



MISSION-ORIENTED INNOVATION POLICIES TO ADDRESS COMPLEX SOCIETAL CHALLENGES

BRAZILIAN ENTREPRENEURIAL MOBILIZATION FOR INNOVATION (MEI)
LEADERS COMMITTEE

31 March 2023

Philippe Larrue
OECD Directorate for Science, Technology and Innovation



Content

1. What are mission-oriented policies and how are they designed?
2. What are the different types of mission-oriented policies?
3. What are the main challenges of mission-oriented policies?
4. What are the (expected) effects of mission-oriented policies?
5. Conclusions
6. Annexes
 1. Where does this work on mission fit in the work of OECD STP division and how ministerial meeting (April 24)?
 2. How can OECD and Brazil cooperate to mutual learning on missions?



WHAT ARE MISSION-ORIENTED POLICIES AND HOW ARE THEY DESIGNED?

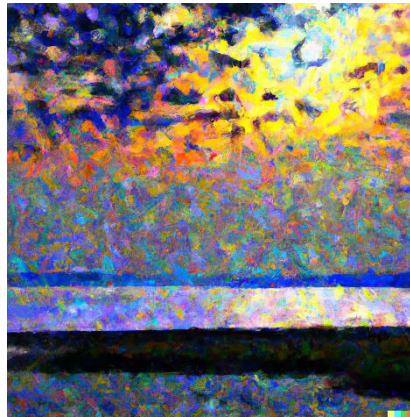


Why Mission-oriented innovation policies?

Global warming in 2100 by...

- Why is it so important?
 - Sense of urgency due to complex and systemic challenges: climate, COVID,....
 - Growing consensus on the limitations of the dominant policy frameworks to deliver on these challenges

Manet



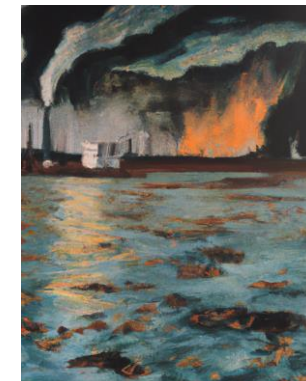
Picasso



Munch



Monet








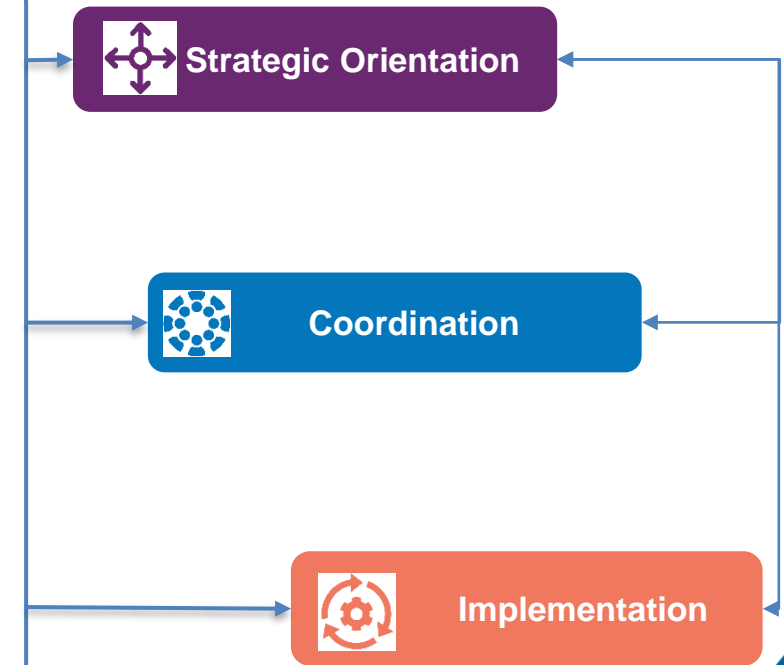


What are Mission-oriented innovation policies?

A broad policy framework including a co-ordinated package of science, technology and innovation initiatives (policy, regulatory, platforms,...) 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?

- An institutional space for collective action to address complex and systemic challenges

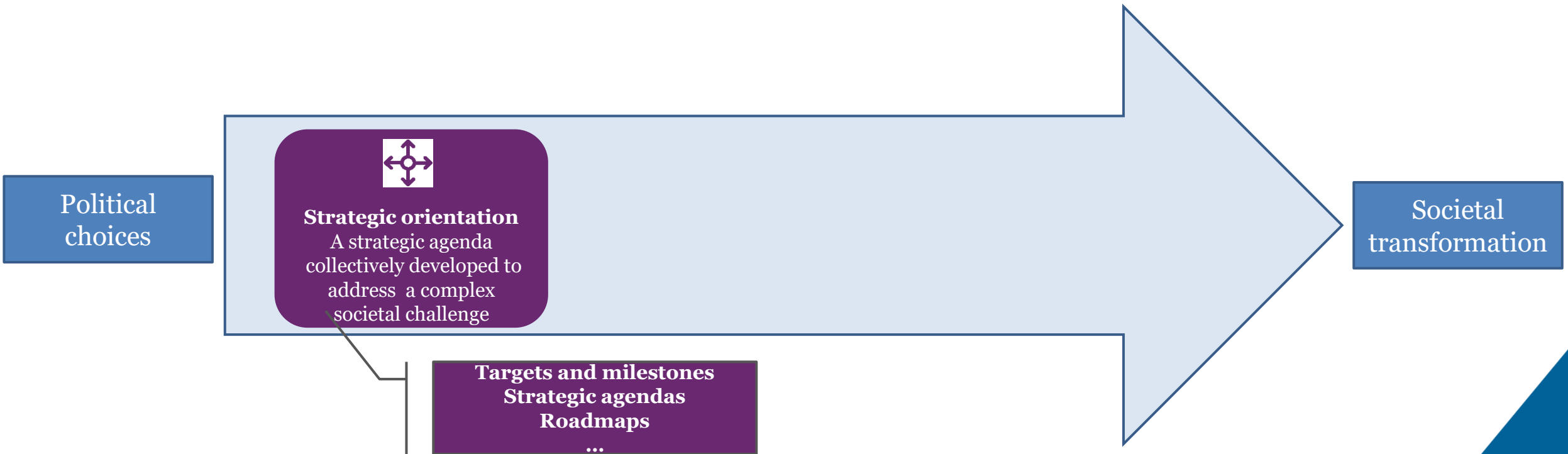
Political
choices

Societal
transformation



What are Mission-oriented innovation policies?

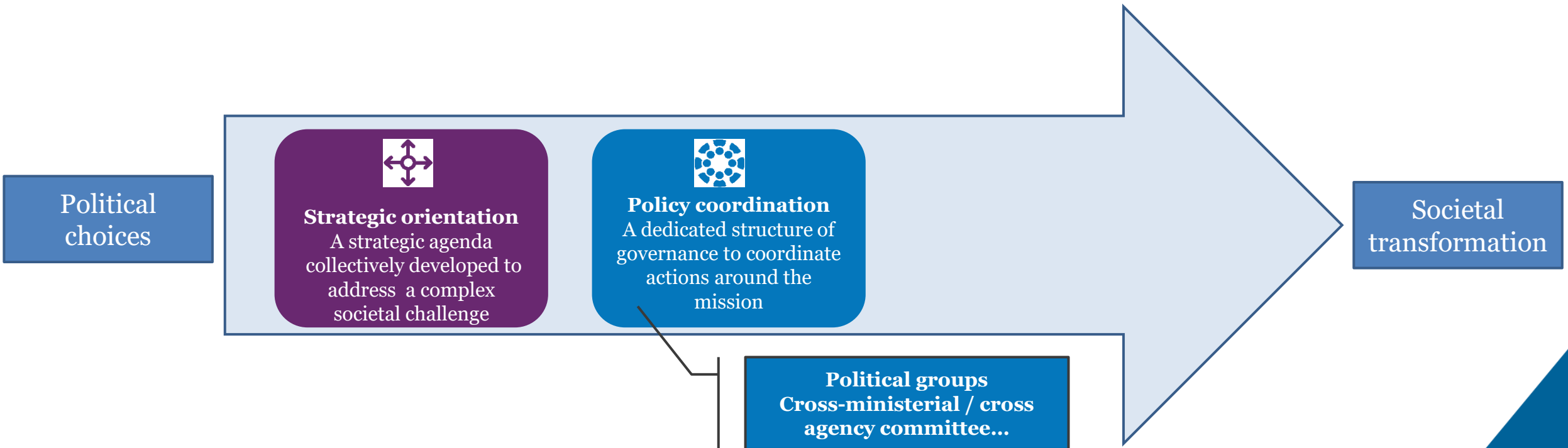
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What are Mission-oriented innovation policies?

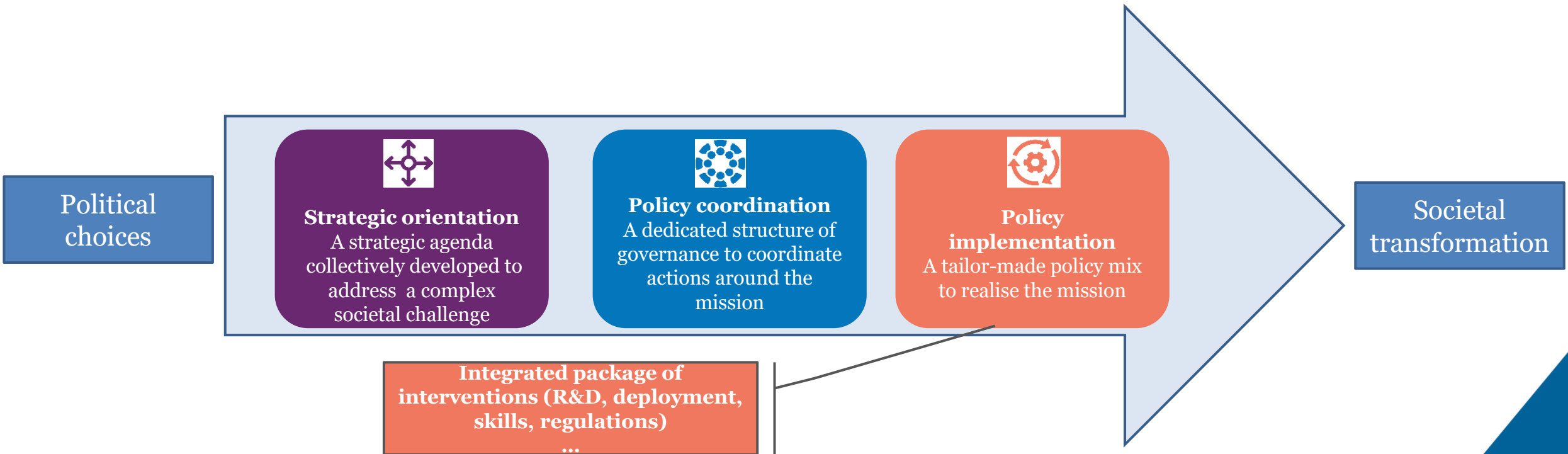
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What are Mission-oriented innovation policies?

- An institutional space for collective action to address complex and systemic challenges

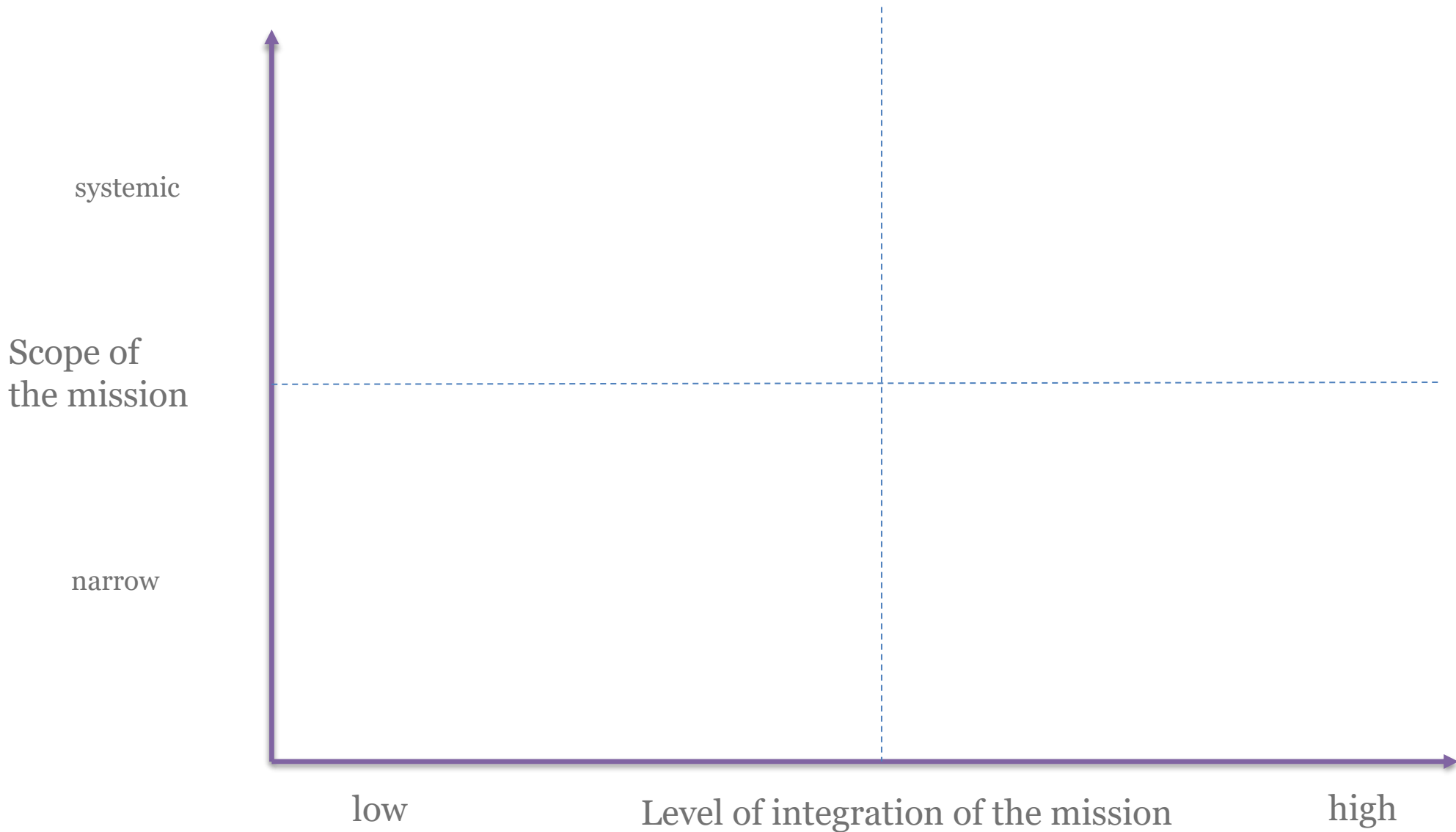




WHAT ARE THE DIFFERENT TYPES
OF MISSION-ORIENTED POLICIES?

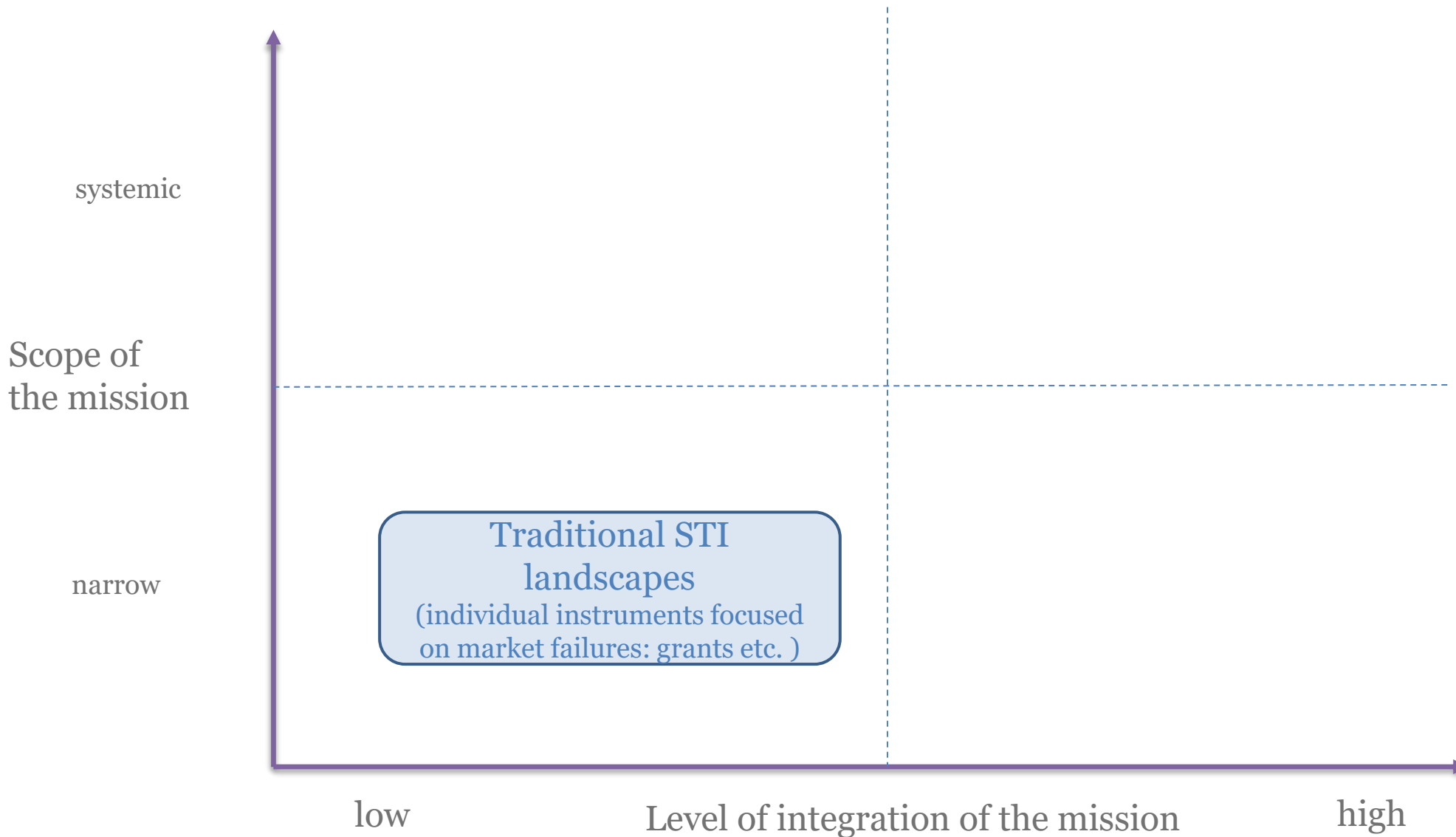


Two key dimensions of mission-oriented policies



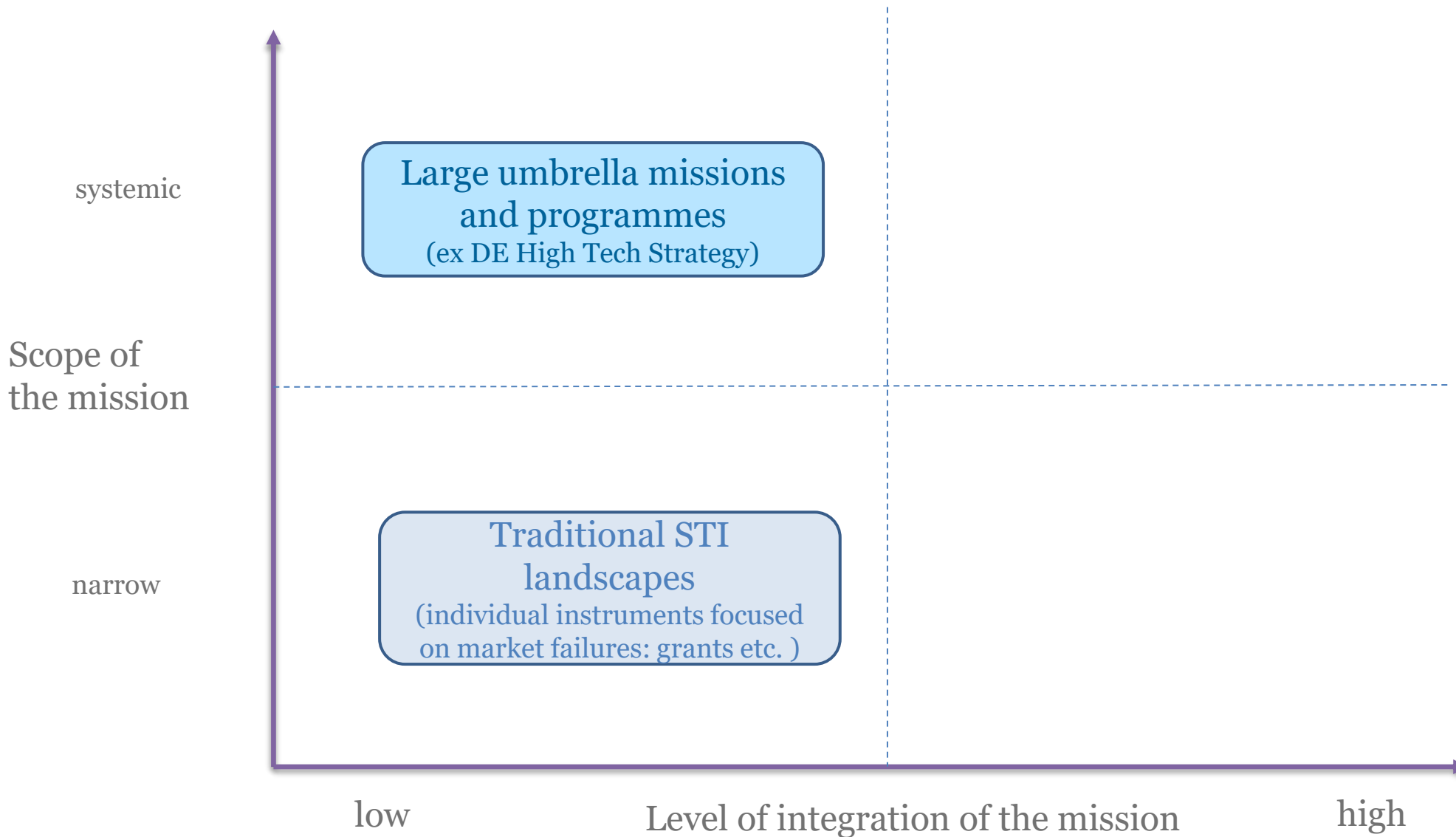


Two key dimensions of mission-oriented policies



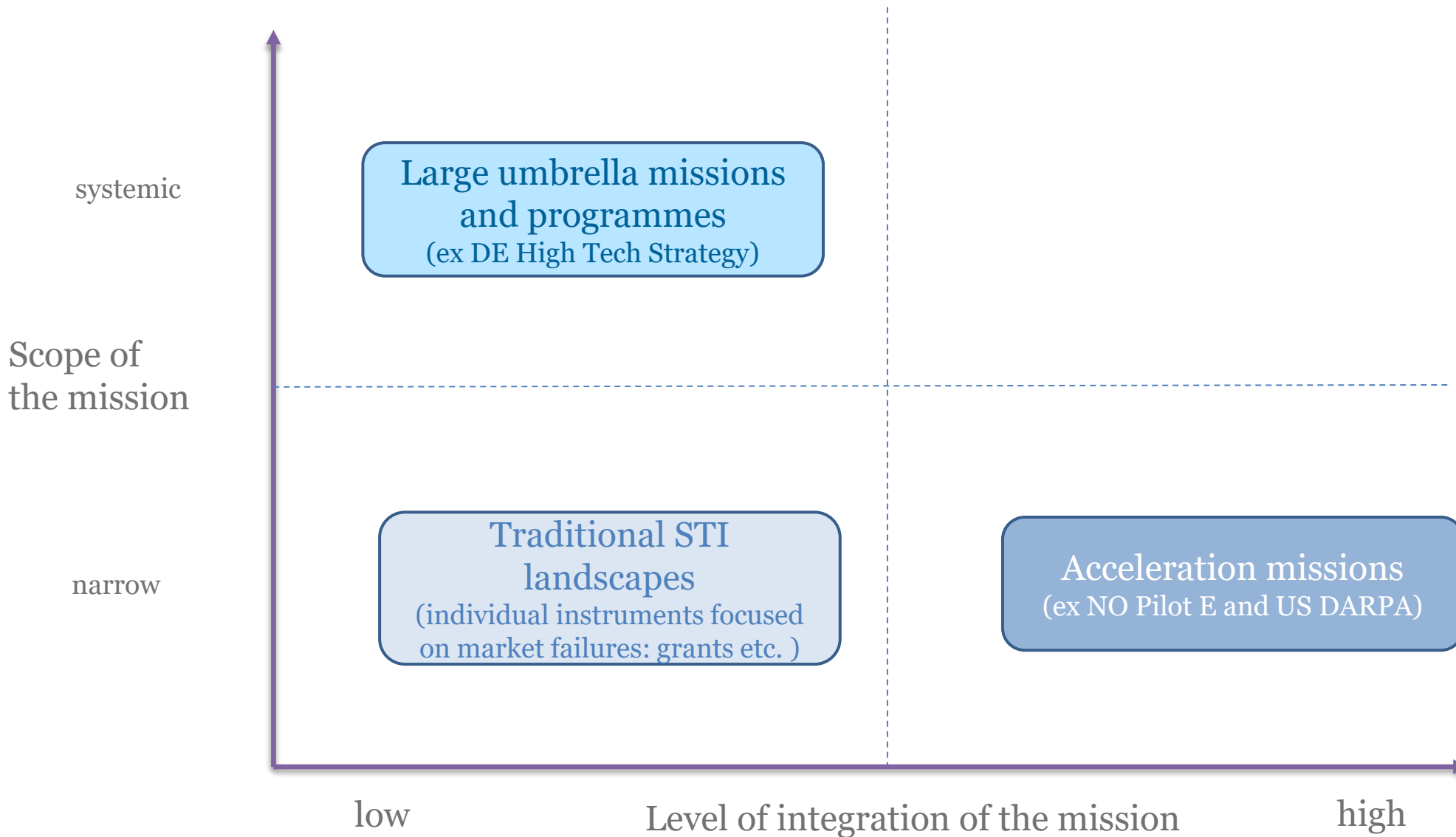


Two key dimensions of mission-oriented policies



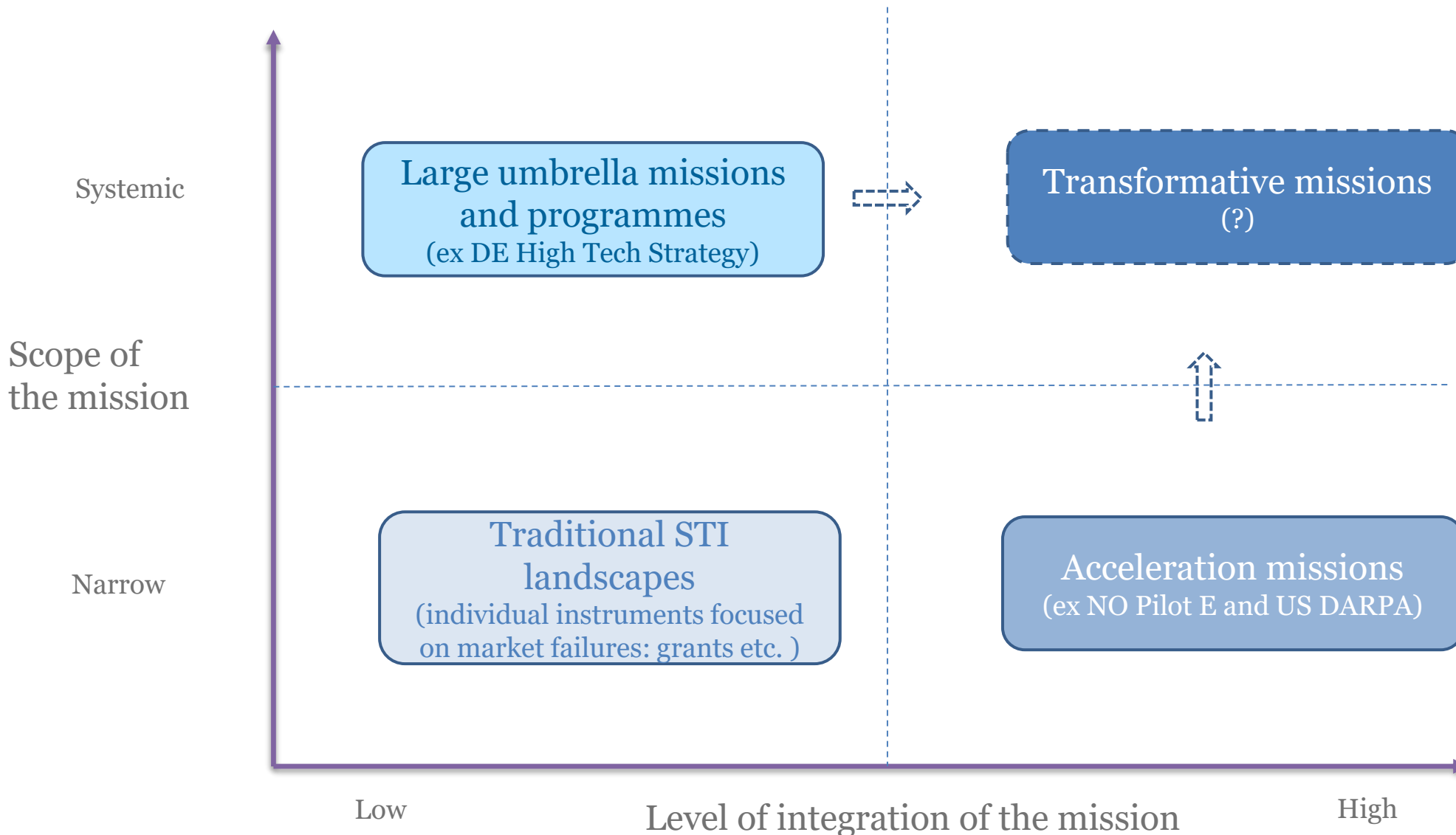


Two key dimensions of mission-oriented policies





Two key dimensions of mission-oriented policies





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

Type

Selected cases



Overarching mission-oriented strategic frameworks

Large policy framework aiming to achieve ambitious, high level, member or transmember missions to address systemic challenges

- Horizon Europe's missions [EU]
 - Mission-driven Top Sectors policy [NL]
 - High Tech Strategy 2025 [DE]
-



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



- Basic principles
 - About 18 Acceleration Strategies
 - Clear targets with milestones (not in all SAs)
 - Co-created roadmaps (not public)
 - Central cross-ministerial coordination
 - Large multiannual budgets
 - Industry decarbonization (€600m)
 - Carbon neutral H2 (€7bn)



Stratégie nationale
pour le développement
de l'hydrogène décarboné
en France

Carbon neutral H2 Strategy - targets for 2030 :

1. Install enough electrolyzers to make a significant contribution to the decarbonisation of the economy.
 - > Installation of a carbon-free hydrogen production capacity of 6.5 GW by electrolysis.
2. Develop clean mobility solutions, particularly for heavy vehicles.
 - > Save more than 6 Mt of CO2 by 2030 (equivalent of the annual CO2 emissions of the City of Paris).
3. Build a French industrial sector that creates jobs and guarantees the national technological leadership.
 - > Generate between 50,000 and 150,000 direct and indirect jobs in France.



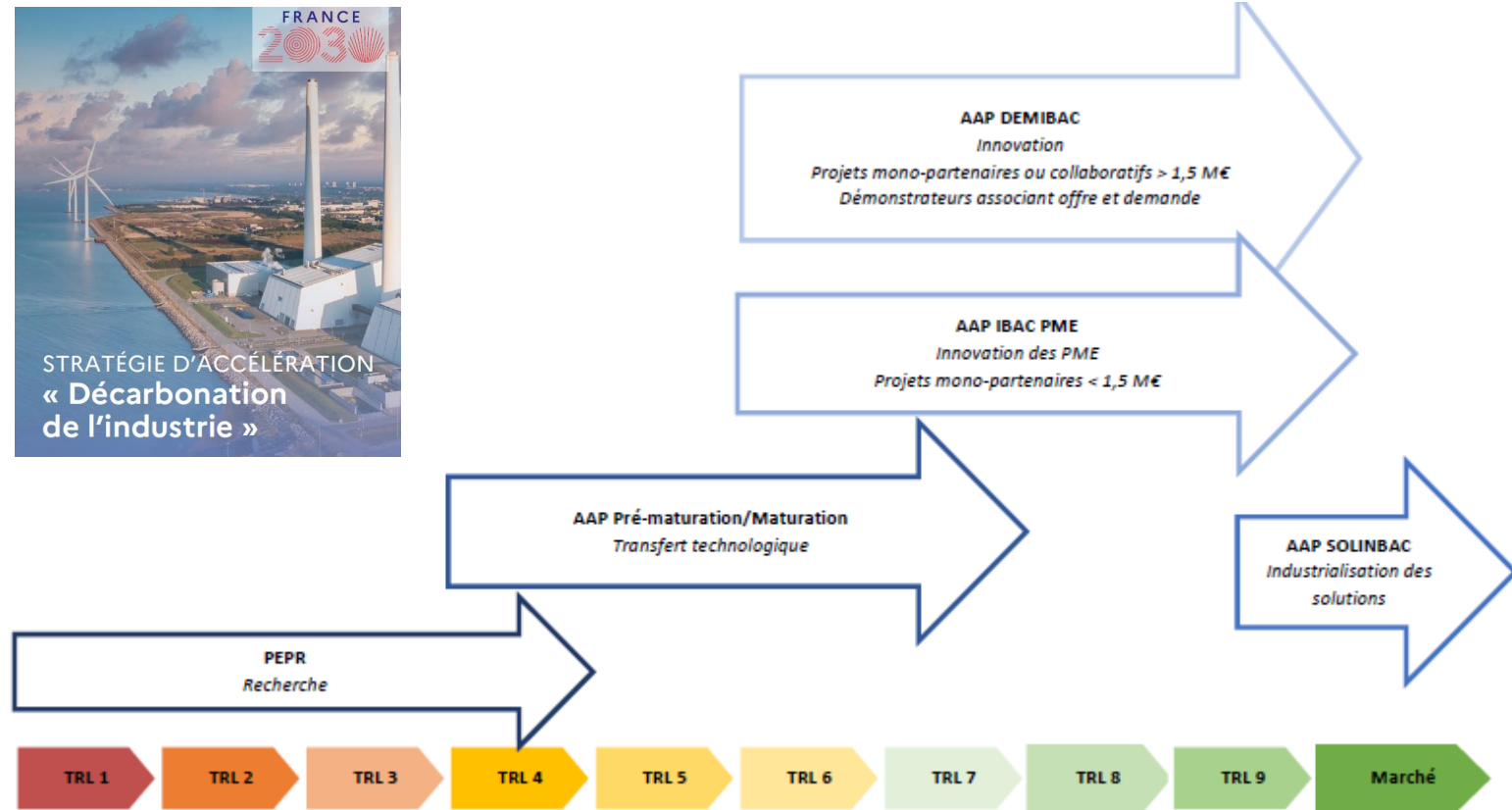
Overarching mission-oriented
strategic framework



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



- Benefits
 - Large scope, covering all the innovation chain and components of the system
 - Institutionalised linkages with upstream research



Overarching mission-oriented strategic framework



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

Type

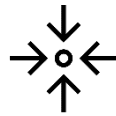
Selected cases



Overarching mission-oriented strategic frameworks

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- Horizon Europe's missions [EU]
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Challenge-based programmes and schemes

Targeted agency schemes, aims to bring concrete solutions to a challenge

- Pilot-E [NO]
- The Future Innovator Prizes [IE]
- DARPA/ARPA agency programmes [US]

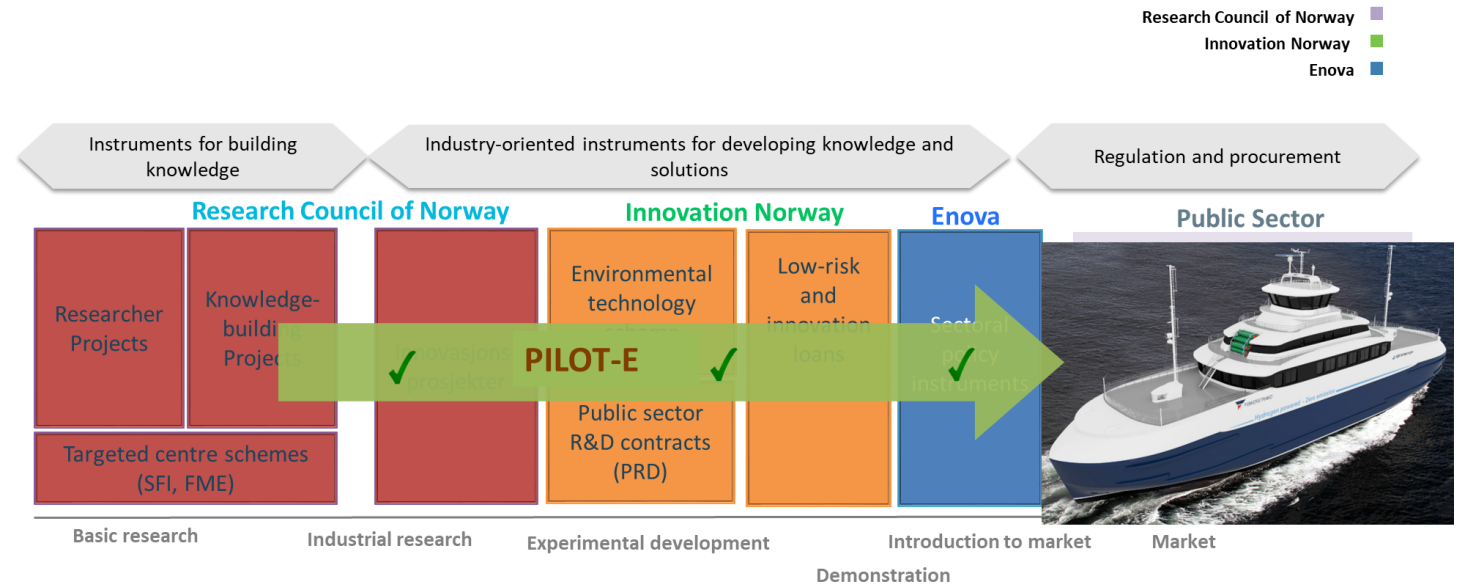


What are the different types of Mission-oriented innovation policies? Pilot-E



- 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



Challenge-based programmes and schemes



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

- **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



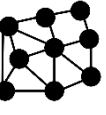
Hydrogen battery electric



Challenge-based programmes and schemes



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

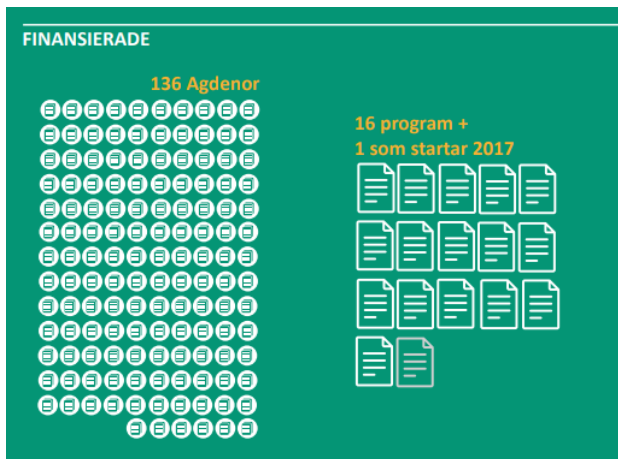
| Type | | Selected cases |
|--|--|--|
|  | Overarching mission-oriented strategic frameworks <i>Large policy framework aiming to achieve ambitious, high level, member or transmember missions to address systemic challenges</i> | <ul style="list-style-type: none">• Horizon Europe's missions [EU]• Mission-driven Top Sectors policy [NL]• High Tech Strategy 2025 [DE] |
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|  | Ecosystem-based mission programmes <i>Mechanisms delegating to ecosystems of actors the development and implementation of strategic agendas to address societal challenges</i> | <ul style="list-style-type: none">• Strategic Innovation Programmes [SE]• Growth engines [FI] |



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



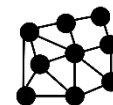
Metallic materials >

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.



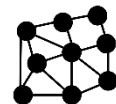
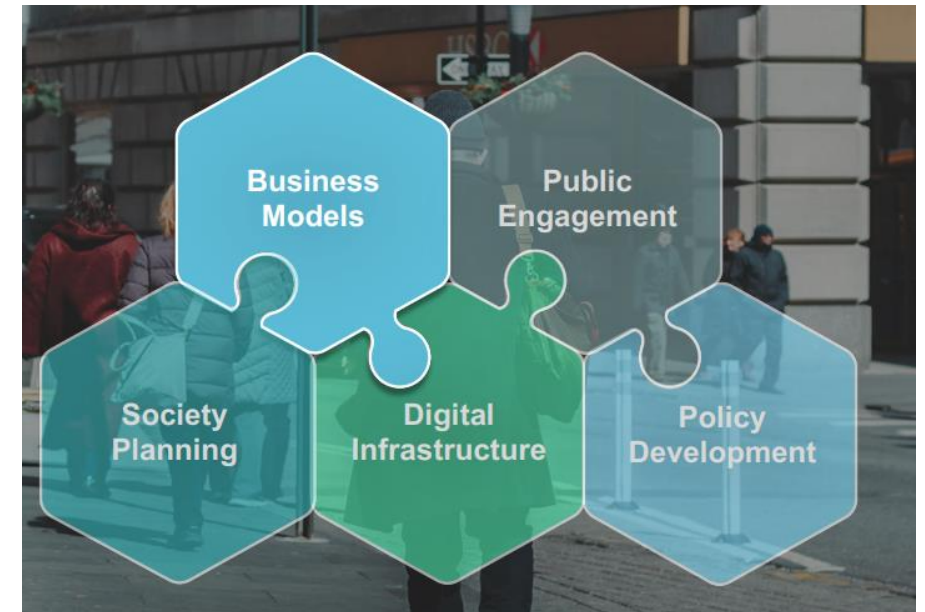
Ecosystem-based mission programmes



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



WHAT ARE THE MAIN CHALLENGES
OF MISSION-ORIENTED POLICIES?



Overall challenges

What scope for missions?

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



Strategic orientation



Policy coordination



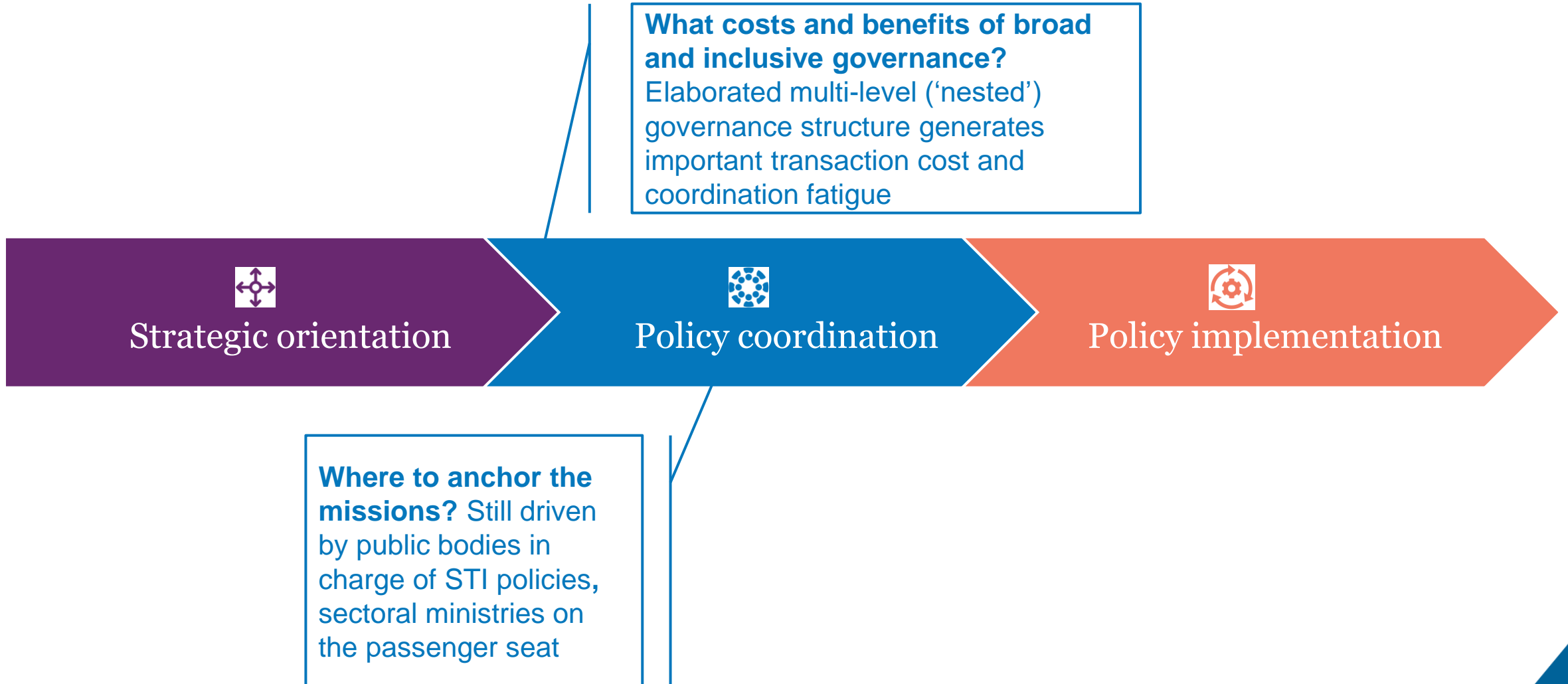
Policy implementation

What degree of directionality?

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



Overall challenges





Overall challenges

How to fund long term collective action with annual sector specific budgetary mechanisms and fragmented funding streams?
Missions are hindered by budgetary siloes and decentralised funding

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 make the structural changes needed to implement 'mission-oriented policy practices'?
Several organisations have not yet adapted their structures of incentives, mindsets, skills and practices (hands-on management of project portfolio...)

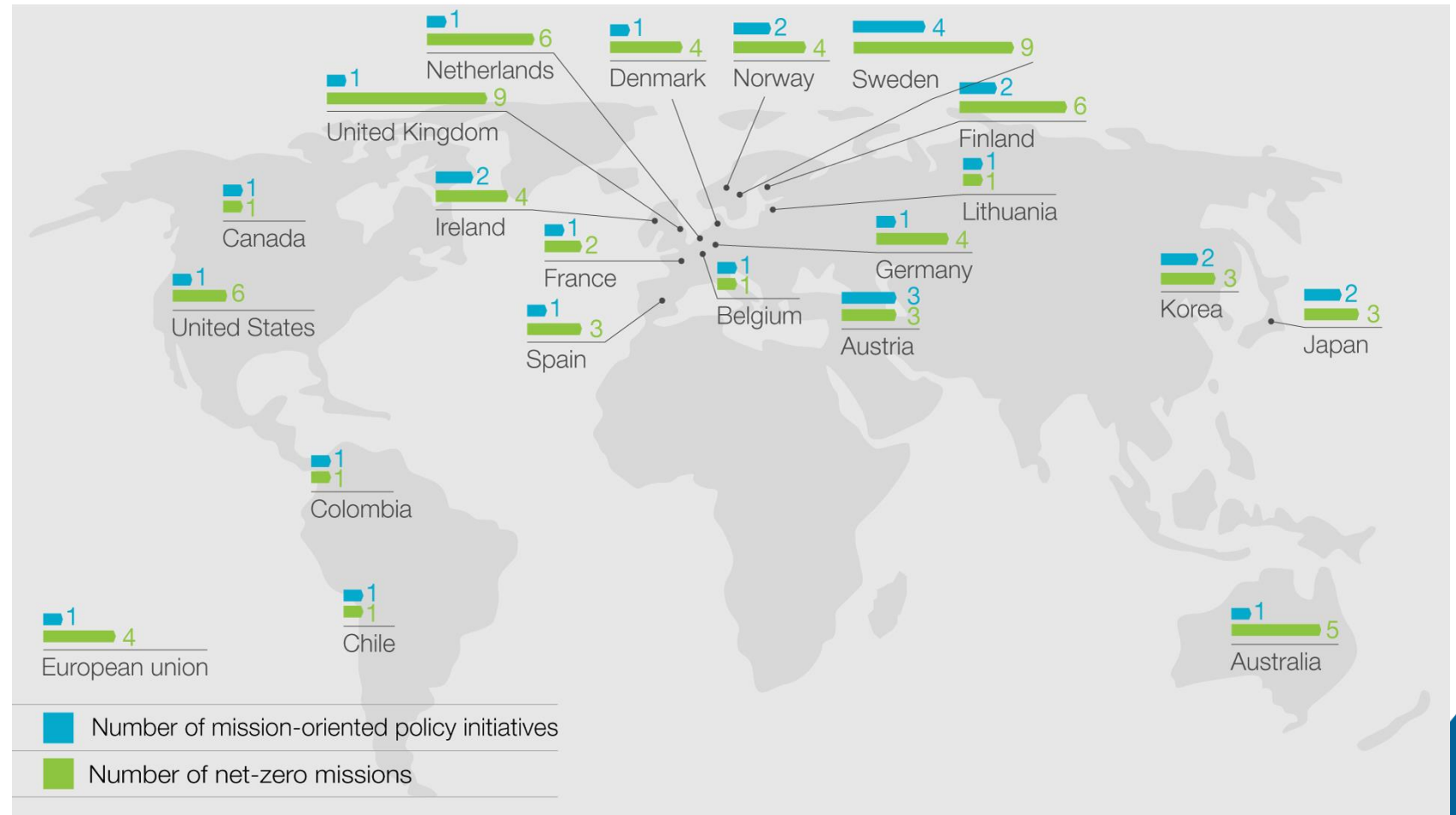


WHAT ARE THE (EXPECTED)
EFFECTS OF MISSION ORIENTED
POLICIES?



A wealth of ongoing MOIP experimentations

- 74 'net zero' missions in in 29 MOIP initiatives
- Most of them launched since 2019





Key results – the (not-so-dark) side of net-zero missions

- Most net-zero missions produce some of their expected results and represent in most cases a marked improvement relative to traditional STI policy mixes
- Net-zero missions are not yet well suited to bring about the needed transformative changes to achieve the goal of net-zero
- Their success will depend on their ability to:
 - expand beyond STI programmes and budgets
 - move from co-developed strategic agendas to joined up action
- But missions learn and improve... it's only the beginning!

'STI' trap

Many net-zero missions remain techno-focused, led by STI authorities, financed from STI budgets

'Orientation' trap

Many net-zero missions remain focused on the development and monitoring of strategic agenda, with still too little focus on implementation



CONCLUSIONS



Main messages

- Mission-oriented policies are platform for collective action
- They are country-specific, deeply embedded in national innovation systems
- All countries can do it, need to find their own way to missions...
- They need time and adequate reflexive mechanisms to build trust, learn and evolve
- They also require changes within public administrations
- They are not the silver bullet, are challenging to implement but can make the difference and deliver impact (even beyond the mission...)
- Implementation of missions needs preparatory dialogue and in-depth work: we stand ready to work with Brazil for mutual learning!



Thank you for your attention

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MISSION-ORIENTED POLICIES FOR NET ZERO

Reaching Net zero:
Do mission-oriented policies deliver on their many promises?

Chapter 5 of the **OECD Science, technology and innovation Outlook 2023** now available!

OECD
BETTER POLICIES FOR BETTER LIVES



STIP COMPASS
INTERNATIONAL DATABASE ON STI POLICIES

MISSION-ORIENTED INNOVATION POLICIES

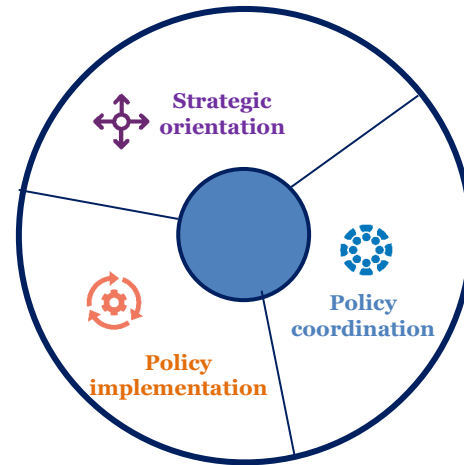


ANNEX 1

THE DESIGN PRINCIPLES OF MISSION-ORIENTED INNOVATION POLICIES

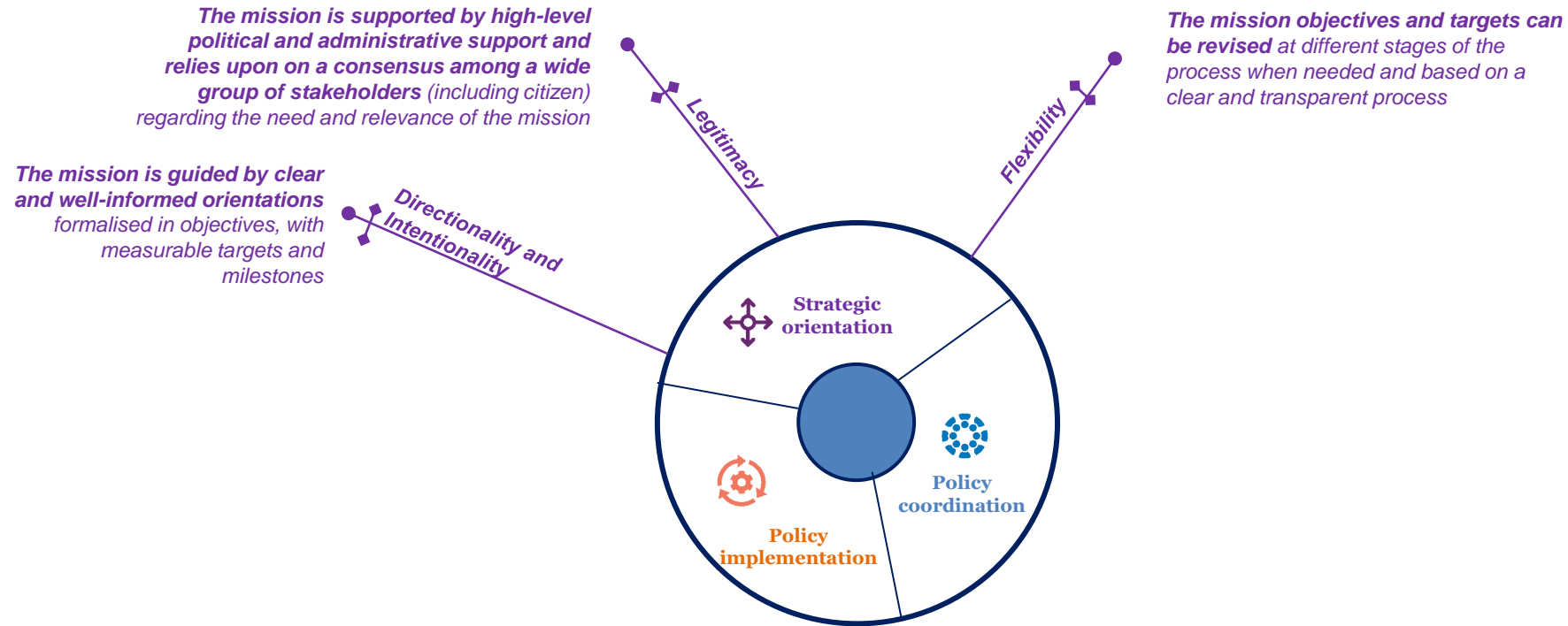


What are the design principles of mission-oriented innovation policies?



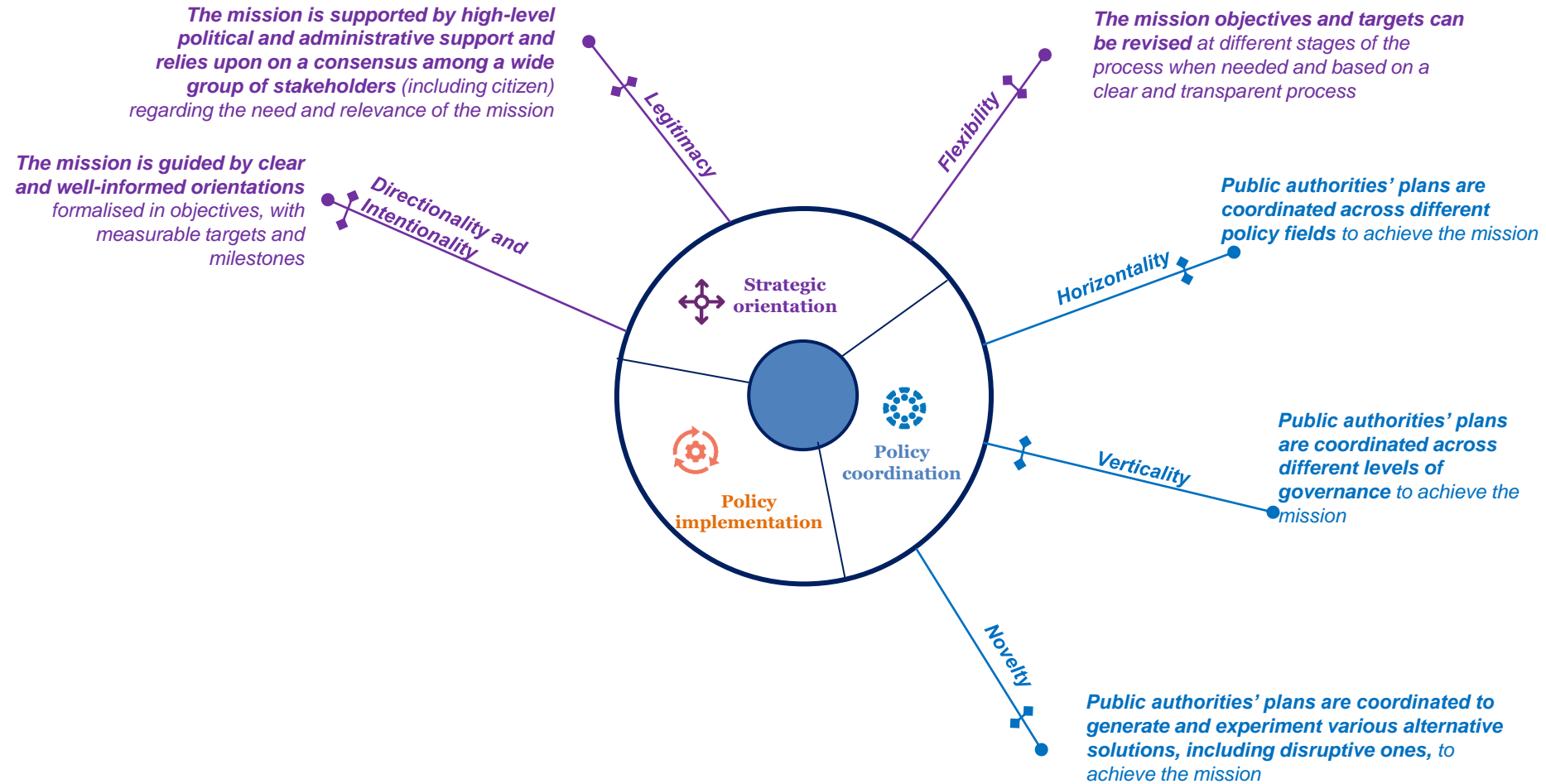


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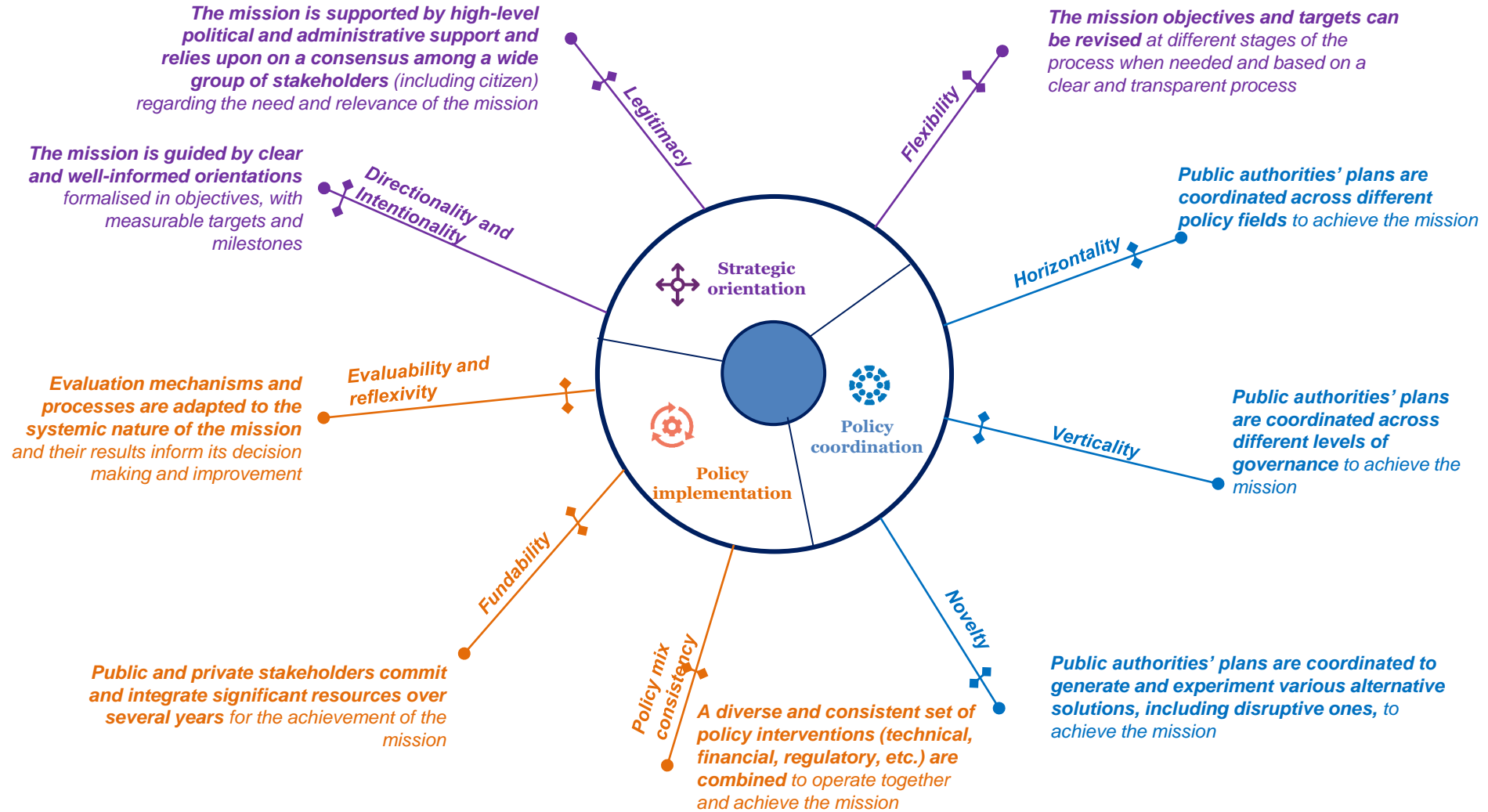


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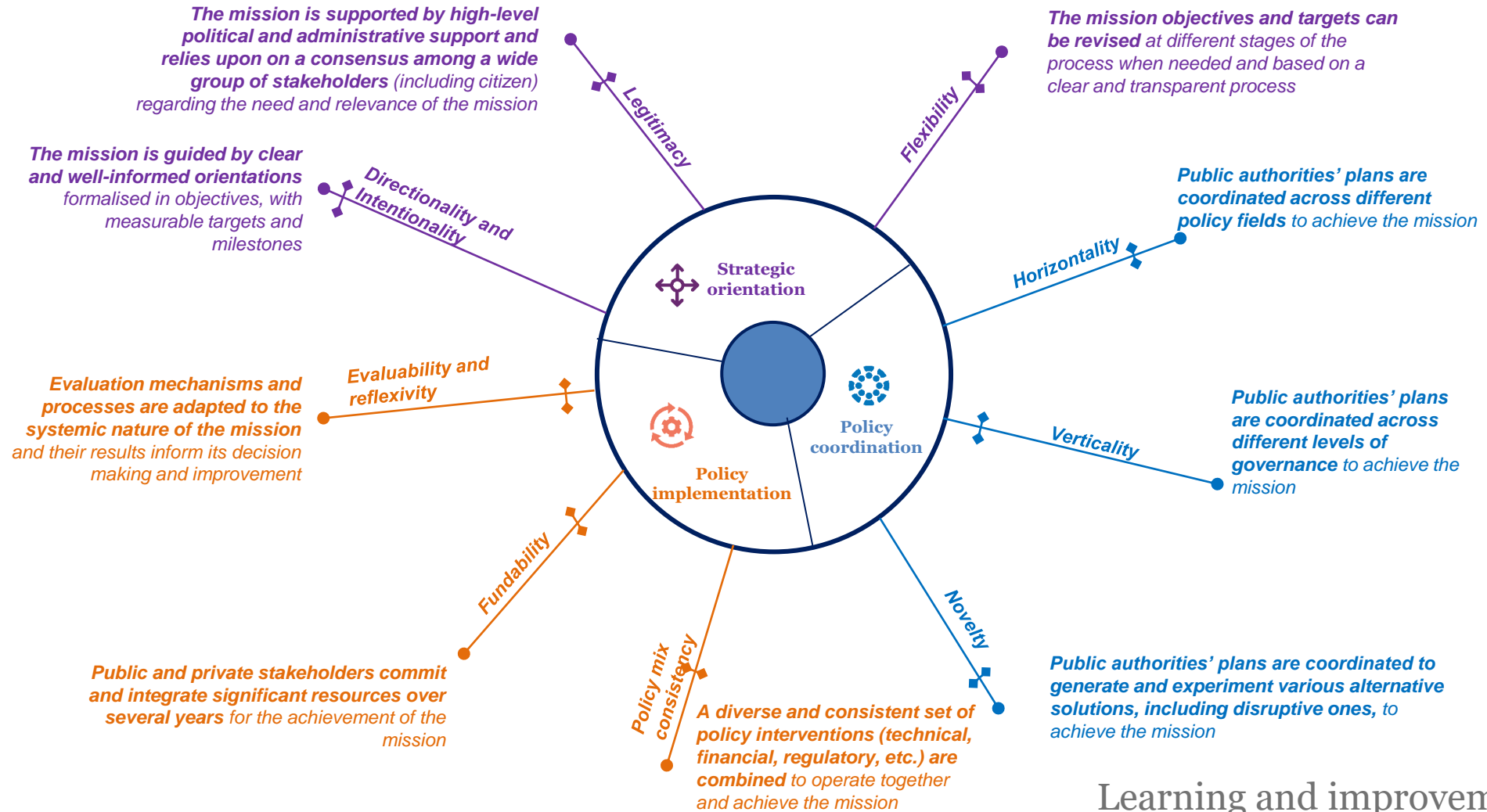


What are the design principles of mission-oriented innovation policies?





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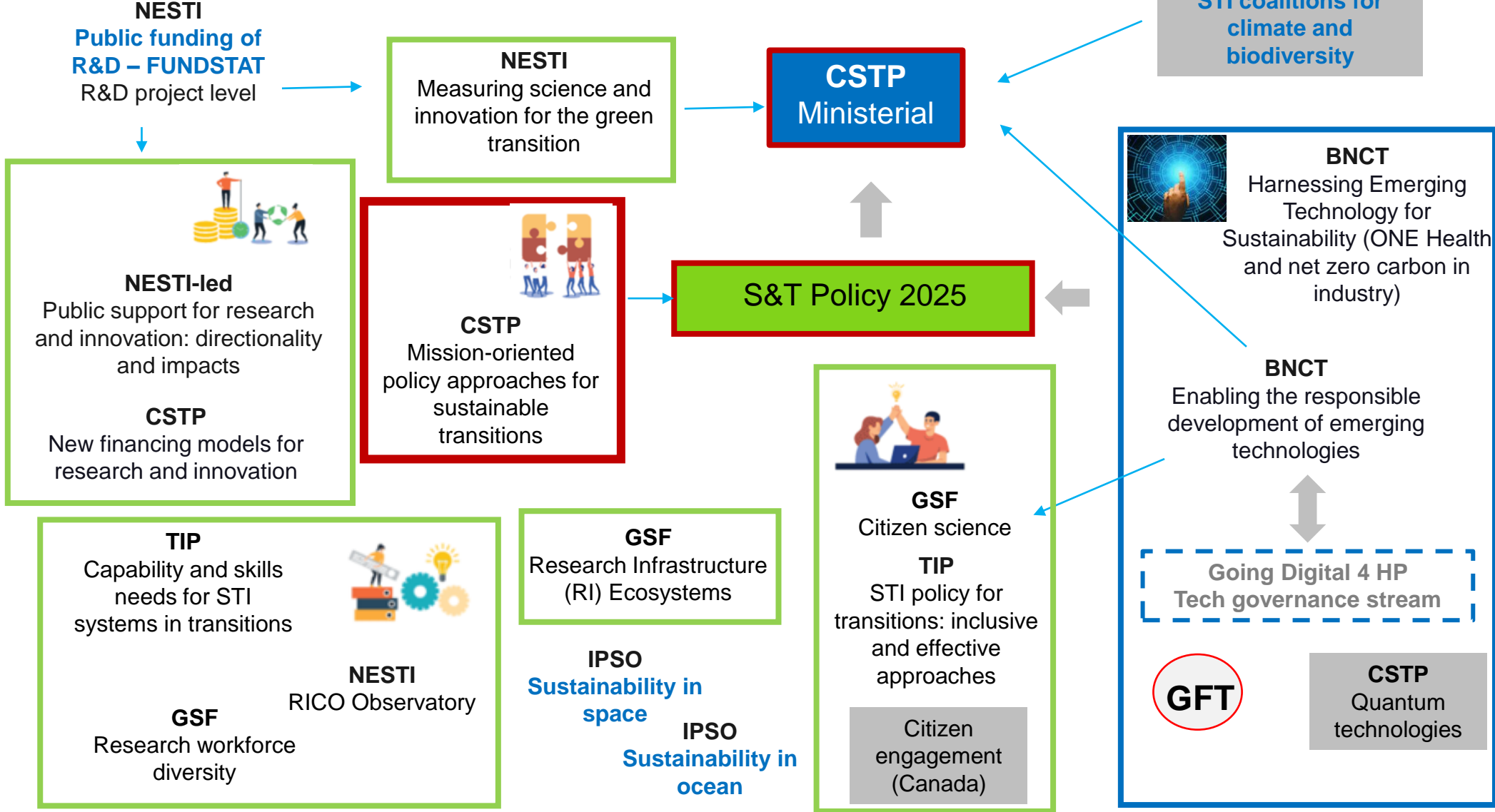


Learning and improvement



ANNEX 2
WHERE DO MISSION-ORIENTED
POLICIES STAND IN OECD STI
PROGRAMME OF WORK?

CSTP 2023-24 projects



NESTI – Core STI statistical infrastructure (RDS, MSTI, ANBERD, Innostat Bibliostat);

Dashboard platform: STI.Scoreboard;

Exploratory (SwiFTBeRD, ISSA).

STIP Compass

STI Outlook (biennial)

STANDARDS setting

Country specific work (Austria, Korea, Italy (w/ CFE), Egypt, Latvia (w/GOV), Slovenia (w/GOV), Sweden, Thailand)

ACCESSION



Enabling Transitions through Science, Technology and Innovation

The logo for 'S&T Policy 2025' features the text 'S&T POLICY 2025' in a bold, sans-serif font. 'S&T' is in blue, 'POLICY' is in green, and '2025' is in blue. Below this, the subtitle 'Enabling Transitions through Science, Technology and Innovation' is written in a smaller, blue, sans-serif font. The background of the logo is a light blue gradient with a faint mountain range silhouette.

S&T POLICY 2025
Enabling Transitions through
Science, Technology and Innovation

We have developed a concept – *S&T Policy 2025* – that aims to help articulate the need for reform and transitions, and outlines ways these could be achieved through science, technology and innovation

What for?

- ❑ develop a vision and practical guidance that help policymakers reorient STI systems towards addressing global challenges, building on lessons from the successful COVID-19 response
- ❑ help raise the profile of STI within other policy domains, with a view to breaking down silos and promoting cross-government cooperation on sustainability transitions
- ❑ better link national STI reform agendas with the need to step up multilateral cooperation on sustainability transitions, given their scale and global nature

What deliverables?

- ❑ background papers and policy dialogues that offer practical guidance and analytical support to policymakers engaged in transitions
- ❑ reference roadmaps and stretch targets that suggest appropriate policy steps and sequences in pursuit of STI-enabled transition pathways
- ❑ multilateral action-oriented vision – possibly in the form of an OECD Declaration – that encapsulates an action plan for reorienting STI policy over the next decade.

A multilevel policy approach: transition reforms from the perspective of ten different but interlinked STI policy sub-domains

NEW MODES OF PARTNERSHIP



How to spur and deepen **STI cooperation** between firms, the public research system, governments, and non-profit sectors for transition?



How to **engage society in STI** to further transitions?

How to promote **cross-government coherence** on STI-enabled transitions that depend on several government bodies cooperating?



How to leverage **international STI cooperation** in the interest of transitions?

INNOVATION ENABLERS



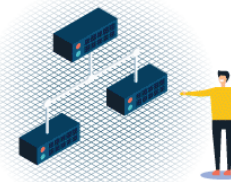
How to direct **private financing and public funding** to support transitions?

How to **develop and implement emerging technologies** to enable just transitions?



How to **gear research and technical infrastructures** towards transitions?

How to nurture the **skills and capabilities** required for STI-enabled transitions?



How to ensure various **framework conditions** for STI are conducive to supporting transitions?

How to develop and use **knowledge and evidence** that support transitions?



CSTP Ministerial 24-26 April 2024

Proposed umbrella theme for the CSTP Ministerial 2024

S&T POLICY 2025

Enabling Transitions through Science, Technology and Innovation

Rethink, Redesign and Implement STI policies that better contribute to:

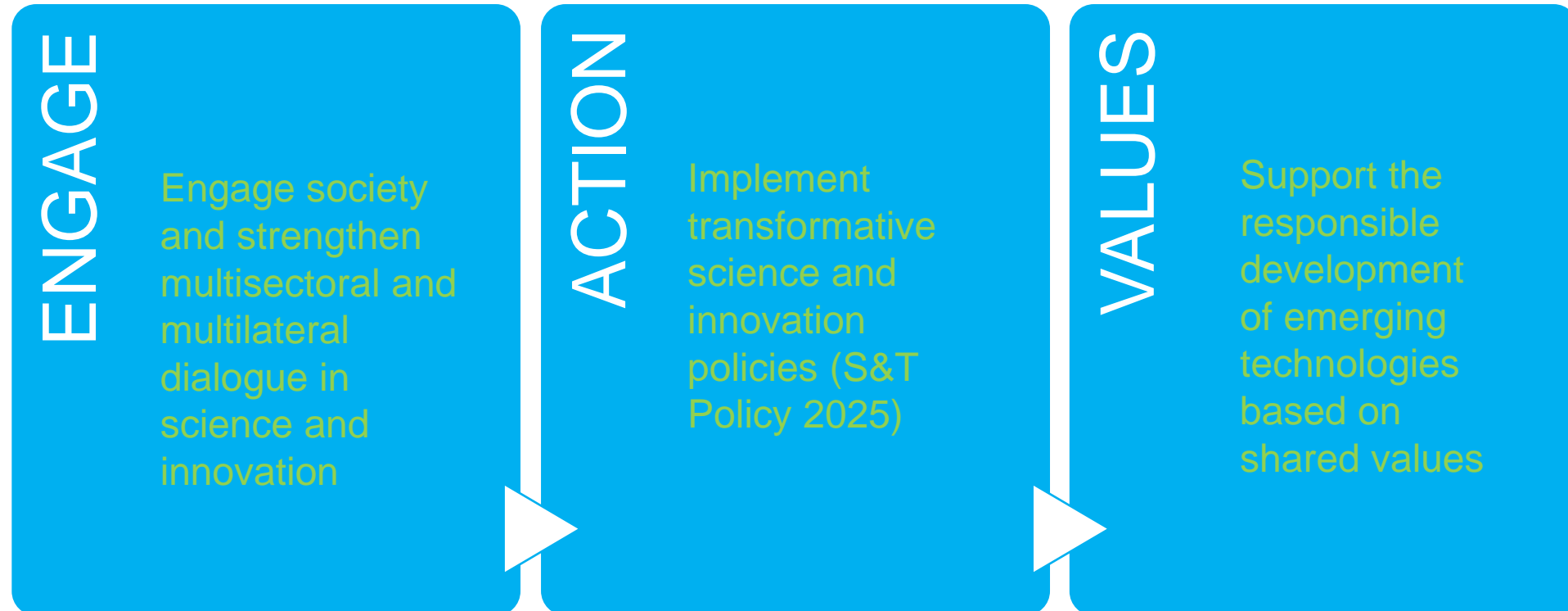
- ✓ sustainable transitions,
- ✓ social and economic resilience,
- ✓ and inclusivity

Call for:

- New Collaborative Partnerships between science and society
- New modes of international co-operation for sustainability along common norms and values
- New Principles for the responsible development of emerging technologies

CSTP meeting at the Ministerial level 24-26 April 2024

S&T Policy 2025: shared challenges, transformative actions



24 April 2024

Multistakeholder High-Level Dialogue: Engaging society and strengthening multisectoral and multilateral dialogue in science and technology



24 -25 April 2024

CSTP Ministerial Meeting

Proposed Objective(s) :

Endorsement of a transformative research and innovation policy agenda to address the climate challenge and support for the responsible development of science and technology based on shared values



ANNEX 3 OVERVIEW OF CSTP WORK ON MISSION-ORIENTED INNOVATION POLICY



CSTP work on mission-oriented innovation policy



- What are the different types of MOIPs?
- What are the different country MOIP practices?
- What the different country MOIP strategies?



- *Definition, typology and design principles of MOIPs*
- *A systematic review of country practices for mission strategic orientation, policy coordination and implementation*



Project on MOIPs to reduce GHG emissions

- Are MOIPs better suited than other policy approaches to support countries' efforts towards Net Zero?
- How to design, coordinate and implement mission-oriented policies to effectively reduce GHG emissions?
 - Net zero mission benchmarking
 - Case-studies of Net zero missions
 - Net Zero mission panels



National MOIP case-studies

- Challenges and opportunities of MOIPs in a specific country
- Next stage for MOIPs in the country and how to get there
 - *A thorough assessment of the national framework conditions for mission-orientation*
 - *Recommendations to design/implement/revise mission-oriented policies in the country*



STIPCOMPASS
INTERNATIONAL DATABASE ON STI POLICIES

MISSION-ORIENTED INNOVATION POLICIES

Online toolkit

- Design, coordination and implementation of MOIPs in countries
- Strengths and weaknesses of different initiatives
 - *The reference platform for all those who set up, implement or research and advise on mission-oriented innovation policies*
 - *20+ MOIP initiatives analysed in detail*



MISSION ACTION Lab

- Cross-directorate partnership (STI, GOV, DCD) to pool OECD resources and expertise in MOIPs
- *MOIP support tools (self-assessment, portfolio management, evaluation)*
 - *Research-action framework*
 - *Large-scale projects (DG RTD, DG Reform, ...)*



CSTP work on mission-oriented innovation policy



MOIP Project phase 1: 2019-20



Strategic Orientation



Coordination



Implementation

- What are the different types of MOIPs?
- What are the different country MOIP practices?
- What the different country MOIP strategies?

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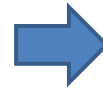
CSTP work on mission-oriented innovation policy



Published
- Japan
- Norway

Finalisation stage
- Austria
- Lithuania

Ongoing
- Korea



National MOIP case-studies

- What are the challenges and opportunities of mission-oriented policies in a specific country?
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Forthcoming?

We stand ready to work with new countries for mutual learning on mission implementation!



CSTP work on mission-oriented innovation policy



To be updated soon with new MOIP initiatives :

- CSIRO missions (AU)
- National missions (AT)
- NRC Challenge program (CA)
- INNOmissions (DK)
- Flagship Programs (Fi)
- Stratégies Nationales d'Accélération (FR)
- Advanced Research Programme (KARPA) (KR)
- The Alchemist (KR)
- ...



STIPCOMPASS
INTERNATIONAL DATABASE ON STI POLICIES

MISSION-ORIENTED INNOVATION POLICIES

Online toolkit

- How do countries design, coordinate and implement mission-oriented policies?
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Update of existing MOIP initiatives



CSTP work on mission-oriented innovation policy



MOIP phase 2: 2021-22

Project on MOIPs to reduce GHG emissions

- To what extent and under which conditions are MOIPs better suited than other policy approaches to support countries' efforts towards Net Zero?
- How to design, coordinate and implement mission-oriented policies to effectively reduce GHG emissions?
 - Net zero mission benchmarking
 - Case-studies of Net zero missions
 - Net Zero mission panels

Chapter in the Science, Technology and Innovation Outlook 2023: Enabling transitions in times of disruption



5 Reaching Net-zero: Do mission-oriented policies deliver on their many promises?



Final report Missions for net-zero to be presented at CSTP October 2023

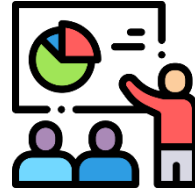


CSTP work on mission-oriented innovation policy



Main activities to date

- MOIP needs assessment survey in cooperation with the Danish Design Center
- A study on MOIP evaluation (forthcoming)
- Large-scale projects on missions (notably for the European Commission)
- Bilateral interactions with mission leaders
- Mission bootcamps organised on demand



First MAL demonstrator in Austria

Missions needs assessment survey

Highlights & insights on mission work



MISSION ACTION Lab

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 support tools (self-assessment, portfolio mgmt, evaluation)*
- *Research-action framework*
- *Large-scale projects (DG RTD, DG Reform, ...)*