NAVIGATING CHANGING LANDSCAPES:

THE CURRENT AND FUTURE ROLES OF EUROPEAN INNOVATION AGENCIES

July 2022

ABOUT THE CHARACTERISATION TASK FORCE

TASK FORCE OVERVIEW

In November 2020, the **TAFTIE** Board approved the implementation of the Task Force on the characterisation of member agencies. Overall, the goal of the Characterisation Task Force was to present an overview and compare TAFTIE member agencies, with an emphasis on the correlation between their strategies, organisational setup and support programs. It also aimed to identify some of the current gaps in knowledge, and highlight competences, services and skills that innovation agencies need to develop to successfully operate and support their clients. Further, it aimed to facilitate important discussions about the future, in relation to new research and innovation (R&I) and economic trends across Europe and globally.

The Task Force launched in April 2021, bringing together representatives from the individual member agencies, led by **Innovation Fund Serbia**, and supported by a contracted consultant organisation - the **Innovation Growth Lab at Nesta** (UK).

TASK FORCE MEMBERS

Innovation Fund Serbia
(Task Force lead)

ANI (Portugal)

Bpifrance (France)

ENEA (Italy)

Enterprise Ireland

FFG (Austria)

Innosuisse (Switzerland)

Innovate UK

Innovation Norway

Invitalia (Italy)

Israel Innovation Authority

NKFIH (Hungary)

PARP (Poland)

PtJ (Germany)

SIEA (Slovakia)

TA CR (Czech Republic)

TTGV (Turkey)

VLAIO (Flanders)

National Research Council Canada (TAFTIE international partner)

ABOUT THE AUTHORS

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ACKNOWLEDGEMENTS

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SUMMARY

The roles an organisation plays are always shaped by its position in wider systems. As systems change, so too may roles need to shift. These changes may be permanent or temporary. All of these issues can present challenges in terms of navigating change while maintaining a clear sense of institutional identity. Innovation agencies experience these dynamics particularly acutely, where the requirements and standards of a bureaucratic organisation often pull against the experimental, messy and serendipitous nature of innovation processes.

It can be difficult to adopt different roles and ways of operating when there are fixed expectations about what an agency 'should' be doing. Governments often find it easier to set up a new institution whenever there is a significant shift in the direction of policy, rather than enabling an existing one to reshape its existing roles and characteristics. However, as the research for this report shows, there are exciting opportunities to reimagine and adapt the roles of existing innovation agencies, and inspiration to be found in the experience of peers.

RETHINKING THE ROLES OF INNOVATION AGENCIES

This research considered the ways in which innovation agencies are currently operating in Europe, comparing key attributes of members of the TAFTIE network. Many similarities were observed, particularly in terms of their mandates and responsibilities, as well as the instruments they use to support innovators. However, we were particularly interested in exploring the differences and the outliers. This process revealed six distinctive characteristics - roles that innovation agencies are taking up to a greater or lesser extent in order to navigate and succeed in their own innovation systems:

Context plays a huge part in determining which roles or distinctive characteristics will be suitable for particular agencies. While the Implementer role comes closest to the 'norm' for many TAFTIE agencies, these characteristics are not fixed or mutually exclusive. An agency might take on different elements of these roles at different points, depending on how their own system and priorities evolve. This report offers some ideas about when and how agencies might consider building these capabilities, illustrated by examples from across the TAFTIE network. It is intended to be used as a framework to prompt reflection and exploration, rather than a strict guide for action.

The Implementer
The agency whose primary focus is to run research and innovation activities on behalf of their Ministry.

The Strategist
The agency that plays a significant role in the formulation and development of innovation policies.

The Emergent Agency
The experimental agency carving a new space in the innovation ecosystem.

The Entrepreneur
The agency that generates its own income from a range of sources, including the Ministry.

The Lean Agency
The agency that maintains a growing budget and slim operating costs.

The Internationalist
The agency focused on internationalisation and gaining the most from the outside world.

CHALLENGES ON THE HORIZON

Innovation agencies operate in increasingly complex environments, and are being called on to deliver ambitious and transformative policy agendas. From the research and discussions held throughout this research, four challenges in particular surfaced as issues that agencies need to be conscious of while rethinking their roles:

• **Adapting with directionality:** The rapid advancement of new technologies shaping society, alongside a more turbulent, uncertain, novel and ambiguous world, places enormous pressure on agencies to meet changing demands fast. In order to do so, they will need to be adaptable but maintain a clear sense of the direction they are headed towards.

• **Focused policy and delivery:** Agencies shifting towards transformational agendas will need strong, cohesive and holistic strategies. Traditional approaches to funding and supporting innovators alone will likely not be enough. The challenge for agencies in the near future will therefore be how to sustain the right policy mix in uncertain times.

• **Building competitive skills and talent:** There is a two fold challenge for agencies in the near future. On the one hand, agencies are having to work hard to attract and retain the talent they need to meet current demands, and on the other, few agencies have a clear sense of how the current capabilities they have will need to shift to meet future demands.

• **Diversifying resources:** Financial and political instability often makes it difficult for agencies to act in a strategic and proactive way. This challenge also impedes longer term planning that is necessary to see through transformational innovation agendas. As a result, agencies will increasingly need to diversify their resources to ensure steady operating budgets.

MAKING THE MOST OF OPPORTUNITIES

As with all challenges, there are associated opportunities. The discussions convened with innovation agencies during this research highlighted a number of ways in which the challenges outlined above could be responded to:

• **Embedding foresight and other innovative methods:** In response to turbulence, agencies can apply foresight, scenarios and other innovative methods to keep abreast of changes and opportunities in the horizon, or to surface assumptions and blind spots that may prevent them from planning strategically for the future.

• **Acting as the convenor in the system:** In response to the increasing difficulty of serving the breadth of needs required for transformational agendas, innovation agencies have the opportunity to act more as a convener to bring together multiple actors and capabilities that may not necessarily be held in-house.

• **Strengthening spaces for continuous learning:** In response to agencies needing to have a better understanding of the skills and capabilities required for the future in order to remain competitive, there is an opportunity to foster holistic learning cultures that help agencies gather and use evidence to make informed decisions about their trajectory.

• **Seeking opportunities beyond the horizon:** In response to knowing that periodic economic and political shifts will inevitably come, potentially at a higher frequency, agencies have the opportunity to consider how they may diversify their funding models and strengthen institutional safeguards to build a higher degree of autonomy over time.

CALL TO ACTION

TAFTIE provides an invaluable forum for discussing these important questions, and sharing knowledge and lessons between innovation agencies that may have different characteristics, or be playing different roles within their respective systems. Through this study, we have identified a number of ways in which it could strengthen its internal processes for sharing knowledge, collaborating with others and embedding strategic learning, including more real-time sharing of data about programmes and interventions (as well as about the overarching roles and characteristics of innovation agencies), creating spaces for regular and structured discussions of future challenges and opportunities, and identifying opportunities for more practical collaborations between agencies. We hope that this will stimulate further thinking, and be a useful input to TAFTIE's ongoing reflections about its own role as a network and convenor - a role which will only become more important in the shifting landscape of innovation support across Europe and beyond.
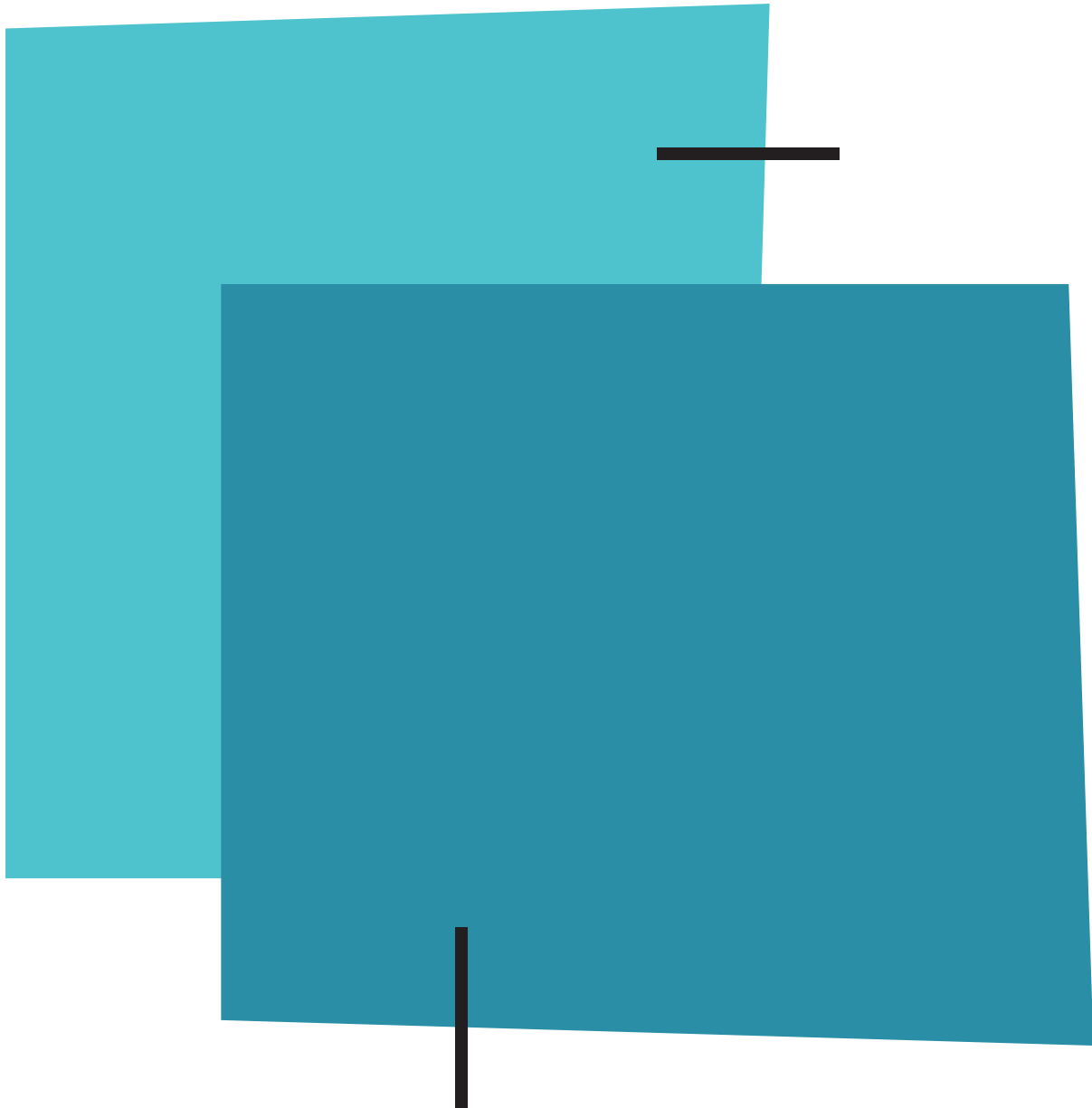
INTRODUCTION

BACKGROUND AND RATIONALE

There is considerable diversity across the 34 European innovation agencies that currently make up the TAFTIE network. They are united by a common overarching purpose - to support the implementation of research, technology and innovation policies in their respective national ecosystems. However, the form that this support takes varies considerably. So too, does the form of the agency giving the support. The smallest TAFTIE member has less than 50 members of staff, while the largest has close to 5,000. Some agencies are strongly involved in the design of national innovation strategies, while others are primarily focused on delivery. The scale and scope of funding and other support instruments differs greatly from agency to agency. This heterogeneity is what gives TAFTIE its power, for there is much to learn from both the similarities and the differences between agencies.

Within TAFTIE there is a shared commitment to exchanging knowledge and best practice, and facilitating mutual learning about the roles and characteristics of innovation agencies. In 2018-19 the Portuguese innovation agency, ANI, chaired a Task Force on the 'soft power' of innovation agencies (Glennie et al, 2019). This looked in detail at the wide range of non-financial support instruments that TAFTIE agencies use to support innovators, as well as gathering general information about the activities and capabilities of agencies across the network.

This 'Characterisation Task Force' builds on that earlier work. Led by Innovation Fund Serbia, and implemented by a team from the Innovation Growth Lab at Nesta, the Task Force objectives were to develop a general picture of the key characteristics of TAFTIE agencies, and to use this as the basis for exploring future challenges and opportunities they may face. Linked to this, there was an intention to create a framework for comparison and tools to support future learning within TAFTIE.

RESEARCH APPROACH

The broad aims of the Task Force necessitated the use of mixed methods and an iterative approach to the research, involving collection of both quantitative and qualitative data. During the quantitative research phase, TAFTIE agencies were asked to complete a survey designed to generate a comparative picture of all member agencies across different dimensions. This survey was co-designed with agencies in the Task Force to ensure that there was a shared understanding of definitions, and that questions were relevant to their needs and interests. Survey questions were grouped into five main areas:

• **Organisational profile:** information about the structure, size and scale of each agency, and details of significant transformations in recent years;

• **Roles and responsibilities:** information about the roles agencies take on in their innovation ecosystem with respect to research and innovation (R&I) and with respect to other actors;

• **Instruments and activities:** information about agency programmes and support instruments, and the innovators they support;

• **Skills and capabilities:** information about how the agency works, and the skills and capabilities they hold in-house or contract out;

• **Evidence and evaluation:** information about approaches to gathering data, measuring and evaluating impact against agency objectives, and the design of programmes and instruments.

Data collection took place between July-September 2021, and as such, offers a snapshot of innovation agencies at that point in time (which was a particularly turbulent moment, given the wider context of the ongoing Covid-19 pandemic). A total of 28 responses were received from across the TAFTIE network; 26 responses came from member agencies, and two were submitted by international partner agencies. This phase of research revealed a number of general trends that were further explored during the qualitative research phase.

Following presentation of the survey results to Task Force members, TAFTIE agencies confirmed that they were most interested in focusing on the differences between them, rather than on the similarities. The first stage of the qualitative research therefore involved interviews with ten agencies that had responded to the survey and were selected on the basis of distinctive characteristics they presented. The interviews were conducted between October and November 2021.

Following analysis of the interview data, a set of 'profiles' was developed to illustrate the distinctive characteristics uncovered - which were validated and further refined with TAFTIE agencies. In the final phase of the research, two co-design workshops were held (in January and February 2022) to open up a conversation about the future challenges and opportunities that innovation agencies may face, and to consider how these might affect strategic considerations about the characteristics and relationships they might need to develop in the future.

STRUCTURE OF THE REPORT

This report brings together analysis of the data gathered throughout the research phase. It has three main parts. Part 1 looks at the **current state of play** for innovation agencies in the TAFTIE network. Drawing on data gathered through the survey and the qualitative research, it offers a picture of the main similarities and differences between agencies, and explores a set of key determinants that influence how they take up their roles. It also explores how these determinants have shaped the set of distinctive characteristics that are embodied by different TAFTIE agencies.

Part 2 **looks ahead to the future**, considering a range of ways in which the roles of innovation agencies might need to shift. It explores both challenges and opportunities that might emerge from changes in the wider 'contextual' environment that agencies inhabit, as well as in the 'transactional' relationships they hold with other actors in their innovation ecosystems.

Part 3 brings together a set of **conclusions and recommendations,** building on the Task Force research. It seeks to outline a forward agenda and areas for further exploration and learning among TAFTIE members and their international partners.

1

THE CURRENT STATE OF PLAY

WHAT DETERMINES HOW INNOVATION AGENCIES OPERATE?

Both the quantitative and qualitative research highlighted common determinants affecting how agencies within the TAFTIE network operate. While each individual agency's context holds its own nuances (we discovered a field of wildflowers rather than a bed of roses or tulips), the determinants below synthesise signals found to play a significant role in how agencies take up their roles. Each determinant affects agencies to a greater or lesser extent. Therefore, our analysis is also accompanied by a scale of determination that is further explored and put into practice with the illustrative 'profiles' presented.

DETERMINANT 1: THE NATURE OF THE ECOSYSTEM

The nature of an innovation ecosystem plays a major role in determining the characteristics TAFTIE agencies adopt or end up contending with. No agency was found to be the only body supporting research and innovation in their countries and there was a near even split between agencies who considered themselves to be the primary government agency and those who did not [Figure 1.1]. There was also an even split between agencies who found themselves within a small ecosystem (1-5 actors) versus those operating in large ecosystems (10+ actors).
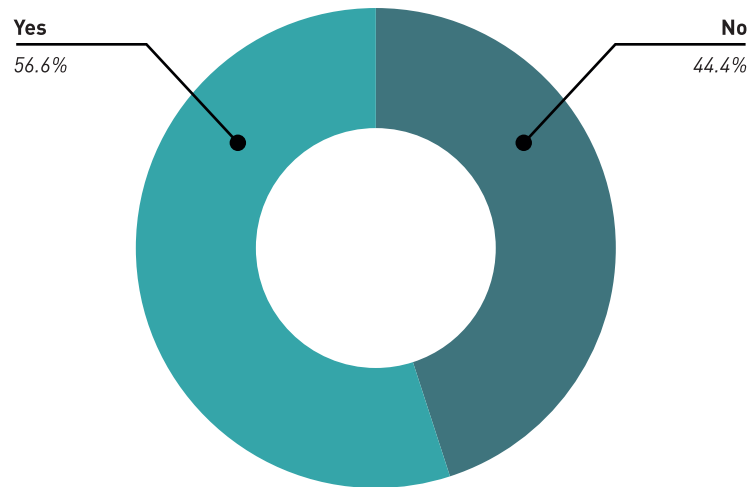
Yes
56.6%

No
44.4%

Figure 1.1: Would you say the agency is the primary government body/agency in the R&I ecosystem in your country?

Exploring this determinant with the ten agencies selected for their distinctiveness, and later as a wider Task Force group during our co-design workshops, we identified two key archetypes of innovation ecosystems that we have called **Distributed** and **Consolidated.**

Distributed systems have multiple actors sharing common innovation spaces. They inherently require collaboration to varying degrees. In some distributed systems there is close cohesion amongst innovation actors and a useful diversity of perspectives and approaches, while others suffer from a lack of coordination with overlapping perimeters of actions. The most effective distributed systems benefit from processes that enable general oversight and knowledge sharing. Where these processes are not in place, the tendency is for roles and responsibilities to be blurred, even if fixed frameworks intended to provide strict and clear mandates are in place. There also tends to be more competitiveness amongst peer agencies (particularly heightened by short budget cycles).

In contrast, **Consolidated** systems are dominated by fewer actors and tend to require less collaboration. Actors in consolidated systems will often have R&I capabilities and support they require housed under one roof, helping them to support clients throughout various phases. However, consolidated systems can be susceptible to becoming less dynamic learning environments as agencies have little competition and there are fewer incentives to collaborate with others. Agencies operating in this kind of ecosystem need to be even more focused on flexibility and developing the mechanisms to continuously evolve and adapt.

DETERMINANT 2: INSTITUTIONAL SAFEGUARDS

Institutional safeguards to protect an innovation agency from undue external interference or to enable them to have more security beyond budget cycles was another determinant affecting agency characteristics and how they operate. The strategic priorities of most agencies are determined by their funders [Figure 1.2], with the majority of agencies' main source of funding being the central government or their overseeing Ministerial body [Figure 1.3].
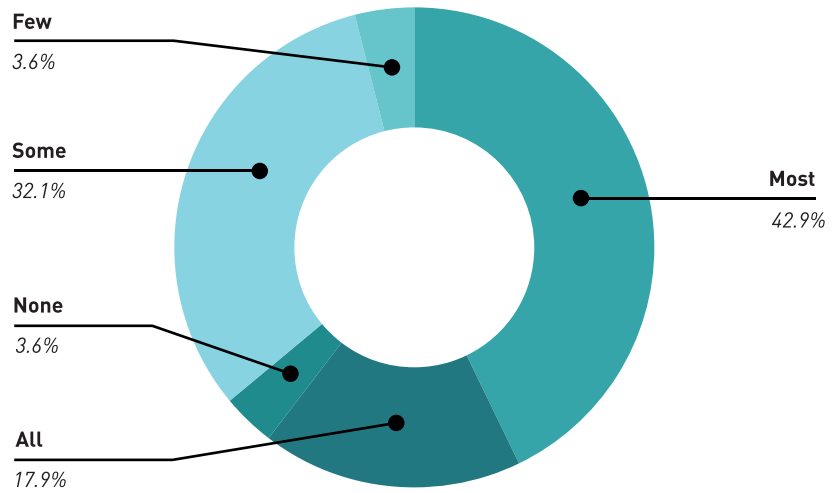
Few
3.6%

Some
32.1%

None
3.6%

All
17.9%

Most
42.9%

Figure 1.2: To what extent are the agency's high-level strategic priorities determined by its funder(s)?

Mixed
10.7%

EU
7.1%

Self-generated income
3.6%

None
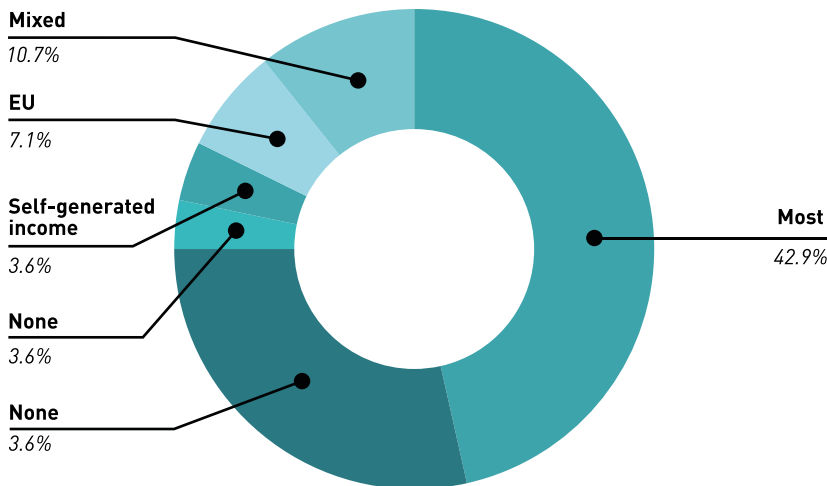*3.6%*

None
3.6%

Most
42.9%

Figure 1.3: What is the agency's main funding model?

However, despite high levels of financial dependence, there are agencies that have considerable strategic autonomy. For some agencies this has been obtained through legislative protections, independent boards, and to a lesser extent through alternative income streams. Others adopt a soft power approach, enabled by close and stable relationships with government and/or their overseeing Ministerial bodies. Many use a mix of both.

Further exploring this determinant, we uncovered a comparative scale whereby some agencies remain **institutionally close** to their funders, while others are **institutionally distant collaborators**, having cultivated a space for more independent governance. The quality of the safeguards for institutionally close agencies are highly dependent on the quality of their relationships. Institutionally distant collaborators are less dependent on relationships but this does not necessarily guarantee greater levels of stability as other factors come into play; for example market factors for those with alternative streams of income.

DETERMINANT 3: ADAPTATION TO CHANGE

In the last five years, over two thirds of agencies have experienced significant changes, both structurally and in terms of budget [Figures 1.4 & 1.5]. This gives a clear indication that the majority of agencies operate in environments of constant change. Covid-19 shifted agency roles, budgets and in some cases legislative boundaries significantly as resources were freed to help respond to the pandemic. However, our research shows that even before this latest major event, agencies faced disruptions to the way they worked. While change and as a result adaptation is somewhat expected, how agencies respond to turbulence in their environments differs.

The third trend identified uncovers a comparative scale where some agencies have embraced an agile approach in the face of changing demands, while others have honed in on tried-and-tested approaches they are reputationally known for.

Agile adapters take an experimental approach to iteration, learning what sticks and works at a small scale before investing more resources. Most agile adapters are working predominantly on policy, acting as a testbed for novel implementation methods. They also tend to work with a variety of actors to shape the environment rather than on delivery.

Tried-and-tested adapters refine skills and expertise they are historically known for, maintaining a focus on tried-and-tested approaches. Most will focus on implementation and delivery rather than playing a more system shaping role. They also tend to focus on their internal skills capabilities and what they can deliver for clients.

yes
69.0%

No
31.0%
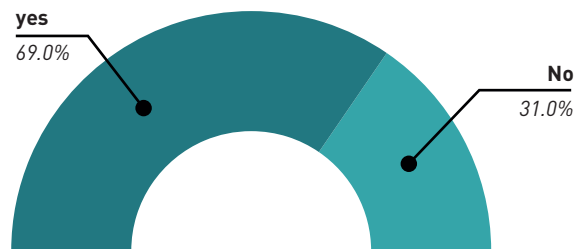
Figure 1.4: Has the agency experienced any significant structural or organisation changes in the last 5 years?
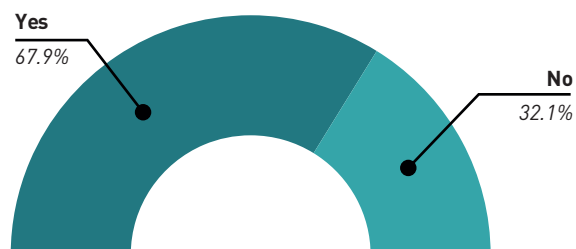
Yes
67.9%

No
32.1%

Figure 1.5: In the five years prior to Covid-19 did the agency's budget experience any significant changes?

DETERMINANT 4: THE POLICY MIX

There are many instruments that innovation agencies can adopt. Among the TAFTIE network, we found that agencies tend to deploy the same kinds of programmes, policies and instruments [Figure 1.6]. Grants are by far the most common instrument used by TAF-TIE agencies, with many also providing business advisory services or managing clusters. Charts 1.7 to 1.10 show other key trends in terms of the instruments used by innovation agencies.

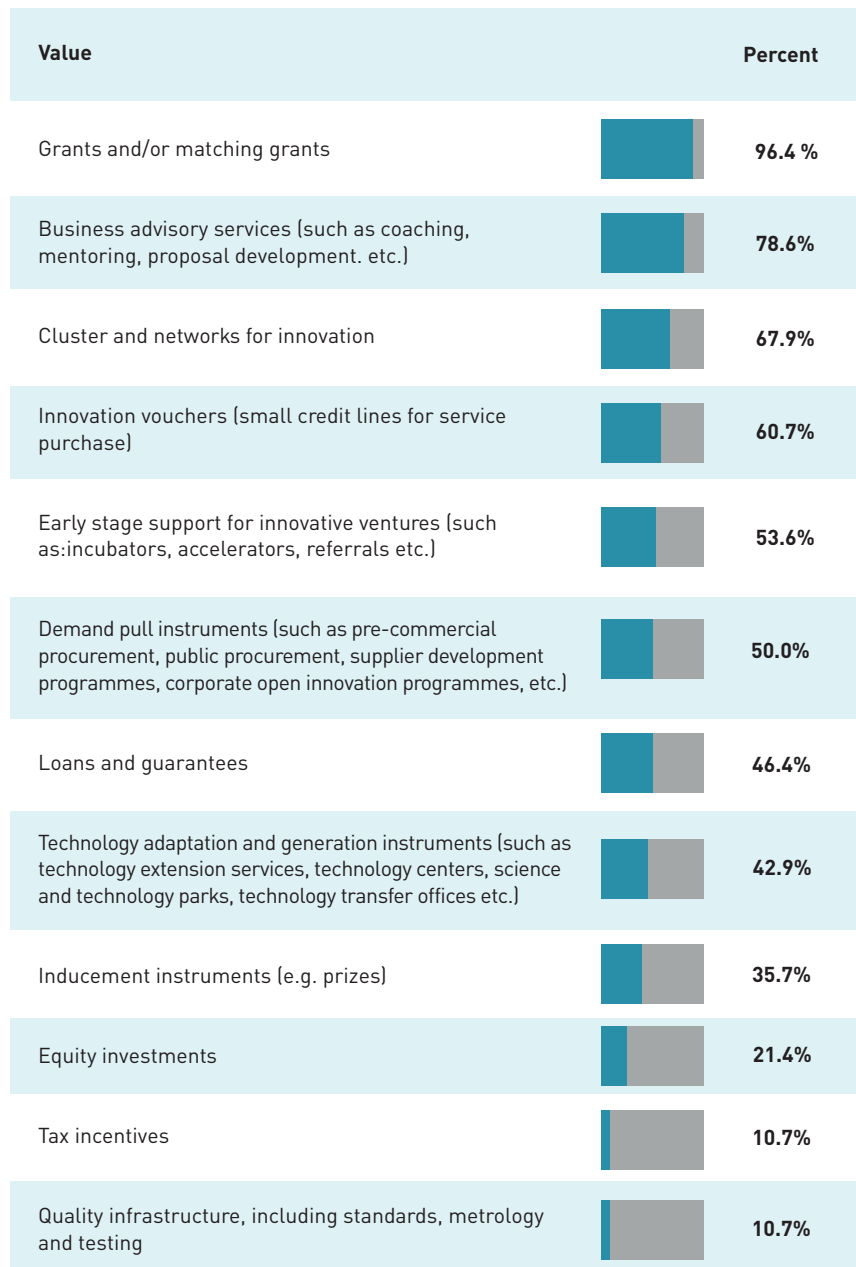| Value		Percent
Grants and/or matching grants		96.4 %
Business advisory services (such as coaching, mentoring, proposal development. etc.)		78.6%
Cluster and networks for innovation		67.9%
Innovation vouchers (small credit lines for service purchase)		60.7%
Early stage support for innovative ventures (such as:incubators, accelerators, referrals etc.)		53.6%
Demand pull instruments (such as pre-commercial procurement, public procurement, supplier development programmes, corporate open innovation programmes, etc.)		50.0%
Loans and guarantees		46.4%
Technology adaptation and generation instruments (such as technology extension services, technology centers, science and technology parks, technology transfer offices etc.)		42.9%
Inducement instruments (e.g. prizes)		35.7%
Equity investments		21.4%
Tax incentives		10.7%
Quality infrastructure, including standards, metrology and testing		10.7%

Figure 1.6: Policy instruments that agencies use, fund or support

Note: By **direct support** we mean a direct influence from the agency on the firm level innovation activity (such as by choosing which projects to support in a competitive grant scheme). By **indirect support** we mean support that is provided to any innovation activity eligible under the rules of the programme (such as R&D tax incentives and loan guarantees), without the agency being involved in the choice of which project to support.

Mostly direct support
53.6%

Only direct support
53.6%

Both equally
7.1%

Mostly indirect support
3.6%
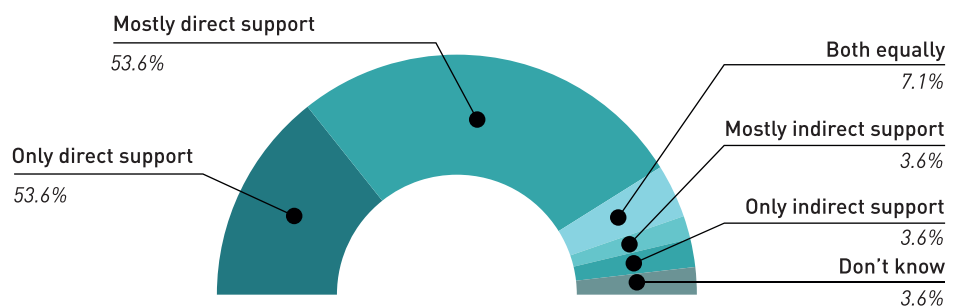
Only indirect support
3.6%

Don't know
3.6%

Figure 1.7: Direct vs. indirect support

Note: By **vertical** programmes we mean measures intended to induce business innovation among firms operating in a particular sector (such as textiles, manufacturing, tourism etc.). By **horizontal** programmes we mean innovation policies aiming to induce business innovation in firms, regardless of the sector in which they operate (non-sector specific funds, general digitalisation programmes, etc.).
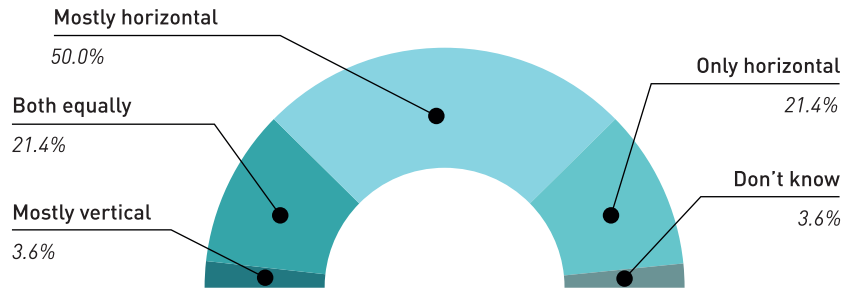
Mostly horizontal
50.0%

Only horizontal
21.4%

Both equally
21.4%

Don't know
3.6%

Mostly vertical
3.6%

Figure 1.8: Vertical vs. horizontal programmes, policies and instruments

Note: By **financial** support we mean support that involves a transfer of money or financing to beneficiaries. By **non-financial** support we mean advisory and other non-monetary support services that may be provided to beneficiaries.
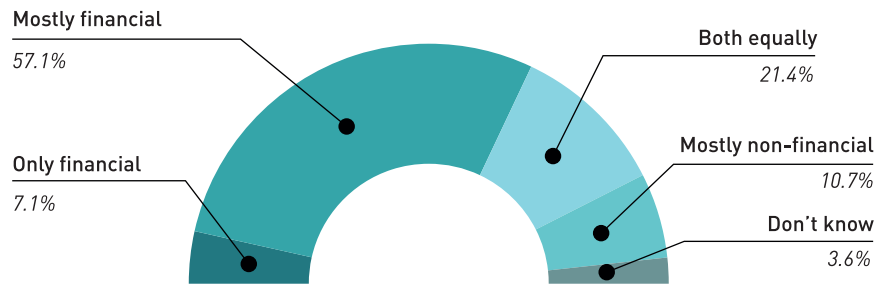
Mostly financial
57.1%

Both equally
21.4%

Only financial
7.1%

Mostly non-financial
10.7%

Don't know
3.6%

Figure 1.9: Financial vs non-financial support

Note: By **Science, Technology and Innovation (STI)** we mean measures that promote the production, diffusion and transfer of technological innovations through R&D support and funding. By **firm-level instruments** we mean measures that primarily aim to build the necessary capabilities of firms to increase competitiveness, exports, productivity, etc.
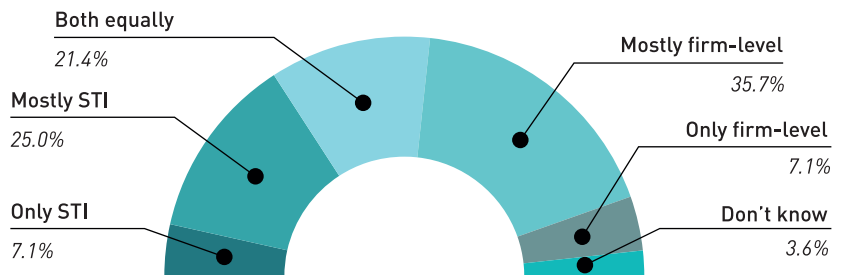
Both equally
21.4%

Mostly firm-level
35.7%

Mostly STI
25.0%

Only firm-level
7.1%

Only STI
7.1%

Don't know
3.6%

Figure 1.10: STI vs firm-level innovation

Innovation ecosystems can foster both competition and collaboration, meaning that agency roles and ways of providing support to beneficiaries will play a dual function to help agencies stand out from the crowd, as well as avoid direct competition with peers. Even if agencies have more freedom to explore new operational areas, agencies will have existing reputations that determine how they will act. This pressure to operate in an expected manner can come from overseeing ministries, clients or sister organisations. In both the interview and co-design workshop phases, TAFTIE agencies spoke about the tension they experienced whilst working to attract and retain clients, while at the same time attempting to remain innovative.

Two comparative scales emerge. On the one hand, some agencies use a broad range of instruments, while others use a few to become more specialist. Agencies adopting a **broad approach** use a wide range of policy instruments to provide a continuum of services to clients throughout the innovation process, and to address failures or gaps in the market that the private sector cannot fill. Other agencies take a more **specialist approach**, focusing on fewer instruments they are known for delivering well, and will adopt others that complement their core capabilities rather than branching beyond their traditional remits.
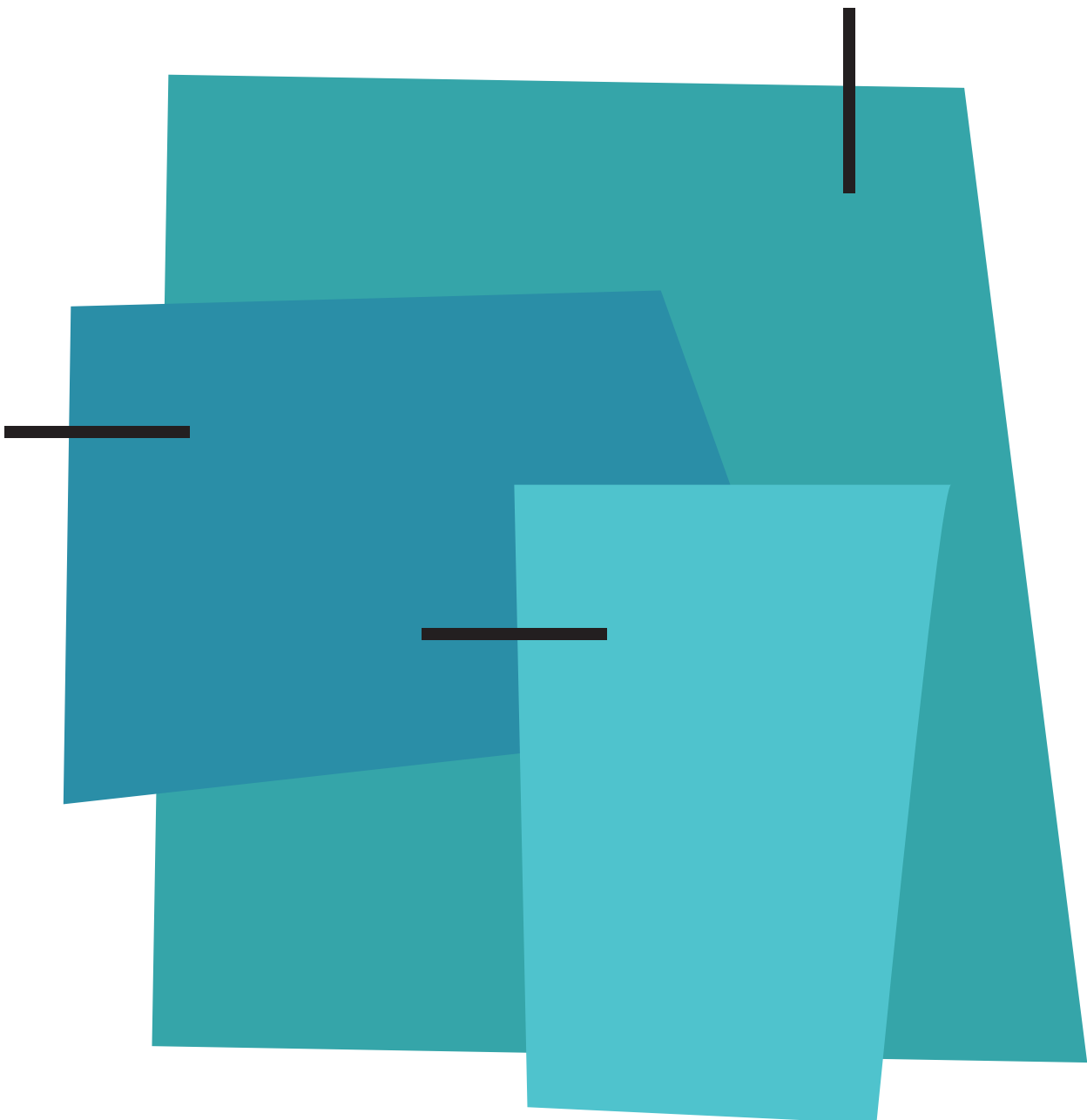
DETERMINANT 5: LEARNING CULTURES

In the increasingly turbulent, uncertain, novel and ambiguous contexts agencies operate in, learning becomes vital to the sustainability of an agency and their ability to deliver effective support for their clients. We found that in some cases, structured learning is embedded in evaluation practices required by legislative bodies (conditions for granting financial support in particular) and imposed by governing bodies. However, not all evaluations are used to support learning and inform future decision making.

Out of all evaluation types - ex-ante, process and impact evaluations - none are used consistently (75-100% of the time). The most common evaluation type used by the majority of TAFT-IE agencies are results/impact evaluations which provide insights into a project's outcomes at the end of the project cycle, highlighting potential improvements for subsequent projects. While fewer in number, some agencies do complete process evaluations to help optimise projects while they are still running to ensure they

meet their targets. But less than 30% of projects regularly include ex-ante evaluations to help inform the design of their programmes [Figure 1.11]. This indicates that across the TAFTIE network there is a gap between some agencies that use different types of evaluations, and those less likely to do so systematically. In addition, this form of structured learning is not necessarily being used to improve performance but in most occasions for final reporting purposes only (something heard during the agency interviews).

	Not used	1-25%	25%-50%	50%-75%	75%-100%	Don't know
Ex-ante/design evaluation Number of agencies Percentage of agencies	1 4.0%	7 28.0%	3 12.0%	3 12.0%	7 28.0%	4 16.0%
Process/implementation evaluation Number of agencies Percentage of agencies	0 0.0%	4 16.0%	5 20.0%	2 8.0%	10 40.0%	4 16.0%
Results/impact evaluation Number of agencies Percentage of agencies	0 0.0%	3 11.5%	4 15.4%	2 7.7%	13 50.0%	4 15.4%

Figure 1.11: Approximate percentage of projects using different evaluation types

This points to two trends of interest. On the one hand, legislative and governance pressures have pushed agencies to build better systems for measuring the results and impact of their programs, while on the other hand this push has not yet supported the strengthening of learning cultures that help agencies with their day-to-day decisions. Non-financial support was one area that agencies highlighted as being inherently difficult to measure the success of - it is harder to prove the "bang for buck" or spillover effect (Glennie

et al., 2019). As agency roles shift beyond providing financial support and towards transformative innovation agendas that focus on missions it becomes increasingly more difficult to focus on fixed outcome measures for one or two interventions alone - likely outcomes result from a complex set of actions and many actors (Ghosh et al., 2020). Therefore a new approach is needed.

Experimental approaches (including but not limited to speculative design, piloting, experimental and quasi-experimental

evaluations) offer some agencies the framework to gather the insights they need (as opposed to what they need to report). Some agencies have begun to consider or develop the mechanisms needed to support such work - moving beyond measuring outputs to an attempt to assess outcomes. Others lean towards **greater collaboration** and knowledge sharing amongst the innovation system to fill 'data deserts' that exist and ensure more systematic learning both within and outside their agencies.

DETERMINANT 6: TALENT AND SKILLS

With rising demands for what agencies need to deliver in terms of transformative agendas, acquiring the right talent and skills is increasingly important. Most agencies struggle to recruit but a few do not. Skills and qualifications that are required but difficult to recruit are split between technical skills that are difficult to attract (mostly because they are also highly sought after in the private sector, e.g. IT, data science and legal skills) versus strategic skills required for optimal operations (management, business, evaluation and generalists) [Figure 1.12].
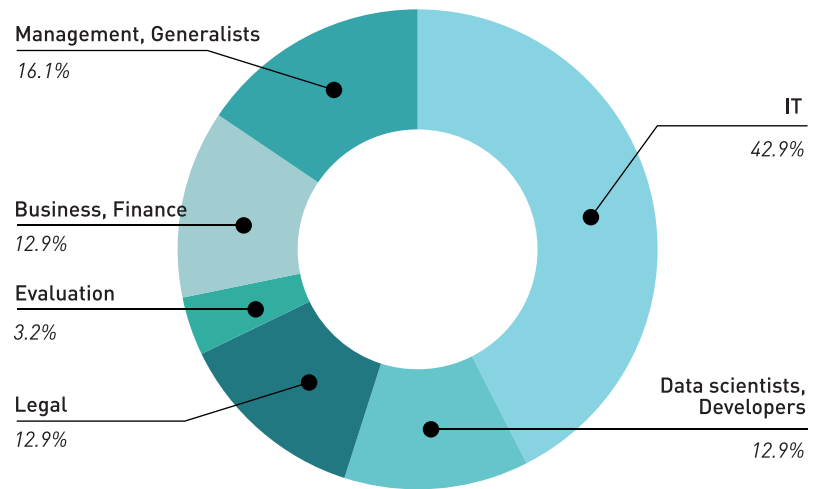
Management, Generalists
16.1%

IT
42.9%

Business, Finance
12.9%

Evaluation
3.2%

Legal
12.9%

Data scientists, Developers
12.9%

Figure 1.12: Skills and qualifications agencies find difficult to recruit for

Market competitiveness points to a greater need for agencies to be well resourced as advanced technologies become more embedded in all areas of our lives; agencies will need to remain reputable to attract this talent. On the other hand, **operational gaps** point to a greater need for clearer strategic direction and strong capabilities to see the bigger picture and connect the dots to meet changing demands; these kinds of skills are harder to assess and therefore find. Half of agencies have not conducted an assessment or audit of the skills they will need for the future [Figure 1.13]. While it is easy to identify that IT and data skills will be instrumental for the fourth industrial revolution, the skills required to manage this change are harder to cultivate when agencies themselves are unclear about where they are headed.
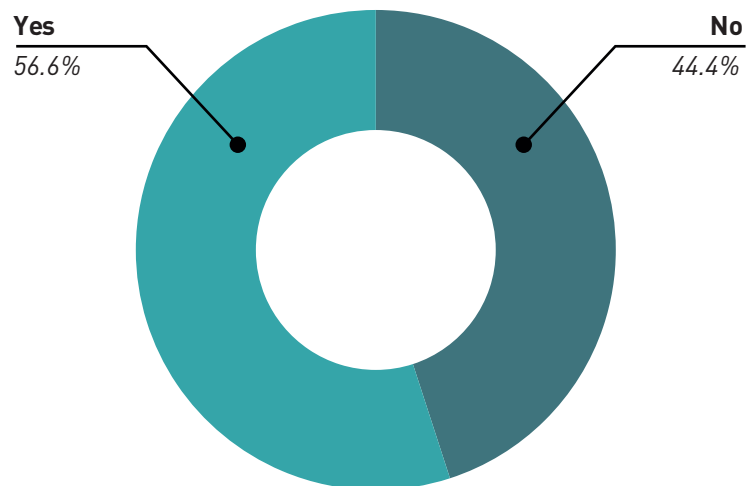
Yes
56.6%

No
44.4%

Figure 1.13: Has the agency performed an assessment or audit of skills needed in the future?

WHAT DISTINCTIVE CHARACTERISTICS HAVE AGENCIES ADOPTED AND WHY?

Earlier research has considered the different missions that innovation agencies have within their respective innovation ecosystems, and the impact that this has on their choices about structure, management practices and the types of instruments they use (see Glennie and Bound, 2016 and Cirera and Maloney, 2017). This Task Force sought to build on the existing literature by investigating in detail some of the more specific characteristics or roles that agencies might take up within a system, taking into account the determinants previously explored that may enable or constrain agencies in different contexts.

The research revealed six distinctive characteristics adopted by agencies[1]. While most TAFTIE agencies are more similar than they are different, these characteristics mark a significant deviation from average behaviours and attributes. They are presented below alongside analysis that considers which determinants have played a role in shaping each distinctive characteristic[2]. The profiles are intended to demonstrate what is possible, given that the profiles were built from existing evidence of agencies at the time this research took place. However, it is important to remember that each profile looks at just one facet

of an agency's role. Therefore, most agencies will likely find that they identify with many aspects across the six characteristics.

Rather than using the profiles as a blueprint, innovation agencies are encouraged to consider how their agency compares to the profiles presented, as well as future roles they may want to adopt to better meet demands required within their systems.

1 There were a number of other distinctive characteristics that we explored and that Task Force agencies found resonated with aspects of their roles. However, the six final profiles produced are the result of the characteristics we had the most supporting evidence for.

2 Agencies can also play a role in shaping systems but the scope of this research has been to focus on the dynamic for innovation agencies only.

USING THE SCALE OF DETERMINATION

The scales used to compare and contrast each distinctive profile are based on a judgement of how critical a determinant is to enabling an agency to adopt this particular profile. Some profiles are heavily dependent on a number of contextual factors, while others are more easily adapted.

If the illustrative profile presented is highly dependent on the way a determinant enables or constraints the agency, it is ranked HIGH; Where the profile presented is to some extent influenced by a determinant, is it ranked MEDIUM; Finally, where a determinant has little or no influence on a profile it is ranked LOW.

Ecosystem:
Refers to specific conditions within an agency's ecosystem related to levels of competition, collaboration and coordination amongst other actors.

Institutional safeguards:
Refers to protective mechanisms that enable agencies to determine long-term strategic plans beyond budgetary cycles or political relationships.

Adaptation:
Refers to specific decisions agencies take to how they adapt and respond to change.

Instrument focus & flexibility:
Refers to an agency's approach to developing and delivering their policy instruments - an innovation agency's 'policy mix'.
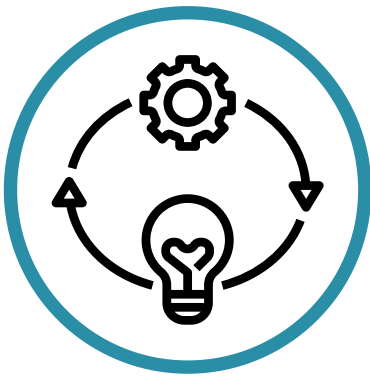
Learning culture:
Refers to the systems and tools agencies use to monitor and evaluate their programmes and their ability to use evidence to inform strategic decisions.

Talent & skills:
Refers to an agency's ability to attract and retain staff, build the capabilities it needs and identify future skills that may be required.

	Ecosystem	Safeguards	Adaptation	Instrument focus & flexibility	Learning culture	Talent & skills
The Implementer	HIGH	MEDIUM	MED/HIGH	HIGH	MEDIUM	MED/HIGH
The Strategist	LOW/MED	HIGH	HIGH	HIGH	HIGH	HIGH
The Emergent Agency	MEDIUM	MED/HIGH	HIGH	MED/HIGH	HIGH	HIGH
The Entrepreneur	MEDIUM	HIGH	HIGH	HIGH	MEDIUM	HIGH
The Lean Agency	MED/HIGH	HIGH	HIGH	MED/HIGH	HIGH	HIGH
The Internationalist	LOW/MED	HIGH	MED/HIGH	HIGH	HIGH	MED/HIGH

THE IMPLEMENTER

The agency whose primary focus is to run research and innovation activities on behalf of their Ministry.

The Implementer has a **close relationship with the Ministry** that oversees their activities. The majority of funding for their work comes from this Ministry so both institutionally and in terms of budget they are **more dependent** on the central government. The Implementer tends to deliver activities on behalf of the Ministry, although they also play a role in informing the design and implementation of research and innovation activities that include a **range of policy instruments**. Over the years, the Implementer is likely to face merges with other organisations and often encounters **directives decided by those outside of their organisation**.
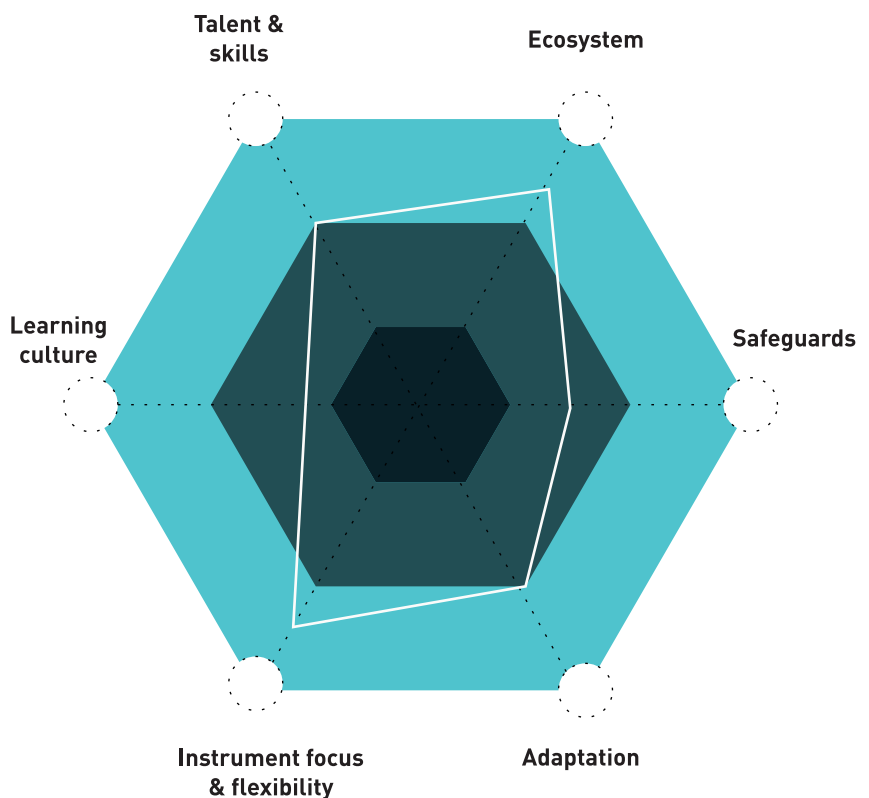
Strengths:
• Clear role in the innovation ecosystem
• Executing a wide variety of policy instruments
• Close and stable relationship with key funder

Challenges:
• With one dominant client the agency is more susceptible to shocks inflicted by the contextual environment.
• Feeding information gathered from the 'front line' into policy-making

"Every day my agency cooperates with different people from the ministries, not just to directors but with many people at different levels... Often, I feel that we are like one organisation."

Adopting an Implementer role is determined by the ecosystem agencies operate in and their use of policy instruments - the driver of their reputation. The Implementer's close ties with their overseeing Ministry help to strengthen their approach and use of policy instruments that are highly sought after, in a mutually assured relationship within their ecosystem. However, these conditions also impact incentives to foster more experimental learning cultures or the Implementer's ability to carve safeguards that would put them in better stead for future challenges should they need to become more agile and develop a more varied skill set or one that is technically different from their existing capability. This limited adaptability also reinforces the talent and skills Implementers have, and gaps that may exist.

THE STRATEGIST

The agency that plays a significant role in the formulation and development of innovation policies.

The Strategist has a **clear vision** for the future of innovation and is working hard to build the skills and capabilities to see this vision come into fruition. Amongst their peers, both nationally and internationally, they gain a reputation for being **impact driven** and achieving results. Day-to-day, this reputation helps to position The Strategist as **chief orchestrator** within the innovation system; they work with a variety of actors to influence long term policy plans and will act as a **testing bed for new approaches** to implementation. The Strategist takes risks, some which have paid off and others which are harder to evaluate. But even in testing economic times, it is their strong relationships and widely perceived value that have helped them to maintain a **sustainable budget.**

Strengths:
• Clear vision
• Agile and experimental
• Collaborative

Challenges:
• Being impact driven comes with added pressure of measuring and evaluating results that are often difficult to capture when operating predominantly on a macro policy level.

"We orchestrate how the other agencies across different ministries operate in relation to innovation, particularly focusing on system transformation and system innovation in relation to the global societal challenges."

Adopting the role of the Strategist is highly determined by the five out of six contextual trends making it the most challenging distinctive characteristic to fully adopt. Talent and skills are crucial for the Strategist as its approach to adaptation, use of policy instruments and learning cultures are all highly innovative and cutting edge. The role it is able to play within any ecosystem is secured by safeguards, in particular those which ensure financial sustainability.

THE EMERGENT AGENCY

The experimental agency carving a new space in the innovation ecosystem.
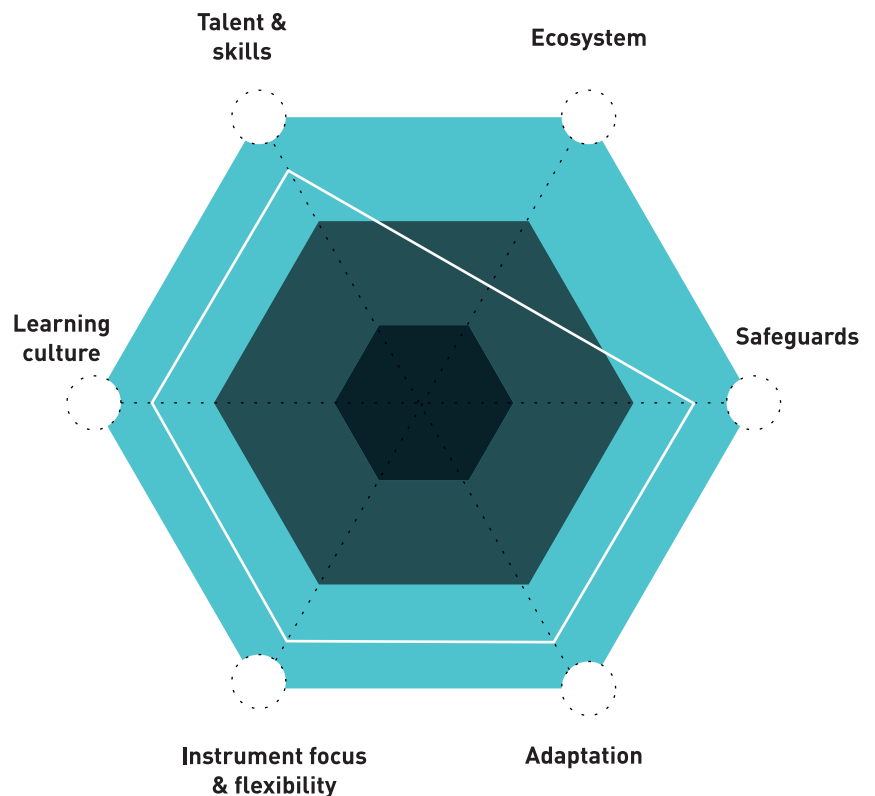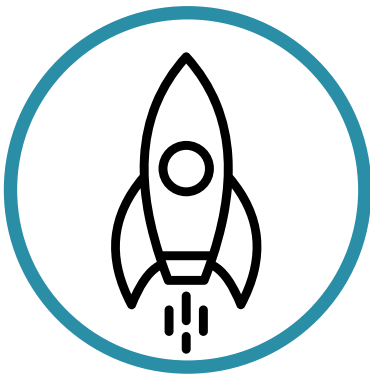
"We are always looking for new tools to try and new projects to be part of...we are constantly trying new things. And we're not afraid to say that something is not working."

The Emergent Agency is one of many agencies in a distributed system, but is **optimistic** about new spaces it is able to carve out. Within the agency there is a **thirst for new ideas** and an **experimental** culture is embedded from top to bottom. This culture and unwavering willingness helps them to **pivot towards opportunities** that shape the innovation ecosystem and make them stand out in the long term. On paper, the Experimental agency is like any other, restricted by a strict mandate and closely supervised by the overseeing Ministry. But beneath, their **internal skills and capabilities** make them dynamic at taking existing opportunities and turning them into testbeds for learning.
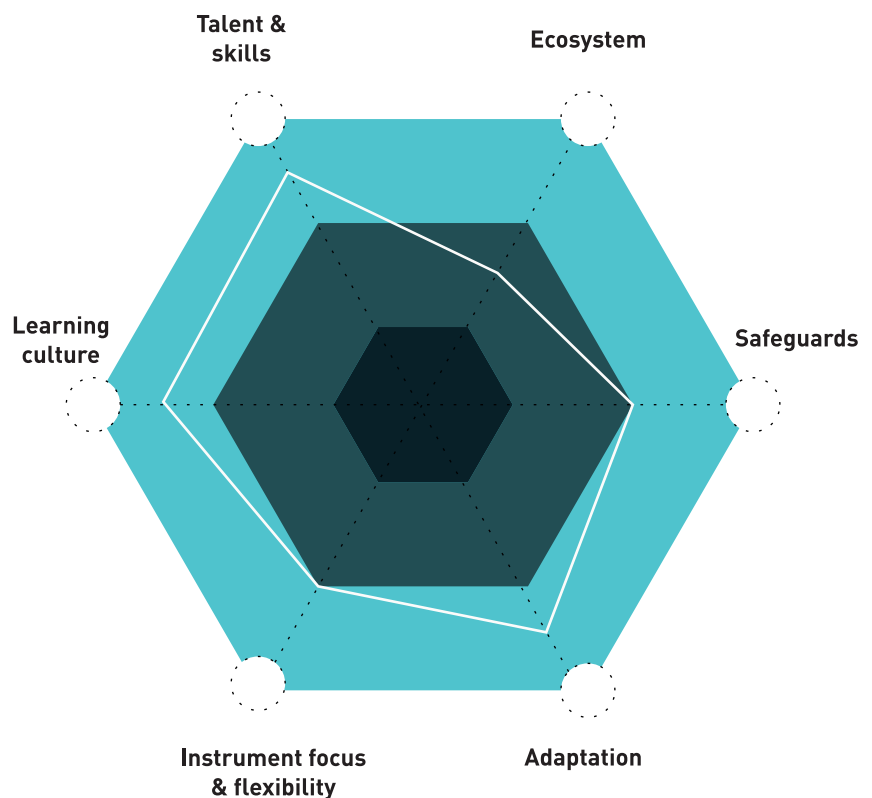
Strengths:
- Agile and experimental
- Supportive leadership
- Skills and capabilities

Challenges:
- Beyond seeking opportunities, the emergent agency could be seen to lack a purpose or valued role in the ecosystem without a clearly defined client or long term direction.

Adopting the role of an Emergent agency is significantly determined by internal capabilities. The talent and skills the agency is able to acquire and retain, the learning culture and approach to adaptation in an environment where they may not have a specific approach to use of policy instruments. This highly experimental distinctive characteristic is supported by some safeguards but does not need a particularly favourable environment to flourish as it is geared towards finding opportunities and grabbing them to make an impact.

THE ENTREPRENEUR

The agency that generates its own income from a range of sources, including the Ministry.

"We're constantly looking at should we increase here, decrease here, and then you have a balance with all kinds of finite resources... You know everything has to react very quickly and we ride high on world economic growth, and we feel the pain when it goes down."

The Entrepreneur has **mixed funding sources** and ability to invest in companies as a limited partner, competing with the private sector to support their clients. How the Entrepreneur supports companies is a decision that is solely theirs to make as they have a**cquired relative freedom** now that they are not reliant on one funding source alone. Their overseeing Ministry is still a key stakeholder but there is independence in the activities they run. The entrepreneurial agency is keen to use a **wide range of policy instruments** to bring value to clients at all stages of their business cycle.

Strengths:
- Strong client focused directive
- Flexibility to use a wide variety of instruments
- Skills and capabilities

Challenges:
- Being open to market forces comes with benefits but also costs when investments don't go well

Adopting the role of the Entrepreneur is determined by safeguards that allow the agency to adapt and grow their policy instruments so that the agency is effective at meeting client demands. Working in this responsive way requires talent and skills but doesn't necessarily require a comprehensive learning culture. This distinctive characteristic can flourish in any ecosystem type.

THE LEAN AGENCY

The agency that maintains a growing budget and slim operating costs.
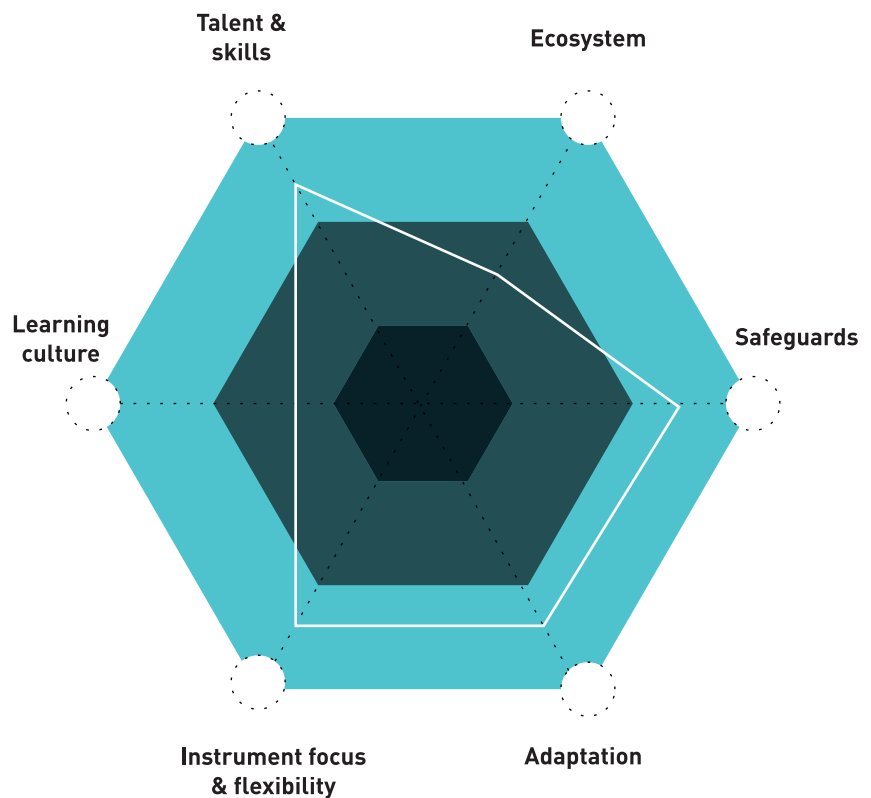
"We are well positioned to be seen as an expert organisation with all the expertise we have within our network, so that we can make use of this to help inform decision making."

The lean agency has a **close and stable relationship** with their funding Ministry, and in an innovation system they will often be a dominant player. The extra resources they have gained over the years are used sparingly to grow **capacities in a networked fashion**, relying on experts outside of the organisation for skills and delivery rather than creating large in-house teams. This strategic approach has kept core operating costs down as The Lean Agency only scales up when there is demand to do so, connecting academic, entrepreneurial and innovation actors. As a **well connected player**, they are a close collaborator with the government but will also often exercise soft power as part of a collective with others.

Strengths:
- Agile operating model
- Network of experts
- Close government partner

Challenges:
- Heavy reliance on a network of decentralised staff requires a lot of resources dedicated to supporting actors to remain engaged.

 Adopting the Lean Agency's role is not affected as much by the ecosystem or the approach to using policy instruments but rather this distinctive characteristic speaks to the internal culture and access to resources an agency can acquire. A Lean Agency has the safeguards and access to talent within its network to not feel the pressure to grow in order to prove its role, to its funder, peers or its overseeing Ministry. Taking an inherently collaborative approach to its innovation work helps to stimulate a positive learning culture.
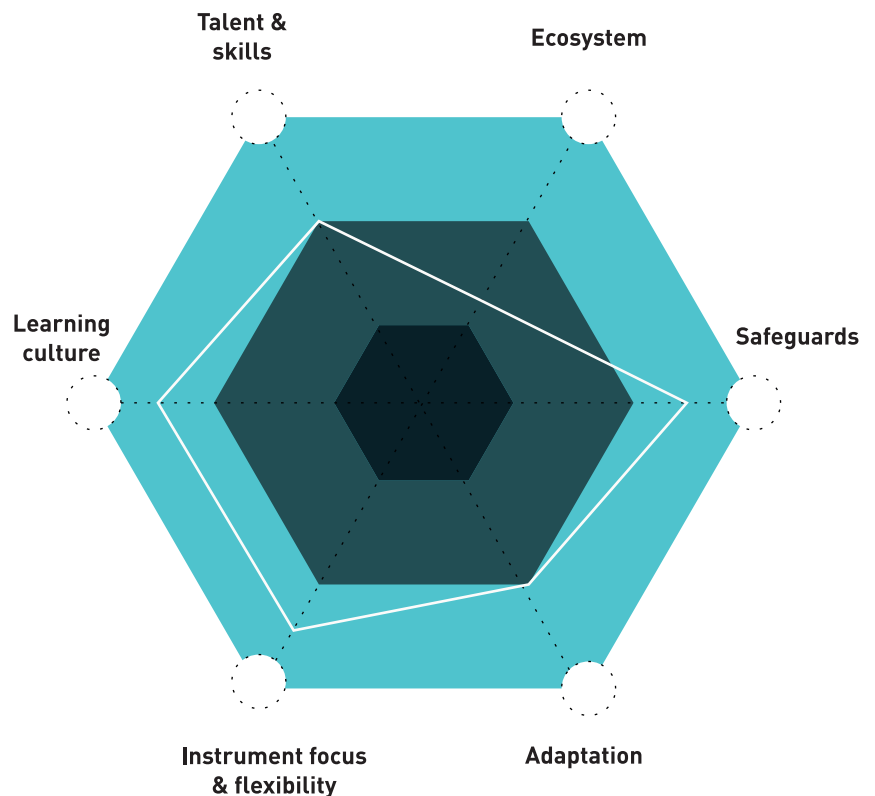
"We use our global network to define our approach so we do not lose sight of the international market and changes there. In that way we have expertise across the value chain from innovation, business and exports, back to disruptors. We want to use all our capabilities."

THE INTERNATIONALIST

The agency focused on internationalisation and gaining the most from the outside world.

The Internationalist is likely to **have more offices outside of their borders than within**. This gives them direct access to a wealth of insight and foresight from across the globe. The Internationalist is positioned to **assist clients to become globally competitive**, to reach wider markets and learn from cutting edge ideas. This targeted strategic direction has awarded the Internationalist more freedom to decide on priorities and instruments as they play a unique role in their innovation system. Their role tends to be evenly split between formulation and implementation activities.

Strengths:
• Clear strategic direction
• One-stop shop for clients
• Global learning culture

Challenges:
• Focus on internationalisation alone may decrease support for other innovation areas that require targeted support

Adopting the role of the Internationalist requires a determination driven by curiosity to learn from what others are doing globally in order to improve prospects nationally. This distinctive characteristic is not necessarily driven by talent or a particular approach to adaptation but rather the openness and flexibility to deliver value in a way that makes the most of global insights. In a more interconnected world, this approach can seem very desirable but relies on safeguards being in place to allow this exploration which may not always relate back neatly with national strategic goals.
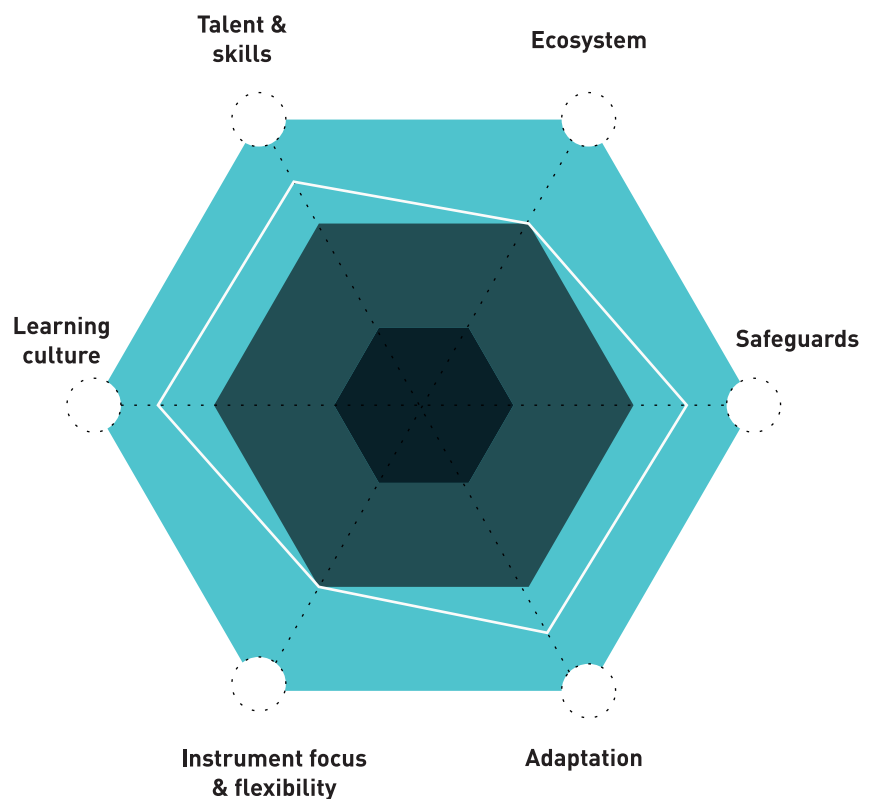
While each distinctive characteristic has been presented as a discrete role, agencies can encompass more than one characteristic at any one time - they are not mutually exclusive. Each characteristic may be adopted to a greater or lesser degree - they do not necessarily define the role that an agency plays overall within the system, but may be one of many different attributes that they have.

They may also adopt a combination of characteristics for different aims. For example, the Hungarian National Research, Development and Innovation Office (NRDI) was appointed to manage the implementation of the Smart Specialisation Strategy (S3) that contributes to "a smarter Europe through innovation and support for economic transformation and modernisation" as part of the EU's Cohesion Policy. In this capacity, the NRDI can be seen to adopt the Implementer role in the way it has been mandated by the Hungarian Minister for Innovation and Technology. On the other hand, it also performs the role of a Strategist as it plays a role of bringing together various actors to enable collective action towards shared goals.

NRDI says:

> *"During the planning of S3, the NRDI Office implemented the Entrepreneurial Discovery Process (EDP) which is an interactive, bottom-up process in which actors from different sectors identified potential strengths and opportunities. After the stakeholder and public sector validation of these priorities, the Hungarian S3 was accepted by the Hungarian government in 2021. In this unique role, the NRDI Office, has an important task: to implement strategy and harmonise in the interventions of the fields of RDI, digitalization and SME development."*

This is one example but it serves to illustrate that there are many possible ways agencies can adopt distinctive characteristics to meet specific aims and respond to the environment around them.

2

LOOKING TO THE FUTURE

While the survey data and interview insights paint a picture of the current state of play, there are many uncertainties and potential futures for innovation agencies across TAFTIE and beyond. Namely, agencies were concerned with the implications of taking on transformative agendas: such as the different roles they may need to play within their ecosystem (to be a connector, a partner and an enabler); behaviours needed to achieve these aims (flexibility, responsiveness, entrepreneurialism); and the kinds of diverging and converging offers they may be required to provide (for example, to become a startup vehicle, be a "sparring partner" for innovators, or to be a driver of missions).

Using a framework for looking ahead at both the far and near future (based on the Three Horizons model by the International Futures Forum), a series of prompt questions were developed to help agencies consider shifts required to respond to changing national and international landscapes, and to support discussions that help tease out collective challenges and opportunities for the TAFTIE network. The four challenges and opportunities identified and summarised below are synthesised from conversations that only scratched the surface of what was possible, leaving substantial scope for further exploration beyond this report.

The challenges presented have been defined as barriers TAFTIE agencies are likely to face as a result of continuous change and uncertainty in the near future.

Each challenge is a direct result of the current determinants to how agencies operate that were identified in Part 1 of this report. The opportunities presented have been defined as levers enabled by the distinctive characteristics we found some agencies adopting in response to the challenges they currently face - hints of dynamism that we can learn from. Each opportunity is a direct response to the common barriers identified.

CHALLENGES AHEAD

CHALLENGE 1: ADAPTING WITH DIRECTIONALITY

The 'exponential age' refers to the rapidly advancing development of new technologies that are dramatically shaping society (Azhar, 2021). This real-time force facing all innovation agencies is coupled with deep-rooted societal challenges driven by geopolitics, national politics and changes to the economy. Above what is experienced in real-time, is a looming climate crisis that is set to bring more frequent and intense extreme events (Oppenheimer, 2020). All these factors related to grand challenges are considerations for innovation agencies today and can be expected to play a more prominent role in shaping how agencies foster innovative cultures in the future. While the Covid-19 pandemic led to major shifts in how agencies operate, we can expect more adverse disruptions to be-

come the new normal and volatility to become a constant.

Operating within this context, the innovation agency will be expected to continue to meet a wide variety of rapidly changing demands. In order to do so effectively they will need to remain adaptable but with a strong and clear sense of direction, to avoid being stretched so thin that they become ineffective. What today some are calling dynamic capabilities, defined as 'the ability of an organisation and its management to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments' (Kattel, 2022).

In the past, agencies that managed to achieve this careful balance of focus and flexibility tended to be

agencies at the periphery (Breznitz and Ornston, 2013) where there was greater freedom to do things differently and little political interference. In the near future, all agencies will need to respond quickly and effectively to both crisis and complexity. The challenge is that like many public institutions, innovation agencies are bound by legal infrastructures and bureaucratic practices that reflect more of the past century than our present and near future realities. The Covid-19 pandemic has been an inflexion point, and has required many agencies to quickly pivot and adopt new practices. However, it remains to be seen whether this adaptive approach will become the norm.

CHALLENGE 2: FOCUSED POLICY AND DELIVERY

Adapting with sufficient autonomy will be one important aspect to ensure agencies are fit for purpose, but directionality will be the key to maintaining effective policymaking and delivery of necessary instruments. Agencies shifting towards transformational agendas, will need strong, cohesive and holistic strategies to keep up with systemic shifts resulting from the fourth industrial revolution; where the speed of innovation in terms of development and diffusion is faster than ever. Holistic responses to mission-oriented strategies will likely mean 'covering both outcomes and enablers, sweeping across public, private and third sector...all are at play, just as they are in the practices of everyday life' (Hill, 2022). In such an environment, only strategic focus will ensure agencies maintain the right policy mix for desired goals.

The challenge for agencies in the near future will be how to sustain the right policy mix that has already historically been broad, multifaceted and highly sophisticated in the developed world. In 2020, the response to the global pandemic saw TAFTIE agencies repurpose funding instruments and programmes, and develop new forms of funding and support to stimulate innovative solutions (Goettsch and Glennie, 2020). These were the results of crisis response rather than longer term planned strategies. So the challenge emerges when agencies are pushed to develop longer term strategies to respond to grand challenges knowing that they operate within perpetual uncertainty, resulting from ever-changing and more complex environments. In addition, transformative agendas will require agencies to collaborate with a wider variety of actors, many of whom they have never connected with in the past (such as citizens or civil society organisations).

The demands will be much greater for agencies of all kinds, regardless of whether they have historically been positioned as fixers, builders or drivers (Glennie and Bound, 2016). Thus with a spectrum of needs, the policy mix for transformational agendas sends agencies into unknown territory where funding mechanisms and traditional support alone will likely not be enough but where the alternatives are also not as obvious.

CHALLENGE 3: BUILDING COMPETITIVE SKILLS AND TALENT

A number of skills gaps were highlighted by this research, many in line with what had already been uncovered by previous research (Glennie et al, 2019). The survey data showed that around half of agencies who responded to the survey had performed an assessment or audit of skills they would need in the future, while two thirds of agencies already found it difficult to recruit for skills and qualifications they needed. This points us to a two fold challenge for agencies in the near future. On the one hand, agencies are having to work hard to attract and retain the talent they need for existing demands, and on the other hand few agencies have a clear sense of current capabilities and how these will need to shift to meet future demands. Considering how agencies position themselves within their ecosystems to determine what their unique 'perimeter of action' is also related to how well they will be able to determine the kind of talent and skills they need - what it is that they can offer that others in the system do not.

Underlying this challenge for agencies in the near future is a changing understanding of the role of the state and the goal of innovation policies. While innovation continues to be about 'taking new ideas and devising new or improved products and services' (Breznitz, 2021), policymaking is past the stage where focusing on economic growth rate and market fixing alone is enough (Kattel, 2022). Rather, what is being asked of governments is inclusive growth and innovation, which requires a different model for innovation agencies. An innovation agency's 'abilities to assess and adjust policies and implementation practices are intrinsically important to such policy frames as missions or socio-economic transitions' (Kattel and Mazzucato, 2018). Behavioural and cultural considerations, as well as technical and legal (Hill, 2022) will all be required. As such, it will be instrumental for agencies to forward plan the skills and capabilities they need for the future, knowing that they will likely need to be much more diverse than they have been to date.

CHALLENGE 4: DIVERSIFYING RESOURCES

Financial and political instability often makes it difficult for agencies to act in a responsive and non-reactive way. This challenge also impedes longer term planning that is necessary to see through transformational innovation agendas. Driven by political contexts outside of an agency's control and market trends, this particular challenge is trickier for agencies to address themselves - it is often beyond their remit. However, as shown by findings in Determinant 2 (on institutional safeguards) and Determinant 3 (on adaptation) presented in Part 1 of this report, the majority of agencies will experience structural and budgetary changes in the near term - one of the few certainties they can count on, if historical patterns persist. Therefore, agencies will need to develop ways to diversify their resources, particularly those connected with transformational projects.

For most agencies, developing strategies to manage both structural and budgetary changes or infrastructures that help to mitigate against disruptions will become increasingly important in the near future. Dynamic organisation capabilities that enable agencies to renew operational processes and dynamic managerial (leadership) capabilities that help agencies to determine and act on new opportunities that emerge (Kattel, 2022) will be essential for agencies to curtail negative shocks driven by environmental factors outside their control.

OPPORTUNITIES TO SHIFT THE TRAJECTORY

All challenges present associated opportunities. The following section highlights four opportunities we believe exist in relation to the four challenges described above. Where we have seen examples of agencies operating in the direction of these opportunities, we include a brief example of how present practice offers a potential response to near future challenges foreseen.

OPPORTUNITY 1: EMBEDDING FORESIGHT AND OTHER INNOVATION METHODS

In response to turbulence, uncertainty, novelty and ambiguity in the near future, agencies have an opportunity to embed foresight and other innovation methods as a way to keep abreast of changes and opportunities in the horizon. Crisis and disruption can open up space for agencies to experiment as was seen during the Covid-19 pandemic. However, making use of foresight activities (such as horizon scanning and the development of scenarios that can test assumptions and create space to consider alternative future options) can support agencies to respond ahead of crisis points and to make strategic decisions about their longer term focus (Glennie, Finch and Mahon, 2022).

For example, Business Finland has created foresight teams to help ensure the international competitiveness of Finnish businesses they support and to adapt to emerging developments:

> *"We use our global network to define our approach so we do not lose sight of the international market and changes there...[and] at a strategic level we have a foresight team which is looking at the long term disruptors."*

In particular, innovation portfolios are best suited for challenges that contain a high degree of uncertainty (Seppälä, 2021), which we can expect to become increasingly common in most areas innovation agencies will operate within.

By embracing innovation methods, there is also an opportunity to shift operating models to allow for continuous innovation by means of 'sensing and seizing entrepreneurial opportunities...to benefit the organisation and its ecosystem' (Gullmark, 2021). A promising approach gaining popularity is to build innovation portfolios that can bring together projects and programmes where there are common synergies. The result of such an approach helps to distribute the risks associated with trying multiple new ideas, transforming potential disruptions into opportunities for structured and strategic learning. Taking a portfolio-based approach also provides directional action while ensuring agencies maintain the breadth required to tackle grand challenges from multiple directions.

For example, Vinnova organises its activities within 10 different areas:

> *"Five are societal challenges and the others are capability oriented, and [we are] also putting teams together to formulate and actively design strategies with those bold and ambitious targets that we're talking about, which is something that is new for everyone... [later] looking at the whole portfolio and not breaking it down in programs or calls but really seeing the big picture - the whole system."*

OPPORTUNITY 2: ACTING AS THE CONVENOR IN THE SYSTEM

In response to the increasing difficulty to serve the breadth of needs required for transformational agendas, innovation agencies have the opportunity to act more as a convener that brings together multiple actors and capabilities that may not necessarily be held in-house. This opportunity has significant potential to build more cohesive and effective innovation systems and to reduce resourcing burdens on innovation agencies.

Innosuisse's approach offers an interesting model here:

In addition, the innovation agency is well placed to bring together multiple actors for the purposes of transformation, with there being mass potential to use emerging digital technologies to bridge existing innovation brokerage gaps (Smith and Haley, 2020). It is well understood that when businesses collaborate with research institutions, they in-

crease the likelihood of improving productivity growth and so too can innovation agencies play a role in convening sectors for specific aims. There is significant untapped potential to connect ideas, people, organisation and communities to speed and improve innovation ecosystems and meet the ambitious aims of transformative agendas.

"The bodies that work part time for us give us an expert pool of assessors for the proposals we receive and a specialised body (innovation council) responsible for decision making. We also have startup coaches who advise startups...we have tight cooperation with all actors working for us on a part time basis."

OPPORTUNITY 3: STRENGTHENING SPACES FOR CONTINUOUS LEARNING

In response to agencies needing to remain on the frontier of supporting innovation, there is a need to build holistic learning cultures that help agencies gather and use evidence in a dynamic way to make informed decisions about their trajectory. Rather than evaluate programmes for the purposes of reporting only, or audit talent and skills sporadically, agencies have the opportunity to embed continuous strategic learning processes to support activities from early policy design through to data that helps improve performance. Strengthening the systems that support learning cultures, can also pave the way for more experimental approaches to policy making, where agencies test, tweak and optimise their services continuously. TAFTIE agencies have started to and should continue to build on the progress being made[3].

There have been examples of agencies stepping towards this kind of capability development but these remain in the very early stages. For example, Innosuisse:

"After mainly external evaluations were carried out in the past, we really have now a systematic way to do evaluations. An important instrument is the monitoring of all the innovation projects we fund...similar monitoring systems are being set up for startup coaching and other activities".

What is key is that agencies move towards setting up the infrastructures required to collect information in real time, and build the processes to use this evidence to inform decision making more widely. One promising example of evidence-based decision making can be seen at TA CR:

"We are trying new processes and we're not afraid to admit it and react if something is not working as it should. Some TA CR activities were implemented as an experiment and have been redesigned many times since the first run. In some cases we still observe that the resulting form is not what it should be and we keep looking for a more functional way of implementation. When impact assessment of an activity shows that an activity isn't bringing positive outcomes, we seriously consider making changes or even cancelling the activity."

On the one hand there is the need to build technical knowledge management systems and on the other hand, there is an aspect of encouraging organisational cultures to shift towards more evidence-based approaches. In particular, locating data deserts, both within agencies and national innovation ecosystems where information sharing is locked and information management practices seldom support learning. There is a huge need to drive investment to close existing gaps and doing so will be instrumental for agencies to remain competitive in the future.

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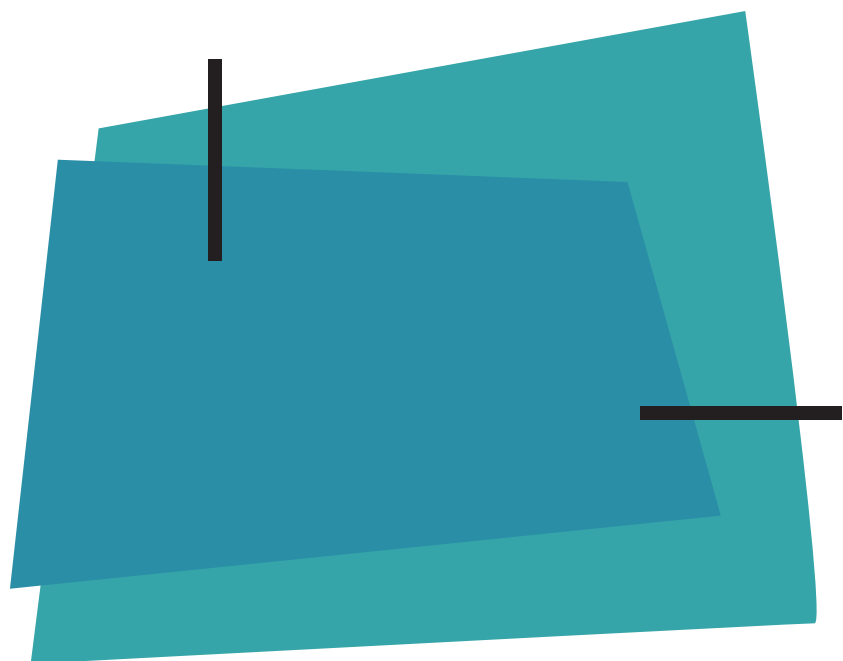
3 More information about the TAFTIE Experiment Task Force can be found here: https://taftie.eu/task-force-experiment/

OPPORTUNITY 4: SEEKING OPPORTUNITIES BEYOND THE HORIZON

In response to knowing that periodic economic and political shifts will inevitably come, potentially at a higher frequency, agencies have the opportunity to consider how they may diversify their funding models and strengthen institutional safeguards to build a higher degree of autonomy over time. While agencies operate within the legal frameworks that confine their roles within their system, a number of examples highlight what is possible if they opt to take a more entrepreneurial approach. For instance, Enterprise Ireland are one of the few agencies that have built a mixed funding model that allows them to directly invest in the companies they support.
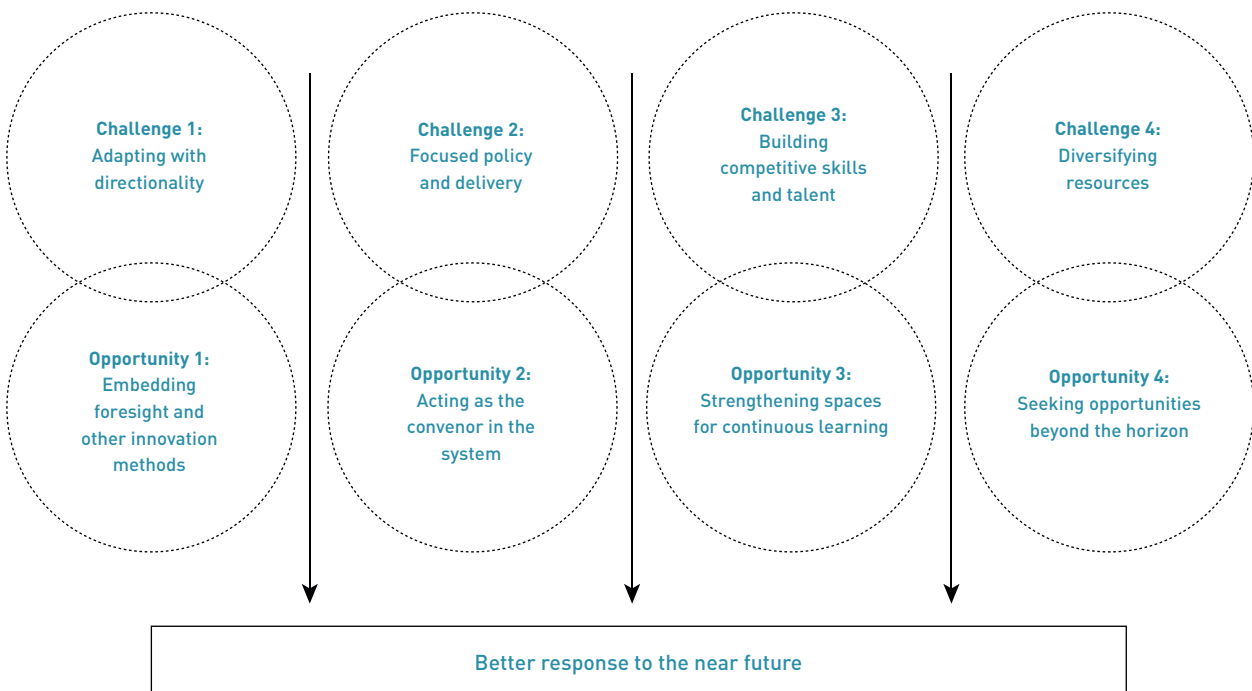
While financial autonomy generated by increasing the levels of external income may provide some freedom it does not necessarily guard agencies against political interference. Therefore, strengthening institutional safeguards that support agencies to plan multi-year programs and projects and to maintain a level of autonomy are increasingly more important.

For example, the National Research Council of Canada Industrial Research Assistance Program have used the terms and conditions that determine their remit to secure some projection over their programmes:

"We have within our terms and conditions broad ability to determine what our program is... it allows us a fair bit of flexibility in what we deliver. It doesn't mean that in our everyday work we exercise all of that flexibility. But we have provision to do it, should we want to exercise it."

What is useful to note from the quote above is that strengthening institutional safeguards does not mean a complete abandonment of existing directives that may have been determined by traditional overseeing bodies. In fact, maintaining strong ties with these same bodies is also a necessary part of being able to influence the wider innovation ecosystem, rather than going it alone. The focus should be on having the measures in place should they be needed and to afford sufficient protection from shocks that may come.

Challenge 1: Adapting with directionality

Challenge 2: Focused policy and delivery

Challenge 3: Building competitive skills and talent

Challenge 4: Diversifying resources

Opportunity 1: Embedding foresight and other innovation methods

Opportunity 2: Acting as the convenor in the system

Opportunity 3: Strengthening spaces for continuous learning

Opportunity 4: Seeking opportunities beyond the horizon

Better response to the near future

TOOLS TO MAKE SENSE OF THE FUTURE

Throughout the Characterisation Task Force a number of tools to support gathering insights about the present to consider the future were developed, building on existing approaches. For these conversations to shape how agencies shift their roles, they will need to happen often both within agencies and outside, collectively with others. This section presents the various tools used throughout this Task Force to assist anyone wishing to use the same methods again in the future.

1. GATHERING INSIGHTS ON CURRENT STATE OF PLAY

Before agencies delve into considerations about the future it is important to understand the current environment. While conducting a survey is one approach, it is resource intensive and can take many hours to both complete and extract meaningful findings. During the co-design workshops that formed part of the qualitative research phase of this Task Force, we used a 90 minute session to map each agency's "transactional and contextual environments" (Ramirez, 2020).

Beginning with the transactional environment based on all the entities that agencies had a direct relationship with, agencies mapped all the players they considered to be part of their spheres of influence. Once all entities were mapped it was helpful to consider those that played more than one role in relation to the agency. For example, businesses could be considered the 'client' but may also occupy the space of 'general public', influenced by political, societal and economic forces as they present themselves in that sphere.

Once all the entities directly related to an agency were mapped, agencies were prompted to think about the contextual environment; all the driving forces affecting the entities in the transactional environment. To nudge future-focused thinking, the Task Force was asked to consider all trends over a ten year period to capture both the biggest trends affecting the current state of play and emerging ones likely to impact the environment in the near future. Through this exercise, agencies considered the following question as a group:

• How might contextual forces change the transactional environment?
• What are the future challenges and opportunities facing your agency?
• Where are your blind spots - what haven't you thought about?
• How can you prepare for an uncertain future context?

From the long list of all entities in the orbit of agencies and the trends affecting them, clustering the maps of the group helped to highlight common features shared amongst the TAFTIE network as a whole [Figure 2.1].
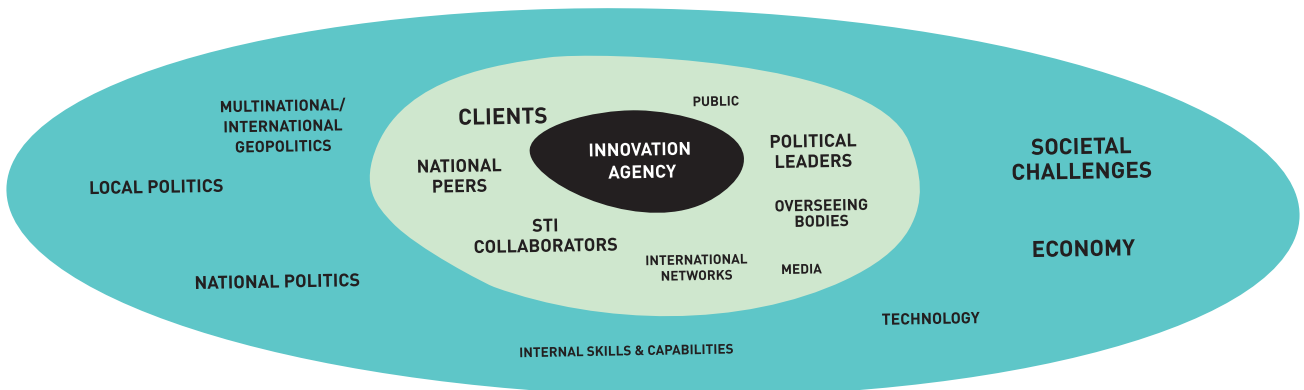
At a later workshop, agencies were presented with the synthesised map and asked to reflect on interrelated forces (where there may be virtuous cycles) within the system, separating causes versus symptoms to have a better sense of where strategic decisions could have the biggest impact.

Figure 2.1: Consolidated map of contextual forces and transactional relationships

2. Looking to the future

2. EXPLORING THE THREE HORIZONS

Exploring the near future is close-ly linked with the distinctive characteristics that emerged through this Task Force and the illustrative examples we were able to build as a result. Taking inspiration from the International Futures Forum Three Horizons model [Figure 2.2], the insights gathered and iterated throughout both research phases were mapped along the IFF's original model .

Having started with mapping the current state of play, agencies had a good basis to consider their current roles and how they might need to change in the future. The illustrative examples of the distinctive characteristics provided a guiding north star for what was possible, should agencies wish to strengthen existing characteristics. This provided the basis for considering aspirational roles they may want to take and what this would mean in the far future.

What appeared to be missing was a consideration for what agencies could achieve in between - their anticipatory roles in the near future. As such, a series of prompt questions were developed to move agencies from considerations about their current roles towards their aspirational roles, and finally towards questions of what anticipatory roles would be needed to get them to the far right of the chart [Figure 2.3].
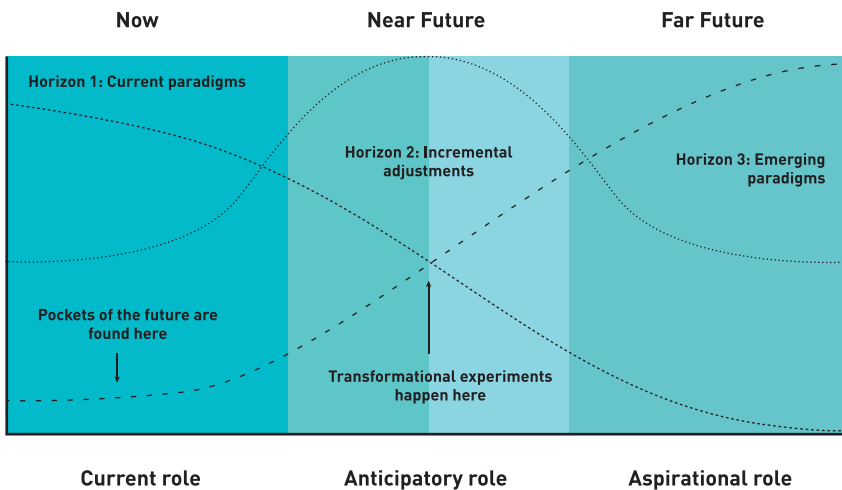

Figure 2.2: The Three Horizons

These prompt questions formed the basis of fruitful discussions that helped to determine the four challenges and opportunities presented in this section. While the discussions only scratched the surface, we believe that this tested model of engagement between TAFTIE agencies will be helpful for future conversations about what lies ahead in the near future and where agencies can collaborate on common challenges and opportunities.
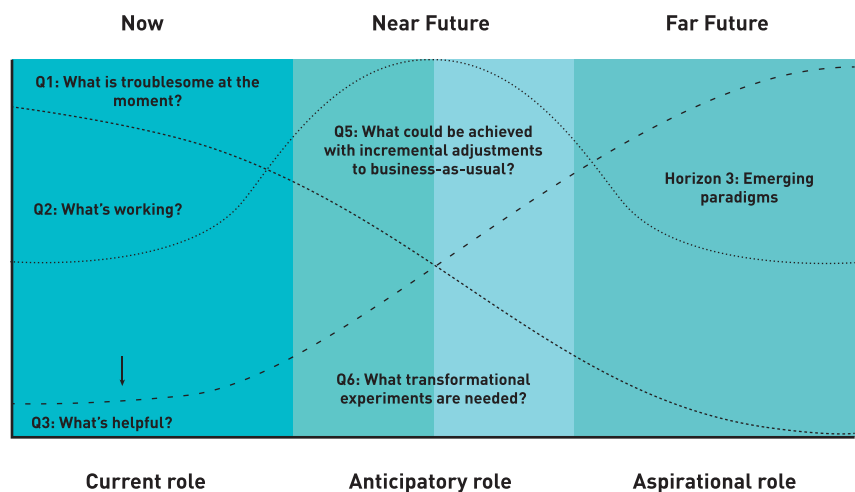

Figure 2.3: Using the Three Horizons to consider anticipatory and aspirational roles
(Adapted from the IFF Three Horizon model)

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CONCLUSIONS AND RECOMMENDATIONS

This report has covered the contextual factors affecting agencies, the trends that result from this current context and the challenges and opportunities they are likely to face in the near future. We have found that agencies are increasingly operating in more turbulent, uncertain, novel and ambiguous environments, as most recently demonstrated by the Covid-19 pandemic and, at the time of finalising this report in Spring 2022, by a looming war in Europe. This environment has pushed all agencies to consider what transformational agendas mean for their own particular ways of working. As such, this report has spoken to the imperative innovation agencies face in considering how their roles may need to shift or change to meet new demands required of them.

There are already signs of agencies operating in distinctively different ways from the norm, as illustrated by the six 'profiles' that deep dive into attributes that will be helpful for agencies to consider a selection or combination of. Each characteristic presents new promising approaches but also trade offs. These illustrative profiles alongside all the other tools developed throughout the Characterisation Task Force provide a framework that facilitates strategic thinking about both current and future trajectories. While the 34 TAFTIE member agencies are as diverse as the countries they operate in, following this framework did uncover common challenges and opportunities for the network as a whole. We hope that this same approach helps to deepen future conversations beyond the scope of this Task Force.

SHARING KNOWLEDGE, COLLABORATING WITH OTHERS AND EMBEDDING LEARNING

Agencies will have to remain deeply curious about both their environments and their roles within them. Task Forces like this capture information at one point in time and nudge reflection but are prone to being quickly out of date. To better respond to the challenges and opportunities of the future, innovation agencies require more regular spaces for reflection about both the current state of play (that is ever evolving) and the near future. Here are three suggestions for what innovation agencies (and networks like TAFTIE) can do to facilitate this:

1. DEVELOP BETTER DATA SHARING CAPABILITIES

The TAFTIE network should consider how it gathers data about its members and manages this information. A better knowledge management system would likely help agencies both to develop their internal capabilities to gather and maintain up-to-date information about how they operate and to regularly share this information with others. In the workshops run for this Task Force, many agencies stated how useful it would be to have better information about the programs and interventions run by their peers in other countries - having regular access to relevant program data could accelerate the learning process across TAFTIE and beyond.

The survey used for this project was co-designed withTAFTIE innovation agencies so there is no reason why it cannot be further developed over time to fit the needs of future enquiries that would need to take place. Other more real-time forms of innovation data mapping could also be considered - there are examples of models[4] developed in Europe that could be replicated.

• *In what ways could TAFTIE collect and make use of data to inform member agencies' strategic decisions?*
• *What kind of data would be most useful to collect and share across TAFTIE members, and with international partners?*

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4 For example, see http://www.eurito.eu/

2. SUPPORT DISCUSSION OF THE FUTURE AND ENCOURAGE COLLABORATIONS

To make the best use of both the data gathered over time and the insights agencies have within their organisations and as a network, regular spaces for reflections and considerations about the future are necessary. Throughout this Task Force, we held a series of workshops over a period of three months. Every conversation built on the previous one, and the deep insights that clarified the biggest 'a-ha' moments happened during the final session. This is not uncommon, as groups take time to norm and form before they begin to perform, identifying synergies between their individual context and the lessons conveyed by others. Therefore, this kind of regular reflective space following a clear methodology is instrumental to teasing out valuable collective knowledge that data alone cannot provide.

In addition, where common opportunities for collaboration emerge from these discussions, it is important for TAFTIE to consider how it supports member agencies to capitalise on possibilities to work together. This will incentivise more openness to contribute to discussion space meaningfully and stimulate more collaboration as a result. Taking into consideration the need for agencies to increase levels of autonomy, there is much to be gained from joint ventures for funding or programmatic development that could be facilitated within the TAFTIE network.

- *What kinds of questions are TAFTIE agencies looking for collective reflections and insights on?*
- *What blind spots does the TAFTIE network possess, and how could they start to identify and address them?*
- *What potential kinds of joint collaborations appeal to the TAFTIE network?*

3. EMBED STRATEGIC LEARNING

There are already many examples of TAFTIE member agencies working together. Where this is happening bilaterally or in consortium, lessons from collaborative activities should be captured and shared with the wider network. There are many existing EU projects where TAFTIE members are working together - how can insights from these operational projects be fed back into TAFTIE to inform members of how they may seek other similar ventures with one another? This opportunity seeking can be maximised if the collective intelligence of the network is geared towards identifying and capitalising on possibilities and then translating insights into shared learning.

Embedding strategic learning will be extremely important to help innovation agencies navigate their ecosystems and their role. Better informed and evidence-based decision making will set the foundations for experimental cultures that support agencies to adapt and respond efficiently to what is demanded of them at any given time. While some agencies are well equipped to embed strategic learning, having already established open, collaborative and curious cultures, others will need support, guidance and resources to really make use of evidence that exists and is emerging. Forging a number of mutually supporting paths in the direction of strategic learning, from strengthening evaluation to connecting with more players in the innovation system, will be a sensible approach to agencies individually and TAFTIE as a whole.

- *What structures or processes would facilitate the identification of strategic collaboration opportunities?*
- *How can lessons from joint collaborations be captured and shared with others?*

FINAL REMARKS

Despite the constraints on innovation agencies explored during this research, there is much to be optimistic about in terms of the resiliency of agencies that contributed to this research. There is no doubt that there will be testing times ahead, with Europe still emerging from the pandemic while already facing another crisis at its door with the war in Ukraine. Nevertheless, should agencies and their leadership continue to remain open to signals in both the current and near horizon environments, they will remain adaptable to what-

ever grand challenges they are pressed to respond to next. It is an exciting time for innovation policy despite the very real stakes at play.

The TAFTIE network provides space for frank conversations and invaluable learning to take place. There is much more potential that can be achieved should there be the desire and will to strengthen collaboration processes amongst its members and international partners. Finally, there needs to be real recognition from innovation policy makers and leaders in

innovation agencies alike that the skills and talent of agencies will need to be heavily invested in to meet the demands of the future. At many points, this report speaks about strategic direction, dynamic capabilities and experimental approaches, all of which require diverse skill sets. Connecting the dots and making sense of the existing and emerging evidence will play an instrumental role in enabling innovation agencies that can transform alongside a changing world.

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