

TRANSFORMATIVE INNOVATION LEARNING HISTORY: SWEDEN

CHALLENGE-DRIVEN INNOVATION: A NEW AVENUE FOR TRANSFORMATIVE POLICY AT VINNOVA

FUENFSCHILLING, BAUER, CLEMENTE: CIRCLE ON BEHALF
OF VINNOVA



**TRANSFORMATIVE
INNOVATION
POLICY
CONSORTIUM**

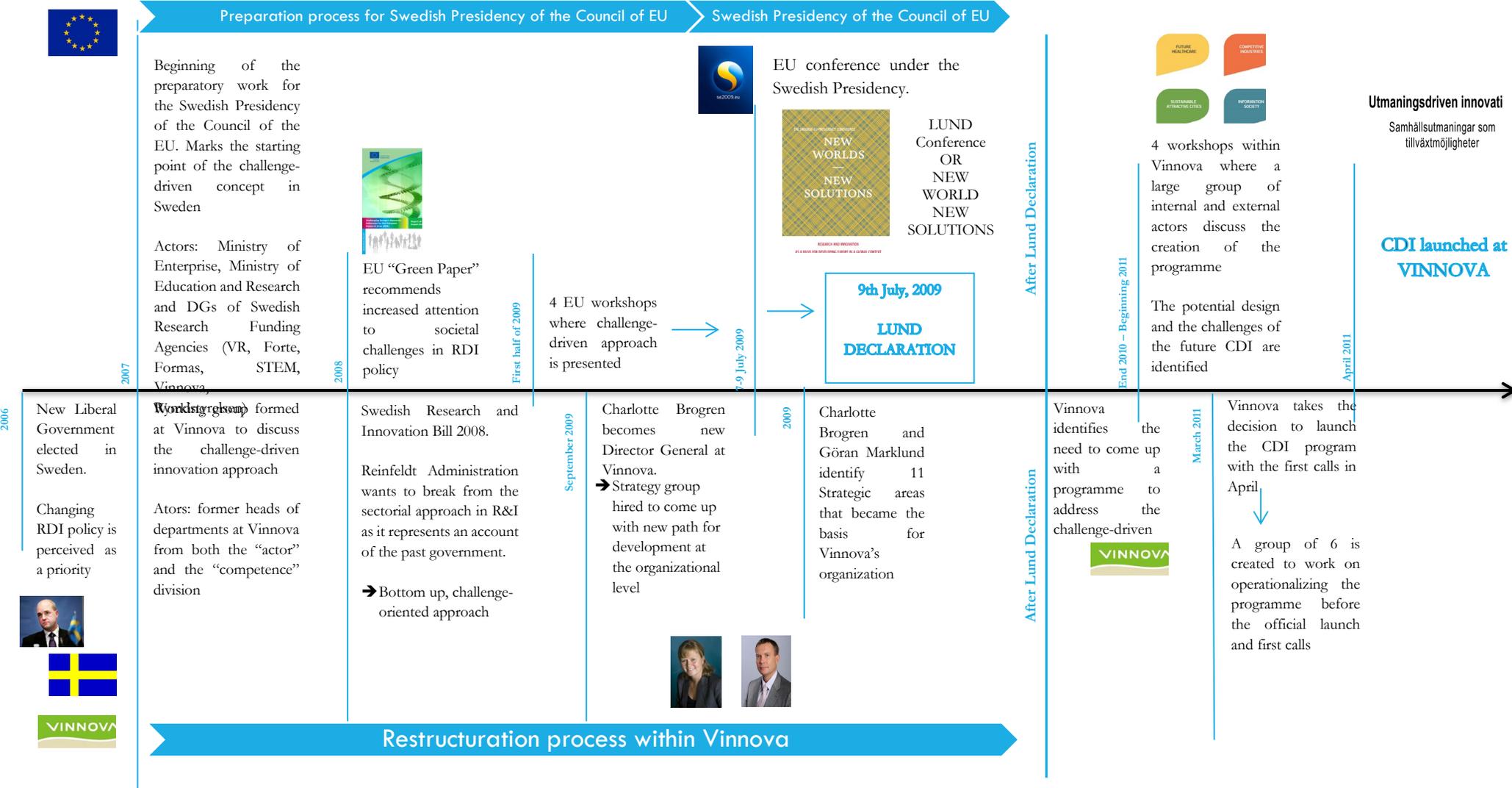
INTRODUCTION

Challenge-Driven Innovation (CDI) is a program launched by the Swedish innovation agency Vinnova in April 2011. The aim of the CDI program is to fund projects that develop sustainable solutions that tackle current societal challenges. These challenges require innovative solutions that go beyond traditional research fields and 'silo-thinking'. Instead, cross-sectoral cooperation between a range of public and private stakeholders is promoted and emphasis is put on a more holistic approach to innovation, also including social and organizational aspects. Furthermore, challenges are understood not just as a threat, but rather also as an opportunity for economic growth. Therefore, the program has been designed in a way that is believed to promote opportunities for transformative innovations by encouraging demand-, challenge- and user-driven projects spanning various actors and industries. The here presented innovation history presents the development of the CDI program over time, gives an overview of its built-in mechanisms to foster challenge-driven innovations and discusses its implications for transformative change using empirical evidence from one of the projects funded by the program in the area of forestchemistry.

KEY INSIGHTS

- **Organizational structure matters** – designing and managing a cross-sectoral and challenge-driven funding scheme requires moving away from traditional, disciplinary organizational structures in agencies as well
- **Leadership is crucial** – commitment from the top management as well as the broader policy environment is important to see through new, innovative approaches
- **Consultation and collaboration is essential** – getting inputs from the broader environment, national and international, is essential to gain relevant expertise and enough support to make informed and legitimate decisions
- **Bottom-up approaches also need guidance** – for many actors it may be more difficult to respond to a completely open program as it is difficult to understand what is expected; designing flexible, adjustable guidelines could be the key
- **Context matters, no one size fits all** – the sectoral and institutional settings of projects are important to acknowledge when designing funding schemes. Transformative innovations face very different barriers depending on where they are developed, e.g. due to specific industrial standards and regulations
- **Reflection, evaluation, revision is key** – new programs and mechanisms have unintended consequences that need to be understood and addressed. New schemes should therefore allocate time and efforts for reflection and evaluation and be prepared to revise the instruments continuously
- **Sustainability transitions require policy mixes** – no one single instrument will be sufficient to address all challenges in a sector. Instead, different instruments should be coordinated in order to stimulate and foster various activities that as a whole enable system transformation

TIMELINE



CHALLENGE-DRIVEN INNOVATION: A SHORT OVERVIEW

The program “Challenge-driven Innovation – Societal challenges as opportunities for growth” was launched by Vinnova in 2011 as a response to find new ways of promoting sustainable innovation and growth in Sweden in light of global societal challenges. The vision is that the program realizes projects that are “*visionary, challenge existing mental models and target systemic issues*” (CDI description, Vinnova). Challenges are believed to be transnational and cross-sectoral in nature, which is why the program strives to support inter- and transdisciplinary collaborations between actors and stakeholders from public and private realms and from a variety of industries and fields. Projects should build up new strategic alliances and networks and innovations should be created through public-private interactions and increased user involvement. Developed solutions have to contribute to economically, socially and environmentally sustainable growth and entail new business opportunities, market segments or a significant reduction of costs for a broad range of societal actors. Suitable projects are furthermore envisioned to promote the relevance of the Swedish market place and its actors while simultaneously attract new international investments and be of global relevance. In addition, diversity and gender mainstreaming is a key concern when evaluating potential projects.

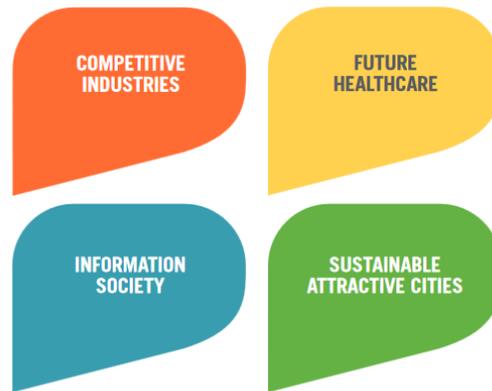
Fig.1: Principles for a challenge-driven approach (CDI description, Vinnova

- Be based on a critical need in society and the business sector, which can be associated with clear requirement owners.
- Result in innovations that combine international business potential and social benefit.
- Build on collaboration between actors in value chains that involve users, customers and other relevant stakeholders in the process.
- Further develop and utilise infrastructures for innovation that both promote the integration of systems (information, communication, standards, transport) and create an opportunity to test innovations under market conditions.
- Include a systemic approach – addressing the whole of the innovations system, not just the parts.
- Promote and stimulate collaboration and interaction between the actors needed for successful utilisation.
- Pursue development of new opportunities that the market itself is not developing.

The CDI program specifies four specific societal challenges: *Future healthcare*, *competitive industries*, *sustainable attractive cities* and *information society*. It is assumed that Sweden has the right capabilities and expertise to address these challenges by developing globally relevant innovations and thereby become a leading partner in the respective fields.

- *Future healthcare*: Demographic changes, resources scarcity in the system, new treatments and technologies or questions of access are all developments that put pressure on the health and welfare system. Projects in this area are thus asked to address such issues with innovative solutions, especially paying attention to questions of health prevention and promotion, knowledge intensiveness and digitalization and appropriate and cost-effective access to services.
- *Competitive industries*: In order to transition towards more sustainable production processes, many industries will have to undergo significant changes and renew themselves in order to stay competitive. Projects are encouraged to find solutions that help Swedish industries to stay competitive, particularly regarding environmentally sustainable production processes, socially sustainable labor markets and sustainable global value chains.
- *Sustainable attractive cities*: Urbanization is a pressing societal challenge – over half the world's population is living in cities and this number will increase further over the next years. Cities thus face the challenge regarding how to combine growth with livability with resource conservation. Suitable projects should thus propose innovative solutions in the realm of urban planning, lifestyles and supply systems.
- *Information society*: The current knowledge based economy and the new technological advances in digitalization that make it possible to collect, evaluate, store and share unprecedented amounts of data are a challenge and a solution at the same time. Projects are encouraged to address issues of inclusiveness and access to information, security and operation of critical infrastructures as well as potential applications for the promotion of sustainable solutions.

Fig. 2: Four societal challenges in the CDI

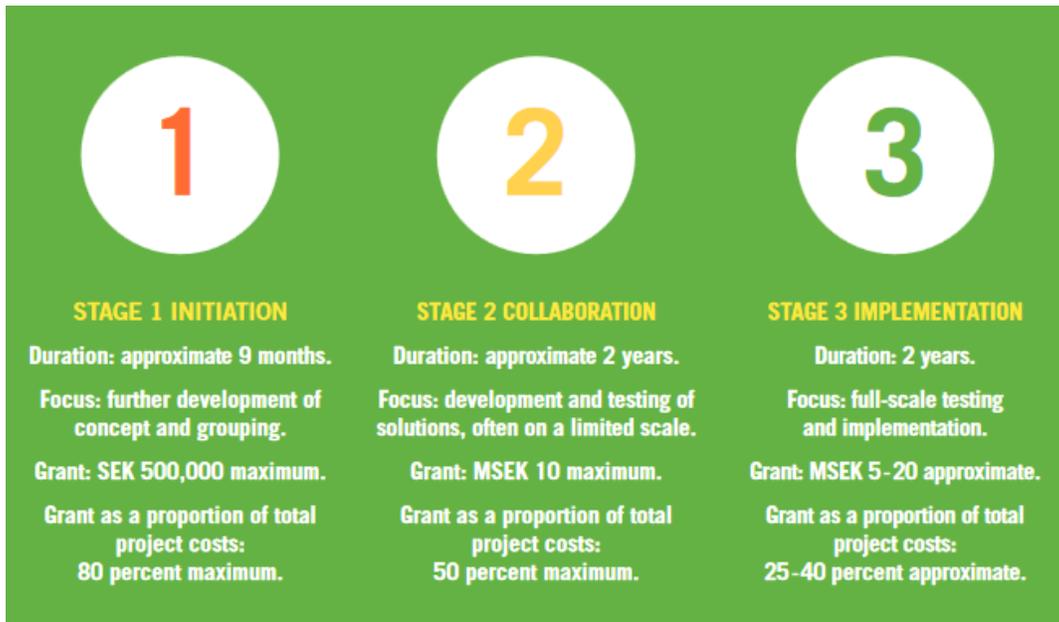


In 2016, Vinnova allocated around 220 million SEK (20 million GBP) to projects funded through the CDI program, amounting to ca. 10% of VINNOVA's annual budget, making it one of the largest single funding programs of the agency. The application process for project funding is organized through a stage-gate model. Calls for application are launched biannually and consortia of at least three project partners can apply for stage one funding. Projects that receive funding for this initial phase are subsequently evaluated and potentially eligible for the next stage. Project evaluation is confidential and executed by Vinnova with the help of external reviewers. The stage-gate funding scheme has been chosen deliberately as a way to foster a challenge-driven orientation, ensure utilization of innovations and facilitate cross-sectoral, transdisciplinary collaborations. It includes the following steps:

- *Stage one – initiation:* Build-up of relevant actor network and development of the project idea. The duration is limited to approx.. nine months and funding consists of SEK 500,000 max. At least 20% co-funding through project partners is required.
- *Stage two – collaboration:* Further development of project idea and initial testing of resulting innovations. Duration ca. two years and funding limited to a maximum of SEK 10 million, requiring at least 50% of co-funding through the project partners.
- *Stage three – implementation:* Demonstration, large-scale testing and implementation of innovations. Duration of two years and funding between SEK 5 to 20 million, representing 25 to 40 % of the total project costs.

At the end of 2016, 257 projects had reached stage one, 68 stage two and 18 went on to stage three.

Fig. 3: CDI stage-gate funding scheme (CDI description, Vinnova)



HISTORY OF THE CDI

CHALLENGES AS AN INNOVATION POLICY FRAME

“The Lund Declaration gave us that push from the government to also have the courage to start designing a program” Vinnova employee

A challenge-driven approach towards innovation policy has been emerging in Europe a few years into the new millenium. EU green papers published in 2007 and 2008 (“The European Research Area: New Perspectives” and “Challenging Europe’s Research: Rationales for the European Research Area”) emphasized the importance of European research for solving global challenges. When the Swedish government started preparing for taking over the presidency of the European council (1 July – 31 December 2009) in 2007 it was decided that research and innovation policy would be a focus issue, and in this process the challenge-based approach became important. There was a sense that the dominant way of understanding innovation policy was no longer enough.

LUND DECLARATION – JULY 2009

THE LUND DECLARATION

EUROPE MUST FOCUS ON THE GRAND CHALLENGES OF OUR TIME

- European research must focus on the Grand Challenges of our time moving beyond current rigid thematic approaches. This calls for a new deal among European institutions and Member States, in which European and national instruments are well aligned and cooperation builds on transparency and trust.
- Identifying and responding to Grand Challenges should involve stakeholders from both public and private sectors in transparent processes taking into account the global dimensions.
- The Lund conference has started a new phase in a process on how to respond to the Grand Challenges. It calls upon the Council and the European Parliament to take this process forward in partnership with the Commission.

The global community is facing Grand Challenges. The European Knowledge Society must tackle these through the best analysis, powerful actions and increased resources. Challenges must turn into sustainable solutions in areas such as global warming, tightening supplies of energy, water and food, ageing societies, public health, pandemics and security. It must tackle the overarching challenge of turning Europe into an eco-efficient economy.

To respond effectively the European Research Area must develop processes for the identification of Grand Challenges, which gain political support and gradually move away from current thematic approaches, towards a structure where research priorities are based on these Grand Challenges. Responses to Grand Challenges should take the form of broad areas of issue-oriented research in relevant fields.

Processes to ensure quality, relevance and trust will be of crucial importance for Europe’s ability to meet contemporary and future Grand Challenges and use knowledge as a tool to turn problems into opportunities and progress. Such processes have to be articulated in the context of Research, Education and Innovation communities, and be based on the understanding of the interaction between “bottom-up” and “top-down” initiated research. The development of such processes is a matter of urgency.

The identification of the Grand Challenges must engage the major stakeholders including the European Institutions, business, public services, NGOs

and the research community as well as interaction with major international partners. Meeting the challenges should involve public-private partnerships, including SMEs, with their potential to develop excellent and sustained problem-solving capacity. It will require Member States to develop more proactive strategies on research priorities at regional, national and Community level. The Framework Programme for Research must also respond to these demands. Therefore the Commission and the Member States together should, based on a broad consultation process, agree on the most appropriate and efficient division of labour when designing future programmes.

Meeting the Grand Challenges also requires the following:

- Strengthening frontier research initiated by the research community itself. It is fundamentally important to create knowledge diversity, endowing the European Union with expertise, especially when confronted with unforeseen Grand Challenges and “shocks”. Competition among researchers will ensure that research carried out in Europe is of international excellence.
- Taking a global lead in the development of enabling technologies such as biotechnology, information technology, materials and nanotechnologies.
- Bringing together supply and demand-side measures to support both business development and public policy goals. Measures are

PARTICIPANT REFLECTIONS:

“There was a sense that something needed to be done to change the innovation system” – Governmental department of enterprise employee

“We actually started this work in 2007, discussing challenges as a new form, or platform for VINNOVA. But we did not have the courage to change from the sectoral structure.” Vinnova employee

PARTICIPANT QUOTE: “With the Lund Declaration, we specified the challenge approach.” – Governmental department of enterprise employee

“The Lund Declaration gave us that push from the government to also have the courage to start designing a program” Vinnova employee

This coincided with internal discussions at Vinnova about a new approach to funding innovation, although at the time it was not acted upon. Vinnova and other STI agencies (VR, Formas, Forte, Vinnova, STEM, Rymdstyrelsen) were involved in the preparations for the EU presidency and their director-generals started a new collaboration forum together with the state secretary of the ministry of enterprise and the state secretary of the ministry of education and research. Their role was to coordinate Swedish efforts and suggest a new direction for European RDI policy and framework programs – this group quickly subscribed to the idea of focusing on challenges. This idea was presented and developed in a series of four preparatory workshops across Europe in early 2009, which led up to the conference “New World - New Solutions: Research and Innovation as a Basis for Developing Europe in a Global Context” in Lund, Sweden, 7-9 July 2009. The conference concluded with the publishing of the Lund Declaration which states that “European research must focus on the Grand Challenges of our time”. This declaration is seen as a cornerstone of Vinnova’s focus on challenges and the starting point of designing a new type of programme which became the CDI.

RESEARCHER REFLECTIONS:

“It cannot be a coincidence that all these discussions about the challenge-driven approach happened at the same time in different contexts, and it is interesting to see that the process was contagious in some ways. And to see how it was operationalized in different ways through the Horizon 2020 and CDI programs.” – CIRCLE researcher

A NEW PROGRAM AND A NEW AGENCY

Vinnova had from its start in 2001 been organized in many traditional disciplinary divisions which had come to be questioned internally. When a new director general, Charlotte Brogren, was appointed in the autumn of 2009, a process of re-structuration started. Coming from industry, Brogren perceived the organizational structures of this public agency as unmanageable. However, with time this re-organization process became a way of questioning the status quo

altogether and finding a new strategy for the agency and its activities became the main goal. The leadership of the director general as well as the deputy director general, Göran Marklund, were essential in driving this process. In addition, a strategy group was created who struggled to find a new trajectory – a process not without conflicts, since breaking up the disciplinary silos was one of the core goals.

PARTICIPANT REFLECTIONS:

“She (Charlotte Brogren) sat us on a boat and pushed us away to come back with new ideas. But every strategist had a specific area (of interest) so we started to work trying to hold on to our areas.” – Vinnova employee

“Operationalizing the CDI program has been a vehicle of change – of organizational change - at Vinnova; part of a bigger strategy for how do we work as an agency.” – Vinnova employee

Along with a large number of undocumented meetings with staff and external actors, four large workshops were organized at Vinnova at the end of 2010 and beginning of 2011. These workshops aimed to encourage a participatory process for finding new ways of thinking about supporting and funding innovation projects. During this process, the theme of challenges was consolidated and became the new principle for how to organize activities at Vinnova. The positive response to the challenge-driven approach from external actors confirmed for Vinnova that this was a productive way forward. The set of challenges that still constitute the CDI program today was determined during this process. Although there were various takes on what constitutes a challenge, the overall idea was barely contested.

PARTICIPANT REFLECTIONS:

“When we decided upon these challenges, we invited a lot of external experts - from research, from industry and from the public sector - to discuss what are challenges. And what we found was that they all talked about the same things”
Vinnova employee

“I think the reason why the challenge-driven approach received no resistance is because it could be an inspiration for all sectors: for society, for policy, for industry, for academics... and that was something important” – Vinnova employee

LAUNCHING THE EXPERIMENT

The direction for the new program was set after the final strategy workshops in early 2011, and in mid-March the decision was made to plan and launch the CDI by the end of April. A new group was formed to operationalize the long-lasting discussions that had been taking place for years into a full-fledged program. The group consisted of Vinnova personnel with different backgrounds, chosen to not entrench thinking along a specific disciplinary or sectoral trajectory. The group had the task to design a visionary new programme but also had to remain realistic - thinking about what they could manage, what had to be in place from the start and what could be learned and refined along the way. Six weeks later, the first call for the CDI program was launched.

PARTICIPANT REFLECTIONS:

“We got a record number of applications in the first round of calls”. – Vinnova employee

“It might be completely correct (from the beginning), it might be almost correct, but the most important thing is to get the process running, and running in an efficient way.”
– Governmental department of enterprise employee

When it was launched there were still lots of questions about how to really run and manage such a program, but there was an understanding that these issues would have to be worked out along the way. During the first years of the program it was refined and retuned several times as the agency gained knowledge of how it worked out for different actors to engage with this new project form. Regardless of its initially limited size and scope, the program was a success in terms of attention from interested actors and has continued to attract many applications.

TRANSFORMATIVE POTENTIAL OF THE CDI

The CDI program was specifically designed and initiated to foster innovations and solutions for societal challenges. While exhibiting shared characteristics with other innovation funding schemes, the program integrated mechanisms that are assumed to explicitly support the development of transformative innovations. Next to the challenge-driven orientation, these include the application process and funding conditions as well as the preferential treatment of projects that span across sectors, take a systemic perspective, and initiate new collaborations (also including users and costumers). In the following, we discuss these aspects in more detail. While some insights are based on general program experience by Vinnova, others are based on the experiences from actors that actually designed and participated in a CDI project. The project explored opportunities for a more sustainable production of chemicals by investigating new value chains between the chemical and forest industry in Sweden. The project was awarded funding for all three stages (Nov 2011-Mar 2012; Aug 2012-Nov 2014; May 2015-Jun 2017) and ran under the name of “Skogskemi I/II” and “Skogmetanol”

Example project: Skogskemi 1, Skogskemi 2 and Skogmetanol

Skogskemi was a CDI project chain in which a large group of firms from the forest industry in north eastern Sweden and the chemical industry in western Sweden collaborated to find new pathways for industrial development. Tackling the challenge of “competitive industries” the first project aimed to find common interests around renewable resources from Swedish forests and new value chains, the second project focused on three different technological options for new chemical products from forest raw material, and the final project was an investment in a pilot facility for the extraction and purification of a chemical product, methanol, from a stream in a kraft pulp mill.

IDENTIFYING SOCIETAL CHALLENGES

Embracing the idea that challenges are best identified in a bottom-up process by respective experts and stakeholders, Vinnova originally wanted to have no guidelines regarding what is considered a societal challenge. Instead, the idea was that applicants would submit whatever they wanted to pursue and the most convincing cases should get funding. However, even before the first call for the CDI was launched, it became clear that this openness is not without problems – actors wanted to know exactly what Vinnova was looking for before spending time on an application. Therefore, Vinnova developed the four areas of societal challenges (see above), assuming that they are in themselves broad enough to fit any idea. The hesitance of actors to apply for such an open-ended call might be an indication that the notion of societal challenges is not yet an established enough idea to suggest what a proposal should entail. Further promoting the discourse around this notion in various industries might thus be necessary to foster a common understanding, also in regard to the design of future programs, in particular when a bottom-up approach is favored.

PARTICIPANT REFLECTIONS:

“I wanted the areas to be really wide open. And in fact, it was, because there were no real limits for those applying. We all always laughed about it – if you really have a project, how can you miss this? How can you not be able to communicate this within those four areas? I think it would be impossible to miss it.” – Vinnova employee

THE STAGE-GATE MECHANISM

The stage-gate funding scheme was deliberately chosen to separate the phases of idea generation, actual development and utilization and larger-scale demonstration. Re-evaluation between the stages allows for a closer control over whether or not societal challenges are actually addressed, whether the project has actual potential and also whether funding through the CDI is still appropriate or if other programs or the market might be more suitable vehicles to further drive the development of the suggested innovations. The investment rationale is based on increased competition at each stage where the percentage of the total project costs covered by Vinnova decreases, but the overall monetary contribution increases. The closer to demonstration, the more financial commitment is also required from the project partners, with necessary co-funding between 60-75% in stage three. This is assumed to ensure industry commitment beyond the actual project timeline.

PARTICIPANT REFLECTIONS:

“Maybe it would make sense to have more cash contributions from industry, and not time. Make them go cash instead of time. Because then you get real industry commitment, because you can always make up the hours.” Forestchemistry project partner

Within the forestchemistry project, the stage-gate mechanism had a diverse range of effects. On the one hand, participants alluded to the usefulness of the first stage in terms of networking and getting industry involved. Since the project was bringing together two to this point quite unconnected industries, they characterized this phase as essential to finding a common language and interests, understanding each other’s needs and coming up with ideas for a potential larger-scale project. In addition, industry actors mentioned that the shorter timeframes of the project stages, and with that the possibility to drop out or join at different stages, was a driving force for participation in the project. That the stage-gate mechanisms might benefit collaborations is also reflected across the program. The average project consortia contain ca. four actors in stage one projects, twelve in stage two, and fifteen in stage three. It was furthermore pointed out that the continued need to re-apply for the next stage forced actors to critically reflect upon which way to go and why and therefore ensured a quality check along the way.

PARTICIPANT REFLECTIONS:

“The first phase of the project was extremely important because it actually allowed us to meet. And we were kind of obliged to meet again because we had to come up with something for the next phase. And that was a very good argument to get the right people at our meetings”. Forestchemistry project participant

“One project leader stood up and said ‘everyone knows how important it is to include reflection in a project; to have milestones where you sit down and consider what is the next best way forward’. It is exceedingly hard to do that in practice because you are overwhelmed by the project plan and doing things... And this stage-gated process forces us, in a good way, to do that.” – Vinnova employee

“We came into the position where we had a trustful discussion and people opened up and talked about the real problem. (...) A lot of the beauty of the CDI, I would guess, happened in the first stage of many of the projects.” – Forestchemistry project participant

Vinnova would have benefitted from people with more experience in the process industry. Because it is so different from other industries.” – Forestchemistry

On the other hand, some project partners had rather mixed feelings about the formal requirements of some stages, especially regarding the demonstration phase. In the case of forestchemistry, demonstrating an application requires a lot of permits regarding health and safety aspects. Being able to organize those takes a lot of time, which is why the two year timeframe of stage three has been criticized. It is thus worth a thought whether a more flexible scheme, which takes into account the sectoral differences, would be beneficial. Furthermore, the money available in that stage was deemed not enough to go for desired large-scale demonstration. In addition to that, it was pointed out that due to the inclusion of various actors, there might be a tendency to go for options that have a broad support, i.e. find the least common denominator and not follow through with the most transformative option. Vinnova is aware of this challenge, but also wants to stress that the CDI is not meant to necessarily be the program that funds all activities from start to finish, but rather act as a starting point for interactions, a means to seed transformative options, that can then be picked up and followed through via other actors, programs or markets.

PARTICIPANT REFLECTIONS:

“We do not think that after stage three the problem is solved. A CDI initiative may run for 7 years, after that maybe another 7 years are needed. But after the three CDI stages they need to find other types of funding and investors.” – Vinnova employee

RESEARCHER REFLECTIONS:

“If we talk about ‘transformative policy’, it can never be about one single instrument”.
– CIRCLE researcher

INCLUSION - EXCLUSION

The CDI program has at its core the principle that transdisciplinary and cross-sectoral collaborations should be achieved. However, breaking with established forms of collaboration is difficult and projects may have a tendency to fall into traditional structures, where academia takes the lead. These has different reasons. From the forestchemistry project we learned that companies, especially large multi-national ones, often face difficulties allocating the time needed to participate in such projects, let alone taking the lead. It is also not really on their agenda. Therefore, it has been essential to the success of the project that an industry-oriented research institute took part in the project, often facilitating interactions between all participants.

PARTICIPANT REFLECTIONS:

“From our side I think it was not a lack of interest, but mainly a lack of resources and time. We have been cutting down our resources and capabilities in participating in such projects due to that there are fewer people working in this segment today.” – Forestchemistry project participant

Another insight from this project consists the role of intermediary actors, such as consultancies. As is the case in many sectors today, expertise lies within engineering consultancies and many companies are used to outsource a considerable amount of their work. This, however, is difficult to do when receiving public funding within the European Union, which led to the project almost being cancelled in stage one already. Following further negotiations with Vinnova, a solution could be found. This indicates that depending on sector specific characteristics, new modes of collaborations and new actors have to be accommodated in order for a project to be executed successfully.

PARTICIPANT REFLECTIONS:

“We only wanted to spend very little of that money ourselves. We wanted to pay out most of the money to consultancy, who were specialised in gasification, in calculating LCA values, etc. And that was actually a big problem for Vinnova. We were very, very close to being thrown out of the CDI after about a year.” – Forestchemistry project participant

Furthermore, we learned that the nature of the stage-gate mechanism can also cause tensions. Who will be in and who out for the next stage, which option gets picked for further development and who will benefit the most from the implemented solutions are all very political questions. In the case of forestchemistry, for instance, all but one of the chemical companies eventually left the project. Whether or not this is problematic for transformative change is an open question. However, in terms of policy design, it should be kept in mind that during such consolidation processes, not all actors are equally powerful. This might also be the reason that the civil society engagement is not as high as originally hoped for.

RESEARCHER REFLECTIONS:

“Intuitively, yes, the idea of stage-gate funding seems good, but we should not ignore that it has consequences like stimulating some sectors, but also maybe leaving out some important actors because they are left out of the competition. Or what happens to those projects which are not reaching stage 3, for example?” – CIRCLE researcher

PARTICIPANT REFLECTIONS:

“Of course, not everyone agreed on everything. But I think why the methanol case was so successful, was because it was something that actually worked. We started maybe with ten different things, but it was quite easy to see that this has commercial value. (...) And also one company really needs to want to do it.” – Forestchemistry project participant

LEARNING

The CDI program has been launched by Vinnova in a very experimental manner, meaning that constant reflection and evaluation are key in further improving the design of the funding instrument. With almost every new call, Vinnova has made some changes to the program, accounting for challenges or successes experienced along the way. However, Vinnova also pointed to the problem that the traditional evaluation schemes available, as for instance offered by many consultancies, are not suited to give justice to the program. The standard markers are not reflecting many of the efforts made and in general it can be said that there is lack of good indicators for measuring transformative change.

This is especially true if one takes into account the broader effects of such projects, such as the value of creating new networks. In the case of forestchemistry, many actors went on to collaborate in other forms and in different constellations. For instance, part of the consortium is now involved in one of the strategic innovation programs, namely BioInnovation, which is also funded by Vinnova. In fact, the story of forestchemistry does itself not start with the CDI project. Instead, the general idea to establish a link between the forest industry and the chemical sector can be interpreted as resulting from another Vinnova policy program called Vinnväxt. As one of the first cross-sectoral initiatives, Vinnväxt was created in 2001 with the goal to foster sustainable regional growth. Thus, a transformative innovation of the futures might be traced back to different policy initiatives that have fruitfully interlinked. More efforts are therefore needed to provide policy makers with effective tools for a sensible evaluation of their programs in regard to their transformative potential.

PARTICIPANT REFLECTIONS:

“The goal for us, is not only - or always - the project goals, but other goals. Do we see another partnership? Do they cooperate in a new way? Do they find new potential projects? Do they get a city to implement a new policy, to find a new way to cooperate with the industry? Then it's not a project goal, it is a program goal.” – Vinnova employee

“I think the way things are evaluated from a policy perspective is very detrimental to whatever is going on in terms of renewal of the system. That is a real conflict, a real problem and challenge to innovation policy” – Vinnova employee

“Reflexivity is behind and that has been a challenge for us, also regarding getting evaluative support.” – Vinnova employee

RESEARCHER REFLECTIONS:

“It is always a question of what lens are you wearing to judge if an initiative is good or bad. And that is a very normative process, so you better be very explicit about what you are actually evaluating. From transitions research, to be honest, academically, we don’t know yet.” – CIRCLE researcher