Responsible Innovation

Call for proposals 2nd subsidy round 2009-2010

This document is the translation of the Dutch Call for Proposals.
In case of different interpretation of the original (Dutch) text and this (English) translation the original Dutch text prevails.

Netherlands Organisation for Scientific Research

Contents

1 Introduction

The NWO theme Responsible Innovation (abbreviated to MVI) is one of NWO's thirteen themes. Those themes are clusters of multidisciplinary research programmes concentrating on current issues with both scientific and societal relevance.

The MVI thematic programme was launched in April 2008. This programme is an alliance between

- the NWO divisions for Humanities and Social Sciences, WOTRO Science for Global Development, Technology Foundation STW and ZonMw
- the Ministry of the Interior and Kingdom Relations
- the Ministry of Foreign Affairs
- the Ministry of Defence
- the Ministry of Agriculture, Nature and Food Quality
- the Ministry of Education, Culture and Science
- the Ministry of Health, Welfare and Sport

During this second, applications are only possible for the areas specified by the steering committee. This are areas that did not receive sufficient attention during the first round. This Call for Proposals sets out information about the possibilities for submitting applications, the conditions that applications must meet and the procedure for assessing the applications. It also includes a description of the themes for which applications may be submitted.

This Call for Proposals pertains solely to the second round in the grant process of the MVI thematic programme (2010).

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2 Aim

The thematic programme MVI focuses on issues concerning technological developments for which it is reasonable to suspect that they will have a dramatic impact (whether positive or negative) on people and/or society. On the one hand, those developments concern new technologies (such as ICT, nanotechnology, biotechnology and neural sciences), and on the other, technological systems in transition (for example agriculture and healthcare). The thematic programme contributes to responsible innovation by increasing the scope and depth of research into societal and ethical aspects of science and technology. It focuses on proactive research into the ethical and societal aspects of technological development projects.

The programme's emphasis is on:

- *Interaction between research into science/technology, humanities and social sciences* Contributions from all these fields are needed in order to ensure responsible innovation in science and technology as envisioned in this programme;
- *Proactive planning*. The programme has an explicitly proactive dimension or 'make' perspective: right from the start, the envisioned research, development and (preliminary) designs must incorporate relevant ethical and societal aspects. MVI research should not only result in an analysis and understanding of a particular problem, but subsequently also lead to a 'design perspective' – in the broad sense, including institutional arrangements;
- *International orientation*. The programme has an international orientation and context: it involves not only Dutch innovation projects, but also innovation projects in other countries or parts of the world. The research explicitly devotes attention to the global context and aspects, and in particular those that are relevant to developing countries;
- *Valorisation*. The valorisation of the research will receive a great deal of attention, both at the level of the programme and at the level of the individual projects.

The research agenda has been defined in consultation with the ministries participating in the thematic programme. In a series of lengthy discussions and consultations, a number of themes were identified that are urgent and very important.

The total budget for research projects is almost €12m. During the second round, a budget of approximately €4m is available.
Applications are only possible for the following four themes:

- Human enhancement
- Food
- Animals, nature & natural habitat
- Intellectual Property Regimes (IPR)

A description of these themes can be found in the next section of this chapter.

It should be stressed that the funds contributed to the programme by the ministries serve as a guideline for the apportionment among the themes. The division of funds will be based on the ministries' contributions, although a degree of flexibility is possible.

2.1 Description of the themes

During this second round, applications are only possible for the following four themes: (1) Human enhancement, (2) Food, (3) Animals, nature & natural habitat,

(4) Intellectual Property Regimes (IPR). These themes are divided into sub themes. An application always concerns one or more sub themes.

2.1.1 Human enhancement

Enhancement is the use of interventions for the purpose of improving functions - not in a therapeutical context - that are linked to the workings of the body, brain and nervous system. The basic questions about 'enhancement' have existed for some time, for example in the world of professional sports, and do not necessarily concern new technological possibilities. Tutoring and private tuition may also be considered forms of 'enhancement'. New technology can make it possible for difficulties to be overcome: an enhancement about which one could only speculate now appears to be within the realms of possibility.

Normative questions about principles can be raised, recently addressed explicitly by the transhumanists: what is the ideal human? How can a response to their philosophy be phrased? Other, more concrete, practical normative questions also exist, concerning matters of fair competition (in sports, at school, and possibly even in connection with access to jobs). And there is the grey area between therapy and enhancement, and the societal responsibilities for it. If new technologies can be used to overcome difficulties, it then becomes urgent to properly evaluate the interaction between the new technology and enhancement options.

Relevant general ethical and societal questions include:
- What is the societal context of the development of techniques for enhancement? What part do individualisation, aging and commerce play?
- What is the situation with the possible health risks and the effectiveness of different forms of enhancement?
- What are the implications for fundamental rights, personal and moral identity, individual autonomy and moral responsibility?
- What is the identity perception of the formable human, and what is the psychological connection between the body and external technology connected seamlessly to the body?
- What are the limits of parents' powers of decision and control in situations involving the possibility of use for their children?
- What are the expected societal implications, and what do they mean in terms of the desirability of enhancement? Examples include the consequences for societal solidarity and justice (on a global or a smaller scale). Will enhancement increase the unfair division of privileges between the 'haves' and the 'have-nots'?
- How should the possibility of a 'rat race' be viewed? What should be done if individual freedom to decide on enhancement turns into an urge to use it to rule out the possibility of overlooking any competitive edge?
- What responsibilities do individuals, aid workers and the government have? In connection with the government's responsibility, the question arises of what the implications are of the government's duty to protect public assets.
- Various sectors are facing the issue of how far the government or employers may go in enhancing 'their' soldiers, pilots, fire-fighters, police, to allow them to perform their duties better; may they be enhanced at the expense of their individuality and their autonomy? Examples of this issue include enhancement of staff of emergency and police services and fighter pilots, allowing them to respond faster and more accurately to alarms and the ever increasing flows of information.

Sub themes

A number of specific applications require particular attention:

(a) Global justice

The topic of human enhancement also gives rise to questions about global justice. How can fair, global access to enhancement technologies be organised? What part can the WTO play in this connection? How are ethically acceptable decision-making systems concerning this issue structured? What enhancement preferences do developing countries have? How can enhancement technologies be developed that reduce the risk of improper use? What does improper use mean in this connection?

(b) Neurotechnology

The possibilities for affecting the brain and changing their performance are becoming ever greater: for example medicines such as Prozac and Ritalin, and the rise of entire institutes dedicated to neuroengineering ('tinkering with the brain') in the US. These processes are also interventions aimed at improving functions in a non-therapeutical context, for example to increase a person's cognitive abilities and alertness, refresh their memories, or change people's moods and feelings. Besides pharmacological interventions, examples also include neurostimulation and neuromodulation using brain implants.

First of all, there is the question about how matters stand with science and public opinion. What possibilities can be expected in the short and medium term? What are the risks? For example, it is not unthinkable that memory enhancement will disrupt the natural balance between remembering and forgetting and as such will undermine the memory's working instead of improving it. Assuming that cognitive enhancement becomes available and is safe to apply, will people actually wish to make use of such technology? If so, to what extent and under what conditions? In situations involving a great deal of social competition, or under the pressure of employers' expectations, how free will they be to refrain from using products that improve a person's cognition or alertness?

(c) Life extension

A great of research is being conducted into factors involved in the process of aging, and into possibilities for influencing that process, for example through nutrition, manipulating hormones or using regenerative medicine/stem cell therapy. 'Forever young' appeals greatly to people's imagination, but does not appear to be very realistic. It seems more realistic to considerably increase people's life expectancy. 'Anti-aging' research and its possible application with a view to life extension gives rise to numerous research questions.

First of all, here too there is the question about how matters stand with science and public opinion. What possibilities can be expected in the short and medium term? Assuming such technology becomes available, will people actually wish to make use of it? And if so, to what extent and under what conditions?

Possible ethical and societal questions include:

- What is the purpose of medicine, and how does life extension relate to that purpose? Should doctors allow themselves to be involved?
- How do our views of aging affect research into life extension and its possible application, and vice versa?
- What are the possible or definite societal implications, and what do they mean in terms of the desirability of life extension and of setting conditions?

Possible implications include:

- The gap between those who can and cannot afford life extension (which includes the issue of international equality and accessibility), and the gap between those who do and do not use, or wish to use, the possibility of life extension. What if the difference in the life expectancies of the 'haves' and the 'have-nots' increases even further: can that be justified, against the background of the requirements of fairness?

- Implications for the way in which people live their lives, for they way in which they deal with existential questions, such as perceptions of meaning/meaninglessness, boredom/fulfilment, perceptions of finiteness, etc. Implications for people's perception of personal identity: will it be possible to experience life as a whole if we reach much higher ages?
- The implications of an exponentially older society for access to work (what about a 'productive gerontocracy', which limits the opportunities of younger people?), societal facilities such as healthcare (a longer life will probably lead to a considerable morbidity), insurance and pensions (will they remain affordable?), and the threat of overpopulation (are tight family policies and/or – in the more distant future - interplanetary relocations not another aspect of life extension?)

(d) Enhancement of military personnel

Military applications of human enhancement are used, on the one hand, for improving the performances – both physical and mental - during military and peacekeeping missions, and on the other for reducing health risks. For both aspects, this requires altering humans to push back their limits. Examples of enhancement of military personnel include, on the one hand, direct alteration of the human body, and on the other embedding the soldier in future (technological) advanced system environments (wideware).

This gives rise to a number of questions. What impact will use of this technology have on military personnel as human beings, in both the positive and the negative sense? And how far can you go, with whom and when? To what extent is it possible to apply this technology to an individual, and to what extent to an entire army?

It is also unclear what technological and other developments that are relevant to this application domain are taking place, or are expected in the medium and long term. Research is needed to provide more information about this issue too.

Neuromodulation, neuroimaging and other neurotechnologies will also have a part to play in this connection (see §3.2.6). For example, questions can be raised about the brain activity of military personnel in combat situations, and about influencing that brain activity, in order to prevent 'cognitive impairment' and 'stress-related disorders' (see 'the moral soldier').

For military purposes, it is also important to know what the countries with which the Netherlands is to cooperate during operational missions are planning to do with the new possibilities for enhancing military personnel, and how they view this issue. The differences may be so great that proper cooperation is no longer possible. How far would the Netherlands have to go to ensure operational cooperation with those countries?

(e) Enhancement and uncertainties concerning opportunities and risks

New technology and innovations offer unprecedented chances and opportunities, which are accompanied by various forms of uncertainty. Technology and innovation play an important part in today's 'risk society', both as an instrument for creating solutions (to map out and limit risks) and as a cause of problems (leading to societal and political unease). How should the way in which people deal with uncertainty about opportunities and risks be given shape institutionally and procedurally?

These conflicts logically give rise to societal and ethical questions, including in relation to the theme of 'the formable human'. This applies not only to questions of legitimacy – who decides on the formability of individuals, and on what grounds? – but also to the problem of globalisation on the one hand versus culture-specific interpretation of standards, rights and fundamental concepts on the other, such as the question of what makes a person a human being, how we interpret such concepts as 'autonomy' and 'responsibility' and to what extent we may interfere with the 'natural' processes of procreation or ageing, for example. Various social science issues naturally also exist. Which actors – for example care providers, researchers, businesses, politicians, patients, consumers - are involved in policies relating to the formable human, and who determines what degree of formability is or is not

permitted? How do various actors deal with risks and uncertainties accompanying formability techniques, such as pre-implanted genetic diagnostics or recreational use of psychopharmaceuticals? Why are some opportunities taken and others not? Do regulatory measures help to effectively limit risks, or do they in turn give rise to new risks? What is the relationship between risks and risk perception in connection with the formable human, and how do fiction and the media affect risk perception in connection with 'tampering' with people?

Possible aspects in this research:

Opportunities:
- What are the possibilities for scientific innovation? What commercial applications are possible?
- What will the impact be on the existing competition and the international relations?
- What impact will this research and its results have on people's wellbeing and quality of life?

Risks and uncertainty:
- What are the risks in terms of health, societal wellbeing/cohesion, public order and safety?
- What are the financial and/or commercial implications of formability techniques, for example from the perspective of the healthcare economy or pension law?
- Can the technology be monitored properly and controlled in society?
- Will the technology affect the fundamental assumptions and organisational principles of society?
- What strategies can help people deal with risks and uncertainties surrounding innovative formability techniques and applications?

2.1.2 Food

(a) Converging technologies and coexistence of diverging values
Biotechnology, nanotechnology and other emerging technologies are becoming more and more accepted in food production. New crops are being developed for arid, brackish or wet land, as are functional foodstuffs, nanofood and in-vitro or cultured meat. How can these developments be steered in such a fashion that knowledge, respect and trust, rather than hypes, are the guiding development mechanisms for scientists, policymakers, producers and consumers? What are the risks attached to these technologies, and what does proper risk control entail in relation to these technologies? How can fundamental conflicts between values focused primarily on formability and risks and values focused on security (precautions) and tradition be brought into coexistence? How can the coevolution be optimised from an ethical point of view? How can GMO processes that are acceptable to a degree in the Netherlands be optimised despite the fact that aversion to them continues to grow slightly in Europe (Pollack 2009)? How can scientists and research institutions in this field optimise their communications with diverging groups of society? How can these technologies help reduce the difference between rich and poor?

(b) Sustainable production: Balanced cycles, pluralism in production styles
How can increased balance in cycles, cradle to cradle, shortening of chains, etc. impact current food production? How can the footprint of Dutch production be reduced? How can the Netherlands go from an unsustainable animal production export country to becoming a responsible knowledge production export country? How can external costs (in terms of environment, landscape, disappearance of dynamic rural areas) be internalised in the price of foodstuffs? Do agroproduction parks (on industrial estates) offer a sustainable approach to this problem? What

innovative types (experiments) in the field of both forms of agriculture that meet the demands of sustainability, biodiversity, etcetera, are likely to be feasible?

Local and supra-local production

How can large-scale, input-intensive forms of agriculture coexist with resilient, possibly small-scale, robust and low-input forms of agriculture? What is the implication of the increasing demand for local orientation of production/retail chains and for shorter chains, for example in the context of food sovereignty and food safety? How can sustainability-related benefits of small-scale production be optimised without unsustainable production being moved elsewhere? What is the relationship between local sustainable production and global sustainable production? In what way can rural and urban people (farmers and townspeople) be brought closer to one another and can urban agriculture be realised? Corporate Social Responsibility (or PPP) for foodstuff companies and what role do retail companies play, as the link between production and consumption?

(c) Sustainable production: fair international trade

What are the implications of improved international regulations/institutions for the trade in agroproducts, considering poverty-reducing and sustainable regulations for foodstuff production in LEDCs and the trade in foodstuffs? What links exists between poverty reduction and food production, and which of those links are beneficial for sustainable development?

(d) Consumption and the role of retail

Eating differently (more healthily)

Changes in lifestyle and food products make it necessary to constantly communicate with individuals-consumers about what foodstuffs may be healthy and sensible for them. Although it is necessary for people to eat more healthily, considering the increasing numbers of overweight and obese people, placing the importance of health above all else in connection with eating has an adverse effect because people do not wish to become health freaks. How can individuals organise their complex eating choices to make the decisions that are right for themselves? Ensuring healthier eating habits requires in-depth communication about people's requirements in terms of matching their eating habits to their other activities. In what ways can retailers and producers, in the fields of logistics, production and marketing, make those wishes possible?

Vocal consumers-individuals

A large minority of people are unhappy with current food production, and would prefer information and participation more in tune with their wishes. How can that group of individuals be given more influence on the production/ technology? This group also calls for greater transparency and information about the ethical decisions that the chains make about payment for labour, about use of land, about cost externalisation. How can systems of 'ethical traceability' be realised and combined with logistics and production systems?

(e) The government and sustainable, poverty-reducing and high-quality food and food production

What options does the government have in order to realise these objectives? How can it contribute using such methods as labelling, standardisation, inspections, incentives for producers and consumers, price policies, promotion of particular acceptable production methods and consumption methods?

Governments and the markets

In their role as central regulators, governments also have a guiding influence on markets. What options do governments have for steering prices and companies in the direction of sustainability, poverty reduction and better food choices? How can governments contribute to the internalisation of costs that other parties try to externalise? What international regulations qualify for this purpose?

2.1.3 Animals, nature & natural habitat

(a) Biodiversity and nature
Industrialisation, climate changes and globalisation mean that everything that is connected to nature is becoming more and more scarce and controversial. Changes are causing breaches between ecosystems and within ecosystems. They are creating new groups of poor people (fishers and farmers are losing their livelihoods) and new groups of rich people. The question is, which changes are ethically acceptable and which are not. To what degree can scientific examination of these changes and technologies make a positive contribution to the way in which we deal with changes, and to reducing the difference between rich and poor?

Many of the 'services' that natural and semi-natural ecosystems provide to society are not attributed any value on the markets. International and northern institutions (governments, commercial and societal midfield) are promoting a major trend to convert and value ecosystems for private, market-oriented use. However, that use may be at the expense of the general interest and of poor people, for example in the case of scarce water sources. Calculating the 'total economic value' of ecosystems is an important necessity, regardless of whether a regulatory of economic course ('payment for environmental services') is chosen for protecting that value. For example, are we capable of rising above the current randomness of concepts and techniques that emphasise Western concepts of value and price and research whether they can be reconciled with local and indigenous ways of valuing ecosystems? Can we clarify the legal construction of rights of ownership and non-profitable obligations toward society in different circumstances? Or can we take the methods of valuing ecosystems from their economic isolation and value relevant ecosystems in conjunction with the affected population, stakeholders, policymakers and development professionals?

Other questions that are relevant to this theme include:
- What biodiversity occurs where on earth? Where is biodiversity suffering most from climate changes? How can ecosystems with a high degree of biodiversity be supported? Does designating 'hot spots' help? Will they protect nature and people, etc.?
- Property issues come into play: nature as public property ('commons') or private property? Ethical questions also exist in connection with the value of preserving certain species in relation to creating opportunities for other developments.
- A more concrete issue is the creation of new nature. What ecosystem issues are at the heart of matters, how should regulations and governance be given shape? How should we deal with 'temporary nature'? What part do NGOs and international organisations play in this context? Multi-level governance often results in top-down policies: how can local developments be taken into consideration?
- How do we promote sustainable ecotourism? What regulations and certification systems are required for that purpose?
- Do the Biodiversity Treaty and the European Directives work properly?

(b) Animal production
The increasing and dynamic demand for food production is an impulse for the search for the ethically most responsible scientific and technological approaches. Besides scientific research into the most effective conversion of feed into meat, research has slowly started into alternatives to meat (insects, in vitro meat). The coexistence of intensive and extensive animal husbandry systems requires coordination and regulation. Increasing interdependencies mean that questions of harmful effects of migrating species (zoonoses, introduced species) are important. Some important questions include:

- How can alternative sources of protein (such as insects) be produced and utilised in an ethically and societally acceptable manner?
- Animal production is surrounded by a complex of questions: How can we resolve the forthcoming shortages of animal fodder? What bio-industry is acceptable to which cultures? How can and should we deal, at the international level, with different systems (intensive, genetically modified, extensive, etc.) for animal husbandry? Questions also exist about the application of biotechnology to animals.
- Preventing animal diseases gives rise to a whole series of questions about such issues as risk management, fear politics and the consequences of risk management for local, small-scale animal husbandry firms.
- What part do European and national regulations play, and what is their effect?

(c) Biofuels and food production

Very many countries wish to slow down the greenhouse effect and so reduce CO_2 emissions. For example, the EU has decided that CO_2 emissions should be down by 20 percent by 2020, and that by then biofuels will make up 10 percent of the energy used for transport. As matters stand, the necessary measures cannot be implemented: they require scientific and technological innovations. Basically, the current generation of biofuels – ethanol from alcohol from sugar cane, beets, maize, rapeseed, soya and sunflower – only offers drawbacks. The production is not truly CO_2-neutral, since large volumes of fossil fuels are used for fertilisers, pesticides and transport (estimates vary from 0.2 to 0.9 litres of fossil oil per litre of biofuel). The demands in terms of space are enormous: the average car would consume a football field of maize every year. Water consumption is also high. The demand for soya and other crops means that more rainforest is being cut down (or burned down, like in Borneo) and that marginal land is being put to use. Similarly, the monocultures also threaten biodiversity. The most fundamental problem, however, is that the production of ethanol is competing with food production, and that by forcing prices up this threatens food production and encourages farmers to earmark their current crops for fuel rather than for human food or cattle feed. Europeans will then face the competition between their cars and their meat: however, in less developed countries, the primary concern is how to obtain food.

Only second-generation biofuels, produced by extracting energy and chemical materials from cellulose from any plants at all, meaning that waste such as wood pulp and straw can be used, will meet sustainability standards; however, these are not expected to be commercially available for 5 to 10 more years. That generation will, theoretically, not compete with food production. Another interesting field of research is research into the technological possibilities of plants and organisms that are not part of the human food chain and that could be used by developing countries and to which no other drawbacks are attached. Energy from algae is one such possibility.

Relevant questions in this area include:

- Production: under what conditions is production of biofuels acceptable (responsible) – sustainable (CO_2-neutral) biofuels that do not hinder food crops?
- The development of biofuel crops involves choices about using land, possibly already being used for food crops, about high water consumption or less, about unused or infertile land, etc. How can those choices be made in an ethically responsible manner?
- There are many issues in connection with the design of regulations (certification systems), standardisation and monitoring. Are CO_2-neutral, sustainable biofuels being produced?
- How can ethically acceptable innovation of biofuels be organised that is suitable for local requirements (for example in developing countries)? For example, energy from algae: what technological systems are needed, what societal changes have to be made and can be justified?

- Developing energy- extensive food production systems and energy-producing food production: How should access to research priorities, applications and increased participation be arranged?

2.1.4 Intellectual Property Regimes (IPR)

(a) Agriculture, nature, environment, foodstuffs

More and more often, regulations concerning Intellectual Property of genetic sources are the subject of discussion, at the level of local population groups, public and private research institutes and national and international government. Many people believe that the IPRs are counterproductive, since they block research and help maintain monopolies and the growing differences between rich and poor (see below). Similarly, many people wonder whether the individualistic presuppositions of the concept of ownership are still viable in an era of research conducted collectively and in networks.

Nevertheless, for the purpose of development into a knowledge economy, incentives for innovation in the field of genetic sources are vital. What regulations promote open, transparent and reliable research that has an international appeal (through other research or implementation elsewhere)? Genetic sources (plants, animals, humans) are used for research into biodiversity and for maintaining that biodiversity, for research into climate changes and its mitigation or adaptation and for research into new foodstuffs, agricultural crops and types of animals. A series of proposals, which partly complement one another, are currently circulating as alternatives to the presently dominant US and EU regimes, which are based on different notions of fairness, openness and effectiveness. Multilateral and bilateral regulations also exist.

The MVI programme is only aimed at promoting research in the field of IPR focusing on natural resources and at knowledge of that subject, focusing on nature (biodiversity), the environment, agriculture and foodstuffs and into which no research, or barely any research, has been conducted to date. Research proposals in this field must explicitly concern new issues that are not yet addressed elsewhere. Moreover, the proposals must be coordinated with other programmes and centres conducting or subsidising research into IPR, such as the Nijmegen Centre for Society and Genomics. In the application, the researchers must explain the requisite degree of innovativeness of their questions and how they relate to other programmes and centres.

(b) IPR and developing countries

Although the relationships with developing countries and the global level also play an important role in the themes described in the previous section, it is also useful to devote separate attention to the developing countries. It is becoming increasingly apparent that innovations affect the still growing differences between rich and poor countries. Current IPRs encourage either traditional technology transfer, or technologies adjusted to suit poor countries, yet in both cases they play an important part in addressing important global issues, such as poverty reduction, environmental degradation, climate changes and nature management.

Although the poor countries possess a wealth of genetic material and knowledge about that material, they have nevertheless barely been able to profit from the existing IPR regulations (CBD, ITPGR). The present IPRs appears to benefit a small number of large enterprises (rich countries), which is not always to the advantage of scientific research or the development of new seeds, and certainly not to the advantage of poor countries and research institutes. What alternatives are imaginable and feasible to encourage sustainability research and help reduce the differences between rich and poor? What IPR regulations do developing countries and local communities regard as positively contributing to forms of innovation that

are to their advantage? How can local, indigenous knowledge contribute while helping to reduce poverty?
What part can international companies, knowledge institutes and governments play to help IPRs aimed at improving sustainability and reducing the differences between rich and poor? What responsibilities should the richer countries and the most important users of genetic material assume in order to realise fair treatment of genetic material? What is the relationship between IPRs and regulations governing access to technology and sharing of technological innovations (access and benefit sharing)? What manner of IPR is needed to implement feasible and fair regulations for access and benefit sharing and/or burden sharing?
The relationship between IPR and management of natural areas as common or even global property (commons, public goods) is also a factor here (see 3a). Also with respect to this sub theme, the MVI programme is only aimed at promoting research on questions into which no research, or barely any research, has been conducted to date. Research proposals in this field must explicitly concern new issues that are not yet addressed elsewhere. Moreover, the proposals must be coordinated with other programmes and centres conducting or subsidising research into IPR, such as the Nijmegen Centre for Society and Genomics. In the application, the researchers must explain the requisite degree of innovativeness of their questions and how they relate to other programmes and centres.

3 Guidelines for applicants

3.1 Who can apply

Applications may be submitted by senior researchers at Dutch institutions for Research-Oriented Education and Academic Research and/or researchers at the institutes recognised by NWO or at an international centre for research-oriented education in the Netherlands[1]. Applicants not affiliated with an institution recognised by NWO may submit applications together with senior university researchers.

3.2 What can be applied for

Applications concern the themes of the MVI programme. During this second round, applications are only possible for the following four themes: (1) Human enhancement, (2) Food, (3) Animals, nature & natural habitat, (4) Intellectual Property Regimes (IPR). These themes are divided into sub themes. An application always concerns one or more sub themes. A description of these themes can be found in chapter 2, section 2.1.
During this round, applications only concern the themes described below. These are always *projects for research into the ethical and societal aspects of concrete technological developments*.
Projects for research into the ethical and societal aspects of concrete technological developments have to have a 'make' perspective, i.e. they should not only result in an analysis and understanding of a particular problem, but subsequently also lead to a 'design perspective' – in the broad sense, including institutional arrangements.
All such projects are multidisciplinary, consisting of research in the humanities as well as in social sciences. Furthermore, the input from science/technological research is clearly visible and is involved in the research in the humanities and social sciences. It is explicitly possible as well that the research consists of an integration of both a science/technological component and humanities and social science components.

Project grants

Project grants may be requested both for long-term and for short-term research. For applications for long-term research, the submission of a preliminary application is compulsory. For applications for short-term research, it is only possible to submit full applications: applicants who are willing to submit an application for short-term research are requested to inform the MVI bureau about it (see chapter 3, section 3.4).

Project grants for long-term research are intended to encourage researchers who wish to conduct promising research into ethical and societal aspects of concrete technological developments (on one of the themes given above). Research proposals may be submitted in the form of projects with a budget of up to €550,000 and a duration of 4 years, with possible spread over at most 5 years, with applications for 2 or more researchers (who will be subsidised by NWO). Projects that exceed the limits specified should demonstrate other sources of funding.

[1] The only centres permitted are the following: ISS (Institute of Social Studies The Hague); UNESCO-IHE Delft; IHS (Housing Studies, Rotterdam); ITC Enschede en MSM (Maastricht School of Management).

Long-term research projects must have a project leader, who is available to discuss the interaction between humanities, science/technology and social sciences throughout the duration of the project. He or she is responsible for coordinating the joint activities and integrating the various results.

Project grants for short-term research may be requested for in which quick results are needed: policy-supporting research and analysis of current issues that concern one or more of the themes given above. As a rule, such research will concern the ethical and societal aspects of concrete technological developments. Projects for short-term research have a maximum budget of €125,000 and a maximum duration of one year. Projects that exceed the limits specified have to demonstrate other sources of funding.

Interaction between research into science/technology, humanities and social sciences

Considering the programme's ambition to make a contribution to responsible innovation, the partnership and exchange of research results between research in the areas of science/technology, humanities and social sciences is a vital factor. This involves:

i. Science and technology researchers (in the broadest sense, including medical scientists);
ii. Humanities researchers. These will be primarily ethicists and philosophers (practical philosophy and philosophy of science and technology); ethicists that address normative questions are welcome within the MVI programme as well. Contributions from other disciplines are also possible (such as general history and history of science);
iii. Social science researchers, or social and behavioural scientists: On the one hand, these might be researchers from more traditional disciplines such as sociology, law, economics and psychology, and on the other researchers from the 'interdisciplines', who contribute to reflections on the position of science, technology and technological systems in society.

Innovation / Planning of the progress in research, development and innovation projects

During the coming years, important developments are expected to emerge rapidly in the area of what are referred to as the ‘converging technologies’. It is in the application of these technologies that pressing ethical and societal questions are being asked. Many people, including science/technological scientists and policy advisers, mistakenly believe that thinking about societal and ethical aspects of new technology almost automatically leads to promising research being cancelled and opportunities being let slide. The MVI thematic programme explicitly presents a different view: the explorations of ethical and societal aspects are intended to provide a constructive contribution to responsible innovations.
The programme has an explicitly proactive dimension or ‘make’ perspective: right from the start, the envisioned research, development and preliminary and final designs must incorporate relevant ethical and social aspects. MVI research should not only result in an analysis and understanding of a particular problem, but subsequently also lead to a 'design perspective' – in the broad sense, including institutional arrangements. It is all about the question how to innovate in a responsible way. Because the themes within Responsible innovation are linked to concrete innovation projects, science/technological research and innovation will often be the direct reason for social and behavioural scientists and humanities experts to study societal and ethical aspects.
Both the central position of the ‘make’ or ‘design’ perspective and the explicit mention of the contribution to (the realisation of) innovation(s) is part of the assessment criteria for societal relevance.

International orientation

The MVI thematic programme has a strong international orientation and context. The questions and problems addressed by the programme are international questions and problems. For this reason, the programme explicitly devotes attention to the global context and aspects, and in particular those that are relevant to developing countries. Researchers are explicitly invited the possibility exists to submit applications for research that is relevant for developing countries, and involving researchers from developing countries.

Research in developing countries

For applications for which the research will take place in developing countries[2], the research team must include at least one applicant from a partner institute in the developing country in question and one PhD researcher or post-doc from a developing country. For proposals in which the research has a significant international component and is directly relevant to (but is not conducted in) developing countries, it is highly recommended that partners from developing countries be involved.

Research in other countries

Researchers from other countries may act as co-applicants for the research proposal[3]. Researchers from other countries may act as members of the research team, on the condition that they have an appointment at or receive a living allowance.[4] from a Dutch institution research-oriented education and academic research.
A grant can be requested for costs of materials connected to internationalisation (those costs count toward the total grant requested).

Valorisation/societal relevance

Utilising the research results is one of the main priorities in the MVI thematic programme. The aim is to ensure that the research actually contributes to innovation. In light of that emphasis, projects must meet the requirement of **societal relevance**.
To promote this societal relevance, all applicants are asked to involve a **valorisation panel** when transforming their preliminary application into a full application, and to contact a **representative of a Dutch ministry**, in order to articulate the research question.
The valorisation panel should consist of users and potential users, i.e. persons who are prepared to disseminate and valorise the research results under the target group that they represent. Moreover, the applicants are also asked to contact a representative at the qualifying ministry participating in the MVI programme, in order to articulate the research question. The contact details of representatives of ministries participating in the MVI programme can be obtained through the MVI bureau. Applicants can contact one or more persons of the list available at the MVI bureau, but researchers who already have contacts of their own at the relevant ministry participating in the MVI programme, or at another ministry (that does not participate in the MVI programme), may use those as well. In that case, however, the researchers are asked to notify the MVI bureau. This means that the MVI bureau must be contacted in all cases.

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[2] Developing countries are defined as the low and middle income countries that are eligible for Official Development Assistance, or ODA, as defined by the OECD (see www.oecd.org/dac/stats/daclist).

[3] For the precise rules in this connection, please refer to Section 3.1 (Who can apply?).

[4] Living allowances are only granted to researchers from developing countries.

Valorisation panel, valorisation workshop, valorisation plan

The valorisation panel will be involved with the details, from the preliminary application until the detailed submission, and will remain involved in the project for its entire duration. More specifically, the primary duty of the valorisation panel is to ensure that the researcher is aware of the existing issues and needs, to allow the researcher to take those into consideration in his or her choices. The valorisation panel plays a supporting role:

- in articulating the research question
- in preparing a valorisation plan
- in or before writing the final research report
- in disseminating and communicating the research results

Applicants who are invited to detail their preliminary applications for *long-term* research are obliged to organise a **valorisation workshop**, at which at least the valorisation panel is involved, before submitting their application. NWO may provide financial assistance for the organisation of these workshops. If financial assistance is requested from NWO, the preliminary application must include not only a description of the workshop's organisation and planning, but also a budget specifying the expenses. The maximum amount is €2,000, or €10,000 for research conducted together with and involving local partners and/or stakeholders from developing countries. The results of the valorisation workshop should be included in the full application.

The **valorisation plan** is aimed at the contribution and use of relevant research results by societal partners or stakeholders within and outside the established scientific community. A valorisation plan (including a summary of the accompanying costs) should be included in each full proposal. The valorisation plan should also explain the role of the valorisation panel. The budget for these activities should be no more than 10% of the total project budget.

Costs for which grants may be requested[5]

This section lists the costs for which grants may be requested. The list of costs that qualify for subsidising is followed by an explanation of the concepts of replacement grant, living allowance and bench fee.

Long-term projects

The maximum grant for these projects is €550,000. The following costs qualify for subsidising:

- personnel costs for researchers in humanities, social sciences and science/technology, that is:
  - PhD research positions (maximum duration of grant: 4 years at 1.0 FTE)
  - post-doc positions (maximum duration of grant: 3 years at 1.0 FTE), N.B. these positions are minimally 0.5 FTE
  - replacement grant for (senior)researchers
  - (maximum grant €25,000 at 0.5 FTE, spread of the sum over multiple years is permitted)
  - replacement grant for the project leader (maximum grant €25,000 at 0.1 FTE for the entire duration of the research)

    Besides the replacement grant for project leaders, up to 2 other replacement

[5] Subsidies are granted on the basis of the standard amounts for personnel costs based on the contract between the Association of Universities in the Netherlands en NWO. That contract can be downloaded from NWO's website (www.nwo.nl/subsidiewijzer/ subsidieregeling/vergoedingen NWO).

grants may be requested for a maximum number of 2 persons. A spread of the sum over more than two persons is not possible.
- researchers from developing countries may apply for a net monthly *living allowance*
- costs of materials for internationalisation and valorisation
- other costs of materials for the research
- bench fee

Short-term projects

The maximum grant for these projects is €125,000. The following costs qualify for subsidising:

- personnel costs for researchers in humanities, social sciences and science/technology, that is:
  - post-doc positions (maximum duration of grant: 12 months), N.B. these positions are minimally 0.5 FTE
  - replacement grant for (senior)researchers (maximum grant €25,000 at 0.5 FTE for a period of 12 months)
    Up to 2 other replacement grants may be requested for a maximum number of 2 persons. A spread of the sum over more than two persons is not possible. A total of up to 2 replacement grants may be requested.
- researchers from developing countries may apply for a net monthly *living allowance*
- costs of materials for valorisation and internationalisation
- other costs of materials for the research
- bench fee

Explanation of some of the concepts used here

- *replacement grant*
  Grant for researchers and senior researchers employed by the institution and intended to allow them to be replaced for some of their teaching and other duties and so be free to participate in the project. In most cases, this will concern senior researchers. A description should be included of what the participation entails, and it must be demonstrated what plans exist for replacing the researcher or senior researcher. The grant covers the replacement's salary costs.
- *living allowance*
  researchers from developing countries may apply for a net monthly living allowance, if they cannot find a position at a Dutch university. That living allowance serves to cover all personal expenses, including housing, medical expenses, insurance and commuting. The regulations at the institute of the principal application must be leading for purposes of calculating the amount.
- *bench fee*
  A bench fee is available for every PhD researcher and/or post-doc, including for researchers from developing countries receiving a living allowance. The maximum bench fee is €5,000 for a full-time appointment. For part-time appointments, the bench-fee is based on the percentage of the appointment. The bench fee serves to cover PhD-related expenses (in Dutch: ‘promotiekosten’) and visits to conferences in the Netherlands and abroad. The bench fee is intended for the persons carrying out the project, but is placed at the project leader's disposal. This means that the project team member is entitled to it. Use of the bench fee is subject to consultation between the project leader and the team member. For PhD students, the allowance for the costs of printing their dissertation is included in the bench fee. As such, PhD students working on this type of project may no longer claim separate allowances for costs of printing their dissertations. However, the project leader and team member may use the bench fee as they see fit.

3.3 When can applications be submitted

The deadline for submitting preliminary applications is **2 February 2010, 12 o'clock at noon**. Preliminary applications are compulsory for applications for long-term research. After that deadline, improvements or additions to applications are not permitted.
The deadline for submitting full applications is **26 May 2010, 12 o'clock at noon**.
For short-term research, it is only possible to submit full applications. Applicants that are willing to submit an application for short-term research are requested to inform the MVI bureau about it (see section 3.4).

3.4 Drawing up an application

For drawing up your preliminary application for long-term research, please refer to the 'Instructions for MVI preliminary applications' (Annex, chapter 6, section 6.1).
For drawing up your full application (both for long-term and for short-term research), please refer to the 'Instructions for MVI preliminary applications' (Annex, chapter 6, section 6.2).
For short-term research, it is only possible to submit full applications. Applicants who are willing to submit an application for short-term research should inform the MVI bureau no later than **15 March 2010** by e-mail (mvi@nwo.nl), by sending a short outline of their proposal (15-20 lines).

3.5 Specific conditions

This Call for Proposals is subject to NWO's general grant conditions, which can be found at the NWO website (www.nwo.nl/subsidiewijzer).

For the composition of research teams in proposals in which the research takes place in developing countries, see Section 3.2 above.

Awarded research projects must start no later than six months after the date of awarding. Any projects that have not started by that date may lose their grant.

3.6 Submitting an application

The application must be submitted in an electronic form using the Iris system, NWO's system for electronic applications. The Iris system can be found at https://www.iris.nwo.nl/.
The electronic application consists of two parts: a fact sheet and the preliminary proposal. The fact sheet contains the basic details of the applicant. The preliminary application should be submitted in PDF format.

4 Assessment procedure

4.1 Procedure

Preliminary applications [applications for *long-term* research]

Preliminary applications are compulsory for applications for *long-term* research. Preliminary applications will be selected by the Advisory Board. That board will assess whether the preliminary application shows sufficient promise of scientific quality, and will determine the degree to which it will contribute to the objectives of the MVI programme. The selection will also take into account the spread of the preliminary applications over the programme's research agenda. The committee will submit its opinion to the steering committee in the form of a recommendation. The steering committee will decide on the selection based on the recommendations put forward by the advisory board.

Short outline research descriptopn [applications for *short-term* research]

Applicants who are willing to submit an application for short-term research, are requested to inform the MVI bureau about it (see chapter 3, section 3.4).

Full applications for applications for *long-term* and *short-term* research

The MVI bureau will determine the administrative admissibility of the applications by verifying whether they meet the specified format, including the financial restrictions. The advisory board will then assess whether the applications are admissible in terms of substance.

Two committees will assess the full applications that have been declared admissible, working parallel to one another.[6]

Advisory Board

The Advisory Board will assess the applications based on the assessment criteria set out in Section 4.2, under I and II. The committee will involve at least two external (international) experts in that process. Based on the experts' reports and the comments of the applicants in response to those experts' reviews, the Advisory Board will express a final assessment on the quality of the applications.

Societal Panel

A societal panel will advise the scientific advisory committee on the 'societal relevance' of the applications (section 4.2, III), assigning them to the categories high, middle and low. Applicants will be given the opportunity to respond to the societal panel's assessment.

Only applications that are assigned to the high or middle categories for the criterion of 'societal relevance' are eligible for grants. So societal relevance is a limiting condition.

Steering committee

The Advisory Board and the Societal Panel will advise the steering committee on the applications to be granted. The steering committee will conduct a marginal assessment of the assessment procedure and then decide on the final assessment of

[6] In the case of full applications for *short-term* research, the steering committee can decide to operate a short-listing procedure (if the number of applications is at least four times the number of grants available). If the steering committee decides to use a short-listing procedure, applicants will be notified of this with the notification of receipt of their proposal.

the applications, based on the recommendations put forward by the advisory board. The steering committee may adjust the recommendations based on policy considerations, viz. the spread of the applications across the themes of the MVI programme, and based on the financial restrictions determined together with the ministries (for the latter factor, see also the comment in Section 2, Objective).

4.2 Criteria

Applications must be appropriate to the objective and definition of the MVI programme (see the programme description). The assessment criteria for full applications are as follows:

I Scientific quality
- the originality and/or innovativeness of the question and/or method
- the scientific relevance of the proposed research
- the clarity of the research question
- the suitability of the approach/method used
- the cohesion between the description of the research and the elements making it up, and between the separate elements
- the feasibility of the research proposal and the plan of action, including the amount of the personal costs in relation to the envisioned research results
- the quality of the research team and track records of the researchers in connection with research involving cooperation between researchers in the fields of the science/technology, humanities, and social sciences

II Added value
- the contribution to the MVI programme, including the manner in which the cooperation between the science/technology, humanities, and social sciences will be structured
- the international orientation and/or international cooperation
- the organisation and embedding of the research

III Societal relevance
- an explicit explanation of the societal relevance of the research proposed, plus, for short-term projects, an explicit explanation of the relevance of the proposed research in terms of policy
- the central position of a 'make perspective' or a 'design perspective'
- the explicit mention of the contribution to (the realisation of) innovation(s)
- the involvement of relevant knowledge users (valorisation panel) in detailing the research proposal and while carrying out the research, in order to ensure that the utility perspective remains intact
- the involvement of relevant knowledge users (valorisation panel) in disseminating and communicating the research results among the envisioned group or groups of users (input in the preparation and implementation of the valorisation plan).

The assessment criteria listed under I and II are equally important. Societal relevance (assessment criterion III) is a limiting condition for obtaining a grant (see above, under Section 4.1).

If further selection proves necessary, the following factors will receive additional focus:
- the degree to which the proposal contributes to the MVI programme
- the level of international orientation and/or international cooperation
- the level and innovativeness of the cooperation between the humanities, science/technology and social sciences is structured

4.3 Composition of committee

The composition of the Advisory Board and the Societal Panel will be announced on the MVI website (www.nwo.nl/responsible-innovation). The composition of the steering committee and the programme committee will also be announced on that site.

5 Other information

5.1 Contact

For further information, please contact the MVI bureau:
- Dr. J. Roodenburg
- Tel.: +31 (0)70 344 08 06, or 823
- E-mail: j.roodenburg@nwo.nl

The contact details of the division of Social Sciences, WOTRO Science for Global Development, Technology Foundation STW and ZonMw will be posted on the MVI website.

5.2 Documentation

For further information, please refer to the programme description and the website dedicated to the programme (www.nwo.nl/responsible-innovation). The website includes an option for downloading the document entitled 'Costs specified per type of project'.

6 Annexes

6.1 Instructions for MVI preliminary applications for *long-term research*

Preliminary applications for *long-term* research should be submitted in accordance with the following instructions.

Submitting the preliminary application

Preliminary applications for *long-term* research should be submitted (as PDF files only) to the MVI MVI bureau **by 2 February 2010, 12 o'clock at noon**. You should use Iris, NWO's system for electronic applications, which can be found at https://www.iris.nwo.nl/. You will also find a description of how Iris works, plus instructions for its use. You will need a user name to use Iris. Information about how to obtain a user name is also available on the website. Iris will send you an E-mail confirming that NWO has received your electronic application. **The applications can only be submitted by the account of the main applicant.**

Electronic applications consist of two elements: a **fact sheet** and the **preliminary application**. You use the fact sheet to set out the factual details relating to your preliminary application (title, principal applicant, etc.)7. The preliminary application should be submitted in PDF format. **The file may not be protected in any manner, to ensure that the application details in the PDF file can be properly processed.**

Preliminary applications must be written in **English**. Letters of recommendation and other references should **not** be enclosed with the application.

Iris factsheet

1. Project Title

Provide a *brief* title for your preliminary application.

2. Summary

Provide a brief, scientific summary of the preliminary (maximum of 250 words).

3. Principal applicant

NWO only recognises one principal applicant. That person will bear primary responsibility for the research programme. He or she will be responsible for both the research as such and the financial aspects.

4. Co-applicants

This space may be used for specifying any co-applicants. For proposals involving research in developing countries, the research team should include at least one applicant from a partner institute in the country in question.

Preliminary application

5. Classification

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[7] The **fact sheet** may only be filled out using ASCII symbols (i.e. plain text). As a result, it is impossible to include formulas, italics, etc. in the fact sheet. However, that can be used In the **research proposal**.

I. Please state the **theme** within which you believe your preliminary application falls. You may choose from the following themes:

Projects for research into the ethical and societal aspects of concrete technological developments
Themes:
1. Human enhancement
2. Food
3. Animals, nature & natural habitat
4. Intellectual Property Regimes (IPR)

II. Please indicate the **sub theme(s)** of the principal theme chosen under I within which you believe your preliminary application falls. You may choose from the following sub themes:

Human enhancement
(a) Global justice
(b) Neurotechnology
(c) Life extension
(d) Enhancement of military personnel
(e) Enhancement and uncertainties concerning opportunities and risks

Food
(a) Converging technologies and coexistence of diverging values
(b) Sustainable production: Balanced cycles, pluralism in production styles
(c) Sustainable production: fair international trade
(d) Consumption and the role of retail
(e) The government and sustainable, poverty-reducing and high-quality food and food production

Animals, nature & natural habitat
(a) Biodiversity and nature
(b) Animal production
(c) Biofuels and food production

Intellectual Property Regimes (IPR)
(a) Agriculture, nature, environment, foodstuffs
(b) IPR and developing countries

III. Please state whether your research pertains to or has specific relevance for **developing countries**:
- pertains to/relevance for developing countries: yes/no

6. Composition of the research team
Please list the persons who are or will be directly involved in conducting the research, including the positions requested (PhD researcher, post-doc, replacement). If the names are not yet available, please state the positions. Please distinguish between the following categories:
A. Humanities researchers ('Alfa'), in a broad sense
B. Science and technology researchers ('Bèta'), in the broadest sense.
C. Social science researchers ('Gamma'), in a broad sense.

Next, explain how the cooperation between the humanities, science/technology and social sciences will be structured.

7. Description of the Proposed Research
Provide a brief description of the proposed research. This section should be no more than 1500 words.

You should include the following aspects:
- scientific relevance (question, research method, envisioned research results)
- structure of the cooperation between the humanities, science/technology and social sciences
- international orientation and/or international cooperation (if your answer on question 4, III is *yes*, please indicate the relevance of your research for developing countries)
- societal relevance

8. Literature
Please include a literature list. This should cover no more than one A4 sheet.

9. Preliminary budget
Provide a general indication of what you are requesting in terms of personnel costs and costs of materials. You should state the amount requested for the costs of materials in euros. For the personnel costs, the following information is required: the nature (post-doc, PhD researcher or replacement) and the scope of the appointment (in FTEs) and its duration (in months).

10. Valorisation workshop (prior to submitting your full application)
Please describe the general structure and planning of the valorisation workshop. If financial assistance is requested from NWO for this workshop, please also include an itemised budget.

11. Research ethics
Please indicate whether your research (or parts of your research) is ethically sensitive (i.e. regarding the privacy of persons, the storage of data, the involvement of patients, etc.). If yes, please indicate which parts of your research this concerns, and how will they be addressed. Please mention whether approval by a research ethics committee is (potentially) necessary.

12. Summary for laymen
Please provide a summary for policy makers. This should be a Dutch text of no more than 250 words.

6.2 Instructions for MVI full applications for long-term and short-term research*

Full applications for *long-term* and *short-term* research should be submitted in accordance with the following instructions.

Submitting the full application

Full applications should be submitted (as PDF files only) to the MVI bureau by **26 May 2009, 12 o'clock at noon**. You should use Iris, NWO's system for electronic applications, which can be found at https://www.iris.nwo.nl/. You will also find a description of how Iris works, plus instructions for its use. You will need a user name to use Iris. Information about how to obtain a user name is also available on the website. Iris will send you an E-mail confirming that NWO has received your

* This document is the translation of the Dutch 'Richtlijnen voor de opzet van uitgewerkte aanvragen in het kader van het programma Maatschappelijk Verantwoord Innoveren'. In case of different interpretation of the original (Dutch) text and this (English) translation the original Dutch text prevails.

electronic application. **The applications can** only **be submitted by the account of the main applicant.**

Electronic applications consist of two elements: a **fact sheet** and the **full application**. You use the fact sheet to set out the factual details relating to your full application (questions 1 to 4: title, principal applicant, etc.)[8]. The full application should be submitted in PDF format. **The file may not be protected in any manner, to ensure that the application details in the PDF file can be properly processed.**

Full applications must be written in **English**. Letters of recommendation and other references should **not** be enclosed with the application.

Approval university/research institute in which the research will mainly be carried out

Confirm your electronic application by letter. The written confirmation can be sent to:

- Netherland Organisation for Scientific Research (NWO)
- Division for the Humanities, MVI Bureau
- Dr. J. Roodenburg
- P.O. Box 93425
- 2509 AK The Hague
- The Netherlands

The letter should contain the following information:

- Title of the research proposal;
- Confirmation of approval with the proposed research and the regulations concerned with the execution of the research by the competent authorities of the university/research institute in which the research will mainly be carried out;
- Signature of the main-applicant, the director of the university or research institute involved, date, place and full names. For proposals involving research in developing countries, a signature of the co-applicant of the developing country is needed as well.

Iris factsheet

1. Project title (Iris fact sheet)

Provide a brief title of the research proposal.

2. Summary (Iris fact sheet)

Provide a brief, scientific summary of the project (max. 250 words).

3. Principle applicant (Iris fact sheet)

NWO only recognises one principal applicant. That person will bear primary responsibility for the research programme. He or she will be responsible for both the research as such and the financial aspects.

4. Co-applicant(s) (Iris fact sheet)

This space may be used for specifying any co-applicants. For proposals involving research in developing countries, the research team should include at least one applicant from a partner institute in the country in question.

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[8] The **fact sheet** may only be filled out using ASCII symbols (i.e. plain text). As a result, it is impossible to include formulas, italics, etc. in the fact sheet. However, that can be used In the **research proposal**.

Full application

5. Classification

I. Please state the **theme** within which you believe your preliminary application falls. You may choose from the following themes:

Projects for research into the ethical and societal aspects of concrete technological developments
Themes:
- Human enhancement
- Food
- Animals, nature & natural habitat
- Intellectual Property Regimes (IPR)

II. Please indicate the **sub theme(s)** of the principal theme chosen under I within which you believe your preliminary application falls. You may choose from the following sub themes:

Human enhancement
- (a) Global justice
- (b) Neurotechnology
- (c) Life extension
- (d) Enhancement of military personnel
- (e) Enhancement and uncertainties concerning opportunities and risks

Food
- (a) Converging technologies and coexistence of diverging values
- (b) Sustainable production: Balanced cycles, pluralism in production styles
- (c) Sustainable production: fair international trade
- (d) Consumption and the role of retail
- (e) The government and sustainable, poverty-reducing and high-quality food and food production

Animals, nature & natural habitat
- (a) Biodiversity and nature
- (b) Animal production
- (c) Biofuels and food production

Intellectual Property Regimes (IPR)
- (a) Agriculture, nature, environment, foodstuffs
- (b) IPR and developing countries

III. Please state whether your research pertains to or has specific relevance for developing countries:
- pertains to/relevance for developing countries: yes/no

IV. Please state whether your research proposal is for long-term or short-term research.

6. Previous and future submissions
Please indicate if you have submitted, or will submit, this proposal at NWO or elsewhere for different types of subsidy. If so, please give the concerned NWO division and/or thematic research programme, the file number (if known) and the year of application.
If you have submitted the current application elsewhere, or are planning to do so, please indicate the date at which you are expecting a final decision, as well as the organisation that will take this decision.

7. Institutional setting
State in which Dutch setting (university or otherwise) the research will mainly be carried out. It suffices to mention the name of the research school concerned, and/or the research institute or Chair group.

8. Period of funding
State the total duration of the project and the anticipated starting date of the research. A project should start as soon as possible after it has been awarded, which is in any case **no later than six months after the date of awarding**.

9. Composition of the research team
Give in a **diagram** the composition of the research team (main-applicant, co-applicant(s), involved researchers, and others):
- names (with initials) and titles
- affiliations (university, institute, etc.)[9]
- disciplines and the category of the discipline (α, β or γ):
  A. Humanities researchers ('Alfa'), in a broad sense
  B. Science and technology researchers ('Bèta'), in the broadest sense.
  C. Social science researchers ('Gamma'), in a broad sense.
- duration (in months) and the number of time (in fte) devoted to the appointment

If names are not yet known, just mention the positions.
If your project concerns **long-term research** please indicate who will be the coordinating project leader, and how the coordination will take place.
If your project involves **PhD research**, please indicate who will be the supervisor(s). If the supervisor is not a university researcher, indicate on what grounds he/she has the appropriate rights to act as a supervisor.
Furthermore, please motivate that the PhD student(s) will be embedded appropriately within the proposed research (see footnote 4 of the (Dutch) call for proposals).

10. Description of the Proposed Research
Provide a description of the proposed research. The following aspects should be covered, **under the following headers (10a – 10f)**:

(a) Scientific relevance
scientific relevance (formulation of problem definition and objective, theoretical framework, research method / approach, innovative elements)
(b) Added value
compatibility with / added value for the Responsible Innovation (MVI) programme

(c) 'Make'/'design' perspective
the 'make' perspective or 'design' perspective
(d) Cohesion of the research [*long-term projects*]
for long-term projects: the cohesion of the research and the elements making it up, and between the separate elements
(e) Cooperation between humanities (α), science/technology (β), and social sciences (γ)
the manner in which the cooperation between humanities (α), science/technology (β), and social sciences (γ) will be structured

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[9] For co-applicants from developing countries, please give full information (title, university, E-mail, address, etc.).

(f) Societal relevance
societal relevance
(g) Contribution to innovation
the explicit mention of the contribution to (the realisation of) innovation(s)
(h) Relevance in terms of policy [*short-term projects*]
for short-term projects: describe the actuality and policy relevance of the proposed research, and indicate why a quick result is needed

The list of literature references should cover no more than one A4 sheet (9 pt).

11. International orientation and/or international collaboration
Describe the international orientation of your research. If your answer on question 5, III is *yes*, please indicate the relevance of your research for developing countries.

Word Count: State the number of words used for items 10 and 11.
- For **long-term research** this section should be no more than **4000** words. This excludes the list of literature.
- For **short-term research** this section should be no more than **2000** words. This excludes the list of literature.

12. Work programme
Give a detailed work plan for the duration of the project. For foreseen publications during the running time of the project, and other products, please give a clear timetable and the names of the involved researchers.
During the whole running time of the project, you are expected to reserve time for writing publications.
If one or more PhD projects are planned, a detailed timetable should be given until the promotion (within the period of the appointment!).

13. Planned scientific deliverables and knowledge dissemination
Please indicate which research results are foreseen, when they will be obtained, and in what way they will be published / communicated. This point only concerns the dissemination of research results within the academic community.

14. Valorisation
A. Composition of the valorisation panel
Give a **table** in which you mention all members of the valorisation panel with initials, titles, and affiliation (organisation, company, etc.). Indicate as well the name(s) of the contacted ministerial representative(s). In any case, you should (also) have contacted the representative(s) of the qualifying ministry participating in the MVI programme.

B. Valorisation plan
Describe the valorisation plan.
Mention explicitly for which societal partners the proposed research is relevant in terms of policy (e.g. by referring to strategic themes of ministries).
Describe which research results are envisioned. When will the results be communicated, and in what way? Add a timetable.
Describe the role of the valorisation panel in the articulation of the research question and the valorisation plan. Describe its role during/before the writing of the final report, and in the dissemination and communication of the research results.
The valorisation plan should contain an overview of the costs (for valorisation). The budget for these activities should be maximally 10% of the total project budget.

Word Count: State the number of words used for item 14B (max. **1200** words).

C. Valorisation workshop (only in case of long-term research)

Please give a description of the results of the workshop that you organized before submitting this full application.

Word Count: State the number of words used for item 14C (max. **800** words).

15. Research ethics
Please indicate whether your research (or parts of your research) is ethically sensitive (i.e. regarding the privacy of persons, the storage of data, the involvement of patients, etc.). If yes, please indicate which parts of your research this concerns, and how will they be addressed. Please mention whether approval by a research ethics committee is (potentially) necessary.

16. Brief curriculum vitae of the principal applicant
You are expressly requested not to submit an exhaustive curriculum vitae. Please mention only those matters which are relevant to the assessment of this application.

17. Literature
- Selection of publications. Mention no more than ten of your own relevant publications. For research in a developing country, please add the same information for the (principal) co-applicant from a developing country.
- International literature. Mention no more than ten key-publications from the international literature concerning the themes of the proposed research.

18. Summary for laymen
Please provide a summary for policy makers. This should be a **Dutch** text of no more than 250 words. This text can be used by NWO for publicity purposes in case your application is awarded a grant.

19. Research Budget
Please specify **in a table** the costs (in euros) of the personal and material resources for the whole period that you are applying for. Motivate the costs briefly. Only costs that are directly linked to the proposed research can be applied for. Material costs mainly concern internationalisation and valorisation. With regard to the costs for valorisation, just mention the costs (the motivation should not be repeated here, *cf.* 14B).
With regard to the personal resources, the following information is needed: the type of appointment (post-doc, PhD student, replacement or project researcher from a developing country) and the number of hours to be devoted to it (in FTE), as well as its overall duration. See the NWO Subsidy Guide (http://www.nwo.nl/subsidiewijzer) for the costs on a full-time basis according to the NWO-VSNU contract agreement of 1 July 2009). These exclude the bench fee.
If external partners contribute financially to the research project, please specify what is contributed by who, and the amount(s) involved.
If the research funding required exceeds the maximum of EUR 550,000 (long-term projects) or EUR 125,000 (short-term projects), the additional sources and the amount should be indicated and motivated in the full application. The university, or other (third) party should declare that it covers all additional costs. The signed guarantee letter should be sent separately (by surface mail) to the MVI bureau.

6.3 Appendix

Overview of the questions for the full proposal

1. Project title (Iris fact sheet)
2. Summary (Iris fact sheet)

3. Principal applicant (Iris fact sheet)
4. Co-applicant (s) (Iris fact sheet)
5. Classification
6. Previous and future submissions
7. Institutional setting
8. Period of funding
9. Composition of the research team
10. Description of the proposed research
11. International orientation and/or international collaboration
12. Work programme
13. Planned scientific deliverables and knowledge dissemination
14. Valorisation (Composition of the valorisation panel, Valorisation plan, Valorisation workshop)
15. Ethical aspects
16. Brief curriculum vitae of the principal applicant
17. Literature
18. Summary for laymen
19. Research budget

6.4 General time path

Long-term research

- 2 February 2010: deadline for submitting preliminary applications
- Mid-March 2010: assessment of the preliminary applications by the Advisory Board
- end of March: decision by the steering committee
- 26 May 2010: deadline for submitting full applications
- June 2010: peer review procedure, consultation of at least two external (international) experts
- end of June 2010: Societal Panel consulted
- first week of September 2010: the applicants will have the opportunity to respond to the reviews and the assessment of the Societal Panel
- end of September 2010: assessment of the full applications by the Advisory Board
- start of October 2010: decision on funding by the steering committee
- The awarded projects can start at 1 November 2010

Short-term research

- 15 March 2010: submission of short outline of the research (15-20 lines)
- 26 May 2010: deadline for submitting full applications
- June 2010: peer review procedure, consultation of at least two external (international) experts
- end of June 2010: Societal Panel consulted
- first week of September 2010: the applicants will have the opportunity to respond to the reviews and the assessment of the Societal Panel
- end of September 2010: assessment of the full applications by the Advisory Board
- start of October 2010: decision on funding by the steering committee
- The awarded projects can start at 1 November 2010