTI makes three main recommendations entailing different specific actions. They are aimed at several actors: the government (adaptation of the research and innovation policy); SSH researchers, trainers and knowledge institutes (more emphatic engagement with innovation); and line ministries (adopt a more systematic approach in addressing complex issues and utilise SSH research in this).

It is important to see these recommendations in balance: it is about a combination of facilitating and challenging. On the one hand, AWTI calls for a broader interpretation of innovation in government innovation policy and in the practice surrounding research and innovation; this will open the way for SSH research to play a full part. On the other hand, AWTI wishes to challenge those in the SSH field to realise a further culture change, opening the way for a more natural engagement with innovation and impact. The ambition is that this should lead to a situation in which everyone understands that SSH research warrants a permanent place in innovation.

The recommended actions are based partly on a survey of relevant initiatives at home and abroad (see Annex 1). The roundtable meetings also produced important information and inspiration regarding what does and does not have a chance of success (see www.awti.nl for the information map summarising these meetings). The numbering of the recommendations and actions does not imply any ranking – the figures are purely intended to offer an overview.

3.1 Recommendation 1: Adapt research and innovation policy to incorporate relevant SSH research

AWTI calls on the government to adapt Dutch research and innovation policy to allow for better alignment of SSH research with the policy. This is crucial for finding adequate responses to the challenges facing Dutch society and will lead to more innovation that contributes to well-being in a broad sense. The Minister of Education, Culture and Science and the Minister of Economic Affairs and Climate Policy need to take charge of implementing this recommendation.

The present innovation policy is designed with an overly narrow view of innovation. Chapter 1 showed that innovation assumes many more guises than simply technical artefacts with financial returns. Chapter 2 showed that a narrow interpretation of innovation still dominates in much of government research and innovation policy. Partly because of this, too little use is made of SSH research and innovations do not contribute as much as they might to finding solutions to complex issues.

Recommendation 1: Adapt research and innovation policy to incorporate relevant SSH research.



This recommendation can be implemented by taking the following three actions.¹³⁴

► **Action 1. Adopt a broader definition of innovation in research and development policy**

The Ministry of Education, Culture and Science and the Ministry of Economic Affairs and Climate Policy must draw on SSH research in establishing a broader interpretation of innovation and ensuring that innovation policy serves societal goals. In practice, this means that the innovation policy must be subjected to critical review from an SSH perspective.¹³⁵ There are several ways of doing this: an interdepartmental policy review, an external meta-evaluation or including a regular evaluation question (or component) in the evaluation of different policy instruments. This also requires a critical review of which missions should be funded in the Mission-driven Top Sector and Innovation Policy (MTIB). The (implicit) objectives of the National Growth Fund similarly require a critical review. The recent AWTI advisory report 'Shaping the future' shows that it is far too often the 'usual suspects' who determine the goals and therefore the direction of policy, leading to innovation policy that is insufficiently transformative.¹³⁶ This reflection is also needed in other areas of government research and innovation policy: what kind of innovation does the policy produce, and does it help in addressing complex issues?¹³⁷

► **Action 2. Launch a development programme or facility for broad-based valorisation**

The Ministry of Education, Culture and Science and the Ministry of Economic Affairs and Climate Policy are advised to provide an impulse to the further development of valorisation and impact in the Dutch knowledge and innovation system. Emphatic attention needs to be given in this process to a broad interpretation of innovation, in which SSH research can play a full part. This impulse could for example consist of a subsidy programme, and should lead to more and better tools for ensuring impact

134. These actions also include suggestions from the roundtable meetings, and especially from those classified in the information map under 'valuing SSH' and 'funding research'. In processing these suggestions, AWTI took into account whether or not something is already happening (sufficiently), the expected positive and potentially negative (side-)effects, and the feasibility.

135. The Netherlands has a rich tradition of research on technological development and innovation, as highlighted in Chapter 1. This served as an inspiration for this advisory report and must also be taken on board in the further development of the research and innovation policy. Research on the innovation policy is also very useful in fulfilling this action. (Velzing, 2013).

136. (AWTI, 2023)

137. N.B. AWTI will be publishing an advisory report later this year on the transformative capacity of the present innovation system.

and innovation with SSH.¹³⁸ A development is already under way in the Netherlands towards reflecting on and experimenting with specific forms of valorisation of SSH research.¹³⁹ The Knowledge Transfer Offices (KTOs) at universities are engaged in this, for example, as are the national research institutes and the DROP network at universities of applied sciences. They are explicitly going beyond facilitating knowledge-intensive activity, for example also setting up living labs in which they collaborate with civil-society partners or businesses in the region.¹⁴⁰ Rather than 'business developers', terms such as 'impact officers' and 'ecosystem builders' are used. These bottom-up developments help in fleshing out the third core task of knowledge institutes and should be encouraged by the government.

► **Action 3. Facilitate a more inclusive and more systematic approach to innovation**

AWTI recommends that the Ministry of Education, Culture and Science and the Ministry of Economic Affairs and Climate Policy make the research and innovation system more inclusive, thereby creating scope to utilise SSH research.¹⁴¹ The requirement for co-funding could for example be relaxed where transdisciplinary research contributes to broad welfare but not necessarily to economic prosperity.¹⁴² Build long-term funding into the research and innovation system which is geared to the nature of the impact of SSH research (and which counters the tendency towards 'projectification' of innovation research; see section 2.1). The conditions can also be made more inclusive using simple steps; the discipline codes used in research applications, for example, are often based on traditional classifications and impede

138. See also the AWTI reports 'A better start' and 'Seizing opportunities with knowledge' (AWTI, 2020a, 2021a).

139. This development builds on a tradition and practice in the natural science and medical research disciplines. Examples are Technology Transfer Offices (TTOs), incubators and Business Developers. Attention has recently been growing for how the facilities and support for valorisation and knowledge transfer would be structured in SSH research. However, the Knowledge Transfer Offices (KTOs) are still in development in this regard. An analysis by Swedish and Italian researchers (Borrás, Gerli & Cenzato, 2024) confirms the broadening of the role of TTOs, but also the existing impediments: "Our empirical findings reveal a disconnect between the prescribed expanded role of TTOs and their actual interpretation of that role. Additionally, TTOs lack the flexible mandates necessary for engaging in transformative innovation diffusion and the expertise to assess societal needs and impacts."

140. For example, the Academic Workshop for Public Healthcare in the province of Limburg, in which the local health service and Maastricht University work together to improve the health of local residents.

141. It is important here to build on the rich basis and tradition of research on technology and innovation, for example the work on responsible innovation, productive interactions, philosophy of technology, critical technology assessment, etc. See also the Box in Chapter 1 'AWTI uses relevant SSH research'.

142. See the AWTI report 'Unbounded research' (AWTI, 2022c).

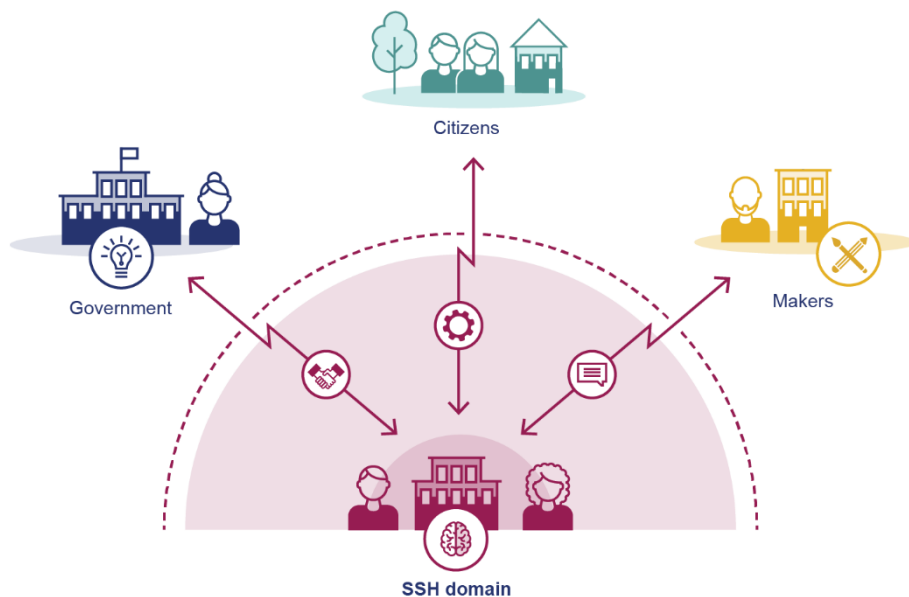
interdisciplinarity.¹⁴³ Transdisciplinary collaboration is key for research on complex issues, including with actors from practice. It is therefore important to include this requirement in the research conditions. Finally, the system will be made more inclusive if an interdisciplinary and transdisciplinary approach is adopted when writing research calls. This means that SSH researchers will also need to be included in the bidding teams and that dialogue must be possible about each other's assumptions on what constitutes 'good science' and 'relevant impact'. Adaptations such as these will encourage more relevant groups of researchers and practitioners to participate in innovation. This in turn will contribute to a broader approach to innovation, in which innovations are more readily studied and implemented as an interactive whole. This approach will also make innovation more systemic.

3.2 Recommendation 2: Challenge SSH researchers to focus more on innovation

AWTI believes the innovative capacity of the Netherlands stands to benefit from the (even) more active involvement of SSH research(ers) in innovation. The culture change that has begun needs to be continued: SSH researchers must take more emphatic ownership of the concept of innovation by using it more and applying it in a way that is appropriate for their disciplines.

143. See also the project on 'collective knowledge development' by The Young Academy and the Dutch Research Council (NWO).

Recommendation 2: Challenge SSH researchers to focus more on innovation.



AWTI expects SSH researchers and knowledge institutes (universities, universities of applied sciences, research institutes) to continue with this culture change, and in this recommendation asks the Minister of Education, Culture and Science to encourage this development. Consultation platforms such as the SSH Council¹⁴⁴ (with links to universities, the Dutch Research Council (NWO) and the Royal Netherlands Academy of Arts and Sciences (KNAW)), the DROP network of universities of applied sciences, the university umbrella organisation UNL, KNAW and the Association of Universities of Applied Sciences can all help implement the actions set out below. Organisations that which are not formally classed as public knowledge institutes but which do carry out SSH research (including private companies and civil-society organisations) can also be involved in implementing this recommendation.

144. SSH Council of the Netherlands (SSH Raad).

This recommendation can be implemented by carrying out the following actions.¹⁴⁵

► **Action 1. Strengthen the links between SSH research and its practical application and innovation**

This report shows that SSH research can play a crucial role in innovation to address complex societal issues. In some cases, SSH research is actually the only route to finding solutions for problems.¹⁴⁶ AWTI accordingly recommend that SSH researchers and institutes further embrace the term ‘innovation’ and apply it in a way that is appropriate for their discipline.¹⁴⁷ Critical deconstruction (see 2.3) should lead to innovative reconstruction, so that the quest for innovative solutions does not grind to a halt.¹⁴⁸ Develop an impact-oriented attitude further by reflecting carefully in advance on how to deal with potential controversies around a research topic, with contradictory research outcomes and with media requests. This kind of careful reflection by researchers and administrators will help prevent risk-avoiding behaviour.¹⁴⁹ Many domains have protocols and routines, but this is less true in the SSH domain.

Two developments will help in the implementation of this action. First, the notion of broad welfare offers pointers for a demand-led approach and for (the contribution of) innovation in the SSH domain to be made visible. Second, we are witnessing increasing societal engagement in all areas of research and innovation (from demand articulation to implementation and diffusion), such as participative research methods, transdisciplinary research and ‘citizen science’¹⁵⁰. This trend also warrants further encouragement in the sector; the development of relevant and robust SSH knowledge depends on a stronger connection between research and society.

145. These actions also include suggestions from the roundtable meetings, and especially from those classified in the information map under ‘increasing relevance’ and ‘facilitating application’. In processing these suggestions, AWTI took into account whether or not something is already happening (sufficiently), the expected positive and potentially negative (side-)effects, and the feasibility.

146. For example, challenges around polarisation, identity and migration, and social safety.

147. The SSH Council has made a start on this with the Key Enabling Expertises (KEX’), which have yet to be fully implemented in practice (Sociaal Wetenschappelijke Raad, KNAW, and SGW-NWO, SSH-Raad).

148. Deconstruction is a philosophical concept; put simply, it means exposing preconceptions. The challenge then is not to stop at deconstruction: without innovative reconstruction, deconstruction creates the risk of permanent confusion and clichéd relativism.

149. See e.g. the book on dealing with complex pressures, ‘Omgaan met complexe druk’ (Wittebrood & Braak, 2022).

150. See e.g. the work in the field of Responsible Research and Innovation and Societal Engagement, which shows that societal engagement is a crucial element of socially responsible innovation (Bauer, Bogner & Fuchs, 2021). See also the AWTI advisory letter on the National Research Agenda (AWTI, 2022a).

► **Action 2. Strengthen the links between SSH and arts and design disciplines**

To offer a counterweight to the tendency towards reflection and deconstruction in the SSH domain, the research would benefit from a stronger link with ‘makers’ from the creative disciplines, such as design, art, photography, architecture, programming, engineering, etc. The drive in these disciplines to ‘make’ things complements the critical, reflective and analytical strength of SSH research. A connection between SSH research and these disciplines could be achieved by promoting collaboration between arts and sciences, facilitating network-building and organising workshops and symposiums at the interface between SSH research and design.¹⁵¹ In some countries the term ‘SSH’ is explicitly combined with the arts.¹⁵² The government thus needs to encourage collaboration between researchers, designers, engineers and artists via assignments in which they can combine their expertise; and we advise researchers and knowledge institutes to seek out this collaboration. One very concrete idea is to diversify the form in which theses and dissertations can be submitted: in addition to written texts, they could also incorporate artefacts, computer programming code, designs or meetings. The international examples in the Box below can serve as inspiration here.

Learning from other countries: Aalto University Helsinki and KU Leuven

Aalto University was founded in 2010 following the merger of the three universities in Helsinki concerned with technology, economics and art and design. The aim was and is to stimulate innovation and multidisciplinary. There are many examples in the University of ties between creation and science. For example, the Aalto University School of Arts, Design and Architecture offers an international teaching programme at the interface of art, design, film and architecture. Students can submit their dissertations in the form of a work of art or product.¹⁵³ And students in the Collaborative and Industrial Design programme are trained in making future-oriented products, services and systems in multidisciplinary and transdisciplinary teams.¹⁵⁴

151. A good example of a project in which the arts and SSH research are combined is ‘Cultuur en Campus. De toekomst van de stad’ (‘Culture and Campus. The future of the city’). See <https://www.cultuurencampusrotterdam.nl/>

152. In the United Kingdom, for example, the abbreviation SSH has been expanded to SHAPE: Social Sciences, Humanities and the Arts for People and the Economy. See <https://www.thebritishacademy.ac.uk/this-is-shape/>

153. <https://www.aalto.fi/en/study-options/aalto-doctoral-programme-in-arts-design-and-architecture>

154. <https://www.aalto.fi/en/study-options/collaborative-and-industrial-design-design-master-of-arts-art-and-design>

At KU Leuven in Belgium, one of the conditions for obtaining a doctorate in the arts is that the doctoral student must not only submit a thesis, but also a work of art.¹⁵⁵ Both components carry equal weight and are treated as a single entity. This doctoral programme is the result of a collaboration between the Faculty of Arts at KU Leuven and LUCA School of Arts. The conditions for obtaining a doctorate comprise a combination of regular requirements and a number of special provisions.

► **Action 3. Make SSH teaching at universities more innovative**

Although a fair amount is already happening¹⁵⁶ education is a powerful route towards creating more impact. Universities are advised to launch 'impact-based minor programmes' in which the central focus is on constructive, integrative and entrepreneurial skills. Interdisciplinarity is crucial here.¹⁵⁷ The aim is to bring together students from different disciplines and training backgrounds to focus on specific problems. This will demonstrate that the same problem can be approached from different perspectives, and that, far from standing in each other's way, these perspectives actually complement each other. Practice should also be incorporated in the teaching programmes (as happens in medical degree programmes, in the form of students working with patients). It is important to realise that specific skills are needed to ensure that (SSH) research leads to innovation and impact.¹⁵⁸ A perfect opportunity for this is to create internships in which SSH research is carried out in a practical setting and leads to impact. This will also instil a focus on practical application among SSH researchers.¹⁵⁹ The experience and routine built up in this area at universities of applied sciences could serve as useful input here (see Box).

Learning from higher professional education

The teaching at universities of applied sciences has a natural focus on practice and practical application. This is stimulated through practical assignments and internships, as well as assignments from companies and civil-society organisations. As research

155. <https://luca.kuleuven.be/onderzoek/doctoraat-in-de-kunsten>

156. New interdisciplinary teaching programmes are regularly launched, and transdisciplinary education is increasing, for example in the 'mixed Classroom', in which students and professionals from the field work together on projects; see <https://www.uu.nl/en/news/mixed-classroom-competes-for-higher-education-prize>

157. See also the AWTI advisory report 'Unbounded research' (AWTI, 2022d).

158. <https://www.hu.nl/onderzoek/onderzoekers/wilke-van-beest>

159. This is in line with the advisory report 'Seizing opportunities with knowledge', which focuses on the business community (AWTI, 2021a).

and education are less strictly organised in disciplines, this makes it relatively easy for transdisciplinary programmes and research groups to develop.¹⁶⁰ A programme such as 'Social Work', for example, combines diverse themes, ranging from psychology and sociology to care and technology.¹⁶¹ Cross-sectoral Master's programmes are also being developed, in which the teaching covers several research domains in order to offer solutions to societal challenges.¹⁶² Partly because some of those following these programmes are workers, there is a natural focus on professional practice.

► **Action 4. Strengthen SSH expertise in higher professional education in order to increase innovative capacity**

Universities of applied sciences should make use of the critical/reflective aspects of academic SSH research. As discussed in section 2.3, a practice-oriented attitude can sometimes lead to a one-sided or short-term approach to problems (for example where researchers think only from the perspective of the partner). A certain critical attitude towards the problem definition is then needed. Precisely this critical/reflective perspective is one of the strengths of academic SSH research. If universities of applied sciences utilise this strength, for example through collaboration with universities, this will increase innovative capacity, because it will then be possible to take into account the social, cultural, legal and ethical aspects of innovation.

3.3 Recommendation 3: Line ministries should actively involve SSH research in addressing complex issues

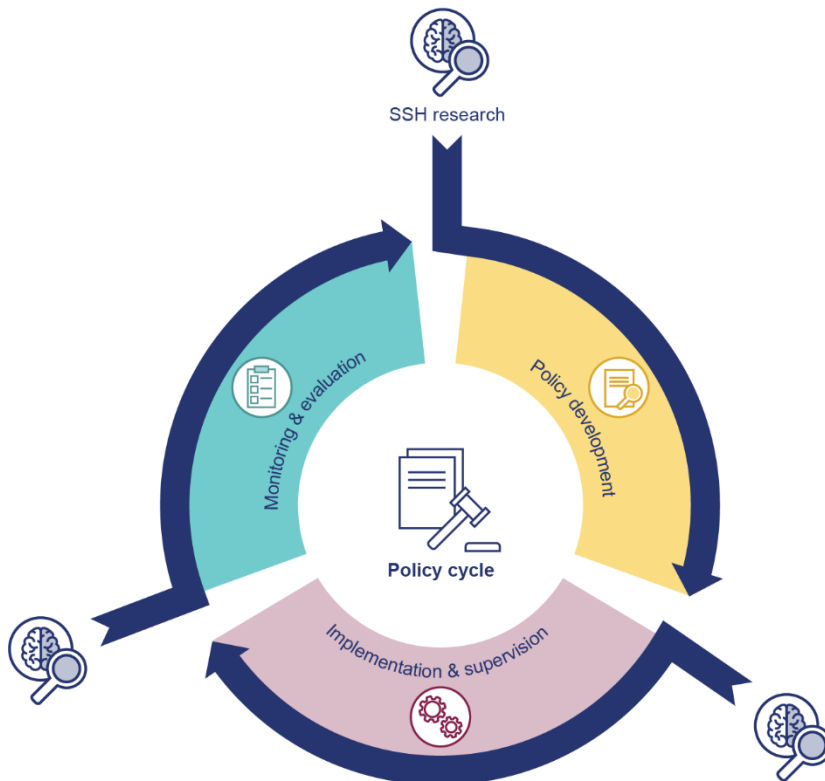
AWTI calls on the government to make more and better use of SSH research in the policy for addressing complex issues. Apart from the traditional research and innovation policy, which falls under the responsibility of the Minister of Education, Culture and Science and the Ministry of Economic Affairs and Climate Policy, work is also going on throughout government on addressing complex issues (such as care, safety, technology, geopolitics). Explicitly or implicitly, these are also examples of system innovation for which a systemic approach is important.

160. Research groups generally have a cross-disciplinary teaching mission.

161. (Landelijke opleidingsoverleggen Social Work *et al.*, 2017)

162. See the interview with Rob Verhofstad, Director of HAN University of Applied Sciences, in ScienceGuide (Bakker, 2022).

Recommendation 3: Line ministries should actively involve SSH research in addressing complex issues.



This third recommendation is accordingly focused on line ministries such as the Ministry of Agriculture, Nature and Food Quality, the Ministry of Justice and Security, the Ministry of Social Affairs and Employment and the Ministry of Health, Welfare and Sport. The Chief Science Officers (CSOs), knowledge departments, knowledge and research coordinators, TNO and government institutes have an important role to play in linking (SSH) research to policy formulation. As we saw in chapter 1, SSH-research is crucial for a better understanding of society. It informs policy and contributes to policy innovation. An important consideration here is the need to ask the right (policy) questions. There are already initiatives such as the Policy Compass which help in bringing in the right (SSH) knowledge. But there is more to be done; the knowledge culture at ministries needs to be strengthened. Bringing in knowledge from the SSH domain can prevent policy having counter-productive effects, prevent good developments being unnecessarily delayed or

solutions becoming needlessly complex. We define two actions below for putting this recommendation into practice.¹⁶³

► **Action 1. Use a systemic approach in policy to address complex issues**

What is the precise problem in the complex issues to be addressed? What is relevant and needs to be taken into account? Which technical, social, cultural and ethical dimensions are important and which form(s) of innovation, including system innovation, can be helpful? We recommend that line ministries charged with addressing complex issues more often adopt a systemic approach: i.e. regarding problems by definition as multidimensional, but also defining them as such. This would outline the system limits: what is and is not relevant in addressing the issue? A systemic approach thus leads to a recognition of the complexity and to a delineation of the issue and creates scope for incorporating SSH research. The Policy Compass can help with bringing in SSH knowledge automatically.

► **Action 2. Utilise SSH research by public knowledge institutes to inform policy**

The government outsources a lot of SSH research.¹⁶⁴ Public knowledge institutes, with their high and transparent quality standards, carry out only a small proportion of that research. The government could make better use of Dutch SSH research by setting aside an explicit budget for public knowledge development in relation to complex policy challenges.¹⁶⁵ Broad programming is important here so that a diversity of disciplines and knowledge institutes can take part. Consider making interdisciplinarity and transdisciplinarity, as well as collaboration in the 'knowledge chain', mandatory in this type of research. In practice, this could be achieved through the thematic programming of the National Research Agenda or by setting up a number of (virtual or distributed) civil-society research platforms.¹⁶⁶

163. These actions also include suggestions from the roundtable meetings, and especially from those classified in the information map under 'conducting policy' and 'funding research'. In processing these suggestions, AWTI took into account whether or not something is already happening (sufficiently), the expected positive and potentially negative (side-)effects, and the feasibility.

164. (Niewold, 2023)

165. Public knowledge development is generally not regarded as outsourcing and this action therefore helps in achieving the norm of no more than 10% of staff costs being spent on external recruitment.

166. The Climate Research Initiative is a good example of this. See also the AWTI report 'Unbounded research' (AWTI, 2022d).



Appendices

Appendices

Natural connections

Annex 1 Creation of this advisory report

This report was created in three phases.

First phase

A start was made in the spring of 2023 with a study of innovation and the social sciences and humanities (SSH): what role does SSH research play now and what are the problems? We spoke to a number of experts in the field, studied the literature and brought together the insights gained during Council meetings. This culminated in a starting document in which we defined next steps for the advisory trajectory.

Second phase

In the second phase, AWTI performed a number of analyses and attended several meetings. We began compiling an inventory of different forms of 'SSH innovation'. We also carried out a more in-depth conceptual study of precisely what innovation means in the context of societal challenges. We also went through the existing policy: how is innovation from and with SSH research fostered or inhibited?

Next, we carried out a review of what is being done in other countries to encourage innovation from SSH research. Information was gathered from nine European countries for this. Four Dutch research and innovation projects or programmes were also studied based on publicly available information and interviews. This provided a more detailed picture of the success and failure factors for the effective use of SSH research for innovation. All these analyses were discussed and clarified during a number of Council meetings around the summer.

Third phase

Three group discussions took place in the autumn of 2023. We also worked on the advisory report and the recommendations in chapter 3. The group discussions were facilitated by The Argumentation Factory (De Argumentenfabriek) and were intended to generate good ideas and explore how better use could be made of SSH research for innovation. In addition to a 'general' meeting, one meeting was devoted to care and well-being and one to artificial intelligence, given the number of pressing questions relating to these two themes to which SSH research can make a contribution. In this phase a number of supplementary discussions were also held with actors who would need to be able to translate the advisory report into practice.

Annex 2 Interviewees and meetings

In preparing this advisory report, several interviews were conducted, roundtable meetings organised and meetings attended. This annex lists the individuals with whom we spoke. We would like to thank all interviewees and participants for their time, openness and insights.

Interviews

- | | |
|---------------------------|--|
| ▶ Bas van Bavel | SSH Council of the Netherlands, Utrecht University |
| ▶ Hans Berends | Vrije Universiteit |
| ▶ Sander Bot | Analysis and Research Department |
| ▶ Nikki Brand | Delft University of Technology (TU Delft) |
| ▶ Hans de Bruijn | Delft University of Technology (TU Delft) |
| ▶ Aniek van den Eersten | Dutch Research Council (NWO) |
| ▶ Karwan Fatah-Black | Leiden University |
| ▶ Amber Geurts | TNO |
| ▶ Laurens Hessels | Rathenau Instituut |
| ▶ Katarina Jerković-Ćosić | Utrecht University of Applied Sciences |
| ▶ Jacob Jolij | Universities of the Netherlands |
| ▶ Nicole de Koning | TNO |
| ▶ Gijs Kremers | Ministry of Education, Culture and Science |
| ▶ Lydia Langerwerf | Dutch Research Council (NWO) |
| ▶ Dorien Lanting | Ministry of Education, Culture and Science |
| ▶ Marlies van de Meent | Dutch Research Council (NWO) |
| ▶ Geerte Paradies | TNO |
| ▶ David van der Plas | Ministry of Economic Affairs and Climate Policy |
| ▶ Maarten de Rijke | University of Amsterdam |
| ▶ Wout Scholtens | Utrecht University of Applied Sciences |
| ▶ Jack Spaapen | ScienceWorks |
| ▶ Margo Strijbosch | Erasmus University Rotterdam |
| ▶ Natasha Stroeker | Analysis and Research Department |
| ▶ Mees van Tooren | Rathenau Instituut |
| ▶ Anne-Fleur van Veenstra | TNO |

- ▶ Marije Wassenaar Erasmus University Rotterdam
- ▶ Nora van der Wende Ministry of Education, Culture and Science
- ▶ Frank Zuijdam SSH Council the Netherlands
- ▶ Erik-Jan Zürcher Leiden University
- ▶ Frank Zwetsloot ScienceWorks

Roundtable meeting – general

- ▶ Niels-Ingvar Boer Ministry of Social Affairs and Employment
- ▶ Jasper Deuten Rathenau Instituut
- ▶ Marieke van Doorninck Kennisland
- ▶ Gijs Kremers Ministry of Education, Culture and Science
- ▶ Jorien van Lookeren Campagne Social Enterprise NL
- ▶ Sander Thomaes Dutch Research Council (NWO)
- ▶ Anne Fleur van Veenstra TNO
- ▶ Inge Werner Dutch Research Council (NWO)

Roundtable meeting – care

- ▶ Cule Cucic ZonMW
- ▶ Jennifer Elich Sociaal werk Nederland
- ▶ Rina Knoeff Groningen University
- ▶ Nico van Meeteren Top sector Life Science & Health
- ▶ Hilde Verbeek Maastricht University
- ▶ Sabine Wildevuur Twente University

Roundtable meeting – artificial intelligence

- ▶ Duuk Baten SURF
- ▶ Antal van den Bosch Utrecht University
- ▶ Natali Helberger University of Amsterdam
- ▶ Claartje ter Hoeven Erasmus University Rotterdam
- ▶ Cynthia Liem Delft University of Technology (TU Delft)

Meetings attended

- ▶ Impact Alliance, with AWTI workshop on this advisory report, NWO Utrecht
- ▶ Knowledge Transfer Office (KTO) discussion on SSH, with presentation by AWTI on this advisory report, Rotterdam
- ▶ DROP network meeting, with presentation by AWTI on this advisory report, online
- ▶ KTO Social Sciences & Humanities (SSH) Working Group meeting, Leiden
- ▶ Societal Impact of Social Sciences, Humanities and Arts 2023, Cardiff, UK
- ▶ TNO Dialogue on Behavioural Change and System Innovation, The Hague

Annex 3 Description of the SSH domain

Social sciences and humanities (SSH) research is a collective name for a diverse set of research disciplines.¹⁶⁷ It incorporates the social sciences and humanities disciplines; the humanities generally include linguistics, arts, literature, history, philosophy and theology, while the social sciences typically include the disciplines economics, sociology, public administration, criminology, psychology, education, political science and communication. Law and anthropology are sometimes classified under one heading and sometimes the other, which illustrates that the classification is not strict and is characterised by all manner of grey areas. It also reflects the fact that research disciplines evolve, differentiate and combine over time and also adapt in relation to broader society.¹⁶⁸

In terms of content and methodology, the following characteristics are generally assigned to social sciences and humanities research:¹⁶⁹ they make human actions and their cultural output a subject of study; interpretation (hermeneutics) is an important part of the methodology and epistemology; research subjects are often (groups of) people, which places specific demands on research methods; the degree of involvement of civil society and the business community varies widely, but is relatively high in some areas of SSH. These do not appear to be natural laws, but are rather about correlations, causality and interpretations; researchers frequently work individually and research teams are smaller on average; less use is made of physical infrastructure, such as laboratories, clinics and instruments (though digitalisation contributes to the infrastructures for SSH research); knowledge produced is more often expressed in words, texts and images, and less often in the form of objects and artefacts, and is less easy to capture in intellectual property.

A total of around 2.3 billion euros is spent on SSH research annually in the Netherlands, around 12% of total R&D expenditure. Most of this total is accounted for by higher education and research institutes, with a financial share of around 27% on SSH research, comparable to the average in the benchmark countries considered here (25%). The UK, Norway, Finland and Ireland spend a higher proportion on SSH research; the high percentage in the UK is mainly due to a high proportion of funding in the humanities.

167. The term is also used to contrast with the other research domains, such as natural sciences research, engineering research and medical research.

168. See also the AWTI advisory report 'Unbounded research' (AWTI, 2022d).

169. (Snow, 1990; Glänzel & Schoepflin, 1999; Hicks, 2005; AWT, 2007; Callaert *et al.*, 2011; Trowler, 2012)

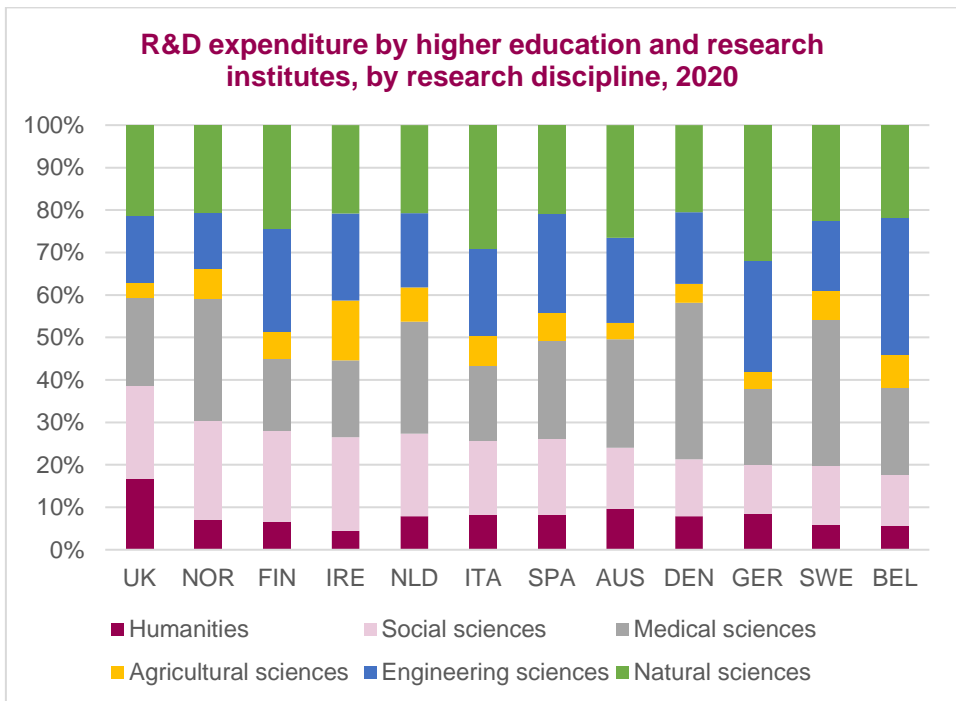


Figure 1. R&D expenditure by higher education and research institutes, by research discipline, 2020. Source: Eurostat. Data via Rathenau Instituut.

A very high percentage of students in the Netherlands (approx. 50%) opt for programmes in the social sciences, and a very small percentage for humanities. All told, a relatively large number of students also choose SSH programmes (while relatively few opt for natural sciences and engineering). The percentage of Bachelor degree students choosing SSH programmes is slightly higher than for Masters students.

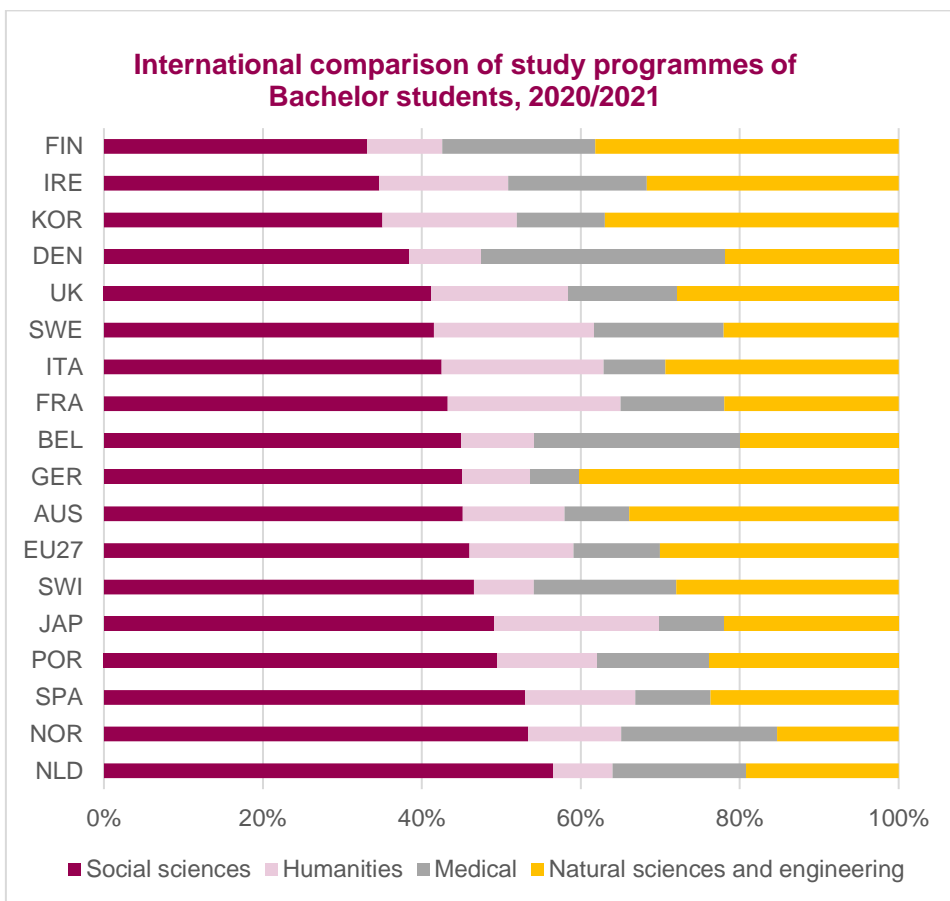


Figure 2. International comparison of disciplines chosen by Bachelor students, 2020/2021. Source: Eurostat and OECD (JAP, KOR, UK), data via Rathenau Instituut. Note: JAP, KOR, UK: 2020. No data available for the US, China or Singapore. Data deduplicated. The figures relate both to academic education (universities) and higher professional education (universities of applied sciences). For the Netherlands, only students at publicly funded institutes are included. Natural sciences and engineering comprise the disciplines physics, engineering, ICT and agriculture. Social sciences also include economics, education and services.

Annex 4 Impact pathways for SSH research

An impact pathway is a process or narrative which describes how insights from research lead to impact in society. The linear trajectory of knowledge, skill, monetisation is an example of an impact pathway. Although thinking about the application of knowledge was originally largely shaped by the thinking around technology transfer (including practices such as patenting and commercialisation), it is now generally accepted that there are many types of impact pathways.¹⁷⁰ For example, knowledge gained from SSH research finds its way to 'impact' by contributing to the public debate in the media or by informing administrations and policy. One conceptual classification which helped us in reflecting on this distinguishes between three principal types of pathways.¹⁷¹

Type 1. SSH research with societal impact

There are several ways in which SSH knowledge can lead to innovation more or less independently and thereby contribute to resolving complex societal and other issues. This happens when knowledge originating from SSH research, for example through models, entrepreneurship, exhibitions, policy concepts or education, finds its way into society and thus contributes to innovation and transformation. This is not one-way traffic: there is continual interaction between the research and society. Not only does research inform and influence society, but society also inspires and influences the research.

Type 2. SSH research supplements technology development and innovation

Knowledge from SSH research can also play a supplemental role, combined or aligned with non-SSH developments in science, technology and innovation, and can thus have an impact on complex societal and other issues. The research in this category is often engineering or medical research and innovation, supported by a supplementary social sciences or humanities perspective. This is thus an example of interdisciplinarity and transdisciplinarity. Examples include the collaboration referred to earlier between language studies and AI, which lead to AI applications such as Large Language Models; or the insights from behavioural and medical science such as psychology and neurology, which are used in the design of digital interfaces or control technology; or in the legal field in relation to 'privacy by design'. One practical example of a 'Type 2' impact pathway is

170. See e.g. the AWTI advisory report 'Seizing opportunities with knowledge' (AWTI, 2021a).

171. References: (Klein *et al.*, 2000; Carlile, 2004; Spaapen & Van Drooge, 2011; Hughes & Kitson, 2012; Reale *et al.*, 2018; Muhonen, Bennenworth & Olmos-Peñuela, 2019; Fabiano, Marcellusi & Favato, 2020).

'Responsible Research and Innovation (RRI).¹⁷² This considered approach to research and innovation can be placed in the tradition of 'Technology assessment' and is at the heart of the Horizon 2020 programme.¹⁷³ RRI means that societal aspects of technological and other innovations are studied and taken into account in research and innovation. SSH disciplines play a crucial role here, and this can therefore also be seen as an attempt to make SSH research an integral component of innovation programmes.

Type 3. SSH research which studies and questions science, technology and innovation

A third way of looking at the relationship between SSH research and innovation is through reflection: how SSH can study, question and improve science, technology, innovation and transformation in a more general sense. Examples can include disciplines such as philosophy, cultural studies, ethics,¹⁷⁴ sociology, law, economics and political science. A critical reflection on society, including the role of science, technology and innovation, gives rise to implications for practice. This category differs from the previous two, where SSH research ('Type 2') is used for reflection, addition or criticism of a given technology or innovative development. Here, SSH knowledge is used in a more general sense to reflect on the role of research, technology and innovation. This role of SSH is exemplified in research on the way in which knowledge is produced and how it influences our interpretation of reality, or how new technological innovations mediate societal relationships, for example interpersonal relationships.¹⁷⁵

172. (DG R&I, 2013) and <https://www.nwo.nl/onderzoeksprogrammas/maatschappelijk-verantwoord-innoveren-mvi>

173. (van Lente, Swierstra & Joly, 2017)

174. (Flahaux, Green & Skeet, 2023)

175. (Latour, 2005; Floridi, 2014)

Annex 5 A closer look at six research and innovation instruments

In preparing this advisory report, we looked at six relevant policy instruments, which form the core of the policy that influences the role of SSH research in innovation. They are the Sector Plans; the National Research Agenda; the Top Sector policy and the related Knowledge and Innovation Agendas (KIA) and the Knowledge and Innovation Covenant (KIC); the National Growth Fund; the 'Erkennen en Waarderen' ('Recognition and Rewards') programme; and the National Expertise Centre for Science and Society (NEWS). We drew on publicly available government documents and research reports, including evaluations. We also spoke with several stakeholders who were involved in the development or implementation of policy, and with researchers who encounter the policy. For a factual check (not the interpretation) we also contacted the Ministry of Education, Culture and Science and the Ministry of Economic Affairs and Climate Policy. These policies are not focused purely on SSH research – In fact, with the exception of the specific SSH Sector Plan, there is no policy which focuses solely on innovation stemming from SSH research.

- ▶ The Sector Plans have evolved into an important coordinating mechanism for research in recent years. It is plausible to assume that the SSH Sector Plan has led to improvements in the previously highly fragmented organisation of SSH research. This policy also leads to improved coordination in relation to interdisciplinary and societal issues for SSH research. The SSH Council devotes a great deal of attention to making and increasing SSH impact. The funding of SSH is modest compared with the Natural Science and Engineering Sector Plan, but growing in the second round.
- ▶ Although the positioning and organisation of the National Research Agenda (NWA) could be improved,¹⁷⁶ the NWA programme is in principle a good starting point for interdisciplinary and transdisciplinary research. It also offers scope for creating impact with SSH. It explicitly adopts a broad interpretation of innovation and impact.
- ▶ Most Top Sector policy and the related KIAs and the KIC uses a narrow interpretation of innovation; the role of SSH, whilst not small, is mainly supplementary and supportive. An exception is the Societal Earning Capacity KIA, which focuses on helping to scale up innovations that lead to sustainable changes in

176. See the AWTI advisory letter on the National Research Agenda (NWA)(AWTI, 2022a).

the long term. The importance of a broad interpretation of impact is endorsed here.

- ▶ Creating impact with SSH in the National Growth Fund is not automatic because in principle the focus is on economic growth. Patents are an important form of output for this Fund. Yet there is a potential role for SSH research because of the growing emphasis in the National Growth Fund on securing sustainable economic growth in the long term. Nonetheless, in practice much of the funding goes to technology development and to natural science and medical research.

- ▶ The more diverse interpretation of quality and impact that is adopted by research funders and knowledge institutes thanks to the 'Recognition and Rewards' programme are positive developments for innovation based on SSH, as they allow more scope for showcasing and valuing the diverse forms of impact stemming from SSH.

- ▶ The National Expertise Centre for Science and Society has the potential to boost the impact of SSH, because it is aimed at improving the links between science and society, something that in the SSH domain – because of the non-material and implicit knowledge it often produces – is often complex.

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Advisory council for science, technology and innovation

Prins Willem-Alexanderhof 20

2595 BE Den Haag

The Netherlands

t. +31 (0)70 311 09 20

e. secretariaat@awti.nl

w. <https://www.awti.nl/english>