

Public engagement

International review, analysis and proposals on indicators for measuring public engagement

VA Report 2011:2

This paper is submitted as a contribution to Anders Flodström's commissioned report about "The assessment of research quality as a basis for allocation of governmental resources to Swedish universities and university colleges"

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Executive Summary

The Swedish government has clearly stated that it is the duty of a university to collaborate with the surrounding society, to inform people about its research results and to work to ensure that its research is also of use to society. However, public engagement with society on scientific issues is given a low priority in Sweden and is not sufficiently integrated into education and research. One reason for this is that public engagement is often seen as optional, voluntary, and as something good to do if researchers have time.

Researchers need incentives and recognition to be motivated to take part. One important and effective method could be to include indicators on public engagement for the resource allocation to universities. Based on country studies, expert interviews and a literature review we developed several public engagement indicators that could be used for resource allocation to universities or within universities. Although rewarding public engagement activities by budget enlargement or constraints is one way to promote public engagement it is a rather top-down approach. Applying the indicators does not necessarily mean that the researchers and university administrations are intrinsically convinced of the importance of public engagement. The incentive for researchers to engage in public engagement may remain low because a fundamental cultural change is lacking. Therefore bottom-up approaches for promoting public engagement of universities and triggering a cultural standard toward public engagement are also recommended.

1. The need for public engagement

For many years the scientific community remained an autonomous, self-contained system separate from the rest of society. This situation has changed over recent decades. Dialogue between science and society has become increasingly important for research institutions across Europe and beyond. The European Commission has reinforced the societal dimension of research within its “Science in Society” programme for a number of years. In Sweden the need for science-society interaction has been formalised in University statutes. It is the task of the university to interact with society, to inform society about its research results and so ensure that the work of the university is also of use to society. “I högskolornas uppgift ska ingå att samverka med det omgivande samhället och informera om sin verksamhet samt verka för att forskningsresultat tillkomna vid högskolan kommer till nytta.”¹

This change towards more openness within the scientific system is happening because major developments are going on within society.² On the one hand, modern societies are demanding democratic participation in science as scientific advances increasingly affect people’s lives. New technologies, discoveries and innovations are having a major impact on people’s health, welfare and security but they also give cause for concern in many areas. Citizens take a stance on numerous issues and need knowledge to make informed decisions. Other societal groups including policy makers or industry are also demanding for more access to scientific results for everyday work or decision-making processes. There is also democratic value in people knowing what their tax money is being spent on and being given the opportunity to express opinion about it.

On the other hand, science is looking more and more towards society. The economic value of research is becoming increasingly dependent on the knowledge of societal actors. Involving societal groups in shaping new technologies and products can ensure sustainable innovation and growth. The needs and concerns of the users must be taken into consideration when developing new technologies. Identifying public interest and public concerns is increasingly important in order to detect the boundaries for science.

VA studies³ have shown that different societal groups such as businesspeople, politicians, journalists and teachers are interested in research and want to have more contact with researchers. They believe that including research results are essential for their work. For instance, more than two thirds of business managers think that research findings are important for their enterprise and can increase its competitiveness. However, VA studies also reveal that research findings are very often not included in everyday work or in decision-making processes. Only a minority of surveyed politicians think that political proposals are often or very often based

¹ Höskolelagen (1992: 1434).

² European Commission (2009): Challenging Futures of Science in Society, Emerging trends and cutting-edge issues, Report of the MASIS Expert Group.

³ VA Report (2004): Lärares syn på Vetenskap, Vetenskap & Allmänhet, VA-rapport 2004:4, VA Report (2005): Journalisters syn på Vetenskap, Vetenskap & Allmänhet, VA-rapport 2005:6, VA Report (2006): Politikers syn på Vetenskap, Vetenskap & Allmänhet, VA-rapport 2006:2, VA Report (2008): Kunskapssynen i Näringslivet, Vetenskap & Allmänhet, VA-rapport 2008:4.

on research results from different sciences. The majority of the politicians state that they only use research results occasionally. Moreover, the latest VA studies reveal that people's trust and confidence in researchers has been declining over the last years.⁴ People think that researchers communicate too little with society. They still perceive a gap between the scientific world and society at large. In summary, although these studies show a demand for more participation in sciences, research often does not find its way out into society.

On the researcher's side, VA studies also show that scientists believe in the importance of dialogue between science and society. Since the changes to the University statutes, there have been many discussions about why and how universities should interact with the surrounding society. "Samverkan", the interaction of universities and the public, is visible at many Swedish universities. Many universities have integrated this task of public engagement into their strategy or mission statement and see it as a key task alongside education and research. In particular, much attention has been focused on university – industry interactions and its potential value to the university. The importance and necessity of interacting with society has been recognized by both universities and researchers. But many researchers still feel that public engagement takes too much time and for little credit.⁵ While excellence in research is included in university rating systems and the awarding of funding and promotions, public engagement activities are regarded as something which is "nice to have", but the activities are not rewarded and are not considered a merit for researchers.

There is therefore a long process ahead to create a new culture in the scientific community in which public engagement is sufficiently recognized and integrated into research and teaching. One approach to foster this change is to reward universities and researchers for their engagement with society. Adequate rewarding systems with indicators have to be developed in order to provide an incentive for universities and researchers to engage with the society.⁶ However, this top-down approach is only one aspect in creating this cultural change. Bottom-up incentives must also be implemented. Universities and researchers need to discover the intrinsic value of public engagement. Experiences from other countries provide examples.

The following paper begins with an overview of different aspects of public engagement (chapter 2). Chapter 3 reviews activities and methods other countries are using to foster public engagement, and a description of initiatives in Sweden follows in chapter 4. These findings are used to propose indicators for measuring public engagement activities in universities in chapter 5. We conclude with recommendations (chapter 6) for initiating a cultural change that includes public engagement indicators as well as other approaches.

⁴ VA Report (2010): VA-Barometer 2010/2011, Vetenskap & Allmänhet, VA-rapport 2010:6.

⁵ VA Report (2004): Forskares syn på samtal med Allmänheten – en fokusgruppsstudie, Vetenskap & Allmänhet; VA-rapport 2004:5; VA Report (2009): ODE-OmvärldsDialog och Engagemang, Vetenskap & Allmänhet, VA-rapport 2009:4; Crettaz von Roten, F. (2008): Levels and patterns of engagement of scientists among different university faculties, University Lausanne; Varvayanis, S. (2008): How university scientists view science communication to the public, Cornell University.

⁶ See Vetenskap & Allmänhet (2007): Att mäta samverkan – förslag till indikatorer vid resurstilldelning och akademisk meritvärdering, <http://v-a.se/2007/11/att-mata-samverkan-%e2%80%93-forslag-till-indikatorer-vid-resurstilldelning-och-akademisk-meritvardering/>. Several public engagement indicators are proposed in this paper.

2. Different aspects of public engagement

According to the Swedish University Statute interaction with the surrounding society is a main task for all universities. But this can encompass different interpretations. Public engagement can be literally translated as collaboration or cooperation, indicating a two-way dialogue between science and society. Sometimes the term public engagement is also used for one-way communication from researchers to society. For instance University Statute states that one of the university's tasks is "to inform society about their work and activities". The society and public consists of many different actors, including the universities themselves. Schools, government, parliament, private companies, third sector institutions, media or museums are all examples of different groups within society that science can interact with.

The Swedish National Agency for Higher Education has derived three potential outcomes of university-society engagement based on a survey of universities:⁷ more democracy, innovation and economic growth, and a better educational system. Public engagement can therefore be seen as a comprehensive term, including the collaboration of science with the general public in order to improve democratic participation, and also collaboration with individual actors such as private companies or schools to improve economic growth and the educational system.

There are various terms referring to science – society interaction in use in different countries, that vary according to the degree of interaction and scope of society. For instance, *public engagement* is a term used in the UK which mainly focuses on the interaction between higher education institutions and the general public.⁸ Public engagement activities of researchers include participating in festivals, creating opportunities for the public to learn about current research, public lectures and workshops in schools as well as contributing to new media enabled discussion forums. Public engagement is however not only meant to inform the public about research results but also to discuss and to collaborate face-to-face with the public in specific projects.⁹

Public dialogue is defined as one form of public engagement bringing together members of the public, policy-makers and scientists. Public dialogue is targeted at the public sector and its science and technology policy-making processes. It should be a two-way conversation between researchers, laymen, politicians and policy-makers. The aim is to find out what the general public, and scientists, think about potential new areas of science and technology "upstream" before policy decisions are made. In this way, it is hoped better and more robust decisions will be made with increased legitimacy.¹⁰

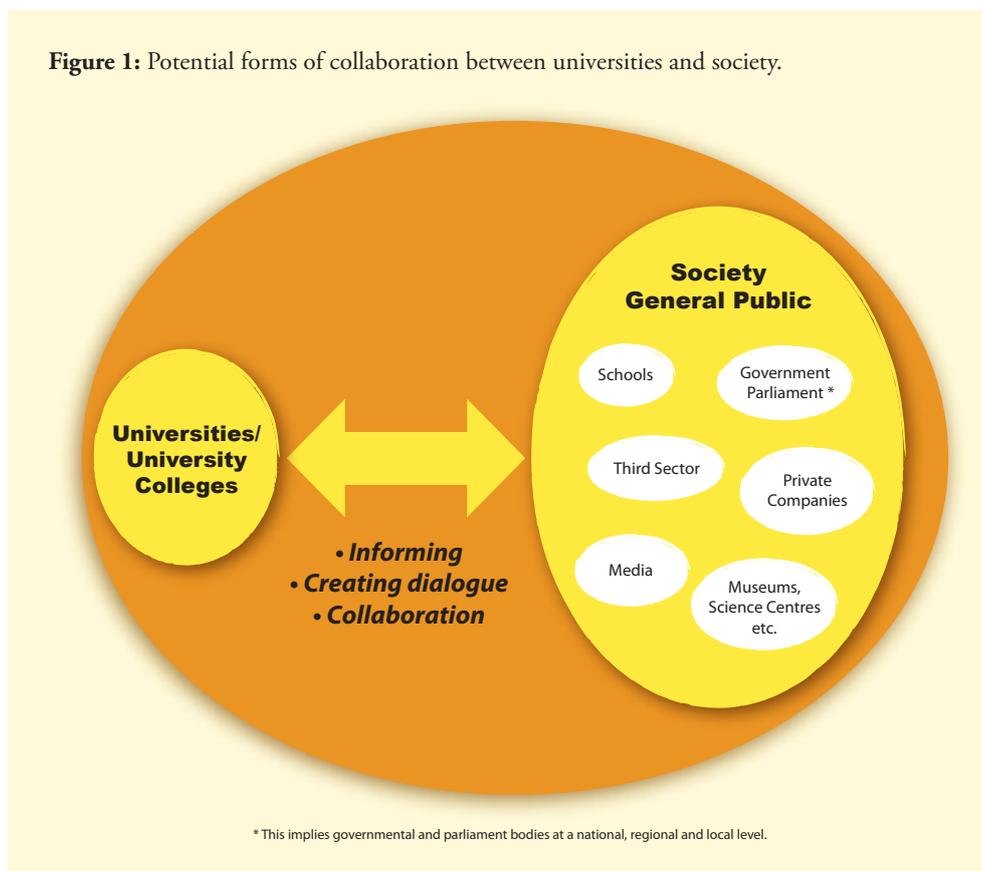
⁷ Swedish National Agency for Higher Education (2004): *Högskolan samverkar*, Högskoleverket rapport 2004:38 R.

⁸ Wikipedia, http://en.wikipedia.org/wiki/Public_engagement, 31.1.2011.

⁹ Research Councils UK (2010): *Concordat for engaging the public with research*, <http://www.rcuk.ac.uk/per/Pages/Concordat.aspx>, January 31, 2011.

¹⁰ See <http://www.sciencewise-erc.org.uk/cms/why-do-dialogue/>, January 27, 2011.

Figure 1: Potential forms of collaboration between universities and society.



Public engagement is also often referred to as *science communication* while talking about the societal engagement of research institutions. Science communication is targeted predominantly at laypeople via different forms of media (print, electronic, social) or to science journalists. Its approach is a one-way communication from science to the public.¹¹

Knowledge transfer is typically used to describe diverse interactions between the private sector and research institutions.¹² The idea is to transfer science output to industry in order to gain a return on the public investment in research by, for example, translating research into new products, processes or services. Examples of industry-research interactions are consultancy projects, contract research, licensing, patenting, student placement, spin-outs and so on.

¹¹ Wikipedia (2011), http://en.wikipedia.org/wiki/Science_communication, January 31, 2011.

¹² Holi, M., Wickramasinghe, R. (2008): Metrics for the Evaluation of Knowledge Transfer Activities at Universities, http://ec.europa.eu/invest-in-research/pdf/download_en/library_house_2008_unico.pdf, January 31, 2011; European Communities, DG Research (2009): http://ec.europa.eu/invest-in-research/pdf/download_en/knowledge_transfer_web.pdf; Geuna, A., Muscio, A. (2008): The governance of University knowledge transfer, SPRU Electronic working paper series, University of Sussex.

In this report we use the term public engagement while referring to science in society activities. We define public engagement as follows:

Public engagement describes diverse forms of interaction between science and society ranging from directly informing the public and creating dialogue with the public to collaborative longer-term projects between science and the public in general (allmänhet) and with specific actors within society.

3. Public engagement in different countries

Ways to trigger and foster public engagement activities of research organisations have been recently discussed in many countries. The following chapter gives an overview of different initiatives in selected countries. The focus is on activities at national level rather than activities at individual universities and research institutes. Based on the following questions, current indicator initiatives and further measures to support public engagement of universities are presented:

- **Institution:** Is there an institution that supports, coordinates and organises public engagement activities? Is this institution independent or “attached” to state authorities? When was it founded? What kind of activities do they do?
- **Mission statement:** Is there a mission or official statement relating to public engagement launched by major research organisations, state authorities or funding organisations? If yes, how many stakeholders have signed this mission?
- **Rewards:** Is there any kind of reward or prize relating to public engagement or science communication? How much reward money is it? Who is donating it?
- **Indicator:** Is there an indicator measuring the public engagement of universities or researchers that is applied to resource allocation? How is it composed?

3.1. UNITED KINGDOM

The UK has made strong efforts to foster science-public interactions. One of the main actors of the public engagement debate is RCUK (Research Councils UK), which has been promoting this subject for many years. RCUK is the corporate unit of the seven individual UK research councils which are the major research funding bodies in the UK. In December 2010 a **Concordat for Engaging the Public with Research** was launched by the RCUK.¹³ The Concordat aims to increase the focus on public engagement and to embed it within UK universities and research institutes. It was signed by UK’s seven Research Councils as well as by eight other major funding bodies, and is supported by numerous scientific and influential bodies.

This Concordat provides a joint statement of expectations and responsibilities across these funding bodies, and encompasses four main principles: 1. UK research organisations have a strategic commitment to public engagement; 2. Researchers are recognized and valued for their involvement with public engagement activities; 3. Researchers are enabled to participate in public engagement activities through appropriate training, support and opportunities; 4. The signatories and supporters of the Concordat will undertake regular reviews of their and the wider research sector’s progress in fostering

¹³ <http://www.publicengagement.ac.uk/why-does-it-matter/concordat>.

public engagement across the UK. At the same time the National Coordinating Centre for Public Engagement (NCCPE) has launched the **Manifesto for Public Engagement** which universities and research institutes are encouraged to sign up to and thereby express their strategic commitment to engaging with the public.¹⁴

The NCCPE was established in 2008 as a part of the **Beacons for Public Engagement** (BPE) initiative. This initiative was launched and funded by RCUK, UK Higher Education Funding Councils and the Wellcome Trust with eight million British pounds. Six universities were selected as role models with respect to public engagement. NCCPE works with all six beacons to promote best practice in public engagement and to provide a single point of contact for all higher education bodies. The aims of the BPE are to create a *culture* within higher education institutions where public engagement is recognised as a valued activity, to build *capacities* for public engagement within higher education institutions and to create *networks* and partnerships for encouraging institutes to embed public engagement in their work and to share best practice.¹⁵ An independent review of the Beacons project was published recently stating that so far the project has been successful in attaining the Beacon goals.¹⁶ It also stated however that although the Beacons universities have made progress towards the desired change in public engagement culture, they have not been fully successful. The reviewers therefore recommend continuing to work with the planned public engagement activities and to set up the cultural standard as the key success indicator of the project.

The **British Science Association** is also an important institution which supports and fosters the collaboration between science and society. Established already in 1831, it organises major public engagement activities across the UK such as the British Science Festival, the National Science and Engineering Week, and several other regional and local events.

The Royal Society awards researchers for excellence in science communication and public engagement with two **prizes**.¹⁷ The Michael Faraday Prize which was established in 1986 for best science communication and the Kohn award for excellence in engaging the public with science established in 2005. The awards consist of a gift of 2,500 British pounds.

The Higher Education Funding Council for England (HEFCE) has issued a new **Research Excellence Framework (REF)** evaluating research excellence in three parts: research outputs, environment and impact. The Impact section aims to identify and reward the contribution that high quality research has made to the economy and society.¹⁸ Public Engagement is recognized within this. A pilot exercise took place in 2010 to test out the REF. A presentation on the pilot exercise findings was given at the National Coordinating Centre for Public Engagement's (NCCPE) conference in December 2010.¹⁹ In the pilot schemes, impact was measured using case studies. Universities that wished to claim impact from public engage-

¹⁴ [https://www.publicengagement.ac.uk/sites/default/files/Manifesto for Public Engagement Final January 2010.pdf](https://www.publicengagement.ac.uk/sites/default/files/Manifesto%20for%20Public%20Engagement%20Final%20January%202010.pdf).

¹⁵ <http://www.publicengagement.ac.uk/about/our-vision>.

¹⁶ <http://www.rcuk.ac.uk/documents/scisoc/BeaconsEvaluationReviewFinalReport.pdf>.

¹⁷ <http://royalsociety.org/Michael-Faraday-Prize>; <http://royalsociety.org/Kohn-Award/>.

¹⁸ <http://www.hefce.ac.uk/research/ref/impact/>.

¹⁹ [http://www.publicengagement.ac.uk/workshops#Day 1](http://www.publicengagement.ac.uk/workshops#Day1).

ment activities were asked to show what distinctive contribution their research made to the public engagement activity and to make a case for the benefits arising from the public engagement activity. The final assessment criteria and detailed guidance are expected to be published late 2011. It is expected that universities will make submissions in 2012-2013 with assessments due in 2014.²⁰

UK'S PUBLIC ENGAGEMENT ACTIVITIES	
Institution	Research Councils UK (RCUK), NCCPE, HEFCE, Beacons for Public Engagement Initiative (BPE), British Science Association
Mission Statement	Concordat for Engaging the Public with Research launched by the RCUK, Manifesto for public engagement, the Engaged University launched by the NCCPE
Rewards	Michael Faraday Prize for best science communication; Kohn award for excellence in engaging the public with science (both of Royal Society)
Indicator	Research Excellence Framework (REF), new approach to evaluate the impact of research on economy and society issued by HEFCE, public engagement is recognized in the framework, work in progress

3.2. DENMARK

The **Danish Science Communication** (Dansk Naturvidenskabsformidling, DNF) is one organisation in Denmark that fosters public understanding of science and technology by different initiatives in science communication. DNF was founded in 2001 and has 16 full-time employees. It is an independent non-profit organisation partly financed by the Danish Government and partly by acquired external funds.²¹ DNF's major activities are focused on working with children and young people. Their main project is the Danish Science Week which began in 1998 and takes place every September in different places across Denmark. The idea is to stimulate interest and curiosity in science and technology among school children in primary and secondary schools and to inspire teachers to teach science in an exciting way. Approximately one third of primary school children and two thirds of secondary school children in Denmark participate in this event – a total of 100.000 children and young people.²²

The **Danish Board of Technology** (Teknologirådet) is an independent body which is funded by the Danish Parliament with around ten million Danish crowns (12 million Swedish crowns). It evaluates new technologies and sciences in order to advise the Danish government and other governmental bodies. It analyses the effects of technologies and new sciences on society, people and environment. One core aspect of their technology assessment is to involve the public in the assessment process through different participatory methods. Consensus conferences or citizens' summits and hearings are methods where randomly selected Danish citizens are invited to participate in a dialogue about a new technology. It is emphasized that

²⁰ Information is obtained from Chloe Sheppard, RCUK, March 9, 2011.

²¹ <http://www.formidling.dk/sw15156.asp>, March 7, 2011.

²² Information from interview with Mikkel Bohm, director of Dansk Naturvidenskabsformidling, DNF, March 4, 2011.

the citizens must be representative in terms of age, gender, employment and geographical location so that all concerns and expectations in the population are heard in the different conferences, panels and hearings. The Danish Board of Technology compared to other technology assessment organisations is very strong, effective and innovative in terms of involving the public in technology evaluation.²³

There is a Danish science communication **prize** (forskningskommunikationsprisen) introduced in 2004.²⁴ It rewards scientists who make extraordinary efforts in communicating their research to a broader public with 100.000 Danish crowns. The prize is donated by the Ministry of Science.

Scientists are rewarded for their outstanding activities in media interaction at the **University of Aalborg**. Twenty-five researchers from the University of Aalborg who have been cited most often in the media are rewarded with 30.000 to 80.000 Danish crowns every year by the University president. This amount is for private use and considered as a plus to the salary.²⁵

In 2009, Denmark introduced a new system of basic funds allocation based on four **indicators** (educational resources 45 %, external research funding 20%, number of PhD 10 % and a bibliometric research indicator 25 %). The bibliometric research indicator might have been a method through which public engagement could have been rewarded by including popular science publications. However, publications considered in this indicator are all addressed to the scientific audience such as peer reviewed journals.²⁶ There had also been a debate about whether to include a knowledge transfer indicator which would take into account collaboration with industry, patents, start-up companies, media attention and others. However this indicator was rejected because it was thought to be too complicated.²⁷ Therefore in the current system of resource allocation to the eight Danish universities, public engagement is not considered.

DENMARK'S PUBLIC ENGAGEMENT ACTIVITIES	
Institution	Danish Science Communication (Dansk Naturvidenskabsformidling), Danish Board of Technology (Teknologirådet)
Mission Statement	-
Rewards	Science Communication Prize (Forskningskommunikationsprisen) by Ministry of Science; 25 best science communicators reward at the University of Aalborg
Indicator	Discussion about knowledge transfer indicator ("videnspredningsindikatorer") but rejected

²³ <http://www.sciencewise-erc.org.uk/cms/assets/Uploads/Publications/International-Comparison-of-Public-Dialogue.pdf>.

²⁴ <http://www.fi.dk/viden-og-politik/forskningsformidling/forskningskommunikationsprisen>.

²⁵ Interview with Alice Bonde, communication department of the University of Aalborg, March 23, 2011.

²⁶ <http://www.fi.dk/viden-og-politik/tal-og-analyser/den-bibliometriske-forskningsindikator/styregruppens-beslutning-om-publikationsformer>, March 7, 2011.

²⁷ Interview with Nikolaj Borg Burmeister from Danske Universiteter, March 2, 2011.

3.3. NORWAY

There is no specific **institution** for public engagement in Norway. However, the Norwegian Research Council is taking on this role and has introduced a communication department with 40 employees working in the field of science communication and public engagement.²⁸ The Research Council also **awards** researchers for outstanding and creative communication of their research to the general public with the "Forskingsrådets formidlingspris". This prize is 200.000 Norwegian crowns and can be used for communication of current or completed research projects.²⁹

In 2006 there was a discussion in Norway about the introduction of indicators to measure the cooperation of universities with companies and the general public. The proposed indicators included measuring the provision of external services, cooperation with industry, publications, presentations at conferences as well as communication of research results via media to a broader public (e.g. popular science articles, presentations to non-academic audiences, presentations on radio/TV etc.).³⁰ The indicators were rejected, however, because it was believed to be too complex to introduce. Data was only available for some parts and it was not clear how to delimit the indicator approach.³¹ There has also been criticism from several researchers from Oslo University who state that the proposed indicators have several shortcomings. The researchers believe there is too much focus on the commercialization and selling of research, which they do not think is appropriate particularly with the current focus on open access to research. In addition, the proposed indicators measure one-way communication instead of two-way dialogue between science and society, and there is no reference to collecting data on science communication via the internet.³²

NORWAY'S PUBLIC ENGAGEMENT ACTIVITIES	
Institution	No specific institution, communication department in the Norwegian Research Council
Mission Statement	-
Rewards	<i>Formidlingspris</i> by the Norwegian Research Council
Indicator	No indicator, introduction of "formidling" indicators were discussed in 2006, but rejected.

²⁸ Interview with Elisabeth Gulbrandsen, Norwegian Research Council, March 10, 2011.

²⁹ <http://www.forskingsradet.no>.

³⁰ Sammen om kunnskap II (2006): Operasjonalisering av indikatorer for formidling, Instilling fra formidlingsutvalg II til KD.

³¹ Interview with Gunnar Sivertsen, Nordic Institute for Studies in Innovation, Research and Education (NIFU), March 31, 2011.

³² <http://www.aftenposten.no/meninger/debatt/article1501944.ece>.

3.4. GERMANY

Germany's formal engagement in public dialogue started in 1999 with the **PUSH Memorandum** which was launched by the major German research organisations.³³ Through this the research councils committed themselves to fostering the dialogue between research and society through diverse activities. These activities include that universities develop rewards for researchers engaging in science communication, that public engagement should be a criterion for academic excellence, and that universities should establish infrastructure and training for public engagement. In the same year (1999) the organisation **Wissenschaft im Dialog**³⁴ (Science in Dialogue) was founded by the major research organisations and the Federal Ministry of Research and Education. Wissenschaft im Dialog organises many different science communication events such as exhibitions, science fairs and symposia (e.g. "Forum Wissenschaftskommunikation"³⁵). Through this it encourages public science dialogue and provides a platform for exchanging best practices in science communication. Recently a short paper was published by Wissenschaft im Dialog evaluating science communication in Germany over the last ten years.³⁶

A second German institution engaging in science communication is the **Wissenschaftsladen Bonn** (Bonn Science Shop).³⁷ Science shops were originally founded in the Netherlands and interface and mediate between researchers and society by organising events, exhibitions and other activities. Science shops also consult citizens about research questions in order to better understand and exploit research results according to their demands. The Bonn Science Shop not only transfers knowledge from science to the public but also acts as a scientific advisor for citizens. If, for instance, citizens want to organise a protest against a mobile phone mast because they fear it could cause health problems, the Bonn Science Shop will support this group by providing them with scientific material and expertise.³⁸ As science shops interact closely with society and different citizen groups, they have a good knowledge of their current and future demands and concerns about science. "A science shop provides independent, participatory research support in response to concerns experienced by civil society."³⁹

Two major research funding bodies⁴⁰ jointly give the "Communicator **Award**"⁴¹ since 2000. This 50.000 Euro prize recognizes scientists who are highly successful, creative and diverse in communicating their research findings to a wider public. Award winners are selected by a jury consisting of science journalists as well as communication and public relations specialists. This prize is the highest award for science communication in Germany. It has a very high

³³ http://www.wissenschaft-im-dialog.de/fileadmin/redakteure/dokumente/push_memorandum_1999.pdf, February 21, 2011.

³⁴ <http://www.wissenschaft-im-dialog.de/>.

³⁵ <http://www.wissenschaft-im-dialog.de/de/wissenschaftskommunikation/forum.html>, February 21, 2011.

³⁶ <http://www.wissenschaft-im-dialog.de/fileadmin/redakteure/dokumente/091711PerspektivenPapier.pdf>, February 21, 2011.

³⁷ <http://www.wilabonn.de/>.

³⁸ http://www.wilabonn.de/WILAinform_61_web.pdf, p. 3.

³⁹ <http://www.scienceshops.org/new%20web-content/framesets/fs-about.html>.

⁴⁰ German research foundation ("Deutsche Forschungsgesellschaft", DFG) and the Donors' Association for the Promotion of Sciences and Humanities in Germany ("Stifterverband für die Deutsche Wissenschaft).

⁴¹ http://www.dfg.de/en/funded_projects/prizewinners/communicator_award/index.html.

reputation among researchers and strongly promotes science communication as an important task for researchers.⁴²

Research and education is administered at the county (“Länder”) level and therefore sixteen different performance-based indicator systems exist throughout Germany. Most of the “Länder” apply indicators such as third party funding (contract research) and number of completed PhD’s. However, there is no indicator that includes public engagement activities of either universities or researchers.⁴³

GERMANY’S PUBLIC ENGAGEMENT ACTIVITIES	
Institution	Wissenschaft im Dialog (Science in Dialogue), Bonn Science Shop
Mission Statement	PUSH Memorandum
Rewards	Communicator Award by two major research funding bodies (DFG and Stifterverband für die Deutsche Wissenschaft)
Indicator	-

3.5. SWITZERLAND

Science et Cité, founded in 1998, organises different activities in the field of public engagement in Switzerland, such as science festivals, science debates, science cafés and school projects. It is partly financed by state authorities but the main budget is acquired by external funds. However, the federal government has recently decided that Science et Cité will no longer be financed by the Federal Ministry of Finances. From 2012 Science et Cité will be financed by the Swiss Academies of Arts and Science with a reduced budget. This decision provoked strong reactions from scientists which led to the writing of a “Manifest”. This **manifest** argues for a new science culture in Switzerland with a stronger focus on science-society dialogue. This dialogue should be supported by the government through clear objectives and funding. The Manifest has been signed by several Swiss scientists that participate in the French speaking section of Science et Cité.⁴⁴

Besides Science et Cité, the Zentrum für Technikfolgenabschätzung, **TA Swiss**, founded in 1992, also engages in dialogue with the public.⁴⁵ TA Swiss consults policy makers and assesses new sciences and technologies by taking expert advice and public opinion into account. A recently published report comparing the degree of public dialogue in science and technology policy ranked the TA Swiss second in terms of public participation.⁴⁶

⁴² Interview with Herbert Munder, director of “Wissenschaft im Dialog”, December 21, 2010.

⁴³ OECD (2010): Performance-based funding for public research in tertiary education institutions, Web annex: additional country detail, <http://www.oecd.org/dataoecd/22/46/46756874.pdf>.

⁴⁴ http://www.science-et-cite.ch/images/stories/downloads/Broschueren/manifest_DE.pdf.

⁴⁵ www.ta-swiss.ch.

⁴⁶ <http://www.sciencewise-erc.org.uk/cms/assets/Uploads/Publications/International-Comparison-of-Public-Dialogue.pdf>.

SWITZERLAND'S PUBLIC ENGAGEMENT ACTIVITIES	
Institution	Science et Cité, TA Swiss
Mission Statement	The manifest launched by leading researchers in Switzerland
Rewards	-
Indicator	-

3.6. SUMMARY OF COUNTRY STUDIES

The above studies reveal that none of the countries selected have so far introduced **indicators** to measure the public engagement activities of universities and researchers. The UK, however, is currently working on a new approach to measure excellence in research and public engagement will be a part of the assessment. In Denmark and Norway there have been intensive discussions about including public engagement activities as an indicator for resource allocation to universities. For different reasons the proposed indicators have been rejected in both countries.

Despite the limited discussions about public engagement indicators, there are many activities across all the selected countries aimed at fostering the interaction between science and society. Almost all investigated countries have one or more professional **institutions** that support collaborations between science and society. There are also independent organisations, research funding organisations, technology assessment organisations and science shops that organise events, inform the public or involve societal groups in the debate on scientific and technological developments.

Several countries have also published a **mission statement** in order to try to commit researchers and research institutions to public engagement. These mission statements are launched and signed by funding organisations, research institutions or individual researchers. By officially committing to the concept of public engagement, the idea and value of public engagement is spread across the scientific community.

Almost all the surveyed countries award a **prize** to scientists for excellent work in engaging with the public. The awards are launched by major research funding bodies or by the national Ministry of science. Prizes have a financial value of between 2.500 and 50.000 Euros.

SUMMARY OF COUNTRY STUDIES OF UK, DENMARK, NORWAY, GERMANY AND SWITZERLAND	
Indicators measuring public engagement activities of universities as a basis for resource allocation	No country has a public engagement indicator. Approaches underway in the UK; proposals in Denmark and Norway have been rejected.
Institutions fostering the collaboration between science and society	Independent organisations, research funding organisations, technology assessment organisations, science shops.
Mission statements that commit to public engagement	Have been launched and signed by major funding organisations, research institutions and individual researchers.
Prizes that award excellence in public engagement	Have been launched by national Ministry of Science or major research funding bodies.

4. Public engagement in Sweden

The following chapter describes public engagement activities in Sweden. In addition to activities on a national level this chapter also exemplifies several public engagement activities at university level.

Vetenskap & Allmänhet (VA, Public and Science) supports, organises and surveys activities and interactions between science and the public. For example, VA organises activities such as science cafés and an annual Researchers' Night event (Forskarfredag). It carries out studies into the Swedish public's attitudes to science and research as well as into public engagement indicators⁴⁷, and analyses the extent to which research is accessible to different parts of the society such as policy-makers, schools and industry. VA is an independent member organisation founded in 2002. Members include universities, research funding organisations, political parties and companies.

The **Swedish National Agency for Higher Education** (Högskoleverket) also works in the field of public engagement between universities and society. In 2004, Sweden's universities and university colleges were surveyed about the status of their public engagement activities. Based on these results the agency contributed to a clearer understanding of what public engagement is. In 2007 the survey was revised to include questions about how to measure public engagement within universities. The most commonly proposed indicators for measuring public engagement included the number of popular science articles, public events, commissioned research and education, internships, master and PhD theses, research projects in cooperation with industry or other societal groups, patents and licenses.⁴⁸

The **Swedish Research Council** (Vetenskapsrådet), Sweden's major research funding organisation, is also engaged in science communication. In addition to research funding activities the Swedish Research Council is responsible for coordinating the communication of research results.⁴⁹

There are also a number of Swedish research funding bodies that initiate and stimulate public engagement projects by applying different criteria for their research funding, such as for instance Vinnova and the Knowledge Foundation⁵⁰. In this report, however, we are not describing these in further detail.

So far there is no national **prize** in Sweden to award scientists for their outstanding contribution to public engagement with society. However, in 2010 the University of Gothenburg introduced a prize to reward students or faculty members for outstanding

⁴⁷ Vetenskap & Allmänhet (2007): Att mäta samverkan – förslag till indikatorer vid resurstilldelning och akademisk meritvärdering, <http://v-a.se/2007/11/att-mata-samverkan-%e2%80%93-forslag-till-indikatorer-vid-resurstilldelning-och-akademisk-meritvardering/>.

⁴⁸ National Agency for Higher Education (2008): Högskolan samverkar vidare, utvecklingen 2004-2007, Högskoleverket rapport 2008:10 R, p. 104.

⁴⁹ Förordning (2009:975) med instruktion för Vetenskapsrådet, see § 1: 11.

⁵⁰ <http://www.vinnova.se>, <http://www.kks.se>.

engagement with society, with prize money of 200.000 Swedish crowns.⁵¹ The Royal Swedish Academy of Sciences (KVA) awards scientists for excellent popular science publications in natural sciences with a prize of 300.000 Swedish crowns.⁵² This prize is restricted to excellent books in the natural sciences. The Knowledge Award (Kunskapspriset) from the National Encyclopedia (Nationalencyklopedin) awards individuals and organisations who encourage and stimulate the general public to be more curious for knowledge in different and innovative ways. This prize does not reward scientists in particular, but all people who try to explain research in an easy and appealing way. Umeå University awards companies or people with outstanding public engagement with three different prizes: The “samverkanspriset” which is administrated by the University campus in Örnsköldsvik without financial donation, the ”Baltics samverkanspris med entreprenöriell inriktning” (focusing on entrepreneurial skills) and the ”Baltics samverkanspris med populärvetenskaplig inriktning” (focusing on popular science), both are awarded every second year with 100.000 Swedish crowns.⁵³

There has been no joint mission **statement** about public engagement – similar to the Concordat in the UK – from the major Swedish universities and research funding organisations. However ever since the 1990s, the University statute has included public engagement as the third task alongside education and research. In 2009 the Swedish government made it very clear that the duty of a university is to collaborate with the surrounding society, to inform people about its research results and so ensure that the work of the university is also of use to society.⁵⁴ Several universities have included this public engagement policy (“samverkansuppgift”) in the university’s strategy, mission or its policy to increase university’s quality in research and education.⁵⁵ They emphasize the fact that both universities and the society will gain from interacting and cooperating with each other. On the website of many universities the word “samverkan” appears immediately on the first page alongside education and research.⁵⁶ Studies show that many activities have been launched since the university constitution was passed.⁵⁷

At a national level there is no public engagement **indicator** applied to the allocation of government resources to the universities. However several universities have been proactive in monitoring and measuring their public engagement activities.⁵⁸

⁵¹ <http://www.gu.se/samverkan/samverkanspriset/>.

⁵² <http://kva.episerverhotell.net/sv/Priser/Pi-priset/>.

⁵³ <http://www.ovik.umu.se/samverkan/>, <http://www.umu.se/om-universitetet/pressinformation/pressmeddelanden/nyhetsvisning//tor-ny-tilldelas-baltics-samverkanspris-med-entreprenorskapsinriktning.cid76998>, <http://www.teknat.umu.se/om-fakulteten/aktuellt/nyhetsvisning/patrik-norqvist-far-baltics-samverkanspris.cid158153>.

⁵⁴ Höskolelagen (1992: 1434).

⁵⁵ For example at Uppsala University, Malmö University, KTH, University of Gothenburg.

⁵⁶ For example University of Gothenburg, Uppsala University, Umeå University, Stockholm University.

⁵⁷ See study of IVA about number of publications published at University’s webpages (IVA-aktuellt 1/2010) and the National Agency for Higher Education’s surveys that monitor public engagement activities at universities and university colleges: National Agency for Higher Education (2004): Höskolan Samverkar, Höskoleverket Rapport 2004: 38R, National Agency for Higher Education (2008): Höskolan samverkar vidare, utvecklingen 2004-07, Höskoleverket Rapport 2008: 10 R.

⁵⁸ The following paragraph is not based on a representative survey of Swedish universities and university colleges. Some universities or university colleges might not be mentioned even though they are active in measuring public engagement.

For example, Malmö University (Malmö Högskola) founded a “Forum för Samverkan” two years ago consisting of members from different faculties.⁵⁹ This forum aims at defining public engagement, at surveying public engagement activities and at developing a model for measuring public engagement. The forum also developed a master list of different public engagement activities with possible indicators. In this case it is highlighted that the term public engagement embraces only those activities where the university *collaborates* with external partners. Science communication and one-way initiatives from scientist to public is explicitly not considered as public engagement. Commissioned research and education from outside partners, several innovation indicators such as patents and licenses and alumni network are all examples of indicators Malmö University has knowledge and numbers of. In the case of some other indicators on the master list, the forum tries to develop approaches for monitoring them. The next step is to agree on an indicator set which will be the basis for a rewarding system for researchers.

The Royal Institute of Technology (KTH) is currently developing a new model for measuring quality.⁶⁰ It is proposed that a number of different public engagement indicators are included such as income from commissioned research and education, the number of patents based on ideas of KTH researchers or students, number of license agreements based on ideas of KTH researchers and students, number of start-up companies based on ideas of KTH researchers and students, and the number of industrial PhD students graduating. The indicators are still under discussion and it remains to be seen if and when the indicator system will be in place.

The Swedish University of Agricultural Sciences (SLU) is aiming to become one of the leading European universities with respect to public engagement within the next ten years. Within their vision for 2020 they formulated several public engagement goals to achieve in the upcoming years.⁶¹ They also appointed a number of persons with responsibility for SLU’s public engagement activities, with the notable example of selecting the assistant vice-chancellor to be in charge of public engagement. In this way public engagement is firmly attached to people at the top of university’s hierarchy, showing clearly that collaborative activities have a high priority at the SLU. Recently there have been 18 senior lecturers appointed who will spend half of their working time on public engagement activities. Employed professors and lecturers will also be evaluated in terms of their public engagement activities. Public engagement capabilities of professors and lecturers are taken into consideration within recruitment processes. Examples of indicators under discussion for measuring public engagement skills are long-term research collaborations with industry, PhD students and researchers placed in industry, number of licensed patents, involvement in different popular science activities, participating in public debates, number of invited external lecturers, etc.

Umeå University is currently running a project about indicators for public engagement activities. Public engagement indicators that could be useful to measure collaboration

⁵⁹ Interview with Anna-Karin Alm at Malmö University, April 13, 2011.

⁶⁰ Information is obtained from Sara Karlsson, quality coordinator, KTH, April 20, 2011.

⁶¹ ”Styrdokument – Samverkan och Samverkansanställningar vid SLU”, see <http://www.slu.se/Documents/internwebben/jep-personal/Styrdokument%20Samverkan%20Svensk%20slutversion%20.pdf>.

activities with the surrounding society are collected from different faculties. The indicators being considered are for example the number of company visits by researchers, the number of research projects with companies, the number of guest lecturers, commissioned education, etc. The plan is for an agreement on several different indicators which will be used to measure public engagement throughout the university.⁶²

Uppsala University has employed a coordinator for public engagement activities. In order to monitor engagement activities with society, Uppsala University measures the volume of commissioned research and education, adjunct professors and innovations.⁶³

SWEDEN'S LEVEL OF PUBLIC ENGAGEMENT	
Institution	VA (Public & Science), the Swedish National Agency for Higher Education (Högskoleverket), Swedish Research Council (Vetenskapsrådet)
Mission Statement	No joint mission statement from research funding organisation, universities or ministry, but: <ul style="list-style-type: none"> - University statute about public engagement since late 1970s - Several universities have included public engagement in their mission and strategy
Rewards	No national public engagement prize, but: <ul style="list-style-type: none"> - single initiatives by University of Gothenburg, Royal Swedish Academy of Sciences (KVA), Nationalencyklopedin, Umeå University
Indicator	No indicator for resource allocation, but: approaches to measure public engagement for example at Malmö University, Uppsala University, KTH, SLU, Umeå University, etc.

⁶² Information is based on interview with Anna Mannelqvist, Umeå University, May 3, 2011.

⁶³ Interview with Maria Orvehed, samverkanskoordinator of Uppsala University, April 12, 2011.

5. Towards indicators for public engagement

5.1. Proposed indicator set for public engagement

Based on a review of the literature, experiences from other countries and expert interviews, a set of indicators for measuring public engagement is proposed and presented in table 1.⁶⁴ The proposal is to measure the degree of public engagement activity at university level with three distinct indicators: **activities**, **resources** and **income**. These indicators for public engagement activities will record the time spent on activities and therefore they reflect the value of public engagement from a researcher's perspective. Measurements of resources and income will show the university's engagement for public engagement.

Public engagement **activities** will be divided into two groups based on the nature of the interaction.⁶⁵ The first group (**activity level 1**) will include activities focusing predominantly on one-way communication from scientist to public with limited feedback from audience to scientist. The main actor is the scientist and the question how the public learns about research.

- *Number of popular science publications*: Popular science books, book chapters, articles or newspaper articles are examples of publications addressed to non-academics. This information is easy to measure and is already gathered by many universities through the press office and by the faculties. This measure however says little about the quality of the publication. Media ranking might be one way to include the quality aspect. The universities could rank different media in the order of those that have the highest value for them.⁶⁶
- *Number of lectures to the public*: Lectures to the public either at the university or at a host location are knowledge exchange activities from researchers to the public. It is a good measure of the researcher's openness to the public. It is easy to measure although the quality of the lecture and the size of the audience is neglected in a blunt numerical measure.

⁶⁴ The proposed indicator set is based on the following sources: Neresini and Bucchi (2011): Which indicators for the new public engagement activities? An exploratory study of European research institutions, in: *Public Understanding of Science* 20(1): 64-79; Molas-Gallert et al (2002): *Measuring Third Stream Activities*, Final Report to the Russell Group of Universities, Science and Technology Policy Research (SPRU), April 2002; Swedish National Agency for Higher Education (2010): *Samverkan mätt med kvantitativa mått – en kartläggning*, Högskoleverket rapport 2010/8, Vetenskap & Allmänhet (2007): *Att mäta samverkan – förslag till indikatorer vid resurstilldelning och akademisk meritvärdering*, <http://v-a.se/2007/11/att-mata-samverkan-%e2%80%93-forslag-till-indikatorer-vid-resurstilldelning-och-akademisk-meritvardering/>; interview with Massimiano Bucchi, Observa, March 31, 2011.

⁶⁵ This division is inspired by Auweraert (2005): *The science communication escalator*, in Steinhaus, N. (ed.) *Advancing Science and Society Interactions*. Conference proceedings Living Knowledge conference Seville, Spain, 3-5 February, pp. 237-241. Bonn: Issnet.

⁶⁶ Publications and participation in social media such as blogs or chat forums has also been considered as an indicator for public engagement. It is though very hard to measure and neglects quality and effort. Counting the number of researchers having a blog and engaging in chat forums says little about the quality of the contributions and how often they contribute. We therefore propose not to use the participation in social media as an indicator.

- *Number of participations in TV/radio:* These activities are a measure of widespread knowledge transfer to the public and again easy to measure. However the quality, length and audience size of the broadcast contribution are not included in the measure. Weightings could be included to differentiate between brief comments in a news broadcast and a lengthy appearance on a science programme, with each requiring different amounts of effort by the scientist. There is also the possibility of weighing contributions in some media higher than others to give a measure of quality.
- *Number of open houses at universities:* This parameter identifies the openness of universities towards the public with an easy measure. Open house activities however tend to attract those people already interested in science.
- *Number of active participations in science cafés, science festivals, researchers' night events, school visits:* This measure identifies two-way communication activities between researchers and the public and provides a good measure of public engagement between the universities and society. However it again says little about the quality of the contributions and the amount of effort a researcher contributed to the event.

The second group (**activity level 2**) of public engagement activities includes projects in which scientists collaborate with societal groups or individuals. These parameters identify longer-term collaborations between researchers and the public, where both parties are on the same level with the aim of learning from each other. Collaborative projects such as these in fact reach fewer people than activities at level 1 such as lectures to the public, but the knowledge exchange is much higher. Therefore the proposal is to weight collaborative projects with the public (indicators at activity level 2) higher than straightforward communication to the public (indicators at activity level 1).

- *Number of visits to external organisations:* This measure identifies the amount of contact with representatives of external organisations, such as companies, schools or public authorities. It is easy to measure but neglects the quality and size of the visits. Small ad-hoc visits and larger more involved visits are equally valued.
- *Number of invited guest lecturers from external organisations:* This parameter also identifies contacts with external organisations and indicates the knowledge flow from external organisations to universities. It is easy to measure but again says little about the quality of the activity or the nature of the audience reached.
- *Number and value of applied research projects collaborating with external organisations:* Preparing research proposals with external organisations such as companies or non-profit organisations is time consuming. Appropriate partners have to be searched for, selected and convinced. Parts of the research proposals that have been written by the external partner may have to be adopted and streamlined. This indicator rewards attempts to set up research projects with external partners, whether it is successful or not.⁶⁷

⁶⁷ This indicator is included into the indicator set of the Malmö University, information is based on an interview with Anna-Karin Alm at Malmö University, April 13, 2011.

- *Number and value of research projects collaborating with external organisations:* This measure identifies longer-term projects with societal organisations such as hospitals, schools, public authorities, companies and museums. The parameter says little about the quality and success of the projects and information is probably not readily available. Research funding organisations in Sweden and Europe have information about the number and financial value of funded projects with external organisations (e.g. Vinnova, Swedish Research Council, DG Research, etc.). One might take the obtained funds from the funding organisations to every university into consideration. However this method excludes internally funded research projects. This information will have to be surveyed from the universities themselves. University administration could obtain these data in the frame of the annual reporting where several facts and figures from the faculties have to be collected.
- *Number of PhD and master theses collaborating with external organisations:* This also identifies longer-term projects between science and public with stronger focus on quality. Accomplished theses are an indicator of successful projects. There may be overlap with the previous parameter as most theses are written within the frame of a research project. This could lead to double-counts, which could be cancelled. It is suggested however that including this parameter will indicate successful collaborations between science and external organisations.
- *Number of faculty members holding a temporary position at external organisations:* This indicator will again measure longer-term projects between scientists and societal groups. Having a researcher at a work place indicates that the collaboration is stable, long term and in some way successful. It is therefore a good complementary indicator to the previous ones. There could be double-counts here too, as temporary positions sometimes are created within project frames. However not excluding double counts in this instance is recommended as this parameter particularly includes the quality and long-term aspect of collaborations.
- *Number of externals holding a temporary position at the university (adjunct professors):* This is the contrary direction of exchange to the parameter before. Having an external holding a temporary position at the university again indicates a stable longer-term collaboration between the external organisation the professor is affiliated with and the university. Again there could be double-counts when the professorship is created within project frame.
- *Number of publications authored with external parties:* This is an easy-to-measure parameter identifying longer-term collaborations with people working outside universities. However it says little about the quality of the publication.

In order to measure the university's engagement in public engagement this paper proposes including the amount of **resources** spent on public engagement activities. Specifically, including the budget and amount of human resources explicitly dedicated to public engagement activities is recommended. This recommendation implies not only the budget and number

of employees working for the communication department or press office of a university. It should also comprise the human and financial resources dedicated to public engagement activities at the faculty or inter-faculty level. The latter numbers are of course harder to obtain and might be “hidden”. Appropriate monitoring systems have to be established within the university in order to survey these numbers. The indicator provides a very good understanding of the value of public engagement within a university.

The **income** from commissioned research or education indicates moreover the degree of collaboration between the university and non-academic organisations. This includes chargeable teaching for companies or other societal organisations as well as research commissioned by a non-academic institution. There might however be a bias towards those universities where strong external relationships are intrinsic to their activities, such as business or technical schools.

Patents and **licences** were not included in the indicator set. Patents and licences measure the innovative capacity of a university. Patents however say little about whether an innovation is good or bad or whether the patent is used at all. Patents measure protected ideas, not collaboration with society. The use of a patent however could indicate collaboration between university and society. Therefore licenses would be better indicators. But licensing as well as patenting is heavily focused on chemical, pharmaceutical and medical technologies.⁶⁸ Patents are not intrinsic to other fields of research and license agreements would strongly favour technology faculties over humanities or social sciences. Recording a high number of licence agreements does not necessarily indicate high-performing collaborative activities with companies. It rather indicates that research results in these fields have a high practical applicability and potential economic value. Furthermore as the number of patents and licences from universities is rather low in Sweden,⁶⁹ these indicators are of limited use in measuring public engagement.

In order to calculate a **compound indicator**, universities have to classify every indicator into four groups: One group where there is complete absence of activity/resources coded with 0; a second group in which there is low activity/resources coded with 1; a third group with medium level of activity/resources coded with 2 and a fourth group with a high level of activity /resources coded with 3. This categorisation will allow an average to be taken across all indicators and will lead to a compound public engagement assessment of a university.

⁶⁸ Molas-Gallart et al. (2002): Measuring Third Stream activities, Science and Technology Policy Research (SPRU), p. 30.

⁶⁹ Tillväxtanalys (2011): Svenska uppfinnare – nytt datamaterial och ny inblick i innovationsprocessen, Working Paper/PM, 2011:14, http://tillvaxtanalys.se/tua/export/sv/filer/publikationer/working-paper-pm/WP_PM_2011_14.pdf.

Indicator	Scale	Strengths	Weaknesses
1. PUBLIC ENGAGEMENT ACTIVITIES			
ACTIVITY LEVEL 1 (science-public communication)			
No. of popular science publications (books, book chapters, articles in newspapers/ magazines)	0-3*	Identifies publications particularly addressed to public, easy to measure	Says less about quality of publication, could be compensated by media ranking
No. of lectures to the public (open lectures at universities, guest lectures by researchers)	0-3	Identifies knowledge transfer to public, shows openness to public, easy to measure	Says less about quality of lecture and audience reached
No. of participations in TV/radio	0-3	Widespread knowledge transfer to public, easy to measure	Says less about quality and effort of contribution
No. of open houses	0-3	Shows openness to public, easy to measure	Tends to reach the science-interested public
No. of active participations in science cafés, science festivals, researchers' nights	0-3	Identifies communication between researchers and public, easy to measure	Says less about quality of event and audience reached
ACTIVITY LEVEL 2 (science-public collaboration projects)			
No. of visits to external organisations***	0-3 (w)**	Identifies contacts with external organisations, easy to measure	Says less about quality and size of visit
No. of invited guest lecturers from external organisations	0-3 (w)	Measures external contacts and knowledge flow from external organisations to university	Says less about quality of lecture and audience reached
No. and value of applied research projects collaborating with external organisations	0-3 (w)	Measures and rewards the time spent in preparing a collaborative project	Data may not be available, needs to be surveyed
No. and value of research projects collaborating with external organisations	0-3 (w)	Identifies longer term collaboration between researchers and societal groups	Data may not be available as contracts may be managed by individual researchers, needs to be surveyed, says little about quality of project
No. of PhD and master theses collaborating with external organisations (e.g. industrial PhD)	0-3 (w)	Identifies longer term collaboration between researchers and societal groups, focus on high performing projects	Double counting with previous parameter
No. of faculty members having a temporary position at external organisation	0-3 (w)	Identifies longer term collaboration between researchers and societal groups, focus on stable relationships	Double counting with previous parameter
No. of externals holding a temporary position at the university (adjunct professors)	0-3 (w)	Identifies longer term collaboration between externals and university, easy to measure	Double counting with previous parameter
No. of publications authored with externals****	0-3 (w)	Identifies collaboration with externals, easy to measure	Says less about quality of publication

Indicator	Scale	Strengths	Weaknesses
2. RESOURCES FOR PUBLIC ENGAGEMENT - budget - human resources	0-3	Identifies the importance and value of public engagement at university level	Hard to collect data besides the budget and people in the communication department, press/PR office
3. INCOME FROM PUBLIC ENGAGEMENT - Commissioned research for external organisations - Commissioned education for external organisations	0-3	Identifies the income from collaboration with external organisations for education or research	Bias to those universities whose intrinsic focus is external relationships (e.g. business or engineering schools)

Table 1: Proposed indicators for public engagement with strengths and weaknesses.

* Universities are to be classified into four groups ranging from 0 = complete absence of activity/resources, 1=low activity/resources, 2=medium activity/resources, 3=high activity/resources. Numbers should be taken in relation to university size.

** Measures are to be weighted.

*** By external organisations we mean all organisations that are outside of the university, for example companies, public authorities, museums, hospitals, schools, etc.

**** By externals we mean persons who do not belong to a university, a university college or research institute. Examples are individuals that are affiliated to companies, public authorities, museums, hospitals, schools, etc.

5.2. Weighting of indicator set

Weightings may be used when comparing across universities. There are on the one hand universities which have a very broad approach covering many different faculties (e.g. Uppsala University, Stockholm University, University of Gothenburg, etc.). On the other hand there are universities which concentrate on particular subjects or research areas (e.g. Royal Institute of Technology, Karolinska Institutet, Swedish University of Agricultural Sciences, etc.). There are also private and public universities, universities focusing on basic research versus applied research, universities embedded in a rural area and urban universities. Faculties, research fields and universities differ significantly for instance in the number of publications, number of research projects with external partners or number of public lectures. This is because some research is more fascinating to the public than others, in some research fields it is more common to publish than in others, and some faculties are more attractive for companies to work with. For example, medical research results are more appealing to the public than theoretical physics; engineering or business schools are more interesting for companies to collaborate with than language schools. Therefore it is important to take these differences between universities into consideration when drawing comparisons. Biases might be balanced by comparing similar universities or with appropriate weightings.

One or several public engagement indicators could also be weighted more heavily than others. It was proposed earlier that science-public collaboration projects (activity level 2) should be weighted higher than science communication to society. Another possibility is to only consider collaborative activities between science and society and therefore neglect all science communication activities.

The method of taking averages across the indicators can of course also include a weighting of certain indicators. By averaging all 17 proposed indicators in table 1, public engagement activities would naturally be given a higher weight as they are numerous. Another approach is to take averages per group (activities, resources, income), thus weighting all three groups similarly.

5.3. Shortcomings of indicator set

Opting for a system of indicators always implies a focus on quantity rather than on quality. The number of popular science articles published does not say much about their quality. Considering the resources spent by the communication department does not evaluate the quality of their interaction with media. The parameters proposed for public engagement activities at activity level 2 attempt to compensate for this weakness by measuring science-public collaboration projects. The existence of longer-term collaboration projects implies a certain level of quality. Bad performance means in most cases that the project dies. Furthermore indicators measure only what has been asked for and what is measurable. One can therefore only get a partial picture of the university's public engagement activities. The introduction of indicators could also distort the behaviour of researchers and faculties as people strive to gain good evaluations. It is difficult to estimate if there has been a cultural change towards public engagement based on indicators. However indicators should give a hint of how embedded public engagement is in an organisation's culture. Higher numbers of public engagement activities demonstrate that a university values public engagement and that it has a part in its culture. Swedish universities already monitor some of the proposed indicators. For some other organisations adequate monitoring systems have to be established to gather the information needed.

The proposed indicators do not measure the **impact** of public engagement activities on society and the economy. Impact studies play an increasingly important role in evaluating research projects at both EU and national level. As well as measuring the excellence of research with output measures such as publications, citations or contract research, high quality research projects can also be identified by their distinct social and economic impact. Public engagement activities might also be evaluated by their impact on the university and society. The UK is currently discussing ways of how to evaluate the impact of public engagement activities within the Research Excellence Framework (REF).⁷⁰ For instance, generic outcomes of public engagement on a societal level are increased trust and mutual understanding between science and society, informed public debate, informed health and wellbeing or evidence-based public policy. Impacts at the university level are innovative research results inspired by collaborative projects with the public, discussed under the heading of open innovation. More concrete outcomes could include the number of faculty members taking up placements at a non-academic organisation and vice versa as a result of joint projects. Impact studies are not easy to run. Possible impacts may occur long after the end of a project, and the correlation between stimulus and effect is often unclear. These are only two of many potential issues regarding impact studies. The UK discussions should be followed closely in order to get more insights into how to measure the impacts of public engagement activities.

⁷⁰ Information is based on an interview with Sophie Duncan, NCCPE, March 28, 2011.

6. Recommendations for fostering public engagement

6.1. Recommendation for an indicator set to measure public engagement

Engagement with society on scientific issues is generally given a low priority and is not sufficiently integrated into education and research. One reason for this is that engagement is often seen as optional, voluntary, and as something good to do if researchers have time. Researchers need incentives and recognition to be motivated to take part. One important measure is to include indicators on public engagement for the resource allocation to universities. Those universities and researchers doing a good public engagement job get more money than others. We therefore recommend including public engagement indicators for resource allocation to universities and university colleges. We recommend including the following **public engagement indicators** as a basis for university resource allocation.

(I) NUMBER OF PUBLIC ENGAGEMENT ACTIVITIES

Activity level 1 (science-public communication)

- No. of popular science publications
- No. of lectures to the public
- No. of participations in TV/radio
- No. of open houses
- No. of active participations in science cafés, science festivals, researchers' nights

Activity level 2 (science-public collaboration projects)

- No. of visits to external organisations⁷¹
- No. of invited guest lecturers from external organisations
- No. and value of applied research projects collaborating with external organisations
- No. and value of research projects collaborating with external organisations
- No. of PhD and master theses collaborating with external organisations (e.g. industrial PhD)
- No. of faculty members having a temporary position at external organisation
- No. of externals⁷² having a temporary position at university (adjunct professor)
- No. of publications authored with externals

⁷¹ By external organisations we mean all organisations that are outside of the university, for example companies, public authorities, museums, hospitals, schools, etc.

⁷² By externals we mean persons who do not belong to a university, a university college or research institute. Examples are individuals that are affiliated to companies, public authorities, museums, hospitals, schools, etc.

(2) DEDICATED RESOURCES FOR PUBLIC ENGAGEMENT

- Budget
- Human resources

(3) OBTAINED INCOME FROM PUBLIC ENGAGEMENT

- Commissioned research for external organisations
- Commissioned education for external organisations

For cross-university comparisons, a blunt comparison of indicators could give biased and inaccurate results. To counter this there are two possibilities: either similar universities could be compared or appropriate weightings should be included. Universities and university colleges can differ significantly: diversified vs. specialised, private vs. public, basic vs. applied research, rural vs. urban. It is important to define comparing groups and/or to develop appropriate weightings. Weightings can of course also be applied across the indicator set. It is proposed to weight public engagement activities at activity level 2 higher than at activity level 1. Collaborative projects imply a higher level of knowledge exchange between science and society than purely science communication activities. The way of averaging across the indicators implies also a weighting. For example, taking the average of all 17 indicators implies that public engagement activities are higher weighted than the other indicators. It is proposed to average per group (activities, resources, income) and giving the three groups the same weight.

6.2. Further recommendations for triggering a cultural change

Rewarding public engagement activities by budget constraints or enlargements is one way to promote public engagement. This is a very top-down approach. The authorities take the decision that universities have to work together with society and enforce this by punishing those doing a bad job and rewarding those doing a good job. Applying the indicators does not necessarily mean that the researchers and university administrations are intrinsically convinced of the importance of public engagement. People tend to adapt their behaviour towards what is measured. It is also very likely that the public engagement indicator, if introduced, would be just one (probably small) part of an indicator set measuring the quality of research. Therefore, the incentive for researchers to engage in science-public interactions may remain low because a fundamental cultural change is lacking. Bottom-up approaches for promoting public engagement and triggering a cultural standard towards public engagement are therefore essential.

RECOMMENDATION 2: MEMORANDUM

Leading authorities and organisations in the Swedish higher education system should launch a joint memorandum for public engagement. The memorandum will emphasise the value and importance of public engagement for both society and the universities. Universities will sign the memorandum and commit to fostering and supporting public engagement with specific activities that have to be agreed on.⁷³

RECOMMENDATION 3: ROLE MODELS

A research funding programme should be developed in which some universities get extra funds for public engagement activities. Universities that are doing outstanding public engagement activities will be selected and will serve as a role model for other universities. This will strengthen the importance and awareness of public engagement.⁷⁴

RECOMMENDATION 4: PRIZE

A national prize awarded for excellent public engagement activities at researcher level should be established. Researchers who have excelled in communication and collaboration with society will be rewarded by a prize. Rewards are a very effective way to raise the profile of a topic and to make people aware of a certain matter. A prize would foster a cultural change by spreading the idea of public engagement. The donator could be one of the Swedish research funding organisations or the Ministry of Education and Research (utbildningsdepartementet).

⁷³ UK's Concordat and Manifesto might be consulted. For example, within the Manifesto for public engagement it is written: "We believe that universities and research institutes have a major responsibility to contribute to society through their public engagement, and that they have much to gain in return. We are committed to sharing our knowledge, resources and skills with the public, and to listening to and learning from the expertise and insight of the different communities with which they engage. We are committed to developing our approach to managing, supporting and delivering public engagement for the benefit of staff, students and the public, and to sharing what we learn about effective practice." (NCCPE, Beacons for Public Engagement, 2010). Universities and research institutes are invited to sign up to this manifesto.

⁷⁴ UK's Beacons for Public Engagement provide useful ideas for this recommendation.

VA promotes dialogue and openness between the public and researchers

VA (Public & Science) is an independent non-profit membership organisation based in Stockholm, Sweden. Founded in 2002, VA's mission is to advance and encourage dialogue between researchers and the public. Since its foundation, VA has organised hundreds of dialogue events and carried out more than 30 studies into science-society interactions.

VA's main aims are

To **increase knowledge** by:

- Studying the public's view of science and researchers
- Studying the interaction between science and different societal groups
- Mapping researchers' engagement with society
- Developing methods for science communication

To develop new meeting formats and organise **dialogues** and **workshops** around research and research communication

To **communicate** and disseminate experiences and knowledge gained.

VA is a knowledge hub for collaboration between science and society. Members from the scientific community as well as from other sectors of society and the general public are represented in the organisation.

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