MISSIONS AND 'NEW' MISSION-ORIENTATED POLICY

TNO innovation for life

'New' mission-oriented policy is policy aimed at achieving specific goals that have a clear relationship to a societal challenge or societal renewal task ('societal missions'). Mission-oriented policies set ambitious, bold and at the same time realistic goals in relation to the challenge in question. A mission therefore has not only a clear direction (directionality), but is also characterised by clear boundaries, has qualified and where possible quantified objectives, and a clear timeframe (intentionality). Above all, missions create a mobilising, inviting and connecting perspective, as a method and an approach for searching, finding and realising solutions. TNO recently released the Dutch publication *'De Staat Van Nederland Innovatieland 2018'* ('The State of Dutch Innovation 2018') on this subject. This is a summary in English.

As a new, promising policy perspective for addressing societal challenges in a focused manner, modern mission-oriented policy is making quick progress in both Europe and in the Netherlands. Its rapid growth in popularity is based on the promise of a more effective, inspirational and broadly mobilising approach in the search for solutions to increasingly urgent societal challenges. Equally appealing is its potential to modernise policy, with a stronger role for society in its involvement, co-creation and co-design. Last but not least it offers the promise of new markets and new economic opportunities based on the solutions generated by mission-oriented policies.

MISSION-ORIENTED POLICY IS DIFFERENT FROM 'POLICY AS USUAL'

Embracing mission-oriented policies, as defined above, implies a radical shift from the conventional approach towards the design and implementation of government interventions. Mission-oriented policy requires, for example, the broad, active involvement of established actors and newcomers as well as civil society and individual citizens—consumers—in the selection, design and implementation of policy. This also implies a different

approach in the process of formulating policy. In addition, missions require room for experimentation, in order to achieve solutions that can address complex societal challenges. This implies the use of instruments that support daring research—and allow for failures—and their scaling-up by parties from different sectors—including citizens—in various fields of science and technology. Furthermore, missions require more than just research and innovation. Monitoring and evaluation must be designed in such a way that the long-term mission can be adjusted, that the right actors can be involved in implementation at the right time, and that the policy mix can be adapted according to progress made. Monitoring and evaluation also play a crucial role in the transparent reporting of results, such that public support for the mission is created and continues to exist among all those involved in society.

Within the framework of mission-oriented policy, a further distinction can be made between so-called 'accelerator' and 'transformer' missions. Accelerators are missions aimed at accelerating technological developments and their ground-breaking applications. Transformer missions are aimed at the development of new, broad and more comprehensive changes or extensive transitions—often driven or triggered by technology—in which the solutions are unknown or only partially known. Transformer missions often require a system change that not only accelerates technological development and (broader!) innovation, but also requires a much more radical change in terms of societal acceptance, application and usage. Moreover, a transformer mission requires accompanying measures, such as the initiation, (co)financing and realisation of new infrastructure, supporting legislation and regulations, as well as the development of new business models.

Mission-oriented research and innovation policy is explicitly a part—a subset—of mission-oriented policy and does not stand alone. It has the potential to accelerate the search for solutions to societal challenges, while at the same time further increasing the necessary social support base and creative potential for finding, supporting and financing these solutions. By combining research and innovation efforts in missions with bold, inspirational and clearly defined goals, in terms of measurability, timeframe and political accountability, the aim is to achieve: 1) the necessary concentration of people and resources needed to carry out missions and the associated (ground-breaking) innovations to achieve major transitions; 2) to shorten the time involved in the search for suitable solutions to societal challenges and thereby increase the effectiveness of efforts, i.e. to arrive at workable solutions more quickly; and 3) to create a clear and stronger connection and involvement of all those involved in the mission, in which the citizen—voter, consumer—is also given a more active co-decision and, where possible, co-creation role.

The process of formulating modern missions has two successive phases: 1) the design and selection phase, which starts with the choice of societal challenges and renewal tasks and continues with the design, selection and prioritisation of missions (the central question being how we can translate challenges into missions); and 2) the implementation phase, which determines how the selected missions can best be orchestrated, organised and coordinated in relation to policy, as well as monitored and evaluated.

The selection phase and the implementation phase can be seen as separate trajectories, each requiring its

own implementation. Mission-oriented policy requires customisation; there is no question of 'one size fits all'. Mission-oriented policy is above all the 'art' of organising an open process that leads to creative solutions—welcoming, inspiring and bottom-up—with and between different fields, actors and sectors. The role of the government in this, and which level of representation of government, depends on the purpose of the mission. Their role can vary from encouraging and facilitating from a distance to more actively steering and directing.

SELECTION PHASE: CHOICE OF CHALLENGE AND ASSOCIATED MISSIONS

The selection phase begins with the identification of relevant societal challenges. Without exception, societal challenges can be characterised as complex, interrelated and systemic in nature. This is precisely why they are often persistent problems, involving different levels of complexity and stratification. We distinguish:

– Challenges related to the effects of human activity on the earth as the source of life and its survival, such as: climate change; environmental pollution; loss of biodiversity; energy transition; and circular economies.
– Challenges related to the position and/or functioning of certain groups in society that require further attention, such as: emancipation; 'inclusiveness'; redressing social, racial or gender-based disadvantages of certain groups; poverty; and (healthy) ageing.

Table 1. Degree of knowledgeability of challenges and possible solutions: uncertainty, complexity and conformity.

Aspect	Understanding/knowability of the challenge	Understanding/knowability of the solution directions
Uncertainty	Limited or fragmented understanding and knowledge of the challenge (of causes, consequences and risks)	Lack of knowledge about the feasibility, scope and impact of a solution or, in the case of multiple possible solutions, about which solution works best
Complexity	Lack of clarity about responsibilities: who is the problem owner? At what level and scale should the challenge be taken up?	Lack of systemic approach or method to link and integrate different (technological, organisational, institutional and social innovation) solutions
Conformity	Different views (conflicting claims, values and framings) regarding what the challenge means	Different views on possible solutions and on the 'best solution'

Source: based on Wanzenböck et al. (2018)

– Challenges related to large-scale and/or disruptive changes as a result of new technology, such as: mobility transition; energy transition; circular economies; dealing with the consequences of digitisation/digital quantum leaps; organisation of the sharing economy; cybercrime; identity fraud; and privacy.

Making choices from all of the societal challenges and renewal tasks that require a breakthrough is a complex and delicate process. It requires careful analysis and consideration with the involvement of stakeholders and citizens. But it is up to the government—the politicians—to make a first choice from the challenges. The following elements play an important role in the political assessment of which challenges will and will not be addressed, and to what extent and direction:

– Relevance: the importance and the value of finding a solution.
– Urgency: the necessity of finding a solution in terms of political, societal, technological or economic points of view.

– Potential impact: an estimate of the sum of direct and indirect positive and/or negative effects of a solution and possible alternative solutions compared to the situation without a solution.

After the identification of relevant challenges on the basis of the above elements, testing will follow according to the degree of understanding of the direction of challenges and solutions. The concept of understanding refers in this context to questions such as: what exactly is the challenge and how can it be defined and delineated? But it is also about understanding possible solutions. Should the solution be sought primarily through technological innovation, institutional change or perhaps also in societal innovation and behavioural change? A good understanding of both the challenge and possible solutions is important. The level of understanding of challenges and solutions is tested on the basis of three important dimensions: uncertainty, complexity and the conformity of opinions (see table 1).

"MISSION-ORIENTED POLICIES SET AMBITIOUS, BOLD AND AT THE SAME TIME REALISTIC GOALS IN RELATION TO THE CHALLENGE IN QUESTION"

The more these three dimensions converge towards less uncertainty, less complexity and more consensus, the stronger the basis for formulating a broadly legitimised and effective challenge. The same reasoning applies to the possible solutions. The greater the understanding about the feasibility, scope and impact of possible solutions, the smaller the uncertainty. The greater the ability to arrive at a systemic approach for linking and integrating different solutions, the lower the complexity. And the less divergent the views on solution directions, the greater the consensus. Here too, the more the three dimensions converge towards less uncertainty, less complexity and more consensus, the greater the chance that a challenge will be widely taken up and realised.

Clarity about which challenges are being actively addressed—based on an analysis of knowability, as described above—is a necessary but not yet a sufficient condition for mission-oriented policy. The crux of a mission-oriented approach lies—much more so than in the choice of challenges—in the next step, in which challenges are translated and 'cut up' into missions. An important point of departure is the notion that missions are a collection of related, but autonomous, independent initiatives with their own goals in a defined hierarchy, with an overarching societal challenge at the top and specific missions below. Missions can thus be conceived as a collection of nested modules (the nested doll principle) that are closely linked to each other.

The advantage of such a modular approach is that missions can be clearly defined and the complexity of steering and managing missions can be reduced. By also providing binding rules, there is a coherent set of missions that does not lose sight of the

'higher' goal of looking for solutions to a societal challenge. Modularity does impose relatively heavy demands on the design and the coherence of the missions, and therefore requires an authoritative architect—for example, in the form of an independent expert or high-level group—that investigates the possibilities for coherent but separate demarcated modules and comes up with proposals.

The second *decomposition step* in the selection process—from challenges to missions—builds on the analysis of the extent to which challenges and solution directions are clear and understandable. This involves comprehending the complexity, stratification and scale of the challenge and how the challenge can be translated into manageable missions. Important features that the societal challenges and societal renewal tasks have in common are that they are complex, interrelated and therefore systemic in nature and have complex feedback loops. This decomposition step provides the following insights into the selection process of the missions:

- By analysing the challenges, it becomes clear which underlying challenges / problems / issues the challenge consists of and how they are interrelated, as well as with other challenges.
- By unravelling and cutting things up, it becomes clear whether these are challenges that can potentially be solved, and so the possible routes to a solution become broadly apparent, or whether these are challenges for which the solutions are still unknown and the problems are complex.
- By unravelling, it becomes clear at which level of intervention (local, regional, national or international) the challenge can be addressed.

Based on this decomposition step, challenges can be compared so that it becomes clear what their research and innovation component is and what type of mission—accelerator, transformer or a combination of both—is required. A challenge for which there is a potential solution and which can be addressed regionally or nationally by accelerating technological development to create a ground-breaking application—an accelerator mission—is of a different nature compared to a global challenge for which a solution is not yet known and for which a transformative change is necessary.

What politicians need in order to prioritise the most urgent societal challenges and to articulate the challenge / problem at the right level is to identify and select missions for a transparent, open participatory process in which all stakeholders are directly involved—from different ministries, layers of government, knowledge institutions and the business community to civil society, users and especially citizens. There are various ways in which the government can shape the active participation of citizens, ranging from social dialogue, consultation and opinion polls to co-design and the organisation and financing of citizen conventions, possibly supported by digital tools and designed with digital platforms.

FROM 'MISSION POSSIBLE' TO 'MISSION SUCCESSFUL': NINE RULES OF THUMB FOR FORMULATING AND IMPLEMENTING MISSIONS AND MISSION-ORIENTED POLICY

Nine rules of thumb, which form the final part of the fourth edition of *The State of Dutch Innovation*'s analysis, offer a practical, guiding perspective on the new and (so far) virtually unexplored policy practice of missions and 'new' mission-oriented policy.

I. Missions are not 'policy as usual'. With a societal challenge as the focal point of a mission, the effectiveness of mission-oriented policy intervention is central—and efficiency is secondary.

Missions are bold and ambitious but have realistic goals. Missions are different in design, policy mix and governance. Risk taking, experimenting and—as the ultimate consequence—the 'freedom to fail' are all part of missions. This applies not only to the 'how' of missions (which solutions? which policy approach? which innovation or research approach?) but also to the 'whom' (which area of governance is designing a mission? which is executing it? In both cases, challengers and citizens are involved). The objective of missions is fixed. Changes are possible, but only concerning policy instruments and governance. Missions are aimed at solutions for societal challenges and actual change; they may not lead to a situation in which 'everything changes so that ultimately nothing changes' (adapted from Di Lampedusa).

II. Identifying, designing and implementing missions requires vigilance against being 'captured' by established stakeholders or actors and the prevention of being prematurely locked into certain technologies or unproven solutions.

Established parties often have an interest in continuing the status quo (name, fame and own interests) and can therefore deliberately reject or frustrate challengers and newcomers, promote certain solutions or directions, or try to push things in a different direction. Established parties often also have additional information with which they can steer the discussion, the goal or the solutions in a specific direction. The design of a mission should initiate innovation and experimentation and be

sufficiently balanced to give challengers and newcomers a role and a fair chance. Additionally, capture can be prevented through adequate and informed countervailing power in the design of mission governance and mission leadership. A good system of foresight, innovation intelligence and well-considered, transparent choices can help. To avoid lock-in, research projects and potential solutions should be set up as openly and as neutrally as possible in terms of technology and innovation.

III. Missions require a policy mix that is designed in such a way that each policy goal is addressed by a single instrument, in line with the Tinbergen rule.

Modern missions require, more so than traditional policy, a wide range of instruments with different modalities, such as laws and regulations, subsidies, loans, fiscal instruments, training and information, etc. The policy mix must not only address supply and demand in the market, but also for example usage and creation, as well as other forms of behaviour of stakeholders and citizens. The instruments in the policy mix have their origins in different policy fields and come from different ministries. To compose the mix as effectively as possible, far-reaching coordination is required. The mix should be designed, in line with the Tinbergen rule, such that each policy objective is addressed by a single instrument. The Tinbergen rule states that: *"Consistent [economic] policy requires that the number of instruments equals the number of targets. […] More instruments than targets makes instruments alternative; that is, one instrument may be used instead of another or a combination of others."* (Tinbergen, 1952).

A policy objective of an instrument is the further translation of a mission objective into (for instance) a specific and concrete change in the market or a change in behaviour that one wants to achieve through the government intervention. A mission objective can be divided into several policy objectives. The Tinbergen rule specifies that several instruments may not address a single policy objective.

IV. Formulating the policy mix for missions requires the adoption of a new rationale for defining its composition, and an increased use of instruments such as prizes and innovation procurement.

Missions address societal challenges that are urgent, relevant and have a major impact. Addressing these challenges requires imaginative solutions and an extensive experimental process. In practice, the policy mix must be designed in such a way that it supports and not penalises risk-taking, daringness and learning from failure. Directing the composition of the policy mix towards the effectiveness and efficiency of the intervention—as is customary in the context of traditional policy—is therefore not the right approach for missions. When formulating mission-oriented policy, effectiveness must be the decisive factor.

Instruments such as prizes and challenges create room for experimentation for both stakeholders and citizens, so that they are stimulated and challenged to look beyond borders and to generate creative and revolutionary new ideas. An instrument to specifically involve the business community is innovation procurement. When the government subsequently uses the instrument in such a way that the solution sought is a basis for further economic activities—i.e. the government in a role as

'launching customer'—not only are the costs of developing the required knowledge covered, but the initial uncertainties arising from the process of market introduction are also—at least in part—addressed.

V. Missions require a discovery and experimentation-oriented approach and a can-do mentality from the government and the organisation responsible for the mission.

In order to achieve breakthroughs on urgent societal challenges, discoveries, creativity and radical solutions are needed. This requires ambition, courage and audacity—from politics and government—to give direction and to choose multiple new and, in many cases, still unknown and uncertain solutions. For the successful implementation of a modern mission-oriented policy, the government and the responsible mission organisation are therefore required to adopt a discovery (self-discovery) and experimentation-oriented approach, in which risk-taking, out-of-the-box thinking and a can-do mentality are required. All solutions must be considered, explored and tested for feasibility, scalability and impact to achieve the formulated mission goal.

VI. To keep missions on course and to adjust policy and governance, frequent monitoring and evaluation of progress, and open and transparent reporting to the outside world are necessary.

Monitoring and evaluation are even more important in mission-oriented policy than in traditional policy. They play an essential role in (re)directing complex and often long-term missions, in terms of progress, the composition of the policy mix and governance structure. Frequent, transparent and independent monitoring and evaluation is also essential in the

context of accountability of mission policy—explaining and accounting for—in order to maintain support and broad involvement.

The requirements (the process of) monitoring and evaluation are also stricter in the context of mission-oriented policy than in 'policy as usual'. Missions require a mission-specific monitoring and evaluation framework with tailored output, outcome and impact indicators and questions that capture these aspects. The process of monitoring and evaluation must be designed from the outset, and carried out independently and transparently. The procedure for monitoring and evaluation must be linked so that deviations from output and outcome indicators lead to an evaluation.

The system of monitoring and evaluation is not isolated, but linked to a well-considered system of innovation intelligence. As a result of this, information also comes through about solutions that have been or are being devised elsewhere and are or are not successfully being implemented there. Innovation intelligence has an informational task that enables people to take account of relevant developments in the outside world that are important for the mission and that can be taken into account in the decision-making process.

VII. Citizens must be directly and actively involved in the formulation, design and execution of missions, as co-creator, co-designer and co-producer.

The success of missions and mission-oriented policies requires the active participation of citizens and all other relevant stakeholders in the mission. Particularly in complex, broad transformer missions, which require radical system and behavioural changes, the formulated

mission goals can only be achieved if the solutions developed are accepted and used. The direct and active involvement of citizens increases the support base and legitimacy of missions. It also prevents citizens and stakeholders from turning against the mission and using for example legal actions to thwart, delay or prevent its execution.

Depending on the specific context of the mission (purpose, granularity and type of mission), a mission governance tailored to the mission must be set up, in which both citizens and stakeholders—from universities, governments and businesses to start-ups, civil society organisations and insurers—have an equal voice in the management and control. In this way, a platform can be created where all stakeholders work together to tackle possible obstacles and citizens make an important contribution to the success of the mission, both during the selection and design phase (as co-creator and co-designer) and during the execution (as co-producer, user, financier, customer, etc.). A condition is that the contribution of all actors involved is acknowledged and respected.

VIII. Missions require an integrated approach, long-term commitment and continuity in support. This requires interdepartmental and policy-domain-transcending collaboration across the entire chain: from fundamental and applied research to companies, users and citizens.

Complex transformations and system changes do not take place overnight; they are long-term processes characterised by a high degree of complexity and uncertainty. This requires a long-term commitment and continuity of support, based on broad societal and political acceptance, and a link between the short and long-term objectives.

A departmental approach works well for single-focus accelerator missions or for missions that are limited to a particular policy area. The broader the impact and application possibilities of developed solutions, the greater the importance of interdepartmental, policy-transcending collaboration in which the entire chain is involved. The importance of breaking through barriers to achieve an effective, integrated approach also increases when it comes to wide-ranging European missions that build on national and regional initiatives.

"MISSION-ORIENTED POLICY REQUIRES CUSTOMI-SATION; THERE IS NO QUESTION OF 'ONE SIZE FITS ALL'"

IX. **Missions require a design and a level of implementation that fits the scale and scope of the challenge and the scale and possible synergy that can be achieved by solutions. In multi-layered missions with a European, national and sometimes also regional dimension, policy is most effective when implemented within the framework of a coherent and coordinated approach.**

Addressing missions at the 'right' policy and governance level that suits challenges and possible solutions sometimes requires an exclusively national, European or even global approach. Much more often, however, missions are layered and interrelated. Missions subsequently have a European, national and often also a regional dimension. Layering and cohesion in missions require: a) scalability and switching of solutions; and b) well-organised coordination and collaboration between the European, national and regional levels in the search for solutions. Both are crucial for the success of a mission—and therefore its effectiveness.

A purely national or even regional approach works well for 'small' missions or clearly defined parts of a larger mission. The larger the mission, the more collaboration and the more coordination is required. EU-wide cooperation is sometimes necessary—without reservations—to arrive at effective solutions.

WANT TO KNOW MORE?
Get in touch with Arjen Goetheer
T +31 888 66 23 27
E arjen.goetheer@tno.nl

❯

TNO.NL

STRATEGIC ANALYSIS & POLICY
TNO's Strategic Analysis & Policy unit combines in-depth technological, socio-scientific, economic and legal knowledge and applies these in coherence for companies and governments. In doing so, we identify emerging technologies at an early stage, advise on appropriate innovation policy and encourage relevant sustainable innovations.

Arjen Goetheer
Frans van der Zee
Marcel de Heide

T +31 888 66 23 27
E arjen.goetheer@tno.nl