

# Ongoing evaluation of the Norwegian Programme for Research Cooperation with India

Final Report



# Ongoing evaluation of the Norwegian Programme for Research Cooperation with India

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## Executive summary

This evaluation has primarily examined the relevance, efficiency and effectiveness of the India programme. It should be stated at the outset that many projects and processes in the programme are currently underway; hence, it is premature to look at outcome and impact levels in their entirety. Consequently, the findings presented on attainment of objectives should be seen as preliminary conclusions.

The overall conclusion of the evaluation is that the India programme is well managed, relevant, and on the right path to achieving its goals. Some of the findings of this evaluation, however, suggest that the India programme has a way to go in terms of adjusting its strategic focus. This means, by and large, occasionally narrowing the focus, concentrating resources, and / or striking a new and clearer balance between different approaches. Choices in this regard will be influenced crucially by financial limitations.

Along the same lines, it is argued that the “go-wide” approach that has characterized the programme so far was appropriate for the initial stages of the programme. In the future, however, the programme would benefit from reviewing and opting to adjust this approach.

The Norwegian Programme for Research Cooperation with India (India Programme) was commissioned by the Ministry of Foreign Affairs (NMFA) as a part of a bigger effort to enhance internationalization of Norwegian research globally. Foreign policy considerations, the role of the NMFA as well as the Norwegian embassy and elements of science diplomacy are all parts of the historical backbone of the programme.

At the heart of India’s rising status and influence is also the perception that the country will be influential in how the international community deals with global challenges related to climate change, energy supply, water resources, disease and welfare services. Internationally, the underlying mission of institutionalized research is about contributing to meet these challenges.

The rationale for Norway’s India programme is clearly spelled out in the Programme Work Plan

2010-2019. According to this well-written document, the India programme was launched by the Council “to promote collaboration on research and higher education between India and Norway within selected areas”. Underpinning the Work Plan, there is the Roadmap for Bilateral Research Cooperation with India, a follow-up to the White Paper no. 18, “*Lange Linjer – Kunnskap gir Muligheter*”, which provides ample context to the India programme, linking it tangibly to Norway’s overarching research policy.

The India programme’s five main objectives are:

- To strengthen bilateral research cooperation with India;
- To establish binding cooperation on research funding with the Indian governmental research funding bodies in collaboration with relevant thematic research programmes and scientific activities at the Research Council;
- To continue to foster relations with India through cooperation with EU and Nordic countries as well as multilateral organisations in which India and Norway are partners;
- To implement capacity-building, dissemination and promote the establishment of new research cooperation between India and Norway;
- To lay the foundation for cooperation with India in all thematic areas and scientific fields, and encompassing basic research, applied research and innovation. Efforts will be made to ensure the involvement of trade and industry, universities and university colleges, and independent research institutes in both countries.

Due to the programme’s wide thematic setup and rationale, none of the objectives say anything about what knowledge and research should be used *for* – as opposed to other established programmes in the RCN. Similarly, research quality and excellence are not emphasized centrepieces articulated in neither the objectives, nor the Programme Plan. In this sense, the India programme is situated in an interesting meta-position – the objectives are ongoing activities on a continuum where all of them address various sides of bilateral relations, cooperation and

capacity building. The formal objectives of the India programme are expressions of an instrumental take on research where increased cooperation is a goal in and of itself.

When looking ahead, the wide scope of the Programme Plan might detract from the guidance it should be giving. The objectives should be reviewed for future programming, and include honing the understanding of the terms central such as capacity building, competence building and cooperation and partnership.

The programme design differs from other programs in the Research Council of Norway (RCN). India programme does not have a Programme Board but an Expert Advisory Group (EAG) to set agendas and develop strategies for the program. Instead receiving applications directly, the funds are managed through other programmes at the RCN

The programme was prioritized following the Norwegian Government Strategy for Cooperation between Norway and India. Programme of Cooperation signed by the Norwegian Ministry of Education and Research and the Indian Department of Science and Technology is a steering mechanism for cooperation.

The largest part of allocations have been channelled through NORKLIMA/KLIMAFORSK, RENERGI, NORGLOBAL. The biggest part of the programme was added in May 2012, with a new agreement between the Royal Norwegian Embassy in New Delhi and the RCN on administration of the embassy's research funds, totalling NOK 125 million, in the period 2012–2016. In total India programme allocated 215 mill NOK from 2010 to 2015 to 41 researcher projects and 21 pre-projects coordinated by a number of Norwegian Institutes and Universities. 10 out of 41 researcher projects have ended to date.

### **Evaluation findings**

The evaluation found that all stakeholders agree on the utility of the India programme as a platform for strengthening bilateral research cooperation. The findings in this context strongly indicate that the programme has value-added.

The evaluation's overall conclusion is that the India programme is a well-managed programme that is on the right path towards goal attainment.

Moreover, concrete examples of societal / policy impact are exemplified by the case studies featured in this report .

Foreign policy considerations, growing role of India as regards global challenges: climate change, energy supply, water resources, disease and welfare issues, as well dynamic growth of India in various areas of research are all parts of the backbone of the programme. These elements influenced formulation of programme objectives.

The goals for the programme are set up very broadly, not allowing for precise assessment of delivery so far. However, majority of programme stakeholders praised India programme for the achievements attained, resulting in substantially larger research cooperation with India. In this way, the additionality of the programme is clearly to be assessed as significant.

The goals were not designed using SMART approach, therefore there is no clear possibility to assess goal attainment based on indicators. So far, the projects financed delivered a number of 16 PhDs and 11 post-doctoral studies. In addition to this, a large number of students on various level was reported to participate in projects financed. Reported publications on level 2 are on the level of 17 % of all publications, comparing to standard 20 % benchmark. At the stage of this ongoing evaluation, it might be stated that the programme is producing publications that are only slightly below the average.

The programme's flexible setting, allowing for organisation of joint calls with other RCN thematic programmes, as well as calls with external partners, is found practical and useful in the context of building research cooperation engaging multiple stakeholders within a wide panorama of thematic areas.

Programme is to large extent addressing the existing needs, however some adjustments as regards the thematic areas and clear division

between social and natural sciences shall be made.

India programme is relatively small, comparing to other RCN programmes. Funding of the programme is also considered too small, if the programme is to cover (with reasonable intervention size) all thematic areas that will be relevant for the current and future research cooperation in India.

Some of the important thematic areas that are prioritized both in Norway and India have not been covered substantially, and will require more focus in the future, especially in the fields like nano- and bio-technologies, advanced manufacturing or ICT.

The India programme financed so far a limited number of projects engaging industry. Commercial applications of the research conducted and companies participation are to be prioritized in order to meet the programme goals and assure relevance of the outcomes.

Main recommendations made:

- The programme should review and hone the wording of central concepts in the Programme Work Plan, defining "capacity building" and "competence building". Cooperation should be captured through developing a set of monitoring indicators.
- The programme should further concentrate on industry and market participation. Market-oriented, innovative projects that directly link up to industry shall be financed.
- All call types (single, bi- and multi-lateral) should be maintained in future programme planning.
- The financing of pre-projects should be continued, allowing for future partners to meet, design their projects and establish better understanding of institutional capabilities.
- Institutional cooperation is recommended with Indian governmental partner, covering social science and humanities under the existing Programme of Cooperation.
- The ex-post evaluation of the programme is recommended minimum year or two after

the completion of projects, allowing for the results to emerge.

- Clear divisions in programme allocation should be stated in programme plan, allocating resources available to the two main fields (social science and natural science projects).

# 1. Evaluation context

## 1.1 MADATE AND EVALUATION CONTEXT

This report is an ongoing evaluation of the Norwegian Programme for Research Cooperation with India (India programme).

The evaluation assesses achievement of programme’s objectives, results and expected effects. The report will conclude with recommendations on further development of the programme, both within and possibly beyond the programme period.

The evaluation will consider:

- whether there is a correlation between objectives and the needs that the programme was established to meet
- if the organization of the programme have been appropriate (including roles of / interaction between the advisory committee, the research board, embassy and administration, as well as the distribution of funds from the Foreign Ministry and the Embassy)
- if the level of commitment has been correct in relation to the objectives
- if the results and preliminary effects of the projects contribute to fulfilling the programme’s objectives
- whether the thematic areas chosen for financing, have so far met the programme’s priorities, and whether there are any specific thematic areas that should be covered in the future

As described in Terms of Reference, the review will focus on the actual results and programme’s ability to meet the designed objectives.

## 1.2 ABOUT INDIA PROGRAMME

The Norwegian Programme for Research Cooperation with India (India programme) was commissioned by the Ministry of Foreign Affairs as a part of a bigger effort to enhance internationalization of Norwegian research globally. The pro-

gramme’s main objective is to promote collaboration in research and research funding between India and Norway. Duration of the programme is for 10 years (2010-2019).

At the outset, the programme prioritized several thematic areas set by the Norwegian Government Strategy for Cooperation between Norway and India, Opportunities in Diversity, White Paper No. 30 (2008-2009): international political issues, climate, the environment, clean energy and social development. Later on, the programme follows the list of thematic areas agreed upon in the Programme of corporation signed by the Norwegian Ministry of Education and Research and the Indian Department of Science and technology.

### OBJECTIVES

- To strengthen bilateral research cooperation with India;
- To establish binding cooperation on research funding with the Indian governmental research funding bodies in collaboration with relevant thematic research programmes and scientific activities at the Research Council;
- To continue to foster relations with India through cooperation with EU and Nordic countries as well as multilateral organisations in which India and Norway are partners;
- To implement capacity-building, dissemination and promote the establishment of new research cooperation between India and Norway;
- To lay the foundation for cooperation with India in all thematic areas and scientific fields, and encompassing basic research, applied research and innovation. Efforts will be made to ensure the involvement of trade and industry, universities and university colleges, and independent research institutes in both countries.

Judging the relevance of these main objectives is part of this evaluation. It is also within the scope of the evaluation to consider the thematic coverage of the programme.



The above-mentioned “India Strategy” and the research programme itself indicate that the country is intended to become one of the top Norwegian partners as regards to research. Both the bibliometric analysis conducted in 2008 and RCN’s portfolio of projects show the need to follow up. Since India’s research and innovation system is institutionally complex, it was necessary to develop direct relations with key financing institutions in India.

Calls for proposals are aimed at promoting bilateral cooperation between Norwegian and Indian institutions, incorporating a recruitment component and gender perspectives, as well as emphasising the benefit of including participants from both countries in the research projects.

Table 1 shows the thematic areas in the India programme over the years. As displayed in the table below, the main focus of the programme has been on energy, environment, climate, international politics and societal development.

Table 1: Programme thematic areas

Year	Thematic areas	Additional themes from programme of cooperation
2010	Energy Environment Climate Societal Development International Politics	Geohazards Nanotechnology
2011	Energy Environment Climate Societal Development	
2012	Environment Societal Development International Politics	
2013	Energy Climate	Nanotechnology
2014	Energy	Vaccines
2015	Climate	Geohazards Polar/ glaciology Medicine

Source: Oxford Research | Research Council of Norway

The programme design differs from other programs in the RCN. The assessment of grant applications and allocation of funding are carried out by the individual thematic/scientific programmes based on their own work programmes. Most of the administrative work regarding the funds is therefore channelled through other programs managed by the RCN such as ENER-GIX, Klimaforsk and GLOBVAC. The India programme does not have a Programme Board but an Expert Advisory Group (EAG) to set agendas and develop strategies for the programme. The members of this group are representatives from a wide range of R&D institutions and industry.

The biggest part of the programme was added in May 2012, with a new agreement between the Royal Norwegian Embassy in New Delhi and the RCN, on administration of the embassy’s research funds, amounting to NOK 125 million, in the period 2012–2016. This almost doubled the available funds for the India programme. The focus areas of these funds are decided in collaboration between the RCN and the Embassy. These focus areas may differ from the prioritised topics listed in the India programme’s objectives. At this stage was also a research and technology representative set in place in the Innovation Norway offices in New Delhi to facilitate closer cooperation with the Embassy and with the Indian research and innovation system.

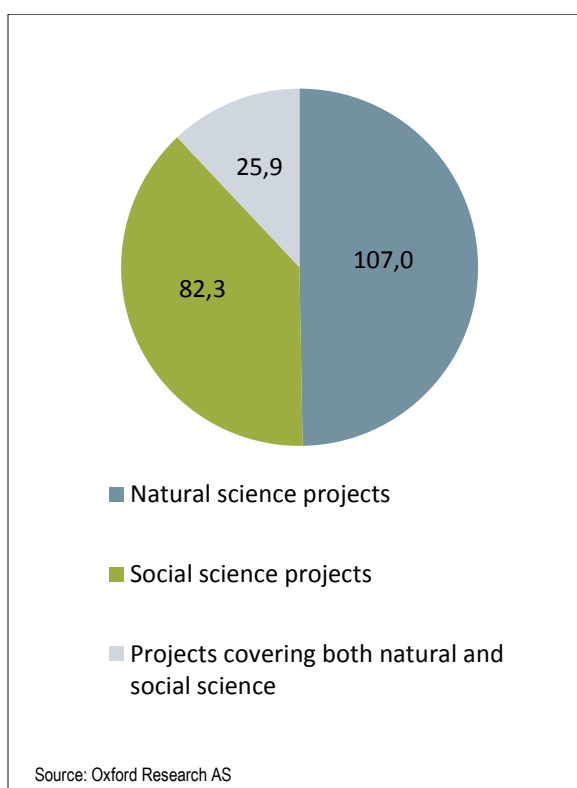
In total, the India programme allocated 215 mill NOK from 2010 to 2015 to 41 researcher projects and 21 pre-projects coordinated by a number of Norwegian Institutes and Universities. 10 out of 41 researcher projects have ended to date.

One of the funding objectives is to promote joint financing of Indo-Norwegian research cooperation. Under these collaborations, the Indian authorities match funding with the India programme. For these joint calls issued by the RCN and Indian authorities, both Indian and Norwegian institutions may act as lead applicants. It is not necessary for the funds to be matched from both Norwegian and Indian side in a joint call, but rather matching of *activity* - as long as the

level of research is the same in both. So far, most of the applicants have been from R&D institutes while fewer have come from the industry.

Figure 1 shows financing of projects per discipline. Pre-projects and researcher projects are included in this figure. Natural sciences represent 50% of all projects, while social sciences have a share of 37%. Remaining 13% are projects covering both natural and social sciences.

Figure 1: Funding per discipline (mill NOK), N = 62



Thematic areas covered by the India programme over the years have already been presented in the table 1. However, a more detailed overview of disciplines, as reported in the projects' applications, can be found in Annex 1. The findings from researcher projects show that political science is a dominating discipline with as much as 15 projects financed. Climatology comes second, being claimed by 12 projects, and followed by

renewable energy, economics and sociology "represented" in 8 researcher projects.

As regards pre-projects, the dominating disciplines are environment, materials science and development, each of these covered in 6 separate projects. Following this is economics, "represented" in 5 pre-projects.

### 1.3 EVALUATION FRAMEWORK

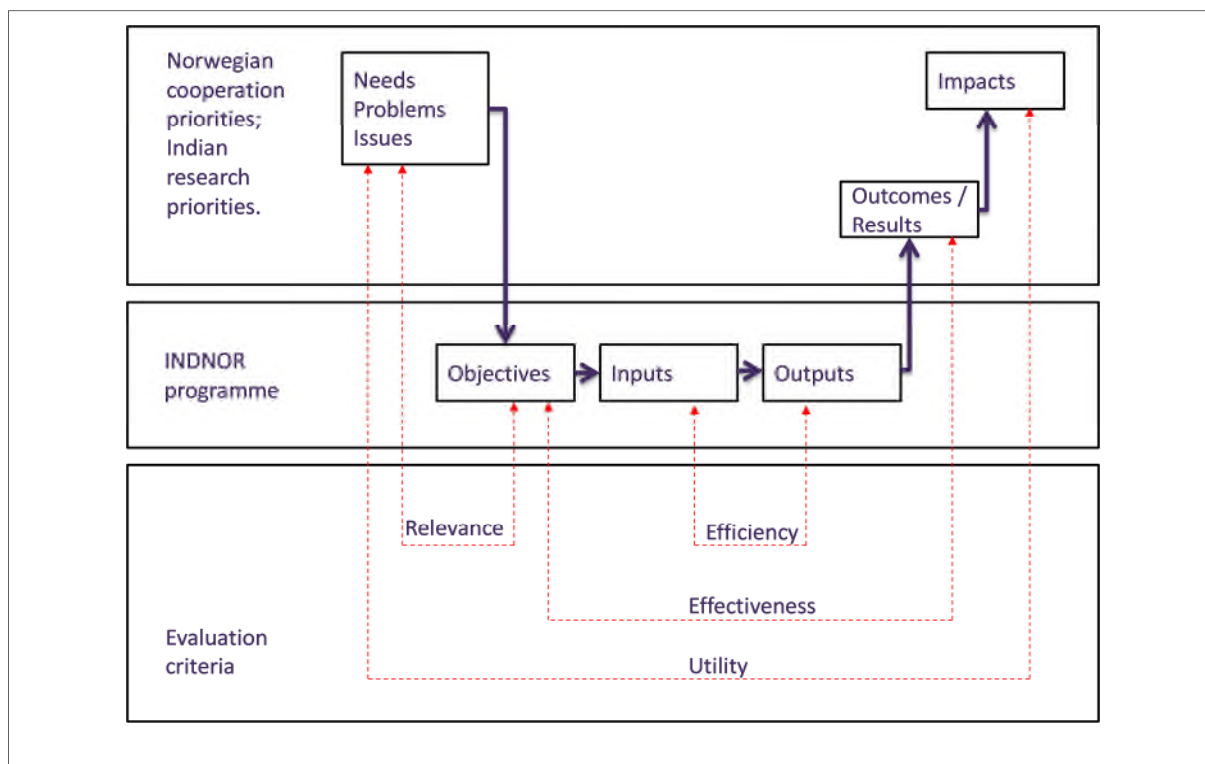
To be able to examine the different evaluation questions in relation to each other and to carry out a comprehensive analysis, we have put the evaluation questions into an evaluation framework. The evaluation team used a model based on the OECD Development Assistance Committee (DAC) criteria as an evaluation framework. This model suggests four core evaluation criteria.

The following criteria are essential in order to conduct this evaluation:

- **Relevance.** To what extent were the programme's goal and activities relevant to stakeholders?
- **Efficiency.** To what extent was the programme organized in an appropriate manner?
- **Effectiveness.** A measure of the extent to which the programme managed, or is able to attain its objectives as a result of the implemented activities.
- **Expected Impact.** Bilateral linkages and their sustainability.

Figure 2 shows that the first step in an evaluation is to understand the framework, context and needs behind the programme. Furthermore, the evaluation than include the relevance and efficiency, as well as achievements (results) and impact of the programme. This general approach has been used to structure the issues in this evaluation.

Figure 2: Overall evaluation model



The Terms of Reference for this evaluation operate with a list of 10 main research questions. In the table below the questions are put in the context of DAC evaluation criteria. Following the statements made during the kick of meeting for this evaluation the first seven questions make up the core of this

evaluation. The last three questions are connected to the projects financed by the Norwegian Embassy in India and are reflecting the objectives formulated in general agreement between the Council and the Embassy.

Table 2: Evaluation questions

No	DAC criteria	TOR questions
1	Relevance	Is there a correlation between goals and the needs that the programme was established to meet?
2	Efficiency	Has the organization of the programme been appropriate?
3	Effectiveness	Has the level of commitment been correct in relation to the objectives?
4	Effectiveness	How has the programme managed to deliver on its objectives so far? Do the results and preliminary effects of the projects contribute to fulfilling the programme's objectives?
5	Relevance	Have the thematic areas so far met the programme's priorities?
6	Relevance	What are the specific thematic areas that should be covered further?
7	Impact/utility	What has been the impact of the programme on the quality knowledge generation?
8	Efficiency	How has the programme managed to influence coordination of different research based programmes in India?
9	Effectiveness	How has the programme managed to streamline embassy portfolio of technical cooperation?
10	Effectiveness	How did the quality control of projects supported improved?

## 1.4 METHODOLOGY

The evaluation team conducted a number of analyses, in which different methodological approaches were applied.

Qualitative methods were at the centre of the data collection; however, in some cases we used a quantitative approach such as in the network analysis, in the simplified bibliometric analysis and in the portfolio analysis.

The methodological and analytical tools used are:

- Desk studies
- Programme theory
- Qualitative in-depth interviews
- Publication analysis
- Portfolio analysis
- Network analysis

In this chapter, we will give a more thorough description of our methodological approach.

### **Desk studies**

The first step in the evaluation was desk research. This included collecting relevant documents, both policy documents and programme relevant documents.

### **Programme theory**

An initial step in the project was to describe the programme theory. A programme theory is the theory of change that the programme draws on. It highlights the reasons for establishing the programme, the activities in the programme as well as the objectives. Thus, the programme theory shows how the Research Council expected the programme to function.

This approach also gives information about what does and does not function in the programme. The relationship between activities and objectives, whether this was logically consistent and whether the programme's activities have been carried out as expected were all examined in turn.

With the description of the programme and its activities as a point of departure, we can then examine how the programme was expected to work and whether the programme's activities were likely to contribute to the goal attainment in the programme. This will help us to identify why the programme has succeeded or failed, and, what parts of the programme activities have failed or succeeded.

In the following chapter, India programme theory was elaborated through discussing why the programme was established, which problems and challenges the programme should address as well as through which means these should be addressed.

In the discussion, we have drawn on data from several sources. Firstly, data from the Research Council has been important; this includes the programme plan and relevant agreements with the financing institutions.

Secondly, interviews with representatives from NMFA Embassy, programme partners in India (financing institutions), and other actors involved in the establishment of the India programme have been an important source of information.

### **Qualitative interviews**

Qualitative interviews have been the main source of information in this evaluation. The interviews have given in-depth knowledge about the programme and its rationale.

The interviews with representatives from the Research Council and the Ministry of Foreign Affairs mostly contributed to the programme theory discussion. We conducted 11 programme theory interviews.

Interviews with project coordinators and cooperating partners, as well as several project partners from other countries, examined the extent and depth of project cooperation, thematic focus, and impact, as well as how the partners perceived the quality of the research and extent of influence on bilateral cooperation.

In this part of the evaluation, 30 interviews have been conducted, covering 14 different projects. In 11 of these, the evaluation team interviewed project managers. The data material also included 19 interviews with cooperation partners.

Table 3: Interviews conducted – an overview

Category	Number of interviews
RCN	3
Ministries	3
Embassy	2
Institutional programme partners in India	3
Expert Advisory Group	6
Project managers	13
Project partners incl.:	11
in Norway	3
in India/other countries	8
Source: Oxford Research AS	

### Portfolio analysis

Our experience from former evaluations of the Research Council programmes has shown that portfolio analyses are a valid source of information. In the portfolio analysis, the approved projects, their institutional affiliation, cooperation partners, project size and thematic focus were analysed.

### Publication analysis

In order to conduct analysis of publications coming out from financed projects, we compiled lists of scientific publications from the projects. Based on this information, we categorized the outcomes using the Norwegian publication indicator system in order to conduct an indirect assessment of the research quality.

Bibliometric approaches portray science results through the production of “knowledge”. Scientific publications allow a transfer of knowledge from the researcher to the scientific community. We have used the Norwegian publication indicator as point of departure for measuring publication outcomes.

Norwegian publication indicator was chosen because the India programme covers both social and natural sciences, and international databases like Web of Science covers the social sciences poorly. In addition, books (anthologies and monographs) published by social science oriented researches are not registered in Web of Science and similar databases. Moreover, the Norwegian publication indicator allows for comparison with other social science programmes and Universities.

However, it is important to note that bibliometric data are used as an indirect measure of quality and therefore this task is a supplement to other measures of cooperation and programme performance. Nevertheless, this type of analysis studies degree of cooperation between researchers in Norway and India and, to some extent, the level of network cooperation established between their respective institutions. Furthermore, the development of bilateral co-authorships in high-ranking journals is a good indicator for the success rate of a programme as regards its objectives.

### Network analysis

Information from the portfolio analysis was used to conduct a network analysis showing patterns of cooperation in the projects, including which institutions and countries the cooperation partners represented.

Furthermore, this analysis has been helpful in determining which research communities that have been represented in the portfolio, and whether the programme has spread the funding too thinly.

The network analysis was prepared using Cytoscape software. The network graph presents all the main actors and their interconnections, providing an overview of programme cooperation, both in terms of consortia and in terms of the patterns of cooperation in production of scientific results i.e. publications.



## 2. India programme theory, background and rationale

This chapter examines the rationale and intervention logic of the India programme.

### 2.1 PROGRAMME THEORY – A SHORT EXPLANATION

A programme theory is a description of the programme's intervention logic. In other words, the programme theory is the programme's own theory on how to reach its objectives – its theory of change. It is the sum of the programme designers' thoughts on how the programme could achieve its goals.

Programme theory plays an important role in evaluating the internal logic and relevance of the projects. As described in the previous chapter, the programme theory is especially important to examine and make explicit the link between the objectives of the programme and the programme's activities.

A key question is whether the implemented activities are likely to yield the necessary or expected results and outcomes?

Furthermore, is there a link between the programme rationale and the programme plan? I.e. does the programme address the initial knowledge needs? In addition, do the projects de facto address these needs?

Together, these questions, or rather the answers to them, makes it possible to describe the internal logic of the programme.

With the description of the programme and its development as the starting point, we can then examine how the programme was expected to work and whether the programme's activities were likely to contribute to the goal attainment in the programme. This will help us identify why the programme has

succeeded or failed, and, what parts of the programme activities have failed or succeeded.

In the discussions that follow, we draw on interviews particularly with sources from the RCN and the Norwegian Ministry of Foreign Affairs (NMFA). The discussions on the India programme theory takes the Work Programme 2010-2019 as the starting point of departure. This document is an expression of how the programme is meant to promote research cooperation between India and Norway.

Underpinning the Work Plan, there is the Roadmap for Bilateral Research Cooperation with India, a follow-up to the White Paper no. 18, "Lange Linjer – Kunnskap gir Muligheter", which provides ample context to the India programme, and links it tangibly to Norway's overarching research policy.

### 2.2 HISTORICAL BACKDROP

In 2006, an agreement was signed between Norway and India considering cooperation in the fields of science and technology. Cooperation would be by means of common projects, exchange of scientists and students, dissemination activities and other joint activities.

A Joint Working Group (JWG) was established to ensure effective implementation of the agreement. Among other things, this group is responsible for identification and propositions of the cooperative activities. The Ministry of Education and Research is the manager of the agreement for the Norwegian Government and represents Norway in the Joint Working Group, together with other institutions such as the Ministry of Trade, Industry and Fisheries.

In 2009, the Norwegian government launched the Strategy for cooperation with India. One of the main objectives of the strategy was to further develop cooperation on societal issues, such as research and higher education.

In November 2011, a contract between the Ministry of Foreign Affairs (NMFA) and the RCN was

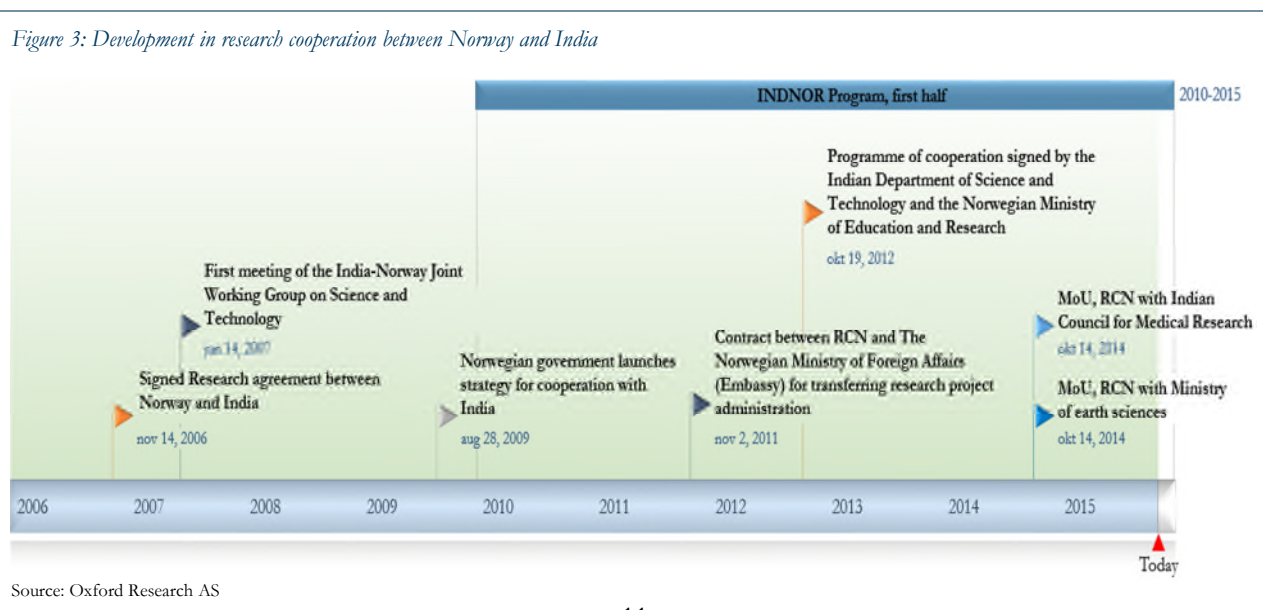
made, where the NMFA sought support for administration of research projects financed by NMFA through the Royal Norwegian Embassy, New Delhi, and in improving the quality control of the funds provided for research. The administration of the project portfolio was too resource demanding for the Embassy, and the RCN was better equipped to handle such projects. The goal of this contract was to strengthen research capacity and manage the research cooperation more efficiently. Projects already funded by the Embassy were transferred to the RCN, and took over also the responsibility of the new contracts the Embassy had decided to fund.

In pursuance of the agreement from 2006, the Norwegian Ministry of Education and Research and the Department of Science and Technology signed a Programme of Cooperation with duration from 2012-2015. This programme detailed prioritised thematic areas, activities and funding of cooperation set by the Joint Working Group. The list of thematic areas is used as a guideline for the calls in the India programme.

During the presidential visit in October 2014, the RCN signed two MoUs concerning research cooperation with institutions from India, one with the Ministry of Earth Sciences and another with the Indian Council for Medical Research.

The white paper “Climate for Research” identified India as one of Norway’s prioritised partners for research cooperation. The India programme has been established to promote research cooperation with

India and provide a cohesive framework for research initiatives targeting India. Technically, the programme was designed to enable the Research Council to negotiate joint financing of Indo-Norwegian research cooperation with the Indian authorities. The aim was to facilitate the integration of Indo-Norwegian research cooperation in the Research Council’s programmes and activities and enhance research collaboration. The India programme has been targeted towards R&D institutions as well as different actors in trade and industry. Depending on a thematic area or scientific field, funding might have been directed towards activities ranging from basic research to industry-oriented research.



### 2.3 PROGRAMME ROLE AND RATIONALE

As is clearly stated in the Programme Plan, **India’s size and increasing significance**, both economically and geopolitically, is the basic justification for country being included as a prioritized country for Norway. The India programme is only one component in a wider India strategy. Moreover, the programme is an expression of Norwegian recognition of the country’s increasing importance as a research and knowledge nation.

A few basic statistics illustrate that India’s significance is worth bringing up in this context. According to the above-mentioned Roadmap, the Indian government has set a goal of increasing its R&D investments to 2% of the GNP by 2018. The country is performing well in innovative knowledge-based services in ICT, resulting from extensive outsourcing from third countries. The country has also tripled its scientific publications in the 2003-2012 timespan. However, at the same time these favourable statistics nuanced by the fact that only 2,5% of the publications are in the world’s 1% leading journals are in fact Indian – a figure the government would like to see quadrupled by 2020.

At the heart of India’s rising status and influence is also the perception that the **country will be influential** in how the international community deals with global challenges related to climate change, energy supply, water resources, disease and welfare services. Internationally, the underlying mission of institutionalized research is about contributing to meet these challenges.

The rationale for Norway’s India programme is clearly spelled out in the Programme Work Plan. According to this well-written document under the section for “challenges”, the India programme was launched by the Council “to promote collaboration on research and higher education between India and Norway within selected areas”. It is stated that the programme is poised to do so by:

- assuming the role as “a **catalyst and facilitator** for research cooperation and competence

building at universities, university colleges, and research institutes;”

- through comprising a “long-term, stable, quality oriented **focus on research collaboration** with India” which will;
- “provide a basis for **increasing the number of research projects**, stimulate Norwegian expertise on India and attract both Norwegian and international researchers.”

The above review of the programme’s historical backdrop and rationale, the India programme – to some extent - bears the characteristic of **research being a tool to obtain something else**, rather than research for the sake of knowledge, or for the sake of using it in a particular way.

Foreign policy considerations, the role of the NMFA as well as the Norwegian embassy with elements of science diplomacy are all parts of the **historical backbone of the programme**. This is, of course, not to say that research itself is of lesser importance in the programme. It is nonetheless an important characteristic to note when looking at the objectives that have been set for the India programme.

### 2.4 OBJECTIVES

**OBJECTIVES**

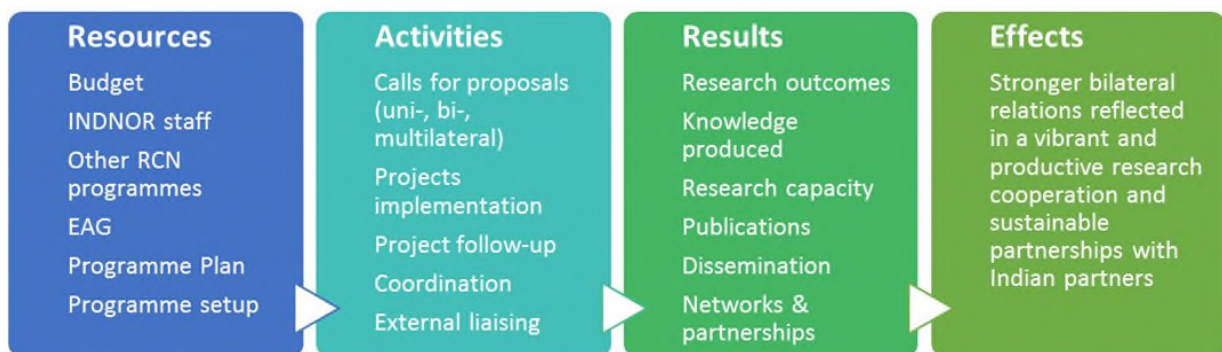
- To strengthen **bilateral research cooperation** with India;
- To establish binding **cooperation on research funding** with the Indian governmental research funding bodies in collaboration with relevant thematic research programmes and scientific activities at the Research Council;
- To continue to **foster relations** with India through cooperation with EU and Nordic countries as well as multilateral organisations in which India and Norway are partners;
- To implement **capacity-building, dissemination** and promote the establishment of new

**research cooperation** between India and Norway;

- To lay the foundation for cooperation with India in **all thematic areas and scientific fields**, and encompassing basic research, applied research and innovation. Efforts will be made to ensure the **involvement of trade and industry**, universities and university colleges, and independent research institutes in both countries.

The main objectives are not formulated as desirable end-states but rather as activities. Due to the programme’s wide thematic setup and rationale, none of the objectives say anything about what knowledge and research should be used *for* – as opposed to other established programmes in the RCN. Similarly, research quality and excellence are not centrepieces of the strategy.

Figure 3: India programme’s intervention logic



There are a few terms in these objectives that are worth taking a closer look at, particularly in the fourth objective:

“To implement **capacity-building**, dissemination and promote the establishment of **new research cooperation** between India and Norway.”

Several interviews show how the term ‘capacity-building’ is interpreted in different ways. Some interviewees stated that capacity building *in practice*

It is logically implicated that matters regarding the quality of the research is covered by the RCN’s other programmes.

In this sense, the India programme is situated in an interesting meta-position – the objectives are ongoing activities on a continuum – for example “to increase research cooperation with India”, “to continue to foster relations (...)”. The formal objectives of the India programme are expressions of an instrumental take on research where increased cooperation is a goal in itself.

The overall objective that should well out of the five main objectives is not defined or clearly stated in the Programme Document. One can surmise that it would ultimately be to improve Norway’s position and relations to India along the lines of what is proposed in the figure below.

A simple intervention logic could look like figure 4:

mostly mean that the Norwegian side is *de facto* building capacity on the Indian side. Another view was that capacity building is about the complementarity in experience and scientific sophistication on both sides.

A third interpretation that surfaced during the interviews is that **capacity building is a measure that enables Indian and Norwegian institutions to cooperate and collaborate in scientific pursuits**. This last perspective means building research



institutions that over time think about each other as natural partners, and who develop techniques and forms of cooperation that ensure mutual benefit. This would possibly be a more precise, yet nuanced way of thinking about capacity building which is currently not covered in the Programme Work Plan.

The very first interpretation has **an element reminiscent of traditional development projects**, whereas the two latter interpretations have mutuality as the central tenet. The term can mean all of this and more, but the India programme might benefit from honing the different terms for the future.

Lastly, it is not entirely clear if and why the India programme role should be “to implement” capacity building as it reads in the fourth objective.

The document also mentions “competence building at universities (...)” and other institutions of learning and research. Again, whether this differs from capacity building or it is simply interchangeable as a concept is not revealed in the text.

Finally, the part on “promoting new cooperation” does not find a natural place together with dissemination and capacity building. It is a somewhat odd split between the fourth and first objective. One should rather add promoting new research cooperation to the first objective, “To strengthen bilateral research cooperation with India”.

While the Programme Work Plan’s guiding criteria for thematic prioritization mostly highlights mutuality and complementarity – for example “areas of common strengths”, and where one of the two countries has special expertise – there is also a criteria that reads “areas where India is facing challenges (...)”. The latter is again reminiscent of development logic. Combined, the width of these criteria is close to all-encompassing.

In sum, the Work Plan is a document that explains the rationale, background and challenges well, but its constitutive elements span wide.

The great breadth of the Work Plan, however, may detract from the precision and guidance the docu-

ment should be offering. While this breadth may have been constructive and useful in the initial five years of the programme, one should revisit the topic of main objectives for the next period.

## 2.5 PROGRAMME RELEVANCE

The India programme has been implemented for several years, using the RCN standardised procedures. This evaluation therefore gives an important opportunity to discuss the programme relevance. Programme relevance addresses the question **to what extent are the programme's goals and activities relevant to its stakeholders?**

### 2.5.1 Relevance of the social science projects

With a population of almost 1.3 billion, India is not only a large pool of labour but also a multidimensional social phenomenon. The sheer size and diversity of Indian society makes it a country of great interest to social scientists. It is also a country with a large network of actors dealing with social sciences and humanities.

There are more than 32 million students in higher education and 400 universities with more than 500 departments of social sciences. While universities are the locus of academic research, there are more than 200 government research institutes and autonomous research organisations, which undertake social science research as well.<sup>1</sup>

Research within social sciences and humanities sort under the Ministry of Human Resources Development (MHRD), under which the Indian Council for Social Science Research is organizationally situated.

Social science research in India is largely funded by the Government of India and its agencies such as ICSSR and the University Grants Commission (UGC). While India has had a relatively strong academic tradition in the humanities and social scienc-

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<sup>1</sup> Social Science Research in India A Mapping Report. DFID South Asia Research Hub; September 2011



es, India's budget expansion in higher education focuses on science and technology.

In many projects, India or Indian society seem to be the prime subject matter. The India programme projects in the field of social science have largely been **Norwegian researchers focusing on India**.

It would be fair to say that the India programme projects in this field has disproportionately generated knowledge about the Indian society rather than Norwegian society (and other) - although there are certainly projects with comparative perspectives that include other countries. One can, however, surmise that the research topics and subject matter have been more **tailored to Norwegian needs, expectations and interests** than to Indian stakeholders'.

However, this notion must be moderated by the fact that social science projects – according to several interviews carried out in the course of this evaluation – have yielded very fruitful partnerships and research collaboration. Still, the subject matter seems to be primarily linked to India. With a view to increase the general interest in social science one should therefore keep in mind that projects should aim to undertake research *with* – not only *on* – India.

One interviewee suggested that the RCN should engage in a dialogue with social scientists specifically on how the interest in this field can be furthered. This interviewee felt that the current approach lacked a crucial focus on mobilizing the 'heavy-weights' within the social science disciplines, coupled with insight into how the Indian institute- and university sectors function. In this interview, the opinion was that many institutions are unable to follow up partnerships unless the right persons and networks have been mobilized. According to the RCN, there are plans under consideration to involve a social science institute. These preliminary plans will probably be decided in the spring (2016).

Social science projects on the Indian side are occasionally associated with a degree of sensitivity. Interviewees frequently opined on the fact that some topics and/or data could be deemed sensitive. However, several interviews show that it is entirely

possible to conduct research on controversial subjects albeit with transparency and a degree of care and caution. The case on land rights featured in this report is only one such example.

In sum, the social science projects have by-and-large been pushed unilaterally or through EU mechanisms (Equip). While this may ensure relevance on the Norwegian side, one should continue the effort to forge a MoU with a social science institute in order to involve the Indian side. If the Norwegian Ministry of Education and Research arrived at an agreement with the Ministry of Human Resources Development (MHRD), this would of course be preferable. EU-based platforms like Equip have already been proved useful and should continue to be used.

### 2.5.2 Relevance of the natural science projects

At the time when many countries are facing recession, India has ranked the 1st place (out of 110 countries) in the Baseline Profitability Index (BPI), presented recently in the Foreign Policy magazine for investment for the year 2015. India's growth rate for the current year is expected to be above 7%. It is therefore an important partner for Norway, especially in the context of trade, investments and economic cooperation, all these assuring mutual benefits.

The Norwegian Embassy in Delhi reports that 90 Norwegian companies are established in India. Indian companies are getting large contracts in Norway. Norwegian investments in India are estimated to close to USD 10 bn. Norwegian businesses have directly generated at least 10.000 jobs in India. Norwegian companies are showing increased interest in recruiting Indian IT professionals and engineers.

Simultaneously, the manufacturing sector in India is currently receiving a huge boost after the launch of 'Make in India' campaign in September, 2014. This sector is expected to grow at 14% year-on-year (YoY) for the next 7 years. 'Make in India' is an initiative of the Government of India to encourage

multinational, as well as domestic, companies to manufacture their products in India. Under this programme India is to emerge, after initiation of the programme in 2015, as the top destination globally for foreign direct investment, surpassing China as well as the United States. Under this initiative, 25 sectors of the economy have been targeted.

Norway has special expertise and capabilities in some of these sectors, including renewable energy, clean technologies, ports, mining (drilling) technologies, bio-technology and smart manufacturing. It should be said that these sectors are to some extent present in the India programme, however, the programme size and number of projects **does not amount to a substantial support** for these sectors.

Similarly, within topics like **environment, energy, climate and pollution**, Norway seems to have niches and specialized expertise that is difficult to come by in India. Overall, the natural **science/technology projects were lacking industry interest and market focus**.

Interviews, especially those conducted with members of the EAG, as well as researchers from institutes having large cooperation with the industry; indicate that the programme has not so far given enough focus on the development of market ready technologies that might be relevant to both Norwegian and Indian industry.

If the programme is to be more relevant in the future, it might be important to focus more on **applied industrial research projects** in natural science, possibly also being on higher Technology Readiness Level<sup>2</sup>, focusing more on marketable technologies that are of common interest to India and Norway. This might include more focus on the projects within areas prioritised in both countries, for example nano- and bio- technology or advanced manufacturing.

Interviews present partly opposing views on whether the India programme should direct more

or less attention to applied research. This seems to be quite dependent on the scientific field. One view professes that positioning too close to the private sector will be detrimental to linking up to academic partners, whereas others think there should be more emphasis on cooperation with the industry sector. A conventional view on innovation is that new approaches are born of **multidisciplinary research**. This may present both opportunities and challenges for formulating calls in terms of thematic focus.

## 2.6 THEMATIC FOCUS

The first years the programme followed the thematic focus set in the Norwegian Government's strategy for cooperation with India (2009). These thematic areas were

- international political issues
- climate
- the environment
- clean energy
- social development.

Later these thematic areas were changed to a list set by the Joint Working Group for the Programme of Cooperation. The new list of thematic areas include

- Climate research including ocean and arctic/polar research
- Clean energy
- Geo-technology and geo-hazards
- Marine research – bioprospecting and polar research
- Nano-science/technology primarily related to clean energy and solar energy and medical uses
- Vaccines human and fish/animal, including vaccination programmes and biotechnology of new vaccine development
- Glaciology
- Medical research
- Social aspects of climate change related issues

In 2011, ICT was added to the list. The Programme of Cooperation prolonged the current list of topics in between 2012 and 2014.

<sup>2</sup> TRL in European Commission's Horizon 2020 programme [http://ec.europa.eu/research/participants/data/ref/h2020/wp/2014\\_2015/annexes/h2020-wp1415-annex-g-trl\\_en.pdf](http://ec.europa.eu/research/participants/data/ref/h2020/wp/2014_2015/annexes/h2020-wp1415-annex-g-trl_en.pdf)

It is clear that the social science has a lesser role in the second list of prioritised areas.

After a number of years of implementation, various stakeholders presented a number of opinions regarding the programme thematic focus. Those confirmed by several of the interviewed persons are presented in the following paragraphs. The Embassy is in general satisfied with the scope of the programme.

Interviews generally express that the **thematic areas of the India programme are broad** enough, although there are critical remarks on the prioritisation and formulation of the calls.

Some results from interviews with programme participants show that the thematic areas are considered to be somewhat biased towards natural science. Some respondents wish that a clear decision should be made regarding the split of allocation to social science and humanities *versus* natural science and innovation projects in the future.

The choice and prioritization of thematic areas in calls surfaced frequently in the interviews. There were examples of interviewees who thought there were instances where funds seemed to be earmarked because topics were too narrow. A few interviewees therefore felt discouraged from applying. In other words, opinions on the thematic scope varies considerably.

It must be mentioned, however, that calls preparation in the RCN programmes is a process usually carried out with a structured approach, including workshops with a broad range of researchers. It is an issue for consideration to include even broader range of researchers from different disciplines to capture multi- and interdisciplinary views in these workshops.

Interviewees come with some solutions relevant for specific India programme character. For social science projects: it would be beneficial to finance **multidisciplinary projects**, building new models, going beyond typical development research on topics like poverty or equality. India is searching for balance between growth and environment protection, trying to investigate how the fast growth is influencing the social and economic aspects of the entire

system. Projects within water availability (hydrology), food and nutrition security, as well as energy sustainability are among the main problems India is to tackle. For all of these areas multidisciplinary projects might be deployed connecting natural science to social and political issues emerging. The programme should address integrated research across these topics, with the interaction of various stakeholders, integrated multidisciplinary research and co-production of knowledge.

A repeated opinion was to have a **larger programme that will focus not only on India**, but also merge with the programme for China and possibly other countries of the region. This idea was connected to the sustainability: A wider programme would create more space for researchers who do not want to specialise in only one country. To some extent, a programme dedicated to a single country feeds a more specialised group of researchers, but creates risks for them if the programme is discontinued. **Broader geographical coverage** may allow for more comparative studies and broader perspectives, especially in social science.

As regards the natural science and innovation projects, there are several promising fields where India excels already today and will grow in the future. Some of them are in line with Norwegian research and industry interest.

At present, India is amongst the top 12 biotech destinations in the world and ranks 3rd in the Asia Pacific region. The **biotech industry** in India is likely to grow significantly in the future. The India programme engaging in biofuels confirmed the Norwegian interests in this sector of economy.

India has the fifth largest power generation portfolio worldwide and plans to double its total **renewable energy** capacity by the end of 2017. The governmental plans include wind power, solar power, biomass and small hydro-power. Solar power will be even more prioritized in longer perspective (by 2022). Photovoltaic industry will therefore grow considerably. At present, wind energy is the largest renewable energy source in India. Government of India is planning to promote deployment of offshore wind farms.

Norwegian interests in developing these technologies have been up-taken by the India programme.

This is a naturally promising sector for bilateral co-operation, including all possible green energy technologies.

By combining components of the cyber and physical world, Indian **smart manufacturing industry** is moving towards making manufacturing systems flexible and integrated. India programme has not been investing into this area. A range of technical changes, including advanced robotics, large-scale factory digitization, 3D printing, etc. are going to shift the manufacturing paradigm in times to come. The Indian manufacturing sector is an important juncture today that will shape the future global economy.

At a time when Norway is looking for growth alternatives outside the oil driven technologies, manufacturing technologies should be an area of interest.

## 2.7 CALLS AND ALLOCATION

The programme is commonly considered as **significantly contributing to building capacity for Indo-Norwegian research cooperation**. However, when comparing to needs and wide programme goals, and the size and intensity of Indian research scene, the current level of funding may not be appropriate to assure that the relevant research topics are covered by an adequate number of projects.

In addition to this, the **practice of cutting budgets** proposed in the project applications is causing problems to researchers, forced to limit the scope of the project granted.

The smaller allocations made also influence projects' duration. Although standard project of three years **duration is fine in terms of conducting the research**, longer projects give more flexibility. For example in cases, where project's results can be commercialized, there could be some options for project prolongation offered. This would allow for upscaling and industrial applications, as well for securing IPR.

Finally, it was observed that the programme brings a relatively small amount of **post-doctoral students**.

This indicator is a result of allocations available - post doctoral studies are expensive and are hard to fund with limited project budgets. Several researchers interviewed, opined that the programme should think of financing more post-doctoral studies, but this requires longer financing and larger project budgets. Improvements in this regard, may result in better programme sustainability in general.

Recent developments in Norway, including low oil prices and the refugee crisis give reasons to believe that there will be **fewer resources available to develop bilateral research cooperation**. In this context one should also pose the question of programme sustainability in the longer term, and the consequences for the focus of the programme.

### Analysis of allocation

The overview of the funding shows that research in the India programme is quite wide and spread-out. One could argue that there is an imbalance between the sheer size of the Indian research scene, the multitude of available research topics and the size of the India programme.

Apart from some natural science projects where a small number of companies have been engaged, the India programme so far did not show large industry interaction. In terms of possible programme size and use of resources in natural science, more **focus on industry driven projects** could benefit the future impact of the programme, even though interviews showed opposing views on this topic of debate. In addition to that it is rather to choose only a **small number of prioritized sectors**, instead of trying to finance all possible fields.

The table 4 shows the amount of funding allocated to the India programme projects per year. Note that this figure includes only researcher projects; pre-projects are not covered.

Table 4: Funding per call (mill NOK)

Calls	mill NOK
NORKLIMA/KLIMAFORSK - 2011	18,0
KLIMAFORSK - 2011	13,4
RENERGI - 2011	18,0
NORGLOBAL/GLOBMEK - 2011	4,5
NORGLOBAL/WOMEN AND GENDER - 2011	6,6
NORGLOBAL Indnor - 2012	39,0
MILJØ 2015 ("JOINT Indnor") - 2013	12,0
NORKLIMA/KLIMAFORSK - 2013	16,8
GLOBVAC (New Indigo) - 2013	2,8
ENERGIX - 2014	17,5
Source: Oxford Research   Research Council of Norway	



Table 5: Funding per programme calls (mill NOK), N = 32

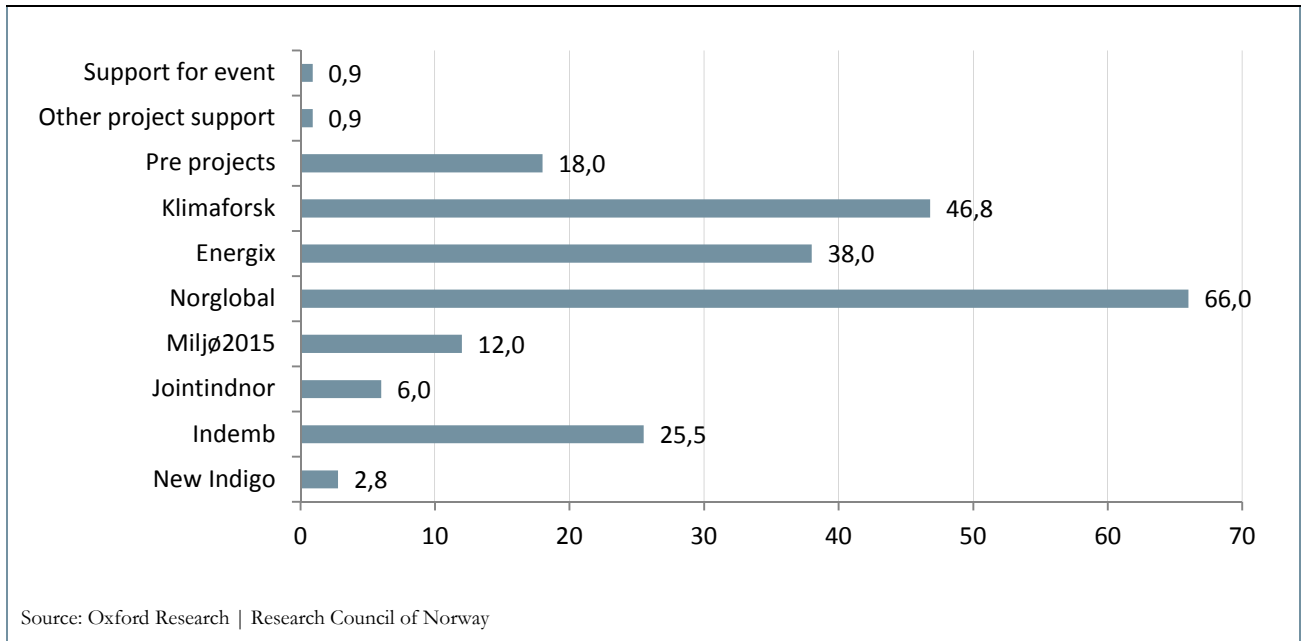
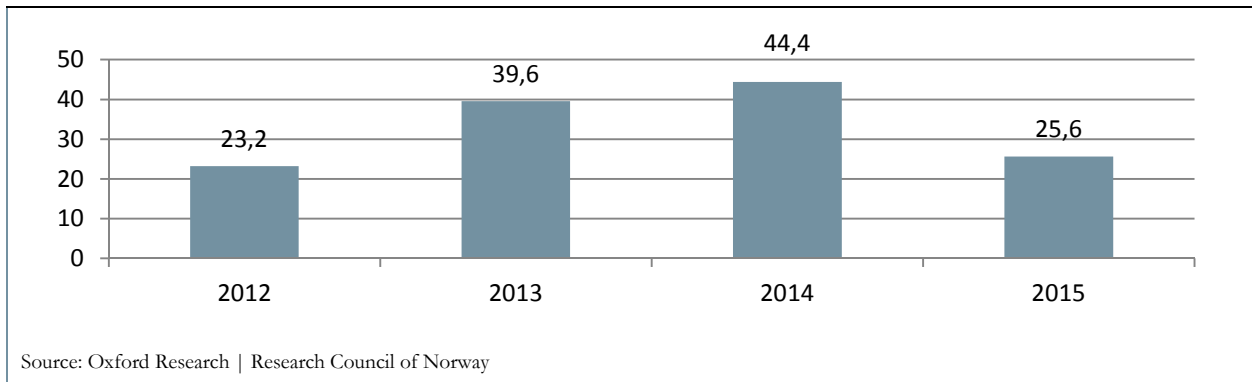


Table 6: Funding per year (mill NOK), N = 32



### 3. Programme procedures and organisation

The India programme is a relatively small programme in the RCN portfolio but stands out in its way of operating. The programme has its calls and projects implemented in cooperation with other RCN programmes or bilateral calls with Indian governmental partners. This particular **construction is very flexible**. Interviewed stakeholders considered the programme setup to be efficient and appropriate for its specific context, allowing large programmes to have bilateral calls targeting India. However, there is also a negative side. Dispersed character is a reason for losing part of programme visibility to stakeholders. Several project managers and partners invited to interviews did not consider their funding as funding coming from the India programme, but as funding from thematic programmes run by the RCN.

#### 3.1 PROCEDURES

In terms of formalities required from the projects during implementation, a great majority of interviewed project coordinators confirmed that the RCN was prompt in terms of solving problems raised. The RCN standardised procedures for reporting and monitoring are well known to organisations and researchers implementing projects. Interviews revealed that the RCN staff was regarded as responsive and helpful.

**Pre-projects** have been praised as an excellent **opportunity** to clarify project ideas and discuss them with partners. This line of financing is therefore recommended for continuation in the future. Also organisation of meetings at the programme level, practiced in the RCN programmes, as well as presenting projects in the programme portfolio is considered to be a good practice, appreciated by researchers.

Minor technical issues appearing in some projects have in this context minor meaning; however they are listed here for eventual consideration:

- The **template for Consortium Agreement** provided by the RCN was said to lack clear delimitations as regards **Intellectual Property Rights (IPR)** eventually resulting from the project. The Consortium Agreement is a binding part of the project for its partners and it is required before the project starts. Introducing changes in the template that cover the intellectual property interactions between partners is recommended.
- The requirement to sign **Memoranda of Understanding** from project partners before the project allocations is made from the RCN appeared as being problematic in two identified cases for Indian partners. Large research institutions in India had problems signing the MoUs before the detailed budgets and work split were ready, which is a case when new project partners appear in the consortia. The situation can be improved here with release of small funding for initial workshop after which the MoU can be signed with all partners. This will allow researchers to negotiate and plan all the work and split of responsibilities.
- Interviewees complained that **project budgets have been reduced**. Such situations influence projects' ability to deliver promised results and sometimes the entire project is put in danger. Financial shortages were claimed to be the main barrier for more cooperation. Tight budget that is even more reduced before signing the contract reduces largely the available time for conducting research, mostly influencing the Norwegian input to projects.
- A technical issue was raised as regards the RCN reporting system - students having started PhD studies in Norway are requested to provide Norwegian personal number in the project reports. In case of Indian students, however, only a D-number is given, which causes difficulties in the reporting.

### 3.1.1 Projects' selection

The procedures used for proposal screening and selection are universal for all programmes and calls in the RCN and are in general praised for their objectivity and efficiency. It must be said that selection as a topic comes back also in other programmes' evaluations.

The topic of projects selection was recurring also in this evaluation.

This case was raised in several interviews stating that **selection was somehow influenced by the sensitive nature of projects proposed**, which have been considered unwanted in India.

Some interviewees suggested that the calls should be thematically wider, but should have stricter demands on qualifications researchers' track records so as to minimize the bureaucracy, but still generate wider interest and reach out for the best and most creative researchers.

### 3.1.2 Consortia cooperation

The consortia created in most of the India programme project followed a clear model.

First, in the majority of cases there was already an **established link** between the Norwegian institutions proposing the project and the Indian partner. Sometimes these links are good established with more than 10 years of cooperation, while others are shorter. However, the project coordinators confirm that there is a risk associated with getting into the project with unknown partner. Most of the researchers interviewed had previous personal connections from other projects in the past, joint publications or conferences where they had the opportunity to initiate appropriate personal and professional relations.

As mentioned earlier, the pre-projects financed in the India programme have often been praised for establishing new contacts and networks. Institutions claimed to make a number of new connections within these projects that resulted in new proposals and other initiatives beyond the programme itself.

The focus on **networking and organisation of workshops** and conferences is therefore considered as one of the positive aspects of the India programme. This is especially the case for some researcher projects resulting from earlier pre-projects.

As regards the **proposal preparation**, again most of the informants claimed extensive cooperation between Norwegian and Indian partners. There were rare cases in which Indian partners were absent in the process. These cases oftentimes resulted in implementation problems and misunderstandings. Most of the awarded proposals were prepared jointly and the contribution was not limited to sending CVs; extensive consultations and content input were reported in interviews.

Preparation of proposal imposes formal obligations on future project partners. In great majority of cases, partners commit to what is written in the proposal, assuming this project will be funded. However, in some cases, researchers could not deliver on contractual obligations made in proposals, because of bureaucratic constraints in their home institutions in India.

Project proposals are better, when partners **contribute to the design of the application**. In most of the research projects, Indian partners manage their own work packages and hold **responsibility for implementation**. Sometimes they are assisted with mentoring, monitoring and capacity building activities from the Norwegian coordinators. By and large, the interviewed researchers speak about solid cooperation in the projects, with good atmosphere between participants.

Many projects reported **extensive capacity building** activities in terms of engaging students and researchers on various levels in the research process. Their input sometimes was higher than expected.

The requirement to deploy large part of the project budget in India resulted in Indian partners implementing substantial parts of the work, sometimes larger than they could handle from an organisational perspective.

The projects stimulated research in India that would not have been undertaken otherwise. However, the amount of work on the Indian partners was sometimes causing **delays in implementation** that could not be remedied remotely from Norway.

This issue of overload was not frequently brought up in interviews. Some of the cases appeared to have been personal in nature and not related to institutional bureaucracy. The consequence was at times caused delays and uncertainty regarding the quality of the research.

On the **institutional** side, projects sometimes faced different problems connected to time accounting, transfers or invoicing. In one case, it was revealed that researchers were publishing using data from the project without crediting the source.

On the Norwegian side, a number of researchers confirmed that without Indian partners their projects would simply fail or would not be able to deliver. In both natural science and social science projects the Indian partners were **crucial for conducting research work** and data gathering.

On the Indian side of the project staff, it was often opined that they allocate much more time on the project implementation than the Norwegian partners. The reason for that were the existing differences in researchers' remuneration.

This topic brought on the discussion in different research milieus and was also discussed in EAG. **Remuneration inequality**, so visible in case all project expenses covered initially only from Norwegian side, was solved through a new model of financing introduced with joint calls. Currently, in all the bilateral calls, the Norwegian researchers are paid from the RCN, while Indian researchers are paid from Indian allocation.

**Access to various data sets and measurements** in India was also reported to be a problematic issue. This was the case reported for both social projects and natural science projects, especially within climate and hydrology. The data are sometimes claimed as hard to obtain and of un-

known/questionable quality. For the climate related data, several institutions are responsible for measurements in India and these processes are not coordinated.

In some cases, the researchers asked the Norwegian Embassy for assistance. The conclusion in this regard appears to have been that Indian partners should form a consortium with those having a common interest in the data, especially since this would also be cheaper. In one of the cases recalled, the data issue actually influence the entire project delivery.

## 3.2 PROGRAMME ORGANISATION

### 3.2.1 Expert Advisory Group (EAG)

The role of the Expert Advisory Group was defined as advising the programme, not managing it. Since many other programmes have different kind of Programme Board, the EAGs role might seem confusing. Generally, the data gathered through interviews bring the notion of rather weak influence of the group on the programme implementation and on allocation of resources to different thematic fields. The EAG matters in some occasions, providing the information or bringing concerns. Activity level of participants varies.

The Norwegian Embassy reports to be influential in defining the programme scope, not so much through its representative in the EAG but especially through direct linkages and communication with the programme management in the RCN.

The obvious issue for discussion here is **EAG composition**. The Group gathers different scientific specialisations, and different levels of expertise as regards knowledge about India. Members represent different institutions, including private companies, institute sector and universities, with different interests in the context of the programme. Such group may obviously play a role, discussing strategic issues, making petitions, presenting points of view, advocating broader calls or different thematic focus.

The established practice is to have representatives of several disciplines in such bodies. However, the specific character of the India programme makes the operations of this Group particularly weakened, by the fact that it contains both representatives of the natural science and industry, as well as social researchers (in minority). Members therefore perceive their roles as natural protectors of their own discipline. This causes **inherent tension as regards programme focus** discussion.

In general, EAG members expressed the view that group has no major influence over the programme implementation, being a consultative body. Within the RCN, however, EAG is generally seen as a constructive partner in discussion, and a body that provides useful input into the strategic direction of the programme. There has been no reported conflict of interests when it comes to the individual members of the group.

### 3.2.2 The role of the Royal Norwegian Embassy

A bit more than 10 years ago, Norad was more involved in India. However, in 2003 all bilateral aid from Norway to India was discontinued by Indian initiative. After this, funds budgeted to aid projects were transferred to research projects, giving the Embassy in Delhi money for research cooperation.

After some time, the amount of administrated research programmes was taking up too many resources for the Embassy, so in 2011 the MFA and the Embassy signed an agreement with the RCN to take over the responsibility for the projects. The RCN is much more equipped to handle research projects, it has a long experience administrating projects and distributing funds, as well as it can control the scientific quality of the projects to a greater extent. Embassy expressed also the need for some more frequent reporting on results.

The India programme was (in part) established to work as seed-funding for building relations with Indian research institutions. This objective has been successful from the Embassy's point of view, set-

ting cooperation with a broader scope of institutions than before.

The Embassy still holds administration for programmes with a research component, but all other research projects are handled by the RCN.

## 3.3 EXTERNAL CHALLENGES

These are topics reported in some of the interviews, though not under any control of the RCN. These challenges are also not unique for India.

### *Visa*

Citizens of both countries have to apply for entry visa. Several interviewed project managers and partners reported problems with this issue. On the one hand, every time when Norwegian researcher wants to attend a workshop in India, a **necessity to apply for visa** appears. Application process takes a lot of time and sometimes the visa is not arriving on time or covers a very short period. It was also claimed impossible to obtain long-term open visa for researchers attending several dispersed workshops in the timespan of 3-4 years. This issue was discussed at EAG as well as supported by the Norwegian Embassy in India. Interviewees claimed that visa problems are now solved.

Problems with visas were visible especially in the initial stage of projects implementation.

It appeared to be a sensitive issue also in relation to scope of projects financed. Finding a correlation between the difficult visa cases and the project theme (e.g. research on poverty) has not been a topic of this evaluation, but appeared in the conversations. Refusal of visa is a serious matter for someone having a research project ongoing in India.

The visa application procedures are considered as time-waster, so are also permissions necessary to conduct research and travel in the field, for some projects, where local data gathering is needed. These bureaucratic issues were reported as consuming much more time than expected in the projects,



even if Indian partners have been providing extensive assistance to this regard.

### ***Currency fluctuations***

Similar financing problems appear with **currency exchange rates** changing during project implementation. When large part of the project costs is allocated to expenses in India– the falling Norwegian currency is currently causing large financing problems to institutes having a number of researchers operating in the projects. The Research Council is therefore suggested to address the issue in a complex way in order to help implementing institutions to maintain financial sustainability of the projects.

Two interviewees mentioned the need for more **flexibility when reallocating funds** within the projects from researcher to researcher and from year to year. In the present system the approval is to be sought in every case.

## APPLIED SCIENCE AND THE INDUSTRY SECTOR: THE CASE OF ELKEM SOLAR

### Case focus: technical and commercial impact

Elkem Solar's project on solar energy is an example of an India programme project that effectively connects applied sciences and industry. The call sparked interest with Elkem Solar, a company that had been looking for a way to test the effectiveness and durability of solar modules produced with silicon feedstock. The hypothesis was that solar modules made of silicon from Elkem Solar's metallurgical route would perform better in high-temperature environments than other mainstream materials.

The company had a contact in an Indian company called Titan Energy Systems Ltd, which eventually gave rise to an effective project setup: Elkem Solar produced the feedstock, a German customer sliced the material into thin wafers and made solar cells suitable for generating solar modules, and Titan Energy Systems would then assemble and produce the full sized solar panels.

Partnering with Titan Energy Systems led the project to Padmasri Dr BV Raju Institute of Technology (BVRIT) an institution which at the time was aspiring to become a university. The solar panels were installed on the roof of the school along with a batch of reference panels made of mainstream materials. The academic staff of BVRIT then monitored them and extracted data. Meanwhile, Elkem Solar had brought on-board the Agder University (UiA) and the Kristiansand-based research institute Teknova who were assisting in filtering and interpreting the data. The Norwegian side of the project visited the test site in Hyderabad mid-way into project, which generated wide media coverage both in television, newspapers and magazines. The results ultimately showed that the Norwegian technology had competitive advantages under high temperature climatic conditions.

For Elkem Solar, a private sector company working in a highly competitive field, the value of the findings are self-explanatory. However, there were a number of synergies and spin-off effects resulting from the project. Some ten publications have been produced. A number of these has been presented at conferences such as Institute of Electrical and Electronics Engineers Photovoltaic Specialists Conference (IEEE PVSC), and the Innovation Platform for the Global PV Solar Conference (EU-PVSEC). Others have been published in peer-reviewed journals. The project also resulted in a PhD stipend at UiA, which focused on data extracted from the project.

The case of Elkem Solar is an example of how India programme and the parameters set in the call directly resulted in a productive venture, both in terms of research- and industry collaboration. Moreover, the station on the test site is still running and being monitored, and the partners involved are still in communication.

A few discernible success factors are the fact that the project was well calibrated and organized in terms of ensuring the mutual interests of the stakeholders across the two countries. Furthermore, the project progressed with successful trust building, and benefited from the initial contact with Titan Energy Systems as they identified the test site and effectively set terms for collaborating with the BVRIT. Even though Elkem Solar made use of a pre-existing contact, the latter had not been part of any business venture with the company previously. Still, the connection turned out to be a door opener in this particular India programme project.

## 4. Programme results by objective

The sub-chapters below present aggregated information about the relevance of the programme, reflecting on findings according to each of the main programme goals.

### 4.1 BILATERAL COOPERATION

Objective 1  
Strengthening bilateral research cooperation

India is one of a few countries for which Norway decided to establish separate research cooperation programmes. Analysis conducted in this evaluation brought a large consensus among all stakeholders that the programme has created a platform for strengthening the research cooperation in general. In this context it is obvious that the **programme has proven its additionality**. If there was no India programme, the scope of cooperation would have been much smaller and scattered. All opinions gathered through interviews in this context confirm that there is a clear difference made, as regards created possibilities for Norwegian researchers to cooperate with India and *vice versa*.

#### **Network analysis of programme cooperation**

The network analysis provides insight into the patterns of cooperation in the India programme. This type of analysis gives a visual overview of the cooperation networks.

The following paragraphs will unpack the complexity displayed in Figure 5.

The data used for the analysis were obtained from project applications. We have created a database based on established “cooperations” and later on presented existing networks in a visual form. Figure 5 displays all established connections between institutions financed in the India programme. The intensity of colour (from green through yellow, or-

ange to red) and the size of nodes demonstrates the degree of cooperation.

URAS, followed by NMBU and PRIO, has a leading position in terms of number of “cooperations” established in the programme. Edge size (thickness) represents a networking parameter called “edge betweenness” indicating the number of connections between institutions, using the same colour pattern as described above.

Table 7 lists the institutions with biggest networks established under the India programme.

Table 1: Number of cooperation partners

Institutions	Cooperation partners
URAS	13
NMBU	10
PRIO	9
SINTEF P	8
DSHG, UiO	8
NGI	8
NUPI	8
NORSAR	6
CMI	6
UiA	6

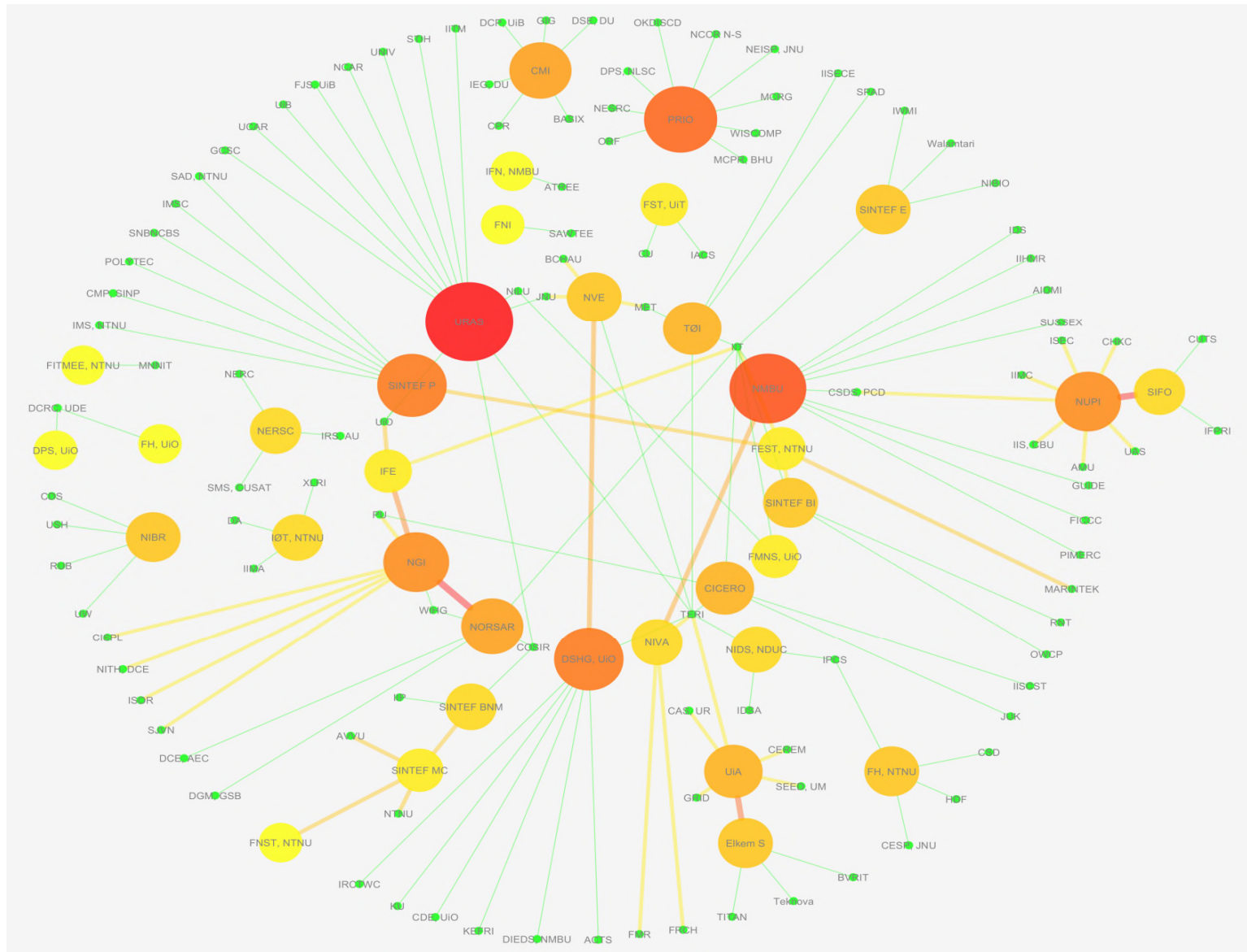
Source: Oxford Research | Research Council of Norway

The above listed institutions cooperate mostly with international partners developing thus an international network. However, there is no cooperation between these top 10 institutions, except between NGI and NORSAR.<sup>3</sup>

<sup>3</sup> Abbreviations used are listed in Annex 3

Ongoing evaluation of the Norwegian Programme for Research Cooperation with India

Figure 5: Network analysis



The network analysis shows that only few institutions have the same partners. In addition, there are 10 separate small networks, mostly within social science, which are not integrated with the rest of the institutions. As regards the research groups in natural science, we can observe a higher degree of integrations. However, when compared to other research programmes the integration is significantly lower.

In general, the **networking has increased between participating institutions** and individual researchers, the same is observed as regards joint publications. Additional spin-offs are reported, including applications to EU funds.

Interviews bring the notion of **growing trust** and linkages between the research teams from both countries.

Interviewed researchers underlined that the networks established should be maintained, otherwise the spending made so far can be wasted. In recent months, due to discussed funding cuts, the long-term perspectives for several programmes in Norway are questioned. Assuring **certainty as regards financing of future Norwegian-Indian research cooperation** is therefore crucial for all stakeholders of the programme.



## EQRISK PROJECT

### Case focus: societal relevance

The EQRisk Project (Earthquake Hazard and Risk Reduction on the Indian subcontinent) is a good example of the program's core activity. It is a collaboration between Indian, Bhutanese and Norwegian institutions, where the participating Norwegian institutions are NORSAR and Norwegian Geotechnical Institute (NGI). The Indian participating institutions are Indian Institute of Technology Roorkee (IITR), Wadia Institute of Himalayan Geology (WIGH), CSIR Centre for Mathematical Modelling and Computer Simulation (C-MMACS) and Assam Engineering College (AEC). Lastly, the Bhutanese participant is The Geological Survey of Bhutan, Department of Geology & Mines (DGM). In addition to these official partners, a number of affiliated partners have been involved in the project and its activities, i.e. Northeast Indian Institute of Science and Technology (NEIST Jorhat, Assam), Central University of Himachal Pradesh (Daramshala), BMS College of Engineering (Bangalore, Karnataka), Building Materials and Technology Promotion Council (BMTPC, New Delhi). In this project, the key activities are concentrated on the regions of North East India and Buthan, Peninsular India and Northern India (states of Uttarakhand and Himachal Pradesh).

EQRisk is already the third bilateral collaboration project of NORSAR in India since the year 2001. While the first project, which started in 2001 was led by NGI, the second (2006-2010) as well as the current project (2012-2015) were led by NORSAR, Department of Earthquake Hazard and Risk.

The first projects were funded and administrated by the Norwegian Embassy in New Delhi. The administration of the project was later transferred from the Embassy to RCN without any complications. The transfer did not invoke any extra work for the project leader. In the early stages, the project experienced some bureaucratic challenges, because of inadequate contact with all the right authorities in India. This caused the project some delay, but after working a while with building relations, the project could start fully according to the envisioned plans.

In the second half of the project, the focus shifted more from research towards on capacity building and dissemination activities. This involved the guidance of PhD and master students as well as training students, faculty members and practising engineers and architects. The latter was accomplished through organizing and conducting numerous training courses (of 3-5 days) in various parts of India. Thereby being able to teach more than 900 participants in various earthquake-related topics. The desire is that this practice continues also after the completion of the project, sustaining all the good relations and connections made during the project period and exhibiting continued efforts of Norwegian research institutions and authorities in India towards an (earthquake) safer society.

NORSAR have operated internationally for a long time, also in several developing countries in other parts of the world. Working in developing countries can be a mixed experience, as institutions in some countries are technically not as capable and advanced as this can be observed with Indian institutions. According to NORSAR, working in India is one of their best experiences abroad. The Indian researchers are not only experts and possess equal expertise in their fields, they are also as devoted to the project and its work tasks as their Norwegian counterparts, and learning is equally important for both parties.

Earth sciences is a prioritised field in the collaboration between Norway and India. This was confirmed October 2014, when the President of India visited Norway. During this visit, a Memorandum of understanding (MoU) was signed between the Earth System science organization, Ministry of Earth Sciences and the Research Council about cooperation in the field of earth system sciences, including Geo-hazards and Polar sciences. By this understanding, the two countries will publish joint calls, where each party is responsible for funding institutions in their respective country.

## 4.2 JOINT FUNDING

### Objective 2

To establish binding cooperation on research funding with the Indian governmental research funding bodies in collaboration with relevant thematic research programmes and scientific activities at the Research Council;

The India programme has launched a number of joint calls with Indian governmental research funding bodies, including Ministry of Earth Sciences, India Council of Medical Research and Department of Science and Technology (DST). In the context of industrial cooperation needs, DST is the most important partner for the India Programme. All other institutional partners have been introduced through DST. The entire Programme of Cooperation with DST can be considered as a separate MoU for programme implementation.

A perception of certain **imbalance** between natural science projects and the allocation made to social science and humanities was revealed in a number of interviews with social scientists, this however is not confirmed by the hard data on projects allocation in the programme. Still, social science projects were postulated in the interviews to receive more attention in the India programme bilateral calls in the future. This can be first and foremost arranged by starting **institutional cooperation with important Indian governmental partner**, preferably introduced through DST within the existing Programme of Cooperation. Bilateral calls implemented within social science projects might **balance the perception programme character** and assure that implementation of social science projects will be smoother. Finally, joint calls will improve financing of the research and positively influence thematic relevance of the research. In addition, such strong governmental umbrella may influence solving some issues with access to data or bureaucratic obstacles.

Cooperation with such institution as for example Indian Council of Social Science Research, supporting a network of 27 social science institutes, can benefit this field of research.

To support this suggested developments it must be said that the cooperation with the Indian Ministry of Earth Science, Indian Council of Medical Research and Department of Science and Technology (DST) in joint calls did not appear from vacuum.

The collaboration existed between India and Norway, built on PhD students experience and workshops organised in the area of polar research and geo-hazards. This cooperation resulted in collaborative agreements, based on mutual need.

The same can be now obtained using the experience from social science project already financed.

The cooperation with **Ministry of Earth Science** started with workshops, identifying certain strengths within these particular topics on both sides. The Indian government representatives underlined that there might be many more areas that will appear as the agreement is ongoing over the next 5 years. It was underlined on Indian side that the research outcomes are to be useful for the society, this being an ultimate goal of the cooperation.

As the results are concerned, the Ministry is aware that the projects financed within the bilateral calls are in great majority too young now to observe the outcomes. However, the expectations from the Ministry side are high.

In terms of projects selection the Indian partners are satisfied with the process. Countries had independent evaluation first, followed by assessment by joint panel. The experience so far shows that assessment results are almost identical on both sides. All topics of interest as seen from the Ministry side have been covered.

As regards **cooperation with DST**, the three joint calls were prepared under the aegis of bilateral agreement signed between India and Norway. The calls are claimed to provide impetus in enhancing the research cooperation between the two countries.

The calls' documents were prepared jointly by DST and RCN, which based on the common interest on

both sides. The calls were adopting the national rules and procedures of both sides. The finalisation of joint call texts was recalled to be smooth.

Both sides using country specific evaluation procedures assessed the quality of the proposals received against this joint call independently. Either side did not have any influence or interference in assessing the quality of proposals at respective ends. After the independent technical evaluation, the final decision to support the proposals was taken jointly based on technical grade/ranking of each side and only mutually agreed top proposals were supported jointly.

Indian governmental partners underlined that there is a good progress, as regards the programme implementation. Good cohesion was claimed from both sides as regards timelines, proposals, and thematic focus. In addition, the programme size is considered appropriate for good and long relationship with Norway.

It was said that there is no separate allocation to finance the India programme projects in the budget of the DST. These expenses are covered from general budget allocated to research. As the programme unfolds, the financing is granted, matching the Norwegian input on Indian side.

### 4.3 MULTILATERAL COOPERATION

#### Objective 3

To continue to foster relations with India through cooperation with the EU and Nordic countries as well as multilateral organisations in which India and Norway are partners

The India programme projects databases analysed reveal a number of research institutes and individual researchers from other **EU countries and America being represented in the consortia**. This brings a notion that projects somehow foster relations with other countries. These partnerships are however formed ad-hoc on project level and are not

triggered by conscious actions (multilateral calls) on programme level. Also Nordic cooperation does not exist at the programme level. Joint calls with other Nordic countries have not been organised. Some of the researchers interviewed postulated wider calls allowing established researchers from other countries to initiate projects, however this will require joint cooperation with financing institutions from other (Nordic) countries. Unfortunately, in this context, the Indian side does not support the idea of multilateral calls with participation of more than one research council from the West.

Multilateral calls are also found not easy to implement on the EU level. Horizon 2020 calls does not “automatically” address research with India. Interviews with the RCN indicate that probably ERAnets will be more important tool to use in this regard in the future.

It must be said that there is a large *diaspora* of Indian researchers in the West. This network is largely cooperating and participating in projects implemented in and about India. Their participation is also visible in the India programme projects, influencing programme ability to address this objective.

Observation was made in one of the interviews that for each open position advertised in Norwegian institutes, a number of Indian applications is received. In this process, Indian expertise becomes available in Norwegian institutes.

Multilateral cooperation, through participation of researchers from other universities and institutes is influencing the research quality of the programme. In case of programmes where **researchers from other countries** are encouraged into joined calls, good competition and (subsequently) quality appears.

However so far, there was no specific agreements established between the Norwegian authorities and other Nordic countries, as regards the research cooperation with India. Simultaneously, other Nordic countries also try to rise their presence and cooperation with India.

As regards the **cooperation with multilateral organisations** where India and Norway are partners, there also exists a place for more activity. This may include already established and tested RCN concepts of joint calls with the EU RDI programmes (ERANETS and Horizon 2020 calls in the future), but also continued cooperation with international organisations such as the WHO and other UN agencies, as well as OECD.

## INDIA: LAND RIGHTS, ENVIRONMENTAL PROTECTION AND INCLUSIVE DEVELOPMENT WITHIN INDIA'S FEDERAL SYSTEM

### Case focus: policy impact and societal relevance

One of the examples of interesting projects financed from India programme is the project titled "India: Land Rights, Environmental Protection and Inclusive Development within India's Federal System" led by CMI (Chr. Michelsen Institute/Centre on Law & Social Transformation) in partnership with CPR (the Centre for Policy Research in Delhi). This particular project exemplifies several important issues for this evaluation. It is a social science project, covering a sensitive subject that is conflicting by nature. The project is based on extensive field research in India, deployed in four regions/states of the country and is interdisciplinary by nature, connecting law, social research and political science. In addition to that, the team of researchers is very international, connecting India, Norway and the USA.

The problems investigated in this project - changes in land ownership patterns, land use and land governance are serious flashpoints of conflict between competing groups, historically and in present times. There are huge knowledge gaps about land rights in different states of India and in the state's practice of land acquisition. There are huge geographical, governance and legal variations in land management in India, in part because of its colonial history. There has been no comprehensive countrywide mapping of the legal relations with respect to land in India since Baden Powell's monumental work in the 19th century. This project is the first step in building extensive knowledge on this issue. The point is therefore to understand how state institutions in India have managed tensions between individual and community rights to land and property and the power of the state to acquire land and property for purposes of economic development and social redistribution.

Land acquisition is one of the important political and economic issues in India. In very recent policy debates, there was a huge opposition on the new law to this regard proposed by the government. While the project was trying to provide independent views on the issue, this was not necessarily in line with the government interest.

Thus, this is a challenging project in terms of both the complexity and political nature of the issues and it is interesting to see how it has fared in a country where several other projects faced challenges as regards administrative barriers and bureaucracy, problems with access to data and political obstacles.

The project had to reduce the scope of investigations somewhat since the grant offered by RCN was smaller than the proposal, with additional 'cuts' caused by the depreciation of the Norwegian Krone, effectively reducing the funds to the Indian partner by about 20%.

This project from the beginning was assuming extensive interaction with national and state level policy-makers and bureaucrats as well as activists, representatives from community and civil society groups and business. The findings confirm that the legislative framework, the changes in land use and land governance and ownership patterns, are even more politicised than it was anticipated, particularly in Meghalaya, the North Eastern state included in the study.

In all those difficult circumstances, the project was on going well and managed to deliver to its promise, even if several changes were needed as the work unfolded. The team cooperated before, and the main per-



sons knew each other from previous project on Health right litigation, involving a multi country study including India. Researchers also had a common long-term research agenda in the same field, namely the role of law in social change.

The findings are very interesting and valid for current policy debate in India: There are quite dramatic shifts in land use patterns, with radical reduction of the part of the state that is covered by forests, which is of major concern both on environmental grounds and from the perspective of the livelihoods of traditional forest-dwellers. The project finds that the efficacy of the constitutional provisions put in place to protect tribal populations (so called Scheduled Tribes or STs) is limited by the existence of a contrary legal regime – authorizing land acquisition for building dams, infrastructure, protecting forestland, and mining – which facilitate displacement of the tribes by the state and private industry. In addition, bureaucratic shortcomings in the departments and institutions responsible for tribal welfare significantly impede the impact of the protective legal provisions. They are further weakened by the mainstream narrative, which portrays the special provisions for the STs to run at cross-purpose with overall development and progress. The project also shows that in the absence of a unified tribal identity, and due to considerable variation amongst – and stratification within - tribal groups, benefits from the special provisions tend to accrue disproportionately to the more dominant groups and to tribal elites.

As part of the project the researchers set up a new initiative for land rights in the Centre for Policy Research, in November 2014, to more effectively communicate with others working on the issues, disseminate findings from the project, and build on it. A number of cooperation propositions have been received since then, to continue the research in the area.

The project also generated policy input and empowerment, bringing in perspectives from all sides. In terms of dissemination, the project findings were presented in influential periodical magazines, TV debate, and a book chapter for the Oxford Handbook on the Indian Constitution, social media, review for India's largest magazine of a book written by the Minister who spearheaded the 2013 Land Acquisition law, and submission to Parliament on the new government's 2015 Land Acquisition Amendment Bill. Project researchers are providing news and knowledge for the discussion. In addition, a large number of conference presentations and speeches were delivered internationally from Delhi to Bergen, Harvard and Washington DC. The ability of the project to offer balanced and independent analyses of the issue, not necessarily in line with the government interest, shows the significance of independent research on politically controversial issues.

The main factors of the successful implementation:

- Experienced and knowledgeable project management, shared by researchers in implementing institutions, agenda for the project decided at each stage collectively;
- Experienced team with track record and long term research interests in the field;
- Engagement and ownership of the project by Indian partners at all stages (project conception, implementation, data gathering and analysis, publication and dissemination);
- Strong institutional anchoring of the project on the Indian side;
- Trust and relations building through longer visits to Norway and India (made possible by additional funding from the RCN's Yggdrasil grant).

## 4.4 CAPACITY-BUILDING, DISSEMINATION AND NEW RESEARCH COOPERATION

### Objective 4

To implement capacity-building, dissemination and promote the establishment of new research cooperation between India and Norway

#### Results reported from the project reports

Interviewed researchers and reported outcomes bring a notion of good delivery to this regard. Most of the projects implemented engaged PhD students and some post doc students. A remark must be made that these were not always students who had their studies financed from the India programme, especially on Indian side, PhD students engaged were often reported to be financed from other sources. Several projects also give possibilities for Master students on both sides to build their experience in international research cooperation. A portfolio of Norwegian research institutes continued building their knowledge, improved their experience and research capacity as regards India.

A common obstacle was mentioned in the context of typical PhD studies. In most cases such process takes around four years to conclude, while the projects are in most cases shorter, reaching 3 years. This is not assuring funding for the entire duration of the PhD process. Another technical aspect mentioned here was again connected to visas. Students staying longer than initially planned in the project have to apply for visa again to conclude the research after the project is officially concluded.

As regards dissemination, the projects financed focus on scientific publications and organisation of workshops and conferences. These are the main means for dissemination of projects results.

The interviews give a notion of very standard approach to this regard, meaning that researchers focused on producing **research papers and organising research conferences** in their field, as the

main dissemination elements. More policy level actions that will result in policy impact were not in focus, however there are examples of projects investigating important thematic fields for India, where the knowledge and experience produced have been further used or have been somehow used in the policy debate.

In total, the programme resulted so far in 16 doctoral and 11 post-doctoral fellowship grants. Projects also reported 2 visiting and 1 overseas researcher grants. It is expected that projects will report more direct deliveries when it comes to formalised capacity building in the future. Overview over fellowship grants per project is presented in Annex 2.

Table 2: Reported fellowships and grants

	Total
Doctoral fellowship	16
Post-doctoral fellowship	11
Overseas researcher grant	1
Visiting researcher grant	2

The next table shows the aggregated activities reported by all projects in the programme. A more detailed table describing activities per project can be found in Annex 2.

Table 3: Total reported activities

Activities	Total
General outreach activities	120
User-oriented outreach activities	342
Introduction of new/ improved methods/ models/ technology for increased value creation	9
Commercial results with contributions from project	5
New business	1
Business oriented R & D results	7
Scientific publications	134



**Publication analysis**

In the following section, we present results from conducted analysis of scientific publications reported by researcher projects.

**About the data**

We have based the bibliometric analysis on data gathered from the progress reports. The names of authors and their reported publications were searched for, in order to build the database of results in terms of co-authorship in publications, affiliations of co-authors and types of/ quality of scientific journals. Bibliometric approach does not entail any qualitative content analysis of the articles. Therefore, this approach was used to assess the quality of articles through assessment of publication channels. Publication channels were searched for, and based on their quality were scientific publication assigned points.

We have removed forthcoming and submitted articles from the list. Furthermore, we have only included scientific publications, and we have excluded PhD theses and unpublished research reports.

The number of publications from the India programme projects is thereby higher than the number we have registered.

We categorized all publications in the following categories: “book chapters”, “monographs” and “scientific articles”. Only research published in publication channels listed in the Norwegian publication scheme has been included.

**Results**

41 researcher projects in the India programme were subject to review. In 18 cases, we have not registered any publications. These are projects under NORGLOBAL (6 projects), ENERGIX (4 projects), KLIMAFORSK (4 projects), MILJØ2015 (2 projects), and INDEMB (2 projects). However, 6 of these projects have started in 2015 and publications are therefore not yet expected. Publishing takes time and publications normally come late in the

project period. Publications released in the beginning of the project period are usually based on research previous to the project. We can therefore conclude that 12 projects have not lead to any publications so far from which 3 are already finished.

For the remaining 23 projects, we have registered 115 scientific publications. The table below displays the number of publications for all India programme projects, as well as type of publications. Scientific articles are the most common types of publications in the data set analysed, with book chapters as the second most common type.

*Table 4: Number of publications in India programme*

Type of publications	Number of publications
Scientific articles	92
Book chapters	21
Monographs	2
Total	115
Source: Oxford Research   Research Council of Norway	

The figure 6 shows how the number of publications differs over the years. The programme started in 2010 but the first publications were released in 2011. 2013 is the year with the most publications, and the number of publications has since decreased. This can be due to the fact that several projects ended in 2015 while others have started. It can be therefore expected that the number of publications will increase in the following years, reaching another peak. However, a general problem is that final reports are handed in at the end of the project period but many publications are published later. Thus, a number of publications is normally higher than what the final reports indicate.

Figure 6: Yearly number of publications in the India programme



have not brought any publications, while NEW INDIGO resulted in two scientific articles. However, these two project types consist of only 2 and 1 projects respectively.

Researchers in the most productive projects published about 15 - 25 publications. These were projects under ENERGIX and INDEMB. As the table 11 shows, NORGLOBAL projects also resulted in relatively high number of publications but the number of publications per project was rather low (3 publications per project on average). MILJØ2015

Programme	Book chapters	Scientific articles	Monographs	Total
ENERGIX	9	30	2	41
INDEMB	1	26		27
MILJØ2015				0
JOINT Indnor	1	7		8
KLIMAFORSK		14		14
NEW INDIGO		2		2
NORGLOBAL	10	13		23

Source: Oxford Research | Research Council of Norway

Table 5: Number of different types of publications in each project

The next table shows the distribution of publications on level 1 and 2. On average, within each discipline, about 20% of the publications are expected to be level 2 publications. The share of level 2 publications is below 20%. It can be therefore concluded

ed that the India programme has been so far performing slightly behind on this indicator.



Table 6: Publications' distribution on level 1 and 2, in percentage

	Total (N = 115)	Scientific articles (N = 92)	Book chapters (N = 21)	Mono- graphs (N = 2)
Level 1	83 %	88 %	57 %	100 %
Level 2	17 %	12 %	43 %	0 %

Source: Oxford Research | Research Council of Norway

In addition, it is necessary to point out that book chapters on level 2 represent above 40% of publications in this category. This is the key reason why

the share of level 2 publications is as high as it is; given that the share of level 2 articles is at 12% and the share of monographs on this level corresponds to 0%.

The number of publications per project is however not high. On average, each project produced about five publications.

The figure below shows the distribution of level 1 and 2-publications for each project. For most projects, level 1 publications are the dominant type of publications; however, in 5 projects, the majority of publications have been published through level 2 publication channels.

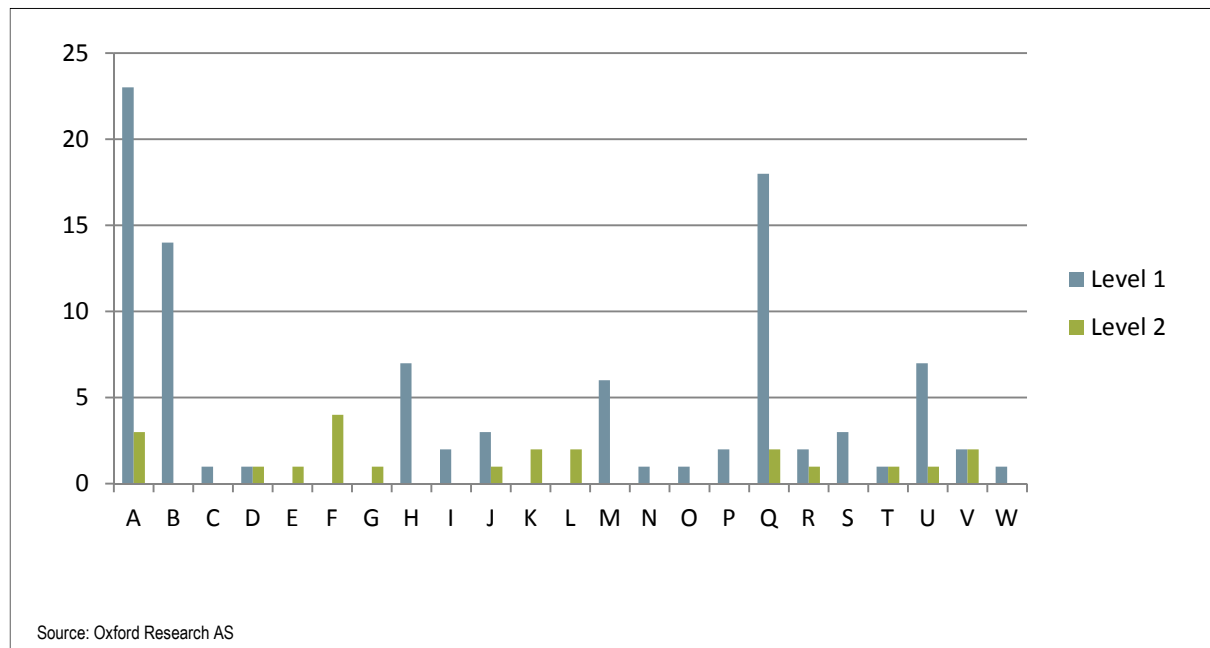


Figure 7: The number of publications distributed on level 1 and level 2

To benchmark the results, we have first compared the numbers from the India programme with publications at the University of Oslo (UiO) and the University of Bergen (UiB). At the UiO, the university staff at the Faculty of Mathematics and Natural Sciences published 31% of its work through level 2 publications channels, while the Faculty of Social Sciences reported 26% of level 2 publications in

2014. In the same year, the corresponding numbers for the Faculty of Mathematics and Natural Sciences, and the Faculty of Social Sciences at the UiB were 31% and 32% respectively.

Secondly, we have compared the results with Pov-Peace programme. In this programme, the share of level 2 publications represented 25%. However,

PovPeace was fully oriented on social science research and therefore this comparison has its limitations.

In general, the results for the India programme projects lie below the average. However, as the figure 7 shows, there is a high degree of variation between the projects. 5 out of 23 projects have only level two publications, which clearly outperform even the universities. Yet it is important to note that these projects have on average 2 publications and the results must be therefore interpreted with carefulness.

The question is whether we should expect better results from the projects financed by the RCN than for general research at the universities.

At one hand, fully financed projects should be held to a high standard, yet at the same time, the research institutes manage a majority of the projects and they operate within a tighter economic framework than the universities.

The final step in the publication analysis was to identify the journals in which the India programme researchers have published their research. Tables below show the journals where India programme researchers have published most of their articles. Table 12 shows journals for natural science and table 13 lists journals oriented on social science. Overall, researchers within natural science have published their results in 46 different journals, while we have registered only 8 journals within social science field.

Table 7: Most popular journals for India programme projects within natural science

Journal title (natural science)	Number of articles
Physical Review E	8
European Physical Journal B	4
Frontiers in Physics	4
Natural Hazards	4
Seismological Research Letters	3
Source: Oxford Research   Research Council of Norway	

Table 8: Most popular journals for India programme projects within social science

Journal title (social science)	Number of articles
The Geographical Journal	3
PS: Political Science and Politics	2
Island Studies Journal	2
Economic and Political Weekly	2
Source: Oxford Research   Research Council of Norway	

In general, there is little consistency in where the researchers publicize their results. Instead, the India programme results have been widely distributed and not limited to a narrow number of journals. This applies especially for researcher in natural science. The number of scientific articles in social science and thereby also journals through which the articles were published is significantly lower when compared to natural science.

**Network analysis of cooperation in publications**

Another perspective is given by the network analysis of publications, demonstrating the intensity and structure of co-authorship between institutes.

The data file for this task was established by firstly listing all authors from the established India programme publications database, and secondly through assigning institutes’ names for each of the authors. This allowed us to observe the pattern of cooperation between the research institutes. “Publication network analysis” gives a different picture of the programme and includes a much smaller number of institutes, than what was the case for the analysis based on data from the proposals. This indicates firstly that the consortia have changed underway, and secondly, that the researchers at the project managing institutes do not always co-author articles with their partners. The latter could also indicate that the cooperation mentioned in the proposals are more in name only, or that the partners deliver data, but are not included in the analysis and writing phase.

As in the previous network analysis of India programme cooperation, the intensity of colour (from

green through yellow, orange to red) and the size of nodes demonstrates the “degree” of cooperation in co-publications.

A single thin green line indicates one publication with authors from two different institutes. The thicker the line is and the redder it appears the more publications were co-published between institutes.

SINTEF Petroleum is clearly a leader in terms of “co-publications” delivered as a project owner. In addition, NORSAR, SINTEF BI, NERSC and UiA are also outstanding institutes when it comes to “co-publications”. Table 15 displays the number of “co-publications” by the top 5 institutes (project owners) on this indicator.

Table 9: Number of “co-publications” by top 5 institutions

Institution	“Co-publications”
SINTEF P	26
NORSAR	20
SINTEF BI	14
NERSC	8
UiA	7

Source: Oxford Research | Research Council of Norway

It is important to note that the reason why URAS is displayed in orange colour in figure 8, is because the institute has had many partners per “co-publications”, and not because the number of “co-publications” is high. We have registered only 4 “co-publications” for URAS, although the institution has in two cases collaborated with 18 partners.

UiO also appears in orange colour given it is the leading institute in terms of “co-publications” in general. (“co-publications” as a project owner plus “co-publications” as a project partner) In total, we have registered 34 “co-publications” by UiO.

Edge size (thickness) indicates a networking parameter called “edge betweenness”, demonstrating the number of connections between each of the institutes using the same colour pattern as described above.

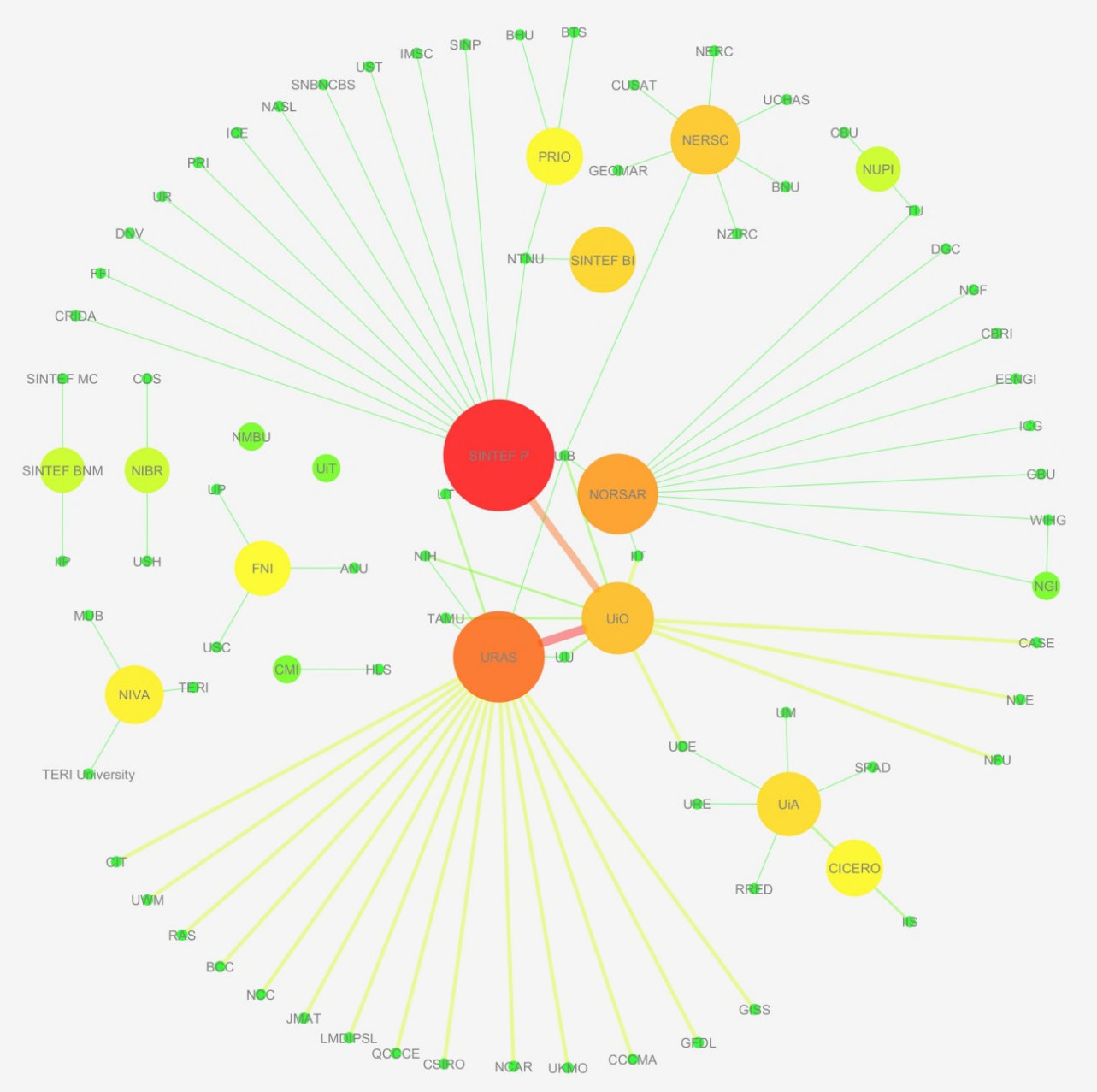
As the figure 8 shows, there are five smaller separated networks of co-publishing institutes that are not connected with the large network. The core institutes within these networks are NIVA, FNI, NIBR and SINTEF BNM. Furthermore, the CMI has published only one publication in cooperation with HLS and therefore this institute has not developed a bigger network.

In addition, there are two Norwegian institutes publishing individually UiT and NMBU, displayed as separate entities in the figure 8. <sup>4</sup>

<sup>4</sup> Abbreviations used are listed in Annex 3

Ongoing evaluation of the Norwegian Programme for Research Cooperation with India

Figure 8: Network analysis of co-publications



Looking at differences between input (partners listed in applications) and output (number of “co-publications”), there is clear imbalance. 39 project owners reported partners in their applications, yet only 13 projects resulted in “co-publications” with the same or higher number of partners.

## 4.5 COOPERATION

### Objective 5

To lay the foundation for cooperation with India in all thematic areas and scientific fields, and encompassing basic research, applied research and innovation. Efforts will be made to ensure the involvement of trade and industry, universities and university colleges, and independent research institutes in both countries

The programme document postulated that efforts are to be made to ensure the involvement of trade and industry, universities and university colleges, and independent research institutes in both countries.

The India programme managed to lay cooperation under several important thematic fields; however, it is far from reaching all thematic areas that would be relevant in the context of countries’ interests and experience.

The India programme was so far a good platform for **understanding and networking with the research landscape in India.**

The portfolio overview gives a picture of large engagement of various actors in both university and research institutes’ sector in Norway, obviously with some organisations being more engaged.

The lack of engagement of industry indicates that programme is far from delivering applied research & innovative solutions to the market.



## 5. Conclusions and recommendations

The evaluation's overall conclusion is that the India programme is a well-managed programme on the right path towards goal attainment.

Foreign policy considerations, the growing role of India as regards global challenges: climate change, energy supply, water resources, disease and welfare issues, as well dynamic growth of India in various areas of research are all parts of the backbone of the programme. These elements influenced the formulation of the programme objectives.

The goals for the programme are set up very broadly, not allowing for precise assessment of delivery so far. However, majority of programme stakeholders praised India programme for the achievements attained, resulting in substantially larger research cooperation with India. In this way, the additionality of the programme is clearly to be assessed as significant.

The goals were not designed using SMART approach, therefore there is no clear possibility to assess goal attainment based on indicators. So far, the projects financed delivered a number of 16 PhDs and 11 post-doctoral studies. In addition to this, a large number of students on various level was reported to participate in projects financed. Reported publications on level 2 are on the level of 17 % of all publications, comparing to standard 20 % benchmark. At the stage of this ongoing evaluation, it might be stated that the programme is producing publications that are only slightly below the average.

The programme's flexible setting, allowing for organisation of joint calls with other RCN thematic programmes, as well as calls with external partners, is found practical and useful in the context of building research cooperation engaging multiple stakeholders within a wide panorama of thematic areas.

Programme is to large extent addressing the existing needs, however some adjustments as regards the thematic areas and clear division between social and natural sciences should be made.

India programme is relatively small, comparing to other RCN programmes. Funding of the programme is also considered too small, if the programme is to cover (with reasonable intervention size) all thematic areas that will be relevant for the current and future research cooperation in India.

Some of the important thematic areas that are prioritized both in Norway and India have not been covered yet, or will require more focus in the future, especially in the fields like nano- and biotechnologies, advanced manufacturing or ICT.

The India programme financed so far a limited number of projects engaging industry. Commercial applications of the research conducted and companies participation are to be prioritized in order to meet the programme goals and assure relevance of the outcomes.

In paragraphs below, more detailed fundings and subsequent recommendations have been presented following the division of evaluation questions. The recommendations made are designed to improve the programme implementation and increase the likelihood of reaching the objectives in the future.

This chapter presents conclusions and recommendations structured according to the evaluation questions. Recommendations are introduced as the various topics are dealt with in due course.

## 5.1 GOALS AND NEEDS

**Relevance: Is there a correlation between goals and the needs that the programme was established to meet?**

The India programme connects policy-level needs with a set of goals revolving around establishing, developing and maintaining wide research cooperation with India. Foreign policy considerations, the role of the NMFA, the Norwegian embassy and elements of science diplomacy, are all parts of the historical backbone of the India programme.

More specifically, the programme was launched to promote collaboration on research and higher education between India and Norway within selected areas, most notably through acting as a “catalyst and facilitator” for research cooperation and competence building.

At the heart of India’s rising status and influence is the perception that the country will be influential in how the international community deals with global challenges related to climate change, energy supply, water resources, disease and welfare services. Internationally, the underlying mission of institutionalized research is about contributing to meeting these challenges.

**The goals of the India programme are highly relevant to these needs and projections.**

Furthermore, the rationale for Norway’s India programme is clearly spelled out in the Programme Work Plan, and the Roadmap for Research Cooperation with India, which tangibly links it to Norway’s overarching research policy.

The five main objectives stated in the Work Plan do not say anything about what knowledge and research should be used *for* – as opposed to many other established programmes in RCN.

**The formal objectives of India programme are expressions of an instrumental take on research where increased cooperation is a goal in and of itself. In this sense, the India pro-**

**gramme is situated in a flexible meta-position that suits its role as a facilitator and catalyst for research cooperation.**

The scope of the programme has been widely defined, and occasionally come across as all-encompassing, for example in its criteria on areas for research cooperation.

While this has likely brought in a constructive ambiguity in the 2010-2015 period, we believe that there are reasons to hone some of the central tenets articulated in the Programme Work Plan in the future.

Since the main objectives of the programme revolve around prime-outcomes of cooperation, a review of the work plan would also include looking at how researcher projects can feed the management with relevant information on the multifaceted modes and workings of cooperation between Norwegian and Indian partners. This is an important part of understanding whether the seed-funding actually yields results.

### **Recommendations:**

*The programme should review and hone the wording of central concepts articulated in the Programme Work Plan. In particular, this should include terms that pertain to cooperation, defining “capacity building” and “competence building”. This exercise also needs to consider how the Indian side understands these concepts.*

*More precise and nuanced information on cooperation should be captured through developing simple KPIs, allowing management to access information which differentiates between pre-existing, established, new and recurring partnerships.*

### **Relevance of Social Sciences**

Naturally, India, being a vast country, often becomes the centre of attention in terms of research topics. However, while the India programme’s objectives are centred on research cooperation, social science projects oftentimes aim at undertaking re-

search *in* India and *on* India. The research topics and subject matter have - to some extent - been more tailored to Norwegian needs, expectations and interests than to Indian stakeholders' needs and interests.

With a view to increase the general interest in social science one should therefore keep in mind that projects should aim to undertake research *with* – not only *on* – India.

Although interviews often revealed that many topics in social science were deemed sensitive, the case study on land rights featured in this evaluation, is an example of how it is possible to undertake research on controversial topics. **This project had strong relevance to society and direct impact into controversial policy debates.**

**Recommendation:**

*In future calls for social science and humanities one might increasingly consider wider geographical and comparative focus in order to boost the relevance for both Indian and Norwegian stakeholders. This should include both generalists and experts on India alike.*

**Relevance of Natural Sciences**

When it comes to projects within the natural sciences, India is an important partner to Norway, especially in the context of trade, investments and economic cooperation. However, even if the programme tried to address industrial applications, innovative projects that link up to industry are relatively few in the India programme portfolio.

There is a number of common topics, where Norway seem to have niches and specialized expertise, and where cooperation with India can be fostered with mutual benefit. Overall, the natural science/technology projects might be lacking industry engagement and market focus, for example in the fields of nano- and bio-technology, or advanced manufacturing.

A simple example of **the programme having technical and commercial impact** is the case on

Elkem Solar featured in this report. This example showcases how a single project gave birth to solidifying partnerships, research and productizing technology.

It should, however, be recognized that there are opposing views on whether India programme should direct more or less attention to applied research. This seems to be quite dependent on the scientific field in question. One view professes that positioning too close to the private sector can be detrimental to linking up to academic partners. This must be taken into consideration.

**Recommendation:**

*The programme should further concentrate on industry and market focus where appropriate. The relevancy of the natural sciences in India programme might be boosted by devoting more attention to applied research in terms of market-oriented, innovative projects that directly link up to industry.*

**5.2 ORGANIZATION**

**Efficiency: Has the organization of the programme been appropriate?**

The India programme is a relatively small programme in the RCN portfolio but stands out in its way of operating. The organization of the programme was found to be efficient and appropriate for its specific context.

The overall impression from interviews was that RCN was prised for the implementation procedures. This includes the call preparation, application forms, application assessments, reporting forms, reporting assistance and follow-up. The follow-up from RCN staff was reportedly systematic and satisfactory.

There will always be a degree of disagreement over selection processes, formulation of calls and priorities. This evaluation found, however, a **predominantly positive attitude among researchers** who have been involved in- and exposed to India programme calls and procedures.

Unilateral calls are simpler to execute, but projects run the risk of not being looked favourably on from the Indian side. Bilateral calls are more in line with the spirit of the India programme, and probably better in terms of reaching the main objectives of the programme. They are, however, time consuming and labour intensive, which is also due to the fact that the Indian side procedurally needs an extra round internally. Multilateral calls have less freedom in terms of influencing and controlling the thematic focus, but can yield great results, while sharing input from RCN and other partners.

**All three main modalities – uni- bi- and multi-lateral calls – were found to have merits, and the management of the India programme balances these well in their strategic thinking.**

**Recommendation:**

*All call types should be maintained in future programme planning. Project selection process should always be characterised by ultimate transparency.*

**Pre-projects have been widely praised** as a great opportunity to clarify project ideas and discuss them with partners. Researchers may need tools to assess the capacity of potential partner institutions in general, and within a given scientific field. While individual researchers can be assessed through looking at bibliometric data, there could be other, generic angles to look for when it comes to gauging, for example, the administrative capacity of a potential partner institution.

The participation of Indian partners on the proposal writing stage was identified as important for the future success of the projects. Optimally, the partners should be present and contribute when designing a project.

**Recommendation:**

*The financing of pre-projects should be continued, allowing for future partners to meet, design their projects and establish better understanding of institutional capabilities.*

Preparation of proposals come with formal obligations on future project partners. In the vast majority of cases, partners commit to what is stated in the proposal, assuming the project is funded. In a few cases, however, bureaucratic hurdles in Indian institutions made it hard to deliver on contractual obligations.

**Recommendation:**

*Another solution for consideration (alternatively or simultaneously with pre-projects) is to organise a small grant scheme, similar to PES2020 scheme, that will support project preparation, including funding of project preparatory meeting and ensuring that the existing concepts and obligations of the proposal are reviewed.*

*Partners should have a chance to come to Norway, discuss research cooperation, and agree on the main points of the proposal as well as contractual obligations.*

### 5.3 LEVEL OF COMMITMENT

**Effectiveness: Has the level of commitment been correct in relation to the objectives?**

The evaluation finds that the **level of commitment in financial terms is not entirely adequate** to match the objectives. India programme is relatively modest in size, but has very wide objectives. This should give rise to a discussion on breadth and depth when it comes to the focus of the programme; it can attempt to do either one, or both.

If India programme is to cover both, this will require a higher allocation and a number of calls in areas that have not been covered thus far. However, if in the future the resources are scarce, the programme may consider allocating money to fewer projects in order to get more impact.

The evaluation sees the wide seed funding approach throughout the initial years of the programme as a well-chosen approach, however, the programme should consider adjusting the size and extent of this approach in the future.

**Recommendation:**

*Adjust programme objectives to the level of projected, future allocations. Scarcer resources should necessitate a narrower focus to maximize impact.*

## 5.4 DELIVERING ON OBJECTIVES

*Effectiveness: How has the programme managed to deliver on its objectives so far? Do the results and preliminary effects of the projects contribute to fulfilling the programme objectives?*

*Bilateral cooperation:* The evaluation found that all stakeholders agree on the utility of the India programme as a platform for strengthening bilateral research cooperation. **The findings in this context strongly indicate that the programme has value-added.**

The programme created significant possibilities for Norwegian researchers to cooperate with India and *vice versa*.

Networking has increased between participating institutions and individual researchers, as can also be observed when it comes to joint publications. Additional spin-offs are also reported. Interviews generally reveal a notion of growing trust and linkages between the research teams from both countries.

**Recommendation:**

*In order to sustain and grow the bilateral networks built already, the Council should formally state and make known the level of long-term financial commitment directed to research cooperation with India.*

*Joint funding:* Interviewees on the government level in India generally praised the cooperation. Even if the preparation of calls and proposal assessments are time-consuming processes due to consultations with partners outside the Council, they are report-

ed to yield good outcomes in terms of defining the thematic focus and engagement of the Indian research institutes. However, the programme still lacks an Indian counterpart for social science.

**Recommendation:**

*Under the existing Programme of Cooperation, the India programme should pursue avenues for institutional cooperation on social science and humanities.*

*Such cooperation could potentially also be forged with the Indian Council of Social Science. Similar to the bilateral calls for natural science calls, this could have positive effects in terms of fostering cooperation and ensuring the inclusion of needs and interests of Indian stakeholders.*

*Multilateral cooperation:* The India programme projects' databases reveal that a significant number of research institutes and individual researchers from other EU countries and America are represented in the consortia.

Projects financed foster relations with other countries through engagement of foreign researchers. These partnerships are, however, accidental and are not triggered by conscious actions (multilateral calls) on programme level.

Interviews with RCN representatives reveal that multilateral calls are difficult to organise, due to regulations of policy constrains. EU calls under Horizon 2020 have no existing mechanisms for prioritising cooperation with particular countries.

**Recommendation:**

*Joint calls with other Nordic countries and other international organisations should be considered. Opportunities for organised joint calls in ERA-NETS should be investigated.*

In the event of future shortages or significant reductions in funding, one should consider omitting or adjusting the objective that pertains to fostering relations with Nordic countries and multilateral organizations.



*Capacity building:* Most projects implemented engaged PhD students and occasionally post doc students. These were not always students who had their studies financed by the India programme. On the Indian side, PhD students often had other sources of funding.

Projects also give possibilities for Master students on both sides to gain experience in international research cooperation. Norwegian research institutes continued building their knowledge, experience and research capacity on India. The reported numbers partially confirm the positive picture. In total, the programme has resulted in 16 doctoral and 11 post-doctoral fellowship grants. Projects also reported 2 visiting- and 1 overseas- researcher grants. It is expected that projects will report more deliveries when it comes to indicators reflecting capacity building in the future.

A total of 41 researcher projects in the India programme were subject to review of publications. In 18 cases, we have not registered any publications thus far. For the remaining 23 projects, we have registered 115 scientific publications. The results of publication analysis bring the notion that scientific quality of these produced results for the India programme projects lie slightly below the average.

**Recommendation:**

*The ex post evaluation of the programme is recommended to be carried out minimum one year after the completion of projects, allowing for the full publication results to emerge. In such case, additional round of reporting on publication might be needed that will grasp the results produced after projects delivered their final reports.*

*Cooperation in all thematic areas:* The programme objective is to lay the foundation for cooperation with India in all thematic areas and scientific fields, encompassing basic research, applied research and innovation, with efforts that ensure the involvement of trade and industry, universities and university colleges, and independent research institutes in both countries. As mentioned before, with such a wide range of objectives, it may not be feasible for a programme with limited resources to deliver.

**Recommendation:**

*The project selection criteria in the future should consider two strategic angles, essentially emphasizing one or finding a balance between: incentivising the deepening of existing partnerships and cooperation on the one hand, and creating new co-operation linkages, on the other.*

## 5-5 THEMATIC AREAS AND PROGRAMME PRIORITIES

**Relevance: Have the thematic areas so far met the programme's priorities? What are the specific thematic areas that should be covered further?**

The broadly defined thematic areas and objectives defined in the programme plan give rise to a degree of disagreement and debate concretely questioning allocation of funds, and choice of thematic areas. The evaluation did not find this discontent to be prevalent among interviewees, but it is worth noting that the breadth of the programme can be problematic in this regard.

**Recommendation:**

*Clear split in programme allocation should be outlined in the programme plan, allocating resources available to social science and humanities versus natural science projects.*

A number of areas prioritized in Indian strategic development plans could be linked up to existing competence found on the Norwegian side. In particular, this might include profiling the programmes (as far as natural science is concerned) around biotech, smart manufacturing and renewable energy.

**Recommendation:**

*To an increasing extent within natural sciences, the programme should focus on selected thematic fields that are relevant for industry in both countries, while encouraging industry participation.*



## Annex 1: India programme projects' disciplines

Table 10: Discipline overview over pre-projects

No.	Project name (Pre-projects) N - 21	Environment	Climatology	Renewable Energy	Materials science	Aquaculture	Hydrology	Chemistry	Physics	Seismology	Biology	Political Science	Economics	Sociology	Anthropology	History	Migration	Entrepreneurship	Innovation	Sustainability	Development	
		1.	Air pollution exposure assessment by land-use regression (LUR) - A pilot study aiming for health effects of air pollution in India	1																		
2.	Climate Change, Reproductive Health and Environmental Contaminants. A Child Cohort Study in three Regions of India.	1	1																			
3.	Climate Change as an opportunity towards Adaptive sustainable Aquaculture	1			1							1								1	1	
4.	Conceptualizing and Contextualizing climate change and migration -Developing a Future Research Agenda		1														1					
5.	Cosmopolitanism and its Paradoxes: Diversity, Development and the Divine													1	1	1						
6.	Dislocation Removal from Silicon				1		1															
7.	Economic Growth and Sustainable Development in India												1									1
8.	Fracture propagation through disordered porous media: A safety issue for CO2 storage and petroleum production	1	1	1																		
9.	Impact of Climate Change on Hydropower Development: Water Resources Management for Multiple Uses in the Godavari River Basin, India	1					1															
10.	India and globalisation: Regional disparities, industrial development and inclusive growth (INGRID)												1									1
11.	International Cooperation on Biohydrometallurgy				1						1											
12.	Nanophase materials for hydrogen storage applications				1			1	1													
13.	Politics of Security in India											1			1	1						
14.	Predicting biodiversity responses on tropical mountaintops and in forest canopies under climate change	1	1																			
15.	Prepare for advanced analysis of reservoir-triggered seismicity, Koyna Dam, India			1						1												
16.	Responding to Local Poverty - On what the affluent ought to do and what the poor are permitted to do											1	1									1
17.	Social Entrepreneurship: A Catalyst for Sustainable Development																	1	1	1	1	1
18.	Sunbelt-located optimized solar modules made in India of solar grade silicon from Elkem Solar AS			1	1																	
19.	Sustainable development of geothermal energy in North Western Indian Himalayas			1																	1	1
20.	Transformation and Friction in Globalizing India											1	1	1								
21.	ZnO thin films for Advanced Photovoltaics			1	1				1													
<b>SUM</b>		<b>6</b>	<b>4</b>	<b>4</b>	<b>6</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>5</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>6</b>	

Source: Oxford Research | Research Council of Norway

Table 11: Discipline overview over researcher projects

No.	Project name (Researcher projects) N - 41	Disciplines																			
		Environment	Climatology	Renewable Energy	Materials science	Meteorology	Hydrology	Chemistry	Geology	Ecology	Biology	Political Science	Economics	Sociology	Anthropology	Law	Geography	Migration	Gender	Sustainability Development	
1.	Climate Induced Mobilization of Persistent Organic Pollutants (POPs) in Rivers in India (INDNOPOP)	1	1																		
2.	Too much, too less, too bad? - Adapting to climate change impacts on water quantity and quality in the dry-lands of Maharashtra, India		1						1			1	1								
3.	Decadal to multi-decadal variability in the Indian Monsoon Rainfall (IMR) and teleconnection with Atlantic Multidecadal Oscillation (AMO)		1			1	1	1													
4.	Climate change, uncertainty and transformation										1		1	1						1	
5.	Coping with Climate: Assessing Policies for Climate Change Adoption and Transport Sector Mitigation in Indian Cities		1			1					1	1	1							1	
6.	The response of the hydrological system in India to climate change		1			1	1	1	1												
7.	Climate Change and its Impacts on Selected Indian Hydrological Systems using Earth System and High-Resolution Modeling		1				1														
8.	Operation of the Smart Grid with Wide Area Information					1															
9.	Photoelectrochemical Splitting of Water with N-doped Graphene-Hematite Composites for Hydrogen Production					1															
10.	Hydrodynamic Loads on Offshore Wind Turbine Substructures due to Nonlinear Irregular Breaking, High Steep and Extreme Waves					1		1													
11.	EcoLodge - Efficient production of Butyl-Butyrate from Lignocellulose derived Sugars					1			1												
12.	India - Fracture and Flow in Porous Media: Application in geothermal installation, hydrocarbon production and CO2 storage					1	1														
13.	India - Wave Energy Converters for Combined Clean Energy and Coastal Protection					1															
14.	India - Energy from the lava in Indian Himalayas (Agnayodgara Urja)	1	1	1																	
15.	A comparative study of socio-technical innovations and sustainability factors for up-scaling in village scale solar power supply models					1	1						1			1				1	
16.	International objectives for adaptation, access and benefit sharing: Effects on the management of plant genetic resources in India and Nepal											1			1					1	
17.	Perceptions and understandings of climate change and migration: Conceptualising and contextualising for Lakshadweep and the Maldives		1													1	1			1	
18.	Value chains for sustainable conservation, integrated development, and livelihoods promotion: An application to butterfly farming in India																			1	1
19.	Making Women Count for Peace: Gender, Empowerment and Conflict in South Asia											1		1				1			
20.	Self-help or social transformation: The role of women in local governance in Kerala (India) and South Africa											1		1		1	1			1	
21.	India: The state, globalization and industrial development in India: the political economy of regulation and											1	1								



## Annex 2: Results overview

Table 12: Fellowship grants in India programme

No.	Project name (Researcher projects) N - 41	Doctoral fellowship	Post-doctoral fellowship	Overseas researcher grant	Visiting researcher grant
1.	Climate Induced Mobilization of Persistent Organic Pollutants (POPs) in Rivers in India (INDNOPOP)				
2.	Too much, too less, too bad? - Adapting to climate change impacts on water quantity and quality in the drylands of Maharashtra, India	2			
3.	Decadal to multi-decadal variability in the Indian Monsoon Rainfall (IMR) and teleconnection with Atlantic Multidecadal Oscillation (AMO)	1	1		
4.	Climate change, uncertainty and transformation		1	1	
5.	Coping with Climate: Assessing Policies for Climate Change Adoption and Transport Sector Mitigation in Indian Cities				
6.	India - Fracture and Flow in Porous Media: Application in geothermal installation, hydrocarbon production and CO2 storage				
7.	India - Wave Energy Converters for Combined Clean Energy and Coastal Protection	2			
8.	India - Energy from the lava in Indian Himalayas (Agneyodgara Urja)				
9.	A comparative study of socio-technical innovations and sustainability factors for up-scaling in village scale solar power supply models		1		
10.	International objectives for adaptation, access and benefit sharing: Effects on the management of plant genetic resources in India and Nepal				
11.	Perceptions and understandings of climate change and migration: Conceptualising and contextualising for Lakshadweep and the Maldives				
12.	Value chains for sustainable conservation, integrated development, and livelihoods promotion: An application to butterfly farming in India				
13.	Making Women Count for Peace: Gender, Empowerment and Conflict in South Asia				
14.	Self-help or social transformation: The role of women in local governance in Kerala (India) and South Africa				
15.	Water related effects of changes in glacier mass balance and river runoff in western Himalaya, India: past, present and future (GLACINDIA)		2		
16.	Indnor: Hydrologic sensitivity to Cryosphere-Aerosol interaction in Mountain Processes (HyCAMP)	1			
17.	Intestinal parasites in Northern India: effects of climate patterns on prevalence of different intestinal parasites in children	1			
18.	Operation of the Smart Grid with Wide Area Information	1	1		
19.	Photoelectrochemical Splitting of Water with N-doped Graphene-Hematite Composites for Hydrogen Production				
20.	Hydrodynamic Loads on Offshore Wind Turbine Substructures due to Nonlinear Irregular Breaking, High Steep and Extreme Waves	1	1		
21.	EcoLodge - Efficient production of Butyl-Butyrate from Lignocellulose derived Sugars	1			
22.	India and Norway: A Comparative Study of Democracy and Welfare-based Growth				
23.	Earthquake Hazard and Risk Reduction on the Indian Subcontinent	5			
24.	Climate change mitigation and adaptation in forest plantation sector				
25.	Inclusive Growth in India				
26.	Adsorption based technology for CO2 recovery				
27.	China in Indian Strategic thinking				
28.	The response of the hydrological system in India to climate change				

29.	Climate Change and its Impacts on Selected Indian Hydrological Systems using Earth System and High-Resolution Modeling		1		
30.	India: The state, globalization and industrial development in India: the political economy of regulation and deregulation				
31.	India: Savings Behaviour and the Introduction of Mobile Banking in India				
32.	India: Politics and Development in India: A micro-level study of who gets what, when, and how		1		
33.	India: Urbanizing India: Urbanization, Exclusion and Climate Challenges				
34.	India: Land Rights, Environmental Protection and Inclusive Development within India's Federal System				
35.	India: Food Security in India: the interactions of Climate Change, Economics, Politics and Trade				
36.	India: Agrarian contracts and rural poverty in India				
37.	India: Indias climate and energy policy strategy in a globalizing world: Changing global structures and international cooperation (INDGLOB)				
38.	India: Conditions for women's inclusive and effective political participation in South Asia				
39.	Impact of climate and land use change on hydrological response (surface and sub-surface) of Beas basin (up to Pandoh dam)	1	1		2
40.	In-silico design and mechanistic studies of clean-energy materials				
41.	Design and Development of Functional Foods from Agri-and Marine waste for Value Addition		1		
<b>SUM</b>		16	11	1	2

Source: Oxford Research | Research Council of Norway

Table 13: Dissemination of capacity building

No.	Project name (Researcher projects) N - 38	General outreach activities	User-oriented outreach activities	Introduction of new/improved methods/ models/ technology for increased value creation	Commercial results with contributions from project	New business	Business oriented R & D results	Scientific publications
1.	Climate Induced Mobilization of Persistent Organic Pollutants (POPs) in Rivers in India (INDNOPOP)				1			2
2.	Too much, too less, too bad? - Adapting to climate change impacts on water quantity and quality in the drylands of Maharashtra, India	4		2				
3.	The response of the hydrological system in India to climate change	1	19	1	1		3	
4.	Decadal to multi-decadal variability in the Indian Monsoon Rainfall (IMR) and teleconnection with Atlantic Multidecadal Oscillation (AMO)	3	17					7
5.	Climate Change and its Impacts on Selected Indian Hydrological Systems using Earth System and High-Resolution Modeling	5	73					4
6.	A comparative study of socio-technical innovations and sustainability factors for up-scaling in village scale solar power supply models	2	5	1				1

7.	Making Women Count for Peace: Gender, Empowerment and Conflict in South Asia	11	22					3
8.	International objectives for adaptation, access and benefit sharing: Effects on the management of plant genetic resources in India and Nepal	7	10					5
9.	Self-help or social transformation: The role of women in local governance in Kerala (India) and South Africa	3	9					2
10.	Perceptions and understandings of climate change and migration: Conceptualising and contextualising for Lakshadweep and the Maldives	14	21					12
11.	Value chains for sustainable conservation, integrated development, and livelihoods promotion: An application to butterfly farming in India	1	32	2		1		4
12.	India - Fracture and Flow in Porous Media: Application in geothermal installation, hydrocarbon production and CO2 storage	31	30					29
13.	India - Wave Energy Converters for Combined Clean Energy and Coastal Protection		9					20
14.	India - Energy from the lava in Indian Himalayas (Agneyodgara Urja)	4	11	2	1		1	
15.	Earthquake Hazard and Risk Reduction on the Indian Subcontinent		32					28
16.	India and Norway: A Comparative Study of Democracy and Welfare-based Growth	2	2					4
17.	Climate change mitigation and adaptation in forest plantation sector.	3	7					2
18.	Inclusive Growth in India		5					1
19.	Adsorption based technology for CO2 recovery.		5		1		2	2
20.	Water related effects of changes in glacier mass balance and river runoff in western Himalaya, India: past, present and future (GLACINDIA)							
21.	Indnor: Hydrologic sensitivity to Cryosphere-Aerosol interaction in Mountain Processes (HyCAMP)	3	4		1		1	
22.	India: The state, globalization and industrial development in India: the political economy of regulation and deregulation							
23.	India: Savings Behaviour and the Introduction of Mobile Banking in India							
24.	India: Politics and Development in India: A micro-level study of who gets what, when, and how	11						
25.	India: Urbanizing India: Urbanization, Exclusion and Climate Challenges	4	7					4
26.	India: Land Rights, Environmental Protection and Inclusive Development within India's Federal System	3	11					1
27.	India: Food Security in India: the interactions of Climate Change, Economics, Politics and Trade	2	2					
28.	India: Agrarian contracts and rural poverty in India							
29.	India: Indias climate and energy policy strategy in a globalizing world: Changing global structures and international cooperation (INDGLOB)							1
30.	India: Conditions for women's inclusive and effective political participation in South Asia		1					
31.	Intestinal parasites in Northern India: effects of climate patterns on prevalence of different intestinal parasites in children	2	1	1				2



32.	Climate change, uncertainty and transformation		7					
33.	Coping with Climate: Assessing Policies for Climate Change Adoption and Transport Sector Mitigation in Indian Cities	0						
34.	China in Indian Strategic thinking	4						
35.	Operation of the Smart Grid with Wide Area Information							
36.	Photoelectrochemical Splitting of Water with N-doped Graphene-Hematite Composites for Hydrogen Production							
37.	Hydrodynamic Loads on Offshore Wind Turbine Substructures due to Nonlinear Irregular Breaking, High Steep and Extreme Waves							
38.	EcoLodge - Efficient production of Butyl-Butyrate from Lignocellulose derived Sugars							
<b>SUM</b>		<b>120</b>	<b>342</b>	<b>9</b>	<b>5</b>	<b>1</b>	<b>7</b>	<b>134</b>
<b>Source: Oxford Research   Research Council of Norway</b>								

## Annex 3: Abbreviations used in network analysis

Abbreviation	Institute
<b>ACTS</b>	African Centre for Technology Studies, Kenya
<b>AIDMI</b>	All India Disaster Mitigation Institute, India
<b>AMU</b>	Ambedkar University, India
<b>ANU</b>	Australian National University, Australia
<b>ATREE</b>	Ashoka Trust for Research in Ecology and the Environment, India
<b>AVVU</b>	Amrita Vishwa Vidyapeetham University, India
<b>BASIX</b>	BASIX Sub-K iTractions Ltd., India
<b>BCC</b>	Beijing Climate Center, China Meteorological Administration, China
<b>BCHAU</b>	Bidhan Chandra Agricultural University, India
<b>BHU</b>	Malaviya Centre for Peace Research - Banaras Hindu University, India
<b>BNU</b>	Beijing Normal University, India
<b>BTS</b>	Berlin Graduate School for Transnational Studies, Germany
<b>BVRIT</b>	Padmasri Dr BV Raju Institute of Technology, India
<b>CAS, UR</b>	University of Reading, Centre for Agricultural Strategy, UK
<b>CASE</b>	Camco Advisory Services, South Africa
<b>CBRI</b>	Central Building Research Institute, India
<b>CBU</b>	University of California, Berkeley, USA
<b>CCCMA</b>	Canadian Centre for Climate Modeling and Analysis, Canada
<b>CDE, UiO</b>	University of Oslo, Centre for Development and the Environment, Norway
<b>CDS</b>	Centre for Development Studies, Prasanth Nagar, India
<b>CEREM</b>	Centre for Earth Research & Env. Mgmt, India
<b>CESP, JNU</b>	Centre for Economic Studies and Planning, Jawaharlal Nehru University, India
<b>CICERO</b>	Cicero Centre for Climate Research, Norway
<b>CISPL</b>	Complete Instrumentation Solutions Private Limited, India
<b>CIT</b>	California Institute of Technology, USA
<b>CMI</b>	Chr. Michelsen Institute for Science and Intellectual Freedom, Norway
<b>CMP, SINP</b>	Condensed matter Physics, Saha Institute of Nuclear Physics, India
<b>COSIR</b>	Council of Scientific & Industrial Research, India
<b>CPR</b>	Centre for Policy Research, India
<b>CRIDA</b>	Central Research Institute for Dryland Agriculture, India
<b>CSD</b>	Council for Social Development, India
<b>CSDS, PCD</b>	Centre for the Study of Developing Societies, Programme for Comparative Democracy, India
<b>CSIRO</b>	Commonwealth Scientific and Industrial Research Organisation, Australia
<b>CU</b>	Calcutta University
<b>CUSAT</b>	Cochin University of Science and Technology, India
<b>CUTS</b>	Consumer Unity & Trust Society, India

<b>DA</b>	Development Alternatives, India
<b>DAPN, NIPH</b>	Department of Air Pollution and Noise, Norwegian Institute of Public Health, Norway
<b>DCE, AEC</b>	Department of Civil Engineering Assam Engineering College, India
<b>DCP, UiB</b>	University of Bergen, Department of Comparative Politics, Norway
<b>DCRC, UDE</b>	Developing Countries Research Centre, University of Delhi, India
<b>DGC</b>	Diphu Government College, India
<b>DGM, GSB</b>	Department of Geology and Mines, Geological Survey of Bhutan, Bhutan
<b>DIEDS, NMBU</b>	Norwegian University of Life Sciences, Department of International Environment and Development Studies, Norway
<b>DNV</b>	Det Norske Veritas AS, Research and Innovation, Høvik, Norway
<b>DPS, NLSC</b>	Department of Political Science Nambol L. Sanoi College, India
<b>DPS, UiO</b>	Department of Political Science, University of Oslo, Norway
<b>DSE, DU</b>	Delhi School of Economics, University of Delhi, India
<b>DSHG, UiO</b>	Department of Sociology and Human Geography, University of Oslo, Norway
<b>Elkem S</b>	Elkem Solar AS - Kristiansand, Norway
<b>FEST, NTNU</b>	Faculty of Engineering Science and Technology, Norwegian University of Science and Technology, Norway
<b>FFI</b>	Norwegian Defense Research Establishment, Kjeller, Norway
<b>FH, NTNU</b>	Faculty of Humanities, Norwegian University of Science and Technology, Norway
<b>FH, UiO</b>	Faculty of Humanities, University of Oslo, Norway
<b>FICCC</b>	Fundacio Institut Catala de Ciències de Clima, Spain
<b>FITMEE, NTNU</b>	Faculty of Information Technology, Mathematics and Electrical Engineering, Norwegian University of Science and Technology, Norway
<b>FJS, UiB</b>	University of Bergen, The faculties' joint secretariat, Norway
<b>FMNS, UiO</b>	Faculty of Mathematics and Natural Sciences, University of Oslo, Norway
<b>FMR</b>	The Foundation for Medical Research, India
<b>FNI</b>	Fridtjof Nansen Institute, Norway
<b>FRCH</b>	The Foundation for Research in Community Health, India
<b>FST, UiT</b>	Faculty of Science and Technology, University of Tromsø, Norway
<b>GBU</b>	Gautam Budha University, Greater Noida, India
<b>GCSC</b>	German Climate Service Center, Germany
<b>GEOMAR</b>	GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany
<b>GFDL</b>	Geophysical Fluid Dynamics Laboratory, Princeton, USA
<b>GIG</b>	The Graduate Institute, Geneva, Switzerland
<b>GISS</b>	Goddard Institute for Space Studies, New York, USA
<b>GRID</b>	GRID-Arendal, Norway
<b>GUIDE</b>	Gujarat Institute of Desert Ecology, India
<b>HDF</b>	Human Development Foundation, USA
<b>HLA</b>	Harvard Law School, USA
<b>IACS</b>	Indian Association for the Cultivation of Science, India
<b>ICE</b>	Itasca consultants, Ecully, France

<b>ICG</b>	International Centre of Geohazards, Norway
<b>IDS</b>	Institute of Development Studies, UK
<b>IDSA</b>	Institute for Defence Studies & Analyses , India
<b>IEG, DU</b>	Institute of Economic Growth, Dehli University Enclave, India
<b>IFE</b>	Institute for Energy Technology, Norway
<b>IFN, NMBU</b>	Institute for Nature, Norwegian University of Life Sciences, Norway
<b>IFPRI</b>	International Food Policy Research Institute, New Delhi, India
<b>IIHMR</b>	Institute of Health Management Research, India
<b>IIMA</b>	Indian Institute of Management Ahmedabad, India
<b>IIMC</b>	Indian Institute of Management Calcutta, India
<b>IIP</b>	Indian Institute of Petroleum, Dehradun, India
<b>IIS</b>	Indian Institute of Science, India
<b>IIS, CBU</b>	University of California Berkeley, Institute of International Studies, USA
<b>IISCST</b>	Indian Institute of Science Centre for Sustainable Technology, India
<b>IISECE</b>	Indian Institute of Science Electrical Communication Engineering, India
<b>IIT</b>	Indian Institute of Technology, Roorkee, India
<b>IITM</b>	Indian Institute of Tropical Meteorology, India
<b>IMS, NTNU</b>	Institute of Mathematical Sciences, Norwegian University of Science and Technology, Norway
<b>IMSC</b>	Institute of Mathematical Sciences, Chennai, India
<b>IPCS</b>	Institute of Peace & Conflict studies, India
<b>IRCTWC</b>	Interuniversity Research Center for Tehnology, Work and Culture, Austria
<b>IRS, AU</b>	Institute of Remote Sensing - Anna University, India
<b>ISEC</b>	Institute for Social and Economic Change, India
<b>ISOR</b>	Iceland Geo Survey, Iceland
<b>IWMI</b>	IWMI Sub Regional Office for Southern Africa, South Africa
<b>IØT, NTNU</b>	Department of Industrial Economics and Technology Management, Norwegian University of Science and Technology, Norway
<b>JMAT</b>	Japan Meteorological Agency, Tsukuba, Japan
<b>JNU</b>	Jawaharlal Nehru University, India
<b>JUK</b>	Jadavpur University, Kolkata, India
<b>KEFRI</b>	Kenya Forestry Research Institute, Kenya
<b>KU</b>	Kenyatta University, Kenya
<b>LMDIPSL</b>	Laboratoire de Météorologie Dynamique, Institute Pierre Simon Laplace, France
<b>MARINTEK</b>	The Norwegian Marine Technology Research Institute, Norway
<b>MCPR, BHU</b>	Malaviya Centre for Peace Research - Banaras Hindu University, India
<b>MCRG</b>	Mahanirban Calcutta Research Group, India
<b>MET</b>	Norwegian Meteorological Institute, Norway
<b>MNNIT</b>	Motilal Nehru Nat'l Inst of Technology Allahabad, India
<b>MUB</b>	Masaryk University, Brno, Czech Republic
<b>NASL</b>	Centre for Advanced Study at the Norwegian Academy of Science and Letters, Norway

<b>NCAR</b>	National Center for Atmospheric Research, USA
<b>NCC</b>	Norwegian Climate Centre, Meteorological Institute, Norway
<b>NCCR N-S</b>	South Asia Coordination Office National Centre of Competence in Research North-South, Nepal
<b>NERC</b>	Nansen Environmental Research Centre, Norway
<b>NERSC</b>	Nansen Environmental and Remote Sensing Center, Norway
<b>NESRC</b>	North Eastern Social Research Centre, India
<b>NFU</b>	Nanjing Forestry University, China
<b>NGF</b>	National Geotechnical Facility, India
<b>NGI</b>	Norwegian Geotechnical Institute, Norway
<b>NIBIO</b>	Norwegian Institute of Bioeconomy Research, Norway
<b>NIBR</b>	Norwegian Institute for Urban and Regional Research, Norway
<b>NIDS, NDUC</b>	Norwegian Institute for Defence Studies, Norwegian Defence University College, Norway
<b>NIH</b>	National Institute of Hydrology, India
<b>NILU</b>	Norwegian Institute for Air Research, Norway
<b>NITH, DCE</b>	National Institute of Technology Hamirpur Department of Civil Engineering, India
<b>NIVA</b>	The Norwegian Institute for Water Research, Norway
<b>NMBU</b>	Norwegian University of Life Sciences, Norway
<b>NORSAR</b>	Norsar Foundation, Norway
<b>NTNU</b>	Norwegian University of Science and Technology, Norway
<b>NUPI</b>	Norwegian Institute of International Affairs, Norway
<b>NVE</b>	Norwegian Water Resources and Energy Directorate, Norway
<b>NZIRC</b>	Nansen-Zhu International Research Center, China
<b>OKDISCD</b>	Omeo Kumar Das Institute for Social Change and Development, India
<b>ORF</b>	Observer Research Foundation, India
<b>OWCP</b>	OWC Power AS, Norway
<b>PIMERC</b>	Postgraduate Inst. of Medical Education & Research Chandigarh, India
<b>POLYTEC</b>	Polytec Foundation, Norway
<b>POU</b>	Pondicherry University, India
<b>PRI</b>	Polytec Research Institute, Haugesund, Norway
<b>PRIO</b>	Peace Research Institute Oslo, Norway
<b>PU</b>	Panjab University, India
<b>QCCCE</b>	Queensland Climate Change Centre of Excellence, Australia
<b>RAS</b>	Russian Academy of Sciences, Moscow, Russia
<b>RNT</b>	Rainpower Norway, Deperment Trondheim, Norway
<b>RRED</b>	Risk Reduction Education for Disasters, UK
<b>RUB</b>	Royal University of Bhutan, Bhutan
<b>SAD, NTNU</b>	Norwegian University of Science and Technology, Student and Academic Division
<b>SAWTEE</b>	South Asia Watch on Trade, Economics & Environment, Nepal
<b>SEED, UM</b>	School of Environment & Development University of Manchester, UK

<b>SIFO</b>	National Institute for Customer Research, Norway
<b>SINP</b>	Saha Institute of Nuclear Physics, Kolkata, India
<b>SINTEF BI</b>	Sintef Building and Infrastructure, Norway
<b>SINTEF BNM</b>	Sintef biotechnology and nano-medicine, Norway
<b>SINTEF E</b>	Sintef Energy AS, Norway
<b>SINTEF MC</b>	Sintef materials and chemistry, Norway
<b>SINTEF P</b>	Sintef Petroleum AS, Norway
<b>SJVN</b>	SJVN Limited - Geology and Instr. Rampur H.E.P., India
<b>SMS, CU-SAT</b>	School of Marine Sciences Cochin University of Science and Technology, India
<b>SNBNCBS</b>	Satyendra Nath Bose National Centre for Basic Sciences, Kolkata, India
<b>SPAD</b>	School of Planning and Architecture, New Dehli, India
<b>SPAD</b>	School of Planning and Architecture, New Dehli, India
<b>STIH</b>	Statkraft IH Holding AS, Norway
<b>SUSSEX</b>	University of Sussex, UK
<b>TAMU</b>	Texas A&M University, USA
<b>TERI</b>	The Energy and Resources Institute, India
<b>TITAN</b>	Titan Energy Systems Ltd., India
<b>TU</b>	Temple University, USA
<b>TU</b>	Tezpur University, India
<b>TØI</b>	The Institute of Transport Economics, Norwegian Centre for Transport Research, Norway
<b>UAS</b>	University of Agricultural Sciences, India
<b>UCAR</b>	University Corporation for Atmospheric Research, USA
<b>UCHAS</b>	University of Chinese Academy of Sciences, China
<b>UDE</b>	University of Delhi, India
<b>UiA</b>	University of Agder, Norway
<b>UiB</b>	University of Bergen, Norway
<b>UiO</b>	University of Oslo, Norway
<b>UiT</b>	University of Tromsø, Norway
<b>UKMO</b>	UK Met Office, Exeter, UK
<b>UM</b>	University of Manchester, UK
<b>UNIV</b>	UNIVERSITAS, Norway
<b>UP</b>	Symbiosis Institute of International business, University of Pune, India
<b>UR</b>	Géosciences Rennes, University of Rennes, France
<b>URAS</b>	Uni Research AS, Norway
<b>URE</b>	University of Reading, Reading, UK
<b>USC</b>	Unitarian Service Committee, Canada
<b>USH</b>	University of Sheffield, UK
<b>USH</b>	University of Sheffield, UK
<b>UST</b>	University of Strasbourg, Strasbourg, France



<b>UT</b>	University of Tokyo, Japan
<b>UU</b>	Uppsala University, Sweden
<b>UW</b>	University of Witwatersrand, South Africa
<b>UWM</b>	University of Wisconsin-Madison, USA
<b>Walamtari</b>	Water and Land Management Training and Research Institute, India
<b>WIHG</b>	Wadia Institute of Himalayan Geology, India
<b>WISCOMP</b>	Women in Security Conflict Management and Peace, India
<b>XLRI</b>	XLRI School of Business & Human Resources, India



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