

'An Agenda for the Netherlands'

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L&G, it is a great pleasure to be here at Rotterdam today to present you with the latest developments in the 3TU Federation as well as the current dynamics in Dutch Higher Education policy.

Generally speaking, we have achieved a high level of cooperation reflected in very adequate and productive research cooperation, both at the level of the 3TU Research Centres as well as among individual researchers. In the educational domain our joint efforts to offer our students the advantage of access to the full scope of our programs could still bear more fruit. To consider enrolment in master programs at another university is still not very fashionable among Dutch students. We have to step up our efforts here, since this will help to better specialise our master programs, as it will help our students to better articulate their objectives and expectations regarding their master education. We very much welcome the interest expressed by Wageningen University and Research Center to team up with the 3TU-Federation. As a token of how well this cooperation proceeds, we - the four of us, together with our close partners TNO and STW - are proud to present today our contribution to the National Science Agenda. I will come back on this later in my speech.

**[SLIDE 1]** L&G, in the area of Dutch Higher Education policy a lot of activity takes place and as the current slide shows, initiatives have accumulated over the past few years. We are currently working in the framework of the performance agreements on Higher Education under the control of the Review Committee. We have concluded and we now operate a set of roadmaps to align research efforts with our industry partners in the Topsectors. At the end of last year the minister and state secretary of Education have issued their vision paper on Science with a clear focus on how to brace talent. As an outcome of this vision paper we are now engaged in a creation exercise for a national Science Agenda. And, last but not least, we are in full expectation of the minister of Education's strategy agenda on higher education before summer.

Always look at the bright side of life and just be happy that there is so much policy interest in our work. However, there is a risk of lack of coherence. Let me illustrate my point. It is a statement of fact that the Dutch university system is punching well above its weight as is reflected in all sorts of rankings on university performance. So policy concerns should be aimed at enabling the Dutch universities to engage successfully in a ever more competitive global higher education and research environment. For that it is important to take a holistic perspective on how research systems work and where government policies could contribute in a meaningful way.

## Check against delivery

**[SLIDE 2]** The next slide sums up in a nutshell the fundamentals, the game-changers and the responses of Science systems in the current context. The fundamentals are only partially dealt with in the recent policy-papers. Research funding is discussed in terms of redirecting funding flows towards priorities of topsector agenda's and of the upcoming National Science Agenda. The level of research funding is taken as a given, while it is increasingly clear that the Dutch HE and research system is here at the verge of a crisis. The complaints in our research communities on publication-stress highly correlate with the very low succes rates in the acquisition of research budgets, especially for the young and not yet established researchers. Success rates of around 10% are simply not a fair treat for our faculty. Imagine the loss of valuable time for research and education by drafting yet another proposal for research funding. It is high time for the minister and state-secretary to address this crucial topic by adding new money to the system and to bolster the credibility of their policies.

Investment in research infrastructures rarely appears as an important topic in the policy papers. Rather, the necessity of these investments seem to be questioned with an air of suspicion. However, for everyone who is engaged in international university co-operation it is overly clear that state of the art research and educational infrastructures are key conditions for success. We encourage the minister and the state secretary to accept decisions made by their predecessors, transferring the ownership of the university campus real estate to the universities, with a limited budget to cover the associated costs. Now we have to heed that responsibility and invest in an environment of good quality for our students and researchers to work in. Responsible investment programs require universities to drive surpluses in their operational budgets in order to avoid huge financial costs later on. It is worrying that the dynamics of the real estate portfolio's of universities are so poorly understood.

In the recent policy notes a lot of attention has been given to career development of researchers. We welcome very much the interest expressed by both the minister and the state secretary in this topic. I do believe universities can do a better job in providing a clear pathway towards an academic career and supporting policies should be further developed. Such policies can help to profile the Netherlands as an interesting locus for young researchers to work and to develop their careers. There are clouds gathering though. We see increasingly that our offers in the international labour market for researchers can less and less match those of others, also within Europe. Especially, when focusing on top-researchers, startup grants run into the millions and also individual pay-levels are increasingly impossible to match.

The autonomy of universities, defined within a clear set of rules and objectives, has served the Netherlands well and the universities are broadly speaking ship shape. The minister and state secretary could be more generous in acknowledging this plain fact, especially in light of the gradual decrease in funding per student. All the more interesting since a performance agreement creep undermines the autonomy of universities. We have now performance agreements running on outcomes of education, admittedly supported by the universities themselves on the basis of mutual commitments of both the minister of Education and the universities. Now there is talk that alignment with the National Research Agenda or the expenditure related to the proceeds of the introduction of the study loan system are equally suitable for performance agreement type of approaches, including making funding dependent on outcomes; a fine example of 'rendementsdenken' by the way. Policies focusing on prescriptive and detailed management directions have very bad track records and are therefor definitely a move in the wrong direction. I rather favor a much broader strategic policy discussion on the basis of the university strategy papers we are required by law to produce every 6 years. This approach should result in a multi year capacity funding frame work, which is much better geared to the longer time horizons in research and higher education.

## Check against delivery

**[SLIDE 3]** Let's zoom in on the current level of research funding in the 3 universities of technology. When I spoke on this topic at the previous 3TU.I&T Conference at Eindhoven in december 2013, I presented a gloomy picture of rapidly declining research funding. Fortunately the situation seems to have improved a little in 2013 en 2014. In 2013, it has been the EU to provide us with substantial research funding, while in 2014 the EU funding suffers somewhat, probably due to the transition from FP7 to Horizon 2020. In 2014 the data are largely influenced by the one time allocation of gravity funding (zwaartekracht gelden) by the national science foundation NWO. STW is a constant and sustained factor in 3TU research funding. The research cooperation with the company sector has not yet reached its pre 2012-levels, although some improvement was there in 2014. The share of direct government funding further declined as a percentage, reflecting the end of research funding out of natural gas revenues (the FES). We firmly expect the EU-funding to further increase, while we also hope that cooperation with the business sector will take up to higher levels. We should explore whether we could render the R&D tax facilities more prone to university-company cooperation. At the national level we are witnessing a substantial decrease in national funding for R&D activities, as shown in the lower right corner of the graph. This is worrying since spending on R&D is after all the most effective course of action to shape our future sustainable earning capacity as a nation.

**[SLIDE 4]** Before embarking upon our topic of today, the National Research Agenda, I would like to dwell briefly on how the research portfolio of the Netherlands has developed over time. Assessing the study of choice of Dutch young people it is clear that social sciences, management sciences, humanities and languages have the lion part, quite sustained over time. Clearly universities have adopted their portfolio choice in such ways as to cater for this demand. This results in a scientific output in the social sciences of equal size as Germany, while in the natural sciences and technology we are trailing Germany by a less then a 20% share compared to the German volume. So is it to far fetched to say that in fact the sciences portfolio of the Netherlands has been determined by the choice of our students? And if so, are we content with this outcome in terms of sciences providing for our response to social challenges and the competitiveness of our economy. This question becomes all the more urgent in view of the fact that our global presence in mathematics, chemistry, physics and material sciences is eroding, somewhat concealed by the high impact of our work in chemistry and physics.

We should not idly stand by and let the declining presence of the Netherlands in chemistry and physics simply happen. Not just for the sake of national pride but much more out of pure necessity. In the list of game changers in the slide on science systems (slide 2) a while ago, computational power, breakthroughs at the nano-level of research and the abundance of data will drive leaps forward in science and technology. The national capacity to absorb these developments cannot be guaranteed at the current levels of physical and computational sciences. Obviously, it would be rather overambitious to expect the Netherlands science system to have lead roles in every possible break through development. But for the Netherlands to be a partner in a global network of science and therefore to have access to these new developments, we need to have an above critical mass of top research in sciences. Clearly, currently we are moving to the wrong direction. Some skeptics might view this as a sales pitch in favor of science and technology, but the effects are much wider. Big data, computational power will affect social sciences as well. Analysis of complex social systems will come within reach and will impact methodology and research practice. The 4-5 year olds who are now entering the school system will graduate at times were big data and computational technologies will be part of their world. This makes it urgent to address the share and direction of computational education in our school system and to bring it up to speed to prepare our kids for their future.

## **Check against delivery**

**[SLIDE 5]** L&G, we have high expectations of the upcoming National Science Agenda. We see this as an interesting exercise in involvement of the research community and of the general public in a debate on the directions science and research should take. A successful conclusion could help to broaden support for research and to strengthen the case for a more generous research funding. The open invitation to the public to formulate their questions to science resulted in 11700 contributions and this shows, in my opinion, a keen interest in the matter.

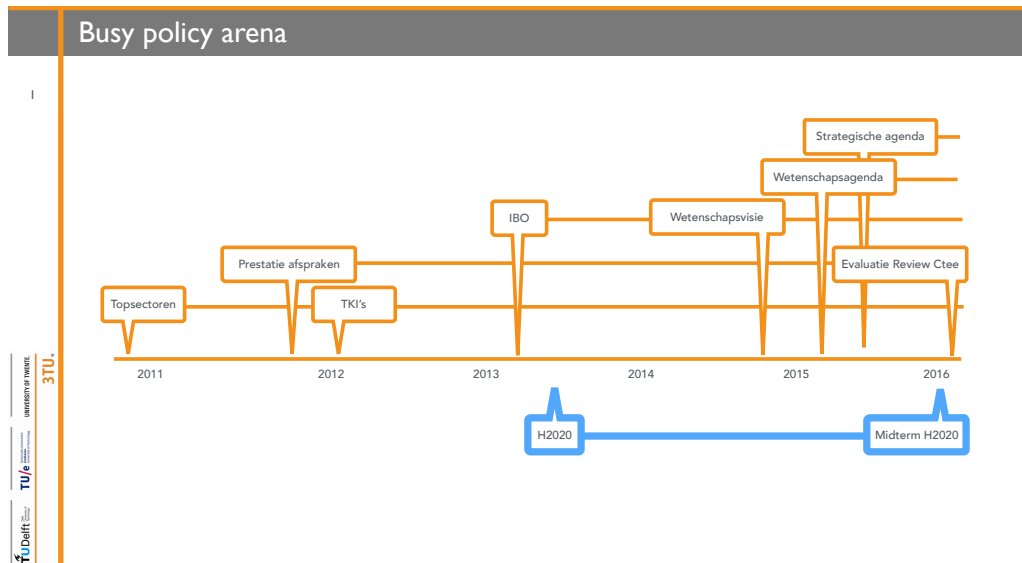
**[SLIDE 6]** We, the 3 Universities of Technology, Wageningen University and Research Center, TNO and Technology Foundation STW, have joined forces in drafting an 'Agenda for the Netherlands'. The agenda articulates a comprehensive research approach around 10 themes of high societal relevance, ranging from life in big cities, safe food to eat, sustainable energy systems, new ways of manufacturing, harvesting waste, smooth transport systems, personalized health, comprehensive water management and digital society. We hope it can serve as a source of inspiration for those who work on the final version of the National Science Agenda. It certainly can serve as a means of communication to the general public to show what we have in store on these important challenges.

Our joint exercise clearly revealed at least three underlying findings to make our agenda work: 1) the need for a comprehensive approach to mobilize the entire chain of knowledge ranging from researchers to industry as well as societal organizations; an interesting corollary is that this inclusiveness becomes us well since it resembles so much the decision making process in the Netherlands and opens ways to improve the learning capability of our economy. 2) a close partnership between science and technology and the social sciences is of crucial importance as integral part of the analysis and the design of solutions. And 3) the need to think in terms of personalized solutions; make our mission understood by the individual citizen by addressing his or her personal needs.

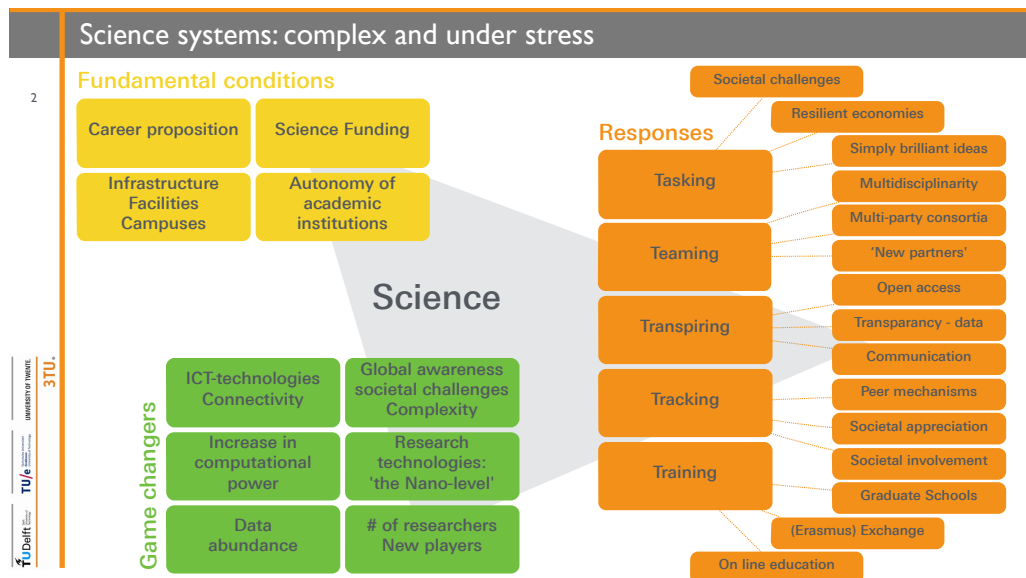
L&G, therefore we believe that the whole process of producing the National Science Agenda is possibly of bigger importance than the outcome itself. It is rather presumptuous to fixate research topics for the coming decade. The world of research is quite different from the world of policymakers. It is the world of individual brilliance, meeting of minds, serendipity and patience versus the world of procedures, rules and changing winds and impatience. Adequate free space to foster the unimaginable needs to be guaranteed in order for the science system to work. As the chairs of the process, Alex Rinnooy Kan en Beatrice de Graaf already pointed out: "everything in the Agenda is of importance, however not all that is of importance will be in the agenda". I would nominate this quote for the understatement award of the year 2015.

Thank you for your attention

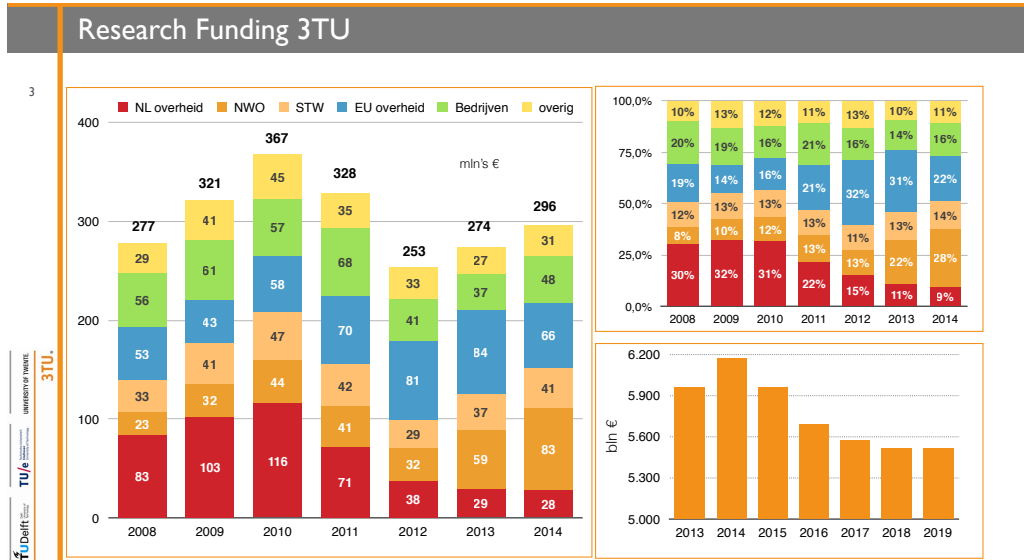
Slide 1



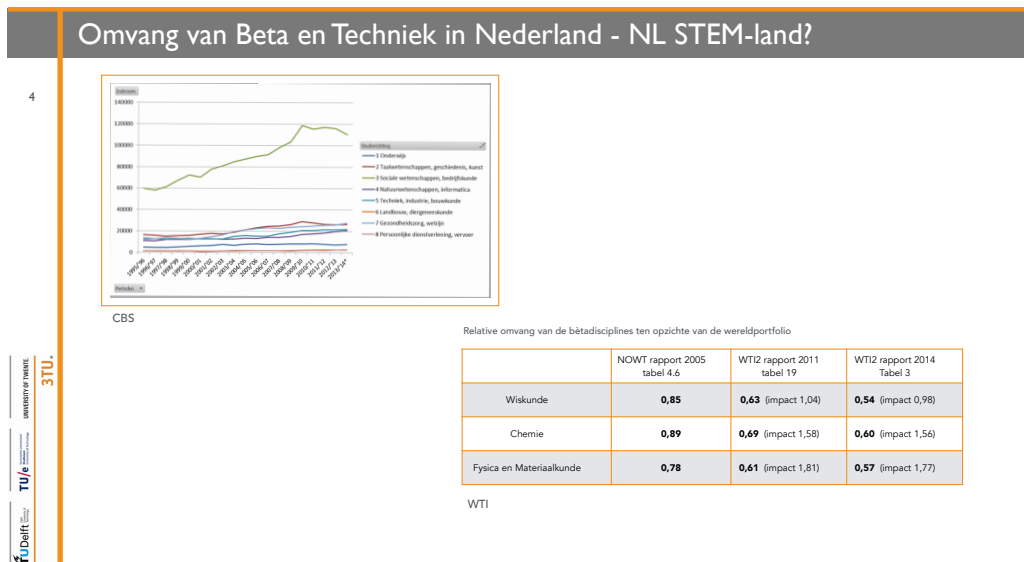
Slide 2



Slide 3



Slide 4



Slide 5

## The National Science Agenda

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**Top kernwoorden**

veiligheid wetenschap democratie jongeren natuur **gezondheid** gedrag  
ontwikkeling preventie kanker geschiedenis klimaatverandering ecologie politiek  
onderwijs bouw **Energie** Psychiatrie Identiteit mens duurzaam heelal  
gezondheidszorg evolutie sport biodiversiteit klimaat Taal communicatie Ethiek samenleving filosofie  
kinderen infrastructuur Welzijn innovatie Leven **Chemie** maatschappij water ict zorg  
**Hersenen** leren **duurzaamheid** Economie voeding Technologie cognitie  
cultuur

**11700 ingediende vragen**

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Slide 6

## An Agenda for the Netherlands

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### AGENDA VOOR NEDERLAND

Inspired by technology

DELFT UNIVERSITY OF TECHNOLOGY | Eindhoven University of Technology  
UNIVERSITY OF TWENTE | TNO | WAGENINGEN UNIVERSITY & RESEARCH CENTRE | STW

### INHOUDSOPGAVE

INLEIDING	5	SMART VEHICLES, SMART TRAFFIC, NIEUWE MOBILITEIT
DECENTRALE, DUURZAME ENERGIE: SYSTEMEN EN OPSLAG	9	MATERIAALSCHAARSTE, HERGEBUIK EN NIEUWE MATERIALEN
LEEFBAARHEID GROTE STEDEN	21	DUTCH INDUSTRY, SMART-ESTI INDUSTRY
PERSONALIZED HEALTH	33	INTERBAAAL WATERBEHEER
DE DIGITALE SAMENLEVING	45	DUURZAME EN PRODUCTIEVE LANDBOUW VOOR VOEDSEL EN GRONDSTOFFEN
DUURZAME EN PRODUCTIEVE LANDBOUW VOOR VOEDSEL EN GRONDSTOFFEN	57	VOEDING EN GEZONDHEID
SLOTWOORD	69	

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