NWO Open Competition Domain Science - XL
Round 2021-2022

Call for proposals

Science
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1 Introduction

1.1 Background

NWO stimulates excellent, curiosity-driven, disciplinary, interdisciplinary and multidisciplinary research. In doing this, NWO focuses on all scientific disciplines and the entire knowledge chain with an emphasis on fundamental research. Fundamental scientific research forms the foundation for understanding the world around us, for understanding the natural and human past, and for making important new discoveries. Non-programmed fundamental research is necessary for innovations that make society economically successful and socially resilient. Conversely questions from society can give rise to new fundamental questions.

In this call for proposals you will find information about how to submit research proposals for curiosity-driven, fundamental research in the research fields of the NWO Domain Science (NWO-domein Exacte en Natuurwetenschappen (ENW)). This funding instrument is open for research proposals with a question in or overlapping the fields of earth sciences, astronomy, chemistry, computer science, life sciences, physics, and mathematics. Proposals can be monodisciplinary, multidisciplinary, or interdisciplinary in nature. The NWO Domain Science has three types of funding you can apply for in open competition. These are the small-scale and large-scale grants, and grants for promising ideas. This call for proposals describes the large-scale grants (ENW-XL, formerly ENW-GROOT). For more detailed information about the grants for promising ideas and small-scale grants we refer you to the call for proposals NWO Open Competition Domain Science – XS and ENW-M (formerly ENW-KLEIN).

1.2 Available budget

A total of € 30,000,000 is available for the awarding of ENW-XL grants in the 2021-2022 funding round.

If additional funds become available then NWO retains the right to increase the level of funding available. In such a case, the increase in the level of funding will be announced in good time. No rights for third parties may be derived from this.

The NWO Domain Board Science has not pre-determined the allocation of funds over (sub)disciplines and neither has it determined the number of grants to be awarded. The assessment of the proposals and awarding of the grants will take place in accordance with the selection procedure as stated in Section 4.1. Only research proposals with the qualification "excellent" or "very good" are eligible for funding.

1.3 Validity of the call for proposals

This Call for Proposals is valid with effect from 1 October 2020.

The deadline for submitting pre-proposals is Thursday 15 April 2021, at 14:00:00 hours CE(S)T.

The deadline for submitting full proposals is Thursday 23 December 2021 at 14:00:00 hours CE(S)T.
2 Aim

The ENW-XL grants are intended for consortia in which research groups use collaboration (coordinated consolidation of strengths and areas of expertise) to create added value compared to individual projects, such as for instance ENW-M grants. The ENW-XL grant gives researchers the opportunity and freedom to start, strengthen, and/or expand excellent, challenging and innovative lines of research.

Applications with a (partial) domain-overarching component shall only be considered by the NWO Domain Science if a significant part of the proposed research fits one or more of the research areas of the Domain Science.
3 Guidelines for applicants

3.1 Who can apply

Full, associate and assistant professors and other researchers\(^1\) with a comparable appointment can submit an application if:

- they are employed (i.e. hold a salaried position) at one of the following organisations:
  
  o Universities established in the Kingdom of the Netherlands;
  o University medical centres;
  o NWO and KNAW institutes;
  o the Netherlands Cancer Institute;
  o the Max Planck Institute for Psycholinguistics in Nijmegen;
  o the DUBBLE Beamline at the ESRF in Grenoble;
  o NCB Naturalis;
  o Advanced Research Centre for NanoLithography (ARCNL);
  o Princess Máxima Center.
  o The Royal Netherlands Meteorological Institute (KNMI);
  o IHE Delft Institute for Water Education.

- 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. Researchers with a zero-hour appointment are excluded from applying.

An exception to the required duration of appointment can be made for applicants\(^2\) with a “tenure track” appointment. If the tenure track appointment does not cover the entire duration of the project, an additional condition applies. The applicants should then demonstrate by means of a letter that adequate supervision is guaranteed for the entire duration of the research for all researchers that they request funding for.

Additional conditions:

- An ENW-XL grant proposal has a single main applicant and at least one co-applicant;
- In ENW-XL round 2021-2022, a researcher may be involved, as main applicant or as co-applicant, in only one ENW-XL grant proposal;
- In an ENW-XL grant proposal researchers of at least two different organisations (see above-mentioned list) collaborate.

The representation and promotion of women in science lags considerably behind that of men. NWO therefore strongly encourages women to submit proposals.

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\(^1\) In this Call for Proposals, “researchers” refers to both women and men.

\(^2\) The word ‘applicants’ refers to both main applicants and co-applicants.
Collaboration with Luxembourg

NWO has made agreements with the Fonds National de la Recherche (FNR) in Luxembourg about the joint funding of bilateral projects. Collaboration with a research group from Luxembourg is possible by expanding an ENW-XL grant (proposal) with a Luxembourgian component (financed by FNR). The foreign component does not count for determining the minimum and maximum budget size on the Dutch side. The Luxembourgian component may amount up to €1,000,000. NWO treats and assesses bilateral proposals in the same way as regular ENW-XL grant proposals, as described in this call for proposals. Please contact NWO (see Section 5.1) if you are considering to submit a proposal with a Luxembourgian component, or if you would like to receive further information about this variant. Luxembourgian researchers involved in an ENW-XL grant proposal must comply to the conditions of the FNR INTER programme (https://www.fnr.lu/funding-instruments/inter/) and are requested to contact the FNR well before the submission deadline.

3.2 What can be applied for

An ENW-XL grant has a minimum size of €1,000,000 and a maximum size of €3,000,000. The grant must be used for four or more temporary scientific positions, in combination with the other available budget modules. Everything that you apply for (positions, material budget, and investment) must be commensurate with the research proposed. You should only apply for funding that is vital for carrying out the research and provide reasons for this. This means that the maximum permitted budget does not have to be applied for.

Budget Modules

The budget modules (including the maximum amounts) that are available within this call for proposals are stated in the table below. You should only request that which is essential for realising the research.

<table>
<thead>
<tr>
<th>Budget module</th>
<th>Maximum amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>PhD</td>
<td>according to VSNU or NFU rates</td>
</tr>
<tr>
<td>Postdoc</td>
<td>according to VSNU or NFU rates</td>
</tr>
<tr>
<td>Non-scientific staff at (NSS) universities</td>
<td>€ 100.000, according to VSNU or NFU rates in combination with PhDs and/or postdoc(s)</td>
</tr>
<tr>
<td>Material costs</td>
<td>€ 15,000 per year per scientific position</td>
</tr>
<tr>
<td>Investments (up to € 150,000)</td>
<td>maximum of € 150,000</td>
</tr>
<tr>
<td>Investments (€ 150.000 to € 500.000)</td>
<td>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</td>
</tr>
<tr>
<td>Knowledge utilisation</td>
<td>less than 5% of the total budget applied for</td>
</tr>
<tr>
<td>Internationalisation</td>
<td>less than 5% of the total budget applied for</td>
</tr>
<tr>
<td>Money follows Cooperation</td>
<td>less than 50% of the total budget applied for</td>
</tr>
</tbody>
</table>

An explanation of the budget modules can be found in the annex (Section 6.2) to this call.

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3 For personnel outside the Netherlands, the local rates are reimbursed up to a maximum of the VSNU rates.
Involvement of civilians, so-called ‘citizen science’, might have an added value to the quality of science. They could offer data and insights that would not be available for science in other set-ups. NWO wants to finance citizen science as well and offers the possibility from 2020 onwards to apply for reimbursement of citizen involvement in research projects via the budget module ‘material, project-related goods or services, work by third parties’. This module offers researchers a possibility; this is by no means an obligation. Researchers can decide whether the involvement of citizens is desirable and how the budget is used for this (e.g. reimbursement of expenses for civilians, offering skill training or technical aids for participating citizens).

3.3 When can applications be submitted

The deadline for the submission of pre-proposals is **April 15, 2021, 14:00:00 hours CE(S)T**.
The deadline for the submission of proposals is **December 23, 2021, 14:00:00 hours 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. Once you have submitted your application you may not change it. You do however have the right to withdraw your application.

3.4 Preparing an application

Anyone who satisfies the submission criteria as stated in Section 3.1 can (jointly) submit a pre-proposal for an ENW-XL grant. You can only submit a full proposal for an ENW-XL grant if the pre-proposal has successfully passed through the first step (see the selection procedure, Section 4).

- Download the application form, the budget table, and other relevant templates from the electronic application system ISAAC or from NWO’s website (on the grant page for this programme).
- Prepare the application in English.
- Use the application form and the budget table for the 2021-2022 round.
- Save the forms as pdf files and upload them in ISAAC.

For every (pre-)proposal submitted, NWO assumes that the applicant has informed the host institution and that the university or institute has accepted the funding conditions of this programme.

**Domain Science research areas**

Pre-proposals will be assessed by cluster assessment committees (see Section 4.1). When NWO appoints the members of the cluster assessment committees it will do its best to choose experts for the research areas stated by the applicant. You must therefore select one or more research areas that match your research proposal best. In section 6.1 you will find a list with the research areas relevant for the NWO Domain Science.

**Referees / non-referees**

NWO kindly requests applicants to make at least three and at most five suggestions for foreign referees who we may be able to consult. The list with suggestions for referees may not contain any names of researchers that the main applicant or the co-applicant(s) have worked with during the past three years, are currently working with, or expect to work with. The suggested referees may not be working in the Netherlands. In addition, the applicant may state the names of three people who may not act as referees. The latter is not compulsory. NWO kindly request to state the non-referees and suggestions for referees in ISAAC already at the same time as you submit your pre-proposal.
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.

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.

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 (full 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.
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.

Advice on awarded ENW-XL projects
Following the award of an ENW-XL project, NWO will appoint, in consultation with the consortium, an external advisor for the project. This advisor is an independent and experienced researcher from the relevant research field, for instance a member of a scientific advisory committee, that is not directly involved in the project. The advice aims at maximising the scientific and/or societal impact of the project. To this end, the external advisor will be in contact with the Project leader and/or the consortium at least once a year.

Ethical aspects
Research proposals that may raise ethical issues need to be considered carefully before the research is 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 a proposal is accepted, funding will be awarded subject to the condition of obtaining approval from the relevant ethics committee or obtaining a licence under the WBO. A research project cannot start before 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 the time to obtain a WBO licence. In the event of complex ethical issues, NWO reserves the right to consult an external advisor.

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. With technical questions please contact the ISAAC helpdesk, see Section 5.1.2.
4 Assessment procedure

4.1 Procedure

Admissibility

The first step in the assessment procedure, both of pre-proposal and full proposal, is to test whether the proposal is admissible. On behalf of the NWO Domain Science Board, the NWO Domain Science office will assess the appropriateness and completeness of the proposal. The conditions as described in chapter 3 of this call for proposals will apply here. **If correction of the application is required, the applicant will be given a one-off opportunity to adjust the application within 5 working days.**

Adjusted applications that are received by NWO in time and that meet the submission conditions will be taken into consideration.

All submitted pre-proposals/proposals are in mutual competition. The assessment occurs in two steps.

Step 1: Pre-proposals

Cluster committees

Based on the research areas chosen by the applicants, various cluster assessment committees (cluster committees) will be appointed to assess similar research areas. The exact composition of cluster committees depends on the chosen research areas and the number of admissible pre-proposals.

Members of a cluster committee are domestic and foreign researchers with expertise in the research areas covered in that cluster.

The pre-proposals will be allocated across the various cluster committees. In case a (multidisciplinary) pre-proposal content-wise fits more than one cluster committee, this pre-proposal might be assessed by more than one relevant cluster committee. During a meeting the cluster committees will rank the pre-proposals and provide a motivation. The ranking results from a graded assessment against the assessment criteria. Pre-proposals are assessed against criterion 1 (Scientific quality of the pre-proposal) and criterion 3 (Quality of the consortium) only (see Section 4.2). NWO will try to ensure that all cluster committees will nominate percentage-wise a similar number of pre-proposals for further elaboration. A basic principle is that the total number of nominations will be about twice the expected number of awarded projects. In the final nomination the order of the pre-proposals in the cluster rankings remains intact.

Decision taking

The cluster committees will advise the NWO Domain Science Board by providing a motivated ranking and a list of pre-proposals nominated for further elaboration. Based on this advice the NWO Domain Science Board will decide which pre-proposals may be elaborated into full proposals. The candidates with the highest chance of being awarded funding will be invited to submit a full proposal before the deadline.

Remark

As pre-proposals are not submitted to referees, no rebuttal is requested.
Chapter 4: Assessment procedure / NWO Open Competition Domain Science - XL

Step 2: Full proposals

Referees and rebuttal
As soon as a proposal is declared admissible, NWO will submit this for advice to external referees. These independent advisers are experts in the field of the proposal. For each proposal NWO tries to consult four referees but at least three referees will assess each proposal. The referees will assess the proposal against the assessment criteria 1, 2, and 3 as detailed in Section 4.2, and will not give a graded assessment. The referees' reports will be made anonymous and will be sent to the applicant for a written rebuttal. Applicants must submit their rebuttal as a pdf file via ISAAC within 10 working days of making the referees’ reports available.

Three assessment committees and interview
The proposals will be distributed across three assessment committees, which will have different focus areas based on the research areas indicated by the applicants. NWO will try to ensure that the different assessment committees receive approximately the same number of proposals. After invitation for submission of a full proposal (see Step 1: pre-proposals) applicants will be informed on the global distribution of focus areas over the three assessment committees. Committee members can be members from the cluster committees (pre-proposal phase), supplemented with other experts.

All consortia that submitted an admissible proposal will be invited for an interview. During the interview a delegation of maximum three persons of the consortium will explain the proposal by means of a presentation to the assessment committee. The committee members will then have the opportunity to ask questions. During the interview uncertainties regarding the comments of the external referees and the rebuttal will be discussed. The committee can also ask new questions regarding the three assessment criteria (see Section 4.2) that were not raised by the referees. During the interview the consortium can respond to these in a discussion with the committee so that a hearing and rebuttal procedure takes place.

Each assessment committee will subsequently determine a graded assessment with justification for the proposals they assessed, based on the full proposals, the referees' reports, the rebuttal, and the interview with the consortium. The ranking results from a graded assessment against the assessment criteria (criteria 1, 2, and 3, Section 4.2).

Task of assessment committees
The task of the assessment committees is to make their own independent consideration based on the proposal, the referees' reports, and the rebuttal. The referees' reports will to a large extent ‘guide’ the final assessment but will not be blindly accepted by the committees without question. The assessment committees will consider and compare the referees' arguments (also among each other) and examine whether the rebuttal contains a well-formulated response to the critical comments from the referees' reports. Furthermore, the assessment committees, unlike the referees, can see the quality of the other proposals and rebuttals submitted. The assessment committees can therefore reach a different assessment from the referees.

Domain-wide assessment committee
The domain-wide assessment committee will consist of representatives from the three assessment committees. The domain-wide assessment committee will reach a single final ranking of the proposals based on the three assessment committee rankings that have been independently established. In the final ranking the order of the proposals in the assessment committee rankings remains intact.

Decision taking
With the final ranking the domain-wide assessment committee will advise the NWO Domain Science Board about the quality of the proposals it puts forward. Based on this advice, the funding available, and any possible policy aspects (for example on the basis of the NWO Domain Science strategy) the domain board will take a decision about whether to award or reject the proposals.
Chapter 4: Assessment procedure / NWO Open Competition Domain Science - XL

General

Code for Dealing with Personal Interests

The NWO Code for Dealing with Personal Interests applies to all persons and NWO staff involved in the assessment and/or decision-making process. See also: www.nwo.nl/en/code.

Integrity

In the NWO Grant Rules it is stated that all research funded by NWO must be carried out in accordance with the nationally and internationally accepted standards for scientific conduct as stated in the Netherlands Code of Conduct for Scientific Practice 2018 (VSNU). Further information about the NWO policy on scientific integrity can be found on the website: https://www.nwo.nl/en/policies/scientific-integrity-policy.

Encouraging female researchers

If two proposals receive an equal ranking (rounded to one decimal place) then the domain board will give preference to the proposal from a female main applicant. This applies to both pre-proposals and full proposals.

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 (see also Section 3.5). 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 data management plan.

Qualification

NWO will award a qualification to all full proposals and will make this known to the researcher with the decision about whether or not the application has been awarded funding. For more information about the qualifications please see www.nwo.nl/en/funding/funding-process-explained/nwo-qualification-system.

Global timetable

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<table>
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<tr>
<td><strong>Pre-proposals</strong></td>
<td></td>
</tr>
<tr>
<td>15 April 2021, 14:00:00 hours CE(S)T</td>
<td>Submission deadline pre-proposals</td>
</tr>
<tr>
<td>Beginning of September 2021</td>
<td>Assessment pre-proposals by cluster committees</td>
</tr>
<tr>
<td>October 2021</td>
<td>Decision NWO Domain Science Board; NWO informs applicants about the decision; invitation to submit full proposals.</td>
</tr>
<tr>
<td><strong>Full proposals</strong></td>
<td></td>
</tr>
<tr>
<td>23 December 2021, 14:00:00 hours CE(S)T</td>
<td>Submission deadline full proposals</td>
</tr>
<tr>
<td>January-February 2022</td>
<td>Referees are consulted</td>
</tr>
<tr>
<td>March 2022</td>
<td>Applicants can submit a rebuttal</td>
</tr>
<tr>
<td>April 2022</td>
<td>Interviews</td>
</tr>
<tr>
<td>End of April 2022</td>
<td>Meeting of the domain-wide assessment committee.</td>
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</tbody>
</table>
4.2 Criteria

For the assessment of proposals within the ENW-XL programme the basic principle is that the proposals must clearly describe what will be investigated, who will carry out the research, and why the research should be carried out. Pre-proposals are assessed against the criteria 1 and 3 only. Full proposals are assessed against all three criteria.

**Criterion 1: Scientific quality of the proposal (What)**
This includes:
- the clarity of the proposal, question posed and the objectives;
- scientifically innovative and/or ground-breaking elements;
- the scientific approach: (challenge in) the approach and the feasibility of this;
- the effectiveness in terms of methodology proposed.

**Criterion 2: Scientific and/or societal impact (Why)**
Applicants can choose to focus in their research project on scientific impact only, societal impact only, or a spread across both forms of impact.

Scientific impact includes, among others:
- potential and relevance of research results for one’s own discipline and related discipline(s);
- potential and relevance of the research results for the wider scientific field.

Societal impact includes, among others:
- potential for societal impact in the short and long term;
- a vision of the way(s) in which the proposed research could lead to societal impact.

Besides impact, the assessment committee, as part of this criterion, will also weigh:
- the motivation for the focus on scientific impact and/or societal impact;
- the degree of the presence of processes, factors, or plans to enhance (unforeseen) chances on the not-chosen focus of impact during the runtime of the project.

It is possible to achieve a good grade for this criterion if the focus of the proposal lies on scientific impact, societal impact, or a spread across both forms of impact. The score of this criterion is independent of the chosen focus; therefore the one form of impact is not better or worse than the other.

**Criterion 3: Quality of the consortium (Who)**
This includes:
- the degree of added value of the collaboration. The way in which the collaboration offers more than the sum of the individual researchers;
- the quality and scientific achievements of the participating research groups insofar as these are relevant for the successful realisation of the proposal submitted;
- the degree of critical mass;
- the degree of clearness and effectiveness of the organisation structure of the consortium;
- appropriate expertise and (access to) the equipment needed;
- the degree of diversity of the consortium (gender and academic age), balanced against the ratios in the relevant research field.

The quality of the consortium is weighed on the basis of the degree of added value that the proposed collaboration (in the context of an ENW-XL grant) has compared to the current situation. The current
situation may be that there is not yet, or only limited, collaboration, or that a long-term collaboration and organizational structure already exists.

**Weighting of the criteria**

The weighting of the criteria is as follows:

**Pre-proposals**

The scientific quality of each pre-proposal accounts for 50% of the final score and the quality of the consortium for 50%.

**Full proposals**

The scientific quality of each pre-proposal accounts for 40% of the final score, the scientific and/or societal impact for 20%, and the quality of the consortium for 40%. Via the final score, a proposal should have at least acquired the qualification "excellent" or "very good" to be eligible for funding.
5 Contact details

5.1 Contact

5.1.1 Specific questions
For specific questions about NWO Open Competition Domain Science - XL and this call for proposals please contact:

Dr Remko Achten, phone +31 (0)70 349 45 65, email: ENW-XL@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  Domain Science research areas

Applications only fall within the scope of this call for proposals if they are in, or overlap with, the fields of earth sciences, astronomy, chemistry, computer science, life sciences, physics, and mathematics. In the application you should state which of the following research areas (at least one) is applicable and for each research discipline you should state a percentage (at least 20%, totalling 100%). The NWO Domain Science office will use the research areas stated to allocate the proposals submitted across the cluster assessment committees. Of course there are various research areas that cannot be allocated to one discipline. A few research areas are therefore listed under several disciplines in the list below; the disciplines are stated to make it easy to find the research areas. The research areas are listed in alphabetical order per discipline.

**Astronomy**
- Galaxies
- Gravity and the universe
- High-energy astrophysics
- Instrumentation - telescopes, detectors and techniques
- Planetary sciences
- Stars
- Very large databases in astronomy: archiving, handling and analysis

**Chemistry**
- Analytical chemistry
- Biochemistry
- Biotechnology
- Catalysis
- Chemical biology
- Chemical technology, process technology
- Inorganic chemistry
- Macromolecular chemistry, polymer chemistry
- Materials chemistry
- Molecular biology
- Organic chemistry
- Physical chemistry
- Structural biology
- Synthetic biology
- Theoretical, computational and quantum chemistry

**Computer science**
- Artificial intelligence, expert systems
- Algorithms, data structures, complexity, and computability
- Bioinformatics
- Computer graphics, computer simulation, virtual reality
- Computer systems, architectures, networks
- Data management, data mining and information theory
- Information systems, information storage and retrieval, user interfaces, multimedia
- Security & privacy
- Software engineering, programming languages, formal methods

**Earth sciences**
- Atmosphere sciences
- Environmental sciences
- Geochemistry
- Geophysics
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Geodesy, physical geography
Geodynamics, sedimentation, tectonics, geomorphology
Geotechnics
Hydrosphere sciences
Marine sciences
Paleoceanography
Paleoclimate
Paleontology, stratigraphy
Petrology, mineralogy, sedimentology
Planetary sciences

Life sciences
Agronomy
Animal sciences, zoology
Biochemistry
Bioinformatics
Biomedical research
Biotechnology
Cell biology
Developmental biology
Ecology
Environmental sciences
Evolutionary biology
Genetics, omics
Immunology
Microbiology, virology, parasitology
Molecular biology
Neurosciences
Nutrition, food
Organismal biology
Pharmaceutics, pharmacology
Physics of life
Physiology
Plant sciences
Systems biology
Theoretical biology, modeling

Mathematics
Algebra, number theory, discrete mathematics
Mathematics of data science
Functional analysis, control theory
Dynamical systems, differential equations
Geometry, topology
Logic, set theory
Numerical analysis, scientific computing
Optimization, operations research
Probability, statistics

Physics
Atomic, molecular and optical physics
Condensed matter, materials and nanophysics
Particle and astroparticle physics
Physics of energy
Physics of fluids and soft matter
Physics of life
Physics of technology and instrumentation
Plasma physics
Quantum physics and technology
6.2 Explanation of budget modules

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 (www.nwo.nl/en/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 (www.nwo.nl/en/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.
- 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. (https://www.rijksdienstcn.com/werken-bij-rijksdienst-caribisch-nederland/arbeidsvoorwaarden)

The rates for all budget modules are incorporated in the budget format that accompanies the application form. For the budget modules “PhD” 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.

**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 can be requested for NSS. 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.
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Explanation of budget module Material

For each fte scientific position (PhD and postdoc) 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, 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 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.

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.
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 use of the knowledge that emerges from the research. The budget applied for may not exceed 5% of the total budget. Because knowledge utilisation takes many different forms in different scientific fields, it is up to the applicant to specify the costs required, e.g. costs of producing a teaching package, conducting a feasibility study into potential applications, or filing a patent application. The budget applied for should be adequately specified in the proposal.

**Explanation of budget module Internationalisation**

The budget for internationalisation is intended to encourage international collaboration. The budget applied for may not exceed 5% of the total budget. 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 web page](https://www.nwo.nl/en) you will find an overview of research councils that signed a bilateral MfC agreement with NWO.

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5 In this budget module, the definition for “knowledge transfer” used by the European Commission in the Framework for State Aid for research and development and innovation applies (PbEU, 2014, C198).
The budget applied for within this module cannot be more than 50% of the total budget applied for.

A co-applicant from the participating foreign knowledge institution should satisfy the conditions set for co-applicants in Section 3.1 of this call for proposals, with the exception of the condition that the co-applicant should be employed in the Kingdom of the Netherlands.

The rates for the personnel costs of researchers at the foreign knowledge institution are calculated on the basis of the correction coefficients table of the Marie Skłodowska-Curie grants (EU, Horizon 2020), based on the Dutch VSNU rates. The table can be found on this web page of NWO.

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 part of the overall financial accountability of the project.

The exchange rate risk lies with the applicants. 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 statement must be accompanied by an auditor’s report.

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.