



# Consortia in Photonics (Taiwan)

## Call for proposals

Applied and Engineering Sciences



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# 1 Introduction

## 1.1 Background

The Dutch Research Council (NWO), through the Knowledge and Innovation Covenant 2020-2023, and the Ministry of Science and Technology (MOST) aim to stimulate long-term research and innovation collaboration in 'Photonics'.

NWO, together with MOST, contributes to the mission-driven innovation policy aimed at opportunities from societal challenges. To achieve this, NWO and MOST are making connections between researchers, private and public parties, and are encouraging the exploration of new pathways. Bringing various parties together gives rise to new consortia and innovative research.

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 Dutch government 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.

## 1.2 Available budget

The subsidy ceiling for this call is M€ 3, divided in two equal shares between NWO and MOST. The NWO share amounts up to a maximum of M€ 1.5 and the MOST share amounts up to a maximum of M€ 1.5.

## 1.3 Validity of the call for proposals

This call for proposals is valid until the date on which NWO and MOST take 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 deadline for the submission of proposals is stated in Section 3.3. The decision dates are given in the planning stated in Section 4.1.

## 2 Aim

### 2.1 Theme of the call

This call is open to researchers from the photonics community in The Netherlands and Taiwan. It aims to give an impulse to photonics research in both economies, to stimulate (new) collaborations between the two science communities in these territories, and to learn from each other's approaches solving blocking issues for the future. For this (first) call, the thematic work field is broad.

This means that joint proposals can be submitted from different areas within photonics. In these proposals, researchers from Taiwan describe how they collaborate with researchers from the Netherlands to achieve the common goals of the bilateral research proposal. In these proposals a Taiwanese work package and a Dutch work package with separate corresponding budgets can be distinguished. The respective work packages must contribute to the strategic research agendas in both The Netherlands and Taiwan.

#### Photonics agenda in The Netherlands

Photonics is a technology that is used in many products. This includes products we use every day, such as cameras in mobile phones, the Internet and lighting. Despite the fact that photonics is relatively unknown to the general public, there are great opportunities in this domain for The Netherlands. The *Dutch National Agenda Photonics* (see: <https://nationaleagendafotonica.nl/en/>) provides insight into what these opportunities are for The Netherlands and how we can capitalise on them. Photonic solutions are the answer to growing needs in the areas of communication, food production, home comfort and health, with a minimum of strain on the living space. The expected economic growth of the photonics industry is much higher compared to the growth of the economy in general. It is with good reason that photonics is seen as one of the important key technologies for the future, in the European Commission, in the Knowledge and Innovation Agenda (KIA) and in the top sector HTSM, which published the Photonics Roadmap 2020.

In this call, the topic of the Dutch work package should address one or more of the promising clusters from the national photonics agenda. These clusters are:

- Photonics in Health
- Photonics in Manufacturing
- Photonics in ICT
- Photonics in Semicon
- Photonics in Energy & Environment
- Photonics in Agri-food

#### Photonic research orientation in Taiwan

Photonics industry is also one of the major industrial sectors in Taiwan. The total revenue reaches US\$ 55 billion in 2019. Although the market size shrinks mostly due to the downsizing of flat-panel display industry, the photonics industry is moving toward innovative and value-added direction and has rapid growth in the optical sensing and bio-medical applications.

The photonics research programme is also one of the biggest programmes in MOST and supports the cutting-edge and applied research in academia. The photonics research programme currently covers most of the emerging fields that are classified into four groups:

- Optoelectronic Material, Device, and Module
- Optical Fiber Communications & Waveguide Optics
- Optics Engineering and Laser Technology: includes the subfields of Nanophotonics and Laser Technologies, Information Optics, Optical Design, Biophotonics, and Optical Sensing
- Energy and Display Technology: includes Display Technology, Lighting Technology, Photovoltaics

There are two special research programmes supported by MOST: Silicon and Photonics Integrated Circuits and Extreme Laser Engineering. These special programmes aim to support the research on the emerging and disruptive photonics technology, which can also be regarded as the near-term priorities in photonics research. In this call, the topic of Taiwan work packages should address the applications of photonics technologies, including:

- Photonic integrated circuits
- Nanophotonics
- Optical communications
- OLED and solar cells
- Biophotonics

In this call, researchers working, e.g., in the above fields could strengthen their technology level by collaborating with research groups from The Netherlands with complementary expertise.

Photonics makes an important contribution to solving social challenges. NWO and MOST strongly encourage collaboration for scientific, social and economic impact. Besides the technological aspects, research into the societal aspects is needed. Amongst other things, this concerns research into responsible innovation, economic and psychological aspects.

## 2.2 International collaboration

Proposals should be characterised by equal partnership between the Dutch and Taiwanese partners. This includes inter-institutional cooperation, a balanced contribution to the proposed research, and frequent exchange between the partners, including exchange visits by both senior and junior researchers. Projects must organise a minimum of two research visits of a minimum of three months each for PhD students and/or post docs, and of minimum three weeks each for senior researchers.

Projects are expected to interact with the other projects awarded in this call, so as to enhance the impact of the call aim as a whole. As a part of this, projects will be expected to attend joint kick-off and mid-term workshops, as well as a final conference. Projects should budget for this accordingly.

The involvement of foreign researchers and/or collaborating partners outside The Netherlands and Taiwan 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. On the Dutch side, consortia are therefore invited, if this aligns with the objectives of the research proposal, to make use of the budget module Internationalisation to give international collaboration a place in the project design. The modules are further described in Section 6.2.

## 2.3 Research with societal impact

NWO and MOST believe it is important that knowledge generated from research funded by NWO and MOST 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<sup>1</sup>: societal changes in both the short and long-term.

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<sup>1</sup> 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.

NWO and MOST use the Impact Outlook 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<sup>2</sup> from the moment the consortium is formed until the completion of the project (see also under Section 2.3 Interdisciplinary research).

### 2.3.1 Impact outlook

This call is aimed at funding fundamental and application-oriented scientific research into technological breakthroughs to create economic opportunities for The Netherlands and Taiwan to contribute to solving societal challenges. Through this call, NWO and MOST fund research into technologies in different life-cycle phases, from fundamental to more application-oriented (no further than proof-of-concept testing in a laboratory environment), for which the time horizon for achieving impact through application of the technologies is diverse. For example, it is possible to do research into the further development of technologies, with good perspectives for accomplishing impact in the short term. The impact can also be further into the future, as is the case of basic research into emerging technologies that could drastically change society. NWO and MOST have chosen the *Impact Outlook* approach to comparably assess the impact of proposals for which the time horizon for realising the impact differs. Therefore, the *Impact Outlook* approach is part of the project plan.

Knowledge utilisation is viewed as an iterative process. The chance of productive interactions and knowledge utilisation increases if continuous alignment takes place between researchers and possible end users from the start of the initial research question and subsequently throughout the implementation of the research. Therefore, in this call, consortia draw up an *Impact Outlook* together with the stakeholders. As a result of this, a project can flexibly respond to (unforeseen) opportunities for impact/changes that can occur during the course of the project. An example of this could be a focused exploration for key methodologies to facilitate the public acceptance of the technology developed.

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

## 2.4 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. This requires a fitting design of and vision on the research.

### 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. Check the NWO [website](#) for a complete overview.

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.

Consortia will be assessed as to whether they include sufficient expertise to answer the research question in the entire breadth and to achieve the desired societal impact.

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<sup>2</sup> A stakeholder is each person or group that can influence the goals being achieved or can be influenced as a result of these.

### Innovative from the start

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.

(A further explanation of interdisciplinary collaboration can be found on NWO's website: <https://www.nwo.nl/en/researchprogrammes/knowledge-and-innovation-covenant-kic/interdisciplinary-collaboration>).

## 2.5 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.

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 Outlook*, 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 Outlook* 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 Outlook* 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).

## 2.6 Collaboration with universities of applied sciences

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.

## 3 Guidelines for applicants

### 3.1 Who can apply

Eligible consortia are composed of researchers based in The Netherlands and in Taiwan, with active involvement in the project of a main applicant on both the Dutch and the Taiwanese side. The consortium must also include at least one industry partner on both sides.

Specifically, the Dutch and Taiwanese sides of the consortium must fulfil the following requirements:

Dutch side of the consortium:

- One main applicant who fulfils the requirements of Section 3.1.1;
- At least one co-applicant who fulfils the requirements of Section 3.1.2;
- At least one co-funder who fulfils the requirements of Section 3.1.3;
- Optional: one or more collaboration partner(s).

Taiwanese side of the consortium:

- One main applicant who fulfils the requirements of Section 3.1.1;
- At least one co-applicant who fulfils the requirements of Section 3.1.2;
- At least one co-funder who fulfils the requirements of Section 3.1.3;
- Optional: one or more collaboration partner(s).

Proposals are submitted by the two main applicants and the co-applicants. A proposal is written by a consortium in which besides the applicants other participants are involved as well.

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 applicants

A proposal should have two main applicants: one based in the territory represented by NWO, in accordance with the laws administered in that territory, and one based in the territory represented by MOST, in accordance with the laws administered in that territory. The two main applicants will serve as the recipients of the grants from their respective funding agencies, NWO and MOST. They will serve as the points of contact for their respective funding agencies. The main applicants' organisations will take responsibility for the project secretariat, the day-to-day management and all financial affairs of the research project, including the final financial accountability towards their respective funding agencies.

A 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.

##### Dutch main applicant

The Dutch 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 organisations or institutions referred to in Paragraph 1.1.1 of the NWO Grant Rules 2017 (NWO Subsidieregeling) [as amended from time to time] [including 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)];

- 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<sup>3</sup>. Personnel with a zero-hour appointment is excluded from applying.

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.

#### Taiwanese main applicant

For Taiwanese scientists, MOST requires the main applicant to fulfil the criteria in compliance with the MOST regulation refers to the 'Guidelines for applying for MOST Bilateral Add-on Grant for International Cooperation'.

- Main applicant qualifications:
  - The main applicant should currently implement the subsidised MOST research project (hereinafter referred to as the original plan) and submit the application within the deadline of the project, and the project implementation period has not been expired. The so-called original plan does not include promotion cases, industry-academia cooperative cases, Industry-University cooperative cases, and international double (multi-)lateral agreement cooperative research plans.
- The main applicant who is implementing MOST's projects with major policies and has not been allowed to implement other subsidised programmes of MOST can still submit application for this project to ensure double (multi-)lateral agreement cooperative case is completed.

### 3.1.2 Co-applicants

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.

#### Dutch co-applicants

The Dutch 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<sup>4</sup>. 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.

#### Taiwanese co-applicants

MOST requires that the Taiwanese co-applicant must be an eligible PI and meets the qualifications described in the 'Operation Guidelines for MOST Research Project Grants'.

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<sup>3</sup> 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.

<sup>4</sup> 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.

### 3.1.3 Co-funder(s)

Co-funding may be contributed by organisations that participate in the consortium. Co-funding can be delivered in cash or in kind. At least one co-funding partner must be established either in Taiwan or in The Netherlands.

Co-funders in this call do not receive funding from NWO and MOST. The co-funders jointly contribute a net minimum amount of 10% of the budget for the proposal on either side. The role that these parties play in the preparation, realisation, and translation of the research to society should be described in the research proposal.

On the Dutch side, 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 this call.

On the Taiwanese side, co-funders need to fill in the 'MOST-NWO International Cooperation Research Industrial Cooperation Letter of Intent', please refer to the Chinese version of the call for proposals.

### 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

The main applicants and consortia can apply for funds for a project with a maximum duration of five years. Each project consists of a Dutch work package and a Taiwanese work package. Per project, a maximum of k€ 750 can be requested from NWO for the Dutch work package, and a maximum of NT\$ 3M including original grant subsidised by MOST per year can be requested from MOST for the Taiwanese work package.

#### Reimbursable costs

Different costs can be reimbursed from the NWO grant for the Dutch work package, and from the MOST grant for the Taiwanese work package. The application form allows you to specify which organisation you would like to cover a certain cost. You should complete two budgets, one specifying the costs to be covered by the NWO grant and one specifying the costs to be covered by the MOST grant.

#### Reimbursable costs NWO budget

Everything applied for (such as personnel positions, material budget, investments, and the mutual ratio between these budgets) must be in proportion to the research. You should only request subsidy which is essential for realising the research.

Budget module	Maximum amount
PhD	no limit on number of positions, according to VSNU or NFU rates <sup>5</sup>
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 <sup>5</sup>
Postdoc	no limit on number of positions, according to VSNU or NFU rates <sup>5</sup>
Non-scientific staff at (NSS) universities	€ 100,000 per PhD and/or postdoc, according to VSNU or NFU rates <sup>5</sup> in combination with PhDs and/or postdoc(s), up to a maximum of € 300,000 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 <sup>5</sup>
Personnel universities of applied sciences and other institutions	no limit on number of positions, rates based on <i>Handleiding Overheidstarieven 2017</i> (HOT)
Material costs	€ 15,000 per year per scientific position
Investments (up to € 150,000)	maximum of € 150,000
Knowledge utilisation	minimum 5% to maximum 20% of the total project budget
Internationalisation	€ 25,000, this budget module can be applied up to three times
Project management	maximum 5% of the total budget requested from NWO

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).

#### Reimbursable costs MOST budget

The following costs will be reimbursed by MOST. For more information, please see [MOST](#) website.

Depending on the actual needs of a research project, the Taiwanese main applicant may apply for the following subsidies:

1. The main applicant may apply for foreign travel expenses (including the cost of overseas research and attending international academic conferences), business expenses, and equipment expenses that can be subsidised according to bilateral agreements. However, this programme does not approve management fees and salary for doctoral researchers.
2. The applicants will be selected by MOST and the bilateral agreement institutions. MOST may take the initiative to increase the number of international cooperative research leaders. The hosting fee is NT\$ 5,000 per month (the main applicant can receive a maximum of NT\$ 25,000 for the research hosting fee per month). However, the main applicant can only receive one share of hosting fee from various international cooperative research projects.

<sup>5</sup> For personnel outside the Netherlands, the local rates are reimbursed up to a maximum of the VSNU rates.

### 3.3 When can applications be submitted

The deadline for the submission of proposals is **9 November 2021, 14:00:00 hours CEST (NWO) / 9 November 2021, 20:00:00 TST (MOST)**. Proposals must be submitted on time to both NWO (via ISAAC) and MOST (e-mail the full proposal in PDF format to <cmtom@most.gov.tw> for eligibility check).

When you submit your application to ISAAC you will also need to enter additional details online, such as the institutions or organisations of both main applicants and your co-applicants and collaboration partners. You should therefore start submitting your application at least one working day before the deadline of this call for proposals.

Applications submitted after the deadline to either NWO or MOST will not be taken into consideration.

### 3.4 Preparing an application

Dutch-Taiwanese research teams must prepare a joint research proposal, which will be submitted to NWO by the Dutch main applicant and to MOST by the Taiwanese main applicant.

#### For NWO

- Download the application form and Excel budget format, and the declaration of the applicant(s) , and the form data management section, from the electronic application system ISAAC or from NWO's website (on the grant page for this programme);
- Complete the application form and Excel budget format, using the guidelines in the application form;
- Save the application form as a PDF file and upload it in ISAAC;
- Save the Excel budget format as Excel, the form 'declaration of the applicant(s)', and the form 'data management section' and upload it as separate document in ISAAC;
- Add letters of support from co-funders (at the moment of submission, the letters of support appended should pledge the entire required co-funding according to the conditions described in Section 3.5.3).

#### For MOST

After the proposal has been selected and approved by MOST and NWO, the main applicant in Taiwan needs to log in to the MOST electronic application system, the Academic Research Service Portal (ARSP) [<https://www.most.gov.tw>], to apply for budget approval within one month.

The proposal should include:

- Fill in relevant information according to the requirements of the system.
- The form of international cooperation research plan should be completed (IM01-04). The IM02 form should provide the international cooperative plan. The IM04 form should include the joint portion (in English) specified in the bilateral agreement, and the main applicant's list of international cooperative plans in the past five years, as well as supplementary materials such as resumes and publication list of participants of both parties.
- After submitting the application online, the main applicant must also submit the application through the implementation institution before the deadline.

It is not permitted to include other documents than those requested above. Applicants will be asked to remove any additional documents.

## 3.5 Conditions on granting

Considering that NWO subsidies are only granted to parties that meet the criteria for 'Dutch main applicants' as described in Paragraph 1.1.3 of this brochure, the [NWO Grant Rules 2017](#) and the Agreement on the Payment of Costs for Scientific Research apply to all grants provided by NWO. Considering that MOST subsidies are only granted to parties that meet the criteria for 'Taiwanese main applicants', the MOST grant conditions apply to all grants provided by MOST. For more information, please refer to '[Guidelines for applying for MOST Bilateral Add-on Grant for International Cooperation](#)'.

### 3.5.1 Duration

The maximum duration of a project is five years. Proposals with a longer duration will not be considered by NWO nor MOST.

### 3.5.2 Start

The project should start before April 2023. At least one researcher must be appointed to the project at the time of its start. If the project has not started by 1 April 2023, NWO and MOST can decide to revoke the granting decision.

#### Start documents

The Dutch main applicant and the Taiwanese main applicant are responsible for ensuring that the necessary documents (see below) are submitted to their respective funding agencies, so that the project in its entirety can start on time.

#### NWO

The project can start if the following documents are approved by NWO:

- A project notification form with information of project staff;
- A data management plan;
- A consortium agreement, signed by all consortium organisations;
- (If relevant) approval of relevant ethics committees;
- (If relevant) receipt by NWO of the first tranche of in-cash contribution / a signed confirmation letter of the contribution.

#### MOST

The project can start if the following documents have been approved by MOST:

- The signing of the contract and disbursement of subsidy for grant projects shall be processed in accordance with the letter of approval issued by MOST.
- A grant project with an approved subsidy shall be carried out duly in accordance with the contents of its proposal and may not be changed. However, after submitting relevant documentation during the execution period of the project and with consent from MOST, this restriction may not apply.

#### Publications

When publishing the results of the subsidised research, the support by NWO and MOST should be mentioned.

### 3.5.3 Co-funding conditions

This compulsory co-funding<sup>6</sup> 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 party that has pledged an in-cash contribution to the Dutch work package. After these funds have been received, NWO and MOST 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.

#### 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;<sup>7</sup>
- PPP allowance;

<sup>6</sup> 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>.

<sup>7</sup> 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.

- 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 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).

### 3.5.4 Substantive monitoring and programme-supporting activities

NWO and MOST 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 and MOST will fulfil a secretarial role. Further tasks and working methods of the user committee and the role of NWO and MOST will be elaborated in the project agreement (see Section 3.5.4).

In addition to this, NWO and MOST 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 applicants will be responsible for the annual substantive and financial reports about the project. With a view to monitoring the progress of the project, NWO and MOST can request interim substantive and financial reports.

#### Final accountability to MOST

For financial accountability to MOST, please see: '[Operation Guidelines for MOST Research Project Grants](#)'.

- Applicant institutions must complete their grant report within three months of the conclusion of their research projects in accordance with the MOST's regulations.
- Applicant institutions ought to supervise main applicants by reminding them to submit electronic copies of required documents such as their research findings report, report on overseas travel, and so forth within three months of their project conclusion on the MOST website.

- For applicant institutions that conducted a MOST-granted research project, grant reporting and the submission of the research report must be completed in order for the research project in question to be deemed closed.
- When executing a granted research project, the main applicant shall utilise the subsidies as per the purpose(s) stated for the grant. The main applicant shall assume full responsibility for the authenticity of all documents of expense and full liability for providing false expense documentation.

#### 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 and MOST.

### 3.5.5 Intellectual Property and Project Agreement

NWO and MOST seek 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 and MOST want to ensure that the research results from research it funds are publicly accessible and, on the other hand, they want 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 parties involved in the research. The basic premise is that the research results can be published without limitations.

With respect to intellectual property (IP), this call 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

(<https://www.nwo.nl/en/nwo-grant-rules>). This policy is aligned with the ‘Rules for public-private partnership’ of the Ministry of Economic Affairs and Climate Policy of The Netherlands.

The MOST IP policy can be found in the ‘Treatment of Rights and Interests of R&D of MOST’.

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 use the standard text of NWO in the model agreement. The model project agreement allows for tailor made agreements on IP and publication procedure. However, parties may also decide to use the standard NWO IP and publication procedure. 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 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.

### 3.5.6 Open Access

As a signatory to the Berlin Declaration (2003) and a member of cOAlition S (2018), NWO is committed to making the results of research funded by NWO openly accessible via the internet. NWO is thus fulfilling the ambitions of the Dutch government to make all publicly funded research openly available. Scientific publications arising from projects awarded on the basis of this call for proposals must therefore be made available in open access in accordance with the Open Access Policy Framework.

### Scientific articles

Scientific articles must be made available immediately at the time of publication (without embargo) via one of the following routes:

- Publication in a fully open access journal or platform registered in the DOAJ;
- Publication in a subscription journal and immediately (without embargo) depositing of at least the author accepted manuscript of the article in an open access repository registered in OpenDOAR;
- Publication in a journal for which a transformative Open Access agreement exists between VSNU and a publisher. For further information see: [www.openaccess.nl](http://www.openaccess.nl).

### Books

Different requirements apply to scholarly books, book chapters and edited collections. See the Open Access Policy Framework at [www.nwo.nl/en/open-science](http://www.nwo.nl/en/open-science).

### CC BY licence

To ensure the widest possible dissemination of publications the Creative Commons (CC BY) licence must be applied. Alternatively – in case of serious objections - the author may request to publish under a CC BY-ND licence. For books, book chapters and collected volumes all CC BY licence options are allowed.

### Costs

Costs for publication in fully open access journals can be budgeted in the project proposal using the budget module for 'material costs'. Costs for publications in hybrid journals are not eligible for reimbursement by NWO. For Open Access books a special NWO Open Access Books Fund is available.

For more detailed information about NWO's open access policy, see <https://www.nwo.nl/en/open-science>

## 3.5.7 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 and MOST expect that research data resulting from NWO and MOST-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 and MOST require 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 be 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](http://www.nwo.nl/datamanagement-en).

For the information on the MOST attribution and application protocol of scientific and technological research results can be found at <https://www.most.gov.tw/folksonomy/detail/7b0f6390-814b-430c-94a0-ec5347db6025?l=ch> [Chinese].

## 3.5.8 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](http://www.absfocalpoint.nl)). NWO assumes that researchers will take all necessary actions with respect to the Nagoya Protocol.

## 3.5.9 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 DEC 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.

The researchers of MOST must follow the 'Academic Ethics Guidelines for Researchers by the Ministry of Science and Technology [Chinese], [English]'.

### 3.5.10 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>. The MOST grant rules that all research selected and approved by MOST must be conducted in accordance with the '[Guidelines for Handling and Investigating Research Misconduct MOST](#)'.

### 3.5.11 DORA

NWO is a signatory of the [San Francisco Declaration on Research Assessment](#). DORA is a global initiative that aims to improve the way in which research and researcher are assessed. DORA focuses on reducing the uncritical use of bibliometric indicators, but also on removing unconscious bias in the assessment of research and researchers. The overarching philosophy behind DORA is that research should be assessed based on its own quality and merits rather than based on derivative indicators such as the journal in which the research is published. For NWO this means that assessors are requested not to rely on indicators such as the Journal Impact Factor or h-index. These can therefore also not be mentioned by applicants in their application. When assessing the scientific track record of candidates, NWO uses a broad definition of scientific output. Besides publications, applicants are encouraged to also list other scientific products, such as datasets, patents, software, code, etc. For more information about what NWO does to implement the DORA principles, please visit [www.nwo.nl/en/dora](http://www.nwo.nl/en/dora)

- Download the application form from the electronic application system ISAAC or from NWO's web page (on the grant page for this programme).
- Complete the application form.
- Save the application form as a pdf file and upload it in ISAAC.

## 3.6 Submitting an application

Applications should be submitted to both NWO and MOST, by the Netherlands-based and Taiwan-based main applicants respectively. Applications not submitted to both organisations will not be taken into consideration.

Applications submitted after the deadline, or that have not been submitted to both application systems before the deadline, will not be included in the assessment procedure.

#### Submission to NWO

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.

The main applicant based in the territory represented by NWO or at one of the organisations or institutions referred to in Paragraph 1.1.1 of the NWO Grant Rules 2017 (NWO Subsidiereregeling) [as amended from time to time] [including 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)] must submit his/her application via his/her own ISAAC account. Applications not submitted via ISAAC will not be admitted to the assessment procedure.

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

Please note that you will be asked to submit additional information when submitting your application in ISAAC, such as the organisations of your consortium members. For this reason, we strongly advise

that you start submitting your application at least five working days before the deadline.

For technical questions please contact the ISAAC helpdesk, see Section 5.1.2.

#### Submission to MOST

The Taiwanese main applicant needs to e-mail the full proposal in PDF format to <cmtom@most.gov.tw> for the eligibility check. After the proposal has been selected and approved by MOST and NWO, the main applicant in Taiwan needs to log in to the MOST electronic application system, the Academic Research Service Portal (ARSP) (<https://www.most.gov.tw>), to apply for budget approval within one month.

## 4 Assessment procedure

### 4.1 Procedure

#### 4.1.1 Matchmaking

In the period prior to the deadline for submitting proposals NWO will facilitate (virtual) matchmaking activities for this call. 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 websites and the newsletters of NWO.

#### 4.1.2 NWO Code for Dealing with Personal Interests

The NWO Code for Dealing with Personal Interests applies to all persons involved and NWO employees involved in the assessment and/or decision-taking process

(<https://www.nwo.nl/en/common/subsidies/funding-process-explained/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 proposal is completely and correctly filled in and admissible. All applicants and their institutions must fulfil the eligibility rules for research proposals as set by respectively NWO and MOST. This is done using the conditions described in Chapter 3 of this call for proposals.

If NWO and/or MOST detect shortcomings during this test, then they will give the main applicant(s) a one-off opportunity to modify the 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 and MOST.

The remainder of the assessment procedure will subsequently be conducted through the online system of NWO.

#### 4.1.4 Assessment proposal

All eligible applications will be sent to independent reviewers, who will assess the application based on the assessment criteria specified in Section 4.2.

##### Referees and the rebuttal

The proposals will first be assessed by external referees. Referees are independent advisers who are an expert on (a significant part of) the topic(s) of the proposal. NWO and MOST aim to have four referees per 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 anonymised form to the Dutch main applicant for a written defence (the rebuttal), via ISAAC. The Dutch main applicant should share the reports with the Taiwanese main applicant. The consortium will have ten working days to write a response to the referees' reports. The rebuttal should be submitted by the Dutch main applicant on behalf of the consortium, via his or her ISAAC account.

### Assessment and grant advice

NWO and MOST will jointly compose a selection committee, with international experts. All applications are assessed in competition by the selection committee, according to the criteria specified in Paragraph 4.2. The selection committee will make a final assessment of the application, based on the application, the referees' reports, and the rebuttal, according to the criteria in Section 4.2. The selection committee will subsequently rank all applications. The selection committee will subsequently submit a substantiated recommendation regarding granting or rejection to the Board of the NWO Domain Applied and Engineering Sciences (AES), on behalf of NWO, and MOST.

### Decision-making

The selection committee submits its recommendation regarding granting or rejection to the Board of the NWO Domain Applied and Engineering Sciences (AES) and MOST for the final granting decision. The Board of the NWO Domain AES and MOST determine the final assessment of the proposals, based on the selection committee's recommendation. Based on this proposal, the Board of the NWO Domain AES and MOST take a decision about granting or rejecting the proposals. The decision becomes definitive when the Board of the NWO Domain AES and MOST have come to the same provisional decision.

### 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 selection 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 selection committee when writing the data management plan. A project awarded funding can only start after NWO and MOST have approved the data management plan.

### Qualification

NWO gives all proposals a qualification. This qualification is made known to the Dutch main applicant with the granting decision. MOST will communicate the decision to the Taiwanese main applicant. 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 4.2.1).

### Proposals

3 May 2021	Launching the joint call
May – October 2021	Webinars and matchmaking
9 November 2021	Submission deadline proposals NWO and MOST
November – December 2021	Referees are consulted
January 2022	Consortia have ten working days to submit a rebuttal, via the ISAAC account of the Dutch main applicant
March 2022	Meeting selection committee
April 2022	Decision NWO and MOST
April 2022	NWO and MOST inform main applicants about the decision
September 2022	Start joint projects

## 4.2 Criteria

In this call, proposals are assessed according to the following three assessment criteria, for which the sub-criteria are described in Section 4.2.1.

1. Quality of research
2. Quality of consortium
3. Impact

The qualification arises from the average assessment for the three criteria, with each of the criteria carrying equal weighting.

#### 4.2.1 Sub-criteria

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

1. Quality of research
  - Scientific and methodological quality
  - Urgency of the proposed research
  - Innovative aspects of the proposed research plan
  - Interdisciplinary aspects of the proposed research plan
  - 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
  - The proposal substantiates convincingly how the research contributes to this Photonics Onderzoeksagenda ([https://nationaleagendafotonica.nl/wp-content/uploads/2018/12/National\\_Agenda\\_Photonics\\_spreads\\_EN.pdf](https://nationaleagendafotonica.nl/wp-content/uploads/2018/12/National_Agenda_Photonics_spreads_EN.pdf)) and to the photonic research orientation in Taiwan (see section 2.1)
  
2. Quality of 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)
  - 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
  
3. Impact
  - Contribution to scientific impact, definition and analysis of the problem, contribution to solution
  - Contribution to societal impact, the societal challenges as described in the call
  - Economic perspective of the proposal
  - Connection strategy for involving the relevant stakeholders and end users

#### 4.2.2 Scores and threshold values

The selection committee will use a scoring scale of 1.0 to 9.0, for which 1.0 is the maximum score.

Only 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 and 3) the minimum score of 4.0 is required to be eligible for funding.

Score range	Qualification
1.0 - 1.4	Excellent

1.5 - 3.4	Very good
3.5 - 5.4	Good
5.5 - 9.0	Unsatisfactory

### 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.

## 5 Contact details and other information

### 5.1 Contact

#### 5.1.1 Specific questions

For specific questions about this call for proposals on 'Photonics' please contact:

##### NWO

Mr Dr Paul Schuddeboom (NWO Applied and Engineering Sciences (AES))

Telephone: +31 (0)30 6001269

E-mail: [p.schuddeboom@nwo.nl](mailto:p.schuddeboom@nwo.nl)

Ms Dr Silke Diedenhofen (NWO Science)

Telephone: +31 (0)70 3494261

E-mail: [s.diedenhofen@nwo.nl](mailto:s.diedenhofen@nwo.nl)

Mr Berry Bonenkamp (NWO Social Sciences and Humanities (SSH), bilateral cooperation with Taiwan)

Telephone: +31 (0)70 3494416

E-mail: [b.bonenkamp@nwo.nl](mailto:b.bonenkamp@nwo.nl)

##### MOST

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Second Secretary of Division of Science and Technology

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E-mail: [chchtsai@most.gov.tw](mailto:chchtsai@most.gov.tw)

#### 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](mailto:isaac.helpdesk@nwo.nl). You will receive an answer within two working days.

#### 5.1.3 Technical questions about the MOST Academic Research Service Portal ARSP

For technical questions about the MOST Academic Research Service Portal, ARSP, can be found at: <https://ord.mcut.edu.tw/var/file/10/1010/img/375/731435653.pdf>. The information desk can be contacted at the regular office hours (Taiwan) on +886 800-212-058 or +886 227-377-590 (-591, -592).

## 5.2 Other information

NWO processes data from applicants in accordance with the NWO privacy statement, [www.nwo.nl/privacyverklaring](http://www.nwo.nl/privacyverklaring) (in Dutch).

## 6 Annexe(s):

Please note: These annexes are for NWO. It may be that MOST requires additional documents. Please see: '[Operation Guidelines for MOST Research Project Grants](#)' and '[Guidelines for applying for MOST Bilateral Add-on Grant for International Cooperation](#)'.

### 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). <https://www.nwo.nl/documents/nwa/nwa-orc---handleiding-overheidstarieven>

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

\* 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

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](http://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](http://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*.

- (<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.
  - (<https://www.rijksdienstcn.com/werken-bij-rijksdienst-caribisch-nederland/arbeidsvoorwaarden>) (only available in Dutch).

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.

### 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<sup>8</sup>.

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

<sup>8</sup> 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.

#### 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

- 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 Knowledge utilisation

The aim of this budget module is to facilitate the utilisation of knowledge emerging from the research<sup>9</sup>. 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.

In the context of the Impact Outlook 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)*<sup>10</sup>: 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.

<sup>9</sup> 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).

<sup>10</sup> A stakeholder is each person or group that can influence the goals being achieved or can be influenced as a result of these.

- *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. This budget module can be applied up to three times.

Funding can be requested for:

- Working visits of the researchers (PhD, or Postdoc) from The Netherlands to the Taiwanese research institutes;
- 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 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.

## 6.4 KIC 2020-2023

The NWO funding for the call for Consortia in Photonics (Taiwan) is through previous funds for the Knowledge and Innovation Contract 2018-2019. This call for Consortia in Photonics (Taiwan) is a pilot call for international collaboration within the KIC, and the specific requirements differ from the standard calls for the Knowledge and Innovation Covenant 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.

More information about the KIC programmes can be found at <https://www.nwo.nl/en/research-and-results/programmes/nwo/knowledge-and-innovation-covenant/index.html>.

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