

Design and implementation of **mission-oriented** research and innovation **policies**

International Conference “Missions for sustainability: New approaches for science and society” - 06 May 2022

Philippe Larrue,

OECD Directorate for Science, Technology and Innovation



Content

1. Definition, functions and design principles
2. Typology of mission oriented policies
3. 3 examples of mission-oriented policy
4. Challenges and opportunities
5. MOIP national trajectories



DEFINITION, FUNCTIONS AND DESIGN PRINCIPLES



What are Mission-oriented innovation policies?

A co-ordinated package of initiatives (policy, regulatory, platforms,...) tailored specifically to mobilise science, technology and innovation in order to address a societal challenge.

This co-ordinated package :



is aimed towards ambitious and concrete goals...



... to be met in a defined time-frame



spans several stages of the innovation cycle from research to demonstration and market launch



crosses various siloes (disciplines, sectors, policy areas, etc.)








uses various instruments (supply-side and demand-side; top-down and bottom-up)



What are Mission-oriented innovation policies?

A co-ordinated package of initiatives (policy, regulatory, platforms,...) tailored specifically to mobilise science, technology and innovation in order to address a societal challenge.

This co-ordinated package :

-  is aimed towards ambitious and concrete goals...
-  ... to be met in a defined time-frame
-  spans several stages of the innovation cycle from research to demonstration and market launch
-  crosses various siloes (disciplines, sectors, policy areas, etc.)
-  uses various instruments (supply-side and demand-side; top-down and bottom-up)








Strategic Orientation

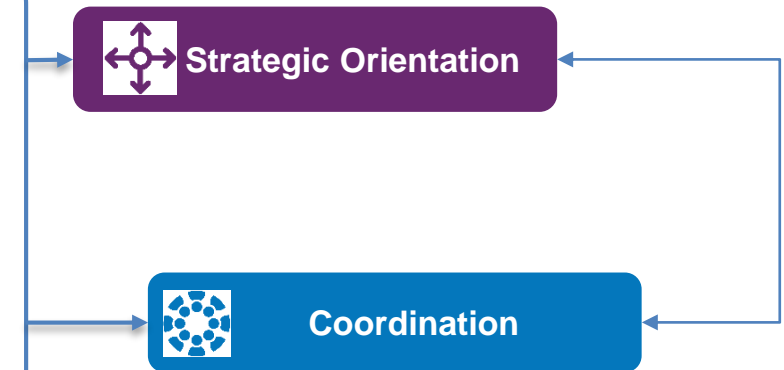


What are Mission-oriented innovation policies?

A co-ordinated package of initiatives (policy, regulatory, platforms,...) tailored specifically to mobilise science, technology and innovation in order to address a societal challenge.

This co-ordinated package :

-  is aimed towards ambitious and concrete goals...
-  ... to be met in a defined time-frame
-  spans several stages of the innovation cycle from research to demonstration and market launch
-  crosses various siloes (disciplines, sectors, policy areas, etc.)
-  uses various instruments (supply-side and demand-side; top-down and bottom-up)








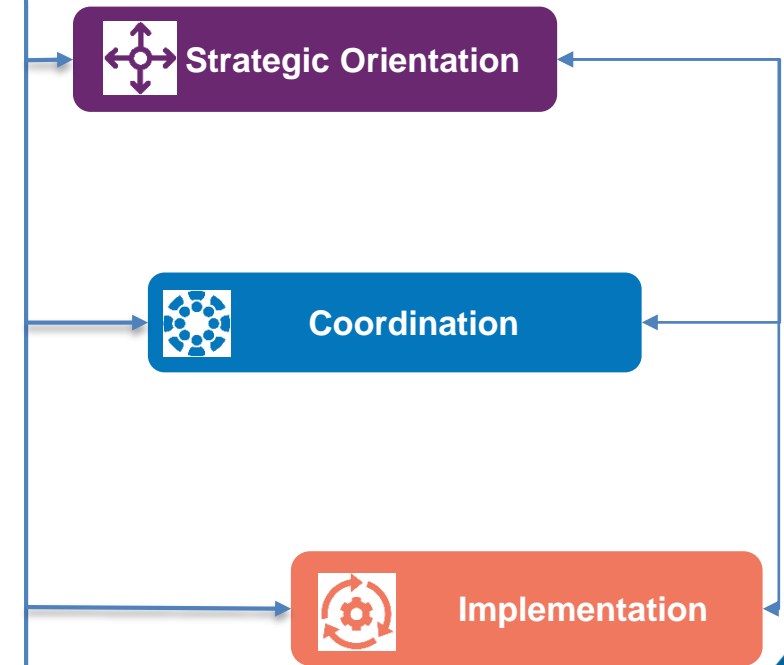


What are Mission-oriented innovation policies?

A co-ordinated package of initiatives (policy, regulatory, platforms,...) tailored specifically to mobilise science, technology and innovation in order to address a societal challenge.

This co-ordinated package :

-  is aimed towards ambitious and concrete goals...
-  ... to be met in a defined time-frame
-  spans several stages of the innovation cycle from research to demonstration and market launch
-  crosses various siloes (disciplines, sectors, policy areas, etc.)
-  uses various instruments (supply-side and demand-side; top-down and bottom-up)








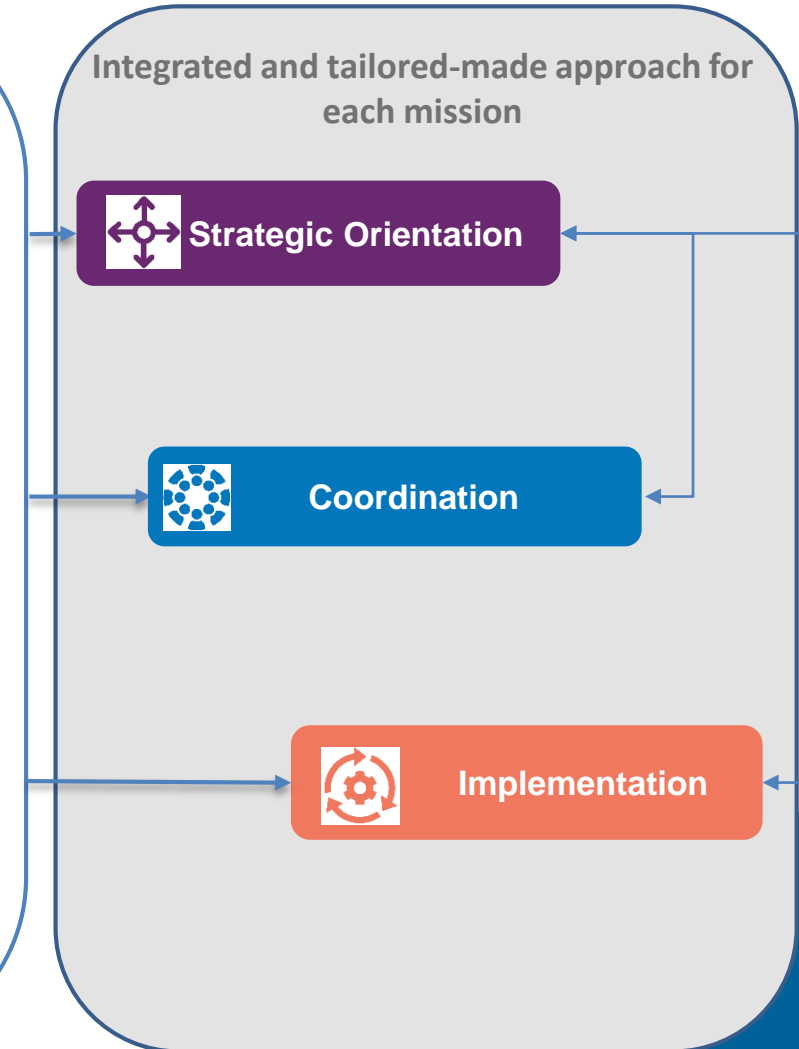


What are Mission-oriented innovation policies?

A co-ordinated package of initiatives (policy, regulatory, platforms,...) tailored specifically to mobilise science, technology and innovation in order to address a societal challenge.

This co-ordinated package :

-  is aimed towards ambitious and concrete goals...
-  ... to be met in a defined time-frame
-  spans several stages of the innovation cycle from research to demonstration and market launch
-  crosses various siloes (disciplines, sectors, policy areas, etc.)
-  uses various instruments (supply-side and demand-side; top-down and bottom-up)





What are Mission-oriented innovation policies?



Strategic orientation

How to create a broad consensus on selected societal challenges, their transcription in clear and bold objectives and the way to address them?



Co-creation of the mission (and derived roadmaps, strategic innovation agendas, etc)



What are Mission-oriented innovation policies?



Strategic orientation

How to create a broad consensus on selected societal challenges, their transcription in clear and bold objectives and the way to address them?



Co-creation of the mission (and derived roadmaps, strategic innovation agendas, etc)



Policy coordination

How to align the plans and commitments of public and private actors beyond disciplinary, sectoral and policy silos around the commonly agreed missions?



Setting of a dedicated structure of governance and leadership (e.g. interdepartmental coordination group, dedicated mission manager, etc.)



What are Mission-oriented innovation policies?



Strategic orientation

How to create a broad consensus on selected societal challenges, their transcription in clear and bold objectives and the way to address them?



Co-creation of the mission (and derived roadmaps, strategic innovation agendas, etc)



Policy coordination

How to align the plans and commitments of public and private actors beyond disciplinary, sectoral and policy silos around the commonly agreed missions?



Setting of a dedicated structure of governance and leadership
(e.g. interdepartmental coordination group, dedicated mission manager, etc.)



Policy implementation

How to implement bundles of complementary policy and regulatory instruments to achieve the commonly agreed mission?



Implementation of a tailor-made policy mix
(drawing on / using various instruments, funding streams,..)



TYPOLOGY OF MISSION ORIENTED POLICIES



What are the different types of Mission-oriented innovation policies?

Type	Selected cases	Risks / Challenges
 Overarching mission-oriented strategic frameworks	<ul style="list-style-type: none">• Horizon Europe's missions [EU]• Mission-driven Top Sectors policy [NL]• HTS2025 [DE]	<ul style="list-style-type: none">• Mission dilution• Mission umbrella / lack of integration• Mission inflation



What are the different types of Mission-oriented innovation policies?

Type	Selected cases	Risks / Challenges
 Overarching mission-oriented strategic frameworks	<ul style="list-style-type: none">• Horizon Europe's missions [EU]• Mission-driven Top Sectors policy [NL]• HTS2025 [DE]	<ul style="list-style-type: none">• Mission dilution• Mission umbrella / lack of integration• Mission inflation
 Challenge-based programmes and schemes	<ul style="list-style-type: none">• Pilot-E [NO]• The Future Innovator Prizes [IE]	<ul style="list-style-type: none">• Niche innovation / unscaled mission• Connection between supply and demand for innovation




What are the different types of Mission-oriented innovation policies?

Type	Selected cases	Risks / Challenges
 Overarching mission-oriented strategic frameworks	<ul style="list-style-type: none">• Horizon Europe's missions [EU]• Mission-driven Top Sectors policy [NL]• HTS2025 [DE]	<ul style="list-style-type: none">• Mission dilution• Mission umbrella / lack of integration• Mission inflation
 Challenge-based programmes and schemes	<ul style="list-style-type: none">• Pilot-E [NO]• The Future Innovator Prizes [IE]	<ul style="list-style-type: none">• Niche innovation / unscaled mission• Connection between supply and demand for innovation
 Thematic mission-oriented programmes	<ul style="list-style-type: none">• Mobility of the Future [AT]• CLIMIT [NO]	<ul style="list-style-type: none">• Limited impulse for change / limited mission orientation



What are the different types of Mission-oriented innovation policies?

Type	Selected cases	Risks / Challenges
 Overarching mission-oriented strategic frameworks	<ul style="list-style-type: none">• Horizon Europe's missions [EU]• Mission-driven Top Sectors policy [NL]• HTS2025 [DE]	<ul style="list-style-type: none">• Mission dilution• Mission umbrella / lack of integration• Mission inflation
 Challenge-based programmes and schemes	<ul style="list-style-type: none">• Pilot-E [NO]• The Future Innovator Prizes [IE]	<ul style="list-style-type: none">• Niche innovation / unscaled mission• Connection between supply and demand for innovation
 Ecosystem-based mission programmes	<ul style="list-style-type: none">• Vision-Driven innovation milieus [SE]• Growth engines [FI]	<ul style="list-style-type: none">• Risk of capture by powerful incumbents



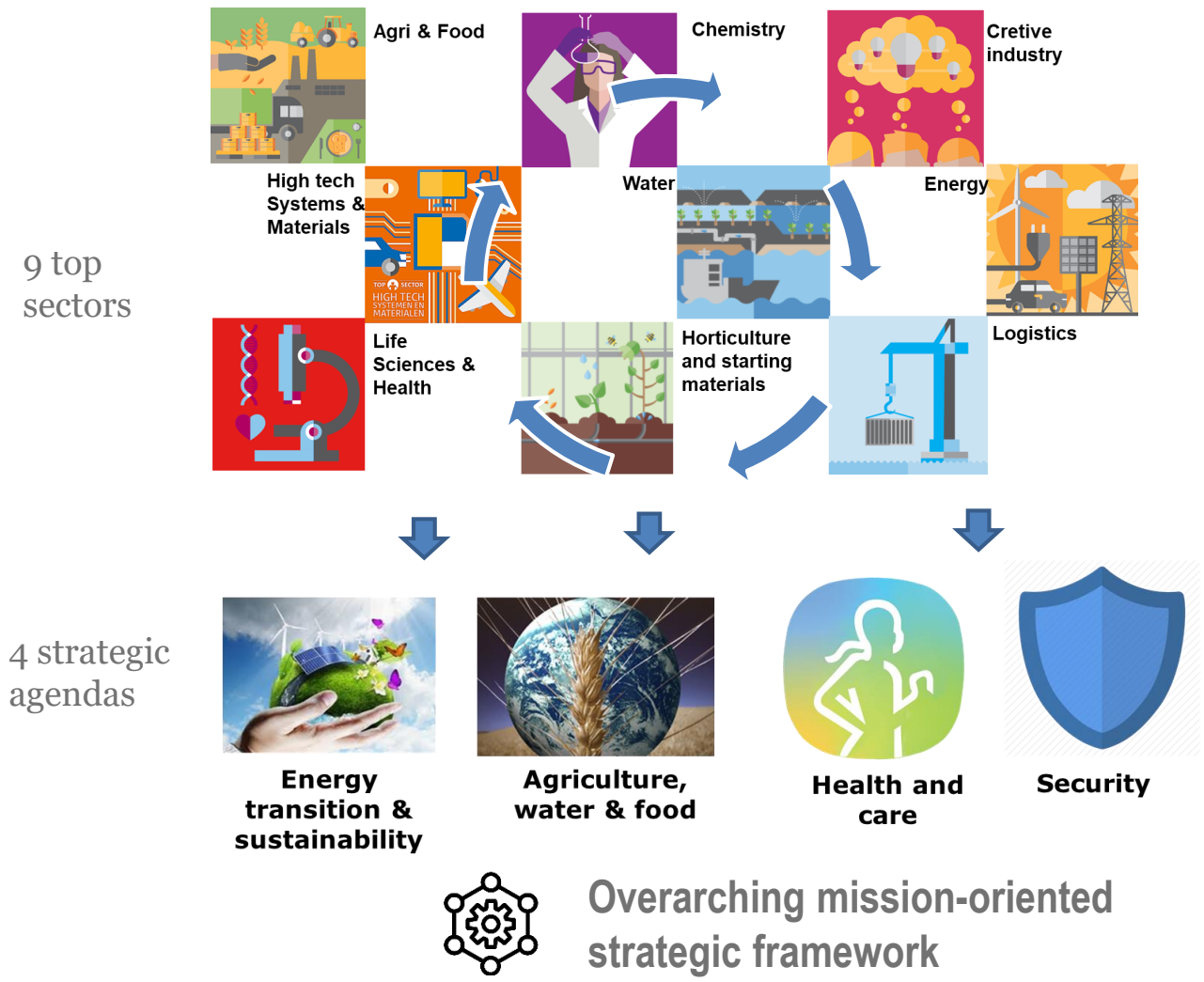
3 EXAMPLES OF MISSION-ORIENTED POLICY



Mission-driven Top Sectors



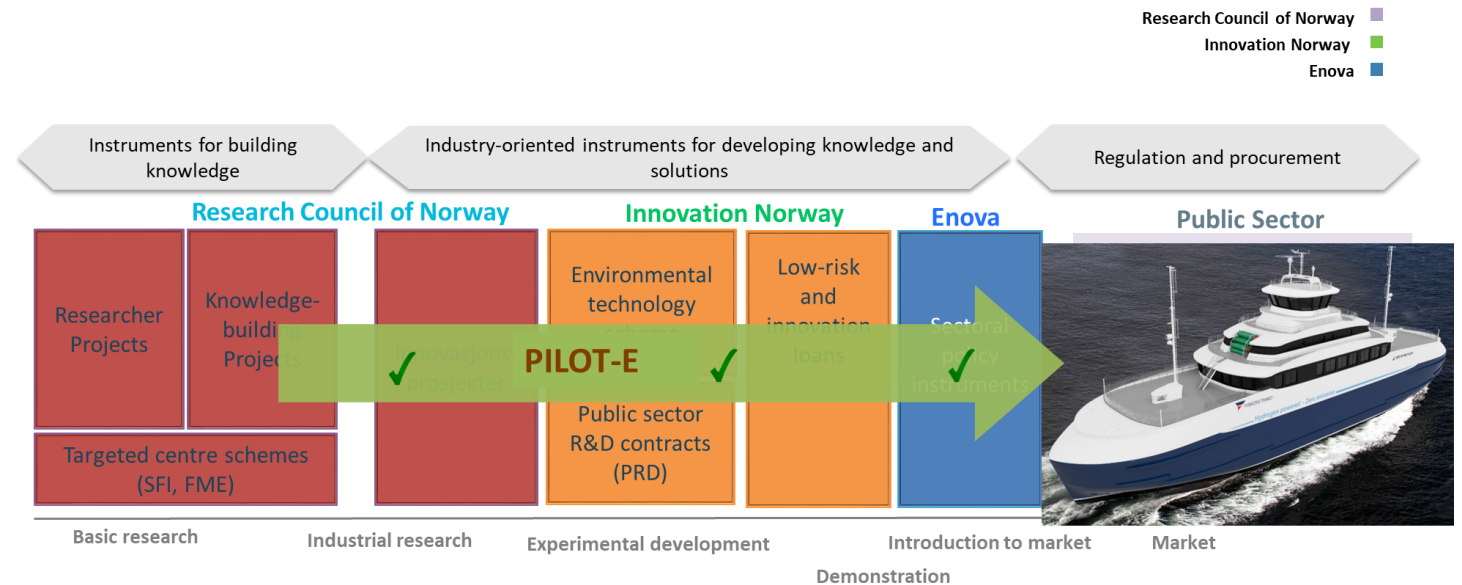
- Basic principles
 - Initiated in 2011, became mission-driven in 2018
 - 25 missions in 4 challenge areas
 - Different Top Sectors cooperates to develop strategic agendas (IKIAs), with a clearly identified leader
 - The IKIAs include concrete Multi-year mission-driven innovation programs (MMIPs) for each of the 25 missions.





- **Basic principles**

- Launched in 2016, development of low or zero emission technologies/vehicles
- 3 agencies working together: joint AAP development, tripartite coordination, collective monitoring and evaluation
- Selection of projects including the demand component

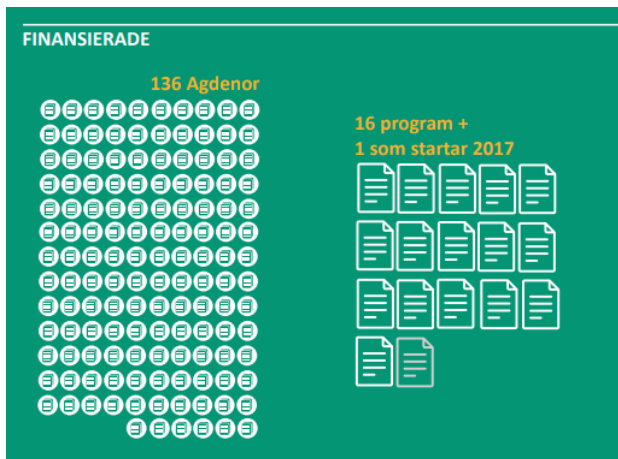




Strategic Innovation Programmes



- Basic principles
 - Launched in 2012
 - Co-creation of strategic roadmaps by ecosystem actors
 - 2-step process (development of roadmaps / implementation of projects to achieve the roadmap)



Bioinnovation >

Promotes a bio-based economy with the goal of creating conditions for value added and competitiveness by 2050.



Drive Sweden >

Creates the mobility services of the future based on connected, self-driving and shared vehicles.



InfraSweden2030 >

Supports innovative products and production methods for a climate-smart transport infrastructure.



Innovair >

Strengthens the aerospace technology area through increased collaboration, research and information dissemination.



Internet of things >

Works for Sweden to become a leader in utilizing the benefits of having things and people equipped with built-in sensors.



Medtech4Health >

Works to implement more medical technology ideas, streamline healthcare and strengthen the medical technology industry.



Metallic materials >

Creates conditions for exploiting the global opportunities for the metal industry.



PiiA: Process industrial automation >

Strengthens the Swedish process industry and develops the innovation capacity of the industry's suppliers.

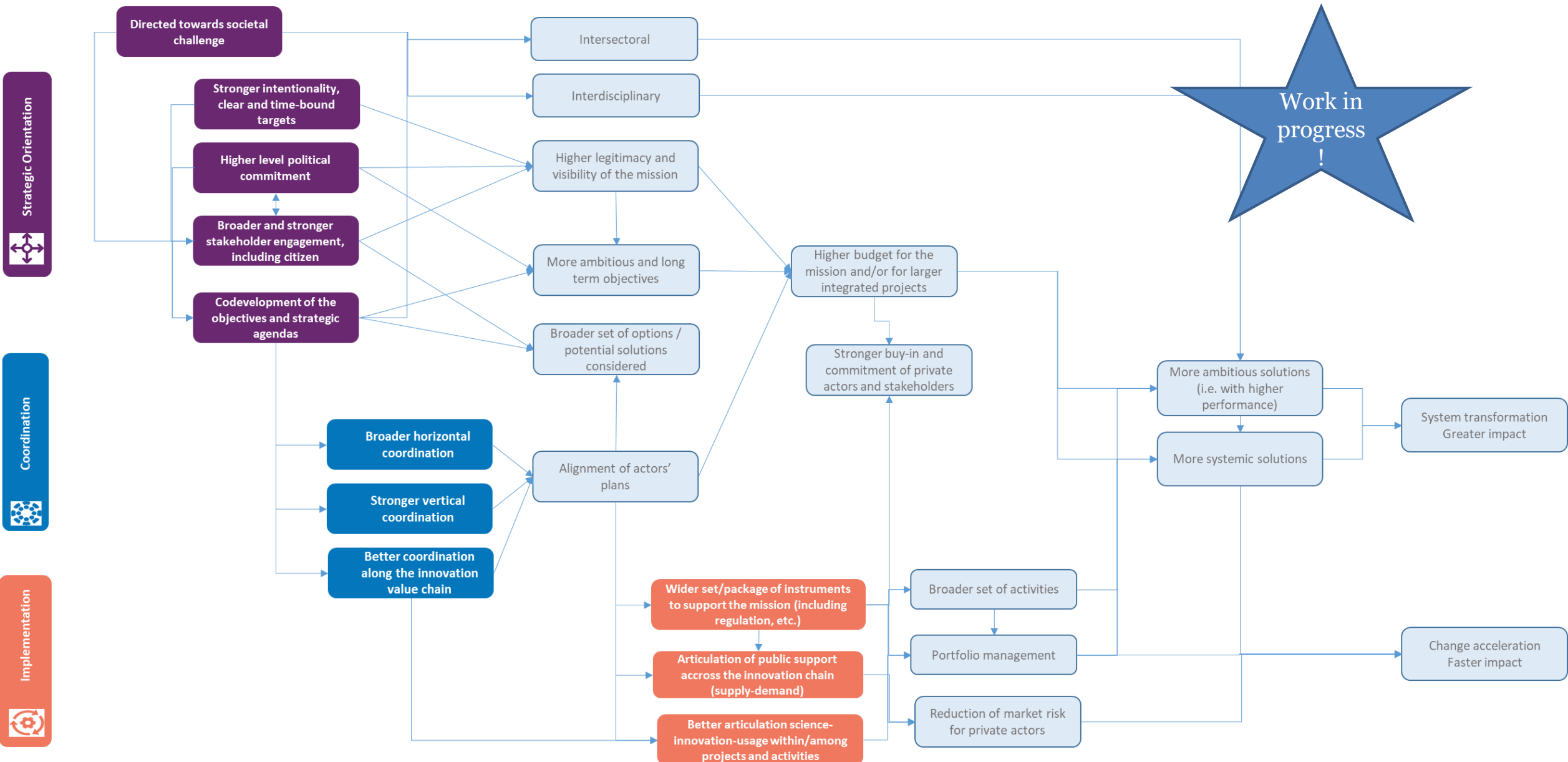


Ecosystem-based mission programmes



CHALLENGES AND OPPORTUNITIES

MOIP Theory of change: from design principles to impacts





Overall challenges



Strategic orientation



Policy coordination



Policy implementation



Overall challenges

How systemic / transformative?

Most MOIPs pick problems, not solutions but remain limited to scientific/technological solutions!

What scope and granularity?

Missions must be consistent with the resources and capacity of the country/region/city



Strategic orientation



Policy coordination



Policy implementation

How many real missions?

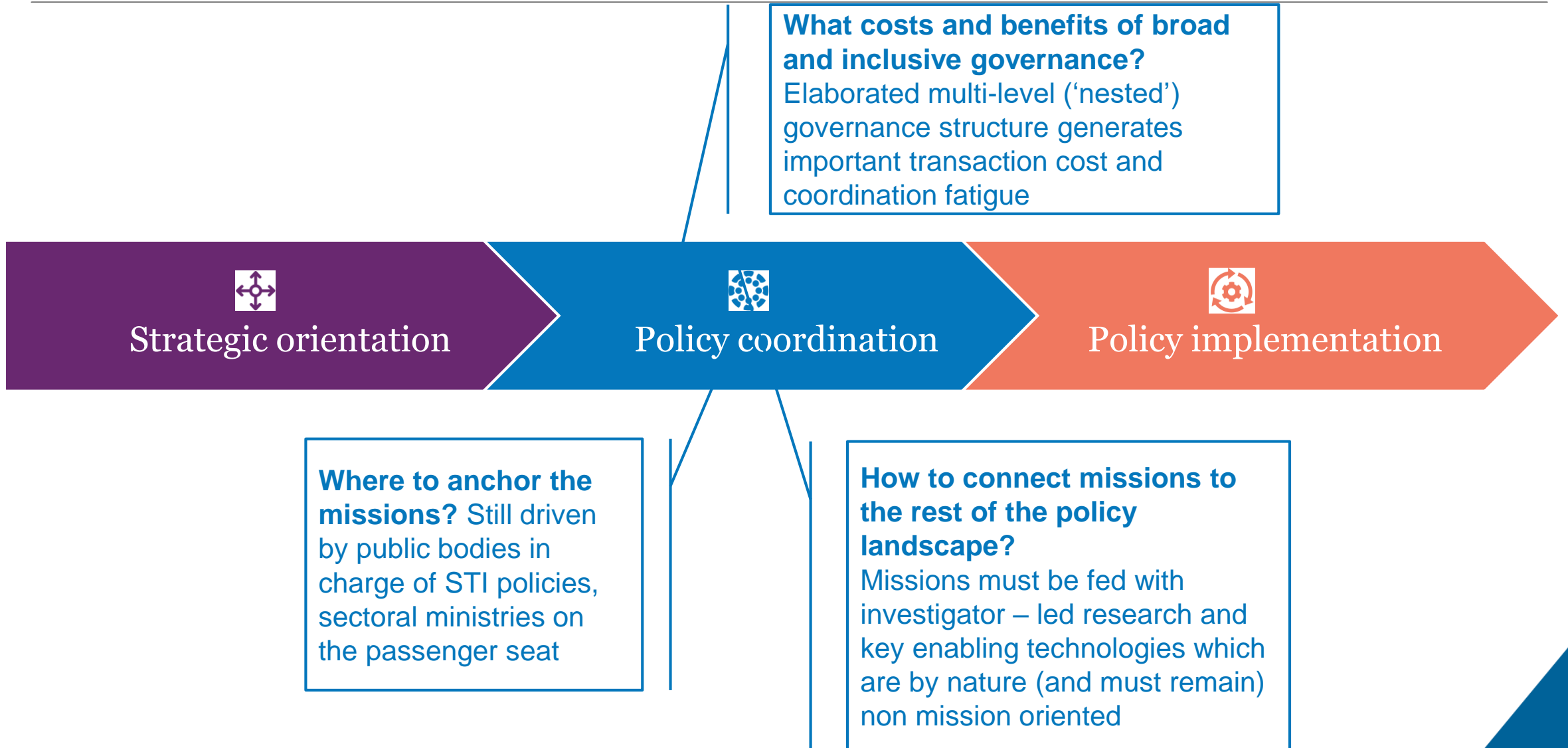
Very few initiatives have set 'real' missions (bold, targeted, measurable, time-bound, etc.)
Significant mission washing or mission dilution

What definition process?

Sequential process of mission definition, with gradual narrowing down of directions
What role and influence of stakeholder consultation? Of Foresight?



Overall challenges





Overall challenges

How to implement portfolio management?

Portfolio management requires additional resources and different practices, selection and evaluation criteria, mindsets..

How to evaluate the additionality of missions?

MOIPs still rely on traditional (non-systemic) evaluation tools and methods – limited lessons learned



Strategic orientation



Policy coordination



Policy implementation

How to practically connect the supply-side and demand-side policy instruments?

The 'instrument packages' are still not well integrated



NATIONAL MOIP TRAJECTORIES

- MOIPs are deeply embedded in national institutional setting



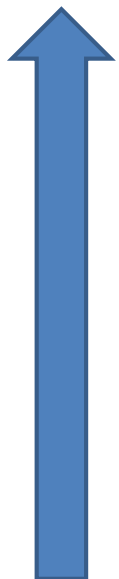
Specific national mission trajectories

- Countries are a continuously learning about MOIPs as they implement them



trajectories

MOIP led by higher level of the STI system



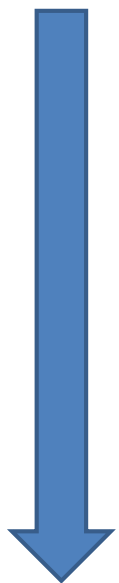
1. Top-down and center-of-government led
(ex: Japan, Korea)

2. Overarching strategy-based
(Germany, Netherlands)

3. Thematic and continuous
(ex: Austria, France)

4. Bottom-up and agency-led
(Norway, Sweden)

MOIP led by lower level of the STI system

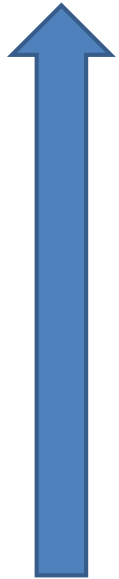


- MOIPs are deeply embedded in national institutional setting
- Countries are a continuously learning about MOIPs as they implement them



Specific national mission trajectories

MOIP led by higher level of the STI system



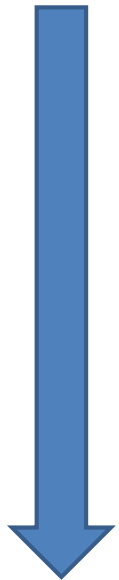
1. Top-down and center-of-government led (ex: Japan, Korea)

2. Overarching strategy-based (Germany, Netherlands)

3. Thematic and continuous (ex: Austria, France)

4. Bottom-up and agency-led (Norway, Sweden)

MOIP led by lower level of the STI system

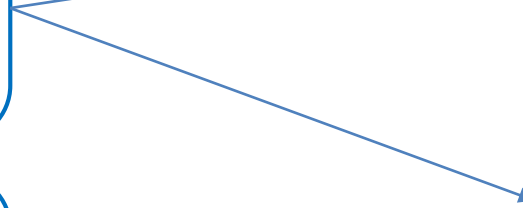


Streamlining mission orientation

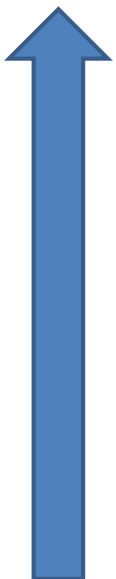
Delegating the MOIPs that have proved successful to interministerial structures

Focusing mission orientation

Concentrating the MOIP efforts towards a narrower number of priorities and missions



MOIP led by higher level of the STI system



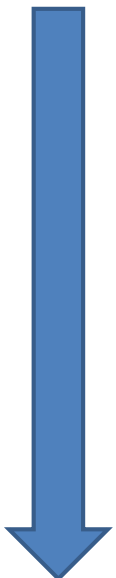
1. Top-down and center-of-government led
(ex: Japan, Korea)

2. Overarching strategy-based
(Germany, Netherlands)

3. Thematic and continuous
(ex: Austria, France)

4. Bottom-up and agency-led
(Norway, Sweden)

MOIP led by lower level of the STI system



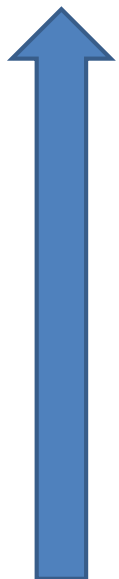
Focusing mission orientation

Concentrating the MOIP efforts towards a narrower number of priorities and missions

Deepening mission orientation

Improving the **strategic orientation** and **integration** of existing MOIPs

MOIP led by higher level of the STI system



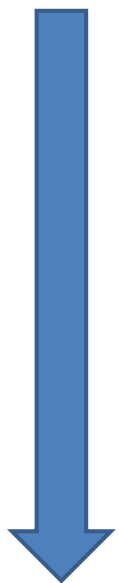
1. Top-down and center-of-government led (ex: Japan, Korea)

2. Overarching strategy-based (Germany, Netherlands)

3. Thematic and continuous (ex: Austria, France)

4. Bottom-up and agency-led (Norway, Sweden)

MOIP led by lower level of the STI system

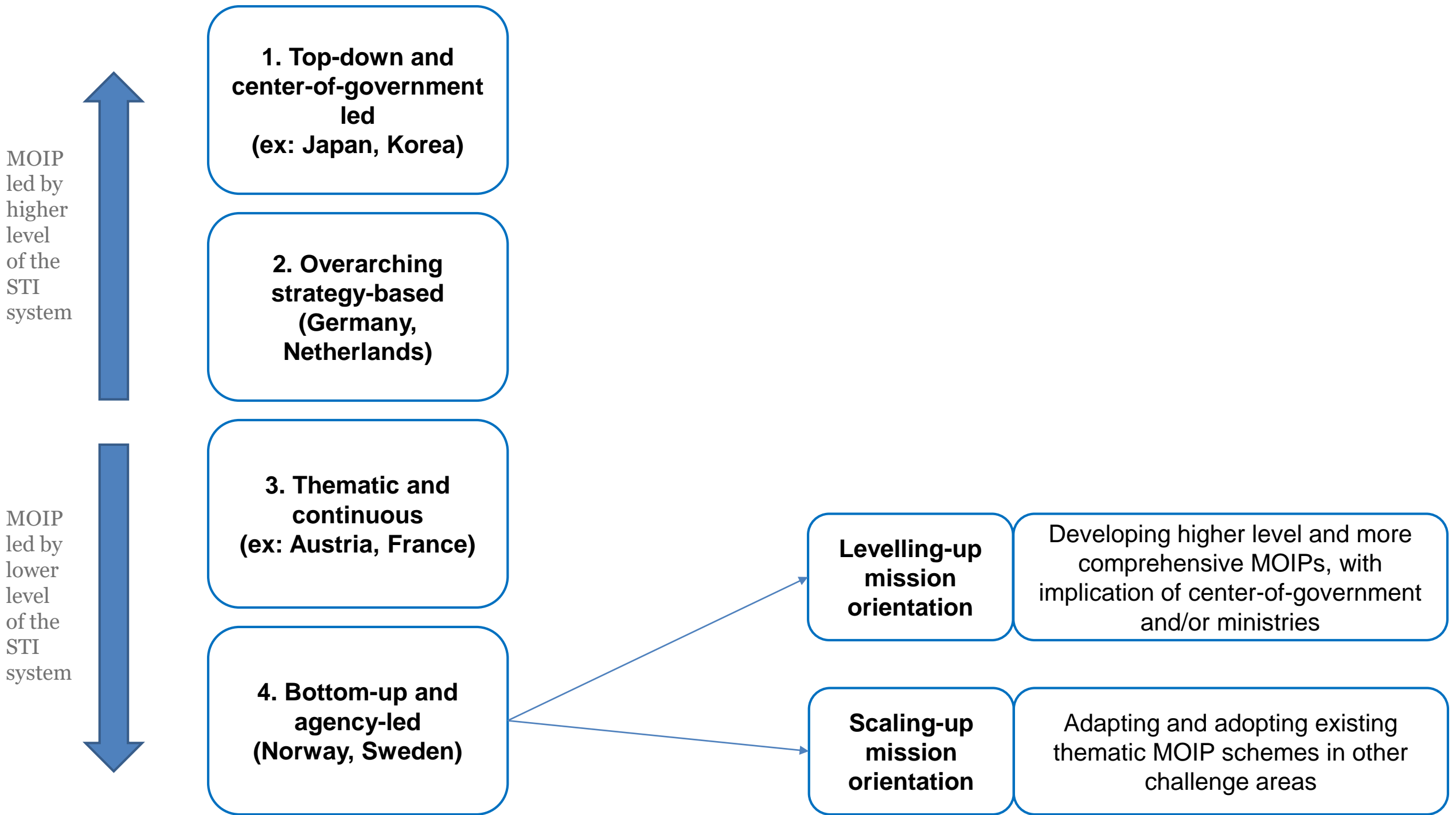


Deepening mission orientation

Improving the strategic orientation and coordination of existing MOIPs

Levelling-up mission orientation

Developing higher level and more comprehensive MOIPs, with implication of center-of-government and/or ministries





- A cross-directorate partnership (STI, GOV, DCD) to pool OECD resources and expertise in MOIPs to better advise governments in defining, setting up and governing missions
 - MOIP needs assessment survey
 - MOIP training materials and self-assessment tool under development
 - Study on MOIP evaluation
 - Large-scale projects on missions (DG RTD, DG Reform,...)



Many thanks for your attention

Le 'Toolkit MOIP' en ligne

<https://stip-pp.oecd.org/stip/moip>



Explorable dashboards Policy learning Hub

Welcome to the OECD Mission-Oriented Innovation policies online toolkit

This explorable guide helps policy makers design and implement Mission-oriented innovation policies. With the support of policy makers and building on partnerships with selected institutions, this toolkit aims to become the reference platform for all those who set up, implement or research and advise on mission-oriented innovation policies.

Explorable dashboards

Policy learning hub



Ongoing work:



OECD publishing

THE DESIGN AND IMPLEMENTATION OF MISSION-ORIENTED INNOVATION POLICIES
A NEW SYSTEMIC POLICY APPROACH TO ADDRESS SOCIETAL CHALLENGES

OECD SCIENCE, TECHNOLOGY AND INDUSTRY POLICY PAPERS
February 2021 No. 100



Publications

OECD publishing

MISSION-ORIENTED INNOVATION POLICY IN NORWAY
CHALLENGES, OPPORTUNITIES AND FUTURE OPTIONS

OECD SCIENCE, TECHNOLOGY AND INDUSTRY POLICY PAPERS
April 2021 No. 104



OECD publishing

MISSION-ORIENTED INNOVATION POLICY IN JAPAN
CHALLENGES, OPPORTUNITIES AND FUTURE OPTIONS

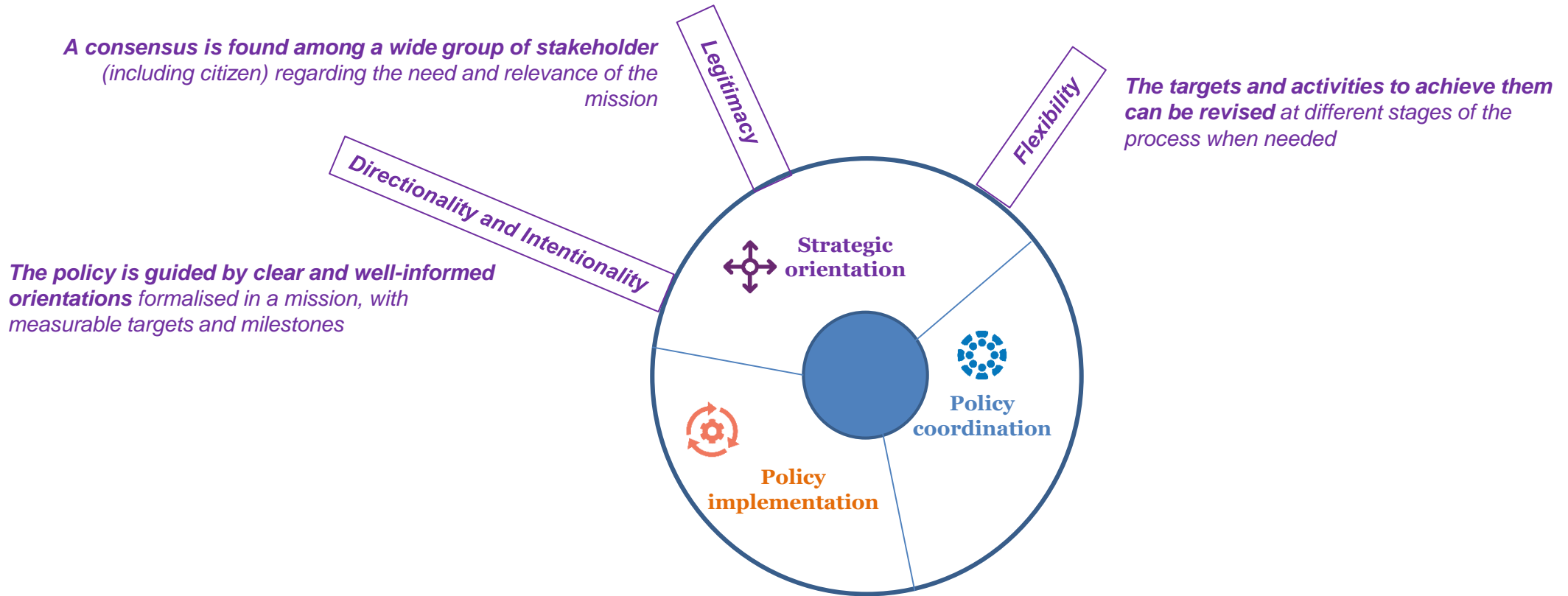
OECD SCIENCE, TECHNOLOGY AND INDUSTRY POLICY PAPERS
April 2021 No. 106



Forthcoming MOIP national studies: Austria, Korea, Lithuania

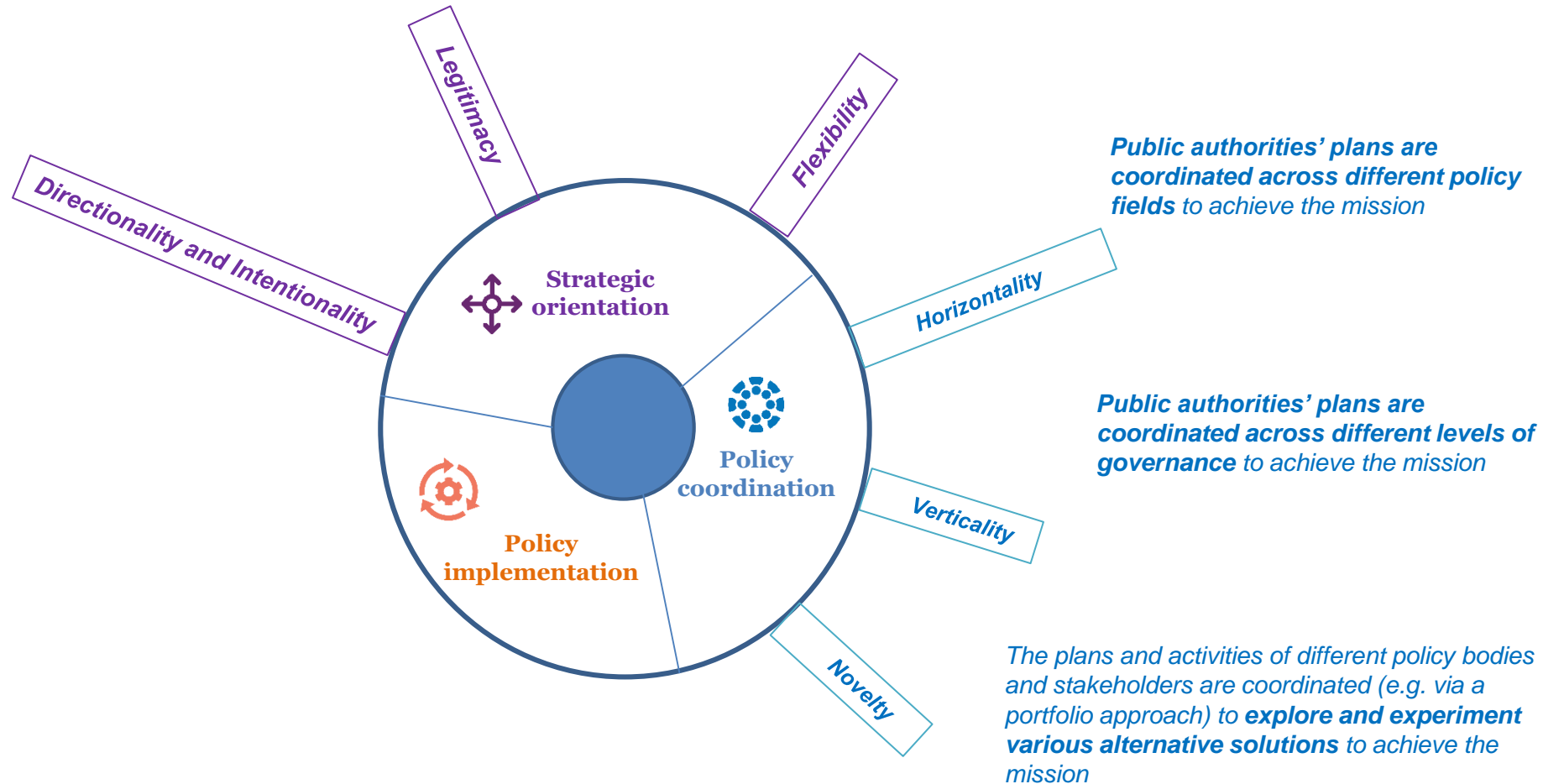


What are mission-oriented innovation policies generic design principles?



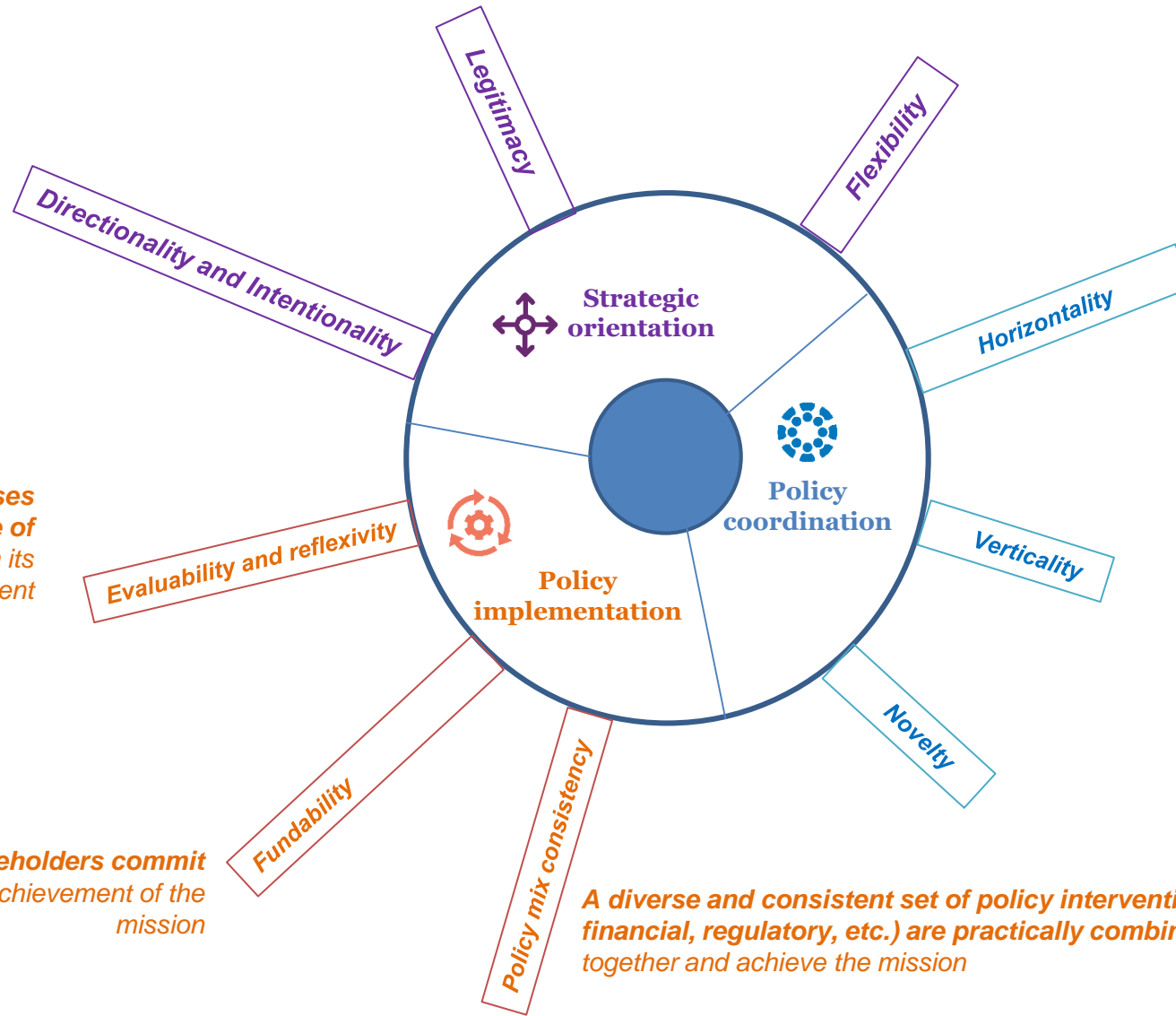


What are mission-oriented innovation policies generic design principles?





What are mission-oriented innovation policies generic design principles?



Evaluation mechanisms and processes are adapted to the systemic nature of the policy and their results inform its decision making and improvement

Public and private stakeholders commit various resources for the achievement of the mission

A diverse and consistent set of policy interventions (technical, financial, regulatory, etc.) are practically combined to operate together and achieve the mission



Mission-driven Top Sectors



- Benefits

- Targeted approach towards clear goals
- Cross-sectoral cooperation to address societal challenges
- Broad policy coordination (beyond STI)
- Strong and formal engagement of public and private stakeholders (4-year Knowledge and Innovation Covenant (KIC) 2020-2023)



Overarching mission-oriented strategic framework



- **Benefits**

- Acceleration (fast track) of projects from research to deployment
- More strategic (hands-on) approach to project portfolios
- Virtual Single Window
- Portfolio management
- Synergies between funding instruments of the 3 agencies

- Model replicated in other fields (Pilot-H, Pilot-T, Biooeco initiative, Green innovation Platform)

Supply

Siemens
0-emission offshore wind service ship



Passenger ferries

Wartsila
Urban Water Shuttle



Brødrene Aa
Sightseeing



Car ferries

Kongsberg
0-emission autonom ferry



Fiskarstrand
World first Hydrogen ferry



Battery electric

Hydrogen battery electric



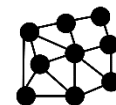
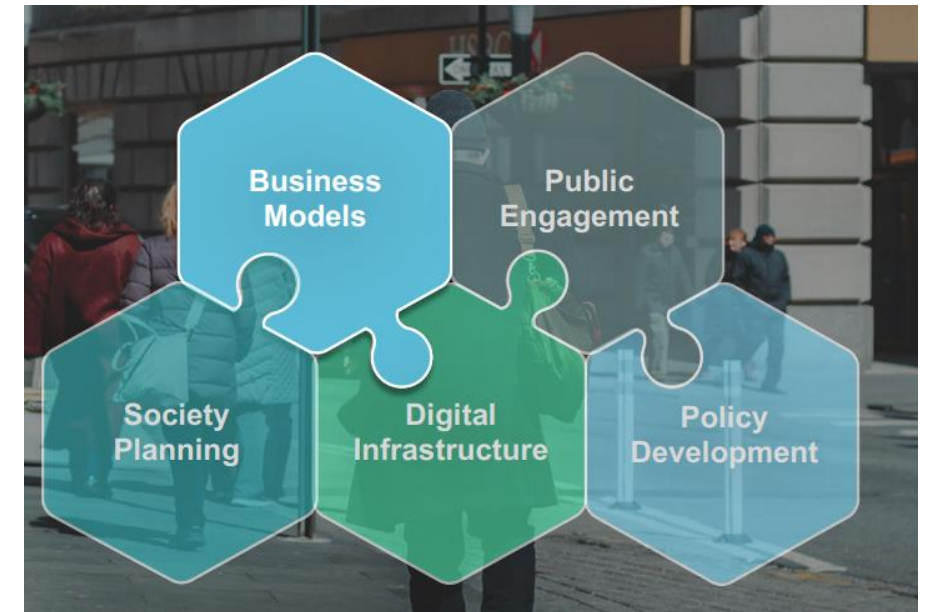
Challenge-based programmes and schemes



Strategic Innovation Programmes



- Benefits
 - Involvement of all actors in the definition of roadmaps
 - State commitment to finance projects according to selected roadmaps
 - Long-term approach
 - Each SIP has its own governance and management structure, with the involvement of ecosystem players
 - Management of AAPs by each program (with the agencies concerned) mobilization of the ecosystem, collective approach



Ecosystem-based mission programmes