



# **Impact Cases – A practical help for KTH faculty**

**How to build a strong Impact Case  
illustrating the pathway from KTH  
research & education to societal change**

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## Background

KTH started to work with Impact Cases in the Research Assessment Exercise 2012 (RAE2012), the second RAE performed by KTH. Impact Cases proved a valuable way to show and assess societal impact, in many ways giving a better understanding than KPI:s related to societal impact. A strong correlation between excellence and high social impact was also noted, comparing the outcome for all research environments at KTH.

The following years KTH continued to develop societal impact, for example by creating the academic position Impact Leader at each School. The Impact Leaders have been instrumental for keeping up a continuous dialogue with the faculty and transferring competence between the different Schools as well as between the central support functions (through a representative Impact steering group) and Schools.

Developing a “KTH process” for writing Impact Cases has been an ongoing effort between 2015 – 2017, where all Schools’ Impact Leaders have had an active role. Each School presented 2 or more Impact Cases in 2016, of which one related to Societal impact from education. After analysis and conclusions were drawn, a process for how to write an Impact Case, including where to start and what should be included, has been established.

The process described in this guidelines is meant to help you in your work of writing a strong Impact Case, which includes all relevant parts proving that your research has led to societal impact.

If you have questions, please contact the Impact Leader or Communicator Officer at your School.

## What is an Impact Case?

An impact case is a structured description of a chain of events that leads to impact, starting with the research or education that is the origin of the impact and finishing with the actual impact that has been created.

This is supposed to be an objective description of what has actually happened in the different steps during the time period covered by the impact case, with as much supporting evidence as possible. This guideline document has been developed with the aim to give the faculty a structure for building an Impact Case.

A template has been developed alongside the guidelines with further instructions, such as restrictions in words etc.

## What characterizes a strong Impact Case?

A strong impact case is able to put your research/education in a context that explains why your case is important and includes evidence beyond your own statements. It also provides information about the reach and significance of the impact. Several types of impact can be argued for in the same impact case. For instance the impact can be a product that has increased the competitiveness of an organization and have led to other products being more sustainably produced and hence improved our environment.

## Why should you write an Impact Case?

An impact case can be used for two overall purposes:

1. As a base for external communication and evaluations
2. Internal communication, development, learning, and improvement

Some examples for what the Impact Case can be used for:

- News, stories, and other selling communication both internally and externally
- Information source for internal and external evaluations
- Analysis of pathways, best practices, etc. to create impact
- As a tool for creating more successful research applications

The idea being that the school communicators, the KTH communications department, persons responsible for evaluations, etc. can use the impact case as a starting point and build on it to create stories, reports, etc. that suits the particular purpose. When writing an Impact Case, the same information can hence later be used for a number of different purposes, saving time and effort for everybody involved.

## Definitions:

### **Societal Impact:**

An effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia. In the document impact is used interchangeably with societal impact.

### **Intermediate Impact:**

To be understood as a societal impact that is taking place more immediate to a research project or education activities i.e. the immediate effects of a research project. Usually it corresponds with the measurement of the intervention or research objectives. There is no exact point where intermediate impact becomes societal impact – it is a matter of arguing for your opinion on where your impact case is positioned at a specific time point.

### **Potential Impact:**

Possible or expected impact, but has not yet come to the stage of actually have a proven effect or change that defines societal impact.

### **Significance:**

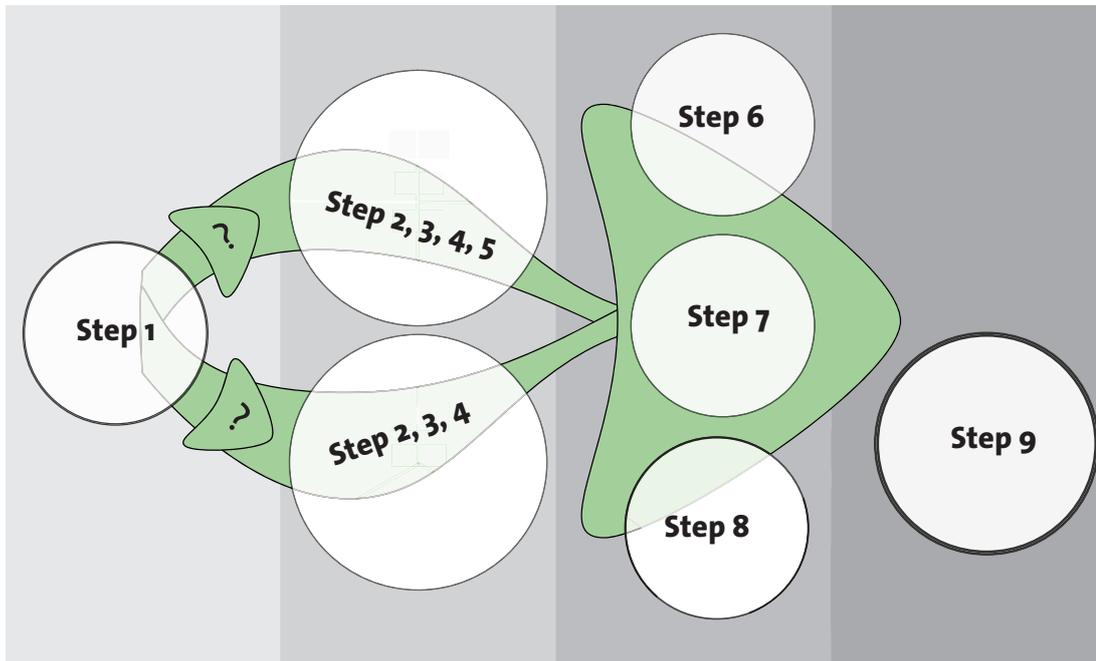
How big effect the impact had on beneficiaries How much difference the impact made to beneficiaries, i.e. the degree to which the impact has enriched, influenced, informed or changed policies, practices, products, opportunities or perceptions of individuals, communities or organizations.

### **Reach:**

How wide was the impact geographically (i.e. locally, regionally, nationally, internationally) and/or in terms of different segments (i.e. within or beyond a specific industry/kind of institutions/subgroups of the society/ etc.) and/or where in the value chain (i.e. affecting only or beyond the lead users).

### **Potential Impact:**

Testimony from end users and/or presentation of for instance documents, records, objects, indicators etc. demonstrating that societal or intermediate impact has taken place.



PICTURE *Full Impact Case and Intermediate Impact Case*

Step 1. Identifying an Impact Case

Step 2. Shortly describe your Impact Case

Step 3. Explain WHY your impact is important (significance)

Step 4. Describe the reach of your impact

Step 5. Provide evidence of your impact

Step 6. Describe impact creating activities

Step 7. Present the underlying research and/or education activities

Step 8. Describe physical and human assets/infrastructure used

Step 9. Listing physical and human assets/infrastructure generated

## How to get started

### Step 1. Identifying an Impact Case

An impact case can be a case where evidence for either societal or intermediate impact can be provided.

Requirements for an impact case:

- The main part of research and educational activities has taken place at KTH
- The main part of research and educational activities described have been performed the last 15-20 years
- The claimed impact has taken place the last 5 – 10 years
- A chain of evidence must be provided. This could be done in various ways, see Step 2.

### Step 2. Shortly describe your Impact Case

Short description of what impact your research / education activities has led to and why it is important using a few sentences, max 200 words.

Describe your impact in general terms by making use of the different types in Appendix A and by describing what the specific impact is and for who/whom in your case. Describe key activities in a chain of evidence to prove the impact created.

#### Example to illustrate:

Defending critical infrastructure against intentional electromagnetic threats (Dep. of Electromagnetic engineering, EES):

*Modern society is critically dependent on interconnected and interdependent infrastructures such as power, mobile communication, water supply, transport, and information technology services. The prevailing critical infrastructure evolved historically by adopting modern semi-conductor technology in its critical functions and its vulnerability to high power electromagnetic (HPEM) interference has changed and is largely unknown. Susceptibility of modern electronics makes the infrastructure vulnerable to HPEM disturbance, which can be created by rogue elements with technical expertise. The last 12 years of research at UU/KTH has provided the major infrastructure owners in Sweden the knowledge and the methods to evaluate the susceptibility of their systems to intentional electromagnetic interference (IEMI) and take remedial action. Reports to several government agencies led to that workshops have been held with f.ex. Fortifikationsverket to transfer knowledge and methods, a handbook has been written issued by Fortifikationsverket and international standards have been changed based on contributions from the researchers*

### Step 3. Explain WHY your impact is important (significance)

Explain why your impact is important. Preferably, place your impact in a context of societal challenges and /or goals which are defined internationally, nationally or more locally as standards of improvement.

It is a good idea to connect to specific impact goals/aims in high level documents such as UN 17 Sustainability, the Juncker plan, Horizon 2020, A Digital Single Market Strategy for Europe, The Paris Agreement etc. or national goals/aims such as described in Forskningspropositionen, by the Swedish

Research Funding Bodies, etc. or more local goals such as described in for example “Vision 2040 – Ett Stockholm för alla”. If connecting to documents, explain how it is linked to your impact case.

#### **Example to illustrate:**

The FRAP technology - A new biocompatible implant technology in fracture treatment (Dep. of Neuronic Engineering, STH School & Dep. of Fiber and Polymer, CHE School):

*The fracture treatment can more easily be applied with minimal invasive surgery and in many cases only with local anesthesia. This is of great advantage when it comes to treat elderly patients with a risk for complications after the surgical procedure.*

*The in-hospital stay is substantially shortened to about 1-2 days thereby leaving the treatment much more effective with reduced health care costs.*

#### **Step 4. Describe the reach of your impact**

Describe who/whom are the beneficiaries of your impact and where they are located; from a geographic perspective, which sector(s) and where in the value chain, type of organization(s) or users etc. International reach should not be seen as “better” than having a local reach. It’s good, but not necessary, to demonstrate reach in several dimensions.

#### **Example to illustrate:**

Project Discovery – using a massively multiplayer online game to do real life science (Dep. of Proteomics and nanobiotechnology, BIO School):

*The Project Discovery-module is a minigame within EVE Online, an online game played by more than 500 000 people. In project discovery, the gamers are helping to identify and classify proteins by analysing fluorescent confocal images of cells from the Human Protein Atlas (HPA).*

*Education in proteins and protein classification is today also provided to gamers by KTH teachers at the virtual EVE university.*

#### **Step 5. Provide evidence of your impact**

Provide concrete evidence on your impact and its significance. Use a logical chain of arguments to strengthen your claim (i.e. meetings with x and presented in popular science articles, led to contact with company y etc.). One of the key problems is the overlap between concepts of significance and reach, as they are highly connected and correlated in most cases. The key thing is to make sure that your impact couldn’t be described as insignificant or lacking reach, and to identify evidence that can strengthen claims to either significance or reach (ideally both). See examples of evidence to use in Appendix C.

#### **Example to illustrate:**

Miljöbyggnad: Making Sweden’s building stock greener (Dep. of Miljöstrategisk analys, ABE School):

*The project “Environmental classification of buildings” which led up to the development of the tool Miljöbyggnad.*

*gnad... engaged around 30 participating companies, including property owners, architects, consultants, developers, insurance companies, and municipalities. The participatory project design helped to give the tool a high acceptance in Swedish building and construction sectors.*

*Today, more than 700 buildings have been certified with the tool. It is used by all leading developers in Sweden, including e.g. NCC, WSP, PEAB and SWECO, as well as municipalities (e.g. Värnamo) and property owners (e.g. Akademiska hus). Currently a third version of the tool "Miljöbyggnad 3.0" is being developed [2] showing a continued interest in the tool.*

### **Step 6. Describe impact creating activities**

Describe impact creating activities that made the uptake in society possible. For societal impact to take place impact creating activities are required. Examples of such activities are for example workshops with users, collaboration with ministries, being involved in standardization etc.

It's also valuable to show how the uptake in society has been made possible by researcher's/research group's activities involving different stakeholders at different stages. For instance, when developing a new method/product it might at some stages be necessary to concentrate on activities aimed at changing values and mindsets, while at other time impact activities aiming to sell the product s/methods is in focus.

#### **Example to illustrate:**

Greenhouse Labs (CHE School):

*The activities in Greenhouse Labs affect the education at KTH. Students who read a Master of Science education at the School of Chemical Science and Engineering, KTH, meet the activities of Greenhouse Labs through a perspective of course that spans over the first two years. For students in the higher grades, there is the opportunity to do their master thesis within the companies at Greenhouse Labs. So far, at least 12 students made their master thesis in Greenhouse Labs. Twice a year, PhD-students from all over Sweden visit Greenhouse Labs during a course arranged by the School of Industrial Engineering and Management, KTH. ... Since 2012, the Greenhouse Labs had visits from all around the world, representatives from universities, entrepreneurs and investors to ministers and a president. From Sweden Greenhouse Labs have had visits from among others the Minister of the Development Cooperation, representatives from the Ministry of Education and organizations like SNITTS.*

### **Step 7. Present the underlying research and/or education activities**

Present the underlying research/education in such ways that a non-researcher can understand what has been done and how it has led to the impact described. Present who are the main responsible researchers for the Impact Case and what KTH Departments are involved. List up to 10 articles as references.

### **Step 8. Describe physical and human assets/infrastructure used**

Describe what physical and human assets/infrastructure that have contributed to creating the impact. These assets are often built up over time and can in themselves lead to impact by being used as a base for collaborative projects and/or activities. Examples are for example specific labs, instruments, open data, partnerships, alumni network, IPR (copy right, patent, design and trademark), etc. Don't forget to mention if you have used KTH strategic partnerships, centra, research infrastructures, KIC:s or other arenas in your activities.

### Example to illustrate:

Applying digital health care on new arenas (STH School)

*On a national level is STH the host of the Strategic Innovation Program MedTech4Health financed by VINNOVA for calls in medical technology. STH is taking a lead in developing the laboratory concept in the new building at KTH Campus Flemingsberg, i.e. the renewal of the use of laboratories linked to the increasing importance of real life settings.*

### Step 9. Listing physical and human assets/infrastructure generated

List the physical and human assets/infrastructure (see examples above) generated, which can form a base for possible future impact and may also be used by external actors.

### Example to illustrate:

Modelling tools for Sustainable Development (Dep. of Energy Systems Analysis, ITM School):

*The Global Electrification ToolKIT – GETIT – is an open source, spatial, electrification tool that estimates, analysis and visualizes the most cost effective electrification option between grid, mini-grid (PV, Wind, Hydro, Diesel) and Stand alone (PV, Diesel). The tool is developed to ensure access to affordable, reliable, sustainable and modern energy for all by 2030 (SDG 7). The tool has been applied to 44 African countries and India. Its results are openly accessible on the United Nations website.*

## How to continue to improve the future impact

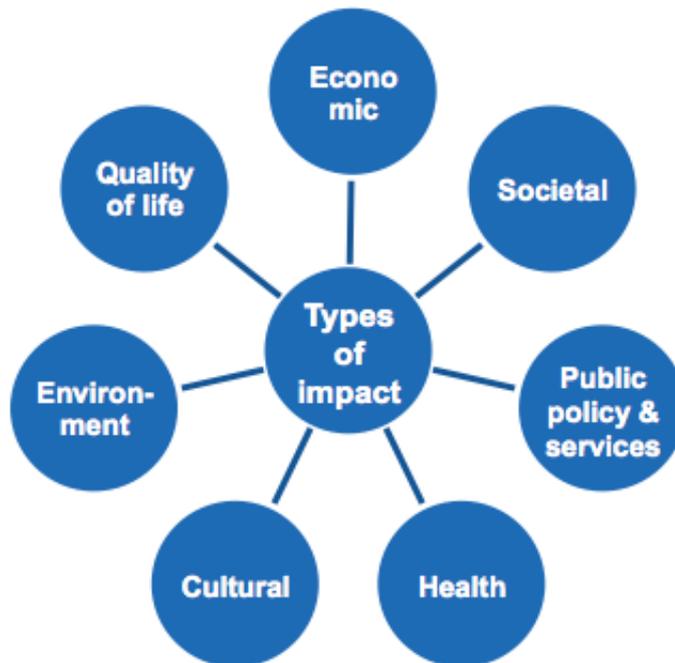
If you got letters of support from external bodies before you submitted the grant that funded your research – go back to these companies/organizations to see how they used your work. Who did they pass your work on to? Have they mentioned your research? Did it change any decisions and if so – at what level? Can these people point you to evidence in documents etc. that your work has been used? If not, can they provide testimonials about the impact of your work?

If your engagement with stakeholders continued after the project - what further collaborations arose from this engagement that wouldn't have happened without the original research? Did collaborators use the methods from the research in their own professional practice after the research ended, and what was the effect of those changes in their practice?

A general recommendation is to create your own system/log or similar to keep track of your engagements and activities. This can help you to identify evidences later on in order to create a strong chain of arguments to prove that the future impact is due to your efforts.

## Appendix

### A. Different types of impacts:



### B. Examples on impact creating activities

- Activities connected to teaching and learning – students and faculty are direct consumers of research and they affect the companies and organizations where they chose to work
- Involving business leaders, practitioners and consultants in both private and public sector organizations through workshops/seminars/as partners in research projects/in steering/advisory boards/testing groups involving end users, etc.
- Commercialization of results and intellectual property.
- Participate as an expert in working groups/governments official investigations/EU expert groups etc. connected to policy changes
- Participation in bodies/committees aimed at standardization efforts on national or international level
- Meetings with companies/organizations taking place in a structured way, increasing the willingness in general to engage in new collaborations/enduring collaboration
- Activities aimed at raising the public awareness and new understanding of the research and its impact, for example through museum exhibitions/collaborations, science nights/festivals, projects with schools, collaboration with gaming industry, participation in the civil dialogue through different forums, etc.

### C. Examples of different types of evidence, both qualitative and quantitative

- Testimonials from named individuals, contact details to those affected by the claimed impact
- Press coverage, popular articles, interviews, referring to statements
- Guidelines/documents/reports/ input to authorities/ government
- Evaluation data, critical external reviews of the engagement activity
- Standards changed
- Training materials
- Policy revisions, informing social policy, industry adoption
- Follow-up studies – of observations, changed behavior, surveys
- University-business collaboration, evidence of third party involvement, for example how collaborators have modified their practices
- Consultancy application
- Details of conference/invitations to speak
- Links to relevant background information
- Public engagement – speak to the ‘organizer’ of the event
- Price in student/innovation/... competition
- New program developed/course adoption/curricula change
- Details of grants
- Startups created, growth, production increase, /decrease in waste/carbon dioxide, standards changed, lives saved, public health improved
- More students applying to program/got employed after it was changed
- Use of tool/process/service developed, downloads of apps/free software/data etc., /
- Public engaged with research and expertise
- Provision of case studies and teaching examples, usage statistics,.
- Economic savings, revenue increase, business/economic impact.
- Evidence of sustainability through, for example, a sustained or ongoing engagement with a group, a significant increase in participation in events or programs or use of resources.
- Google key statistics or phrases from your work to see where they have been used in documents that have been put on the web

### D. Questions to help clarify reach and significance

- What user groups (lead users) outside academia did you work with? Locally/regionally/nationally/internationally?
- What end users were effected?
- Locally/regionally/nationally/internationally?
- What was the purpose of the ‘interaction’?
- What has been the effect on the users/audience?
- Did it change something for them?
- How did they benefit from the ‘interaction’?
- How did your contribution effect the impact/benefit?

