Earth and Life Sciences

Research Programme Biodiversity Works

Towards a dynamic and resilient nature in an ever-diminishing space

The Hague, 1 January 2011

The Netherlands Organisation for Scientific Research

Content

1 Introduction

The Earth and Life Sciences Division (Dutch acronym: ALW) of the Netherlands Organisation for Scientific Research (Dutch acronym: NWO) and the Ministry of Agriculture, Nature and Food Quality have combined their forces in biodiversity research. This brochure describes how to submit research proposals in this field.

The Biodiversity policy programme (*Biodiversity works: 2008-2011*) was launched in 2008 and signed by various government ministries (Agriculture, Nature and Food Quality; Development Cooperation; and Housing, Spatial Planning and the Environment), as well as being supported by certain other ministries (Economic Affairs; Education, Culture and Science, Transport, Public Works and Water Management, and Defence). This programme includes a section on acquiring new knowledge in the field of biodiversity. NWO-ALW has successfully completed various biodiversity programmes since the 1990s, while biodiversity is also an important theme in the Earth and Life Sciences Division's 2007-2010 strategy. This common interest in biodiversity is reflected in the establishment of the *Biodiversity works: towards a dynamic and resilient nature in an ever-diminishing space* research programme. The programme offers the opportunity to request funding for a PhD student or postdoc to conduct research into dynamic nature, ecosystem functions and/or land scarcity.

Budget

A total of EUR 3,650,000 has been reserved for the *Biodiversity works: towards a dynamic and* resilient *nature in an ever-diminishing space* research programme.

2 Aim

The aim of the programme is to generate new knowledge on policy themes: in other words, to achieve a greater focus on the dynamism of nature, on devising and implementing ecosystem services and on dealing with the limited physical space available for nature in the Netherlands.

Problem definition

Biodiversity is underpinned by nature management. Nature management focuses on preserving and restoring biodiversity, with the primary objectives being to preserve largely 'undisturbed nature', to maintain and restore 'traditional', semi-natural landscapes and to create 'new nature'. These concepts are readily applicable in nature reserves, where land is not being used for financial or economic purposes. The scientific research needed for properly substantiated preservation and restoration in nature reserves has so far, however, focused too little on dynamism in nature and on interactions between ecosystems and elements of such systems. Meanwhile, climate change and new links within and between continents mean that account also increasingly has to be taken of invasions by new species.

There are other gaps in our knowledge of the entire spectrum of rural areas. If we are to deal with the scarcity of space in such areas and ensure usable and sustainable management of our landscape we need to switch from upscaling of nature reserves to the level of the overall, regional landscape. Although the draft version of the National Ecological Network is currently being amended, nature cannot easily be boxed into areas, districts or similar categories. There is currently a mismatch between the dynamism in nature and the regulations specifically designed to protect this nature (such as the Flora and Fauna Act and the Habitats Directive). Adopting a more dynamic approach to nature and to the changes arising in response to changing economic carriers in our landscape and changes in regulations will help optimise the results achieved with the same resources. However, this demands an understanding of social and spatial economies and a historical knowledge of land use.

Without economic carriers there is no future for biodiversity in rural areas, while imitating the economic carriers of the past does not represent a long-term solution, certainly not on a larger scale, other than in the specific situation of nature reserves. Opportunities for improvement exist at regional and district levels, where stakeholders' interests mean they can play a role by providing funding or functional economic services and increasing or maintaining biodiversity. In this way, a sustainable basis can be established for an attractive landscape offering wide-ranging biodiversity for users. The key to biodiversity in rural areas lies in the agricultural sector, the largest user of these areas. And the role that a changing agricultural sector can play in establishing a new, integrated approach to farming and nature is essential in this respect. We are currently in a phase in which we are seeking to integrate nature into the overall landscape. This demands a 'delta' approach. In other words, an approach bridging the humanities ('alpha sciences'), natural sciences ('beta sciences') and social sciences ('*gamma* sciences'), or combining historical, ecological and economic interests (*alpha* + *beta* + *gamma* = *delta*). These concepts can also be summarised as the PPP (People, Planet, Profit) principle of sustainability.

Scope

The primary focus within the *Biodiversity works* research programme is on the Dutch situation in terrestrial and fresh-water aquatic research, with a possible overflow to situations in neighbouring European countries and possible inclusion of examples

and/or further integration within the EU Framework Directive on Water, the Habitats and Birds Directives and Natura 2000.

The scope of the research consequently excludes worldwide or tropical research, while sea and coastal research is covered by NWO-ALW's National Programme for Sea and Coastal Research (Dutch acronym: ZKO).

Research within the *Biodiversity works* research programme will be knowledge-generating. DLO (the former Agricultural Research Agency) operates the Knowledge Base 1 programme. This has ten focal points and includes three subjects similar to the themes specified below. Applications under the *Biodiversity works* programme may be complementary to, but must not overlap the DLO Knowledge Base programme. Applicants must ensure that their applications do not overlap this programme, and the programme committee will also consider this aspect.

Themes

This call for biodiversity research proposals covers three research themes:

1. Dynamic nature
2. Ecosystem functions and services
3. Land scarcity.

Details of the themes can be found in section 2 of the brochure.

Collaboration with stakeholders

In order to be assured of a cohesive link between research and management and/or policy, applicants must take due account of stakeholders' ideas on possible applications of research results.

Results

The results of completed scientific research will be published in referenced scientific journals, either as part of a dissertation or otherwise. Articles are also expected to be published in Dutch periodicals in the field of nature management and policy.

Output from the programme may also be made available in other forms, such as computational models (simulation models, scenarios and decision-support systems) or databases for general consultation and other forms of knowledge transfer, possibly including education.

Possible application of results:
Possible opportunities to apply the results of research in theme 1 ('Dynamic nature') could include applications in explorations and assessments, but also in system descriptions that, as well as ecology, also take cultural and economic aspects of habitat types into account. This will provide input for assessing and formulating national and international policy and for use by provincial authorities, water boards and land-use, planning and other management bodies.

In addition to the above, other possible applications in theme 2 ('Ecosystem functions and services') could include applications in models (ideally validated) and the provision of relevant series of benchmarks, as well as in financing arrangements. Alongside national governments, target groups could include provincial authorities, the Dutch Government Service for Land and Water management (DLG), water boards and nature managers, as well as funding organisations, banks and NGOs.

In the case of theme 3 ('Land scarcity') possible applications could also be found in spatial strategies and scenarios and in assessments for policy on structuring and the design of larger, adjoining areas in the Netherlands, including in cross-border relationships. Alongside national governments, target groups could include provincial

authorities, the Dutch Government Service for Land and Water Use, water boards, nature managers, urban planners and municipalities.

2.1 Dynamic nature

Target and habitat types are used in nature management in the Netherlands and Europe. However, external influences are making it increasingly difficult to operationalise these concepts. New combinations of species are arising as a result of new species migrating to the Netherlands in response to climate change, increasingly intensive transport and the linking of waterways (such as the linking of Eastern and Western Europe by the Rhine-Danube canal, but also other waterways). This has consequences for existing ecosystems. Whether theoretical principles such as those derived for terrestrial systems also apply in aquatic systems is still unclear. What is the link between land and water from the perspective of local interactions of species with major differences in dynamism and spatial scale? Is it possible to identify ‘windows of opportunity’ that are important for long-term developments?

Biodiversity in the Netherlands can be found in nature areas of a dynamic nature, such as coastal areas and ecosystems in the vicinity of rivers, as well as in semi-natural, stably managed landscapes and in nature restoration areas where agriculture has given way to nature development, but also in extensively urbanising rural areas. In order to understand the resilience of these systems (i.e. the extent to which external influences can be resisted, and the rate at which a system can return to its original state after the influence ceases to apply), it is vital not only to improve our understanding of these processes, but also to understand links between sub-ecosystems.

As well as understanding ecological processes, it is crucial to gain insight into the economic, cultural and historical processes that have shaped and continue to shape semi-natural landscapes in the Netherlands. These processes play a role in determining the success of the resources deployed in restoring biodiversity, partly because they serve as a frame of reference (which can be assesssed) and partly because agricultural activities and the related spatial planning of the landscape determine the scope available for nature management and restoration. The ultimate question, therefore, is, how can integrated management at a landscape level give direction to these developments?

Questions that could be researched include:

Feedback

- Where does positive feedback occur between vegetation, soil abiotics and biotics and the interaction with plants and above-ground vertebrates and invertebrates, and where is such feedback negative?
- How do restrictions in the dispersion of above-ground and below-ground organisms determine the feedback?
- How does the feedback contribute to the management and preservation of biodiversity?

Land use

- What influence is rapidly changing land use having, often after centuries of stability, on species’ chances of establishing and maintaining themselves in new configurations of their habitats?
- How are changing land-use patterns and climate change influencing above-ground and below-ground biodiversity and the resultant changes?

Environmental changes and invasions

- How is biodiversity in terrestrial and aquatic systems being influenced by extreme environmental changes and biological invasions of species from other continents or other climate zones?
- How are these developments influencing biodiversity in dynamic nature areas and in nature areas primarily appreciated for the consistency of their environmental influences and management?

Research results can help achieve:

1. better management of nature areas;
2. better implementation of nature management in a changing mosaic of different forms of land use in large-scale landscapes or areas.

2.2 Ecosystem functions and services

Theoretical research into the relationship between biodiversity and ecosystem functions and services mostly suggests that a reduction in biodiversity will lead to a reduction in functions and services. However, a reduction in biodiversity is often caused by external factors, such as eutrophication, dewatering and other disturbances. To date, research into the relationship between biodiversity, functions and services has focused primarily on numbers of plant species, while the role of multitrophic interactions with animals and micro-organisms has often been disregarded. Ecosystem functions and services consist of more than just primary productivity. Capturing CO_2, producing oxygen, clean groundwater, clean air, pollination and the suppression of diseases and pests are all important ecosystem services. It is only recently that biodiversity research has started considering the impact that microbial biodiversity and the diversity of plants and animals have on each other and the effect of this on important societal functions and services. It is important to understand the link between the dynamism of ecosystems and the diversity of species and functional groups on the one hand, and the relationships between these aspects and the dynamism and resilience of systems on the other hand.

Questions that could be researched include:

Land use and ecosystem functions

- What is the significance of internationally important ecosystem functions for specifically Dutch ecosystems, such as the effect of land use on hydrology, the effect of vegetation degradation on erosion, the role of carbon sequestration and oxygen production by different systems and the disruption of nutrient cycles?
- How do interactions between trophical levels operate in the relationship between diversity and ecosystem functions (for example, the role of microbial diversity in understanding nutrient cycles and the biogeochemistry of soils as the basis for ecosystems' functioning), with a specific focus on the spatial context (relevant scale levels)?

Indicators of ecosystem functions

- Are there indicator types for the functioning of various trophical levels and various functional groups of plants and animals, and what role do these indicator types or groups play as a measure of the preservation of biodiversity (specifically of target species)?
- To what extent are theoretical concepts that have been developed for terrestrial systems applicable to aquatic systems and *vice versa* (for example, a system's sudden switch to an alternative, stable condition, or invasive species)?

Economy and ecosystem functions

- What role can economic carriers play in the performance of specific ecosystem functions?
- What are the ethical and economic values of biodiversity and ecosystem functions, and how can we implement these in Dutch ecosystems of international significance, also given their scale and magnitude?

Research results can help develop policy to:

1. demonstrate that nature (green areas) is an essential prerequisite for the earth and the people living there to survive;
2. make it clear that 'green' functions and services are of importance to us all.

2.3 Land scarcity

Local biodiversity is also determined by the way in which species and substance flows move in space, the abiotic baseline and local history. In terrestrial systems, primary production takes place locally, but above-ground herbivores and carnivores can move across large distances. In aquatic systems, primary production is often from organic material originating from elsewhere. Processes such as herbivory and grazing have a spatial component, and result on a larger scale in mosaics and interactions between ecosystems. The role that micro- and macrobiodiversity play in these ecosystems and the way in which land and water ecosystems are spatially linked can generate important information for managing biodiversity in the Netherlands.

The scarcity of space in the Netherlands and Western Europe is reflected by the competing claims made on space, by fragmentation and by the bisection of essential connecting routes. It is consequently becoming increasingly important to specify the targeted form of biodiversity, both in nature reserves and in rural areas as a whole. Upscaling from numbers of species to the level of functional species groups, food webs, ecosystems and landscapes is vital.

Questions that could be researched include:

Functioning of ecosystems

- How can terrestrial and aquatic systems be effectively linked for the purposes of managing and restoring biodiversity?
- How large do areas need to be to ensure sufficient genetic variation at different trophical levels?
- What are the critical lower limits for each ecosystem type?

Rural areas

- To what extent can the different forms of biodiversity in rural areas (nature reserves with biodiversity as their primary function, or multifunctional areas combining agricultural or other production, recreation, aesthetics and visual features) be viewed together for the purposes of promoting ecosystem services and biodiversity?
- Economic carriers are subject to dynamism. What consequences will changing views on agriculture have for biodiversity and ecosystem services?
- To what extent can cultural and historical aspects play a role in maintaining and increasing biodiversity?

Urban areas

- What is the value of urban green environments in promoting ecosystem services and biodiversity?

- What role can changing views on contraction scenarios for populations and residential and industrial areas play in increasing biodiversity?

Research results can help shape policy that:

1. views nature as more than just nature reserve areas;
2. regards basic ecosystem services and biodiversity in intensively used landscapes as essential and therefore worth of protection.

3 Guidelines for applicants

3.1 Who can apply

- Professors, university lecturers and senior lecturers or researchers in equivalent positions may apply if they:
  - are employed by a Dutch university, an NWO or KNAW (Royal Netherlands Academy of Arts and Sciences) institute or the Netherlands Cancer Institute, *and*
  - have at least a university degree (*Drs.* or *Ir.* title*)* or equivalent qualifications, *and*
  - have an employment contract for at least the period of the application process and the research for which the grant is being applied.
- Researchers from other research institutes can apply only if the Earth and Life Sciences Board considers the following criteria to be met: the institute is located in the Netherlands; the institute has independent research activities; the institute does not operate for profit; the institute is cooperating with a university on the research for which funding is being requested, and this is evidenced by the university contributing to the research in the form of personnel or material, and the researchers are free to publish in international scientific publications.
- Applicants are not permitted to apply for a position for themselves (the Innovational Research Incentives Scheme has been set up for that purpose).
- Applicants who have received an Innovational Research Incentives Scheme (IRIS) grant cannot submit an application until two years after the starting date of that grant.
- A grant must always be requested by one main applicant; co-applicants are not permitted.
- Only one application per main applicant will be processed.
- A grant must always be requested by a main applicant, and correspondence will in the first instance be with that person.

3.2 What can be applied for

Each application will be for a maximum grant of EUR 250,000 to cover all reasonable, non-infrastructural expenses incurred in the research, such as temporary staff appointments (PhD students or postdocs, possibly supplemented by other temporary staff contributing specific expertise for a maximum of EUR 10,000), materials (consumables, but not equipment), fieldwork (travel and accommodation expenses relating to the gathering of research data at a location other than the researcher's own organisation) and travel expenses (costs relating to visits to other research groups). Each type of expenditure should be accounted for separately.

One temporary staff position may be applied for in each project application. A PhD student position can be requested for a period of 4 years, while a postdoc position can be requested for a period of 3 years (or 2 years, if appropriate). Staff costs are eligible for funding on the basis of the most ercent standard remuneration agreed in the covenant between NWO and the Association of Universities in the Netherlands (VSNU). This specifies the following maximum amounts (as at 1 July 2010):

- PhD student over 4 years: EUR 198,693
- Postdoc over 2 years: EUR 128,938
- Postdoc over 3 years: EUR 195,706

No funding can be requested for staff supervising the researcher, student assistants, overheads, general laboratory equipment, maintenance and insurance costs,

conference visits (to be paid from the bench fee) or publication costs. NWO reserves the right to reduce grants awarded on applications honoured, based on advice given.

3.3 When can applications be submitted

The call for the *Biodiversity works* research programme, involved abridged applications ('pre-proposals'). The closing date for submitting pre-proposals was 5 October 2010 at 23.59. After confirmation of the advice regarding pre-proposals by the steering group, the applicants with projects that fit in the programme and are most likely to be successful, have been invited to submit a full application. The closing date for submitting pre-proposals is **1 March 2011** at **23.59**. The remaining candidates are firmly advised not to pursue their applications.

3.4 Drawing up an application

3.4.1 Full proposal

The full proposal will consist of three parts:

1. a fact sheet listing key data of both the applicant and the proposal;
2. the research proposal;
3. a letter of support from the stakeholder(s).

The fact sheet must be completed and submitted electronically using Iris, NWO's online grant application system. The research proposal must be completed on the application form that can be downloaded from the website. This form must be included as a PDF attachment with the electronic submission via Iris. The application must also include a letter of support from the stakeholder(s) (see 3.4.4).

The fact sheet, research proposal and letter of support must all be completed/written in English.

Please use a font of at least 10 and remember the maximum number of words/pages permitted. Incomplete application forms or forms exceeding the maximum number of words/pages permitted for a question may result in your application being rejected. No additional information (such as letters of recommendation, reprints and so on) will be permitted. Applications failing to comply with these necessary restrictions will not be processed.

3.4.2 Fact sheet

The fact sheet must state the name and address of the main applicant and the title of the research project, and include a summary (max. 250 words) in English. If the application for a grant is accepted, this English summary will be made publicly available on the NWO website, unless you specify when submitting your application that you do not give permission for this.

3.4.3 Application form

1a. Details of applicant

Details of the main applicant, research institute(s) and research school.

1b. Applying for

Which type of position is applied for, PhD or post-doc.

2a. Composition of research group

Please indicate the individuals from the Netherlands (and possibly other countries) who will be verifiably involved in performing this research (scientists and stakeholders), including details of any support staff requested. Please state these individuals' surnames and initials, titles and specialisations and the nature of their involvement (e.g.: day-to-day supervision, thesis supervisor or adviser).
Participation by researchers (from the Netherlands or abroad) and stakeholders must be formalised at the time of the application being submitted.

2b. Keywords

Please provide a maximum of five keywords that describe the research proposal.

3a. Top 5 scientific publications of the applicants related to the proposed research

Please provide – a maximum of 5 – key publications of the applicant and/or the involved research group (possibly also of the potential candidate for the position) that are relevant for the proposed research project.

3b. Other relevant publications

Please include a list of significant publications relating to the proposed research.

4a. Detailed description of the proposal (maximum 2000 words and two figures)

Objective(s) of the project
State the scientific objective(s) of the project proposal.

Innovative character of the project
What are the potentially innovative aspects within the broader scope of the research theme? By definition, all research results expand 'known' boundaries. What is being sought here, however, is research of a more innovative nature in the relevant discipline(s) and that differs from more routine research based on traditional methods. The innovation and differences may be reflected in the research methods proposed and potential results. Is the proposed research ground-breaking? It will be kept in mind that a truly explorative research programme should be identified and, despite a possible isolated position (such as a starting or small research group) should have a fair chance to be supported. At the same time it is not realistic to expect a research group to "do something completely new" every four years. Building on previous work should be possible, but it is should be made clear how the proposed research is innovative with respect to this previous work. Is an important contribution (or breakthrough) to the development of the area of research foreseen?

Scientific approach/research methodology
Please elaborate on the aspects mentioned below. The proposed project should be limited to a specific problem for which a solution is within reach. A too general or vague research objective should be avoided. It is emphasized that applications submitted to ALW as part of a larger (inter)national programme, can be evaluated as a stand-alone project.
Indicate the scientific importance of your application briefly and to the point. Provide the history and position of the proposal within the development of the area of research. Applicants could indicate the relation of the proposed project to research in this field that is carried out elsewhere or the application of the proposed research in the research school, institute or laboratory they are working in. How urgent is implementation of this project with regards to (being ahead of) international competition, availability of data, participation in cooperative programmes etc. If the research in the group comprises more than one project, the proposed project should be projected with respect to ongoing research.
Please indicate how the proposed research will be carried out and which methods and equipment will be used.

Provide details on the proposed research group. Collaborations, type of involvement, assignments: amongst others who will be responsible for daily supervision of the proposed PhD student. With which partners abroad will you be working together with respect to this application?

4b. Research impact (max. 300 words)

N.B. This section is not intended to be used as further elaboration of section 4a. Please use a maximum of 1000 words for this section. Include the following details:

1. The specific societal, technological or industrial problem that requires a solution that is not yet available;
2. How the proposed research will contribute to resolving the problem, and the societal or economic consequences in the medium or longer term;
3. Which target group will benefit from the results, or which parties or end users have a direct interest in the results;
4. How collaboration with the stakeholder(s) will take place;
5. The steps to be taken to enable the research results to be used. Which specialists will be needed to achieve the objective?

5. Timetable of the project and working programme

Please indicate the phasing of the research project in periods. Specify the work that will take place for the research. Which activities of the candidate for the position applied for are identified and how are these activities planned in time? When is a potential promotion expected? It is important that the PhD project is completed within 4 years. The timeframe therefore has to be realistic. ALW requires that the timetable is set up to allow 3.5 years for experimental work, allowing for sufficient time to write the dissertation and promotion at the end of the project period.

6. Affiliation with (inter)national research/policy programmes

Please indicate whether the proposed project is connected to a national or international research or policy programme. Is the research carried out in collaboration with (inter) national partners? Is true (inter)national cooperation and formal connection of the proposed research to such programmes included or is the proposal meant to establish the (inter)national collaboration? (please also refer to chapter 2 “scope”).

7. Theme (max. 500 words)

Please state the theme applicable to the research project you are applying for. This may be theme 1, theme 2, theme 3 or a combination of themes. You should explain how the proposed research fits within the theme(s).

8. Budget

Please provide a summary of the requested budget. You should distinguish between staff expenses, equipment and fieldwork/travel expenses and give brief reasons why this expenditure is necessary for the research to be carried out. The total amount applied for must not exceed EUR 250,000.

Personnel (mm)

In the table, state the number of man-months for which the PhD student or postdoc is requested within the available timeframe. PhD students should be requested for 4 years and postdocs for 3 years (or 2 years, if appropriate). An amount of up to EUR 10,000 may be requested for other staff with specific expertise.

Consumables

Consumables: only if these are very specific to this research and, due to their magnitude, cannot be fully covered by the relevant institute’s own budget. Standard office and laboratory equipment will not be funded. The maximum amount that can be requested annually for consumables is EUR 10,000.

Fieldwork/travel expenses
Travel and accommodation expenses relating to fieldwork. The geographical areas should be clearly indicated. Please also specify, if applicable, whether permission for the fieldwork has been obtained from the relevant authorities and the duration, period and nature of the research.

Please indicate which foreign research groups, institutes and/or museums will be visited in connection with this research. You should also indicate the nature/necessity of the visit and estimate the duration.

Fieldwork/travel expenses must not exceed EUR 10,000.

The combined amount requested for consumables and fieldwork/travel, for the entire period of the grant, should not exceed EUR 50,000 for a PhD project and EUR 40,000 euro for a postdoc project (3 years).

An additional bench fee of EUR 5,000 will be awarded for each project accepted. This can be used to pay for the costs of attending conferences and so on and does not need to be included in the budget.

9. Financial assistance from (an)other source(s)

Please indicate whether you have applied, or will apply, for financial support for this project and related research from other sources (for example EU-programmes, but also at other NWO divisions). If so, indicate for which parts of the project and when a decision about this can be expected. It is not allowed to submit an identical application to several NWO divisions at the same time.
Furthermore you should indicate how much your own institution will contribute to consumables, equipment and other costs of this research. (Personal support of your institute to this research should also be indicated at section 1c of this form). Please be aware that a letter to guarantee implementation of this project can be requested from the faculty board, or comparable financial authority, if the project is awarded.

10. Legal requirements

We would like to stress that the applicant, and not NWO, is responsible to ensure compliance with legal requirements and guidelines with respect to the proposed research. If an applicants indicates “No” at this section, the project can obviously only be started (if awarded) when it is made compliant with all legal requirements and guidelines.

11. Support letter from stakeholder(s)

The full proposal must include a support letter from the stakeholder(s). This document (see 3.4.4 for details) must be included as a PDF attachment with the electronic submission via Iris

3.4.4 Support from stakeholder(s)

In order to achieve the objectives of the programme, a requirement has been included to demonstrate that the project entails close collaboration with one or more stakeholder(s) willing to be actively involved in formulating and performing the project. The full proposal must consequently include a detailed letter of support from the stakeholder(s) in which the concrete details of the contributions to be made by the stakeholder(s) are provided. This contribution could include, amongst others, guidance of the researcher to be appointed, provision of data and permission to carry out fieldwork on stakeholder terrains. Next to this, the stakeholder should indicate how its contribution will positively affect the results of the research. The support letter (in English) is submitted as a PDF attachment with the full proposal with the electronic submission via Iris.

3.5 Specific conditions

Submissions of applications will be governed by the NWO-ALW guidelines.

The ALW Board reserves the right to require an application to be shortened or amended on scientific, policy or budgetary grounds as a condition for awarding funding. If an application is granted, ALW will generally designate the main applicant as the project leader. The latter will receive the ALW instructions for project and programme leaders and the NWO general funding conditions. The research should start within a year of the grant being awarded, with the appointment of the PhD student or postdoc. If it is not possible to achieve this, the grant will be withdrawn.

Projects awarded funding must report on progress and results in the form of a scientific annual and final report, while also providing information for mid-term and final assessments.

Results will be presented at the annual biodiversity meeting arranged by NWO as part of the *Biodiversity works* research programme.

NWO supports open access to data. Data generated in projects within the *Biodiversity works* research programme will be made available to the Dutch Biodiversity Information Facility (NL-BIF; www.nlbif.nl) immediately after completion of the project. In consultation with the main applicant, NL-BIF will, if wished, postpone publication for up to two years after completion of the project and just include a reference to the project on the website. In the pre-application phase, all applicants have agreed to these conditions regarding open access of data.

After the review procedure and preceding possible grant confirmation, projectleaders of highly ranked proposals will be requested to provide a data management plan to be approved by ALW. Approval of the data management plan by ALW is a condition for receiving a grant.

3.6 Submitting an application

Applications must be submitted through Iris, NWO's electronic application system. To do this you must request an access code via the NWO website. You can find more information about Iris on the NWO website. If you have questions of a technical nature, please contact the Iris helpdesk. Details of how Iris works and the Iris user manual can be found on http://www.iris.nwo.nl. The Iris helpdesk can be reached on Mondays to Fridays from 11.00 hrs. to 16.00 hrs (CET) by calling 0900 - 696 4747 (calls cost EUR 0.15 per minute) or by e-mail on iris@nwo.nl.

4 Assessment procedure

4.1 Procedure

The procedure consists of two parts; the first part, in which pre-proposals will be submitted, and the second part, in which selected applicants will submit full applications. An independent international review panel from the *Biodiversity works* research programme will advise the steering group on the proposals submitted.

Pre-proposal

The first part of the procedure is the pre-proposal phase, which involves submitting an abridged application. The programme committee[1] will prepare policy recommendations for the review panel. The international review panel will take the programme committee's recommendations into account when assessing the pre-proposals for suitability and comparing them against the criteria. The pre-proposals will then be prioritised, without use of external advisers (international referees). Once the steering group has received the recommendations on the pre-proposals, the most suitable applicants submitting a proposal fitting within the programme will be invited to submit a full application. Those whose pre-proposals are considered less suitable will be strongly advised not to submit a full application. Proposals not fitting within any of the three themes will not be considered.

Full application

The international review panel will assess the full applications against the various criteria. Foreign referees will be employed so that specific disciplinary knowledge can be used in determining the quality of the research proposals. All assessments received for the applications will be anonymised by the ALW office and sent to the applicants. Applicants will be given the opportunity to submit a written rebuttal ('both sides heard'). This rebuttal must not be longer than two pages of A4 (font: Arial; minimum letter size: 10).

The programme committee will draw up recommendations on the applications' relevance to the call, opportunities to apply the results and collaboration with the stakeholders. The review panel will meet to discuss the respective merits of the applications, based on the programme committee's recommendations, the research proposals, the views of the referees and the written rebuttals, and will then issue a clearly argued assessment that also can be expressed in figures, all based on a set of predetermined criteria. The review panel will subsequently issue a ranking reflecting the differences in quality established.

Based on the review panel's rankings, the available resources and, where necessary, policy considerations, the steering group will then decide which proposals to honour. See section 6.1 for a schedule of the procedure for submitting applications.

[1] These are the programme committee members who, in accordance with the NWO Code of Conduct regarding Conflicts of Interests, are not involved in the pre-proposals and/or applications submitted.

4.2 Criteria

The four criteria will be weighted equally. In the event of overall scores being equal, prioritisation will be determined by the suitability within one or more research themes.
The criteria applying to the pre-proposals will be:

1. Suitability within one or more research themes of the *Biodiversity works* research programme;
2. Scientific quality of the proposal;
3. Quality, infrastructure and added value of the relevant research groups/stakeholders (fundamental/applied);
4. Opportunities to apply research results (as evidenced, for example, by third-party contributions and stakeholder involvement).

Full applications will be assessed on the basis of:

1. Scientific quality of the application:
   - Originality;
   - Innovative character;
   - Technology, methodology and feasibility of the proposed approach.
2. Quality, infrastructure and added value of the relevant research groups/stakeholders (fundamental/applied).
3. Opportunities to apply research results:
   - potential contribution that results of and/or insight from the research can make to resolving a problem;
   - potential to apply results of the proposed research in the medium or longer term;
   - expected cultural, societal, technological or economic impact of the results of the proposed research;
   - effectiveness and feasibility of the proposed approach.
4. Suitability within one or more research themes of the *Biodiversity works* research programme (*referees will not assess this criterion*).

4.3 Committee members

The procedure involves a steering group, a programme committee and a review panel.

The steering group has financial responsibility for the programme and comprises representatives of the parties funding the research and an independent chairman. The steering group takes the decisions within the research programme and informs the ALW divisional board.

The programme committee is responsible for the contents of the programme and comprises members with expertise in the field of biodiversity (stakeholders and scientific experts). In view of the NWO protocol on involvement and possible conflicts of interest, programme committee members should ideally have no personal involvement in the applications.

The review panel comprises national and international scientific experts and Dutch stakeholders/experts. The panel will assess the full applications, and its members are also not allowed to have any personal involvement in the applications.

5 Other information

5.1 Contact details

Information on the *Biodiversity works* research programme is available from:

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6 Appendix: Application process