Climate-robust production systems and water management

Agricultural and horticultural production systems in relation to water quality, scarcity and surplus

Call for proposals
Chapter 1: Introduction / Climate-robust production systems and water management

1 Introduction

1.1 Background

NWO contributes to Dutch innovation policy with a part of its programming. From 2020 onwards, this programming will be based on the mission-driven top sectors and innovation policy of the Ministry of Economic Affairs and Climate Policy (EZK), which is aimed at solving major societal challenges. The underlying Knowledge and Innovation Agendas (KIAs) and the contributions of NWO and other parties are part of the Knowledge and Innovation Covenant (KIC) 2020-2023.

Mission-driven top sectors and innovation policy

Climate change, cyber security, ageing: Dutch society faces several major challenges. These challenges require groundbreaking innovative solutions with impact. That offers economic opportunities for public and private parties to jointly develop innovative solutions for societal issues.

Four important societal themes play a central role in the new mission-driven top sectors and innovation policy:

- Energy Transition & Sustainability
- Agriculture, Water & Food
- Health & Care
- Security

These themes have been elaborated in 25 missions that contain concrete ambitions.

There will also be a focus on:

- Key Technologies
- Public earning capacity

From ambitions to objectives

Based on the ambitions, the top sectors have jointly drawn up Knowledge and Innovation Agendas (KIAs) for each of the aforementioned six themes. In consultation with relevant stakeholders from science and society, multiannual mission-driven innovation programmes (MMIPs) have been formulated within these KIAs. For the innovation areas, the MMIPs describe the intended objective, the (sub)programme lines and the specific research and development questions to be answered. For the Key Technologies, potential multiannual programmes (in Dutch: MJPs) have been identified, supplemented with knowledge and research questions.

NWO and the KIC: research bring solutions a step closer

The contribution of scientific and practice-oriented research is indispensable for realising solutions for the challenges posed. NWO is responding to this by investing more than 100 million euros per year in research in which public and private parties collaborate on societal challenges. The research and innovation programmes of NWO for the KIC 2020-2023 contribute to answering the research and development questions linked to the societal challenges.
Collaboration with impact

The Dutch government has never previously formulated the ambition to realise large-scale societal changes to solve societal problems. In the vision of NWO, the chances of realising the intended changes and the impact of these will be greatest if the focus lies with interdisciplinary research in which collaboration is sought with relevant knowledge institutions (including universities of applied sciences), public and private partners, including small and medium-sized enterprises (SMEs). Chapter 2 of this call for proposals explains how NWO will encourage and facilitate the route from societal problem via research to impact.

NWO research programmes for the KIC 2020-2023: four main lines

NWO will focus on specific and large-scale research programmes. These programmes are organised in four main lines:

1. MISSION – Mission-driven thematic calls aimed at the priorities from the six KIAs.
2. DEMAND – Partnerships aimed at research and innovation questions from private and public partners on subjects from the KIAs.
3. STRATEGY – Large, long-term, strategic collaborations on subjects from the KIAs.
4. PRACTICE – Practice-driven instruments aimed at strengthening collaboration between universities of applied sciences, SMEs and regional partners, on subjects from the KIAs.

This call for proposals falls within the main line MISSION, in which NWO will develop a limited number of large thematic calls each year.


1.2 Available budget

A budget of 6 million euros is available for this call for proposals.

1.3 Validity of the call for proposals

The application round Climate-robust production systems and water management has two phases:

1. The submission of pre-proposals
2. The submission of full proposals

This call for proposals is valid until the date on which the NWO Executive Board takes the decision about the full proposals. For projects awarded funding within this call for proposals, the conditions stated remain valid throughout the entire duration of the project.

The deadlines for the two phases are stated in Section 3.3; the expected decision dates are given in the planning stated in Section 4.1.
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2 Aim

2.1 Theme of the call

As a result of climate change, the Netherlands will increasingly face changing precipitation patterns with longer periods of drought and periods of intense rainfall in a short time. This has considerable consequences for agriculture and horticulture. Climate change can lead to too much or too little water for crops, lower groundwater levels, soil subsidence and salinisation. This can result in crop damage and reduced yields.

Amongst other things, the effects depend on the local soil and water system and can therefore strongly differ per region. Through modifications to the production and/or water systems, the negative effects of climate change can be reduced or even prevented, and any opportunities that climate change provides can be utilised.

The Netherlands faces the challenge of organising agriculture and horticulture in a sustainable and climate-resilient manner that fits within the changing (regional) soil and water systems. We need not just technological knowledge but also knowledge about the societal aspects of the intended innovations. This programme therefore clearly addresses interdisciplinary research in which natural sciences research is integrated with research from the social sciences and humanities, in line with the interdisciplinary approach used within the KIC (see Section 2.3).

Aim of the programme

Innovative solutions in which agricultural and horticultural production systems are considered in relation to water system management are vital for a future-proof and sustainable agricultural production. The aim of this research programme is to develop knowledge for climate-robust agricultural and horticultural production systems in relation to research into the effects of water quality, scarcity and surplus. The outcomes of the research are meant to allow for the realisation of innovative and integral solutions for climate-resilient agricultural production that fits within the regional soil and water systems while taking into account societal challenges, transitions, impact and support.

Research areas and integral approach

The aim of this programme requires an integral approach in which research into agricultural and horticultural production systems, water and soil systems and the societal aspects of innovations is combined. Research projects must consider aspects from all three research areas. The integral approach must also be expressed in the composition of the consortium with researchers and partners from different disciplines.

Climate-robust agricultural and horticultural production systems

For the design of climate-robust and sustainable agricultural and horticultural production systems, we need additional knowledge about the characteristics that enable plants to survive periods of drought, salinisation, wetness or temporary flooding. The use of new crops, adapted cultivation techniques and smart technology can also contribute to solutions. Another possible route to realise robust production systems is a high diversity at the cultivar, species, cultivation, business and landscape levels. That requires more insight into how functional agrobiodiversity can contribute to the resilience of the production systems against extreme weather conditions and other effects of climate change. In the area of livestock farming, for example, we need additional knowledge regarding which animal breeds are adapted to the local ecological conditions, such as a salty or wet environment, and which genetically relevant variations are available. In addition, the use of other grass species, changes in grassland management and the use of alternative types of coarse fodder can contribute to climate adaptation.

Heat stress and emerging pests and diseases as a consequence of climate change fall outside the scope of this call.
Water system management

Sustainable (regional) water and soil management is vital for routes to climate-robust agricultural production, so that optimum consideration can be given to local water quality, water availability and soil characteristics. That requires insight into local water and soil systems and the effects of climate change on these, in relation to use functions (such as agriculture and horticulture, nature, recreation) and current and future water level management. Knowledge is also needed about the impact of (alternative and existing) production systems on water and soil systems in combination with climate effects, such as the impact of little water and high temperature on the (ecological) water quality. In addition, a better understanding is needed of the effect and interaction of soil and water measures on the local and regional scale, but also the consequences of coincidental effects on the water system due to climate change and human interventions. For future-proof production systems, the development of “smart” and innovative technology for water system management is vital. New information technologies can provide opportunities for better anticipating water scarcity and water surplus. To accommodate the effects of changing water quantity and quality, possibilities for a more climate robust land-use and water allocation can be examined, including, for example, water reuse, local water storage in winter and the closure of cycles between agriculture and other usage functions. In this context, data science and eco-engineering could also be used, as could increasing awareness among water users (consumers, companies and sectors).

Societal aspects of innovations

Effective and sustainable climate-robust innovations in agriculture and horticulture and water system management require more than just technological knowledge and solutions. These issues have natural sciences perspectives as well as dimensions in the social sciences and humanities. The development of climate-robust production systems in relation to water management is part of a broad transition effort and makes a contribution to the development of innovative transition pathways towards a climate-resilient use of rural areas that fits within a changing society. The integral solutions that are sought and that are worked on at various scales with respect to climate-adaptive production systems in relation to water quality and land use issues require a designing, interactive approach. Trade-offs in use functions between various sectors (such as water safety, nature, agriculture and horticulture, drinking water and energy supply, shipping, industry, et cetera) require a deliberation of the priorities and costs between sectors and involve governance issues.

The social and societal aspect of innovative solutions is important, for example, with respect to knowledge, attitude, behaviour and adoption by agricultural entrepreneurs, and awareness of and support for climate adaptive measures among water users and other actors. Transition, organisation and management issues also play a role, such as the distribution of responsibilities, but also opportunities for financial mechanisms. Other aspects include the embedding in politics and policy, ethical issues, legal frameworks, communication for and about innovation, and more.

Connection with research agendas and existing initiatives

This programme connects the Top Sectors Agri & Food, Horticulture & Starting Materials, and Water & Maritime, within the missions of the Knowledge and Innovation Agenda (KIA) Agriculture, Water and Food. The complete KIA of this theme and the underlying Multiannual, Mission-Driven Innovation Programmes (MMIPs) can be found here. Within this KIA there is a specific relationship with the following MMIPs: A2 (Healthy, robust soil and cultivation system), A5 (Biodiversity in circular agriculture), C1 (Climate-resilient rural area), C2 (Climate-adaptive agricultural and horticultural production systems), C4 (Improving water quality), F1 (Improving sustainability and cost management of water management implementation projects), F3 (Netherlands Digital Water Land), S1 (Smart Technologies in Agri-Horti-Water-Food), and S2 (Biotechnology and Breeding). The programme closely ties in with three routes of the Dutch National Research Agenda (NWA): “Sustainable production of safe and healthy food”, “Quality of the living environment” and “Blue Route: Water as a pathway to innovation and sustainable growth”. The content of the programme is also aligned with existing programmes and initiatives, such as the Action Programme Climate Adaptation Agriculture, Delta Programme Freshwater, Delta plan Agricultural Water Management, the NWA programme "Transition to a sustainable food system", High Tech to Feed the World, DigiShape, and Knowledge Boost Water Quality.
NWO believes it is important that knowledge generated from research funded by NWO also finds its way into society.

In the KIC, the programmes focus on innovative research with the aim of developing solutions for societal issues together with societal partners and in doing so creating economic opportunities. The programmes strive to realise impact\(^1\): societal changes in both the short and long-term.

In the KIC, NWO uses the Impact Plan Approach (see https://www.nwo.nl/en/policies/knowledge+utilisation). To increase the potential of the research’s societal impact, demonstrable involvement is needed from important stakeholders\(^2\) from the moment the consortium is formed until the completion of the project (see also under Section 2.3 Interdisciplinary research).

### 2.2.1 Impact Plan

Societal impact is never solely an outcome of knowledge and insight from research. Furthermore, societal impact is often only realised in the years after a research project has been concluded. Knowledge utilisation is viewed as an iterative process towards societal impact. By ensuring continuous alignment between researchers and possible knowledge users from the start of the research formulation (co-creation) and during the realisation of the research (co-design), the chances of productive interactions\(^3\) and knowledge utilisation increase. And, accordingly, the chances of societal impact too. Consortia together with stakeholders draw up an Impact Plan as part of the full proposal.

The Impact Plan describes the intended productive interactions for the consortium and the action plan for realising societal impact. The pre-proposal form contains several questions that can serve as an initial step towards the Impact Plan. In the full proposal form, an elaboration of the Impact Plan should be included as an integral part of the proposal.

An Impact Plan contains a description about how knowledge utilisation from the research will lead to a greater potential of the results. The full proposal describes how the approach for achieving impact is integrated in the research design and how this will be realised by consortium partners together with stakeholders from policy, practice and industry.

When the call is opened, NWO will organise a workshop in which the drawing up of an Impact Plan will be further explained to the consortia that will submit a full proposal (see Section 4.1.1).

### 2.3 Interdisciplinary research

With the KIC 2020-2023, NWO is realising an innovative approach with particular attention for interdisciplinary research. The societal challenges focused on in the mission-driven research require an integral approach in which researchers from the humanities, natural sciences and social sciences collaborate in order to contribute to complex societal issues.

\(^1\) NWO understands societal impact to mean the cultural, economic, industrial, ecological or social changes that are (partly) the consequence of knowledge and expertise generated by research. These usually occur after the research has been realised, but also require continuous attention during the preparation and realisation of the project.

\(^2\) A stakeholder is each person or group that can influence the goals being achieved or can be influenced as a result of these.

\(^3\) NWO understands ‘productive interactions’ to be exchanges between researchers and stakeholders in which knowledge is produced and valued that is both scientifically robust and societally relevant.
How do we define interdisciplinary collaboration?

Interdisciplinary collaboration within the KIC refers to research in which knowledge and expertise from different scientific disciplines is brought together to solve problems and to explain phenomena for which knowledge from a single discipline would not be sufficient. Within the KIC, this concerns a collaboration between the scientific fields of the humanities, natural sciences and social sciences. The starting points of this are:

**Integrated**

It concerns an integration of at least two of the three scientific fields and always includes the natural sciences. The natural sciences cover the applied and engineering sciences, physical and natural sciences and the health sciences. Researchers from each of the scientific fields can initiate a collaboration. Research in the humanities and social sciences should be realised by researchers from those scientific fields and not by researchers from the domain of the natural sciences.

**From the outset**

The research question in the integrated approach is always interdisciplinary in nature. As a consequence, interdisciplinary research should be initiated right from the outset. Only then can interdisciplinary research questions be realised. Monodisciplinary research may be realised within the interdisciplinary collaboration. The results from the research will subsequently be integrated and lead to interdisciplinary answers. To achieve this, the research needs to be managed effectively. Contributions from the humanities and social sciences cover the full range of disciplines within these scientific fields, such as linguistics, communication sciences, ethics, law, economics, business studies, psychology, media research, et cetera.

**Innovative**

A collaboration must be challenging and innovative for all researchers involved. So, for example, a collaboration does not merely mean including a legal clause or ethical condition (such as privacy) at the end of the research project. There is not one single ideal approach or method for interdisciplinary collaboration. Researchers choose the approach that best fits their research. The content of the research and the focus on achieving impact is guiding in this respect.

Interdisciplinary collaboration will not always develop automatically and requires stimulative and facilitative measures. Therefore, NWO will arrange workshops and matchmaking meetings to facilitate that different disciplines are brought into contact with each other. A further explanation of interdisciplinary collaboration can be found on NWO’s website.

2.4 Human capital

Training and working are essential factors in initiating innovations and achieving impact. We understand human capital to mean the preparation of professionals and students for a changing workplace and ensuring that sufficient labour potential is present. Within the KIC, human capital has acquired an important place to make the innovation policy successful. See also the Human Capital Roadmap [only available in Dutch] of the top sectors.
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In the coming years, the societal missions will place a strong call on the available labour potential in the sectors involved, and rapid societal, economic and technological developments will require workers to respond flexibly to the demands of the labour market. By participating in learning communities, consortia can help to strengthen the innovation system. Learning communities are collaborations between educational institutions, knowledge institutions, companies and/or civil society organisations that ensure a close interaction between learning, working and innovating. It is expected that within these learning communities, students will be better prepared for the changing workplace and that professionals will be enabled to develop throughout their working lives. With field labs, skills labs, centres of expertise, centres for innovative workmanship, lectorates, practorates, meeting points, living labs and other similar initiatives, learning communities can be given form in everyday practice.

During the elaboration of the Impact Plan, applicants will be requested to reflect on the role of human capital and learning communities in the consortium and in facilitating the desired impact. Consortia will therefore be invited from the initial thoughts about a project proposal onwards, to also consider the place that human capital could assume in the knowledge development and in the Impact Plan Approach. Consortia will also be invited to state which learning communities they are associated with and how these learning communities can be used and could themselves benefit from the knowledge development and Impact Plan Approach.

Industrial Doctorate / Societal Doctorate

One of the possibilities is to deploy research personnel who have an actual and substantial link with the practice related to the research. This can be achieved with the deployment of the PhD student budget module that can be applied for in collaboration with a public or private partner, the so-called Industrial Doctorate or Societal Doctorate (see Section 6.3).

2.5 Collaboration with universities of applied sciences

In the KIC 2020-2023, practice-oriented research by universities of applied sciences is seen as one of the methods to realise impact by connecting research and practice. Consortia are therefore invited to reflect on the opportunities that collaboration with universities of applied sciences might bring for their research, and wherever relevant involve partners from universities of applied sciences in their project.

2.6 International collaboration

The involvement of foreign researchers and/or collaborating partners can provide consortia with the expertise needed to address the innovation questions and societal challenges faced. Foreign collaboration partners can also help to increase the impact of the projects and scope of the research outcomes. Consortia are therefore invited, if this aligns with the objectives of the research proposal, to make use of the budget modules Internationalisation and Money follows Cooperation to give international collaboration a place in the project design. These modules are further described in Section 6.2.
3 Guidelines for applicants

3.1 Who can apply

Pre-proposals and full proposals are submitted by the main applicant and one or more co-applicants. A proposal is written by a consortium in which besides the applicants other participants are involved as well.

Four categories of participants can be distinguished in the consortium:
1. Main applicant
2. Co-applicant(s)
3. Co-funder(s)
4. Collaborating partner(s)

Besides the main applicant and co-applicant(s) a consortium always consists of two or more co-funders, possibly supplemented by one or more collaborating partners.

All participants must play an active role in the formulation of the research questions and the design and realisation of the project.

3.1.1 Main applicant

The main applicant submits the pre-proposal and full proposal on behalf of the consortium and is the point of contact for NWO. The main applicant receives the grant and is, on behalf of the consortium, responsible for the scientific coherency and results as well as financially accountable.

The main applicant may only submit one proposal within this call in the role of main applicant. In addition to this, a main applicant may participate as a co-applicant in no more than one other consortium in this call.

The main applicant should be:
- a full, associate or assistant professor or another researcher with a comparable appointment;
- employed (i.e. hold a salaried position) at one of the following organisations:
  - Universities established in the Kingdom of the Netherlands;
  - University medical centres;
  - Universities of applied sciences, as referred to in Article 1.8 of the Dutch Higher Education and Research Act (Wet op het hoger onderwijs en wetenschappelijk onderzoek, WHW)
  - KNAW and NWO institutes;
  - the Netherlands Cancer Institute;
  - the Max Planck Institute for Psycholinguistics in Nijmegen;
  - the DUBBLE Beamline at the ESRF in Grenoble;
  - Naturalis Biodiversity Center;
  - Advanced Research Centre for NanoLithography (ARCNL);
  - Princess Máxima Center for Pediatric Oncology.
- and also have an appointment period for at least the duration of the application procedure and the entire duration of the research for which the grant is being applied for. Personnel with a zero-hour appointment is excluded from applying.

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4 In the context of this call, ‘proposal’ is meant to indicate both pre-proposals as well as full proposals.
5 If the appointment period of the main applicant is shorter than the intended duration of the research for which funding is requested, then when the proposal is submitted a written statement from the knowledge institution must be provided which guarantees that the tasks of the main applicant will be taken over for the remaining duration of the research in case the appointment of the main applicant is not or is not sufficiently extended.
Main applicants must realise the research for which funding is applied for in the time that they work for the knowledge institution. If that is not the case, then the main applicant should provide a waiver from the other employer, so that knowledge ownership for the knowledge institution(s) is safeguarded.

3.1.2 Co-applicant(s)

A co-applicant is a participant in the consortium and receives funding via the main applicant. In this call, a co-applicant may participate as a co-applicant in at most two consortia. A consortium may have more than one co-applicant.

The co-applicant should be:
- a professor, associate professor or assistant professor or another researcher with a comparable appointment;
- employed (i.e. hold a salaried position) at one of the institutions stated under Section 3.1.1 and an appointment period for at least the duration of the application procedure and the entire duration of the research the grant is applied for. Personnel with a zero-hour appointment is excluded from applying.

Co-applicants must realise the research for which funding is requested in the time that they work for the knowledge institution. If that is not the case, then the co-applicant should provide a waiver from the other employer, so that knowledge ownership for the knowledge institution(s) is safeguarded.

3.1.3 Co-funder(s)

Co-funders are organisations that participate in the consortium and contribute to the project in cash and/or in kind. Co-funders in this call never receive funding from NWO. The co-funders jointly contribute a net minimum amount of 10% of the total budget for the proposal. The KIC draws a distinction between private and public co-funders. For definitions of these and the further specific conditions for co-funding supply in this call, see Section 3.5.2. The role that these parties play in the preparation, realisation, and translation of the research to society should be described in the research proposal.

Organisations from which employees may participate as a main applicant or co-applicant in accordance with the description stated in Section 3.1.1, may not participate as a co-funder in MISSION calls.

3.1.4 Collaborating partner(s)

A collaborating partner is a party that receives no funding and contributes no co-funding to the research proposal, but is closely involved in the realisation of the research and/or knowledge utilisation. Possible examples are companies, public and private organisations and other institutions. The role that these parties play in the preparation, realisation, and translation of the research to society should be described in the research proposal.

3.2 What can be applied for

In this round, funding can be requested for research proposals with a total budget of at least 1,000,000 euros and at most 1,500,000 euros. NWO will fund a maximum of 90% of the total project budget; the rest of the funding must be contributed by the compulsory co-funding (see Section 3.5.2).

The budget modules (including the maximum amounts) that are available within this call for proposals are stated in Section 6.2 of this call.

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6 If the appointment period of the co-applicant is shorter than the intended duration of the research for which funding is requested, then when the proposal is submitted a written statement from the knowledge institution must be provided which guarantees that the tasks of the co-applicant will be taken over for the remaining duration of the research in case the appointment of the co-applicant is not or is not sufficiently extended.
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Everything applied for (such as personnel positions, material budget, investments, and the mix between these budgets) must be in proportion to the research. You should only request that which is essential for realising the research.

For this call the following modules can be applied for:
- Personnel costs;
- Material costs;
- Investments;
- Knowledge utilisation;
- Internationalisation
- Money follows Cooperation;
- Project management.

3.3 When can applications be submitted

The deadline for the submission of preproposals is January 26, 2021, 14:00:00 CE(S)T.
The deadline for the submission of proposals is May 20, 2021, 14:00:00 CE(S)T.

When you submit your application to ISAAC you will also need to enter additional details online. You should therefore start submitting your application at least one day before the deadline of this call for proposals. Applications submitted after the deadline will not be taken into consideration.

3.4 Preparing an application

3.4.1 Preparing the pre-proposal
- Download the pre-proposal form in good time from the online application system ISAAC or from the website of NWO (at the foot of the webpage for the relevant funding instrument).
- Complete the pre-proposal form.
- Save the form as a PDF file and upload it to ISAAC.
- Letters of support are not required in this phase and will not be considered.

Attachments:
- Guarantees for continuity in project management (if applicable, see Section 3.1.1 and 3.1.2). Attachments should be uploaded as separate PDF files in ISAAC.

Other types of attachments are not accepted in this phase of submitting pre-proposals.

3.4.2 Preparing the full proposal
- Download the application form in good time from the online application system ISAAC or from the website of NWO (at the foot of the webpage for the relevant funding instrument).
- NB: the application form and the budget from will be available to download from the aforementioned locations before the deadline for pre-proposals, but will only become available at a later moment, after the publication of this call.
- Complete the application form.
- Save the form as a PDF file and upload it to ISAAC.
- Add the compulsory attachments stated below.

Attachments:
The following attachments must be provided when the full proposal is submitted:
- letters of support from co-funders (see Sections 3.2 and 3.5.2);
- the budget form;
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- confirmation of the contribution to investments (if applicable, see Section 6.2)
- Guarantees for continuity in project management (if applicable, see Section 3.1.1 and 3.1.2).

At the moment of submission, the letters of support appended should pledge the entire required co-funding according to the conditions described in Section 3.5.2.

The attachment “confirmation of the contribution to investments” is compulsory if funding for investments above 150,000 euros is requested (see also Section 6.2).

Other types of attachments are not accepted in this phase of submitting full proposals. Attachments should be uploaded to ISAAC separately from the proposal. All attachments, with the exception of the budget form, should be uploaded as PDF files. The budget form can be uploaded to ISAAC as an Excel file.

3.5 Conditions on granting

The NWO Grant Rules 2017 and the Agreement on the Payment of Costs for Scientific Research apply to all applications.

3.5.1 Duration

The maximum duration of a project is six years. Proposals with a longer duration than that stated here will not be considered by NWO.

3.5.2 Co-funding conditions

This research programme requires at least 10% of the total budget of the proposal in co-funding at the project level.

This compulsory co-funding may be provided entirely in cash and entirely in kind, and there are no rules for the balance between these two components in a project proposal. The complete in-cash co-funding may be provided by both public and private parties. At least 50% of the total co-funding must be from private sources. The definition of private co-funding: see below under Definition private co-funding. The pledged co-funding is the net amount received by the applicant. If VAT is applicable to pledged co-funding, this is additional to the pledged amount.

Definition private co-funding

The relevant definition of private (co-)funding used is deduced from the definition used by the Netherlands Enterprise Agency (https://www.rvo.nl/subsidies-regelingen/pps-toeslag-onderzoek-en-innovatie/definities/definities-pps-toeslag-onderzoek-en-innovatie) (only available in Dutch). A private contribution is thus defined as an in-cash or in-kind contribution that does not directly or indirectly originate from a research institution or public body. If pledged co-funding does not meet this definition, it cannot be classified as a private contribution.

Invoicing in-cash co-funding

After the proposal has been awarded funding, NWO will invoice the private or public party that has pledged an in-cash contribution. After these funds have been received, NWO will allocate the funding to the project.

The following are permitted as in-kind co-funding:

The use of personnel and material contributions is permitted on the condition that these are capitalised and are fully part of the project. Services and know how may not already exist or be available to the applicant. In-kind contributions are only accepted under the condition that the part contributed by the co-funder is an integral part of the work plan and can be made visible as an identifiable effort.

For this call, NWO employs relaxed co-funding conditions due to COVID-19 that deviate from the standard conditions applicable in the main line MISSION. The standard conditions are listed at https://www.nwo.nl/en/research-and-results/programmes/nwo/knowledge-and-innovation-covenant/mission-driven-calls-kic-2020-2023.html
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Determining the value of in-kind co-funding
- The use of personnel is valued on the basis of hours x rate, whereby the hourly rate is based on the actual salary costs (incl. a premium for social benefits and employer costs). Furthermore, 1400 hours is taken as the standard number of productive hours per year for the calculation of the hourly rate. This hourly rate may be no more than 119 euros per hour;
- The value for material in-kind contributions is determined on the basis of the cost price of consumables. The value of investments/equipment is determined based on standard depreciation costs bearing in mind the intensity of use and any existing depreciations according to applicable reporting principles;
- For in-kind contributions in the form of services or know-how (knowledge, software, access to databases or cell lines) the economic value must be established and only the actual costs that can be directly attributed to the project may be counted as co-funding. This is always without a profit margin. Furthermore, the service or know how must not already be present at or available to the applicant. Co-funders should justify the structure and size of the in-kind contributions provided (including hourly rates) in the letter of support. NWO can request substantiation and documented evidence of the rates used and can also request their adjustment.

The following may not be contributed as co-funding (both in cash and in kind):
- funding awarded by NWO;
- PPP allowance;
- co-funding may not come from parties that on the basis of this call for proposals can submit a funding proposal to NWO;
- discounts on commercial rates, e.g. on materials, equipment and services;
- costs related to overheads, supervision, consultancy and/or participation in the user committee (see Section 3.5.3);
- costs of services that are conditional. The co-funding provided may not be subject to any conditions. The provision of the co-funding does not depend on whether a certain stage in the research plan is achieved (e.g. go/no-go moment);
- costs that are not reimbursed according to the call for proposals;
- costs of equipment if one of the (main) objectives of the proposal is the improvement or creation of added value for this equipment.

Accounting for in-kind co-funding
The main applicant reports to NWO about the in-kind co-funding that he or she has received from a co-funder. The main applicant provides accountability in accordance with the NWO Grant Rules 2017 on an annual basis. If a co-funder fails to partly or entirely fulfil its obligations to the main applicant and/or NWO, then this can have consequences for the grant settlement (see Article 3.4.5 of the NWO Grant Rules 2017).

Letters of support from participating co-funders
In a letter of support, the co-funder declares both substantive and financial support for the project and confirms the co-funding pledged. Letters from co-funders involved in the proposal are compulsory attachments for the full proposal. These must be signed by an authorised signatory of the co-funder and printed on the co-funder’s headed stationery. NWO will make a standard template available for the letter of support. Letters of support in which co-funding is pledged are unconditional and may not contain any cancellation clauses.
In the event that the project is awarded funding, the co-funder should confirm its contribution(s) in the project agreement (for example, for invoicing in the case of in-cash contributions). In this agreement, further agreements are also made between the co-funder(s), applicant(s) and NWO (see Section 3.5.4).

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8 Funding awarded by NWO is understood to be funding obtained through a proposal submitted to NWO that is granted funding. In this regard it does not matter from which programme this funding was obtained or who the recipient of the funding is.
3.5.3 Substantive monitoring and programme-supporting activities

NWO will be responsible for the substantive monitoring of proposals that have been awarded funding. To reinforce this and to increase support for implementation of the projects, a user committee will be appointed per project. The main task of the user committee is to advise the project leader about the direction of the project with the aim of maximising the chances of results from the research having an impact/being applied. NWO will fulfil a secretarial role. Further tasks and working methods of the user committee and the role of NWO will be elaborated in the project agreement (see Section 3.5.4). In addition to this, NWO will organise programme meetings. Projects within this call theme will be invited to take part in these.

Accountability during the project
Throughout the project, the main applicant will be responsible for the annual substantive and financial reports about the project. With a view to monitoring the progress of the project, NWO can request interim substantive and financial reports.

Completion of the project
When a project is completed, substantive and financial final reports will be requested. After that the size of the grant will be established by NWO.

3.5.4 Intellectual Property and Project Agreement

NWO seeks to ensure that the research results can be applied at the partners involved in the research. Research results – including patentable findings – should therefore be dealt with in a responsible manner. On the one hand, NWO wants to ensure that the research results from research it funds are publicly accessible and, on the other hand, it wants to encourage the further development of the research results by parties by offering these the opportunity to exploit the results. It can therefore be desirable to transfer intellectual property rights or to grant these under a licence to (one of) the private parties involved in the research. The basic premise is that the research results can be published without limitations.

With respect to intellectual property (IP), the KIC follows NWO policy, which offers room for project parties to make tailored agreements, for example dependent on the composition of the consortia and the size of the (financial) contribution. The NWO IP policy can be found in Chapter 4 of the NWO Grant Rules 2017. This policy is aligned with the “Rules for public-private partnership” of the Ministry of Economic Affairs and Climate Policy.

Project parties will conclude the project agreement with each other and with NWO before the start of the research project. In this agreement, arrangements will be made about intellectual property and publication, knowledge transfer, confidentiality, co-funding payments and progress and final reports. The model agreement provided on the NWO webpage for this call should be used for this. This model agreement has been produced in accordance with the NWO Grant Rules 2017. The conclusion of the project agreement is one of the conditions for starting the project. Approval from NWO is required before the project can start; NWO will also sign the agreement.

Parties can choose to use the standard text of NWO in the model agreement, but they can also choose to make their own agreements or apply existing agreements for the sections about IP and publication procedure. The model project agreement allows for this. In this manner, NWO wants to more strongly respond to the wishes of researchers and co-funders who are involved in NWO projects. In both cases, the IP rights are initially awarded to the knowledge institution, whose employee generated the results concerned. Consortia that would prefer to make their own agreements about IP and a publication procedure, must indicate this choice when the full proposal is submitted. Such agreements should be fine-tuned within the consortium and be submitted to NWO within three months after the grant is awarded, so that NWO can test whether this agreement satisfies the European state support rules and is in accordance with the conditions included in this call for proposals and the NWO Grant Rules 2017.
3.5.5 Open Access

As a signatory to the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities (2003), NWO is committed to making the results of scientific research funded by NWO freely available in open access on the internet. In doing so, NWO is implementing the ambitions of the Dutch government to make all publicly funded research openly available. All scientific publications of research funded on the basis of this call for proposals should therefore be available in open access immediately (at the time of publication). NWO accepts various routes:
- publication in an full open access journal,
- deposit a version of the article in a repository or
- publication in a hybrid journal covered by one of the agreements between the VSNU and publishers. See www.openaccess.nl.

Any costs for publication in full open access journals can be incurred in the project budget. NWO does not reimburse costs for publications in hybrid journals. These conditions apply to all forms of scholarly publications arising from grants awarded on the basis of this call for proposals. Also academic monographs, edited volumes, proceedings and book chapters. For more information on the NWO's open access policy, see: www.nwo.nl/openscience.

3.5.6 Data management

The results of scientific research must be replicable, verifiable and falsifiable. In the digital age this means that, in addition to publications, research data must also be freely accessible. As much as possible, NWO expects that research data resulting from NWO-funded projects will be made publicly available for reuse by other researchers. “As open as possible, as closed as necessary” is the guiding principle in this respect. As a minimum, NWO requires that the data underpinning research papers should be made available at the time of the article’s publication. The costs for doing so are eligible for funding and can be included in the project budget. In the data management section, and in the data management template if the project is awarded funding, researchers explain how they plan to manage the data expected to be generated by the project.

1. Data management section

The data management section is part of the research proposal. Researchers are asked to prospectively consider how they will manage the data the project will generate and plan for which data will be preserved and be made publicly available. Measures will often need to be taken during the production and analysis of the data to make their later storage and dissemination possible. If not all data from the project can be made publicly available, the reasons for not doing so must be explained in the data management section. Due consideration is given to aspects such as privacy, public security, ethical limitations, property rights and commercial interests.

2. Data management plan

After a proposal has been awarded funding, the researcher should elaborate the data management section into a data management plan. In this plan, the researcher describes whether use will be made of existing data, whether new data will collected or generated, and how the data will be made FAIR: Findable, Accessible, Interoperable, Reusable. The data management plan must be completed in consultation with a data steward or equivalent research data management support staff at the home institution of the project leader. The plan should be submitted to NWO via ISAAC within four months after the proposal has been awarded funding. NWO will approve the plan as quickly as possible. Approval of the data management plan by NWO is a condition for disbursement of the funding. The plan can be adjusted during the research.

Further information on the NWO data management protocol can be found at www.nwo.nl/datamanagement-en.
3.5.7 Nagoya Protocol

The Nagoya Protocol became effective on 12 October 2014 and ensures an honest and reasonable distribution of benefits emerging from the use of genetic resources (Access and Benefit Sharing; ABS). Researchers who make use of genetic sources from the Netherlands or abroad for their research should familiarise themselves with the Nagoya Protocol (www.absfocalpoint.nl). NWO assumes that researchers will take all necessary actions with respect to the Nagoya Protocol.

3.5.8 Ethical aspects

Research proposals that may raise ethical issues need to be considered carefully before the research to be carried out. Certain research projects may require approval from a recognised Medical Research Ethics Committee (MREC) or an Animal Experiments Committee (DEC). In addition, certain research proposals require a licence under the Population Screening Act (WBO). More information on the MRECs is available from the Central Committee on Research Involving Human Subjects (CUCO). Information on the DECs is available from the Nederlandse Vereniging voor Dierexperimenten commissies (Dutch Association of Animal Experiments Committees) and information on the WBO is available from the Health Council of the Netherlands.

An applicant is responsible for checking whether his/her research proposal may raise ethical issues and, if necessary, for obtaining approval in good time from the appropriate ethics committee and/or obtaining a licence in good time under the WBO.

NWO endorses the Code on Openness in Animal Testing and the Biosecurity code. Applicants should endorse and comply with the existing codes.

If the proposal is accepted, funding will be awarded subject to the condition of obtaining approval from the relevant ethics committee or a licence under the WBO. A research project cannot start until NWO has received a copy of any necessary ethics approval and/or WBO licence. NWO expects candidates to take into account the time schedule of the assessment procedure and the time required for an ethics committee review or to obtain a WBO licence. In the event of complex ethical issues, NWO reserves the right to consult an external advisor.

3.5.9 Scientific integrity

The NWO grant rules specify that all research funded by NWO must be carried out in accordance with nationally and internationally accepted standards of scientific conduct as laid down in the Netherlands Code of Conduct for Research Integrity (2018). By submitting a proposal, applicants undertake to comply with this code. In the event of a (possible) breach of the above-mentioned standards in research funded by NWO, the applicant must inform NWO immediately and submit all relevant documents to NWO. More information about the NWO code of conduct and policy on scientific integrity can be found on the website: https://www.nwo.nl/en/policies/scientific-integrity-policy.

3.6 Submitting an application

An application can only be submitted to NWO via the online application system ISAAC. Applications not submitted via ISAAC will not be taken into consideration.

A principal applicant must submit his/her application via his/her own ISAAC account. If the principal applicant does not have an ISAAC account yet, then this should be created at least one day before the application is submitted to ensure that any registration problems can be resolved on time. If the principal applicant already has an NWO-account, then he/she does not need to create a new account to submit an application.

For technical questions please contact the ISAAC helpdesk, see Section 5.1.2.
Chapter 4: Assessment procedure / Climate-robust production systems and water management

4 Assessment procedure

4.1 Procedure

4.1.1 Matchmaking
In the period prior to the deadline for submitting pre-proposals NWO will facilitate (virtual) matchmaking activities for this call. In the KIC 2020-2023, the aim of the matchmaking is to bring together and connect researchers from different scientific disciplines (humanities, natural sciences and social sciences; including universities of applied sciences) and organisations from everyday practice so that interdisciplinary research proposals can be realised.

Further information about the realisation and planning of matchmaking activities will be announced via the website and the NWO newsletters.

When the call is opened, NWO will organise a workshop in which the drawing up of an Impact Plan will be further explained to the consortia that will submit a full proposal. Further information about this meeting will be shared with all main applicants of pre-proposals.

4.1.2 NWO Code for Dealing with Personal Interests

4.1.3 Admissibility of the proposal
The first step in the assessment procedure is to test whether the pre-proposal is completely and correctly filled in and admissible. This is done using the conditions described in Chapter 3 of this call for proposals.

If NWO detects shortcomings during this test, then it will give the main applicant a one-off opportunity to modify his/her proposal within five working days. Proposals corrected in the right manner and that are received on time, will still be taken into consideration by NWO.

4.1.4 Selection committee
The NWO Executive Board appoints the selection committee. This selection committee is specifically composed of independent experts from scientific disciplines that are relevant to the theme of this call. In addition, non-academic experts can also be part of the selection committee, such as representatives of relevant companies, societal parties and/or other organizations that are not involved in the applications.

4.1.5 Assessment pre-proposal
Submitting a pre-proposal is a compulsory part of the application process. Pre-proposals are assessed by the selection committee using the criteria described in Section 4.2. No referees are consulted in this phase. During an assessment meeting, the selection committee will reach a non-binding positive or negative advice about the elaboration of each pre-proposal into a full proposal. As this is a non-binding advice, no response phase will take place. Applicants who receive a negative advice in this phase are therefore discouraged from, but not prevented from, submitting a full proposal.

The basic premise for the advice from the selection committee is that no more than twice the expected number of proposals that can be awarded funding will receive a positive advice.
Chapter 4: Assessment procedure / Climate-robust production systems and water management

In the justification for the advice, the selection committee will state its observations with respect to the quality of the pre-proposals and provide recommendations for the elaboration of the full proposal. When giving recommendations, the selection committee will devote explicit attention to aspects such as interdisciplinary collaboration, Human Capital, and knowledge utilisation.

4.1.6 Assessment full proposal

The full proposal should be an elaboration of the pre-proposal. Submission of a full proposal requires letters of support with respect to the required co-funding and a detailed proposal budget.

Referees and the rebuttal

The full proposals will first of all be assessed by referees: independent advisers who are an expert on (a significant part of) the topic(s) of the proposal. The referees will assess the proposal based on the assessment criteria as detailed in Section 4.2. The referees’ reports are sent in an anonymized form to the applicant for a written defence (the rebuttal).

Interviews

The members of the selection committee each provide an assessment of the proposals through a written procedure based on the assessment criteria with due consideration to the referees’ reports and the rebuttal. They give a provisional assessment and itemise which aspects they think should be clarified, explained or described in more detail during the interview.

In principle, all consortia that have submitted a full proposal will be invited for an interview with the selection committee. If the number of full proposals is more than three times the expected number of proposals that can be awarded funding, then the selection committee can decide just to invite a selection of the consortia for an interview.

In that case the selection committee will make a provisional ranking based on its written assessment, with due consideration to the referees’ reports and the rebuttal, and discuss this during a meeting. Subsequently the consortia with the highest ranking will receive an invitation for the interview; this will be about twice the number of proposals that are expected to be awarded funding.

During the interview, the consortium explains the application with a presentation and the selection committee has the opportunity to ask questions to the consortium about the presentation and the application dossier, consisting of the full proposal, the referees’ reports and the written rebuttal. During this process, the selection committee can pose new and additional questions to the consortium on parts of the proposal to which the consortium can then respond. Eventually, the selection committee reaches its own independent deliberation about the quality of each proposal based on the criteria stated in Section 4.2. In this deliberation, the selection committee considers its judgement of the proposal, the referees’ reports, the rebuttal, and the interview. Unlike the referees, the selection committee also knows about the quality of the other proposals submitted. The outcome of this deliberation leads to the selection committee’s final assessment of each full proposal. Based on this final assessment and the resulting prioritisation of the proposals, the selection committee draws up a ranking advice for the NWO Executive Board.

Decision-making

The NWO Executive Board takes a decision about granting or rejecting the full proposals, based on the advice of the selection committee.
Data management
The data management section in the application is not evaluated and therefore not included in the decision about whether to award funding. However, both the referees and the committee can issue advice with respect to the data management section. After a proposal has been awarded funding, the researcher should elaborate the data management section into a data management plan. Applicants can use the advice from the referees and the committee when writing the data management plan. A project awarded funding can only start after NWO has approved the consortium agreement.

Qualification
NWO gives all full proposals a qualification. This qualification is made known to the applicant with the granting decision. To be eligible for funding, a proposal should at least receive the qualification very good and also satisfy the threshold value for the four assessment criteria (see Section 4.2.2).

Indicative timeline

<table>
<thead>
<tr>
<th>Pre-proposals</th>
</tr>
</thead>
<tbody>
<tr>
<td>October-November 2020</td>
</tr>
<tr>
<td>Matchmaking (date and details will be announced on the website)</td>
</tr>
<tr>
<td>26 January 2021, 14.00 CET</td>
</tr>
<tr>
<td>Submission deadline pre-proposals</td>
</tr>
<tr>
<td>February 2021</td>
</tr>
<tr>
<td>Assessment pre-proposals by committee</td>
</tr>
<tr>
<td>March 2021</td>
</tr>
<tr>
<td>Advice on whether to submit a full proposal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Full proposals</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 May 2021, 14.00 CEST</td>
</tr>
<tr>
<td>Submission deadline full proposals</td>
</tr>
<tr>
<td>June-August 2021</td>
</tr>
<tr>
<td>Referees are consulted</td>
</tr>
<tr>
<td>September 2021</td>
</tr>
<tr>
<td>Applicants can submit a rebuttal</td>
</tr>
<tr>
<td>October 2021</td>
</tr>
<tr>
<td>Interviews</td>
</tr>
<tr>
<td>November- December 2021</td>
</tr>
<tr>
<td>Decision NWO Executive Board</td>
</tr>
</tbody>
</table>

4.2 Criteria

In this call, both pre-proposals and full proposals are assessed according to the following four assessment criteria, for which the sub-criteria are described in Section 4.2.1.

1. Problem posed and problem analysis, contribution to solution
2. Expected impact and route to impact
3. Quality of the consortium
4. Quality of the research

Criteria 1 and 2 each carry a weighting of 20% in the overall assessment, and criteria 3 and 4 each carry a weighting of 30%.
Chapter 4: Assessment procedure / Climate-robust production systems and water management

4.2.1 Sub-criteria

Within the four main criteria, the following sub-criteria are distinguished:

1. Problem posed and problem analysis, contribution to solution
   - The problem posed from a scientific and societal perspective
   - Formulation and focus of the innovation question
   - Articulation of knowledge questions and objectives in collaboration with partner(s)
   - Contribution of the research to solving the innovation question posed
   - Contribution of the research to solving the societal challenge as described in the theme of the call

2. Expected impact and route to impact
   - Connecting strategy for involving the relevant stakeholders and involvement of end users
   - Perspective on societal impact
   - Perspective on economic impact

3. Quality of the consortium
   - Track record of all parties involved; scientific, and/or with respect to knowledge utilisation and application of results
   - (Inter)disciplinary composition of the research team
   - Relevance of the consortium partner(s) in the collaboration
     - Presence of necessary partners
     - Contribution of the partner(s) to solving the problem
     - Contribution of the partner(s) to the development and realisation of the project
     - Rationale behind and motivation for financial commitment (cash and in-kind) of partner(s)\(^9\)
   - Synergy, complementarity and added value of the collaboration
     - Chain-wide collaboration and/or collaboration in the region
     - New collaborations and network formation
     - Deployment and use of Human Capital
     - Diversity of consortium members and private, public and civil society partners involved
     - Availability of infrastructure
     - Proposed organisational structure, allocation of roles and project governance

4. Quality of the research
   - Scientific and methodological quality
   - Urgency of the proposed research
   - Innovative aspects of the proposed research plan
   - Interdisciplinary aspects of the proposed research plan\(^10\)
   - Active involvement of the partners in drawing up and realising the research plan
   - Feasibility and suitability of the proposed research plan; scientific, operational and financial choices in the project design

4.2.2 Scores and threshold values

In both phases of the assessment, the selection committee will use a scoring scale of 1.0 to 9.0, for which 1.0 is the maximum score.

Only full proposals with a total score of 3.4 or better (i.e. qualification of ‘very good’ or better) are eligible for funding. Furthermore, for all main criteria (i.e. criteria 1, 2, 3 and 4) the minimum score of 4.0 is required to be eligible for funding.

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\(^9\) This sub-criterion is not yet applicable in the pre-proposal phase

\(^10\) For the basic premises for interdisciplinary collaboration, please see Section 2.2
Chapter 4: Assessment procedure / Climate-robust production systems and water management

<table>
<thead>
<tr>
<th>Score range</th>
<th>Qualification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 - 1.4</td>
<td>Excellent</td>
</tr>
<tr>
<td>1.5 - 3.4</td>
<td>Very good</td>
</tr>
<tr>
<td>3.5 - 5.4</td>
<td>Good</td>
</tr>
<tr>
<td>5.5 - 9.0</td>
<td>Unsatisfactory</td>
</tr>
</tbody>
</table>

4.2.3 Facilitating interdisciplinary research

In the selection procedure, attention will be paid to the interdisciplinarity of the research proposal submitted within the assessment criteria as described in Section 4.2.1.

Furthermore, for the pre-proposals, the selection committee will pay attention to the composition of the consortium and, where applicable, make recommendations with respect to this point that can be included by the applicants in the further elaboration of the research proposal into a full proposal.
Chapter 5: Contact details / Climate-robust production systems and water management

5 Contact details

5.1 Contact

5.1.1 Specific questions
For specific questions about Climate robust production systems and water management and this call for proposals please contact:
Bea Pauw
T: +31 (0)70 3440734
Email: kic-productionsystems@nwo.nl

5.1.2 Technical questions about the electronic application system ISAAC
For technical questions about the use of ISAAC please contact the ISAAC helpdesk. Please read the manual first before consulting the helpdesk. The ISAAC helpdesk can be contacted from Monday to Friday between 10:00 and 17:00 hours CE(S)T on +31 (0)20 346 71 79. However, you can also submit your question by e-mail to isaac.helpdesk@nwo.nl. You will then receive an answer within two working days.
6 Annexes:

6.1 Research Tariffs Manual (HOT) rates

The table below shows the rates described in the Research Tariffs Manual (HOT) from 2017, which apply in this call. For the entire table please see: https://www.nwo.nl/documents/nwa/nwa-orc---handleiding-overheidstarieven (only available in Dutch).

<table>
<thead>
<tr>
<th>Rates per position</th>
<th>Scale</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students</td>
<td>-</td>
<td>25 euros</td>
</tr>
<tr>
<td>Supporting NSP, vocational education</td>
<td>7</td>
<td>59 euros</td>
</tr>
<tr>
<td>Supporting NSP, higher vocational education</td>
<td>10</td>
<td>72 euros</td>
</tr>
<tr>
<td>Junior researcher</td>
<td>10</td>
<td>72 euros</td>
</tr>
<tr>
<td>School teachers</td>
<td>10</td>
<td>72 euros</td>
</tr>
<tr>
<td>Supporting NSP, academic researcher*</td>
<td>11</td>
<td>79 euros</td>
</tr>
<tr>
<td>Intermediate level researcher*</td>
<td>11</td>
<td>79 euros</td>
</tr>
<tr>
<td>Intermediate level researcher*</td>
<td>12</td>
<td>87 euros</td>
</tr>
<tr>
<td>Physician-researcher</td>
<td>12</td>
<td>87 euros</td>
</tr>
<tr>
<td>Lecturer-researcher</td>
<td>12</td>
<td>87 euros</td>
</tr>
<tr>
<td>Senior researcher</td>
<td>13</td>
<td>95 euros</td>
</tr>
<tr>
<td>Management/lector</td>
<td>16</td>
<td>119 euros</td>
</tr>
</tbody>
</table>

* The first intermediate-level researcher scale 11 stands for PhD student level and the second, scale 12, for postdoc level.

The above maximum rates are based on the cost-covering rate (kostendekkend) including the applicable increments. The hourly rate is calculated on the basis of the standard productive number of hours used by the organisation. The chosen cost-covering rate must be substantiated and includes:
- (average) gross salary for the post of the employee who will contribute to the project;
- holiday allowance and 13th month (if applicable in the relevant collective labour agreement) in proportion to the use in fte;
- social security contributions;
- pension costs.

6.2 Budget modules

The budget modules (including the maximum amounts) that are available within this call for proposals are described in the table below.

<table>
<thead>
<tr>
<th>Budget module</th>
<th>Maximum amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>PhD</td>
<td>no limit on number of positions, according to VSNU or NFU rates(^1)</td>
</tr>
</tbody>
</table>

\(^1\) For personnel outside the Netherlands, the local rates are reimbursed up to a maximum of the VSNU rates.
### Professional Doctorate in engineering (PDEng)
- No limit on number of positions in combination with PhDs and/or postdoc(s), according to VSNU or NFU rates.

### Postdoc
- No limit on number of positions, according to VSNU or NFU rates.

### Non-scientific staff at (NSS) universities
- €100,000 per PhD and/or postdoc, according to VSNU or NFU rates.
  - In combination with PhDs and/or postdoc(s), up to a maximum of 300,000 euros per proposal.

### Other scientific staff (OSS) at universities
- €100,000, in combination with PhDs and/or postdoc(s).

### Research leave
- 5 months, 1 fte, according to VSNU or NFU rates.

### Personnel universities of applied sciences and other institutions
- No limit on number of positions, rates based on Handleiding Overheidstarieven 2017 (HOT).

### Material costs
- €15,000 per year per scientific position.

### Investments (up to €150,000)
- Maximum of €150,000.

### Investments (€150,000 to €500,000)
- Greater than or equal to €150,000 (for data collections, a minimum of €25,000 applies) and less than or equal to €500,000 with 25% contribution by the research institution applying.

### Knowledge utilisation
- Minimum 5% to maximum 20% of the total project budget.

### Internationalisation
- €25,000.

### Money follows Cooperation
- Less than 50% of the total budget requested from NWO.

### Project management
- Maximum 5% of the total budget requested from NWO.

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### Explanation of budget modules for personnel

Funding for the salary costs of personnel who make a substantial contribution to the research can be applied for. Funding of these salary costs depends on the type of appointment and the organisation where the personnel are or will be appointed:

- For university appointments, the salary costs are funded in accordance with the VSNU salary tables applicable at the moment the grant is awarded.
  - [View VSNU salary tables](https://www.nwo.nl/en/funding/funding-process-explained/salary-tables).
- For university medical centres, the salary costs are funded in accordance with the NFU salary tables applicable at the moment the grant is awarded.
  - [View NFU salary tables](https://www.nwo.nl/en/funding/funding-process-explained/salary-tables).
- For personnel from universities of applied sciences and other institutions, the salary costs are funded on the basis of the collective labour agreement salary scale of the employee concerned, based on the Handleiding Overheidstarieven 2017.
  - [View Handleiding Overheidstarieven 2017](https://www.nwo.nl/documents/nwa/nwa-orc---handleiding-overheidstarieven, only available in Dutch) and Section 6.1.
- For the Caribbean Netherlands, the Dutch government employs civil servants on Bonaire, Sint Eustatius and Saba under different conditions than in the European part of the Netherlands.
  - [View conditions for the Caribbean Netherlands](https://www.rijksdienstcn.com/werken-bij-rijksdienst-caribisch-nederland/arbeidsvoorwaarden, only available in Dutch).

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12 For personnel outside the Netherlands, the local rates are reimbursed up to a maximum of the VSNU rates.
Chapter 6: Annexes: Climate-robust production systems and water management

The rates for all budget modules are incorporated in the budget format that accompanies the application form. For the budget modules “PhD”, “PDEng” and “Postdoc”, a one-off individual bench fee of € 5,000 is added on top of the salary costs. This bench fee is intended to encourage the scientific career of the project employee funded by NWO. Remunerations for PhD students/PhD scholarship students at a Dutch university are not eligible for funding from NWO.

The available budget modules are explained below.

**PhD (including MD-PhD)**

A PhD is appointed for 1.0 fte for a duration of 48 months. The equivalent of 48 full-time months, for example an appointment of 60 months for 0.8 fte is also possible. If a different duration of appointment is considered necessary for the realisation of the proposed research, then as long as this is properly justified, the standard time can be deviated from. However, the duration of appointment must always be at least 48 months.

In line with the NWO strategy, this category is also understood to include Industrial and Societal Doctorates. The conditions for this are described in Section 6.3.

**Professional Doctorate in Engineering (PDEng)**

Funding for the appointment of a PDEng can only be applied for if funding for a PhD or postdoc is also applied for. The appointment for a PDEng position is a maximum of 1.0 fte for 24 months. The PDEng trainee is employed by the institution applying for funding and can realise activities within the research at an industrial partner for a specified time. If the research proposal is awarded funding, then an agreement must be concluded with the industrial partner(s) concerned. The underlying “Technological Designer Programme” should be described in the funding proposal.

**Postdoc**

The size of the appointment of a postdoc is at least 6 full-time months and at most 48 full-time months. The size and duration of the appointment is at the applicant’s discretion, but the appointment is always for at least 0.5 fte or for a duration of at least 12 months. The product of fte x duration of appointment should always be a minimum of 6 full-time months.

The material budget is available to cover the costs of a more limited appointment of a postdoc.

**Non-scientific staff (NSS) at universities**

Funding for the appointment of non-scientific personnel necessary for the realisation of the research project can only be applied for if funding for a PhD or postdoc is also applied for. A maximum of € 100,000 per PhD or postdoc applied for can be requested for NSS, up to a maximum of € 300,000 per proposal. This includes personnel such as student assistants, programmers, technical assistants or analysts. Depending on the level of the position, the appropriate salary table for non-scientific staff at MBO, HBO or university level applies.

The size of the appointment is at least 6 full-time months and at most 48 full-time months. The size and duration of the appointment is at the applicant’s discretion, but the appointment is always for at least 0.5 fte or for a duration of at least 12 months. The product of fte x duration of appointment should always be a minimum of 6 full-time months.

The material budget is available to cover the costs of a more limited appointment of non-scientific personnel.

**Other scientific personnel (OSS) at universities**

Budget for other scientific personnel such as AIOS (doctor training to be a specialist), ANIOS (doctor not training to be a specialist), scientific programmers or employees with a master’s degree can only be applied for if funding for a PhD or postdoc is also applied for. For this category, per PhD or postdoc applied for, a maximum of € 100,000 can be applied for. The size of the appointment is at least 6 full-time months and most 48 full-time months. The size and duration of the appointment is at the applicant’s discretion, but the appointment is always for at least 0.5 fte or for a duration of at least 12 months. The product of fte x duration of appointment should always be a minimum of 6 full-time months.
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Research leave for applicants

With this budget module, funding can be requested for the research leave costs of the main and/or co-applicant(s). The employer of the applicant concerned can use this to cover the costs of relinquishing him or her from educational, supervisory, administrative or management tasks (not research tasks). The time that is released through the research leave grant can only be used by the applicant(s) for activities in the context of the project. The proposal must describe which activities in the context of the project the applicant(s) will carry out in the time relinquished.

The maximum amount of research leave that can be applied for is the equivalent of five full-time months. NWO funds the research leave in accordance with the salary tables for a senior scientific employee (scale 11) at the time the grant is awarded (https://www.nwo.nl/en/funding/funding+process+explained/salary+tables).

Personnel universities of applied sciences and other institutions

For the funding of salary costs of personnel employed at a university of applied sciences, the following maximum rates (hourly/daily) are used, in accordance with the Research Tariffs Manual (HOT) 2017. For this, the HOT table is used on a cost-covering basis (kostendekkend). For rates for universities of applied sciences positions please see Section 6.1.

Explanation of budget module Material

For each fte scientific position (PhD, postdoc, PDEng) applied for, a maximum of € 15,000 material budget can be applied for per year of the appointment. Material budget for smaller appointments can be applied for on a proportionate basis and will be made available by NWO accordingly. The applicant is responsible for distributing the total amount of material budget across the NWO-funded personnel positions. The material budget that can be applied for is specified according to the three categories below:

- Project-related goods/services
  - consumables (glassware, chemicals, cryogenic fluids, etc.)
  - measurement and calculation time (e.g. access to supercomputer, etc.)
  - costs for acquiring or using data collections (e.g. from Statistics Netherlands), for which the total amount may not be more than € 25,000 per proposal
  - access to large national and international facilities (e.g. cleanroom, synchrotron, etc.)
  - work by third parties (e.g. laboratory analyses, data collection, Citizen Science initiatives, etc.)
  - personnel costs for the appointment of a post-doc and/or non-scientific personnel for a smaller appointment size than those offered in the personnel budget modules

- Travel and accommodation costs for the personal positions applied for
  - travel and accommodation costs
  - conference attendance (maximum of two per year per scientific position applied for)
  - fieldwork
  - work visit

- Implementation costs
  - national symposium/conference/workshop organised within the research project
  - costs for Open Access publishing (solely in full gold Open Access journals, registered in the “Directory of Open Access Journals” https://doaj.org/)
  - data management costs
  - costs involved in applying for licences (e.g. for animal experiments)
  - audit costs (only for institutions that are not subject to the education accountants protocol of the Ministry of Education, Culture and Science), maximum € 5,000 per proposal; for projects with a duration of three years or

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13 Per 0.2 fte scientific employee at a university of applied sciences (junior, medior and senior level, with a minimum appointment of 0.2 fte for a period of 12 months), a maximum of € 15,000 material budget can be applied for each year of the appointment.

14 Citizen Science means involving citizens in research projects. Citizens can assist researchers during data acquisition (e.g. during the annual bird count), by making computer capacity available (e.g. for simulating molecular interactions such as protein configurations and computational drug design), or when formulating research questions and research projects.
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less, a maximum of € 2,500 per proposal applies.

Costs that cannot be applied for are:
− basic facilities within the institution (e.g. laptops, desks, etc.);
− maintenance and insurance costs.

If the maximum amount of € 15,000 per year per full-time scientific position is not sufficient for realising the research, then it may be deviated from if a clear justification is provided in the proposal.

Explanation of budget module Investments (up to € 150,000)
In this budget module, funding can be requested up to a maximum of € 150,000 for investments in equipment, datasets and/or software (e.g. lasers, specialised computers or computer programs).

Explanation of budget module Investments (€ 150,000 to € 500,000)
In this budget module, funding can be requested for investments in scientifically innovative equipment and/or data collections of national and international importance. The minimum amount that can be applied for is € 150,000.

NWO funds a maximum of 75% of the total investment costs, up to a maximum of € 500,000. The applying institution must contribute at least 25% of the total costs of the investment. This contribution to the investment should be confirmed in writing by the applying institution when the proposal is submitted. The costs for investments should be adequately specified and motivated in the proposal.

Funding can be requested for:
− costs for investment in scientific equipment;
− costs for investment in datasets;
− personnel costs for the setting up of databases and the initial digitisation of the bibliographical equipment, if these cannot be purchased;
− personnel costs for employees with specific, essential technical expertise needed in order to build or develop an investment.

If funding for personnel costs is applied for, then the need for these personnel costs should be justified. If the applicant does not have this expertise available, then it should be stated that this expertise needs to be procured with these costs. The internal procurement procedures and/or guidelines of the applicant apply.

Funding cannot be requested for:
− costs of infrastructure facilities that can be regarded as part of the usual infrastructure;
− data collections and any associated software and bibliographies that are already available in other ways;
− other personnel costs, including personnel costs required to operate and conduct research with the facility;
− maintenance and use of equipment. The costs for researchers using equipment for a project can be covered via the material budget.

Explanation of budget module Knowledge utilisation
The aim of this budget module is to facilitate the utilisation of knowledge emerging from the research. At least 5% and at most 20% of the total project budget should be used for knowledge utilisation activities via this budget module.

Knowledge utilisation assumes very different forms in the various science domains. Examples are producing a teaching package, a feasibility study into application possibilities, costs for the submission of a patent application, or a business developer.

In the proposal, the applicant should specify which costs are needed.

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15 In this budget module, the applicable definition for “knowledge transfer” is that used by the European Commission in the Communication from the Commission Framework for State aid for research and development and innovation (PBEU 2014, C 198).
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In the context of the Impact Plan Approach applicants can use this module to cover costs for the following activities:

- Specific activities to facilitate knowledge utilisation towards (intermediary) parties that are not funded in the project, such as knowledge platforms. These activities cover, amongst other things, joint learning activities, training courses and communication activities.
- Involving interested parties (stakeholders): activities organised by the consortium aimed at involving stakeholders, such as consultation workshops, expert meetings, roundtable meetings, et cetera.
- Communication: activities organised by the consortium such as (international) learning events, development of videos, blogs, newsletters and other types of media. The hiring of communication expertise can also be included here.
- Development of skills: activities aimed at the development of skills that go further than the levels of the individual student, PhDs or postdocs, such as the development of courses for stakeholders or master students.
- Monitoring and evaluation moments: in which knowledge utilisation is a subject of discussion: such as interim evaluations and the meetings of the user committee (see also Section 3.5.2).

Travel costs for consortium partners are explicitly not fundable in this module, but the travel costs of collaborating partners and external parties from everyday practice can be funded from this module. The budget requested should be satisfactorily specified in the proposal.

If the knowledge utilisation activities are realised by a party outside of the consortium, then during the tendering procedure for the selection of such a party due consideration should be given to the procurement rules of the government and, when necessary, a European tendering procedure should be followed.

**Explanation of budget module Internationalisation**

The budget for internationalisation is intended to encourage international collaboration. The budget applied for may not exceed € 25,000. The amount requested must be specified. If the maximum amount is not sufficient for realising the research, then it may be deviated from if a clear justification is provided in the proposal.

Funding can be requested for:
- travel and accommodation costs in so far as these concern direct research costs emerging from the international collaboration and additional costs for internationalisation that cannot be covered in another manner, for example from the bench fee;
- travel and accommodation costs for foreign guest researchers;
- costs for organising international workshops/symposia/scientific meetings.

**Explanation of the budget module Money follows Cooperation (MfC)**

The module Money follows Cooperation provides the possibility of realising a part of the project at a publicly funded knowledge institution outside of the Netherlands.

The applicant must convincingly argue how the researcher from the foreign knowledge institution will contribute specific expertise to the research project that is not available in the Netherlands at the level necessary for the project. This condition does not apply if NWO has concluded a bilateral agreement concerning Money follows Cooperation with the national research council of the country where the foreign knowledge institution is located. On this NWO webpage you can read which research funders NWO has concluded such an agreement with.

The budget applied for within this module cannot be more than 50% of the total budget requested from NWO. The co-applicant from the participating foreign knowledge institute should meet the requirements for co-applicants set out in Section 3.1 of this call for proposals, except for the condition that the co-applicant must be employed in the Kingdom of the Netherlands.

The rates for the personnel costs of researchers working at the foreign knowledge institute are calculated using the correction coefficients table of the Marie Skłodowska-Curie grants (EU, Horizon 2020), with the Dutch VSNU rates being the starting point. The table can be found on this NWO webpage.

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16 A stakeholder is each person or group that can influence the goals being achieved or can be influenced as a result of these.
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The main applicant receives the grant and is responsible for transferring the amount to the foreign knowledge institution and for providing accountability for the MfC part of the grant. The MfC part will be accounted for as part of the overall final financial report for the project. The exchange rate risk lies with the applicant. Therefore, gains or losses due to the exchange rate are not eligible for funding.

The applicant is responsible for:
- The financial accountability for all costs in both euros and the local currency, for which the exchange rate used must be visible;
- a reasonable determination of the size of the exchange rate. If requested by NWO, the applicant must always be able to provide a description of this reasonable determination.

If more than 125,000 euros is requested within this module, the final financial report must be accompanied by an audit statement.

NWO will not issue any funding to co-applicants in countries that fall under national or international sanction legislation and rules. The EU Sanctions Map (www.sanctionsmap.eu) is guiding in this respect.

Explanation of the budget module Project management

The module project management provides a possibility to request a budget for project management that is at most 5% of the total budget requested from NWO. This budget can only be used for activities that solely support the project for which the grant is requested. The applicant must satisfactorily justify this budget.

Amongst other things, project management is understood to mean the optimal shaping of the organisation structure of the consortium, support of the consortium and the main applicant, monitoring coherency, progress and unity of the project, and alignment between the sub-projects within the project. This task may also be realised by external parties insofar as the expertise is not available at the knowledge institution of the main and/or co-applicant(s). During the tendering procedure for the selection of a third party, knowledge institutions should take into account the procurement rules of the government and, where necessary, follow a European tendering procedure. The activities of the main applicant and co-applicants in the context of the project (management) may not be funded from this budget module.

The budget to be requested for project management can consist of material costs, realisation costs and personnel costs. For personnel costs a maximum rate of 119 euros per hour may be used (for the rates, please see Annex 6.1). The hourly rate of personnel to be appointed is based on the cost-covering rate (kostendekkend) and is calculated in accordance with the standard productive number of hours used by the organisation. The cost-covering rate includes:
- (average) gross salary for the post of the employee who will contribute to the project (based on the collective labour agreement scale of the employee concerned);
- holiday allowance and 13th month (if applicable in the relevant collective labour agreement) in proportion to the use in fte;
- social security contributions;
- pension costs;
- overheads.

Third parties may realise tasks in the context of project management, but the part of the (commercial) hourly rates that exceeds the hourly rates stated above is not fundable and can therefore not be included in the budget.
6.3 Industrial and Societal Doctorates

Industrial and Societal doctorates are understood to be PhD students who will do their research at both the knowledge institution and an organisation that is not a (co-)applicant. If an organisation and the knowledge institution closely collaborate, then this increases the chance that the knowledge will actually find its way into everyday practice. The research should be an integral part of the project. In the case that an Industrial or Societal Doctorate is appointed, the private or public organisation which is involved in the doctorate should assume responsibility for at least 25% of the salary costs. This contribution may be part of the minimum required co-funding and in that case should always be in cash.

The intended PhD student may be employed by the knowledge institution or the organisation. The activities realised by the PhD student must always fall under fundamental or industrial research. The salary costs of the PhD student are always remunerated in accordance with the valid VSNU rate. NWO will fund a maximum of 75% of this amount and at least 25% of the amount must be contributed by the organisation that is not a (co-)applicant. Any additional salary costs – due to an actual salary that is above the VSNU rate – should be covered by the employer and may be contributed to the project in the form of in-kind funding. For the calculation of a surplus, the employer costs minus the VSNU rates for an appointment of the same size is assumed. The support/grant may not be transferred to the organisation that is not a (co-)applicant.

If an industrial doctorate or societal doctorate PhD position is applied for, then the parties should make agreements about possible IP rights that are generated by the PhD student concerned. With this, allowance should be made for possible access to the research results by other project participants, under FRAND (fair, reasonable and non-discriminatory) conditions or otherwise.

The NWO grant is only awarded to the knowledge institution for the purpose of the PhD research project. In this context, it is relevant to state that in accordance with the application of the NWO Grant Rules 2017, all research results should be published as soon as possible in Open Access form and accordingly serve the public interest. Furthermore, all other provisions from Section 3.5, such as those stated in Section 3.5.4 (Intellectual Property & Project agreement) apply.