

Netherlands Polar Programme



Report on the Scientific Evaluation of the Netherlands Polar Programme 2000-2004

Contents

Conclusions and Recommendations

1.	Terms of Reference.....	4
2.	Introduction.....	8
2.1	Evaluation Procedure	8
2.2	Evaluation Committee	9
3.	Science Programmes	10
3.1	Netherlands AntArctic Programme (NAAP)	10
3.2	Netherlands Arctic Programme (NAP)	10
3.3	Glaciology.....	11
3.4	Oceanography.....	12
3.5	Ecology.....	13
3.6	Human & Social Sciences	14
4.	Programme Management and Logistic support.....	15
4.1	The instrument of MoUs	15
4.2	Polar Office.....	15
5.	Public Relations & Education.....	16
6.	Conclusions	17

List of Abbreviations

Conclusions and Recommendations

The Netherlands Polar Programme (NPP) is a recent fusion of the Netherlands Antarctic Programme (NAAP) and the Netherlands Arctic Programme (NAP), which are in a different phase of development. The objectives of both components of NPP differ as NAAP is *a conditio sine qua non* for the Dutch Consultative membership of the Antarctic Consultative Treaty Meeting of which the first Secretary General is of Dutch origin. Moreover, the Dutch membership with voting rights was and still is rather innovative as the Netherlands Government is executing its research effort in an international context. As such the Dutch do not possess and maintain a national supporting logistic capability for Antarctic research. In the Arctic the situation is different as the process of formal co-operation at both a political and scientific level has dramatically changed in the early nineties of the last century after the fall of the Berlin wall. This change is not reflected in the development of NAP.

The Committee's conclusions and recommendations with respect to the scientific aspects of the NPP are that:

- The scientific quality of almost all projects within both NAAP and NAP is very good to excellent.
- The output of the Glaciology and Oceanographic themes is excellent both in terms of quality and quantity. Both disciplines have made important contributions and got significant support from their host institutions. The **recommendation** for the Glaciology theme is that **the Arctic budget should be increased to ensure the very important ongoing Arctic mass balance measurements.**
- The recommendation of the 2000 International Evaluation to obtain critical mass within the Ecology theme has been met. The new VUA Polar Group performs excellent research in the Antarctic. In the Arctic their research needs a better embedding internationally. The Committee understands that in this case the present situation signals the development phase of Dutch Arctic research. The noted situation is largely the consequence of historic developments within the Netherlands Arctic research community. Still the **recommendation** is that **the research of the VUA Polar Group in the Arctic needs a better embedding internationally.**
- Research groups on Ecology perform very good and innovative research both in the Arctic and Antarctic. In the Arctic region the problem is the lack of budget. The **recommendation** is **to stimulate all NPP Ecology themes as planned, but to give special attention to ornithology, as this research is also of direct relevance to policy makers involved in both the Arctic and Antarctic.**
- The research group of Hacquebord within the Human & Social Sciences theme of the Programme is well established and doing very good research. Yet, the group is rather small and thus vulnerable. The new aspect of legal management research and tourism could be a good new 'niche' next to

current activities. The **recommendations** are 1) **to stimulate legal management research in the Arctic because it is extremely important that the innovative Antarctic research by Bastmeijer can be carried out for the Arctic too,** 2) **to stimulate the history of exploitation in the Arctic,** 3) **to stimulate other groups to join the present activities in order to develop a less vulnerable basis,** 4) **to develop international co-operation especially with regard to archaeology,** and 5) **to focus on truly interdisciplinary research.**

The Committee's conclusion and recommendation with respect to the special scientific NAAP objectives of the NPP, is that:

- The NAAP Programme has stimulated high quality research in specific disciplines, provided some clear centres of excellence and anchored some fields of research firmly in the infrastructure of a university or institute. It has clearly demonstrated the Netherlands commitment as a Consultative Party to the obligatory substantive research output. The NAAP objectives have been met and continue to be relevant for the future. Yet, NAAP is vulnerable due to its strong dependency on logistic capabilities of partner countries.

The Committee's conclusions and recommendations with respect to the special NAP objectives of the NPP are that:

- The Committee noted that most of the Arctic activities fall outside the scope of the NPP. These activities mostly are directly supported by ministries such as Nature Management & Fisheries; Housing, Spatial Planning & Environment; Agriculture, and Transport, Public Works & Water Management.
- Central NAP funding through NWO is extremely low. As a consequence the objectives of NAP have not been met. The Committee notes, however, that due to the development phase of NAP, they could not be met in terms of national co-ordination of Arctic research. The **recommendations** are that 1) **central funding of NAP through NWO should be a magnitude increased, the upcoming International Polar Year (IPY 2007-2008) should be used to structurally raise the NAP budget to more or less NAAP levels,** 2) **since the Netherlands are an Observer to the Arctic Council, which is from a policy perspective similar to the Antarctic Treaty, they should feel committed to treating the organisation and funding of Arctic research in the same way as Antarctic research,** 3) **the embedding of Arctic Research within global science programmes should be increased,** 4) **the Netherlands has signed several Treaties and Conventions and the Ministries involved should ensure through IPO that these responsibilities are met,** 5) **for the adjustment of the Arctic themes the outcome of the Johannesburg follow-up (2002) should be consulted for the political aspects on nature conservation and sustainable development,** 6) **NWO should explore the possibilities of a stronger co-ordination of the on-going activities presently outside the scope of NAP .**

The Committee's conclusion and recommendation with respect to the central support within NWO for the NPP is that:

- Since the Netherlands made an innovative political decision to use foreign logistics instead of operating their own station in Antarctica, there is an additional need for visibility inside the Dutch organisation, as there is for extensive networking and careful use of MoUs. International responsibilities ensuing from the Antarctic Treaty and several other Treaties and Conventions concerning the Arctic are, however, not met in full. The Committee has deep concern regarding the quantity of the present personal support at NWO/ALW. On the other hand the Committee could not reach a *communis opinio* about how much the staff should be enlarged and how necessary it is to establish a Polar Office of the size of 3-4 fte's. **The recommendation is to increase the personal support, which will may-be lead to the establishment of a Polar Office. The Polar Office could act then as the national contact and co-ordination point. If established, the Office should also collect information on the overall polar research effort in the Netherlands and should act as a linking-pin in the international networks of among others COMNAP and EPB (EPB is also an Arctic organisation) and for similar organisations in the Arctic. If this will be done, it should be done in close consultation with the Arctic Centre in Groningen, due to the fact that the institute co-ordinates a large part of the research in the Arctic.**
- On the subject of Logistic support and MoUs the **recommendation** is that **Logistic support should be taken more seriously by the Dutch researchers, but also an improved communication on the subject of MoUs from the recommended Polar Office to the Dutch researchers is needed.**

1. Terms of Reference

The objectives of the Programme were defined as:

NAAP objectives

The main objective is to stimulate first-rate scientific research in Antarctica. The Dutch contribution to Antarctic research also substantiates the Netherlands' consultative status with full voting rights to the Antarctic Treaty.

NAP objectives

Arctic research in the Netherlands is alleged to be somewhat fragmented. The objective of the Arctic component of the Polar Programme is to improve national coordination of Arctic research in this country within an international framework and focussing on gathering data concerning the state of the Arctic environment. More specifically: NAP should provide a framework in order to improve coordination. Increasing Dutch participation in international programmes and in Arctic cooperation in general. The fundamental research should gather information about the physical and biological environment of the Arctic to improve our understanding of various natural and man-induced processes. Research, both fundamental and applied research, should yield basic scientific knowledge of the Arctic environment and address the natural relationships between temperate regions and the Arctic. Research should demonstrate in which way the temperate regions cause pollution of the Arctic and the consequences for the latter region. Dutch research should address environmentally friendly and sustainable use of the Arctic region.

Recommendations of the 2000 International Evaluation:

The 2000 International Evaluation concerned research carried out within the NAAP framework only. As a consequence the focus was the 1994-1999 NAAP Program Plan. The integration process of NAAP and NAP into the NPP started in 2002.

1. The Dutch programme is well organised, innovative and scientifically interesting. It represents only a small research investment in Antarctic funding terms and at present resources are spread too thinly. It is recommended that, unless greater funding is provided, resources should be focussed on a more limited number of topic areas in future to ensure that a critical mass is available for each project.

Response

This recommendation has been implemented immediately. In the 2000-2006 Programme Plan the Geology theme was deleted as no additional funding became available and as substantial interest was lacking.

2. Primary topic areas which should have continued support are Glaciology and Oceanography, both of which have made important contributions and attracted significant support from their host institutions. Ecology has done well under difficult circumstances but can only realistically be continued if an adequate critical mass of researchers can be achieved, which will require more resources. In Human & Social Sciences both Human Biology and Environmental Impact should be deleted from the programme and the limited resources available should be devoted to cartographical

and legal research. No further initiatives should be taken in Earth Sciences unless more funding is provided.

Response

In the 2000-2006 Programme Plan the themes Glaciology and Oceanography were continued. Special funding by the Ministry of Housing, Spatial Management and Environment was obtained in 2003 for monitoring activities within the Glaciology theme.

The Ecology theme was stimulated through a dedicated call in the 2002/2003 NAAP Open Competition round. Moreover substantial support was obtained at the CEME in Yerseke for ecological Antarctic research that is mainly executed in co-operation with the British Antarctic Survey (BAS). For this a MoU has been signed. The science base of this research theme has also been broadened through the involvement of ecologists from the Free University in Amsterdam (VUA). The Human & Social Sciences have also been stimulated through the 2002-2003 dedicated call. To address the problems of tourism in Antarctica, a hotly debated issue in the ATCM, an additional call for this subject was placed, resulting in the funding of a PhD at the International Centre for Integrative Studies (ICIS) of the University of Maastricht for an integrated study on sustainable tourism in the Antarctic. Together with a NWO-funded project on adventure tourism at ICIS this is a new line of research within the Polar Programme.

3. The logistic arrangements reached with foreign operators are highly advantageous to the Dutch programme. The Committee endorse this as a cost effective solution but note that agreements should be made in advance so that the Dutch Programme is not at risk of sudden changes in costs or in the extent of the support expected from the foreign operators.

Response

The *modus operandi* of NAAP is based on both scientific excellence and scientific compatibility with partner countries as well as contributing to the costs of logistics of these partner countries. Crucial for the latter is an active involvement in the relevant coordinating bodies at the global (COMNAP) and European (EPB) level. A Memorandum of Understanding (MoUs) was signed both with the Alfred Wegener Institute for Polar and Marine Research (AWI) and BAS. A number of bilateral MoUs outside the NWO co-ordination, with Russian institutes affiliated with the Russian Academy of Sciences facilitated activities of Dutch researchers in various parts of the Russian Arctic such as the Taymir-, Pechora-, and Archangelsk regions. These MoUs fall outside the present scope of the NPP.

Recently a discussion was started by Dutch Polar scientists about the need of MoUs and whether the current MoUs should be renewed. This discussion is ongoing and is expressed in the questionnaire which forms part of the review documents. Further information on this subject is given in chapter 4.

4. The Committee noted that the entire Dutch Programme was at risk from independent policy or priority changes in funding within any of the sponsoring Ministries. The present financing arrangements spread the costs widely but weaken the apparent priority attached by the Dutch Government to the Antarctic as an area of

national interest. In the light of the international acceptance of Antarctica as a key global research area the Committee suggest that the funding mechanism be reviewed to provide for long-term stability in resourcing and objectives.

Response

No changes have occurred in the present weak funding structure of the Dutch Polar Programme. The NAAP component is still funded by four Ministries (Foreign Affairs; Transport, Public Works & Water Management; Housing, Spatial Planning & Environment; Agriculture, Nature Management & Fisheries) and NWO (on behalf of the Ministry of Science Education and Culture). Co-ordination is complex but support of especially the Ministry of Foreign Affairs has been stimulating. Despite its complex structure the NAAP is well established in the international policy making arena as is indicated by the nomination of the chair of the Interministerial Polar Committee (IPO) as the first General Secretary of the ATCM. He left his office in September 2004.

5. Greater interaction between the IAO and the scientists should be encouraged. The Committee also believe this would allow Foreign Affairs to utilise appropriate information for Antarctic Treaty presentations which would increase recognition of Dutch efforts.

Response

The members of the Interministerial Polar Committee (IPO, successor of the IAO) and NGO's were invited to public activities, Polar Symposia and workshops. The programmes of these activities were actively arranged in such a way that they were more appealing to policymakers and NGOs. NPP scientists and especially those concerned with the legal issues within the Human & Social Sciences theme as well as the NAAP manager are involved in ATCM preparations. This involvement mainly focuses on CEP, logistics, tourism, and legal management. NPP scientists are also involved in activities in the Arctic Council and its Working Groups like Conservation of Arctic Flora and Fauna (CAFF), PAME and AMAP to support the responsible ministerial representatives. These activities are, however, not co-ordinated by NWO. They mostly are taken care of by the Arctic Centre in Groningen that directly reports to IPO.

6. The support offered by NWO may have been reduced too far, making it difficult for adequate expertise to be retained at the centre for negotiation with foreign operators and adequate participation by the Netherlands in COMNAP meetings.

Response

Despite this Recommendation the support at NWO/ALW has been reduced even further in 2000-2005. This reduction is the consequence of general reorganisations and efficiency operations at the NWO level in which the special status and international obligations of NPP were not taken into account. The consequence is a minimal international performance in COMNAP (there is no SCALOP representative anymore), in the COMNAP Environmental Network (there is no environmental officer in the NWO/ALW organisation anymore) and a lower level of bilateral contacts. Yet, Polar activities have also been increased: an Arctic Programme is added to the Antarctica Programme and NWO recently became a leading member of the newly

approved EUROPOLAR Network of Excellence. As a result of this combination of decrease in support and increase in Programme size, the following tasks urgently need attention:

International obligations:

- *Environmental officer, AEON/TRAINET*
- *Support Dutch Chair of INFONET*
- *Ad-hoc requests through the AMEN list*
- *Internationally obligatory reports*
- *Keeping our Internet information up to date (on the COMNAP site amongst others)*
- *Participation in EUROPOLAR and IPY*

National obligations:

- *Website NPP*
- *Translation of relevant texts of ATCM/CEP for scientists and tourists to Antarctica(f.i. Code of Conduct)*
- *Obligatory training courses for scientists participating in Antarctic regions*
- *Newsletter / communication to the Dutch Polar Scientific community*
- *Information to the general public*
- *Activities of the national IPY-Committee*

The Evaluation Committee was asked to consider the following questions:

Questionnaire evaluation committee	
1.	<p>Objectives</p> <ul style="list-style-type: none"> a. How realistic were the objectives formulated in Scope of NAAP 2001-2006 and the objectives for NAP as formulated in the The Netherlands and the Polar Regions assessment memorandum? b. To what extent have the objectives been met? c. Do you think the objectives should be adjusted in view of the present state-of-the-art of the research field, or for political reasons? If so, in what way? d. Does the research meet the scientific priorities set by SCAR?
2.	<p>Scientific results and effects</p> <ul style="list-style-type: none"> a. To what extent did the programme contribute to more in-depth scientific expertise within the selected themes? b. Did NAAP contribute to improving the general public's awareness of the scientific problems in relation to Antarctica? c. Did the products of the programme meet expectations, both qualitative and quantitative? And what are, in your opinion, the most interesting results? d. What is the scientific impact of the programme in an international perspective?
3.	<p>Cooperation</p> <ul style="list-style-type: none"> a. To what extent did interdisciplinary cooperation get off the ground? b. Did NAAP and NAP contribute to embedding of the research and cooperative projects? c. What has been the role of NAP in particular, but also of NAAP, in the general context of research carried out in the Netherlands in this field?
4.	<p>Social relevance</p> <ul style="list-style-type: none"> a. To what extent did the programme contribute to solving social or political questions or problems? b. Did the programme result in knowledge transfer to organisations in society or

	<p>industry?</p> <p>c. Did NAAP contribute to the general understanding of non-scientific problems in relation to Antarctica or Arctica?</p>
5.	<p>Organisation</p> <p>a. Are/were the office organisation and the programme management of the programme adequate? Do you have any suggestions for improvements?</p> <p>b. Have the Antarctic and Arctic studies been implemented adequately in the Dutch infrastructure?</p> <p>c. Is the funding by NWO and/or the funding ministries effective for NAAP and NAP respectively?</p> <p>d. What is the added value of NWO's coordinating function?</p>

The questionnaires used for this evaluation were approved by the Polar Research Committee (CPO) during their meeting April 1, 2004.

The Evaluation Committee was unable to answer questions number 1d, 3c and 4c, due to lack of information or insight on those subjects or backgrounds. Question number 5b was only answered by the Dutch members of the Committee. Answers to all other questions are grouped per subject or theme and are described in chapters 3 to 6.

2. Introduction

2.1 Evaluation Procedure

The evaluation of the scientific part of the NPP is – conforming to the evaluation standard of the NWO Council of Earth and Life Sciences - split into three different levels. The first level concerns the evaluation of the individual projects by the researchers. These include projects in the NAAP and projects in the NAP. The second level is the evaluation of the total programme as such by the Programme Committee (= Polar Research Committee, CPO). The results of level one and two are printed in the document *NPP 2000-2004, Evaluation reports by Programme Committee and researchers*, and send to the Evaluation Committee together with the following documentation:

- Brochure of *The Netherlands Polar Programme - NAAP/NAP*
- Brochure of NAAP (The Netherlands' Antarctic activities in brief)
- Three brochures of *The Netherlands AntArctic Programme* (General introduction; Scope of NAAP 2001-2006; Output of NAAP 1994-2000)
- Brochure *The Netherlands and the polar regions* by the IPO
- Report on the evaluation of the Netherlands Antarctic Programme 1994-1999
- *The Netherlands Arctic Programme 2003-2006* (translation from “notitie Nederland en de poolgebieden”)
- Book of abstracts Polar Symposium Teylers Museum, Haarlem, including the text of two keynote lectures

The third evaluation level comprises the actual international evaluation by external experts (see below). The Evaluation Committee was chaired by an independent Dutch expert. Based on the above mentioned information and with the assistance of the current chair of the CPO, Dr. H. Lindeboom and the current support staff in the NWO/ALW Bureau (Prof. Dr. J.H. Stel, Dr. K. Kooi-de Bruijne and Dr. M. Walgreen) the Evaluation Committee drafted the final evaluation report. The CPO will be given the opportunity to formulate a response to this report. In February 2005 the NWO Earth and Life Sciences Council (ALW) will present the final report to the parties involved. Subsequently an independent policy evaluation will be performed by IPO. Both evaluations will be presented to the Dutch Government in the spring of 2006 together with the *Scope of NPP 2007-2012* ensuing a renewed Order of the Ministry of Foreign Affairs, based on a Cabinet resolution.

2.2 Evaluation Committee

The composition of the Evaluation Committee was approved by ALW in their meeting of April 28, 2004.

Name	Discipline	Organisation	Theme
Prof. Dr. Hans Vugts (em) Chairman	Boundary-layer meteorology /glaciology	Faculty of Earth & Life Sciences, Vrije Universiteit Amsterdam, The Netherlands e-mail: hfvugtsm@xs4all.nl	
Prof. Leif G. Anderson	Marine Chemistry	Dept. of Chemistry, Göteborg University, Sweden Email: leifand@chem.gu.se AOSB member	Oceanography
Dr. Susan Barr	Ethnology/ Polar History	Riksantikvaren - Directorate for Cultural Heritage, Norway e-mail: susan.barr@ra.no	Human- & social sciences
Dr. Gerard Boere	Ecology	Wetlands International (retired per 1 May 2004), Wageningen, The Netherlands e-mail: gcoere@planet.nl former IPO member on behalf of the Ministry of LNV	Ecology
Dr. Gérard Jugie	Glaciology	Managing Director Institut Polaire Français -Paul Émile Victor (IPEV), Brest, France e-mail : gerard.jugie@ipev.fr Chairman of COMNAP and the EPB. EPICA steering board member	Glaciology

The review took place on the 25th of November 2004. An informal morning session was hosted by the Polar research group of the Free University Amsterdam. This group was given the opportunity to present its activities as it is a newcomer in the NPP and because their involvement is the result of a stimulation of the Ecology theme within NAAP as recommended by the 2000 International Evaluation. The Evaluation Committee also met the members of the CPO and

SCAR committee during a joint two hours lunch. The formal evaluation meeting was held at the Radisson SAS Hotel during the afternoon and early evening.

3. Science Programmes

3.1 Netherlands AntArctic Programme (NAAP)

The recommendations of the 2000 International Evaluation with respect to the scientific themes and the need for a critical mass within these themes have been met. The Committee sees neither a need for adding or subtracting themes or topic areas nor for a stimulation of one or more of them, accept for highlighting a few topics within the themes. The Dutch scientific community should be consulted when a new Programme Plan is established, as science is always creating new insights and priorities. As such the text of the present *Scope of NAAP* needs an update in the near future (NOTE: this is a general procedure).

3.2 Netherlands Arctic Programme (NAP)

As the Netherlands Arctic Programme, was established after the last evaluation and combined with NAAP into NPP, this programme has not been previously evaluated. In a general discussion the Committee expressed the following views with respect to NAP:

- Internationalisation of Arctic research is necessary. It is recommended that the embedding of Arctic Research within global science programmes should be increased. This is also the case for research taking place outside the present co-ordination effort by NWO.
- Central NAP funding is extremely low. The annual NAP funding of only € 113.000 is considered to be an order of magnitude too little, despite actual funding outside the scope of the NPP most likely is a tenfold of the present central funding through NWO. Part of this funding is linked to applied and policy related research. Due to the lack of central funding the objectives of NAP have not been met in terms of national co-ordination of Arctic research. There also is a need to update the overview of Arctic research activities in the Netherlands. Moreover the international aspects of Arctic research co-ordination are formally not part of the NWO/ALW activities. This situation should be re-assessed (see also Polar Office). Both the budget and organisation of central funding of Arctic research through the NPP needs to be improved.
- The Committee noted that the Netherlands is an Observer to the Arctic Council, which is from a policy perspective similar to the Antarctic Treaty. Therefore, the Netherlands should feel committed to treating the organisation and funding of Arctic research in the same way as Antarctic research. The Committee underlined that the Observer Status of the Netherlands in the Arctic Council and its Working Groups like CAFF and AMAP was granted because of the substantial activities in the Arctic

region both in the field of research and conservation. The existing Dutch-Russian co-operation facilitated the application for an Observer Status, which is politically important.

- The Netherlands has signed several Treaties and Conventions, such as FCCC, the Bonn Convention (including AEWa and ACAP), Ramsar and OSPAR that ensue responsibilities towards the Arctic. The Ministries involved should ensure through IPO that these responsibilities are met. As an example the Committee learned that the Netherlands as a partner to the CAFF assisted Russia financially through a general MoU between both countries on the subject of conservancy to adhere to its responsibilities in this context. Yet, there is a complete lack of formalised co-operation with Russia within NAP. Both the scientific community and the Ministries should look into this through the NPP. It is suggested that NWO explores the possibility of establishing a MoU with the Russian Academy of Science on Arctic co-operation. This should, however, not replace the present practical MoUs between Russia and Dutch institutes to co-operate in the Russian Arctic.
- NAP should be stimulated and more focus is needed. For the adjustment of the Arctic themes the outcome of the Johannesburg follow-up (2002) should be consulted for the political aspects on nature conservation and sustainable development. These aspects are important as the Arctic region is, contrary to Antarctica, inhabited by indigenous peoples and many economic activities are being carried out by the Arctic- and third (non-Arctic) countries.
- In the field of Human & Social Sciences the focus should be on subjects of legal and historical/archaeological research on resource exploitation such as whaling, and on tourism issues.
- Interdisciplinary research in the Arctic should be stimulated. The Committee noted that these proposals apparently have a hard time in getting funded within the present disciplinary-orientated NWO system as they do not fit the current review system easily. This field suffers the consequences of the lack of interest by leading journals for most interdisciplinary studies. As a consequence publications occur in less high impact journals. The interdisciplinary character should, however, not be stimulated through specific calls, but by organising workshops in which scientists with varying scientific backgrounds are brought together in thematic research efforts.

3.3 Glaciology

The IMAU group performs excellent research with a large number of scientific papers. The Committee noted that as an example the role of the Netherlands in EPICA clearly demonstrates the success of the “Dutch approach” in Antarctic research. Within EPICA the Netherlands both offers excellent science and contributes substantially to the joint costs for logistics of the ESF consortium. The latter is highly appreciated by the German co-ordinator of the EPICA activities in

Dronning Maud Land. The EPICA example also illustrates that the strength of the Dutch programme is well used as scientific quality has strategically be linked with logistic support. For the Dutch Polar Programme a strong point about EPICA is emphasised by the Committee:

- The present *modus operandi* of EPICA is a good instrument for the Dutch community for the co-operation with other research communities. There is an added value for the Dutch community and also a high value return.

The Committee further noted the importance of this type of research for society as it among others gives insights in the effects of polar global change. In this context the Committee referred to a paper by the EPICA community published in Nature last June (Nature, Vol 429, 10 June 2004, p. 623). This paper is just the beginning of a series of high impact papers by the EPICA programme.

The EPICA budget is very well used. With only a small portion of the NAAP funds, they create enormous output with a very high standard of international co-operation. The means for logistic support brought into EPICA are very well used, not only for the Dutch scientific community (IMAU), but also for other European scientific communities. As such they really give it an added value, both by means of logistics and science. IMAU has carried out more than they promised to do in this framework: they also brought in new tools and very innovative ideas to EPICA.

Compared to EPICA the STRATEOLE project seems to be a more isolated research project. Although the model produced in the project works very well and the results are good, efforts should be made to find participants with atmosphere probing instruments like acoustic sounders etc. It is, however, also noted by the Committee that the Antarctic meteorology research has a strong publication record.

The Committee thought it difficult to make a comparison between Antarctic and Arctic research in this field, because a lot of research performed in the Antarctic is not possible in the Arctic. Dutch research in the Arctic should, because of the small budget, be more focussed to have the same impact. Albeit that the results of NAP are very promising seen in the light of the low budget. The researchers are forced to collaborate intensely. The Arctic budget should be increased to ensure, amongst other reasons, ongoing Arctic mass balance measurements. The IMAU is trying to obtain funds from other sources, but they have difficulty finding any. The upcoming International Polar Year (IPY 2007-2008) should be used to structurally raise the NAP budget to more or less NAAP levels.

3.4 Oceanography

The Committee stresses that the Dutch research effort in this field even more relies on the use of foreign international capabilities such as the German research vessel *Polarstern*. The research focus in the Oceanography theme is on Iron and UV-B or a combination of the two. The results show that adding Fe enhances the take-up of CO₂ in seawater. However, this is not a sink for CO₂, because it mineralises in the upper water column. In the scientific community, there is some discussion on this

topic as stated above, but this research has certainly delivered an important contribution to the understanding of these processes. Yet, this kind of research is not specific to the Antarctic, because these processes could be studied in other regions as well (as exemplified by the publication list available to the committee).

The Dutch groups are among the leading research groups on the role of iron in primary production. They are delivering excellent science for comparatively very little money, as the Netherlands is hardly investing in a Polar logistic capacity. The involved scientists produce a large number of very valuable publications and are a major contribution to this research area, internationally they are at top level.

It is noted by the Committee that most experiments are funded by the EU and not by NAAP. This should, however, be seen in the light of a two-level approach of Polar research in Europe, being: linking national funding with EU funding and creating a larger total value. Therefore the Committee holds the opinion that as EU funding is available for this type of research and as NAAP contributes to the costs of logistics within this EU-framework, NAAP only is partially 'owner' of the research output. This is a vulnerable approach which works now, but in the future it is unreliable with decreasing EU funds.

Currently no oceanographic research is performed in the Arctic, although a series of interesting international projects are on-going.

3.5 Ecology

With respect to Antarctic research the Evaluation Committee is impressed by the amount and quality of research carried out with such a low budget. The Committee is satisfied with the results of the stimulation of this research theme. Ecology is adequately stimulated and the Antarctic programme objectives are reached as a 'critical mass' was obtained as was required by the 2000 international evaluation team. Yet, the international link in some of the Antarctic ecology research is lacking.

Narrowing down to the remaining two major fields of research for the Antarctic functions really well, with high quality research that also finds its way to policy makers. Especially Van Franeker's research is noted as very good and innovative, and valuable to policy makers (e.g. supporting international Treaties like the Bonn Convention and its Agreement on the Conservation of Albatrosses and Petrels, ACAP). This research should be continued.

In the Arctic region the problem is the lack of budget. The recommendation here is to work on all themes as planned, but at the same time stimulate ornithological research, as it is of especially high quality and of high policy relevance in relation to Dutch international commitments under various Conventions and Treaties. As an example is mentioned the research by Piersma (Royal NIOZ) who performs innovative research on Arctic species that should be continued. It was noted that Piersma's group also has a number of PhDs working on ornithology in and outside the Arctic on Arctic breeding migratory birds. Similarly research by Alterra (Ebbing, Ens and Schekkerman) on Arctic geese and waders is highly relevant. Yet, all these activities are not visible in the material for the evaluation as this



research is not funded within NAP in which no funding for personnel is available. The Committee again stressed the need to up-date the 1999 overview of Arctic activities. This document should be the starting point for an improved co-ordination effort.

The Committee noted that it is not clear what the Arctic research performed by the VUA Polar group is adding in an international science or niche context. The Antarctic research of this group is excellent, embedded very well, and adds value to international research which was specified during the presentations in the morning. It is recommended that the embedding of Arctic research within global science programmes should be increased. MoUs could and should be used to strengthen and formalise co-operation with for example Russia. The Committee also notes, however, that co-operation with Russia is rather complex.

The number and quality of the ecology publications is of very high standard with the exception of the small number of publications of Huiskes and Gremmen. It is noted, however, that this project concern 'small proposal'-research projects, which have a different character.

3.6 Human & Social Sciences

The Committee notes that research in this field is often low-cost and needs little logistic support. All five Antarctic projects have great promise and are well anchored internationally. The one Arctic project also is well embedded. Yet, this project should in future evaluation be placed in the context of the research effort that presently falls outside the scope of the NPP. The Committee has the opinion that all Antarctic projects within this theme are very innovative. The formulation of the research question of the latest funded project on Antarctic tourism (Martens, ICIS) is very good and promising.

It is recommended that the innovative Antarctic research by Bastmeijer be carried out for the Arctic too. In this framework the challenges are nature conservation, cultural heritage, tourism, and practise of different legal regimes. The recommendation is to stimulate legal management research and archaeology, specifically the history of exploitation in the Arctic. The Dutch have a long Arctic heritage and many relevant archives which are not very accessible for non-Dutch researchers. There are many opportunities in the Arctic for the Dutch, but most are not taken up.

The Committee notes that the group of Prof. Hacquebord is well established and doing very good work. Yet, the group is rather small and thus vulnerable. The number of publications in the Human & Social Sciences theme is below the critical mass in terms of numbers, not in terms of quality. The new aspect of legal management research and tourism could be a good new 'niche' next to Hacquebord's work. The recommendation is to stimulate other groups to join the core activities of the Arctic Centre.

It is also noted that Russia is performing substantial scientific research in Archaeology and that it would be easy to 'step in'. Yet, the Dutch Polar research community does not respond to this opportunity within the NPP.

4. Programme Management and Logistic support

The Committee notes that partner countries or institutes within NAAP such as AWI welcome the Dutch participation both scientifically and logistically. The participation of the Netherlands as a founding member of the DROMLAN Air Network, which was an initiative of the EPB, is seen as an excellent signal of the “Dutch approach” by the international community. The co-operation as performed within the Dutch participation in EPICA also is an excellent example of the *modus operandi* within the “Dutch approach”. This approach is internationally accepted and is now been followed by other new ATCM members such as Canada. However, this approach ensues the necessity of a central and visible Polar Office, extensive networking and careful use of MoUs.

4.1 The instrument of MoUs

The Committee is concerned about the lack of understanding of the Dutch scientific community as expressed in remarks on this subject in the questionnaire about the need of MoUs. The Committee stresses that safeguarding the access to foreign logistic capabilities through MoUs or LoUs is an internationally accepted approach. The present MoUs with AWI and BAS are welcomed by both organisations.

According to the Committee logistic support should be taken more seriously by the Dutch researchers. The NPP office should always be notified when foreign logistics are being used, so that no misunderstandings can occur in this area. Most Dutch polar researchers have very good personal contacts with foreign research groups and are often personally invited to use foreign logistics by their foreign colleagues, but sometimes this cost efficient system is pushed just a little too far. One example of this concerns for instance the use of the *Marion Dufresne*. The phrasing of the arrangements surprised the director of IPEV to some extent. The Committee notes that scientist to scientist co-operation (also a needed part of the co-operation) can indeed lead to miscommunications at the management level and can harm future co-operation. In the Arctic region MoUs are very important as well. Several bilateral MoUs exist between Dutch and Russian institutes. It is noted that the MoU between the Netherlands and the Russian Federation in the field of nature conservation also includes the issue of Arctic co-operation. On the other hand, an improved communication from a possibly established Polar Office to the Dutch researchers on the subject of MoUs is needed. Researchers need to know which MoU's are in place, how they can (must) be used and when to ask the Dutch Polar Office to contact foreign logistic managers to develop a MoU. NWO should put into the application form or inform their researchers in other ways that arrangements for contributing to the logistic costs always need to be considered and formally dealt with in order to prevent misunderstandings.

4.2 Polar Office

The “Dutch approach” is, as is demonstrated in the cooperation within EPICA and the co-operation with AWI, functioning well. It is on the one hand cost efficient

but on the other hand vulnerable, because of the high dependency on foreign logistic support. In the Arctic a more or less similar situation occurs. As an example it is noted that the Netherlands financed the construction of modest accommodations south of Dickson and on Taymyr in the Russian Arctic for a joint Dutch-Russian research programme. As a consequence the execution of the Dutch programme, due to especially its dependency on the logistics of other countries, is vulnerable and can be strongly influenced by policy decisions outside the influence of the NPP and the Dutch Government. The Committee was seriously concerned about the low level of support at NWO/ALW, despite the Recommendation of the 2000 International Evaluation Committee. They discussed again that NPP support through an Office, as is the case with the US Office of Polar Programs at the NSF and the Polar Research Secretariat¹ in Sweden, can be important for the NPP. The Committee has the opinion that a central and visible Polar Office at the national level should be considered seriously. It should act as a linking pin in the international networks of among others COMNAP and EPB and for similar organisations in the Arctic. Presently, the staffing of the Netherlands Polar Programme, although very well connected, is not adequate.

A possibly established Polar Office should fulfil among others the duties and new legal requirements defined by the CEP, deal with MoUs, and educate and inform Dutch researchers by means of an environmental officer and the obligated course. The Office could act as a focus point for IPY 2007-2008. The scientific place of the Netherlands within IPY is clear, but a professional gate is needed. This is also of political interest: Politicians should only have to push one button, i.e. the Polar Office. Size and visibility of the Polar Office would be important to run the NPP and to ensure a long term perspective. A well steered Polar Programme is beneficial for the scientists as well, even if it costs money. The science should be driven from the bottom, but co-ordinated in an international setting, i.e. managerial, logistic and legal aspects by a Polar Office. If a Polar Office should be established, it should be done in close consultation with the Arctic Centre in Groningen, because this institute co-ordinates a substantial part of the research in Arctic areas.

5. Public Relations & Education

The contribution of NAAP to the public's awareness of problems concerning the Antarctic and the Arctic has improved considerably. An excellent example is the 2004 Symposium with a focus on both policymakers and stakeholders. The Antarctica exhibition in the Teylers Museum aiming at the public at large, including school children was also a success.

Consultation with the stakeholders has, in the light of the upcoming IPY, to be increased as has linking research with education (a central element of the next IPY). At a ministerial level linking NPP with research carried out in relation to Conventions and Treaties such as the IPCC, the CMS or ACAP should be initiated both by the NPP office and members of IPO. Finally it is noted that the interest of

the media for Polar research is high. Scientists should also be encouraged to publish more in e.g. Nature and Science as this often leads to media attention.

6. Conclusions

The Committee was unable to address all the terms of reference adequately because of the fact that a large part of the individual reports by scientists was in Dutch or information was not available to answer a specific question. However, in response to the Terms of Reference the Committee concluded the following:

NPP

- The Netherlands Polar Programme has contributed to significant scientific developments but there still is not enough effective interaction between science and policy makers.
- The scientific quality of almost all projects within both NAAP and NAP is very good to excellent.
- Since the Netherlands made an innovative political decision to use foreign logistics in stead of operating their own station in Antarctica, there is an additional need for visibility inside the Dutch organisation and the establishing of a Polar Office could be a solution for this. International responsibilities ensuing from the Antarctic Treaty and several other Treaties and Conventions concerning the Arctic are presently not met. The Committee recommends a strengthening of the present support at NWO/ALW that may lead to the establishment of such a Polar Office (with 3-4 fte according to a committee member) that should act as the national contact and co-ordination point. This Office should also collect information on the overall polar research effort in the Netherlands.

NAAP and NAP

- The NAAP Programme has stimulated high quality research in specific disciplines, provided some clear Centres of Excellence and anchored some fields of research firmly in the infrastructure of a university or institute. It has clearly demonstrated the Netherlands' commitment as a Consultative Party to the obligatory substantive research output. The NAAP objectives have been met and continue to be relevant for the future.
- Central NAP funding is extremely low. Due to the lack of central funding the objectives of NAP have not been met in terms of national co-ordination of Arctic research.

SCIENTIFIC THEMES

- The output of the Glaciology and Oceanographic themes is excellent both in terms of quality and quantity.
- The Recommendations of the 2000 evaluation to obtain critical mass within the Ecology theme have been met. The new VUA Polar group performs

excellent research in the Antarctic. In the Arctic their research needs a better embedding internationally. Yet, the Committee understands that the present situation signals the development phase of Dutch Arctic research and is largely the consequence of historic developments within the Netherlands Arctic research community. Research groups on Ornithology perform very good and innovative research both in the Arctic and Antarctic. In the Arctic region the problem is the lack of budget. The recommendation here is to stimulate all Ecology themes as planned, but to give special attention to Ornithology, as this research is also of direct relevance to policy makers.

- The research group within the Human & Social Sciences theme of the Arctic Programme is well established and doing very good research, but the group is rather small and thus vulnerable. The new aspect of legal management research and tourism could be a good new 'niche' next to current activities. The recommendation is to stimulate other groups to join the present activities in order to develop a less vulnerable basis.
- There is no large scale international co-operation necessary within the theme of Human & Social Science projects, but there should be a focus on truly interdisciplinary research in the Arctic.

List with Abbreviations

ACAP	Agreement on the Conservation of Albatrosses and Petrels
AEON	Antarctic Environment Officers Network
AEWA	African Eurasian Waterbird Agreement (Bonn Convention)
ALW	Earth & Life Sciences Council of now
AMAP	The Arctic Monitoring and Assessment Programme
AMEN	Information exchange system of COMNAP
AOSB	Arctic Ocean Sciences Board
ATCM	Antarctic Treaty Consultative Meeting
AWI	Alfred Wegener Institut für Polar- und Meeresforschung
BAS	British Antarctic Survey
BuZa	Ministry of Foreign Affairs
CAO	Committee Antarctic research (predecessor of the CPO)
CAFF	Conservation of Arctic Flora and Fauna
CEME	Centre for Estuarine and Marine Ecology
CEP	Committee for Environmental Protection, Established 14 January 1998 by the Protocol on Environmental Protection to the Antarctic Treaty.
COMNAP	Council of managers of National Antarctic Programmes
CPO	Committee Polar Research
CMS	Convention on the Conservation of Migratory Species of Wild Animals (also known as the Bonn Convention)
DROMLAN	Dronning Maud Land (Air Network)
FCCC	Framework Convention on Climate Change
EPB	European Polar Board
EPICA	European Project for Ice Coring in Antarctica
ESF	European Science Foundation
FCCC	Framework Convention on Climate Change
IAO	Interdepartmental Antarctica Committee (predecessor of the IPO)
ICIS	International Centre for Integrative Studies, University Maastricht
IMAU	Institute for Marine en Atmospheric Research Utrecht
IPCC	Intergovernmental Panel on Climate Change, established by WMO and UNEP
IPO	Interministerial Polar Committee
IPY	International Polar year
KNAW	Royal Dutch Academy of Science
MOU	Memorandum Of Understanding
NAAP	Netherlands AntArctic Programme
NAP	Netherlands Arctic Programme
NIOO	Netherlands Institute of Ecology
NIOZ	Royal Dutch Institute for Marine Research
NPP	Netherlands Polar Program
NWO	Netherlands Organisation for Scientific Research
OSPAR	Oslo Paris Convention (international cooperation on the protection of the marine environment of the North-East Atlantic)
PAME	Protection of the Arctic Marine Environment
Ramsar	Convention on Wetlands
RUG	University Groningen
SCALOP	Standing Committee on Antarctic Logistics and Operations
SCAR	Scientific Committee on Antarctic Research
TRAINET	Training Network (COMNAP)
UNEP	United Nations Environment Programme

UU	University Utrecht
VUA	Free University Amsterdam
WMO	World Meteorological Organisation