



THE SOUTH AFRICA – NORWAY RESEARCH COOPERATION ON BLUE ECONOMY,
CLIMATE CHANGE, THE ENVIRONMENT AND SUSTAINABLE ENERGY


SANOCEAN


Mid Term Review

8 July 2022

Review Committee

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List of Abbreviations

DSI – the Department of Science and Innovation (in South Africa)

ECR – Early Career Researchers

HCD – Human Capacity Development

HDI – Historically Disadvantaged Institutions

IC – International Committee

JC – Joint Committee

MFA – the Ministry of Foreign Affairs (in Norway)

NOK – Norwegian krone

NRF – the National Research Foundation (in South Africa)

RCN – the Research Council of Norway

PI – Principal Investigator

SANCOOP – South Africa - Norway Research Co-Operation on Climate, the Environment and Clean Energy (2013-2017)

SANOCEAN - South Africa - Norway Research Co-operation on Blue Economy, Climate Change, the Environment and Sustainable Energy (2018-2023)

SDG – Sustainable Development Goals

ZAR – South African Rand

1. Executive Summary

“South Africa – Norway Research Co-operation on Blue Economy, Climate Change, the Environment and Sustainable Energy”, SANOCEAN 2018-2023, constitutes phase IV of a long-standing research partnership between South Africa and Norway. The overall goal of SANOCEAN is enhanced knowledge-based policies and decisions for sustainable development in the areas of oceans and ocean space (blue economy), the environment (with emphasis on oceans and pollution), climate change and sustainable energy in South Africa and Norway. The research needs to be relevant to South African and Norwegian priorities. On a wider scale, this Programme aims to contribute to achieving the Sustainable Development Goals (SDGs).

A panel of four has conducted a mid-term review of SANOCEAN in accordance with *Terms of Reference* provided by the National Research Foundation (NRF). The purpose of the mid-term review was to provide an overview of progress to date, achievements, challenges, and possible recommendations to better implement SANOCEAN for the remaining period of funding. SANOCEAN is due to end in 2023 with a comprehensive programme evaluation (some projects will be requesting cost extensions). The panel was guided to focus on the period 1 December 2017 to 31 March 2021, and to confine the scope of the evaluation to (i) governance and management, (ii) review of selected joint research projects, and provide (iii) recommendations. The panel worked through May and June 2022 on a range of aspects of the review which are detailed in this report, followed by recommendations. The key findings and observations were as follows:

Governance and management

Reported mid-term results indicate that the overall goal of producing enhanced knowledge will be achieved, and that the activities are well aligned with national priorities in both countries, as well as with the SDGs.

We believe the International Committee (IC) and the Joint Committee (JC) have fulfilled their roles in accordance with the *Framework Document*.

We believe the Secretariat would have benefitted from more explicit description of the differing operational responsibilities between NRF and the Research Council of Norway (RCN) (as well as the distinction between their mandates), and a stronger adherence to the timeline

in the *Framework Document* – including the timing of convening a panel for this Mid-Term Review.

Regarding administrative incompatibilities between NRF and RCN, we believe decisions and actions taken by the JC and the Secretariat were appropriate, although these challenges could preferably have been identified and resolved at an earlier stage of the programme.

Regarding delays due to Covid-19, we believe decisions and actions taken by the JC and the Secretariat were appropriate, timely, and adequate.

The secondary programme goal of producing entrepreneurs and facilitating general business development has, however, clearly received less attention than stipulated by the funding partners.

Despite being emphasized in both the *Framework Document* and the *SANCOOP Review Report*, the involvement of Historically Disadvantaged Institutions (HDIs) in South Africa remains disappointingly low.

Overall, we perceive SANOCEAN to be well designed, and we see no need for adjustments during the remaining 1½ years of the programme.

Personal relationships and networks between researchers in South Africa and Norway have clearly been further strengthened during SANOCEAN, thereby improving the sustainability of the institutional cooperation should bilateral financial support come to an end.

Projects and Programme

- We would strongly recommend that funding for South African postgraduate students be ringfenced going forward. The model of South African postgraduate students on projects applying for the open NRF competitive pool of funding was a common and significant challenge for all projects.
- Projects were frequently challenged on the resignation of a PI (in one case) and/or postgraduate students or postdoctoral fellows.
- COVID19 posed a clear challenge to all projects, causing significant delays in some – although not all.

- The projects that were better able to weather the impacts of COVID19 were, in part, those that were able to start earlier, thus undertaking some activities before the start of the pandemic. At least one of such projects had co-funding which likely expedited this process.
- Most projects indicated that they would like better communication between themselves and NRF and RCN going forward (using a range of channels).
- Knowledge outputs and Human Capacity Development (HCD) results were impressive, given the setbacks associated with COVID19. Of particular interest is the number of women Early Career Researchers (ECRs) and postgraduate students.
- There is a strong bias towards the strongest institutions, with all South African PIs from the highest-ranked universities such as Cape Town, Stellenbosch, Western Cape and Northwest (Potchefstroom Campus).
- We would strongly recommend more proactive measurements to inform a broader group of institutions (HDIs) of the upcoming opportunities to encourage them to participate as a lead institution, and to have strong partnership with the highest-ranked institutions.
- Despite being explicitly emphasized that one of the SANOCCEAN objectives is to engage black, female and young researchers, the demographic were not very well balanced, and the projects PIs are dominated by white male researchers. However, female students in both countries are well represented.

2. Introduction

The National Research Foundation (NRF) has a long-term science and technology collaboration with Norway, which commenced in 2002 with a programme on research co-operation for an initial four-year period (SANCOOP). This programme was extended for a second phase up to 2011. The third SANCOOP co-operation programme was concluded at the end of 2017, and the current SANOCEAN programme runs from 2018 through 2023. The overall programme goal is enhanced knowledge-based policies and decisions for sustainable development in the areas of oceans and ocean space (blue economy), the environment (with emphasis on oceans and pollution), climate change and sustainable energy in South Africa and Norway. Based on the guidelines of this SANOCEAN programme, the vision and anticipated output included:

- Increased opportunities to improve research cooperation between South African and Norwegian researchers within the selected thematic areas.
- Contribution to achieving the Sustainable Development Goals (SDGs).
- Strengthen the quality of research and capacity building at both institutional and individual levels.
- Particular attention shall be paid on aspects leading to income generation and provide selling arguments to producers, service providers as well as young entrepreneurs.
- For the South African side, ensuring the participation of Historically Disadvantaged Institutions (HDI) and Emerging Researchers

In terms of funding, the Ministry of Foreign Affairs (MFA) in Norway would invest NOK 30 million over a period of six years, and on the South African side this programme would be funded by the Department of Science and Innovation (DSI) for ZAR 15 million during the same period. SANOCEAN would be jointly managed by the National Research Foundation in South Africa (NRF), on behalf of DSI, and the Research Council of Norway (RCN), on behalf of MFA through 2023. The overall funding will be used to carry out joint research projects that must include one or more of these elements as outlined in the framework and programme guidelines:

- exchange of project staff and post-graduate students
- exchange of scientific and technological information and documentation

- joint laboratory and field work
- provision of equipment grants (only for disbursement to South African institutions)
- dissemination of research findings
- joint participation in international research programmes
- mandatory participation in the SANOCCEAN launching and concluding conference

Also, multi- and interdisciplinary research is encouraged as well as scientific complementarity between the South African and Norwegian research teams within the defined thematic areas.

3. Purpose and Scope of Evaluation

As outlined in the Terms of Reference, the purpose of the mid-term review is to provide an overview of progress to date, achievements, challenges, and possible recommendations to better implement the SANOCCEAN Programme for the remaining period of funding, since its inception in 2018. The panel was guided to focus this mid-review for the period 1 December 2017 to 31 March 2021, and the scope of the evaluation was confined to the following areas

- Governance and management
- Review of selected joint research projects
- Recommendations

4. Methodology

The methodology used during the review process comprised a mixed model as outlined below in order to obtain adequate information and details on the specific projects that were funded, as well as the programme prior to outlining conclusions and recommendations.

4.1 Programme Review

All information supplied by the NRF as “Essential Reading Material” was reviewed by the panel to firstly, fully understand the evolution of the SANOCCEAN programme, and secondly assess if the planned objectives and outlined goals and targets are on track. Documents received and review by the panel included:

- SANOCCEAN Framework Document, (2018 – 2023),

- SANOCEAN Grant Agreement between MFA and NRF, 12 November 2019
- Framework/call guideline
- Secretariat's contracts/agreements with Principal Investigators
- Annual Meeting minutes 2020 and 2021 revised
- SANCOOP Phase III evaluation report
- NRF - Self-Evaluation Report

4.2 *Project Reviews*

This was done in 2 phases:

- Phase 1: Panel reviewed all the progress reports submitted by the funded researchers/PI that were made available by the NRF
- .
- Phase 2: Funded researchers/Pis gave a formal presentation to the panel using the outlined presentation template (Appendix 1) sent to them. The template was designed to get feedback on specific aspects of the project. Time was also allocated for questions and further feedback from the researchers.

4.3 *Interviews and Written Submissions*

Online interviews were arranged with NRF, DSI, RCN and MFA. Lists of questions were submitted to each organization depending on the information required by the panel (Appendix 2). Written submissions were also received if virtual meetings were not possible.

4.4 *Online Survey*

An online survey was conducted by the NRF using a questionnaire that was ratified by the panel (Appendix 5). This survey was sent to all grant holders of the programme to gather supplementary information apart from their progress reports and presentations.

5. Outcomes of the Review

5.1 Review Dimension 1 - Governance and management

A) Overview of Funding for South Africa – Norway bilateral research programmes

Phase I - 2002-2006:

- *NOK 30 mill + ZAR 3 mill allocated*
- *129 applications in 2 calls, 40 approved*
- *15 institutions in Norway received grants*
- *10 South African institutions*

Phase II - 2006-2011:

- *NOK 42 mill + ZAR 9 mill allocated*
- *79 applications received, 27 approved*
- *13 institutions in each county involved*

Phase III - 2013-2017 – SANCOOP:

- *NOK 40 mill + ZAR 10 mill allocated*
- *52 applications received, 19 approved*

Phase IV - 2018-2023 – SANOCEAN:

- *NOK 30 mill + ZAR 15 mill, with NOK 16.659 mill allocated (from MFA) to projects in Norway (via RCN) and ZAR 15 mill + NOK 13.341 mill allocated (from DSI and MFA) to projects in South Africa (via NRF).*
- *22 applications received, 10 approved*
- *Kick-off 25-27 March 2019 in Port Elizabeth*

Mid-Term Review Panel assessment

Panel confirms that the Funding for SANOCEAN is provided by the Department of Science and Innovation («DSI») in South Africa and the Ministry of Foreign Affairs («MFA») in Norway (via the Royal Norwegian Embassy in Pretoria).

B) Partner priorities and programme goal (per the *Framework Document*)

«The goal of the Programme is enhanced knowledge – based policies and decisions for sustainable development in the areas of oceans and ocean space (blue economy), environment (with emphasis on oceans and pollution), climate change and sustainable energy in South Africa and Norway. Particular attention shall be paid on aspects leading to income generation and provide selling arguments to producers, service providers as well as young entrepreneurs. The research needs to be relevant to South African and Norwegian priorities. On a wider scale, the Programme shall aim to contribute to achieving the Sustainable Development Goals (SDGs). »

«SANOCEAN (hereafter ‘the Programme’) is a programme with significant potential to contribute to expanded research opportunities and improve research cooperation between South African and Norwegian researchers within the selected thematic areas. Its main focus is to strengthen, in a sustainable way, quality research and capacity building in the partner countries, both at institutional and individual levels. Special emphasis will be put on ensuring the participation of Historically Disadvantaged Institutions (HDI) in the Programme. »

Mid-Term Review Panel assessment

Reported mid-term results indicate that the overall goal of producing enhanced knowledge will be achieved, and that the activities are well aligned with national priorities in both countries as well as with the SDGs. Social impact is adequately documented by public talks, TV appearances, and radio broadcasts. The secondary goal of producing entrepreneurs and facilitating general business development, however, has clearly received less attention than stipulated by the funding partners. Also, despite being emphasized in both the *SANCOOP Review Report* and in the *SANOCEAN Framework Document*, the involvement of HDIs in South Africa is significantly less than expected.

C) Key finding: The role of the International Committee (IC)

The 22 original applications to SANOCEAN were assessed independently by external evaluators in both countries. Their assessments were subsequently reviewed by the International Committee with five members from each country, including one representative from NRF and one from RCN. Attendees at the first (and only) meeting of IC on 13-14 November 2018 (in Pretoria) were:

South Africa:	Norway:
<i>Andrew Kaniki, NRF</i>	<i>Eyolf Jul- Larsen, CMI</i>
<i>Wisemen Chingombe, UMP</i>	<i>Hans Christopher Bernstein; UiT</i>
<i>Emma Archer, CSIR</i>	<i>Ove Tobias Gudmestad, UiS</i>
<i>Idan Chiyanzu, AGRIC</i>	<i>Anne Gro Veia Salvanes, UiB</i>
<i>Elhadi Adam, Wits</i>	<i>Karl Klingsheim, RCN</i>

At this meeting the IC, together with the SANOCEAN Secretariat, produced a ranked list of 10 projects for approval by the Joint Committee at its inaugural meeting on 16 November 2018. According to the Framework Document, the IC is also expected to «Monitor progress of the programme, assess the final project reports and make recommendations for the JC. »

Mid-Term Review Panel assessment

We believe the IC has fulfilled its role in accordance with the Framework Document.

D) Key finding: The role of the Joint Committee (JC)

The Joint Committee, with representatives from DSI and MFA, is the highest decision-making body of SANOCEAN. According to the Framework Document, the JC will meet during the second quarter of each year to:

- review the progress of the programme*

- *discuss possible revisions of plans and budgets for the programme*
- *approve work plans and budgets for the next year, and*
- *discuss issues of mutual concern.*

Minutes from JC meetings made available to the mid-term review panel include:

- *2nd Annual Meeting on 9 October 2020*
- *3rd Annual Meeting on 14 October 2021*
- *Follow-up meeting on 17 March 2022*

Mid-Term Review Panel assessment

We believe the JC has fulfilled its role in accordance with the *Framework Document*. Going forward, we hope the JC will take an active role in securing funding for a “Phase V” of the bilateral research programme between South Africa and Norway.

E) Key finding: The role of the Secretariat

The delay of almost 2 years in developing the Grant Agreement between MFA and NRF (in November 2019) after the Framework Document was signed (in February 2018) indicates that the involved parties had a somewhat relaxed view of the timeline of SANOCEAN, especially since funding was formally granted to the projects in November 2018. Similarly, this Mid-Term Review is conducted 1½ year later than stipulated in the Framework Document.

The SANOCEAN Secretariat, with members from NRF and RCN, is responsible for administering and monitoring the implementation of the projects supported by SANOCEAN. The following reports by the Secretariat have been made available to the mid-term review panel:

- *Report to the 1st Annual Meeting on 26 June 2019*
- *Impact of COVID-19 on SANOCEAN projects, dated 4 May 2020*
- *Report to the 2nd Annual Meeting on 9 October 2020*
- *Report to the 3rd Annual Meeting on 14 October 2021*

As SANOCEAN Secretariat, NRF and RCN signed an Agreement in February 2019 outlining the responsibilities of each agency in carrying-out their duties. Due to a long-

standing partnership, the two agencies are familiar with each other's grant management systems. This has made it easier for the two agencies to jointly work together as a Secretariat. Based on this working history, processes such as formulating guidelines, rules of procedure, eligibility criteria, application and assessment procedures, decision-making processes, and funding procedure were managed swiftly and efficiently.

Mid-Term Review Panel assessment

We believe the Secretariat would have benefitted from more explicit description of operational responsibilities between NRF and RCN (including the distinction in responsibilities), as well as a stronger adherence to the timeline in the Framework Document.

F) Key finding: Incompatible funding and reporting structures

On the Norwegian side, disbursements to the Norwegian PIs are done regularly in advance, three times a year, based on the approved budgets of the various projects. Only when the projects report deviations, the level of disbursements may be changed. On the South African side, the situation is somewhat more complicated, as funding comes from two different sources, namely the DSI and MFA. Moreover, projects in South Africa are required to document expenses before disbursement (i.e., reimbursement) can be made.

A related challenge is the different formats and deadlines for PIs reporting to NRF and RCN, in accordance with their respective rules and regulations. The reporting deadline is the end of September for Norwegian PI's and the end of February for South African PI's (due to the South African budget year running from 1 April to 31 March). The JC, on 9 October 2020, decided: *"The Annual Meeting agreed that future annual reporting from the Secretariat should be based specifically on the requirements in the agreement between NRF and the Embassy namely articles 7 and 8. The reporting on the full SANOCEAN programme would thus be presented as a single report following NRF-*

Embassy agreement's requirements, with possible additional information to respond to the requirements of the Framework Agreement."

Mid-Term Review Panel assessment

We believe decisions and actions taken by the JC and the Secretariat were appropriate, although it is tempting to suggest that such administrative incompatibilities should have been identified and resolved at an earlier stage of the programme. We support NRF's suggestion that in future research programmes top-up funds from MFA should consider disbursing funds in South Africa, not via NRF, but either directly to the South African institutions or via their Norwegian partner.

G) Key finding: Student bursaries in South Africa

A recurring challenge in both SANCOOP and SANOCEAN is the lack of earmarked funds for postgraduate scholarships in South Africa. South African researchers were instructed to encourage their identified postgraduate students to apply through the normal and competitive NRF freestanding scholarship instrument – which has not yielded workable solutions in a number of projects. The Secretariat managed to ensure that savings due to cancelled workshops, travels, fieldwork, etc., could be reallocated to support postgraduate students. On 14 October 2021 the JC affirmed:

"It was agreed that flexibility should be shown when it comes to student support and that those projects who are in the position to use unspent funds originally budgeted for other purposes can utilise these funds for student support."

Mid-Term Review Panel assessment:

We agree with the JC affirmation on the flexibility that needs to be implemented in terms of student support, but there is little to no information on how the NRF has progressed in this area.

H) Key finding: Delays due to Covid-19

The closing of universities and research labs combined with the lockdowns and travel restrictions and closed borders due to the pandemic have adversely affected SANOCEAN projects and caused planned activities to be delayed. The capacity building element of the programme, including the training of students and young researchers, has also suffered. It is therefore to be expected that affected projects will ask for (no cost) extensions of the original completion date.

The JC, on 14 October 2021, considered the possibility of extending the projects deadline to mid-2023, or even extending the entire programme until mid-2024 in order to account for the COVID-19 related extensions. “The meeting agreed to consider extension requests as they come, and a final decision will be taken at a later stage on the longevity of the entire programme given Covid 19 impact considerations.”

The JC, on 17 March 2022, decided “to allow all the 10 jointly funded projects to be given 6 months no cost extension until 30 June 2023. The Secretariat will notify the projects accordingly.” This revised timeline remains consistent with the Framework Document calling for the end of SANOCEAN as a programme by 31.12.2023. Based on feedback from the PIs, the JC on 17 March 2022 also decided to organize the Mid-Term Conference as a series of virtual workshops in June 2022, with the objective to facilitate exchange of information and views in the aftermath of the covid-induced challenges.

Mid-Term Review Panel assessment

We believe decisions and actions taken by the JC and the Secretariat were appropriate, timely, and adequate – in particular, the decision to give projects six months no cost extensions without compromising the end-date for SANOCEAN.

5.2 Review Dimension 2: Research Projects

In reviewing the projects, we looked at both the PI presentations, as well as the online questionnaire. PIs indicated a fairly mixed experience, providing some good context to some of the other self and external evaluations made available to the committee. The PI presentations and progress reports give more detail than the online questionnaire, but the online questionnaire proves useful for context.

The online questionnaire highlights many of the key findings emphasized above; including financing levels, which had a fairly diverse range of responses (interestingly, including two 'partly inadequate' responses from two of the Norwegian PIs). In addition, funding reporting had a fairly diverse set of feedback from projects; where two South African PIs (at UWC and NWU) indicated this as only 'fair' (all other PIs said this was good or excellent). In terms of reporting procedures, three South African PIs (two at UWC) indicated this as only fair (with positive responses from the rest).

It is interesting to note that all PIs indicated that female researchers had been included in their projects (including female PhD, MSc and in one or two cases, Honours students). When the participants were queried regarding whether SANOCEAN partnerships had led to applications for funding elsewhere, it is of interest to note that two South African PIs and two Norwegian PIs were undecided (everyone else agreed). One of the South African PIs who indicated that they were undecided were the CSIR, which is of interest, since this was a project that seemed to hit its milestones fairly early on, and to perhaps be less affected by COVID delays as a result. Most PIs indicated that participation had not opened up collaboration with other SANOCEAN projects (amongst the South African PIs, the CSIR and NWU were undecided – most other PIs disagreed). Most PIs indicated that they expected collaboration to continue beyond the funding period.

When PIs considered the two most important research outcomes from their projects so far, most PIs indicated greater gender balance – or at least being on the road to redress this (which is encouraging). Some indicated acceptance of scientific articles in leading journals (although not all); and all indicated increased competence of students

and ECRs. Two projects indicated other positive outcomes – UWC (Petrik) showed direct influence on policy decisions, while NINA indicated contributing to improved livelihoods in local communities.

In terms of where the institution could improve (with South African PIs commenting on the NRF, and Norwegian PIs commenting on RCN), there were an informative and diverse range of responses, picking up on many of the issues raised in our key findings, and in the sections below. The South African PIs indicated that feedback on applications, reporting forms and procedures and response to queries/requests were areas where improvement was needed, and almost all asked for better communication (both South African and Norwegian PIs).

Only the NWU (Kriek) asked for the NRF to allow for postgraduate bursaries to ensure the effectiveness of the collaborative project, but it is fair, if one considers the sections from the presentations detailed below, that most of the South African PIs found this a challenge. In the option to provide additional comments, the same PI gave extensive feedback, about the inability of the programme to fund student bursaries, indicating this as a substantive setback. Again, discussions deriving from PI presentations below show that this was a significant challenge for most South African projects.

A) Key findings: Progress towards technical deliverables

In terms of technical deliverables, the project experience was fairly variable. For example, Sophy-Co2 (Fransson and Thomalla, in their four work packages, made substantive progress here, with cruise completion to Dronning Maud Land, Southern Ocean in early 2019, post cruise data workshop completion, two South African PhD students visiting Norway for a one-month scientific exchange (Sept-Oct 2019) and Norwegian scientists being able to visit South Africa – both to Stellenbosch University and the CSIR's Rosebank offices (Jan-February 2020). All of this took place pre COVID, which undoubtedly helped to get a head start on deliverables and milestones. A 2nd workshop for the Southern Ocean Observing System (SOOS) was undertaken online in July 2020, and an oceanographic campaign aboard the Malik Arctica was undertaken from December 2020 – to January 2021, which was largely successful. The project Blue

Connect were, in contrast, set back in their Objective 1 in terms of technical deliverables – they were about to start setting joint field work experiments between the two countries – but COVID curtailed any possibility of the field research, and the PIs indicated that they were not on track and there were significant deviations here. The resources were directed to Objective 3. Objective 2 for Blue Connect was also delayed – they were able to have an online course in March 2020; and hope to complete a field course in 2022 – this objective is not on track but will be completed by the end of 2022. Interestingly, the PIs decided not to hold another online workshop, since they felt it did not meet the intended output.

In the project on Marine Sewage Outfalls – Environmental Impact Evaluation (Petrik and Stavanger); the project had five work packages – WP1 was delayed due to the pandemic (sampling); but has now been completed. In terms of analysing the samples, only some analysis has been done – it is 40% completed, and not on track (partly due to a PhD student resigning; and the post doc replacing the student being from a different background). In terms of sewage plume modelling, this is only 25% done, and not on track from the South African side – partly due to one of the coordinators moving to New Zealand. Finally, the WP5 workshop had to be undertaken in hybrid mode – the PIs hope to have a physical workshop in Cape Town in late 2022. Finally, in the project MicroPlastResitome (Bezuidenhout and Wikmark); three of the work packages are either largely completed or completed (including a position paper in Environmental Pollution being almost complete; and a variation where oceans and water treatment plants were surveyed instead of beaches).

Finally, in the project FORTRAN (Akdogan and Booth/Sorensen), the first three deliverables were largely complete and on track: including a paper in Science of the Total Environment in 2020, and other draft manuscripts. More information here will be provided below.

B) Key Findings: Progress towards HCD deliverables

Again, there is substantial variation between the projects here, for a range of reasons, including difficulties in terms of securing postgraduate funding for South African students (funding for PG students on the projects in South Africa was not ringfenced, and students had to apply for competitive funding – in Norway, the postgraduate funding model is quite different).

- Sophy-Co2 has two graduated PhDs (both apparently women).
- BlueConnect – has three students registered – one MPhil has completed (UCT). One further Masters and one Honours student are ongoing.
- Marine Sewage Outfalls –
 - Norway: three MSc were due to complete June 2021 (check); one MSc completed June 2020. As mentioned above, the PhD student resigned during the period, and was replaced by a postdoc (with a different skill base), causing delays.
 - South Africa: five students registered; one graduated with a PhD
- MicroPlastResitome –
 - South Africa – three students registered; one deregistered; one PhD and one MSc ongoing (it should be mentioned here that only one student was able to obtain funding – the PIs had to make alternative arrangements for the other two)
 - Norway – one postgraduate (degree not specified) completed; and 2 BSc completed.
- FORTRAN – four MEng students registered. Of these, two are completed, one is due to finish in December 2022, and the fourth in March 2023. No deviation was indicated here.

C) Key Findings: Knowledge outputs

There is also clear variance between the projects here, in line with differential progress on technical deliverables indicated above.

- Sophy-CO2 – 3 published papers (including one in Nature Communications – *Remote assessment of the fate of phytoplankton in the Southern Ocean Sea ice zone.*); three in review (including two by PhD student Asmita Singh); and five in preparation, including at least one by PhD student Ogundare).
- BLUE Connect – 8 papers published or in press (check presentation slide)
- Marine Sewage Outfalls –
 - 1 paper from the Green Point study
 - 3 papers from the the Camps Bay study
 - 4 papers from the the False Bay study
 - All of the above includes co-publication with students
- MicroPlastResitome
 - 1 published paper in Environmental Pollution
 - A number of papers in progress
- FORTAN –
 - three published papers, including in Water (MDPI) and Science of the Total Environment.
 - One paper submitted to Microplastics (MDPI).
 - Three papers in preparation.

Conferences

Not all PIs provided equal information here – what was striking was those projects that were able to have their students attend conferences. Again, the progress here was varied, and related to some of the aforementioned structural issues (in part). SOPHY-CO2 had fairly extensive representation at conferences and meetings, including at a virtual Antarctic seminar in October 2020, at the Nansen Tutu Centre 10th Anniversary Symposium in Cape Town (March 2020); at the COMFORT virtual meeting in August 2020, and at the Tromsø Oceanography meeting (2020). BLUE-Connect referred to meetings more generally, but of interest here is the contribution to GEAK (Global Ecosystem Assessment of Kelp) 2022 (this ended up being a very supportive collaboration, including forthcoming publications and partner links). Marine Sewage Outfalls included both previous and forthcoming conferences, including SETAC (2020) and PRIMO (2022; and SETAC (2022).

D) Key Findings: Challenges

Identification of challenges is a key area for consideration, as stated previously, and there were several common challenges identified.

1. COVID19 related challenges:

- a. Fieldwork cancellation, including cruises
- b. Cancellation of in person meetings
- c. Cancellation of student exchanges
- d. Cancellation of scientist exchanges
- e. Impacts on lab availability and analysis
- f. Personal impact on students and scientists (e.g., illness, loss of friends and family, emotional impacts)

2. HCD challenges

- a. Lack of ringfenced funding for South African postgraduate students
 - i. As mentioned previously, this constitutes a significant challenge – it really set back a number of projects; and while some projects were able to make alternative arrangements (for example, redirecting funding that remained unspent due to Challenge 1 above); it was a clear constraint that must be addressed in the future. As mentioned previously, Norwegian graduate students are supported by a different funding model. At least one of the projects indicated that ‘the new NRF modality is not ideal’; and there is a substantive input around this from NWU in the online questionnaire.
- b. Resignation of PIs and/or staff members (for example, the UKZN project, where this was a significant setback – taking time to find a PI replacement at the university, who did present on the project’s behalf).
- c. Resignation of students – for example, the Marine Sewage Outfalls project, where a PhD student resigned, ultimately replaced by a postdoc, but with a

different background, so catching up took time, and there was a delay on this work package.

E) Key Findings: Project impact

Project impacts differed – this is also related to the somewhat different impact pathways envisaged by the different projects. It is also reflected in the online questionnaire, where certain stakeholders are mentioned by particular projects. For example. SOPHY-CO2 had largely scientific and/or academic impacts, including publications, equipment/infrastructure and HCD (with a strong record on gender equality; with two female PIs and two female South African PhD students). Blue Connect was similar, with the addition of contribution to an international assessment process in the form of the Global Ecosystem Assessment of Kelp. International assessments are often fairly high impact – both showcasing publications, but also ideally forming the basis for policy and decision-making.

The project on Marine Sewage Outfalls has had some uptake in popular writing, which has included some challenges from the City of Cape Town (which warrants further attention). In addition, certain of their findings and data have been submitted to the former Department of Environmental Affairs, resulting in banning of certain pharmaceuticals.

F) Key Findings: Feedback from Principal Investigators

A survey with 15 key questions was sent to explore the perception of the projects team on the governance, management, and communications of the SANOCHEAN programme. The questions were answered by 83% of the project's PIs from both Norway and South Africa. The survey shows that the South African PIs are based in Universities of the North-West, Cape Town, Stellenbosch, Nelson Mandela and the Western Cape and none from Historically Disadvantaged Institutions (HDIs). The SANOCHEAN programme has strengthened existing collaboration between the researchers in the partner countries and created new opportunities at institutional and individual levels. The survey shows that the South African and Norwegian partner

institution was either selected based on previous bilateral collaboration (50%) or with no previous relations but reaching out and expressing areas of research of common interest (50%).

The PIs have indicated that both the assessment of the application process and the decision-making are good (Fig 1). However, the Research Council of Norway (RCN) was rated relatively higher than National Research Foundation (NRF) regarding the performance and service provision efficiency.

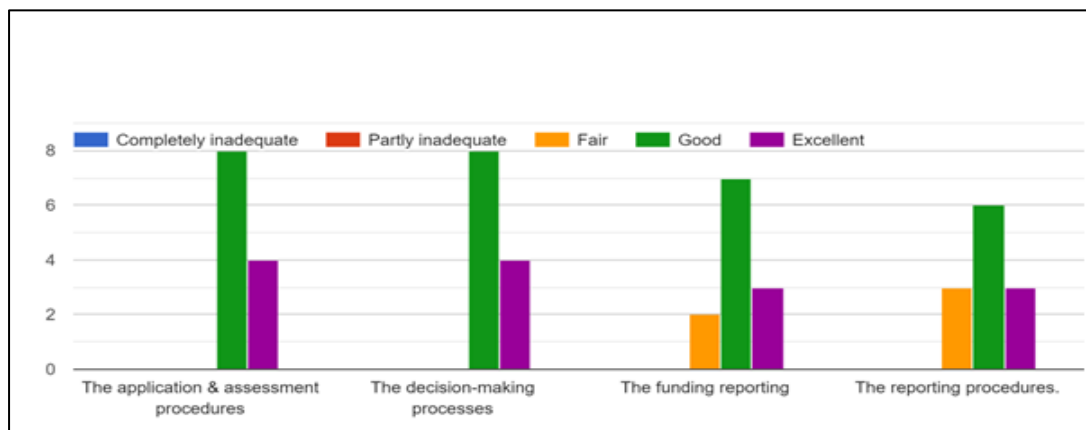


Fig.1 Rating of the application process, decision making and financial reporting of the SANOCCEAN programme.

It was also noted that the project teams believed that email was the best communication channel with the programme secretariat, as compared to personal meetings and phone calls. This could be attributed to working from home during the COVID-19 outbreak and the lockdown restrictions (Fig 2).

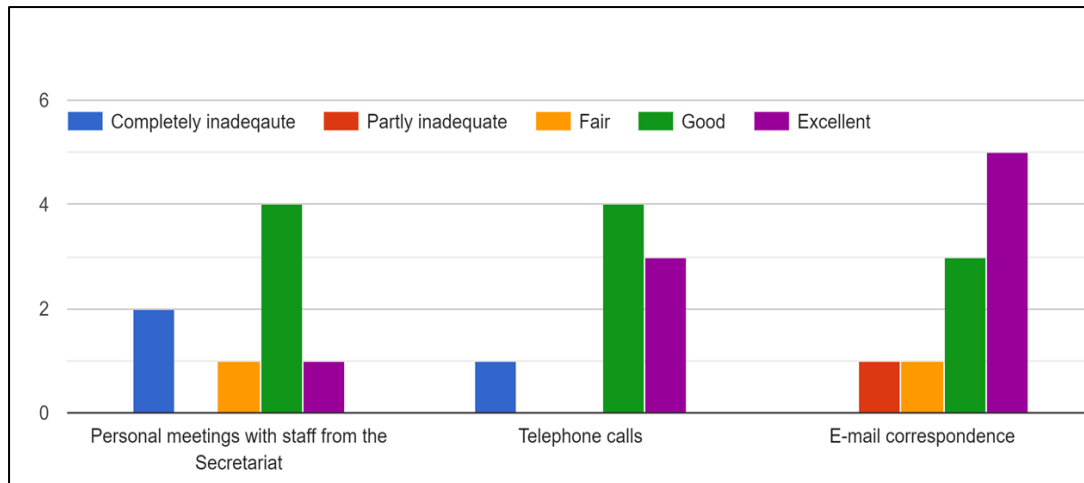


Fig.2 The effectiveness of the communication channels used to obtain information or interact with the program secretariat during the mid-term.

The transformation and the capacity-building issue have been one of the cornerstones of the SANOCCEAN programme. The survey questions were designed to gain insight into the participation of HDIs, researchers, and postgraduate students and how the project promotes young and emerging researchers. It was expected that at least one researcher from HDIs must be part of any project team. However, the survey indicates that only eight projects (67%) involved researchers from HDIs. All projects have one or more of female researchers, female postdocs and female postgraduate students.

Most of the project leaders indicate that the key beneficiaries of the results are the contribution to the body of Knowledge, breaking scientific news (by publishing the research result in leading scientific journals) (75%), helping the local authorities in strengthening their policies (75%) and increasing number of postgraduate students (66%) (Fig 3).

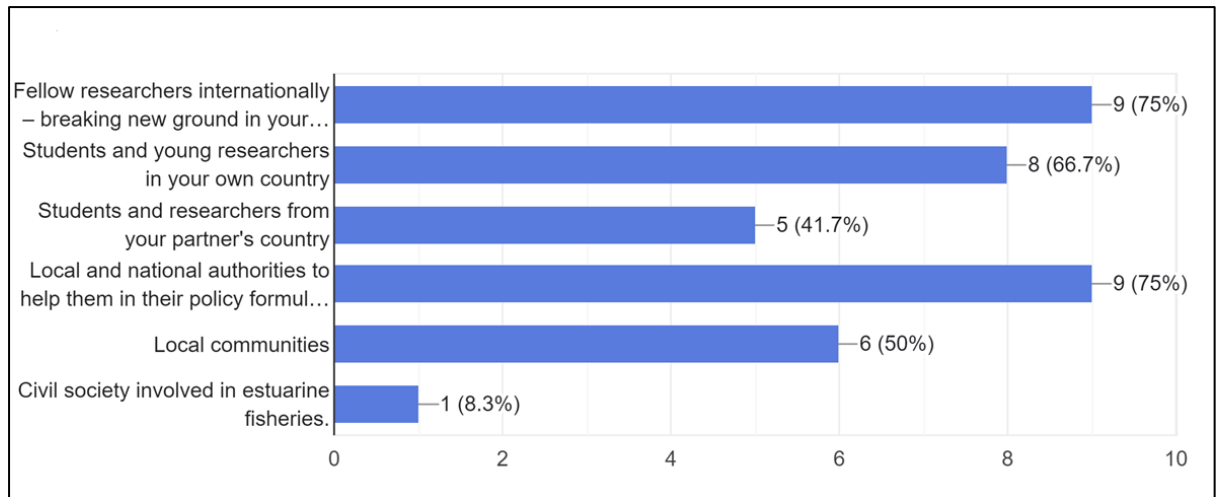


Fig. 3 The key beneficiaries of the research projects outcome as indicated by the project's PIs.

All the team leaders appreciate the SANOCCEAN funding, and they plan to have a long-term collaboration between South Africa and Norway to advance the capacity development of young and emerging researchers and promote research excellence.

6. Recommendations

- We support JC’s decision to give all projects six months no-cost extensions without compromising the end-date for SANOCEAN in 2023.
- We encourage researchers in South Africa to consider increasing the involvement of HDIs.
- We encourage PIs in both countries to consider how benefits to society can be demonstrated and to what extent innovations and income generation have resulted from their projects.
- We recommend a Concluding Conference be convened in 2023, in accordance with the *Framework Document*.
- We encourage the JC to take an active role in securing funding for a future “Phase V” of the bilateral research programme between South Africa and Norway.
- We support NRF’s suggestion that in future research programmes MFA should consider disbursing top-up funds in South Africa, not via NRF, but either directly to the South African institutions or indirectly via their Norwegian partners.
- We strongly encourage reconsideration of the modality for the funding of South African postgraduates. Funding for postgraduate students in South Africa should be ringfenced as part of the project, and not left to the separate competitive NRF bursary process.
- We encourage the requirement for all funding-receiving institutions to indicate their plan Bs for the resignation of PIs, key staff members, postdocs and postgraduate students

7. Additional Documents

- PI presentation template
- Key Questions for (NRF, MFC, RCN, DSI)
- Request for information from NRF
- Request for information from RCN
- Survey Responses