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Interim evaluation of Ireland's Participation in Horizon 2020

Final Report

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technopolis |group| June, 2016

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Executive summary

The mid-term evaluation

- This interim evaluation of Ireland's participation in Horizon 2020 was commissioned by the Department of Jobs, Enterprise and Innovation in Ireland (DJEI) and conducted by Technopolis in the period December 2015-March 2016.
- The study addresses evaluation questions across three areas: The national system of support for participation in Horizon 2020, Ireland's approach to co-funding, and Future recommendations.
- In parallel, Technopolis conducted the ex-post evaluation of Ireland's participation in the Seventh Framework Programme for Research and Technological development (FP7), which can be found in a separate document.

Summary of high points

Ireland has performed strongly within Horizon 2020, more than doubling its drawdown as compared with the first two years of FP7, up from €120M to €273M

The number of applications has seen a similar expansion, and that has been especially strong growth in applications from business

Assuming Ireland can maintain its success rates, the country is on track to exceed its €1.25 billion target and more than double its drawdown as compared with FP7

Thematically, Ireland has been particularly successful within the Excellent Science pillar, further improving on its historically strong performance in Marie Curie and delivering a striking improvement within the ERC, as compared with FP7

Ireland's smaller businesses have continued to show a strong interest in the programme, with Ireland's SMEs securing more than double the share of total EU contributions from the SME Instrument, as compared with the country's share of EU contributions for Horizon 2020 overall

The further expansion and development of Ireland's national support system – NCPs, Research Officers, Horizon 2020 funds – has played an important role in these achievements. There is a clear positive correlation between engagement with the support system and applicant success; there is also strongly positive feedback from users regarding the relevance and effectiveness of the supports on offer

Summary of the one or two areas where further work will pay dividends going forward

The great success with the ERC has mostly concerned the starting and consolidator grants, and there is an opportunity for Ireland to do more to secure its share of the larger and arguably more prestigious ERC Advanced Grants

Ireland is widely regarded by other countries as punching above its weight in terms of its strategic engagement with the Framework Programme. However, the proliferation of new advisory structures and strategic initiatives means that Ireland – and other smaller member states – needs to adopt a more coordinated approach to ensure its engagement is strategically targeted and maximises future opportunities.

Horizon 2020

- Horizon 2020 marks **a fundamental change in European policy-making** due to its comprehensive and integrated approach to research and innovation, bringing together what had been three separate programmes historically: The EU RTD Framework programme; the innovation elements of the Competitiveness and Innovation Framework Programme; and the European Institute of Innovation and Technology (EIT).

- The programme will invest around **€80 billion over its 7-year term, 2014-2020**, primarily through three main pillars: Excellent Science (€24.5 billion); Industrial leadership (€17.9 billion); and Societal Challenges (€31.7 billion). There are several additional programme elements, which sit outside the three pillars (e.g. spreading excellence and widening participation) that are also of relevance to Ireland.
- In addition to the improved coupling of research with innovation through a single programme, Horizon 2020 has also attempted to make its offer more attractive to different stakeholders, from companies to civil society organisations, and to **simplify its processes more generally** (e.g. introduction of a new participant portal, the use of a single cost model, the reduction in financial audits).

Ireland's participation in Horizon 2020 to date

- Following strong participation in FP7, in which Ireland secured €625M in awards, Ireland's Horizon 2020 Strategy (2014), *"EU Framework Programme for Research and Innovation (2014-2020): Ireland's Strategy and Target for Participation"* set an **ambitious target** for the new programme, looking to double of its financial drawdown to €1.25 billion.
- In the first two years of Horizon 2020, Ireland submitted around 4,200 applications, which is **substantial increase** when compared with the first two years of FP7 (+2,300; +183%). This is higher than for the programme overall, for which the equivalent increase is 133%.
- Ireland is also submitting **larger applications,** as compared with FP7. In the first two years of Horizon 2020, Irish applicants requested €2.6 billion in EC contributions, as compared with €850M in total requested EC funding for all applications submitted in the first two years of FP7 (a threefold increase in the amounts requested).
- Ireland secured 622 awards in the first two years of Horizon 2020 (447 in FP7), which amounts to an **application success rate of around 15%.** This is a decrease of around 5 percentage points as compared with FP7, which mirrors the trend for the programme overall, and reflects growth in application numbers across Europe. Ireland has performed better than Horizon 2020 overall, where the average success rate has fallen by more than 8 percentage points.
- Ireland has been **awarded a total of €273.3M in EC contributions** for those 622 participations and 472 projects (several projects have two or more participants by organisations located in Ireland). This is a 228% increase on the draw down in the first two years of FP7 (€120M), which is a notable improvement in performance. Ireland has achieved a success rate – in terms of EC Contributions – of around 11%, which is the same as for Horizon 2020 overall. This ratio is expected to improve slightly when the Commission has completed its contracting for decisions made relating to 2014 and 2015.
- Ireland's performance has matched the performance of four comparator EU member states (Austria, Denmark, Finland and the Netherlands) proportionately, in terms of both application numbers and success rates. The main exception is the Netherlands, which has performed better than Ireland (and the other comparators) in terms of both application success rates and funding rates.
- Ireland is on target to achieve its overall drawdown target of €1.25bn, assuming it can maintain or improve upon the 13% (drawdown) success rate achieved in the first 12 months (2014) and the Commission does invest 100% of the planned budget. The numbers are finely balanced: a fall in either the success rate or Horizon 2020 expenditure would lead to Ireland missing its target, and underlines the need to continue to work hard to ensure it meets that target.

Performance within specific pillars

- Ireland has performed well in all three Horizon 2020 pillars, albeit it has been a little more active in the "Excellent Science" (164 projects, €102.7M) and "Societal Challenges" pillars (177 projects, €95.7M) as compared with the Industrial Leadership pillar (117 projects, €70.7M,).
- Ireland has secured more than €20M in five specific programmes, with the Marie Skłodowska-Curie actions (MSCA) (€54M) programme having achieved the greatest volume of contributions. It has achieved 40% or higher against its national targets for three specific programmes, secure societies, health, and the European Research Council, which is substantially ahead of where the country might have expected to be after two years of the 7-year term (28% of elapsed time).
- Ireland has experienced a high success rate in the SME Instrument, which operates across Leadership in Enabling and Industrial Technologies (LEIT) and the societal challenges pillar. In fact, Ireland's success rate has been higher than the overall average (14% versus 7%). Irish SMEs have so far drawdown 5% of the total EC Contribution, which is far larger than the average drawdown for Ireland across all programmes (1.9%). The SME Instrument has also attracted new players: of the 45 Ireland-based SMEs that have won awards, 32 are new to the programme.

A view from the applicants

- Applicants welcome the programme's commitment to simplification and the introduction of a single financial model. The enthusiasm for Horizon's various other changes varies by segment, with for example a more positive response on average amongst academics as compared with companies for the increased focus on societal challenges and the greater opportunities for co-funding. Companies by contrast were more favourably disposed to the addition of new instruments (e.g. access to finance) or the expansion of support for public private partnerships.
- In the first two years of Horizon 2020, 565 Irish organisations that did not apply in FP7, applied to the programme. This means that **68% of all Irish organisations that have applied so far could be new players** (though it is not clear whether they applied to FP6 or earlier programmes). This represents 24% of total applications to Horizon 2020, and 24% of total requested EC contributions in the first two years. Notably, 87% of these 'new players' are companies.
- Applicants continue to find the programme challenging, however, due to factors such as cost, complexity of bidding and the lower success rates.
- The three evaluation **criteria that applicants find most challenging** relate to demonstrating impacts and dissemination. The more operational criteria such as resourcing and management were found to be challenging by about 1/3 of respondents. Higher education institutions (HEIs) and research organisations are slightly more likely to find the application criteria straightforward than companies or other organisations.

Horizon 2020 national support system

- Ireland's national support system has been expanded and developed over the course of several Framework Programmes and arrived at a point where it has a clear governance structure that involves most if not all of the key actors nationally, a good complement of National Contact Points (NCPs) and a suite of well-regarded financial support measures.
- Our applicant survey revealed that a majority of Horizon 2020 applicants who responded (both successful and unsuccessful) interacted with an NCP during the application process. Of the NCP core services, **information about calls, and advice on calls and administrative procedures were the most frequently used**.
- On average, **successful applicants tend to make more use of the various NCP services** than unsuccessful applicants do. In particular, successful applicants make extensive use of targeted information services and advice on proposal writing.

- While there is little change in the overall percentage of applicants reporting interaction with NCPs between FP7 and Horizon 2020, our analysis highlights **several services that are being used more widely.** These are typically the higher-value functions, including brokering events and assistance with partner searches. There is also a switch away from using the more generic services, including the web portal and circulars. This may reflect a maturing applicant base, as well as substantial improvements in the Commission's own marketing and communications.

Appropriateness and effectiveness of Ireland's national support for Horizon 2020

- A majority of survey respondents report that their interaction with the NCP network has helped them to i) improve their understanding of critical success factors (66%), ii) understand which calls to target (59%), and iii) identify a specific opportunity relevant to their organisation (58%). More than a third of respondents agreed that **interaction with the NCP network had improved the implementation (38%) and impact (37%) aspects of their bid**, while a notable minority (28%) agreed that it had improved the scientific or technical aspects of their bid.

- A comparative analysis between FP7 and Horizon 2020 reveals an **increase in positive views of benefits related to the different NCP functions,** including alerts to specific opportunities, understanding what calls to target and improving implementation aspects.

Adequacy of resourcing of Ireland's national support for Horizon 2020

- Ireland's 23 NCPs (in FTE terms) **equates to around 2 NCPs for every thousand researchers, which is in line with the average for** the EU28 and substantially higher than the average for the EU15. Ireland's NCP system is proportionately larger than each of the four selected comparator countries, suggesting that Ireland's support network has the scale to match the Horizon 2020 performance of other small and medium sized member states.

- Our consultation found there was **widespread satisfaction with resourcing levels across most stakeholder groups**, although a minority suggested that more 'on the ground' support from NCPs in high-pressure areas would be welcome.

- There was general **satisfaction with the wide-range of financial support measures** that are available. There were no suggestions that any specific measure was underperforming or should be changed drastically or replaced. Several contributors suggested that the network of National Delegates could be utilised better in terms of representation and cross-working.

Influencing the European research agenda

- Ireland is **well represented on key European groups**, including seven of 10 JPIs and 23 of 41 European Technology Platforms (with greatest coverage in ICT topics). For completeness, we also reviewed membership of the Horizon 2020 Advisory Groups (of which Ireland is a member of 14 of 19) and the number of registered expert evaluators. Ireland has 255 registered expert evaluators in the Commission's database, and this is proportionally in line with the overall database in terms of pillars and programmes.

- Our analysis suggests that **despite this good coverage, more could be done to maximize Ireland's participation** in these groups, in particular in terms of presence and ensuring that appropriately senior individuals can attend consistently.

Approaches to co-funding

- Ireland has taken advantage of the Commission's increased commitment to Co-funding under Horizon 2020, and has secured a **significant number of MSCA COFUND awards in the first two years**. The instrument has attracted strong interest among both research funders and individual institutions. This European investment in national programmes is expected to allow Ireland to expand its capacity for researcher training and career development, which should help to improve Ireland's prospects in future ERC calls.

- Ireland has been **widely involved with ERA-NETs from the outset,** and since FP6 has been involved in 92 networks, co-ordinating two. In total, 26 Irish organisations have been involved across 57 joint calls. Consultation revealed that **there are many agencies – and some departments – that would wish to engage in ERA-NETs, but cannot do so due to capacity constraints and resourcing issues.**
- Our analysis suggests that **the current approach is not sufficiently strategic** in terms of which ERA-NETs are targeted and by whom, and that a lack of central 'push' has led to Ireland missing out on specific opportunities.

Future participation

Targeting greater participation around national priorities

Ireland's Horizon 2020 strategy is committed to improving national participation in the framework programme through building on national STI strengths and priorities, and includes drawdown targets for each of the programme's constituent elements.

The programme-level drawdown targets are based on a bottom-up assessment of Ireland's national strengths and capacities, as well as past performance in FP7, and an earlier overall target of €1 billion. The individual targets were not updated, when the final overarching target was set at €1.25 billion, and it would be helpful if this could be done now as a matter of some urgency.

Our analysis suggests there are several areas of national strength where Ireland could look to target greater participation in Horizon 2020. Our methodology compared a juste retour figure for each specific programme with Ireland's current target and its actual performance in FP7 and Horizon 2020. Ireland will want to employ a less mechanistic approach, however, our analysis suggests Ireland should be looking to increase its targets substantially in several specific programmes, including FET, Industrial Technology (LEIT), Health and the EIT. The strong early performance in the ERC suggests it may be possible to further stretch that particular target, perhaps focusing additional attention on the larger, and more prestigious ERC Advanced Grants.

Strengthening national support around STI priorities

Our review of the distribution of Ireland's NCPs across the Horizon 2020 pillars reveals a conscious decision to invest more heavily in some areas as compared with others, including LEIT (4 NCPs), agri-food (2 NCPs), SMEs (2 NCPs) and climate (2 NCPs). The outlier in this analysis is Marie Curie, which has one NCP and a target of close to €250M, and yet is a priority area within the overall strategy. This may be a sensible level of resourcing, however, given the high level of interest among universities and colleges, whose research offices and senior academics work closely with the IUA and MCSA NCP to promote opportunities in this space.

It is conceivable that a revised Horizon 2020 strategy would further concentrate the network on those larger programmes that intersect best with Ireland's national priorities, and leave the smaller programmes to be covered indirectly by all NCPs. The absence of any specific nominated NCP support for the substantial opportunities coming through the EIT calls may also be a point for further discussion. There could be a similar discussion about the programme's support for several new types of instrument, including innovative procurement and access to finance: are these dealt with most effectively through targeted support (e.g. a named NCP) or transversally?

Our analysis of the distribution of NCPs suggests there may be another gap, which relates to the increasingly important portfolio of Commission co-funding and strategic initiatives. These initiatives attract substantial EU funding, influence policy and work programmes and can deliver substantial social and economic value. Ireland's national priorities intersect with many of these platforms, and there would appear to be a prima facie case for having an NCP resource, and possibly a support fund, earmarked for such co-funding and strategic initiatives.

Ireland's national support system includes various financial supports that complement the work of the NCP network (and research officers within individual universities, colleges and institutes) that have helped to increase application numbers in general and project coordinators in particular. Ireland created several new financial support measures for Horizon 2020, targeting different aspects of the ERC (pre and post decision), which have helped Ireland to perform strongly and turn round its limited success within the Ideas Programme under FP7.

Our mapping of financial measures shows the focus is on the academic community and that there is no substantial dedicated funding available to encourage Ireland's businesses to deepen their engagement with the programme. There is a similar gap around the provision of financial support for government or the third level sector, both of which are being targeted by Horizon 2020.

The success of recent developments in the support system underlines the potential for a further expansion of the network and related financial supports to deliver increased participation in areas where there has been limited assistance historically and also among those constituencies (e.g. government) that have figured less prominently in the thinking of the support system.

Strategic engagement

We envisage several ways in which Ireland can become *more* strategic in its engagement with Horizon 2020, and particularly with regard to capitalising on the potential synergies that exist between national interests and those of the programme.

Ireland has a good national strategy for Horizon 2020, however, that strategy is not complemented by separate underpinning strategies for the various key actors involved with the programme. The creation of specific strategies would help to focus attention on priorities and this greater openness and transparency would also facilitate coordination among the members of the support system.

The current strategy also focuses on the financial drawdown, and has less to say – at least in a way that is specific or measurable – about the other potentially important objectives, whether that is expanding and improving the level of support available nationally for the development of researcher skills and careers or the strengthening of the global competitiveness of Ireland's key industries. Broadening this presentation of those objectives would underline the strategic potential of Horizon 2020 to more actors, in policy and industry circles.

Synergies

There are numerous evident synergies between national and European interests, and Ireland is already active in this space. The substantial interest in the MCSA COFUND is a good example of Ireland's research community identifying an opportunity to inject additional funds and a transnational dimension into its research fellowship programmes. There continues to be strong interest in the Horizon 2020 ERA-NET instrument too, albeit tight finances nationally are a challenge, and have reduced engagement as compared with FP7. Ireland has also sought to improve its engagement with various European technology and innovation platforms and JTIs, as a means by which to influence the EU's strategic research agendas and support businesses in their market surveillance and partnership building. The SFI Centres have a clear and strong focus on Horizon 2020, as a potential source of income and strategic advantage more generally, for both academics and Ireland's tech firms.

There remains substantial potential for increasing synergies in newer parts of the programme (e.g. Access to Finance, EIT), and some further elaboration of those opportunities would be helpful. In a similar vein, the Commission sees a major read across between Horizon 2020, European Structural and Investment Funds (ESIF), which member states need to work out, and which in the case of Ireland would benefit from closer consideration by the key actors involved.

Maximising success in calls for proposals

Our review of selected other EU member states' Horizon 2020 strategies makes clear that most countries have set substantially higher targets for their national drawdown from Horizon 2020, as

compared with FP7. Given this situation, the success rates seen in the first calls of Horizon 2020 are unlikely to have been anomalous.

Ireland has improved its relative performance, in terms of success rates, recording a less dramatic reversal in success rates as compared with Horizon 2020 overall. This may reflect the investment in the support system and the growing experience of Ireland's research base. Ireland has expanded its NCP team and introduced several new measures with the explicit aim of improving its success rates in the move from FP7 to Horizon 2020, in key areas, and especially around the ERC.

Given the likelihood of Horizon 2020 continuing to see low success rates for the programme overall, it makes sense for Ireland to continue to look at ways in which it can maximise applicants' chances of success, to help ensure risk and reward remain in balance and to help achieve its drawdown target. There are essentially two options: the first is to increase the support system's ability to reach more of the total population of prospective applicants. The second approach is to improve the effectiveness of the support available, whether that is tactical refinements to the advice or the creation of new services.

Firstly, there remain substantial numbers of applicants that choose not to use the support available, for whatever reason, and their success rates are markedly worse on average than those for applicants that have sought advice from the national support system. This positive association is borne out in other countries and regions too. It suggests there may be value in increasing further the level of marketing and communications, with a particular emphasis on codifying critical success factors (to improve success rates) and to showcase the benefits of participation (to expand the pool of applicants and applications).

Turning to the second development option, feedback from our interviews and surveys produced a number of suggestions for new services, which Ireland could implement in order to increase the average success rates within the Horizon 2020 application process, from more funding for travel to the creation of funds for businesses (businesses are currently ineligible for financial support through any of the existing Horizon 2020 schemes). We understand there are state aid rules to be considered here, however, there does appear to be a degree of market failure – due to the high costs and risks associated with preparing proposals – where some additional corrective action on the part of government might reasonably deliver both increased investment in R&D by the private sector and increased social benefits, at the European and national levels.

Increasing the scale of Ireland's participations in the framework programme

There is evidence of movement in this direction already. In the move from FP7 to Horizon 2020, Ireland has recorded a substantial increase in the average size of its applications as well as an increase in the average size of its successful participations. There has also been an increase in the proportion of all applications and participations where Ireland hosts the project coordinator.

There are basically two routes through which one can increase the average scale of participations, with the first being about taking a more central role within project consortia, including taking on the role of project coordinator. The second is to pursue an involvement with larger, more strategic projects. This second tactic does not automatically produce larger individual grants, as mega projects may have far more partners and work packages that look similar to those of smaller projects. There is however a greater opportunity for any one country to secure multiple participations within those larger strategic initiatives, thereby increasing total. The Research and Technology Centres could have an especially important role to play here, with both the capacity to lead big consortia and a central position within the innovation landscape that would allow them to bring into those consortia multiple other Irish actors, from MNCs to indigenous SMEs, through to government-based user organisations.

There are relatively few ultra large projects, and that those that do arise will often have a strong commitment to support a pre-existing partnership. Ireland may need to be more proactive in its participation in various Advisory Groups and ETPs, in order to help encourage the Commission to fund more mega projects and crucially to be in the room when the strategic alliances are being forged.

One of the best ways to increase the numbers of project coordinators is to track participants over time with a view to encouraging people to increase their ambition level with each successive bid, progressing from minor to major partner all the way through to coordinator. There may also be an argument for providing some level of financial support to coordinators over the life of their project, as is done already for the ERC. A small, cost-shared fund for administrative support would help to overcome headcount constraints, and may encourage more of Ireland's leading scientists to push for the role of project coordinator.

Recommendations

As a result of our analysis and consultation with the study Steering Group, we have formulated 20 recommendations against six categories: Targeting greater participation around national priorities (1-2); Strengthening the national support system around STI priorities (3-6); Strategic engagement (7-9); Synergies (10-12); Maximising success in calls for proposals (13-17); and Increasing the scale of Ireland's participations in the framework programme (18-20). We have also indicated a lead agency and a timeline. HLG refers to the High Level Group chaired by DJEI whose core role is to oversee development and implementation of Horizon 2020 strategy.

Figure 1 - Recommendations for future FP participation

	Recommendation	Description	Lead responsibility	Timeline
1	Update programme-specific targets, to reach €1.25 billion overarching target	Review current targets and the extent to which they need to be held where they are or may be expanded, to reflect the overall ambition of reaching €1.25 billion	DJEI, National Director and Support Structure	Summer 2016
2	Create an addendum for current Horizon 2020 strategy	Publish the revised targets, along with accompanying argumentation	HLG	Summer 2016
3	Ensure national support network has capacity to support Ireland's ambitions in strategic initiatives	Review and possibly expand the capacity of network to ensure there is active promotion and coordination of Ireland's engagement with the growing number of Strategic Initiatives (e.g. ERA-NETs, ETPs, JTIs, PCPs)	National Director and Support Structure	By end 2016
4	Consider the merits of creating a support package for the EIT	Carry out an impact assessment (business case) to determine whether a national support package would enable Ireland to increase its engagement with the EIT and its strategic participation therein	National Director and Enterprise Ireland	By early 2017
5	Review the capacity of Research and Technology Centres to deliver on their Horizon 2020 targets	Review the extent to which extra support capacity within Ireland's Research and Technology Centres might increase the likelihood that the centres will meet or exceed their targets (and bring in enterprise partners)	Science Foundation Ireland, Enterprise Ireland	Summer 2016
6	Consider creating a Horizon 2020 fund to support businesses	Consider creating a dedicated fund for business, designed to expand the pool of businesses engaging with Horizon 2020 and increase private investment in R&D	National Director and Enterprise Ireland	By autumn 2016
7	Create a catalogue of key actors and their interests in Horizon 2020	Add annexes to Horizon 2020 Strategy with a mapping of actors, strategic initiatives and national capacities	HLG	By end 2016
8	Develop department-level Horizon 2020 strategies and rolling annual action plans	Develop departmental and agency level strategies, which connect Horizon 2020 to agency mandate and also dovetail with overarching national Horizon 2020 strategy	All HLG members	By end 2016
9	Develop a Logic Model with KPIs to underpin the H2020 strategy	Develop a Logic Model to underpin the national H2020 strategy, which details the link between country's scientific, social and economic objectives for the programme and the various advisory and financial inputs and related KPIs	HLG	By end 2016
10	Create a forum for debating new ideas for strengthening future participation	Consider whether and how it might create a forum for people to propose and debate new ideas for strengthening Ireland's performance in Horizon 2020.	HLG, National Director and Support Structure	By autumn 2016

	Recommendation	Description	Lead responsibility	Timeline
11	Map points of intersection between Horizon 2020 and ESIF	Identify areas of common interest between Horizon 2020 and Ireland's ESIF strategy and investments	DJEI	By autumn 2016
12	Promote awareness of the PCP / PPI instruments	Increase awareness of Horizon 2020's procurement instruments, exploring the potential for a link between Ireland's Small Business Innovation Research (SBIR) scheme and the analogous instrument within Horizon 2020	HLG and Enterprise Ireland	Summer 2016
13	Coordinate involvement in Advisory Groups and ETPs, nationally	Take a more coordinated approach to Ireland's involvement in various Advisory Groups and ETPs in order to strengthen Ireland's influence on programme's research priorities and work programmes	National Director and Support Structure	By autumn 2016
14	Intensify marketing and communication	Expand numbers of information days and awareness raising events with a view to expanding the pool of potential applicants	National Director and Support Structure	From summer 2016
15	Set up a national network of Horizon 2020 mentors	Create a more extensive network of people and mentors with knowledge of the programme	National Director and Support Structure	By early 2017
16	Develop additional guidance material	Create additional guidance material for applicants	National Director and Support Structure	From summer 2016
17	Monitor the Commission's piloting of its 'seal of excellence'	Monitor the Commission's 'seal of excellence' pilot to ensure Ireland can capitalise on any opportunities it may present	Enterprise Ireland	By early 2017
18	Create a national fund for strategic and COFUND initiatives	Create a national fund (competitive) to help national agencies participate more fully in various strategic initiatives and co-funding projects (e.g. ERA-NETs	National Director and Enterprise Ireland	By early 2017
19	Create an expanded fund for Coordinators	Extend the ERC overhead mechanism to project coordinators involved in any part of the programme	National Director and Enterprise Ireland	By early 2017
20	Create an alumni network for participants	Create an alumni network and platform to share experiences / material / advice that will allow Ireland to track careers and encourage progression to higher levels (e.g. coordinators	National Director and Support Structure	By early 2017

1 Introduction

1.1 This study

This report presents the "Interim evaluation of Ireland's participation in Horizon 2020 (Horizon 2020)", conducted by Technopolis in the period December 2015 to March 2016, and commissioned by the Department of Jobs, Enterprise and Innovation in Ireland (DJEI).

The study addresses sixteen evaluation questions across three broad areas: the national support system for Horizon 2020, opportunities for co-funding and future participation.

Technopolis also conducted the "Ex-post evaluation of Ireland's participation in the Seventh Framework Programme for Research and Technological development (FP7)", which was carried out in parallel with this mid-term review and is presented in a separate report.

1.2 This report

The report begins with a presentation of Ireland's national Horizon 2020 strategy and targets before presenting an overview of Ireland's applications and participations across the first two years of the programme. The document goes on to present the evaluation findings in three further chapters, in line with the study terms of reference, and is organised as follows:

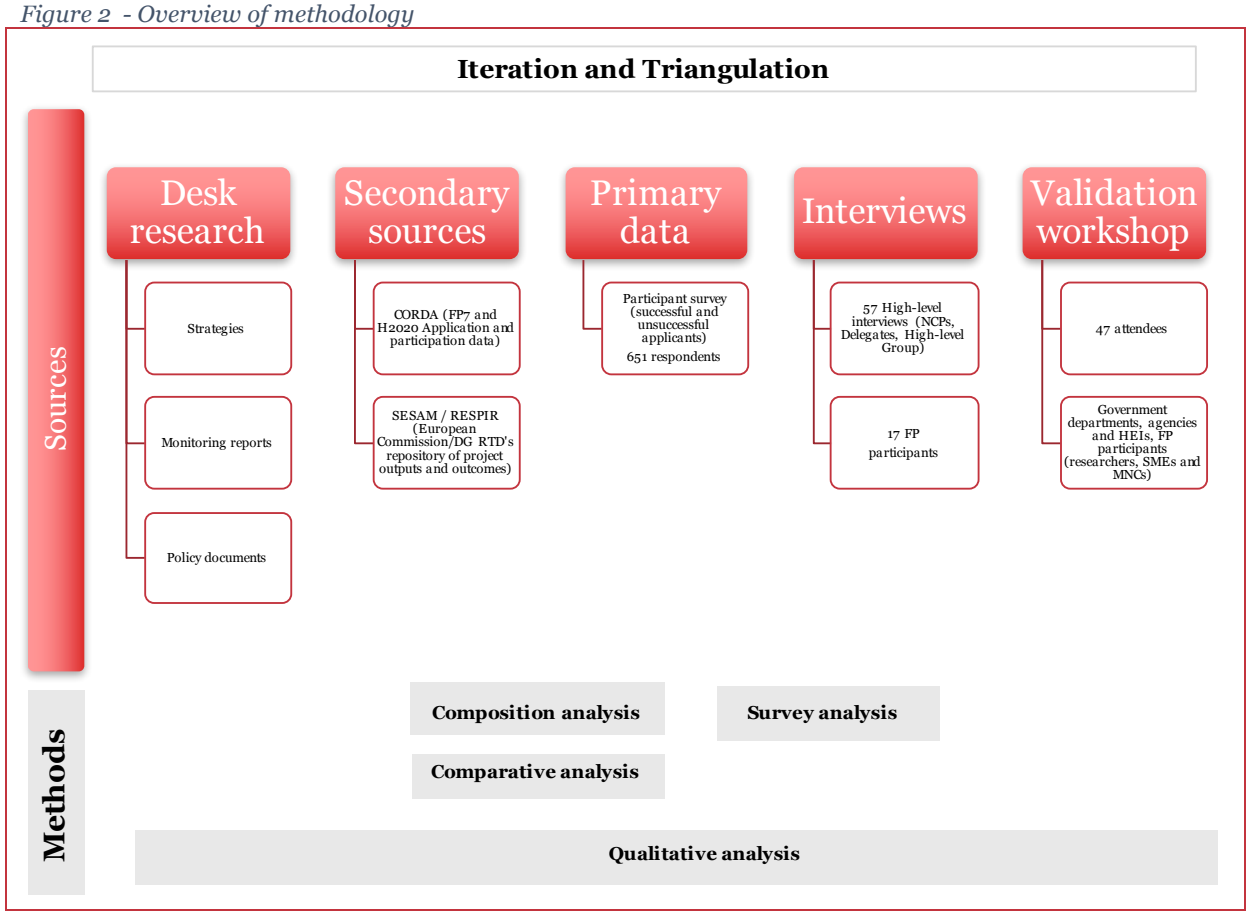
- Section 2: Strategy and targets
- Section3: Overview of participation
- Section 4: System of support
- Section 5: Co-funding
- Section 6: Future participation

The methodology followed for this study is summarised in Figure 2, with a mixed methods approach used to gather a combination of quantitative and qualitative data and information for each of the main evaluation questions. Further details are provided in Appendix A. The rest of this section provides an overview of Horizon 2020 and its strategic importance to Ireland.

Box 1: Terminology

- Proposals – project proposals submitted to Horizon 2020
- Applicants – organisations that take part in proposals
- Applications – applicants involved in research proposals, i.e. refer to participations in proposals
- Projects – approved/funded projects research proposals
- Participants – organisations that take part in approved/funded projects
- Participations – participants involved in approved/funded projects
- EC contribution – corresponds to the financial resources allocated to (funded) projects. Throughout the text we use the 'EC Contribution' term to refer to drawdown from Horizon 2020. This term does not refer to 'juste retour'.
- Quality threshold - corresponds to the minimum score that proposals need to pass in order to become eligible for approval. Not all proposals that pass the quality threshold are funded

Figure 2 - Overview of methodology



1.3 Horizon 2020

Horizon 2020 marks a fundamental change in European policy-making due to its comprehensive and integrating approach to research and innovation, reflecting the developments in the European Research Area (ERA) 2020 and the Europe 2020 strategy. The acknowledgement of the necessary balance of 'supply push' and 'demand pull' in innovation policy and the backing of projects that cut across the phases of research, testing, procurement and deployment of innovations is a core concept.

The rationale for R&I policy intervention at the EU level is driven not only by the market failures in the European R&I system, but also by the notion of European added value, i.e. in support of the Europe 2020 agenda and the completion of the single market. The Framework Programme for Research and Innovation intervenes above all in *transnational activities*, promoting competition among top researchers, enhancing cross border cooperation in order to address common societal challenges and the competitiveness of the European economy.

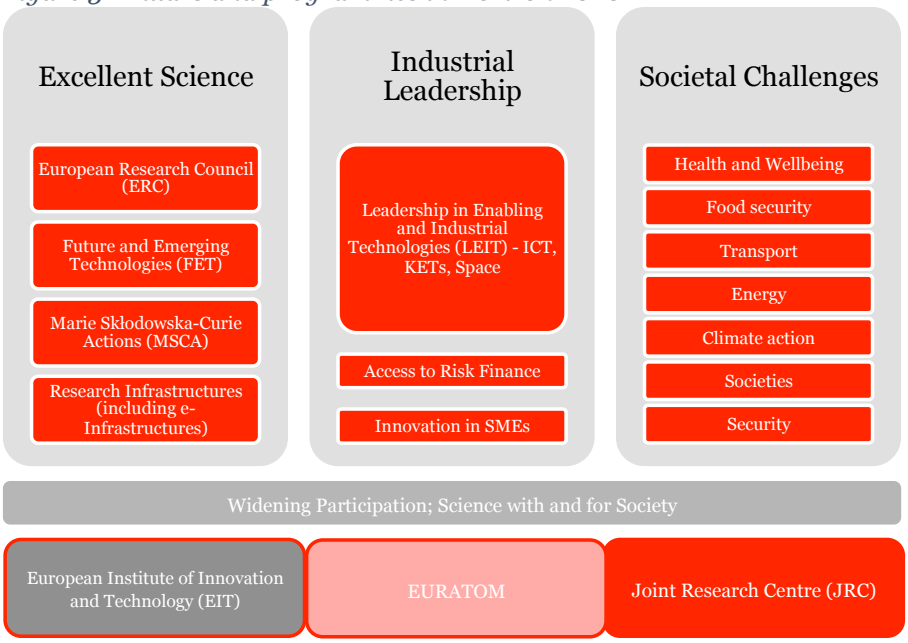
Horizon 2020 is structured around three main pillars (figure below). It carries forward almost all elements of FP7, but also includes what was previously the separate Competitiveness and Innovation Programme (DG Enterprise) and also the European Institute of Innovation and Technology, which was formerly, part of DG EAC's bailiwick. In short, it brings together all of the previous EU funding instruments for research and innovation within a single, integrative framework.[1]

It has also introduced a series of new or improved funding instruments, including the SME Instrument, Access to Risk Finance and novel public procurement methodologies. The programme

[1] https://ec.europa.eu/programmes/horizon2020/en/what-horizon-2020

has expanded the use of co-funding (first used in FP7), which allows EU funds to be granted to national funders to strengthen the international engagement of what are essentially national schemes.

Figure 3 - Pillars and programmes in Horizon 2020



Additionally, the European Commission has maintained its support for an increasing number of strategic initiatives at the European level, which are important to understand and engage with, both from the point of view of influencing research agendas (setting priorities) and securing major contracts. These can be grouped into two categories: i) *innovation-related initiatives* such as the European Technology Platforms (ETPs: industry-led networks that define strategic research agendas and outline roadmaps) or the European Innovation Partnerships (Public-Private Partnerships that work across the research and innovation spectrum and address / work on major societal challenges), and ii) the *Public-Public Partnerships*, i.e. initiatives coordinating national policy makers such as the Joint Programming Initiatives. Lastly, Horizon 2020 is the centrepiece of the Innovation Union, one of the seven Flagship Initiatives identified in the Europe 2020 strategy, from 2010, which is expected to help Europe recover from the worst economic crisis of the post war period.

2 Strategy and targets

2.1 Overall strategy

Ireland's dedicated Horizon 2020 Strategy, "EU Framework Programme for Research and Innovation (2014-2020): Ireland's Strategy and Target for Participation" was published in 2014 by the Department of Jobs, Enterprise and Innovation (DJEI), setting a drawdown target for the new programme of €1.25 billion[2], which is double the €625M drawdown achieved within FP7.

The strategy is rooted in the 2013 National Research Prioritisation Exercise to ensure that the programmes in which Irish organisations are most active align with the country's national research priorities and contribute to the further development of Ireland's strategic capabilities, as well as contributing to key economic growth sectors and the Action Plan for Jobs.

The strategy presents the new Framework Programme as an opportunity to further deepen Ireland's engagement in collaborative European and international research and innovation activities, as a means to improve national competitiveness and support the country's ambitions around jobs and growth[3]. The strategy also identifies new opportunities for Ireland to become involved in large-scale innovation partnerships, following inclusion of the European Institute of Innovation and Technology (EIT) within the Horizon 2020 Programme, as well as the growing number of public-private partnerships and co-funded measures.

The strategy and targets for Horizon 2020 cascade through the main organisations and actors within the support system, with a number of organisations setting specific contributions or objectives in dedicated strategies or as part of their overarching annual plans. There is also a Cross-border strategy developed by InterTradeIreland, which set a target of €175M in drawdown for cross-border projects[4].

2.2 Strategy and targets per pillar

2.2.1 Strategy

Underpinning the overall drawdown target of €1.25 bn is a set of objectives specific to the different pillars of Horizon 2020.

Excellent Science was given a special focus in Ireland's Horizon 2020 strategy, including a new, multi-agency responsibility. This has meant that a number of support agencies, including SFI and IRC, have been given specific responsibilities and roles for delivering the objectives and targets under this pillar. Objectives include:

- To build on success under Marie Curie Actions in FP7, which was second only to ICT funding in overall proportional drawdown for the Republic under FP7
- To address prior under-performance in ERC grants, in part through providing financial support to develop applications part through targeting Marie Curie Fellows for ERC participation
- To pursue opportunities in Research Infrastructures, with a number of linked areas suggested in the strategy
- Foster involvement in the Future and Emerging Technologies (FET) strand, where there has been little strategic Irish involvement previously

[2] This figure is seen as a more accurate view of the Republic's potential, following an initial target calculation of €953M, which was based solely on securing 1.2% of the ~€80M Programme budget (where 1.2% represents Ireland's contribution to the EU budget over the same period (to 2020)).

[3] DJEI (2014) EU Framework Programme for Research and Innovation (2014-2020). Ireland's Strategy and Target for Participation

[4] European Commission Joint Research Centre (2015) Research & Innovation Observatory Country Report - Ireland

The **Industrial Leadership** pillar represents a key opportunity to further the involvement of Ireland's lead industries and SMEs, and to foster involvement in more Public-Private Partnerships. The specific objectives are set out as follows:

- Encourage lead industries to take advantage of the focus on Key Enabling Technologies
- Access Public-Private Partnerships and Joint Technology Initiatives
- Ensure all financial intermediaries are leveraging national investments at the European level
- Build on the success of SME engagement under FP7

The seven **Societal Challenges,** for which multiple agencies have a shared responsibility, are presented as an opportunity to foster greater multidisciplinary working, and with Ireland's strengths in ICT, software, agri-food and other technology-based areas such as nanotech and eco-innovation, the strategy presents a number of objectives:

- Take advantage of new opportunities for research groups across different fields such as nanotechnology, ICT and software to come together on these themes
- Take advantage of the alignment with national policy in agri-food and take advantage of the opportunities for SMEs and large firms in agri-food
- Support businesses to bring to the market eco-innovative solutions, and encourage take-up by public authorities via procurement
- Build on strong performance in Science in Society
- Take advantage of specific growing opportunities for Ireland's SMEs under Food Security and Sustainable Agriculture, and Secure Societies

Within the **cross-cutting areas** of Horizon 2020, the Arts, Humanities and Social Sciences (AHSS) community receives support from the Irish Research Council, including support for AHSS researchers to lead projects in all areas, as well as grants to engage in interdisciplinary projects.

An opportunity is also set out for Ireland's research funding bodies to top up their own funding schemes via the Horizon 2020 **co-fund system**. This is currently being undertaken by a number of agencies, including Enterprise Ireland, SFI and others.

SMEs feature prominently in the strategy, with many concrete opportunities identified through a number of the pillars and specific societal challenges, with specific resourcing put in place to foster further SME engagement.

2.2.2 Targets

A bottom up exercise resulted in an indicative target €1.01bn. To then reflect Ireland's ambition of even stronger participation, a decision was taken to set the official target at €1.25 bn, equivalent to doubling the country's FP7 drawdown. Table 1 shows the indicative Horizon 2020 targets across pillars. It also provides a comparison with FP7 drawdown across areas. This is based on an approximation in terms of comparable programmes across both frameworks. The table reflects the results of Ireland's bottom-up exercise, which resulted in a target of €1.01bn. Section 6 includes our recommendations for the allocation of the remaining €250M, and how to address that gap.

It shows that there are some areas where the targets far exceed the overall expectations of 100% in drawdown (from €625m to €1.25 bn, highlighted in orange). This includes Marie Skłodowska Curie, Inclusive societies, Secure, clean, efficient energy and Smart, green & integrated transport.

In contrast, there are other areas where Ireland could consider pressing harder as expectations are relatively conservative (highlighted in green).

Our recommendations in terms of target are discussed at length in Section 6. To complement this analysis, Appendix B shows an analysis of 'demand', looking at programmes that tend to be oversubscribed and that tend to have low success rates.

Table 1 – Horizon 2020 targets and comparison with Fp7

Areas	*Budget Trilogue %*	Budget Trilogue* €000	Ireland's juste retour** €000	Ireland's bottom up*** €000 target	Ireland's Horizon 2020 target as %	FP7 drawdown €000	Horizon 2020 target as % increase of FP7 drawdown
I Excellent Science	**31.73**	**24,441,073**	**293,293**	**401,000**			
European Research Council	17	13,094,807	157,138	100,000	10%	50,467	98%
Future & Emerging Technologies	3.5	2,695,990	32,352	25,000	2%	--	
Marie Curie Actions on skills, training & career	8	6,162,262	73,947	246,000	24%	112,713	118%
Research Infrastructures (inc. e-Infra)	3.23	2,488,013	29,856	30,000	3%	15,680	91%
II Industrial Leadership	***22.09***	***17,015,547***	***204,187***	***254,000***			
Leadership in enabling & industrial technologies	17.6	13,556,977	162,684	198,000	20%	184,540	7%
Access to Risk Finance	3.69	2,842,343	34,108		--	--	
Innovation in SMEs	0.8	616,226	7,395	56,000	6%	35,656	57%
III Societal Challenges	***38.53***	***29,678,996***	***356,148***	***331,000***			
Health, demographic change & well-being	*9.7*	7,471,743	89,661	72,000	7%	77,960	-8%
Food security; sustainable agriculture; marine and maritime research; and	*5*	3,851,414	46,217	76,000	8%	40,869	86%
Secure, clean, efficient Energy	*7.7*	5,931,177	71,174	65,000	6%	19,842	228%
Smart, green & integrated Transport	*8.23*	6,339,427	76,073	44,000	4%	16,063	174%
Climate action, resource efficiency & raw materials	*4*	3,081,131	36,974	33,000	3%	18,210	81%
Inclusive Societies	*1.7*	1,309,481	15,714	21,000	2%	5,641	272%
Secure Societies	*2.2*	1,694,622	20,335	20,000	2%	28,015	-29%
IV Widening participation	***1.06***	***816,500***	***9,798***	10,000	1%	--	
V Science for and with society	***0.6***	***462,170***	***5,546***	6,000	1%	8,239	-27%
European Institute for Innovation &	***3.52***	***2,711,395***	***32,537***	8,000	1%	--	
JRC Non-nuclear direct actions	***2.47***	***1,902,598***	***N/A***	**N/A**	--	382	
Total	***100***	**77,028,279***	**901,508**	**1,010,000**	**100%**		

*Effective Horizon 2020 budget 2014-20 (current prices) €m. ** Juste Retour is defined as the 'principle that the funding granted to project participants from a given country/region under a joint call is in proportion to the budget contributed to the joint call by that country/region' (see: https://www.era-learn.eu/service/glossary/juste-retour). ***Compiled from National Support Network for Horizon 2020 (RED - juste retour)

3 Overview of participation

3.1 Applications and success rates

3.1.1 Overview

So far Ireland's drawdown represents 1.9% of the total allocated budget of Horizon 2020 in the period under analysis, which compares favourably with the 1.4% drawdown achieved for FP7 overall (the terminology used to describe participation in Horizon 2020 is described in Box 1, Section 1.) The overall Irish success rate of 14.9% (up to the end of March 2016) is slightly lower than the average EU Member State success rate of 16.1%. This rate is based on number of applications. In terms of EC contribution requested, the success rate is 10.5%, which is closer to the EU average (11.0%). This translates into 622 successful applications and a drawdown of €273.3M[5] (further information on projects and participation is shown in Section 3.2).

These calculations are based on CORDA information from March 2016, which omits several applications that are still pending approval, or being negotiated, before being signed off. As such, the performance ratios for this period may improve slightly when the final figures are released.

Higher Education Institutions (HEIs) submitted 2,283 applications with 321 successes (14.1% at €168.M). UCD and NUI Galway recorded the highest number of successful applications (63 and 61 respectively) and a high success rate (16.2% and 18.4% respectively). These two universities have drawn down a total of €30.2M and €31.8M, respectively. Trinity College Dublin (€42.1M) has the highest total drawdown to date.

Driven by SMEs, business demand has been high, with 1,497 applications resulting in 214 successes (14.3% at €81.9M). This success rate is slightly higher than the HEI success rate for the same period.

Company funding accounts for 30% of drawdown for the period. Intel Ireland is listed in the Top 50 Horizon 2020 Companies[6]. Ireland is the top country in terms of the SME Instrument success rate (14%, based on applications), followed by Sweden (12%) and Estonia (12%). (Further analysis on the SME Instrument is provided in 3.2.4).

According to the latest monitoring report prepared by DJEI, Enterprise Ireland and IDA client companies account for 85% of company funding in the period (EI 61% and IDA 24%).

3.1.2 Comparison with FP7

Ireland saw a substantial increase in the number of applications submitted to Horizon 2020 calls for proposals, as compared with the first two years of FP7, with the number of applications almost doubling from around 2,200 to 4,200 (+183%). This upswing is substantially higher than for the programme overall, which recorded an increase of around 133%.

Ireland's applications have also been very much more ambitious in terms of the volume of funds requested, with EC contributions more than trebling from around €850M in the first two years of FP7 to around €2.6 billion in the first two years of Horizon 2020. That increase is far ahead of the figures recorded for the programme overall, which also saw strong growth with requests for funding more than doubling (see Table 2).

The success rate in terms of EC contribution has decreased by 3.5 percentage points. This decrease is substantially less pronounced than the overall decrease in success rates (8.2 and 8.5 percentage points respectively).

[5] We used data to March 2016 for these calculations, resulting in a higher drawdown figure than that published in 25/03/2016 by DJEI. The DJEI release (https://www.djei.ie/en/News-And-Events/Department-News/2016/March/25032016.html) used data to November 2015.

[6] Building Research Relationships with International Industry Partners (February 2015 presentation given by Dr Imelda Lambkin)

Table 2 - Change in applications and EC contribution, FP7 versus Horizon 2020

	FP7 (2007-2008)	Horizon 2020 (2014-2015)	Horizon 2020 vs FP7	
All applications	194,717	258,521	63,804	33%
All EC contributions requested (€M)	67,856	147,327	79,472	117%
IE applications	2,272	4,167	1,895	83%
IE EC contribution requested (€M)	855	2,599	1,744	204%

Source: Technopolis (2016). Based on CORDA data (March, 2016).

Table 3 - Change in success rate, FP7 versus Horizon 2020

	FP7 (2007-2008)	Horizon 2020 (2014-2015)	Horizon 2020 vs FP7	
Successful IE applications	447	622	175	39%
Success rate (IE) (1)	20%	15%	-4.7pp	
Success rate (all) (1)	24%	16%	-8.2pp	
EC contribution requested (€M) - Successful IE applications	120	273	154	128%
Success rate (IE) (2)	14%	11%	-3.5pp	
Success rate (all) (2)	19%	11%	-8.5pp	

Source: Technopolis (2016). Based on CORDA data (March, 2016).

3.1.3 New players

Horizon 2020 has attracted a good share of new players in the first two years. A total of 565 organisations that applied in Horizon 2020 did not apply in FP7. They represent 68% of the organisations that have applied so far. They represent 24% of total applications to Horizon 2020 (with 76% of the applications coming from the more 'experienced' organisations that had applied to Horizon 2020 and FP7) and 24% of the total EC contribution requested.

Perhaps unsurprisingly, the 'less experienced' applicants achieved a lower success rate (10.9%) in comparison with the more experienced applicants (16.2%), on average, based on the number of applications. Their success rate was very much lower in terms of the EC contribution requested (6.1%), which is substantially lower than the more experienced applicants (11.7%) in relative terms, and suggests that less experienced applicants are on average pursuing a smaller role within consortia.

The great majority of the new applicants are private companies (PRCs = 87% of 565 new applicants), which mainly includes companies (see Table 4).

The new players are putting forward fewer proposals per organisation (1.8 versus 11.8 from more experienced participants), which is largely explained by the fact firms dominate the new applicants and universities dominate the more experienced applicants. Typically, HEIs and public research institutes will have very much larger in-house research capacity than even the largest companies.

Table 4 - Applications, by type of stakeholder (in percentages)

	Horizon 2020 only (Applicants =565)	Horizon 2020 and FP7 (Applicants =268)	Horizon 2020 Total (Applicants =833)
HEIs	3.7	71.2	54.8
REC	4.3	2.1	2.6
PRC	87.3	19.5	35.9
PUB	3.6	2.9	3.1
OTH	1.2	4.3	3.6
Total	100	100	100

Source: Technopolis (2016). Based on CORDA data (March, 2016).

The increase in innovation action (IA) instruments[7] in Horizon 2020 is attracting new comers (mostly companies). In fact, 47% of all new comers have taken part in various IAs, mostly the SME instrument.

3.1.4 Applicants' main challenges

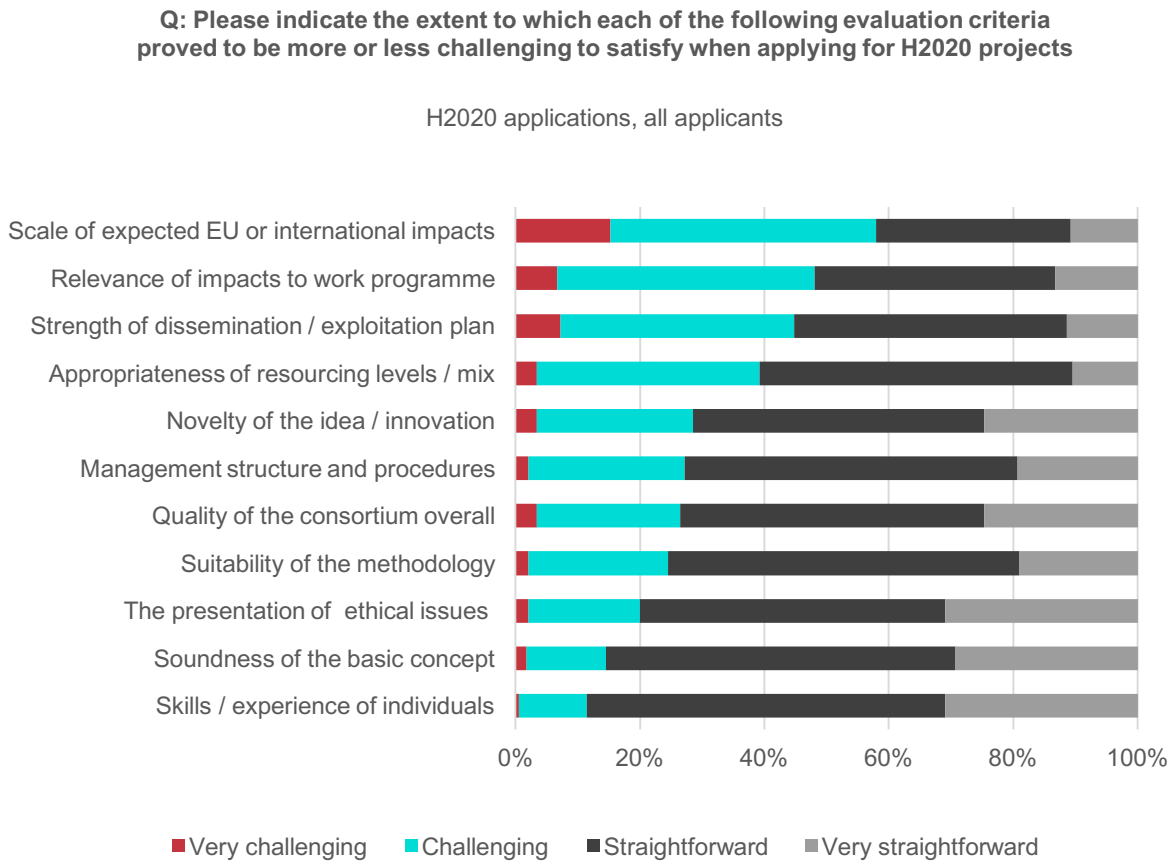
According to our participant survey, the three evaluation criteria that a relatively high proportion of respondents find challenging relate to demonstrating impacts (54% related to the scale of expected EU or international impacts, and 45% related to the relevance of impacts to the work programme) and dissemination (42%). The issue of dissemination was further reinforced through our Validation Workshop, with attendees telling us that it is difficult to communicate the importance of measurable outcomes in a dissemination plan. More practical criteria like resourcing and management were found to be challenging by about one third of respondents. Only a small minority found that skills of the individual and the soundness of the basic concept behind their proposal were challenging, while the numbers were slightly higher for criteria about methodology and novelty.

Looking across all of the dimensions, responses from HEIs (67%) and research organisations (68%) were more likely to be that the criteria were 'straightforward' or 'very straightforward' than responses from companies and other organisations (both 61%).

Compared with other respondent types, companies find it particularly challenging to meet the criteria concerning novelty, methodology and ethical issues. HEIs and research organisations were more likely to find questions of impact and resourcing challenging.

[7] Innovation actions include: prototyping, testing, demonstrating, piloting, large-scale product validation and market replication, as well as demand side approaches such as pre-commercial public procurement of innovation. Regulation is another relevant area, covering standard-setting. (See: https://ec.europa.eu/programmes/horizon2020/sites/horizon2020/files/H2020_inBrief_EN_FinalBAT.pdf , p.17)

Figure 4 - Horizon 2020 evaluation criteria



Source: Participant survey, Technopolis (2016). Base: Up to 386 respondents

3.1.5 Applicants' satisfaction

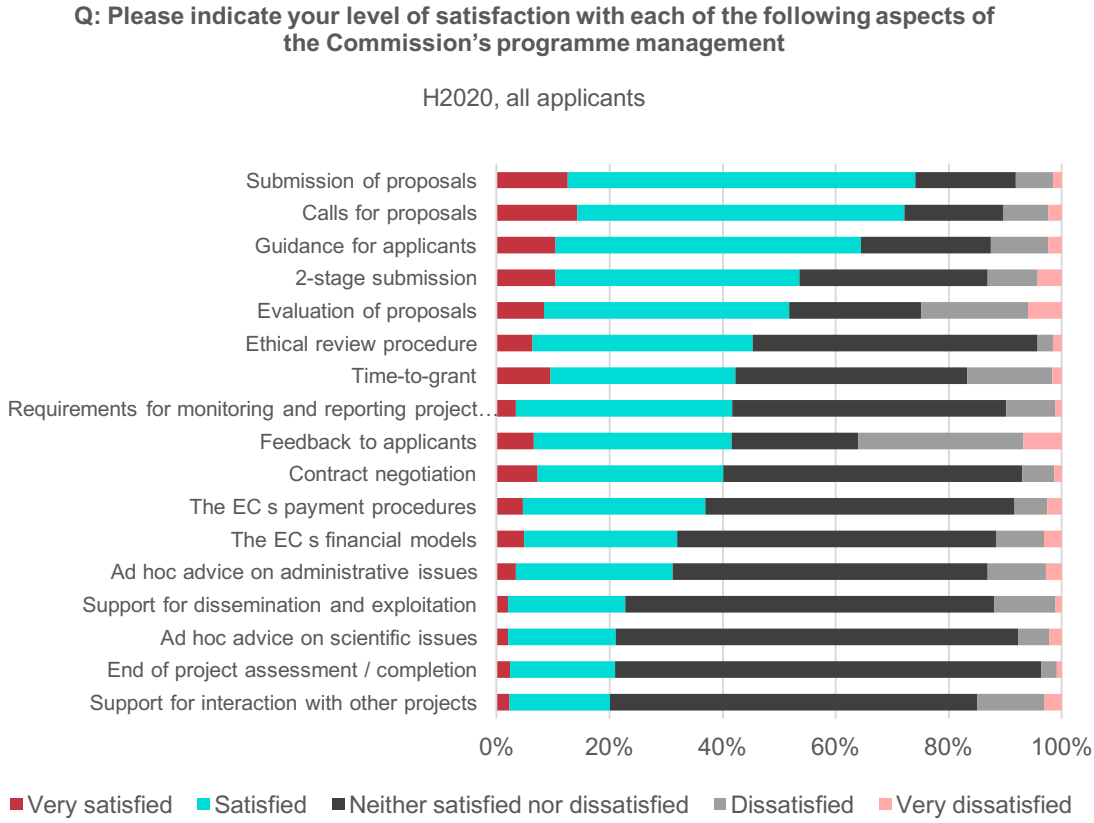
Among survey respondents there was generally a high level of satisfaction with the call and submission process. The highest levels of dissatisfaction were about the evaluation of proposals and feedback to applicants. These issues divided opinion and more than 40% were satisfied with these aspects of programme management. Unsurprisingly, and as noted below, the dissatisfaction was particularly pronounced among unsuccessful applicants.

Other aspects were less contentious: a majority of respondents were 'neither satisfied nor dissatisfied' with the support for interaction with other projects, the end of project assessment or other issues.

Overall, successful applicants (48%) were more likely to be satisfied or very satisfied with the various aspects of the Commission's programme management than unsuccessful applicants (33%). Compared with successful applicants, unsuccessful applicants were more dissatisfied with evaluation of proposals and, particularly, the feedback to applicants. 50% of unsuccessful applicants were 'dissatisfied' or 'very dissatisfied' with the feedback, compared to 28% for successful applicants.

Successful applicants were – unsurprisingly – relatively more dissatisfied with more operational aspects like advice on administrative issues, the monitoring and reporting requirements and the time to grant.

Figure 5 - Horizon 2020: satisfaction with application process



Source: Participant survey, Technopolis (2016). Base: Up to 384 respondents

3.2 Projects and participation

3.2.1 Overview

Ireland has been awarded 472 projects for a total of €273.3M (22% of its current target of €1.25bn). These figures include the projects awarded under the calls that took place in 2014 and 2015. Results for 2015 are expected to be higher in the coming months as CORDA is constantly being updated.

So far Austria, Denmark, Finland and the Netherlands – selected with guidance from the Steering Group as suitable comparator countries – have been awarded more projects than Ireland, and have obtained a higher drawdown. The average size of the projects is the same across those three countries.

Table 5 – Overview of Irish participation so far and international comparison

Pillar	Number of projects	Total EC contribution (in € M)	Average EC contribution per project (in € M)	Number of unique orgs.	Number of participations	Average participation per project
Ireland	472	273.3	0.6	211	622	1.3
Austria	722	398.8	0.6	368	1,020	1.4

Pillar	Number of projects	Total EC contribution (in € M)	Average EC contribution per project (in € M)	Number of unique orgs.	Number of participations	Average participation per project
Denmark	633	371.5	0.6	269	836	1.3
Finland	502	277.3	0.6	248	688	1.4
Netherlands	1450	1137.1	0.8	754	2,271	1.6
EU-28 (Average)	735	483.7	0.7	423	1,155	1.6
EU-15 (Average)	1214	857.6	0.7	683	1,953	1.6

Source: Technopolis (2016). Based on CORDA data (March, 2016).

3.2.2 Progress so far with respect to target

Ireland has drawn down to date €273.3M from Horizon 2020, which represents 22% of its total target. This amount is below the annualised target for two years of ~€357M (obtained by simply dividing €1.25 billion by the seven years of the full Horizon 2020 programming period and multiplying by two), however, the programme overall is effectively back loaded, which means more resources will be made available in the second half of the programming period. According to the different work programmes, the 4-year period 2014-2017 will account for 46% of the total budget allocated to Horizon 2020. This implies that the remaining 54% will need to be allocated in the final three years (2018-2020).

A similar pattern (of resources release) took place in FP7, where 57% of the total of the EC contribution was allocated in the last three years (2011-2013) (instead of 43%, had it been evenly distributed across the seven years of the programme). In fact, Ireland drew down 57% of the total €625M in the last 3 years of the programme.

We have estimated three scenarios for Ireland, based on assumptions around success rates (in terms EC contribution requested versus EC contribution secured).

- Scenario 1: Success rate remains as it was in 2014 (13%)
- Scenario 2: Success rate increases to 15% in the period 2016-2020
- Scenario 3: Success rate decreases to 11% in the period 2016-2020

For each scenario, we estimate the overall draw down based on an assumed average success rate across the life of the programme and an assumption about the programme's annual and total expenditure.

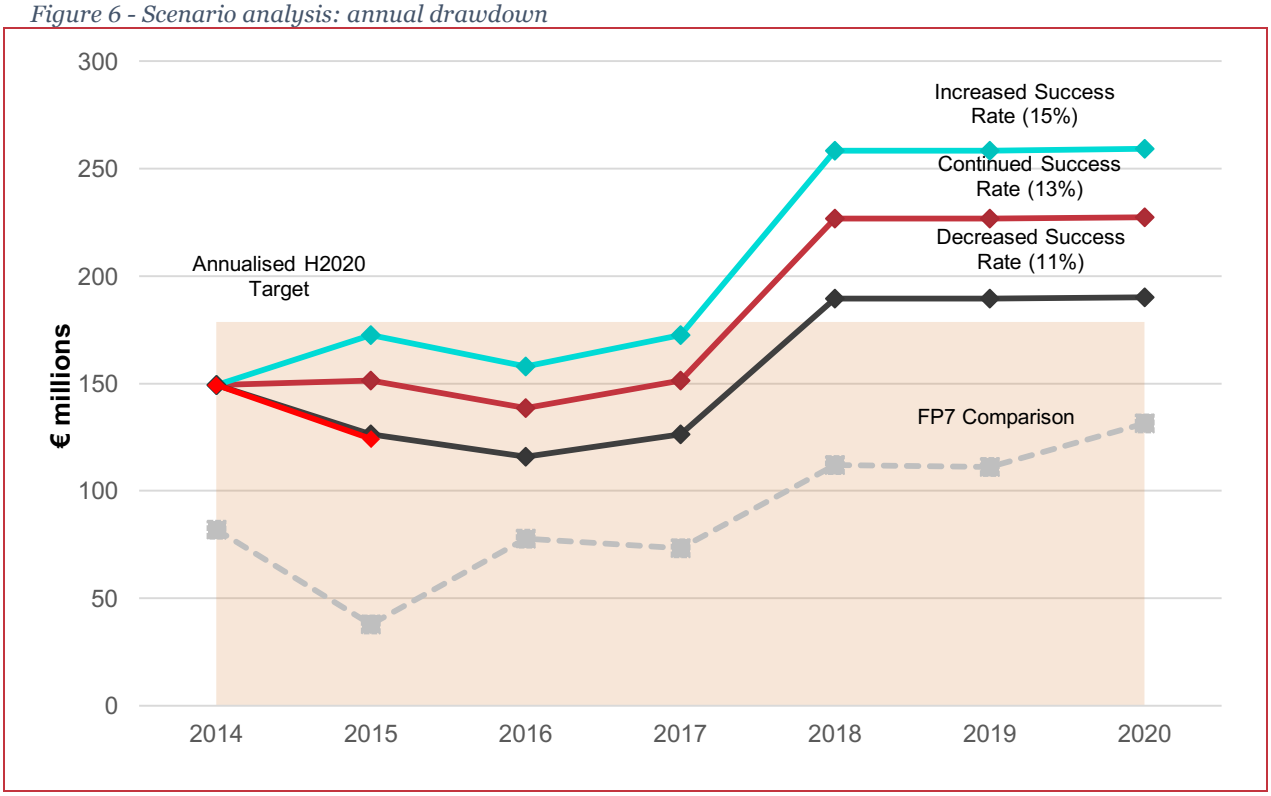
Ireland has drawdown 1.7% of total Horizon 2020 available budget in 2014, with a success rate of 13%. Following a simple 'rule of three,' we assume that an improved average success rate of 15% will lead to a drawdown of 1.9% of the total EC Contribution available in 2015 (while a success rate of 11% will lead to a drawdown of 1.4% of the total EC Contribution available in 2015). There is no information readily available on Horizon 2020 spend per year, hence we have had to make some additional assumptions. Our estimates of Horizon 2020 yearly budget are based on the total budget available for Horizon 2020 (€77 bn), planned expenditures as stated in the available work programmes for the period 2014-2017 and the assumption that the remaining available budget will be evenly distributed in years 2018-2020.

Figure 6 shows the results of our estimations, in annual terms, with all three scenarios exceeding the required annualised drawdown level for the last three years of the programme. Figure 7 shows the

cumulative values, and is easier to read: it shows that Ireland should meet its target of €1.25 billion if it can match or exceed the 13% average success rate and the Commission invests 100% of its planned overall budget. The chart suggests Ireland could exceed its Horizon 2020 target if it can raise its overall average success rate to 15%. However, the chart also shows that even a relatively small decrease (to 11% on average) would jeopardise achieving the goal. This latter scenario is in line with the average success rate for EC contributions achieved by Ireland – and by all EU member states – across the first two years of the programme, albeit this ratio is expected to improve when the Commission completes its contracting and announces the final figures for EC contributions for 2015.

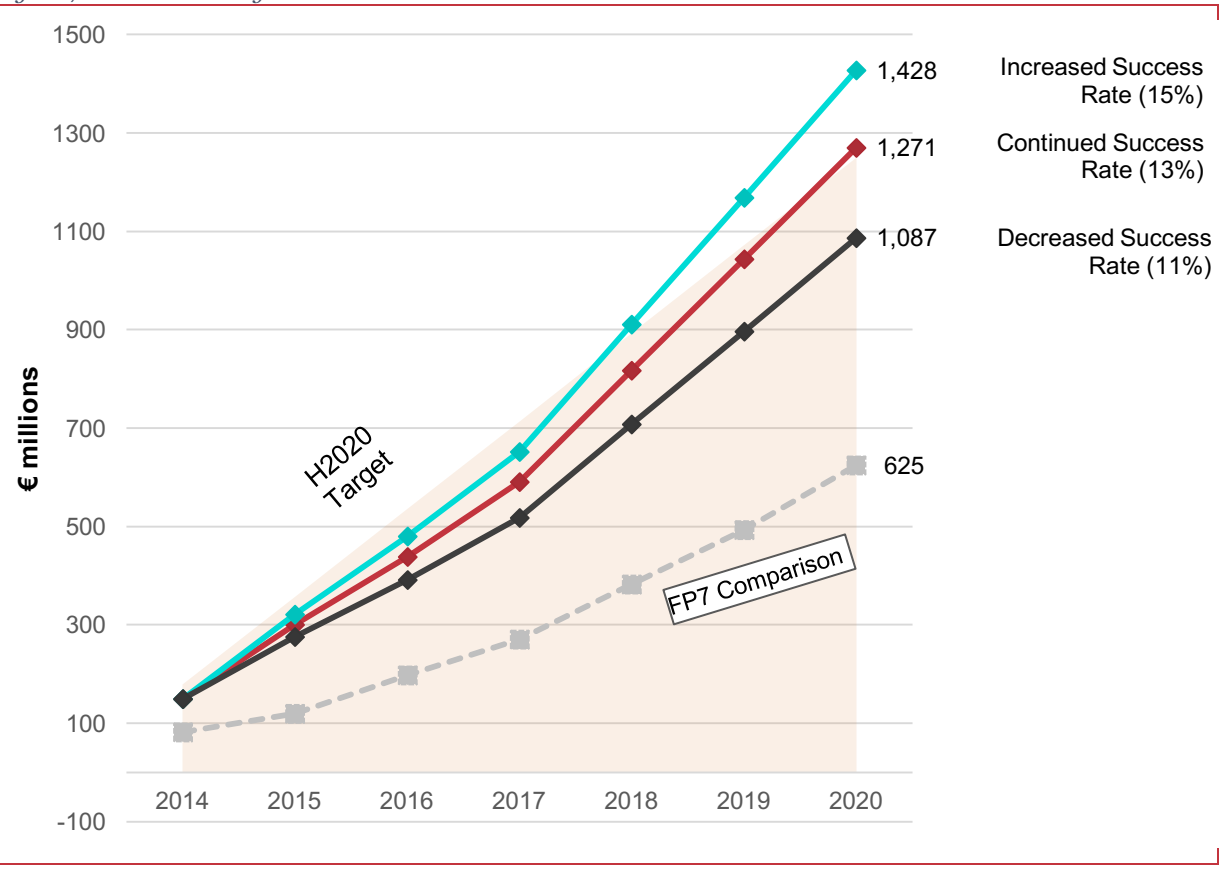
Additionally, the scenario in which the success rate remains the same and the target is achieved relies on the ability of the research system to put forward applications for a value of €5.3 bn in the period 2018-2020 (which is more than double the value put forward in applications in the last three years of FP7, €2.4 bn). This implies that Ireland would have to engage with a wider applicant base (to put forward more proposals) and, perhaps, be more ambitious in terms of pursuing large projects and a larger share in the different projects in which it participates.

Figure 6 - Scenario analysis: annual drawdown



Source: Technopolis (2016). Based on CORDA data (March, 2016).

Figure 7 - Scenario analysis: cumulative drawdown



Source: Technopolis (2016). Based on CORDA data (March, 2016).

3.2.3 Participation per 'pillar'

Regarding the different pillars, a relatively high proportion of projects have been awarded through the "Societal Challenges" pillar (177 projects, 38% of the total) and "Excellent Science" pillar (164 projects, 35% of the total), including 29 ERC projects (€39.7M) and 132 MSCA projects (€54.1M). A total of 117 projects (25% of the total, €70.7M) have been awarded for the Industrial Leadership pillar (see Table 6).

Together, MSCA, the ICT programme and the ERC account for 50% of the drawdown so far. Increased success and participation in the ERC represents a great success for Ireland (ERC represented 8% of the total drawdown from FP7, €50.5M). However, it should be stressed that drawdown is only one measure – increased success in ERC projects also speaks to the quality of Ireland's research base. As our analysis in Figure 20 shows, the ERC is the most difficult programme to win in.

Table 6 – Overview, per pillar

Pillar	Number of projects with Irish participation	Total EC contribution (Irish participants) (in € M)	Average EC contribution per project (in € M)	Number of Irish participations	Average participation per project
Excellent Science	164	102.7	0.6	191	1.2
Industrial Leadership	117	70.7	0.6	161	1.4

Pillar	Number of projects with Irish participation	Total EC contribution (Irish participants) (in € M)	Average EC contribution per project (in € M)	Number of Irish participations	Average participation per project
Societal Challenges	177	95.7	0.5	255	1.4
Spreading excellence and widening participation	3	0.8	0.3	3	1.0
Science with and for Society	8	2.3	0.3	9	1.1
Euratom	3	1.1	0.4	3	1.0
Total	472	273.3	0.6	622	1.3

Source: Technopolis (2016). Based on CORDA data (March, 2016).

Table 7 – EC contribution per specific programme

Rank	Specific programme	Total EC contribution (in € M)	Percentage of EC contribution	Target (in € M)	Percentage of target (in € M)
1	Marie Skłodowska-Curie actions	54.1	20%	246.0	22%
2	Leadership in Enabling Industrial technologies (Information and Communication Technologies, plus Advanced Manufacturing and Processing)	52.2	19%	132.0	40%
3	European Research Council	39.7	15%	100.0	40%
4	Health, demographic change and wellbeing	31.0	11%	72.0	43%
5	Secure, clean and efficient energy	20.4	7%	65.0	31%
6	Food security, sustainable agriculture	19.1	7%	76.0	25%
7	Secure societies - Protecting freedom and security of Europe and its citizens	9.6	4%	20.0	48%
8	Nanotechnologies, Advanced Materials and Production	9.1	3%	66.0	14%
9	Climate action, environment, resource efficient	8.4	3%	33.0	25%
10	Other	29.7	11%		
	Total	273.3	100%	1250.0	22%

Source: Technopolis (2016). Based on CORDA data (March, 2016).

3.2.4 The SME Instrument and Irish SME participation

Horizon 2020 has sought to increase its attractiveness to Europe's SMEs, as compared with FP7, through setting a higher target of 20% (€8.65 billion) for SME income within the LEIT specific programme and the Societal Challenges pillar. The new programme also launched a new SME Instrument, which combines the dedicated SME research schemes from FP7 with the innovation

support measures previously available through the Competitiveness and Innovation Programme. Support is available (through competition) at each of three stages of the innovation lifecycle:

- Phase 1 (SME 1 – proof-of-concept): to explore the scientific or technical feasibility and commercial potential of new ideas. Grants have a maximum value of €50,000 and there is the possibility of applying for further support (phase II)
- Phase 2 (SME 2 – development & demonstration): to develop the business idea further. Grants can be worth up to €3M and should allow the recipient to end up with a market-ready product / service or process
- Phase 3 (the commercialisation phase): to make use of indirect EU support to enter the market, through for example facilitated access to debt or equity finance or concrete advice on IPR protection.

The SME Instrument targets projects that have reached Technology Readiness Level (TRL) 6 as a minimum (or similar for non-technological innovations). As a rule of thumb, this means that the proposed activities have to take place in the operational or production environment. The SME Instrument can be used to target any of the seven Societal Challenges from Secure, clean and efficient energy to health, as well as sections of the Industrial Pillar such as ICT and advanced manufacturing.

Irish SMEs have had an active participation in the SME Instrument, so far, and this is described in Table 8. It shows that the success rate has been higher – for both phases and in total – in comparison with the overall average. In addition, Irish SMEs have drawn down so far of 5% of the total EC Contribution, which is far larger than the average drawdown for Ireland across all programmes (1.9%). The average EC Contribution per participation among Irish participants in Phase 2 (SME-2) has been €1.7M, which is €0.3M higher than the overall average. A total of 45 Irish SMEs have taken part in the instrument 32 of which are new players, i.e. they did not apply in FP7 and have applied in Horizon 2020 only. Furthermore, 6 participations (out of 48) correspond to projects that have progressed from Phase 1 to Phase 2. This may seem low in relative terms (12.5%) but is higher than the overall average (6.5%).

Table 8 - Participation in SME instruments

	Applications	EC Contribution (in €M)	Participations	EC Contribution (in €M)	Success rate (based on applications	Success rate (based on EC Contribution)
Ireland						
SME-1	220	10.4	33	1.7	15%	16%
SME-2	112	173.9	15	24.8	13%	14%
Total	332	184.3	48	26.5	14%	14%
Overall participation						
SME-1	15,839	676.3	1,282	58.3	8%	9%
SME-2	6,303	8,330.9	355	469.9	6%	6%
Total	22,142	9,007.1	1,637	528.1	7%	6%
Irish participations (as a % of overall participation)						
SME-1	1.4%	1.5%	2.6%	2.8%		
SME-2	1.8%	2.1%	4.2%	5.3%		
Total	1.5%	2.0%	2.9%	5.0%		

Source: Technopolis (2016). Based on CORDA data (March, 2016).

The SME Instrument is being used quite widely within the societal challenges and industrial leadership pillars, and Irish SMEs have been successful across many of the specific programmes and have done especially well (in terms of EC contribution) in the areas of Health (which is in line with overall participation of Irish organisations), Food, NMP and energy. Participation levels in the ICT specific programme have also been quite good, however, the income and level of engagement has been limited so far (five participations and €0.3M in terms of EC Contribution).

Table 9 - Participation in SME instrument (Phase 1 and 2) per specific programme

Specific programme	Partici-pations	EC Contri-bution (in € M)
Societal Challenges		
Health, demographic change and wellbeing	9	12.4
Smart, green and integrated transport	1	1.0
Secure, clean and efficient energy	10	2.9
Food security, sustainable agriculture and forestry, marine and maritime and inland water research	8	3.4
Climate action, environment, resource efficiency and raw materials	5	1.3
Europe in a changing world - inclusive, innovative and reflective Societies	1	0.1
Secure societies - Protecting freedom and security of Europe and its citizens	2	0.1
Industrial Leadership		
Information and Communication Technologies	5	0.3
Nanotechnologies, Advanced Materials and Production	4	3.4
Space	1	1.1
Biotechnology	2	0.4

Source: Technopolis (2016). Based on CORDA data (March, 2016).

3.3 Links between Horizon 2020 and national and international environments

We investigated the extent to which changes in the domestic and international environment (including changes in the Horizon 2020 instruments and rules) had affected participation in the programme. Survey respondents were provided with a list of statements and were asked to indicate the extent to which they agreed or disagreed with each of them.

Changes to general financial and regulatory conditions are widely viewed as positive developments: more than 60% of respondents agree or strongly agree that the new indirect cost model[8] and administrative simplification have made the programme more attractive (see Figure 8). In comparison, only a minority view the new support instruments and strategies favourably: 21% believe the new strategic initiatives have made the programme more attractive and 33% that new financial instruments have. The use of societal challenges as a focal point divides opinion: while almost 50% of

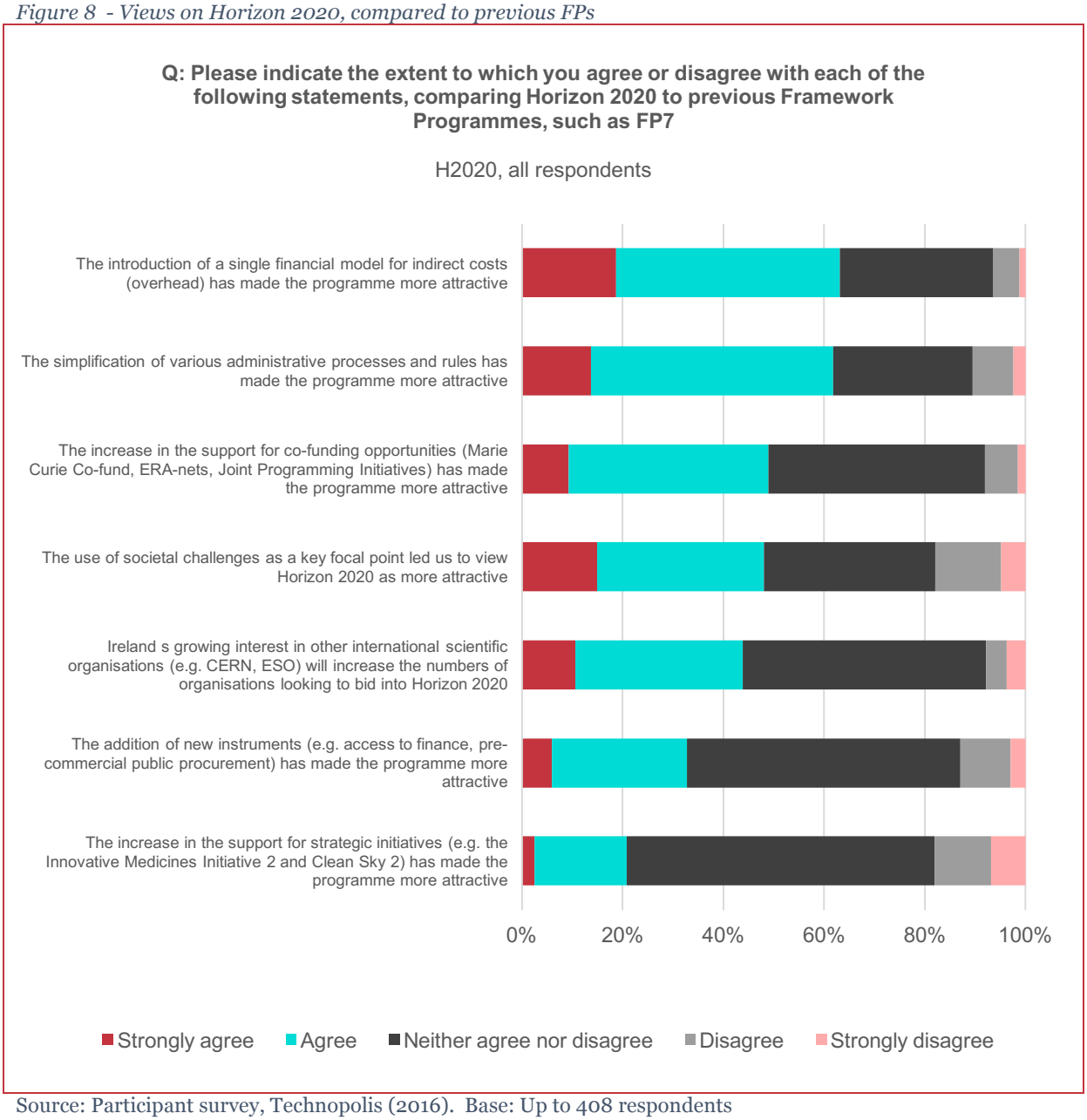
[8] In previous framework programmes, participants were expected to use actual costs when claiming both their direct costs (e.g. salaries) and indirect costs (e.g. cost of administrative support). The indirect costs – or overhead – could be rather difficult to estimate and attribute to a given project and were the subject of many audits and financial queries, and were also highly variable across types of actors and member states. To simplify matters, the Commission elected to introduce a one size fits all model for handling indirect costs, whereby participants use a single flat rate model for indirect costs equal to 25% of their direct costs

respondents agree it has made the programme more attractive, 18% either disagree or strongly disagree with this statement.

Overall, companies and 'other' organisations are slightly more positive than HEIs and research organisations. All stakeholder groups agree on the most attractive and least attractive aspects: they agree that the indirect cost model and administrative simplification are positive and tend to be indifferent about (giving a low score) strategic initiatives and new instruments. HEIs and 'other' organisations score particularly high and low respectively on these questions.

The use of societal challenges is less favourably viewed by HEIs than other types of stakeholders, especially 'other organisations,' where there is quite naturally a stronger interest in exploitation as compared with knowledge producers. Increased support for co-funding is more favourably viewed by HEIs and Research Organisations than by companies and other organisations, reflecting its primary use within Marie Curie and ERA-NETs.

Figure 8 - Views on Horizon 2020, compared to previous FPs



Source: Participant survey, Technopolis (2016). Base: Up to 408 respondents

4 System of support

Evaluation questions

- What is the appropriateness, efficiency and effectiveness of Ireland's national support structure for participation in Framework programmes and how can it be improved?
- What is the adequacy of resourcing and are there any competing priorities?
- What is the appropriateness and effectiveness of academic financial supports (seed funding) provided to researchers? What do other countries do in this regard?
- How can Ireland influence the research agenda and committees under Horizon 2020? What can we learn from other countries in this regard?

4.1 Overview of the national support structure

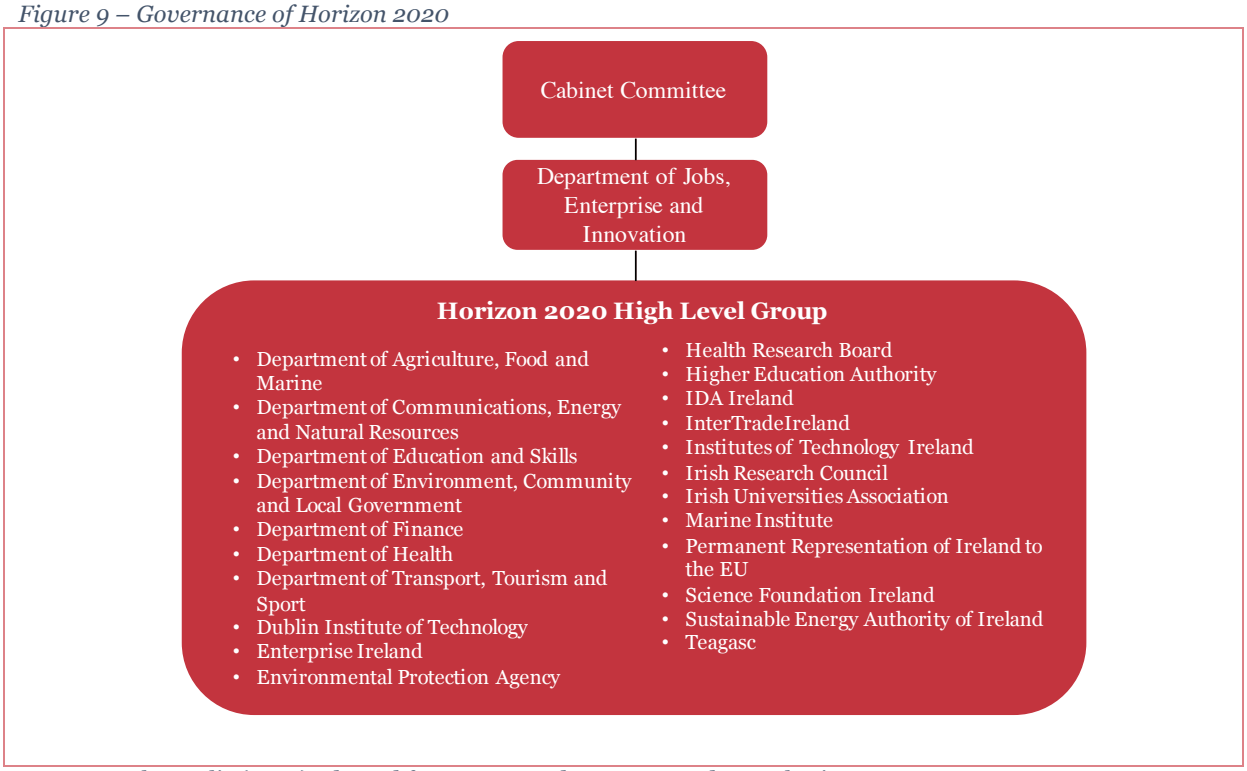
In order to address the evaluation questions related to Ireland's system of support for Horizon 2020, we first present an overview of that support system. We begin with a description of the governance of the system, before outlining both the non-financial support and the financial support available from state actors within the national support structure for participation in Horizon 2020. We then present an overview of the support and co-ordination activities undertaken by other actors, outside of that structure (e.g. the EU coordinators within individual Research and Technology Centres and within the research offices of higher education institutions). This latter piece is based primarily on interviews with high-level stakeholders and participants in Horizon 2020.

4.1.1 Governance

Overall **Ministerial responsibility** for Horizon 2020 sits with the Department of Jobs, Enterprise and Innovation (DJEI), who set the remit of the support structures. A senior official of DJEI was the first Irish delegate to the Horizon 2020 Programme Committee configuration, with other National Delegates for the thematic elements being subsequently based on national roles. DJEI chairs a **High Level Group** (HLG) for Horizon 2020, which has been established to oversee implementation of the national strategy, and to identify and champion 'big wins' for Ireland in the programme. There is also a **working group focused on strategic research proposals**, chaired by the Chief Scientific Advisor to the Taoiseach and Director General of Science Foundation Ireland, and backed by the Minister for Skills, Research and Innovation.[9] This group seeks to identify and champion large-scale EU funding opportunities for businesses and researchers, positioned as "big wins" that are over and above business as usual performance. The main elements in the National Support Network are schematised in Figure 9.

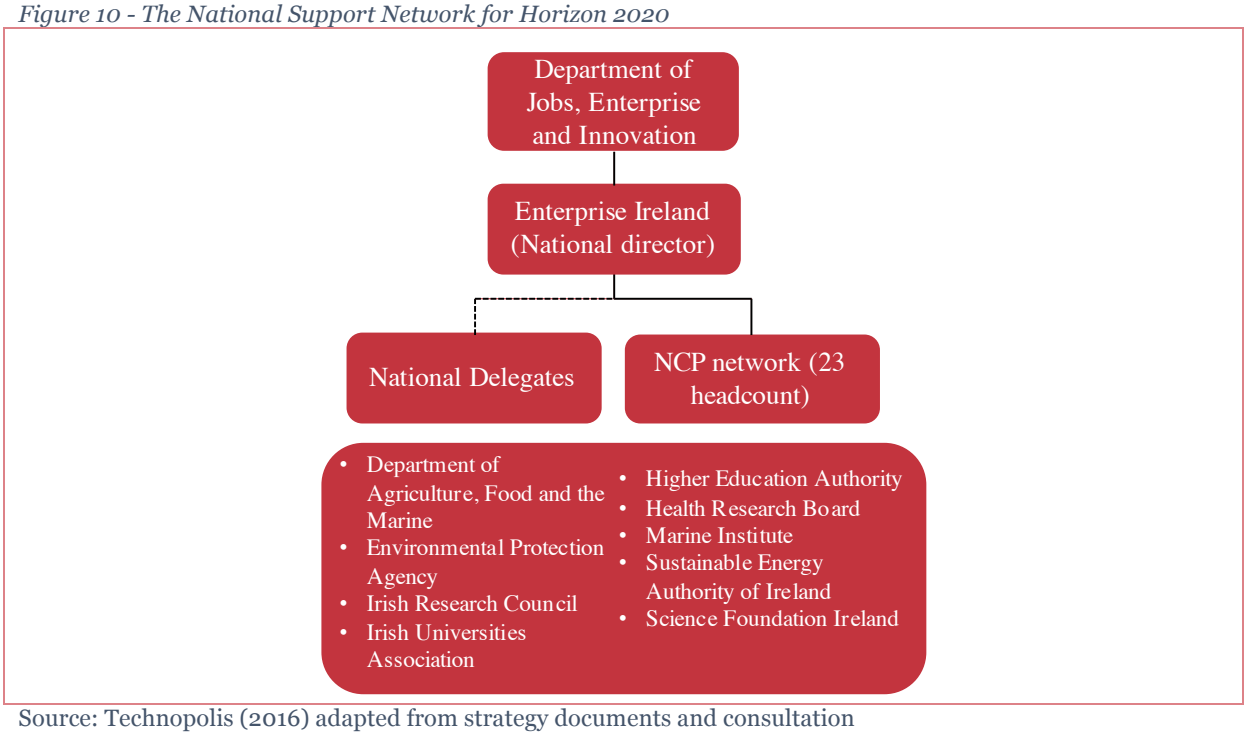
[9] See: http://www.horizon2020.ie/minister-damien-english-wants-researchers-to-think-big/

Figure 9 – Governance of Horizon 2020



Source: Technopolis (2016) adapted from strategy documents and consultation

Figure 10 - The National Support Network for Horizon 2020



Source: Technopolis (2016) adapted from strategy documents and consultation

In addition to these groups is the **All-Island Horizon 2020 Steering Group,** convened and chaired by InterTradeIreland. The Steering Group comprises members from Irish and Northern Irish Government departments and agencies involved in Horizon 2020 support networks, as well as representatives from the North-South Ministerial Council and the European Commission. The Steering Group meets three times per year, and its work focuses on developing and promoting North-

South collaborative Horizon 2020 participation. The Group supports a joint-jurisdiction target of €175m in drawdown from Horizon 2020 for North-South projects.

The Horizon 2020 National Support Network is led by Enterprise Ireland and comprises two government departments (DJEI and the Department for Agriculture, Food and Marine), two national agencies (Environment and Energy), the major national research funding bodies (HRB, HEA, IRC, SFI) a national research institute (Marine) and the Irish Universities Association. It has the remit to "optimise Irish participation" in Horizon 2020,[10] and its 35 or so European Advisors (23 FTEs) are organised in line with the specific objectives of Horizon 2020's three pillars.

The remit of co-ordinating the National Support Network has been assigned to Enterprise Ireland, with the National Director for Horizon 2020 retaining control over the objectives of the whole Support Network. This is a strong, relatively centralised approach that emphasises cohesiveness and consistency of the support offered across all areas. In addition to national access to CORDA data, Enterprise Ireland produces periodic reports that provide wide-ranging feedback on the results of calls for proposals and links that performance with the level of support given (e.g. the first interim report for Horizon 2020 shows a strong association between success and use of support). The dedicated strategy for Horizon 2020 mentions that a new addition to the monitoring of Horizon 2020 participation is the impact on job creation and employment, using the NEMESIS system of detailed macroeconomic models[11] to consider the leverage and cumulative effects of research and innovation on employment.

The National Support Network sits above any organisation- or institution-specific resources, such as the teams within university or research institute research offices.

4.1.2 Non-financial support

Each organisation in the support network provides direct support to their stakeholders, from information, advice and guidance, to mock interviews, peer learning, research infrastructure and schemes.

The Network of National Contact Points works on an All-Island basis and covers all areas of Horizon 2020. The National Contact Points provide guidance and information, and have an adapted role to meet the Commission's recommendation of 'professionalised' support services. Ireland has implemented this by ensuring the National Contact Points provide 'hand-holding' support through proposal preparation. The addition of two new special teams to support industry engagement and multi-disciplinary research are recent adaptations to the support system.

The Irish Marie Curie Office is funded by the Irish Research Council, and managed by the Irish Universities Association. It exists to support a wide range of stakeholders to apply for and manage MSCA awards. Its resourcing includes the dedicated MSCA NCP, and dedicated staff to deal with immigration issues. The office also has dedicated staff for dealing with SFI centres.

SFI have a dedicated EU support team within their EU Affairs Office. This team is in place to support SFI award holders – including SFI funded research centres – and the wider research community to leverage national funding against European monies.

Around the National Support Network are other routes for businesses, which can be signposted via IDA Ireland, IBEC, the Enterprise Europe Network (EEN) and Local Enterprise Offices across the country.

[10] Enterprise Ireland, 2013: Strategies to maximise participation in Horizon 2020

[11] See: http://ec.europa.eu/research/social-sciences/pdf/other_pubs/database-from-ssh-policymaking-projects_en.pdf

Table 10 - Non-financial support for participating in Horizon 2020 in Ireland

Instrument	Owner	Scope and services	FTEs	Annual budget
NCP network	Multiple agencies	• The NCP network provides advice and guidance to potential applicants	14.5 EI 9.7 other	€2.5m[12]
Multidisciplinary ICT team	Enterprise Ireland	• A team made up of relevant NCPs and NDs to support bringing ICT into more project areas	--	Within overall NCP ND budgets
SME team	Enterprise Ireland	• A team made up of relevant NCPs, NDs and agency development advisors to support bringing more businesses into projects	--	Within overall NCP ND budgets
National Marie Curie Office	Irish Universities Association	• Advice and support on preparing applications for Marie Skłodowska-Curie funding • Advice and support on the management of Marie Skłodowska-Curie awards • The office team includes the NCP for MSCA, and two members of staff dedicated to the SFI centres • The office is funded by the Irish Research Council, with an additional Programme Officer funded by SFI	1.0	€0.1m
SFI EU Affairs office	Science Foundation Ireland	• Provides support to SFI award holders (including Centres) and the wider research community leveraging of national investment to win EU funding		
Enterprise Ireland's office in Brussels	Enterprise Ireland	• EU R&D Liaison, who is also a member of the NCP network. • The office is made available for partner meetings and hosting in Brussels, for any Irish applicant.	1.0	

4.1.3 Direct financial support

The financial support schemes available are set out below in Table 11. These supports each fulfil very different purposes, and operate at different intensities. Many agencies work in partnership to deliver support in particular areas. One such example is the National Marie Curie Office, funded by the Irish Research Council and managed by the Irish Universities Association to provide advice and support for preparing applications for Marie Skłodowska-Curie Actions and the management of subsequent awards. Another example is the Irish Universities Association's partnerships with Ibec and IDA Ireland to support university-industry engagement, and the partnerships between Enterprise Ireland, the Environmental Protection Agency and the Sustainable Energy Association of Ireland to deliver environmental and energy elements. Further support for Ireland's participation comes through network members' involvement in various Joint Programming Initiatives (JPIs) and ERA-NETs.

[12] This is an estimate, based on the 24.2 FTE NCP positions at €100,000 per staff member per year (including on-costs)

Table 11 – Direct financial support for participating in Horizon 2020 in Ireland

Instrument	Owner	Scope	Annual / cost
ERC Support programme	Science Foundation Ireland	• The SFI ERC Support Programme provides an additional overhead payment to the Host Institution of ERC award winners, which is designed to assist awardees to successfully carry out their ERC-funded research. Awardees who secured ERC funding while at an Irish Institution, as well as those subsequently recruited to an Irish institution from overseas are eligible. The amounts differ as follows: • ERC award (2015 call or later) with an Irish Host Institution: €150,000, regardless of ERC scheme. • ERC award from a 2014 call with an Irish Host Institution: 20% of the award stated in the ERC grant agreement, up to a maximum of €300,000, regardless of ERC scheme. • ERC awardee (from any year) recruited to work in an Irish Host Institution: The award may depend on the time remaining on the ERC award and will depend on the type of ERC award held, as follows: ERC Starting Grant up to €500,000; ERC Consolidator Grant up to €750,000; ERC Advanced Grant up to €1,000,000	Dependent on Irish applications to the ERC
ERC Development programme	Science Foundation Ireland	• The SFI ERC Development Programme supports researchers based in Ireland that have submitted a proposal to the ERC Starting Grant, Consolidator Grant and Advanced Grant programmes, have been deemed fundable, but were not eventually funded by the ERC due to a lack of available programme budget. • SFI ERC Development Programme grants will be up to 50% of the original ERC proposal, or €500,000, whichever is lower, for a maximum of 24 months.	Dependent on Irish applications to the ERC
Brussels events programme	Science Foundation Ireland	• SFI awards €50,000 to applicants to host an event in Brussels for the purpose of enhancing Horizon 2020 drawdown through influencing, promoting activities, network building etc.	
Coordination support grants	Enterprise Ireland	• The Enterprise Ireland Co-ordination support grants are available to facilitate the preparatory work leading to a proposal for the coordination of projects under the Horizon 2020 Programme, and two types are available • For academic coordinators for any research project within Horizon 2020, up to €12,500 available. • For applicants to ERC, up to €8,000 available for a Starting Grant, Consolidator Grant or Advanced Grant. Up to €5,000 for a Proof of Concept Grant.	Up to €2.2m
Travel grants for academic researchers	Enterprise Ireland	• To facilitate participation in the Horizon 2020 Programme (excluding COST) • Funding available for researchers based in all Irish research performing organisations to facilitate multiple visits to meet research partners in other countries. • Up to €3,000 (at €400 per day) for out of pocket expenses such as hotels, meals, taxis, local fares and incidentals	Up to €0.3m
New Horizons	Irish Research Council	• The Irish Research Council offers two types of 'New Horizons' project grant in 2015 to proposals being developed by academics with contracts of sufficient duration to carry out the proposed research at a recognised HEI or Research Performing Organisation in Ireland. These include: • A 'Starter Grant' for 15 months and up to €100,000 (AHSS) designed to help researchers build track and to provide seed funding for researchers interested in applying for a Horizon 2020 ERC grant in the medium term • Interdisciplinary Grant for 15-24 months and up to €220,000 (AHSS and STEM) designed to encourage AHSS researchers to collaborate with STEM researchers on interdisciplinary projects	Average to date €1.5m

Instrument	Owner	Scope	Annual / cost
		that address societal challenges in the medium term under Horizon 2020, or to help AHSS researchers to form new connections and build on existing national and international networks to develop pilot studies, prepare preliminary findings and help establish consortia on upcoming topics across all Horizon 2020 Societal Challenges.	
Basic Research Excellence Award	Irish Research Council	• Between €60,000 and €100,000 awarded to applicants in the Arts, Humanities and Social Sciences who achieve an 'A' rated outcome in the ERC competitive process but do not receive funding. Award is contingent upon the intention to re-apply to the ERC in the next available call	
Cross-border travel scheme	InterTradeIreland	• Small amounts of funding (€550) to support cross-border partnerships to travel to meet with each other	Approximately €0.01m
EU travel scheme	InterTradeIreland	• Small amounts of funding (€437) to support cross-border partnerships to travel to Europe for meetings with other partners, or to attend relevant events.	Approximately €0.01m

Source: information provided by individual agencies

Science Foundation Ireland also offers a number of national support measures designed to facilitate Irish researchers' access to Horizon 2020, including:

- The SFI Horizon 2020 Research Infrastructure Integrating Activities (Advanced Communities) call for proposals[13] provided €30m in funding in 2015 to improve national research infrastructure (for STEM research) in areas judged helpful to strengthening Ireland's applications to the Horizon 2020 Research Infrastructures Integrating Activities call. The Horizon 2020 INFRA-IA call funds transnational access and coordination among Europe's research infrastructure players, rather than providing capital funding for research infrastructure per se, which is nonetheless of considerable value to researchers in Ireland, given the very substantial number of large-scale facilities across Europe that provide limited open access
- The SFI Investigators Programme[14] provides an Horizon 2020 Catalyst Award of up to €25K to all Lead Applicants to support preliminary coordination and consortia development relating to future applications to Horizon 2020

Through 2016, the Irish Research Council is also investing approximately €90,000 in workshops to support the embedding of interdisciplinary thinking in the Irish research system[15].

4.1.4 Support and coordination activities undertaken by other actors

In addition to the suite of national supports outlined above, the national system of support also includes a number of other important elements that have the ability to support Horizon 2020 participation. These include new Research and Technology centres that bring together industry and academia and coordinate actions across national research groups.

4.1.4.1 Research and Technology Centres

Since 2013, significant investment has been made in Framework Programme-aligned Research and Technology Centres.

[13] See: http://www.sfi.ie/funding/funding-calls/open-calls/sfi-research-infrastructure-programme-2015.html

[14] The Investigator Programme is a national research funding programme run by SFI, see: http://www.sfi.ie/funding/funding-calls/closed-calls/sfi-investigators-programme-2015.html

[15] See: http://www.research.ie/scheme/workshops-cultivate-interdisciplinary-research-ireland-call-closed. Figure provided by IRC.

There are currently 12 new SFI research centres, funded over two calls (seven in 2013 and five in 2015, with a third call now open). The SFI Research Centres bring together partners from universities and industry. These are shown in Table 12. To date, €355m has been invested in the centres by Government and a further €190m from industry[16]. More than 200 companies are involved in centre-based collaborations.

Thirteen SFI funded EU Managers were recruited into the twelve Research Centres, whose role is to explore and support opportunities for EU funding. This support covers both pre- and post-award activities. Recruitment is on-going for some of the Centres. The centres have 15 general Key Performance Indicators (KPIs) from SFI, and a specific Horizon 2020 drawdown metric, with expectations to secure significant amounts of EU funding.

Table 12 - Current SFI Research Centres

Centre name	Focus
ADAPT	Digital Content and Media Innovation
AMBER	Advanced Materials and Bioengineering
APC Microbiome Institute	Gastrointestinal health
CONNECT	Future Networks and Communications
CÚRAM	Medical Devices
iCRAG	Applied Geosciences
INFANT	Foetal and Neonatal Translational Research
Insight	Data Analytics
IPIC	Photonic Integration
Lero	Software Research
MaREI	Marine Renewable Energy
SSPC	Synthesis and Solid State Pharmaceuticals

Source: SFI Research Centres publication, available at: http://www.sfi.ie/assets/media/files/downloads/Investments/2015%20RC%20Leaflets/Combined.pdf

There are currently 15 Enterprise Ireland and IDA Ireland supported Technology Centres, joint-funded collaborative entities to enable and encourage Irish companies and MNCs to collaborate on research projects with research institutions.

Table 13 - Current Enterprise Ireland and IDA Ireland Technology Centres

Centre name	Focus
ARCH	Applied Centre for Connected Health
CeADAR	Centre for Applied Data Analytics Research
GRCTC	Financial Services, Governance, Risk and Compliance Technology Centre
MCCI	Microelectronic Circuits Centre Ireland
DPTC	The Dairy Processing Technology Centre
IC4	The Irish Centre for Cloud Computing and Commerce
Learnovate	Centre of excellence for innovation and research in learning technologies

[16] See: http://www.sfi.ie/investments-achievements/sfi-research-centres/

Centre name	Focus
IMR	Irish Manufacturing Research
CCAN	Collaborative Centre for Applied Nanotechnology
FHI	Food for Health Ireland
I Comp	Irish Centre for Composites Research
IERC	International Energy Research Centre
IVI	Innovation Value Institute
PMTC	Pharmaceutical Manufacturing Technology Centre
TCBB	Technology Centre for Biorefining and Bioenergy

Source: DJEI Directory of Innovation Supports, Research Centres and Technology Centres, 2016

The Research and Technology Centres are important for Ireland's participation in Horizon 2020, for several reasons:

- They represent significant state and industry investment in relevant areas, including alignment with National Research Priority Exercise areas
- Their focus on impactful research suits both national and Horizon 2020 priorities, and provides dedicated coverage of mid-to-high technology readiness levels (TRLs) to complement the excellent research base
- The centres provide a clear route for articulating research impact
- The centres provide a clear route for industry involvement, and may have a catalysing effect for increasing this in Horizon 2020, as compared with FP7

These centres, with their experienced personnel and dedicated EU Managers, are able to provide supplementary support to their industry partners in addition to the National Support Network, and thus have a very significant role to play in boosting industry engagement in the Framework Programmes. This support has been described variously as removing or reducing the administrative burden on companies of applying to and managing grants, as well as providing advice and guidance on opportunities and processes.

The lists of firms engaged in individual Research and Technology Centres show that these are powerful ways of engaging MNCs. More than 20 MNCs are engaged across the current centres.

4.1.4.2 Higher education institution research support offices

Since the end of FP7, Ireland's HEIs have continued to invest in internal Horizon 2020 support capacities, with the larger participating institutions leading the way in terms of the increasing nature and extent of support offered. Two particular examples include University College Dublin (UCD) and the National University of Ireland Galway (NUI Galway).

UCD recently conducted a large-scale restructure, closing their EU office. Now all support sits in the University's research and innovation office at the Belfield campus, which deals with all competitive funding matters. The function consists of a proposal support a team of three individuals, a research programmes team of five individuals and a research partners team of five individuals. Each research partner focuses on a specific theme, such as energy and manufacturing, or data science and ICT. Other functions within this team include grant registration support for each of the schools, technology transfer personnel, reporting and analytics, and research and finances.

NUI Galway has also conducted a wide-ranging programme of change to their systems, which includes additional support personnel, as well as conscious alignment with Horizon 2020 priorities. The university has held a large number of workshops (approximately 30) to mobilise their researchers at the start of the Programme.

This kind of internal support is also beginning to be implemented within Ireland's Institutes of Technology (IoT). In one case, an IoT has invested approximately €50,000 annually to second a researcher who is experienced in Framework Programmes, as support to the IoT's centres and groups. The post is 0.5 FTE, and works like an internal NCP, as the first point of contact for researchers. It was estimated by our interview partner that this post, plus other research office supports such as administration, totals an investment of approximately €100,000 per year.

4.1.4.3 Elsewhere in the system

There are other interesting examples of support elsewhere in the system for participation in Framework Programmes too, though these tend to be more indirect. For example, the Environmental Protection Agency and Department of Environment, Community and Local Government told us of their approach to co-ordinate the many research funders in their area to ensure less duplication and more alignment with relevant topics. This is conducted via, for example, a co-ordination group for water research funders, of which there are 10 in Ireland.

4.2 Appropriateness and effectiveness of support system

We addressed this question by combining survey responses with desk research. We used the survey to examine if and how Horizon 2020 applicants have interacted with NCPs, and the benefits that have arisen from this interaction. In our assessment, we also reach a comparison of these elements between Horizon 2020 and FP7. We then examine the adequacy of resourcing through desk research and high level interviews, looking at the size of the NCP network with respect to Ireland's research base, drawdown and targets. This section sets these elements out in order.

4.2.1 Interaction with NCPs

Through our survey, we investigated Horizon 2020 applicants' engagement with NCPs via an assessment of their level of interaction with NCPs, and the levels of use of specific NCP services. The following sub-sections present this analysis along with a comparison with results from the evaluation of FP7.

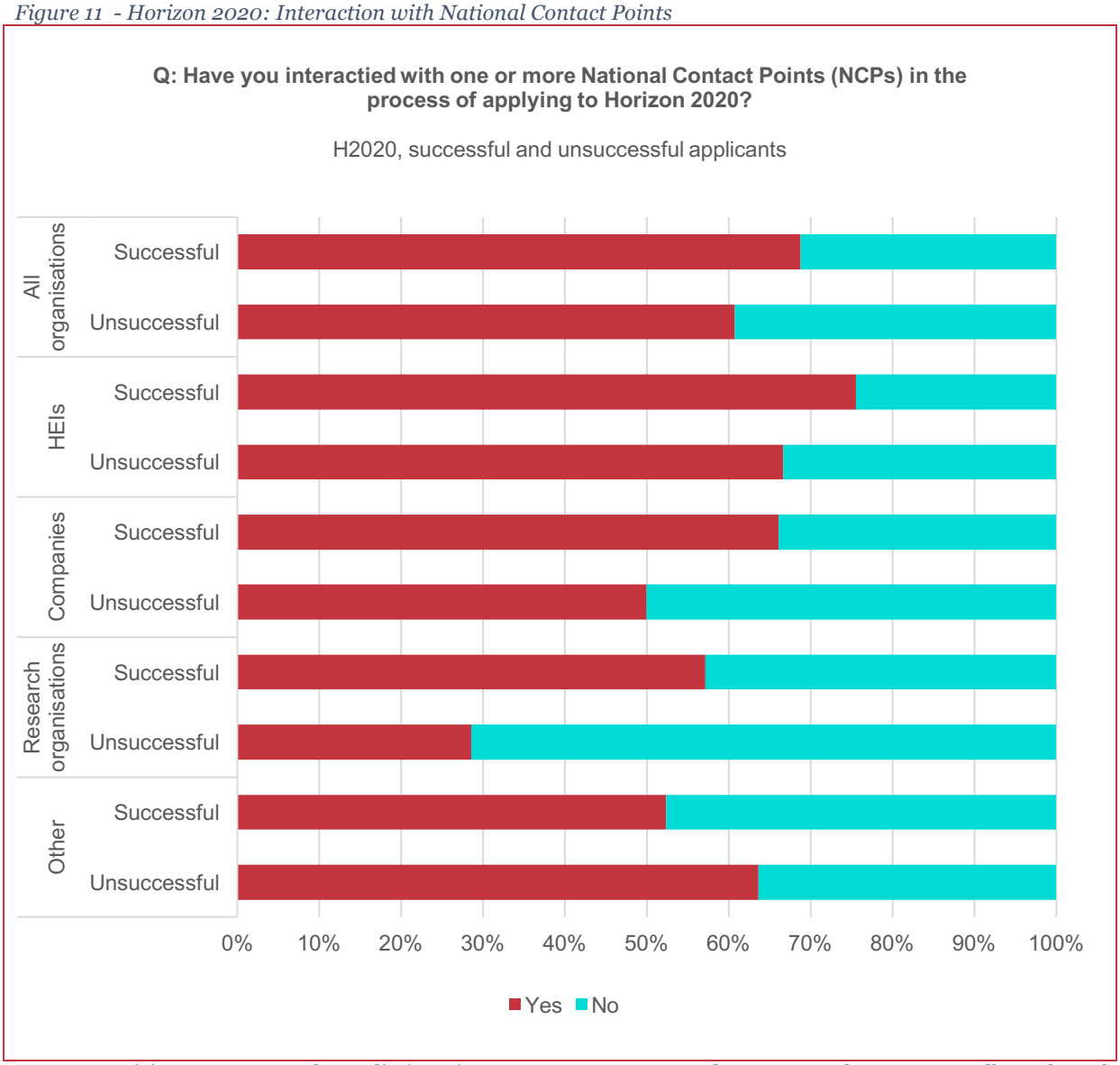
4.2.1.1 In Horizon 2020

According to our participant survey, a majority of applicants, both successful and unsuccessful, have interacted with an NCP during the application process:

- Successful applicants are more likely to have interacted with an NCP than unsuccessful applicants for most groups, except for 'other' organisations.
- HEIs are more likely to interact with NCPs than other groups.
- Research organisations have interacted less with NCPs than other groups. However, for Research Organisations, contact with the NCP appears to be more strongly associated with successful as compared to unsuccessful applicants than for other groups, though it is worth remembering that these are based on a relatively small number of responses from research organisations.

We suggest a caveat of a potential response bias in this question, as we believe that those who have interacted with NCPs would be more likely to answer these questions, whether successful or unsuccessful.

Figure 11 - Horizon 2020: Interaction with National Contact Points



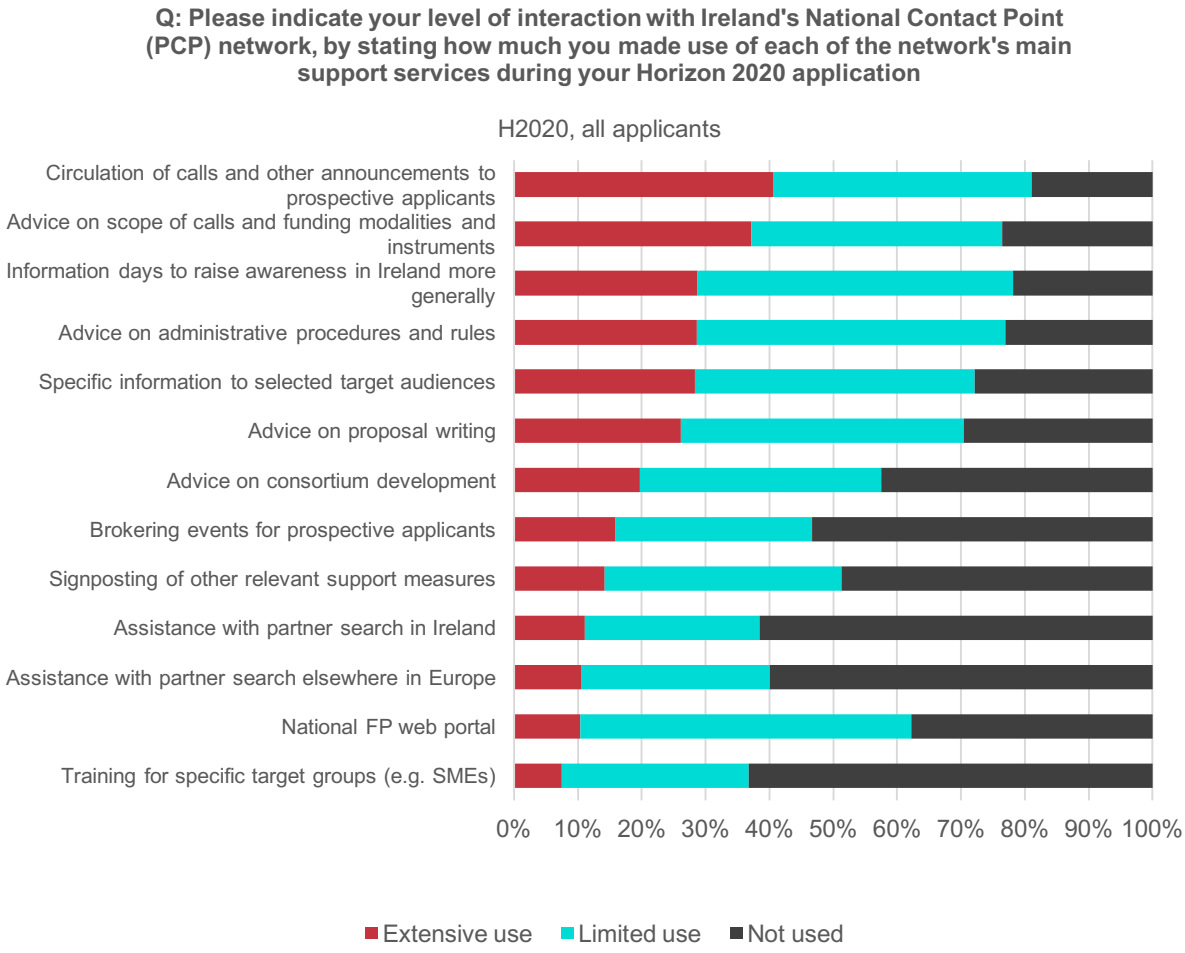
Source: Participant survey, Technopolis (2016). Base: Up to 319 respondents. Note: there are a small number of research organisations responding to this question.

The most frequently used services are the information about calls (circulated announcements and info days) and advice on the calls and administrative procedures (see Figure 12).

Specific information to target audiences has been used by 72% (extensive or limited use) whereas training for specific audiences is the least used service at less than 40%. Help with consortium development, brokering and partner searches in Ireland and Europe are in the lower end, with 20% or less making extensive use of these services.

On average successful applicants tend to make more use of the various services than unsuccessful applicants. Specifically, successful applicants are more likely to have made extensive use of circulated calls, targeted information services, and advice on proposal writing.

Figure 12 - Horizon 2020: use of NCP support services



Source: Participant survey, Technopolis (2016). Base: Up to 234 respondents

4.2.1.2 Horizon 2020 in comparison with FP7

When comparing the feedback of applicants who interacted with NCPs during FP7, and the feedback of applicants who interacted with NCPs during Horizon 2020, there is little change in the overall percentage of applicants that interact with NCPs (shown in Figure 13). For example, our survey shows that 66% of responding FP7 applicants interacted with an NCP, while 64% of responding Horizon 2020 applicants interacted with an NCP. There is minimal change across all organisation types, though we have chosen not to remark on the lower level of engagement among research institutes within Horizon 2020, because the numbers are too small to be confident in the significance of any apparent differences.

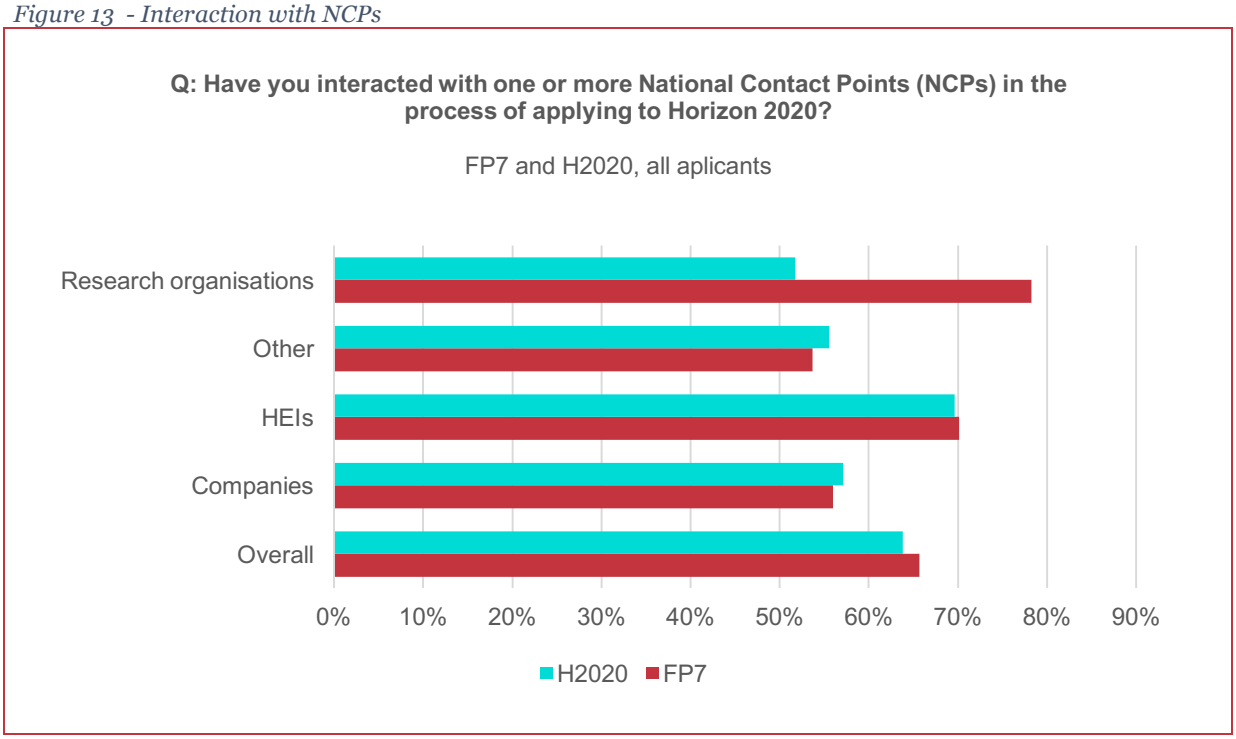
There are, however, some notable changes in the intensity of the interaction and the use of the different NCP functions. We prepared a comparison between the percentages of respondents that reported using the different NCP functions in FP7 and Horizon 2020 (see Table 14). A negative number in the 'Not used' column means that there has been a decrease in the (in percentage points) proportion of respondents that had not used the service in Horizon 2020 (in comparison with FP7), and consequently this results in an increase in its use (limited or extensive). These instances are highlighted in orange in the table.

Overall, the table suggests Horizon 2020 applicants are making more exacting use of the various NCP services, with the analysis showing six of the 13 NCP functions where there has been a 4-11 percentage point movement away from 'not used' towards limited or extensive use. These include:

- Circulation of calls and other announcements to prospective applicants
- Specific information to selected target audiences
- Training for specific target groups (e.g. SMEs)
- Advice on consortium development
- Advice on proposal writing
- Assistance with partner search in Ireland
- Assistance with partner search elsewhere in Europe
- Brokering events for prospective applicants
- Signposting of other relevant support measures

Conversely, we see an increase in the number of respondents that do not use the national FP web portal, as well as advice on the scope of calls and funding modalities and instruments. This is reflected well in the strategy, to use the portal to as a route to encourage interaction with the relevant NCP, rather than as an information source.

Figure 13 - Interaction with NCPs



Source: Participant survey, Technopolis (2016). Note: there are a small number of research organisations responding to this question.

Table 14 - Change in interaction Horizon 2020 versus FP7 (percentage points)

All respondents	Extensive use	Limited use	Not used
National FP web portal	-4.9	-1.1	6.0
Information days to raise awareness in Ireland more generally	3.3	-3.6	0.3
Circulation of calls and other announcements to prospective applicants	4.0	-2.2	-1.8
Specific information to selected target audiences	0.5	3.3	-3.8
Training for specific target groups (e.g. SMEs)	0.2	9.2	-9.3
Advice on administrative procedures and rules	-2.2	1.6	0.6
Advice on scope of calls and funding modalities and instruments	1.8	-6.6	4.8
Advice on consortium development	1.0	0.3	-1.4
Advice on proposal writing	-2.6	7.3	-4.6
Assistance with partner search in Ireland	2.1	6.4	-8.5
Assistance with partner search elsewhere in Europe	0.7	3.1	-3.8
Brokering events for prospective applicants	3.7	7.3	-11.0
Signposting of other relevant support measures	1.8	2.1	-4.0

Source: Participant survey, Technopolis (2016). * Differences are due to rounding.

4.2.2 Effect of interaction with NCPs

Through the survey, we asked successful applicants to indicate, in their view, what the main benefits were that arose from their interaction with NCPs. Respondents were offered a menu of options in the form of statements and were asked to state whether or not they agreed or disagreed with each of them.

4.2.2.1 In Horizon 2020

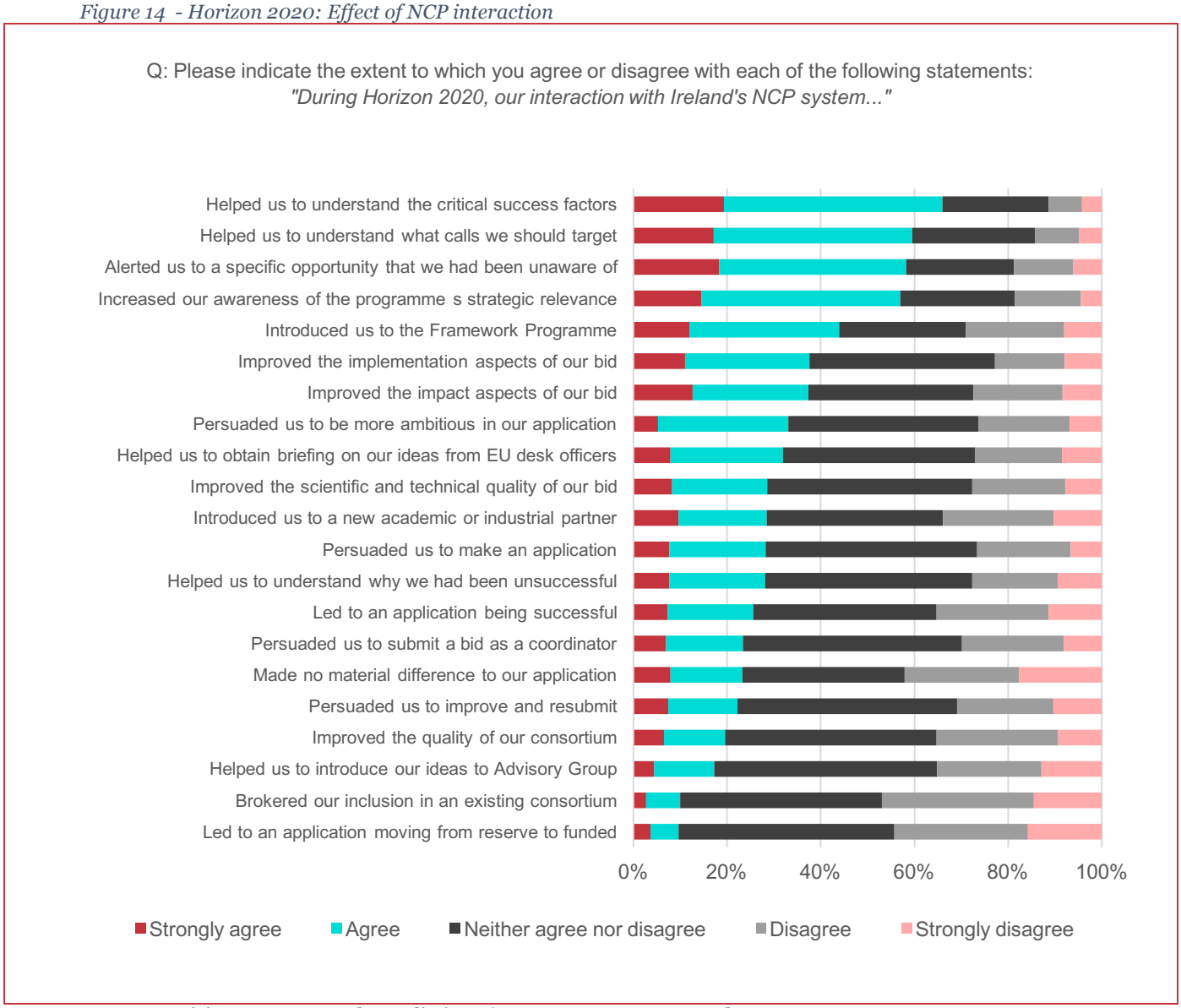
A majority of respondents report that interaction with the NCP has helped improve their understanding and awareness about calls and programmes.

As for the quality of the bids, more than a third of respondents agreed or strongly agreed that interaction with the NCPs had improved the implementation (38%) and impact (37%) aspects of the bid. A smaller but not inconsequential proportion of respondents (28%) agreed that the advice from NCPs had improved the scientific or technical aspects of their bid.

Concerning consortium building, 28% agreed that NCPs had introduced them to a new partner, but only 20% agreed that interaction with NCPs had improved the quality of their consortium and 10% that it had brokered their inclusion in an existing consortium.

Relatively few respondents agreed that the interaction had been directly responsible for the success of an application (28%) or for moving an application from the reserve list to being funded (10%)

Figure 14 - Horizon 2020: Effect of NCP interaction



Source: Participant survey, Technopolis (2016). Base: Up to 213 respondents

4.2.2.2 Horizon 2020 in comparison with FP7

In terms of the perception of benefits from interaction with NCPs, there is an increase in the positive view regarding NCP functions, particularly in terms of alerting applicants to specific opportunities, identifying relevant calls, and supporting and improving bid implementation.

We arrive at this assessment by adding up the number of respondents (successful applicants) that indicated that they agree or strongly agree with the different statements regarding the benefits of interacting with NCPs. The comparison between FP7 and Horizon 2020 is shown in the far right column of Table 15. We have highlighted those instances in which the difference between the two results is plus or minus 5 percentage points (in grey and orange respectively).

The table indicates that there is an increase in the percentage of successful applicants that claim interaction with NCPs has been beneficial in terms of pointing them towards specific or relevant opportunities, and of indicating relevant calls that applicants could consider targeting. There is also an increase in the number or respondents that indicate the support provided by NCPs has improved the implementation aspects of their bids.

The table also reveals that there is a decrease in the percentage of successful applicants that claim interaction with NCPs led to an application being successful (decrease in 11 percentage points of the percentage of people that agree or strongly agree with the statement). This is probably due to the fact that success rates have decreased significantly across the board and participants are not being able to disentangle this external factor from the (potential) effectiveness of the support provided by the NCP.

Table 15 - Change in perception regarding benefits of in interaction with NCPs, Horizon 2020 versus FP7

Percentage of respondents that either Strongly agree or Agree	FP7	Horizon 2020	Change (in percentage points)
Alerted us to a specific opportunity that we had been unaware of	41%	58%	17.0
Introduced us to the Framework Programme	38%	44%	6.1
Increased our awareness of the programme s strategic relevance	57%	57%	0.3
Helped us to understand what calls we should target	54%	60%	5.8
Helped us to understand the critical success factors	66%	66%	0.1
Helped us to obtain briefing on our ideas from EU desk officers	27%	32%	5.4
Helped us to introduce our ideas to Advisory Group	15%	17%	2.7
Persuaded us to make an application	31%	28%	-3.0
Persuaded us to be more ambitious in our application	32%	33%	0.9
Persuaded us to submit a bid as a coordinator	25%	23%	-1.8
Introduced us to a new academic or industrial partner	29%	28%	-1.0
Brokered our inclusion in an existing consortium	11%	10%	-1.4
Improved the scientific and technical quality of our bid	31%	29%	-2.3
Improved the implementation aspects of our bid	32%	38%	5.6
Improved the quality of our consortium	20%	20%	-0.4
Improved the impact aspects of our bid	39%	37%	-1.2
Led to an application moving from reserve to funded	6%	10%	3.3
Led to an application being successful	36%	26%	-10.6
Helped us to understand why we had been unsuccessful	25%	28%	3.0
Persuaded us to improve and resubmit	23%	22%	-0.5
Made no material difference to our application	20%	23%	2.8

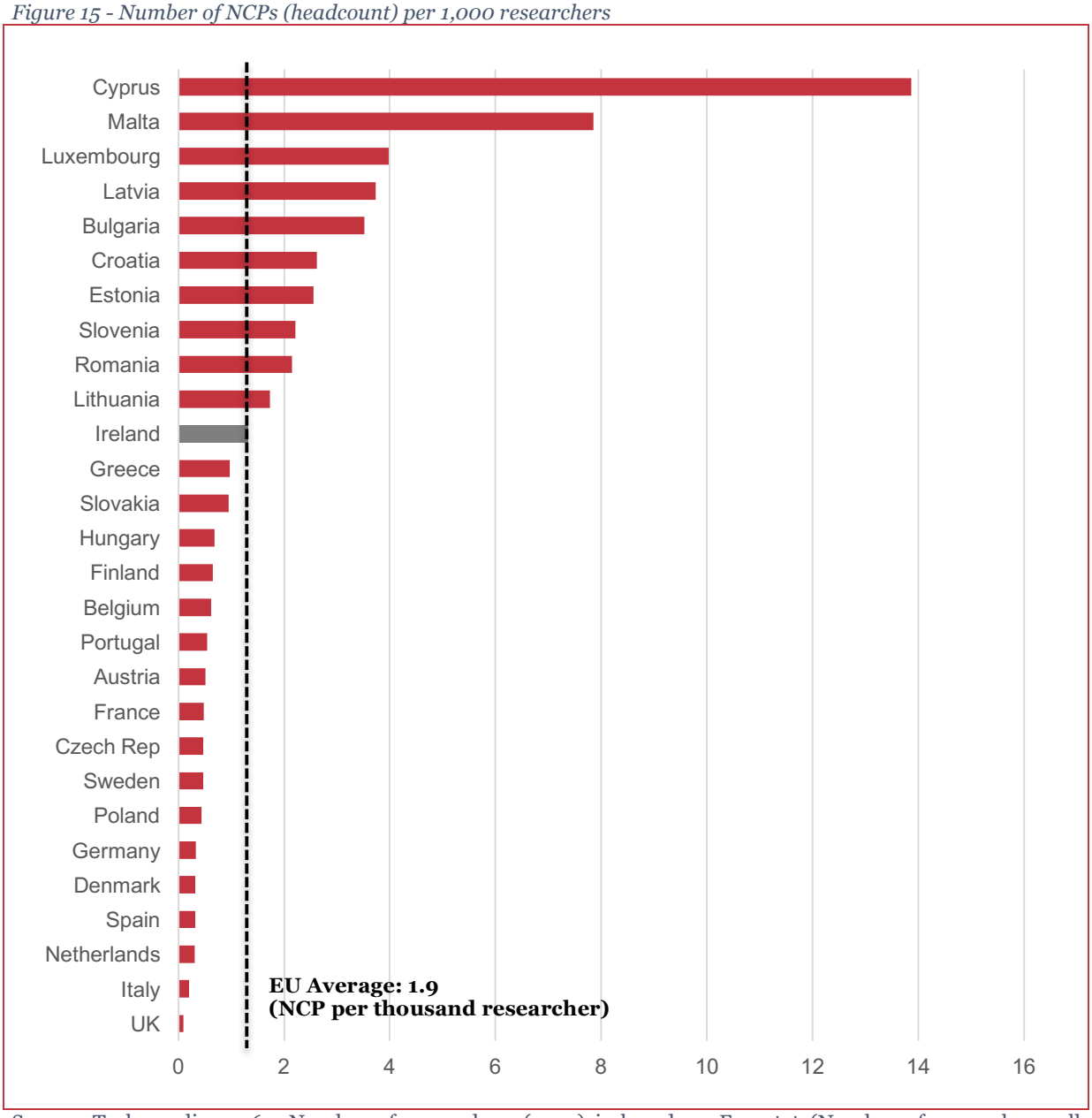
Source: Participant survey, Technopolis (2016).

4.2.3 Adequacy of resourcing

One of the evaluation questions is concerned with the adequacy of the resources currently allocated to the national support system. We assess this by looking at the size of the NCP network with respect to the research base, drawdown and targets. We also asked our stakeholders for their views on the adequacy of resourcing through the programme of high-level interviews.

Regarding the size of the NCP Network, we find that the number of NCPs (headcount) per one thousand researchers is in line with the EU average. This is presented in Figure 15. This figure suggests that Ireland has sized its support network broadly in line with the average for the EU28 overall, when looked at in terms of the numbers of researchers. The chart also suggests there is a small country effect, as one might expect, with the smaller research systems having proportionately larger NCP networks, as compared with the larger EU member states.

Figure 15 - Number of NCPs (headcount) per 1,000 researchers



Source: Technopolis 2016. Number of researchers (2014) is based on Eurostat (Number of researchers, all performing sectors, full-time equivalent [rd_p_persocc]).

Our interviews with high-level officials reveal that there is a good level of satisfaction in terms of resourcing. In a minority of cases more 'on the ground' support for NCPs in high-pressure areas would be welcome, but there is no guarantee that this would result in increased outcomes.

There was no suggestion in interviews that any instrument or mechanism is underperforming and should be drastically changed or replaced. Our qualitative analysis revealed that two particular high-level stakeholders felt that the network of National Delegates is not utilised as well as the network of National Contact Points. This related primarily to whether the right representation is present in all areas, and whether the National Delegates themselves work together enough. In this scenario, we would suggest taking inspiration from the practices of comparator countries, such as the Austrian 'Delegates Roundtable' or Danish 'Reference Group' mechanism, which bring together delegates on a regular basis ahead of programme committees (please see section 0, below). We note that not all

programme committees carry the same influence over the structure of the work programmes (for example ERC or MSCA). Further discussion regarding resourcing could be found in Section 6.2

4.3 Relevance, adequacy and effectiveness of financial and non-financial support

4.3.1 Horizon 2020 applicants' view of the relevance, adequacy and effectiveness of Ireland's support measures

Through the survey, we investigated the relevance, adequacy and effectiveness of the financial and non-financial support provided by the NCPs, Enterprise Ireland, Science Foundation Ireland, the Irish Research Council and InterTradeIreland.

Respondents were asked to score each of the types of support in terms of:

- The **relevance** of the support to their organisation's needs
- The **adequacy** of the levels of available resourcing, for each type of support
- The **effectiveness** of that support, as delivered

Survey respondents were asked to use a scale from 1 to 5, where 1 is very low and 5 is very high. To facilitate the analysis, we estimate the average score provided for each type of support, for each of those three dimensions. As the majority of these support measures are not available to companies, our analysis excludes responses from this stakeholder group, in order to mitigate any possible bias.

Table 16 below, sets out the average scores for each support measure. We have highlighted in grey those fields with an average score over 3.5 out of 5. We have also produced a total score for each support mechanism, and highlight the highest ranked in orange.

All of Ireland's support schemes were scored highly for relevance by survey respondents. When examining adequacy, five supports score highly: awareness raising events run by NCPs, information on calls provided by NCPs, general information provided by national websites, and the two Enterprise Ireland supports (travel grants for academic researchers and co-ordination support for academics). The two Enterprise Ireland supports were the only two supports that scored higher than 3.5 on effectiveness. Enterprise Ireland's financial supports scored well in all three categories of relevance, adequacy and effectiveness, resulting in the highest total scores of all ranked supports.

Looking across successful and unsuccessful applicants, we see that successful candidates are generally more positive than unsuccessful candidates, though the top three most relevant supports are the same for both groups. Unsuccessful candidates tend to score adequacy (0.41 difference on average) and effectiveness (0.40 difference) lower than successful candidates, whereas the difference in terms of relevance is less pronounced (0.19).

*Table 16 - Types of support scored on relevance, adequacy and effectiveness – all respondents **excluding** companies*

	Relevance	Adequacy	Effective-ness	Total
NCPs and other organisations				
Awareness raising events run by National Contact Points	3.8	3.5	3.4	10.7
Information on calls provided by National Contact Points	3.8	3.5	3.4	10.7
Targeted advice and support provided by National Contact Points	3.7	3.4	3.4	10.5
General information provided by national web sites	3.7	3.5	3.2	10.4

Advice on proposal writing	3.6	3.1	3.1	9.8
Brokerage services provided by National Contact Points	3.3	3.0	2.9	9.2
Enterprise Ireland				
Travel grants for academic researchers	4.1	3.9	3.9	11.9
Coordination support for academics	4.2	3.7	3.8	11.7
Irish Research Council				
New Horizons (Starter Grant)	3.8	3.2	3.4	10.4
New Horizons (Interdisciplinary rant)	3.8	3.2	3.3	10.3
Science Foundation Ireland				
Coordination support for ERC applications	3.8	3.2	3.3	10.3
ERC Support Programme (overhead)	3.7	3.4	3.3	10.4
ERC Development Programme	3.7	3.2	3.2	10.1
ERC Support Programme (recruitment)	3.5	3.2	3.1	9.8
InterTradeIreland				
EU Travel Scheme	3.4	3.1	3.1	9.6
Cross-border Travel Scheme	3.2	3.2	3.1	9.5

Source: Participant survey, Technopolis (2016). Base: Up to 298 respondents

4.3.2 Country comparison

Through desk research and interviews, we examined what Ireland's selected comparator countries (Austria, Denmark, Finland and the Netherlands) do with regard to financial support. We found that similarly to Ireland, these countries – with the exception of Austria – provide direct financial support to applicants (from proposal preparation to networking and travel).

In this section, we provide an overview of the approaches taken to 'indirect' support (e.g. advisory services) and how each country is attempting to influence the Programme. We then provide a more detailed focus on financial supports, including a summary table of financial support mechanisms[17].

4.3.2.1 Overview of national support in the comparator countries

We see that each of these countries have Horizon 2020 strategies and have committed to increase their national drawdown considerably (e.g. Austria €1.5bn; Denmark €2bn; Finland €1.04bn[18]).

Similarly, we found that the key actors in the support system of each country are broadly similar to those in Ireland, consisting of a lead department (policy) and implementing agency with a central support system made up of other agencies and bodies.

Generally, the Horizon 2020 support measures for applicants are broadly similar to those available in Ireland, including both advisory services and financial support schemes for proposal preparation and networking or travel. A summary of financial support available in each of these countries is set out in

[17] Some information in the following sub-sections sections is adapted from analysis conducted by Technopolis in the context of its review of Northern Ireland's participation in Horizon 2020, commissioned by the Department of Enterprise, Trade and Investment, Northern Ireland. Technopolis (2016) "Review of the support mechanisms provided by the Northern Ireland Executive to support delivery of the Executive's target of participants winning €145m from Horizon 2020". Draft final report.

[18] The official target is 150% of Finland's FP7 drawdown, which was €690M.

section 4.3.2.2, below. Unfortunately, we have not been able to secure figures or budgets for all schemes through our research.

4.3.2.2 Key differences in financial support

Our desk research and interviews have allowed us to form a high level understanding of how these countries provide financial assistance to prospective Horizon 2020 participants.

Table 17 below, outlines the direct financial supports available for Horizon 2020 participants in each of the four selected comparator countries. In general, we see that each country – with the exception of Austria – provides direct financial support to applicants. These supports include proposal preparation and support for networking and travel. We outline particularly interesting or useful elements in the following text.

There are some interesting differences in the way that these supports are designed and delivered. Finland, for example, offers proposal preparation support at two levels, with one scheme directed specifically at large scale proposals (defined as a project with a total budget of at least €5m, and significant roles for the Finnish participants, financially or otherwise). A formal eligibility criterion of this scheme is to have a Finnish SME included in the consortium as a full partner. Finland's travel support is aimed specifically at participants in existing innovation cluster projects, funding up to 50% of eligible costs. The remaining 50% must be made up from private sources. These are criteria that Ireland might also consider for funding applicants. The Academy of Finland provide match-funding for non-commercial research organisations with projects under a Horizon 2020 Societal Challenges priority, in order to address funding shortfalls and encourage participation in European projects. This too is something that may be considered as the IRC finalises its approach to enhancing research-led responses to societal challenges.

Austria no longer offers direct financial support to applicants. Our qualitative analysis revealed that this decision was taken on the basis of the simplification of the application process in Horizon 2020. This funding appears to have been reallocated to expand national advisory support services. Though not direct financial support for Horizon 2020, the Austrian Science Fund automatically forwards all applications to its national 'Start' grant programme to the ERC first. If a proposal receives both a national Start grant and an ERC grant, the applicant is obliged to choose the ERC grant. This is an approach that could be considered by Ireland, especially with the significant national support through SFI and IRC. One example where this could be considered is the Frontiers Research Programme.

Table 17 - Overview of financial support measures in benchmark countries

Country	Mechanisms and instruments
Austria	• No direct financial support to applicants
Denmark	• EUopSTART, (Danish Ministry of Higher Education and Science) - grants for the preparatory work of Danish businesses and knowledge institutions. We have not been able to secure a figure for this mechanism • Horizon 2020-NET (Danish Ministry of Higher Education and Science) - additional funding between €65,000 and €200,000[19] to existing networks, organisations and clusters for networking activities related to Horizon 2020.
Finland	• Project preparation as part of a Tekes-funded project (Tekes). There are no concrete grant amounts detailed, though Tekes state that preparation costs must be reasonable in comparison with the potential amount of Horizon 2020 funding sought. Support is based on eligible costs. • Funding for the preparation of large Horizon 2020 projects (Tekes). This support is available to projects with a total budget of at least €5m, and where the role of Finnish participants is financially or otherwise significant. Funding is available of up to 5% of the Finnish partners' total budget in the proposed project, based on eligible costs, and there should be at least one Finnish SME in the

[19] Converted from DKK 500,000 and DKK 1,500,000 using InforEuro. Current rates. See: http://ec.europa.eu/budget/contracts_grants/info_contracts/inforeuro/index_en.cfm

Country	Mechanisms and instruments
	consortium. • Funding for innovation clusters in the EU (Tekes). Innovation clusters can apply to obtain funding for activities related to participating in Horizon 2020 projects. Tekes state that applicants ideally are already involved in an existing Tekes-funded innovation cluster project. Funding is available up to 50% of eligible costs (maximum €1m). The remaining 50%must be made up from private sources. • Strategic Research Council match-funding for Horizon 2020 (Academy of Finland). Match-funding for projects accepted under a Horizon 2020 Societal Challenges priority. Funding of up to €10,000 is available for organisations who are not involved in commercial operations. An annual budget is set of €4m for 2016.
Netherlands	• Financial support for SME applications (grants, innovation vouchers) • Support for SMEs in the development of networks of regional clusters

Source: desk research and interviews with in-country representatives

4.4 Influencing research agendas

We have addressed this topic in three ways. We examined available European Commission data, and information held by individual structures, in order to assess Ireland's levels of engagement and representation in a number of important EU groups and initiatives. These initiatives are, primarily, the Joint Programming Initiatives (JPIs) and the European Technology Platforms. For completeness, we also consider the Horizon 2020 Advisory Groups, and registered expert evaluators by pillar and programme. We asked participants in our high level interviews to reflect on Ireland's current approach, and to identify any areas where Ireland could improve its approach. Finally, we examined what specific approaches have been taken at the national level in Ireland's agreed comparator countries to improve their ability to influence the European research agenda.

In summary, Ireland is well represented in these kinds of groups and initiatives. High level interview partners are happy with Ireland's direction, but more should be done to ensure that Ireland is visible and audible in Europe. We believe that there is scope to bring forward more agencies to participate in JPIs, and that there should be an effort to increase participation in European Technology Platforms, in order to increase Ireland's influence on the European research agenda. There would also be benefit to bringing together individuals involved in these kinds of groups on a regular basis, to enable discussion and sharing of upcoming opportunities.

We see that other countries have established specific initiatives to boost representation of their research communities in Brussels. In Ireland, SFI have recently established a Brussels events programme, which awards up to €50,000 to host events and meetings in Brussels. This is a positive step, and may yield lessons for elsewhere in the system.

Full tables detailing Ireland's involvement in JPIs and ETPs, as well as Advisory Groups and registered expert evaluators by pillar, can be found in Appendix E.

4.4.1 Ireland's engagement and representation in EU groups and initiatives

In addition to the Programme Committees attended by National Delegates, participation in Joint Programming Initiatives (JPIs) and European Technology Platforms is especially important in influencing the European research agenda. JPIs facilitate state actors to develop and deliver on joint Strategic Research Agendas specifically to address major societal challenges, and the European Technology Platforms are Commission-recognised, industry-led stakeholder fora that develop the Strategic Research Agendas and technology roadmaps that provide the most important evidence for the draft work programmes.

JPIs are of high importance, and the data show that Ireland is currently involved in seven of the 10 JPIs. A recently-published evaluation of Joint Programming by the European Commission[20] places Ireland among JPI 'Leaders'. The countries in this group are described as:

i) Participating in most of the JPIs, and

ii) Making high in-kind contributions to the leadership of JPIs

The evaluation also notes that Ireland has invested more than its pre-call budget commitments. However, there is room for improvement in bringing forward more agencies to participate in JPIs. While there is no current central oversight of JPIs, our qualitative analysis did reveal one interesting agency-level example of this type of role. The EPA actively encourages all research funders in their area to pool funding for involvement in JPIs, in order to support a higher chance and bigger budget for Irish participation. In discussion with DJEI, we were told that there is a current effort to reinstate national oversight of the JPIs, and other co-funding initiatives. We were told that there had previously been a co-ordination group, which could be reformed. However, budgets for participation would remain the prerogative of each department or agency.

From the available data and information held by individual structures, Ireland is currently participating in 23 **European Technology Platforms** (ETPs)[21]. We see from these data that Irish industry is involved in 10 of these at membership level. Ireland is most well-represented in ICT-focused ETPs, where the country participates in all but one (euRobotics). In other areas, such as energy, Ireland participates in five of eight ETPs, and two of four in transport. In production and processes, Ireland is represented at three of eight ETPs, and in bio-based economy, two of seven. Ireland participates in the only environment ETP, and in one of three cross-cutting ETPs (NANOfutures). ETP membership fees scale in relation to the type and size of an organisation. As an illustrative example, the ALICE ETP fees vary from €1,000 per year for SMEs, NGOs and universities, to €3,000 per year for large companies and national research institutes.

While Ireland is well-represented in these important groups and initiatives, our qualitative analysis suggests that there is often a lack of appropriate seniority in meeting attendance. Some ETPs, for example, require one or two consistent contact points within a member organisation, and a formal commitment to actively participate in at least one working group. Allowing delegates to attend on behalf of more senior individuals may limit the ability of Irish attendees to truly engage in discussion, with less-senior representatives reportedly often fulfilling more of a 'watching brief'. This may be explained by resourcing issues, but more should be done to ensure that the same senior individuals can attend meetings consistently, in order to boost Ireland's representation and voice, and thus influence.

In this respect, Ireland could and should make a significant effort to engage more in European Technology Platforms. These are seen to be particularly influential vehicles, and, while not necessarily causal, there are some indications that presence in these kinds of groups does go in line with national performance in the Framework Programmes. We would recommend more attention is given to coordinating participation in both ETPs and JPIs, and in particular encouraging and facilitating participation, and bringing those involved together at regular intervals to allow comprehensive understanding of upcoming opportunities, and national priorities and positions.

4.4.2 Advisory Groups and registered expert evaluators

For completeness, we include here a short note on Ireland's presence in the Horizon 2020 Advisory Groups, and within the Commission's expert evaluators database. Neither of these are directly related to influencing programmes, but do contribute to Ireland's visibility in the Framework Programmes.

Advisory Groups advise Commission services during the preparation of Work Programmes. Available data show that Ireland is represented in 14 of the 19 **Horizon 2020 Advisory Groups,** meaning

[20] Evaluation of Joint Programming to Address Grand Societal Challenges: Final Report of the Expert Group. DG RTD, 2016, p.36.

[21] See: http://ec.europa.eu/research/innovation-union/index_en.cfm?pg=etp, plus individual ETP websites

that there is relatively comprehensive coverage of these groups[22]. The five groups that Ireland does not have a representative on are: Access to Risk Finance, Europe in a Changing World, International Co-operation, Space, and Spreading Excellence and Widening Participation. Nonetheless, Ireland appears to be represented in most areas of national priority perhaps with the exception of space. The available data on Advisory Group participation indicate that the majority of Irish members are individual experts, potentially suggesting that there may be scope for more organisational involvement. We understand that some groups were refreshed in 2015, with the opportunity to nominate Irish representatives. While there are no guarantees on these nominations being fully undertaken, there is scope to look at this again at other renewal points.

Ireland is again well-represented in the **Horizon 2020 expert evaluators database**[23]. The 255 registered Irish evaluators make up 2% of all registered expert evaluators. Analysis of evaluators per Horizon 2020 programme reveals that Ireland's evaluators are proportionally equal to the total database, though with two main differences:

- 20% of Ireland's evaluators are registered against MSCA, compared to 15% of all evaluators
- 7% of Ireland's evaluators are registered against ERC, compared to 15% of all evaluators

Ireland is also an active member of the Informal Group of RTD Liaison Offices (IGLO), through Enterprise Ireland. IGLO is a Brussels-based group of non-profit R&D liaison offices that seek to enhance co-operation among themselves, their national research systems and European institutions.[24]

4.4.3 Approaches in other countries

We used desk research and interviews to assess how Ireland's selected comparator countries (Austria, Denmark, Finland and the Netherlands) approach influencing the European research agenda. We learned that in addition to encouraging memberships of the above advisory groups and platforms, each of these four countries has instituted specific mechanisms to increase their opportunities for influencing the European research agenda. For example, the Austrian Federal Ministry of Science, Research and Economy (BMWFW) organises a quarterly 'Delegates Roundtable', in which all 14 National Delegates meet to discuss strategic issues and current developments in Horizon 2020 ahead of strategic Programme Committee meetings. According to the Austrian government's EU Action Plan for research[25], the Austrian Research Promotion Agency (FFG) also aims to increase Austria's participation in EU policy-making through establishing a new office in Brussels.

In Denmark, a 'Reference Group' has been put in place to provide Danish Programme Committee members with up-to-date information on Danish research developments and strengths. We understand that the Reference Group also provides input to Danish positions on particular themes and topics of the Horizon 2020 work programmes.

In Finland, Tekes and the Academy of Finland – the two main bodies supporting Horizon 2020 participation – are represented in Brussels by the Finnish Liaison Office for EU R&D (FiLi). FiLi is intended to facilitate Finnish participation in the European policy formulation processes, and monitors developments in EU R&I policy to keep its home agencies up to date.

In the Netherlands, the research community is represented directly in Brussels by Neth-ER, which is part-funded by the Dutch Ministry of Education, Culture and Science. Neth-ER brings together universities and other third-level institutions, regional education centres, the Netherlands Organisation for Scientific Research (NWO), the Royal Netherlands Academy of Arts and Sciences (KNAW) and TNO (the national technology laboratory), all working together through Neth-ER to develop the Dutch research community's positioning within European research and innovation policy.

[22] See: http://ec.europa.eu/programmes/horizon2020/en/experts

[23] See: http://ec.europa.eu/research/participants/portal/desktop/en/funding/reference_docs.html#h2020-expertslists

[24] See: http://www.iglortd.org/

[25] See Austrian Federal Government, 2015

5 Co-funding

Evaluation questions

- How can Ireland capitalise on opportunities for co-funding of national programmes?
- Are the current arrangements for co-funding of programmes optimal?
- Should national resources be targeted more at co-funding?
- How should this be best managed given dichotomy between annual national budgets and the multiannual nature of Framework Programmes?
- How do other countries approach this?

5.1 Current strategy and participation

Ireland's Horizon 2020 strategy notes the growth in the Commission's use of co-funding measures and states that there is a need for better targeting of these opportunities as well as coordination across research funding organisations.

We asked our high-level interview partners to reflect on the co-funding opportunities available in Horizon 2020. We first asked for reflections on the co-funding initiatives themselves, in terms of their importance for Ireland, and then for reflections on Ireland's current approach to managing and engaging in these opportunities. We concluded by asking interview partners for their views on how Ireland might improve its approach to engaging in co-funding going forward. All co-funding initiatives are deemed to be important for Ireland, but the country's current approach could be more strategic and better coordinated, with a greater role for the state in promoting, co-ordinating and supporting involvement to better capitalise on opportunities.

In particular, ERA-NETs are important 'springboards' for further and bigger calls, but are time intensive without immediate significant financial rewards. In this respect, it would be our view that it is worthwhile supporting involvement in ERA-NETs, and co-ordinating that involvement. Our qualitative analysis revealed that the current arrangement for managing Ireland's involvement in these kinds of co-funding initiatives is not optimal – a view shared by many of our interview partners. We understand that decisions on involvement in any such initiative is left to individual organisations. While this is at least partially appropriate – several respondents stated that they felt that the individual organisations were in the best place to decide on which opportunities to pursue – there is a sense that more could be done to extract value from participation and help others who would like to participate but couldn't.

We also examined how the countries in Ireland's selected comparator group (Austria, Denmark, Finland and the Netherlands) approach this topic. Two of the selected comparator countries (Austria and the Netherlands) take a central state co-ordination approach in these areas.

5.1.1 Co-funding opportunities under Horizon 2020

Co-funding in Horizon 2020 relates to two principal instruments:

- **Marie-Skłodowska Curie Actions co-funds.** These are intended for organisations that fund or manage doctoral programmes or fellowship programmes for researchers, to provide an international and/or inter-sectoral dimension to research training and career development
- **ERA-NET co-funds.** ERA-NETs are designed to support public-public partnerships between Member States. ERA-NETs include support to Member States for i) preparation and establishment of networking structures; ii) design, implementation and co-ordination of joint activities, and iii) the topping-up of trans-national calls for proposals

In general, all of our interview partners felt very strongly that participation in these types of initiatives is of high importance for Ireland in terms of maximising engagement in – and influence of – Horizon 2020 and future Framework Programmes. Several respondents stated that these types of initiatives are very useful to go beyond ad-hoc research, as well as providing opportunities for Irish researchers to enter into EU consortia. A small minority stated negative opinions, primary among which were that co-funds – with the exception of MSCA co-funds – are too complex, and too bureaucratic due to the nature of managing a combination of national funding and EU funding.

Interviewees were unanimously positive about the **MSCA co-fund.** Our interviews revealed strong sentiments that access to additional topped-up funding is beneficial in bringing more researchers into the Irish system. In addition, the award of MSCA co-funding offers prestige, and may help in the recruitment of high quality people. The MSCA co-fund appears to be the co-funding initiative that respondents were most satisfied with in terms of how it is used and the process to secure funding. Our qualitative analysis indicates that the organisations that this mechanism is appropriate for, such as the Irish Research Council, are largely accessing it. There has been a push to encourage SFI Research Centres to access MSCA co-funds, and these centres have recently been awarded three MSCA co-funds, with each successful proposal involving multiple centres.

We did hear one piece of constructive criticism related to Ireland's approach to management of MSCA co-fund opportunities, however. One respondent told us that to maximise participation in MSCA co-funds, a step change would be required in scientific career development nationally. This primarily would include dedicated career development managers within centres and research funders, which we were told some had appointed as a consequence of their co-fund award. Our interview partners were almost unanimously positive about **ERA-NETs.** Our interviews revealed strong views about ERA-NETs' importance for driving areas of strategic interest, with one example being an effort to gain access to a new manufacturing ERA-NET in order to boost Ireland's Horizon 2020 participation in that area. While ERA-NETs will not make a significant impact on the national Horizon 2020 drawdown target, they can be seen as a 'springboard' to help drive larger initiatives. Those involved in ERA-NETs across the agencies and departments believe that they remain important and provide good value for the cash investment made into them. Across a number of agencies, we were quoted investment in ERA-NETs of between €500,000-€3,000,000 over a number of years. One respondent stated that their agency had invested small amounts in an ERA-NET and seen a return of four projects and a number of consortia.

Ireland is currently involved in 22 of 61 active ERA-NETs, ERA-NET Co-funds and ERA-NET Plus Networks. Since FP6, Ireland has been involved in 92 networks across these, JPIs, Article 169/185 and other networks, co-ordinating two. In total, 26 Irish organisations have been involved across 57 joint calls.[26] Despite these numbers, our interview partners largely felt that the current approach to ERA-NETs is not sufficiently strategic. There is little central strategic overview of ERA-NET involvement, and many interviewees suggested that there is also no 'push' for organisations to participate in ERA-NETs. Some agreed that this lack of central 'push', had led to Ireland missing opportunities of specific ERA-NETs, because of a lack of co-ordination between agencies and departments, as well as a lack of awareness of the benefits and opportunities attached to ERA-NET participation. These issues remain largely unaddressed, particularly for government departments.

Interviewees – including those directly involved in ERA-NETs – told us that there is little visibility of which organisations are doing what in ERA-NETs. This is not a reflection of low levels of activity, and rather refers to a current lack of ability to proactively identify which organisations perform which roles in which ERA-NETs. Given the wealth of experience in the Irish system, we believe that there would be value in a forum for people involved in ERA-NETs to come together and discuss experiences and to advise each other. There appears to be willingness within Enterprise Ireland to take on such a role, and to provide a service to departments and agencies as part of its broader national Horizon 2020 coordination remit.

[26] ERALEARN. See: https://www.era-learn.eu/network-information/countries/ie

It should be noted that there is also a personnel demand on agencies involved in ERA-NETs, with an in-house coordinator/representative required. This post can involve a commitment of up to 0.5 FTE. Indeed, resource is a key issue in ERA-NET engagement, due to the requirement of dedicated staffing for tasks, including making sure that national objectives can be targeted. Many smaller agencies – and some departments – would be willing to engage in ERA-NETs, but cannot due to resource issues. A central pot to support their participation (covering contributions, travel for meetings, and support for managing calls) would better enable them to engage.

SFI is among the most active in ERA-NETs and ERA-NET Co-funds, and provided the study team with information on this involvement. SFI oversees a structured system for ERA-NET engagement. SFI's process involves the submission of an expression of interest by a relevant research organisation or community, which is then reviewed using a number of criteria. These criteria include, but are not limited to:

- The strategic benefit for Ireland,
- The level and quality of proposed national researcher participation,
- The value of national engagement to the ERANET

Our qualitative analysis suggests that there would be value in the state taking on more of a co-ordination role in this area, to broadcast opportunities and enable relevant individuals to make contact with each other and share information. However, this role should not become prescriptive, or replace the decision-making power of individual organisations in which ERA-NETs they pursue, particularly given the often narrow nature of ERA-NETs.

5.2 Country comparison

Through interviews with representatives in our comparator countries, we heard of two examples of a government agency performing a co-ordinating role for participation in co-funding opportunities.

We were told that the Austrian Science Fund (FWF) directly supports participation in 14 ERA-NETs, while the Austrian Research Promotion Agency (FFG), Austria's National Contact Point organisation, supports 11 ERA-NETs. Our interviewees stated that FFG offers various support services for research organisations, companies and universities, to optimise stakeholders' use of Horizon 2020 and ERA. As the Horizon 2020 NCP organisation, FFG takes part in several ERA-related groups and Programme Committees.

In the Netherlands, the Netherlands Organisation for Scientific Research (NWO) acts as the coordination agency, providing oversight of the national participation in the ERA-NETs. We were told that currently the Netherlands participate in 12 ERA-NET COFUNDs, in areas such as Biotechnologies, materials research, and Marine Technologies.

While the first example is not overly different from support in Ireland, for example through SFI, the Dutch example does provide an interesting point of consideration in the state's coordination role.

6 Future Participation

Evaluation questions

- Into the future, how can Ireland target greater participation in Framework Programmes building from national STI strengths and priorities?
- How can Ireland be more strategic in its engagement overall and particularly with regard to capitalising on synergies and maximising leverage?
- How can the policy system advocate for and incentivise better engagement by key stakeholders?[27]
- What strategies can Ireland apply to maximise chances of success within the application process?
- How can we increase participation of scale, including leading of consortia?

6.1 Targeting greater participation around national priorities

6.1.1 Analysis

Ireland's Horizon 2020 strategy is committed to improving national participation in the framework programme through building on national STI strengths and priorities, and includes drawdown targets for each of the programme's constituent elements. These are based on an assessment of Ireland's national strengths and capacities as well as past performance in FP7, and are presented in Table 18.[28]

Table 18 - Allocation of Ireland's H2020 target income, by pillar and specific programme

Areas	H2020 Budget	Ireland's juste retour	Ireland's Target	Target - JR
	€Ks	€Ks	€Ks	€Ks
I Excellent Science	24,441,073	293,293	401,000	107,707
European Research Council	13,094,807	157,138	100,000	-57,138
Future & Emerging Technologies	2,695,990	32,352	25,000	-7,352
Marie Curie Actions	6,162,262	73,947	246,000	172,053
Research Infrastructures	2,488,013	29,856	30,000	144
II Industrial Leadership	17,015,547	204,187	254,000	49,813
LEIT	13,556,977	162,684	198,000	35,316
Access to Risk Finance	2,842,343	34,108		
Innovation in SMEs	616,226	7,395	56,000	48,605

[27] This evaluation question was originally placed in the System Support section (in the ITT) but we have decided to move it to the section on Future participation as it fits better in this analysis.

[28] The financial allocations shown in Table 1 are based on a bottom-up analysis carried out as part of the development of the Horizon 2020 strategy and amounts to an overall target of €1 billion or around €109M (+112%) more than Ireland's €900M Juste Retour figure and around 160% of the drawdown achieved in FP7. The final drawdown target for H2020 was set top down, at €1.25 billion, and around €350M (+140%) ahead of Ireland's Juste Retour based on the 1.2% contribution to the EU budget and more than double the drawdown achieved in FP7. The additional €250 million in the final target was not added in to the allocations of the individual areas targets across the pillars or individual programmes.

Areas	H2020 Budget	Ireland's juste retour	Ireland's Target	Target - JR
III Societal Challenges	29,678,996	356,148	331,000	-25,148
Health, demographic change etc.	7,471,743	89,661	72,000	-17,661
Food security; etc.	3,851,414	46,217	76,000	29,783
Secure, clean, efficient Energy	5,931,177	71,174	65,000	-6,174
Smart, green & integrated Transport	6,339,427	76,073	44,000	-32,073
Climate action, resource efficiency, etc.	3,081,131	36,974	33,000	-3,974
Inclusive Societies	1,309,481	15,714	21,000	5,286
Secure Societies	1,694,622	20,335	20,000	-335
IV Widening participation	816,500	9,798	10,000	202
V Science for and with society	462,170	5,546	6,000	454
EIT	2,711,395	32,537	8,000	-24,537
JRC Non-nuclear direct actions	1,902,598	N/A	N/A	N/A
Total	77,028,279	901,508	1,010,000	108,492

Using Ireland's anticipated contribution (1.2%) to the EU budget 2014-2020 as the basis for estimating a 'juste retour' figure for each pillar and element within the programme, we can see that there are five areas where Ireland expects to perform substantially ahead of its 'fair' return and five where it is expected to fall short of that arithmetic threshold. The following bullet points list the marginal increment in EU drawdown and share of Juste Retour (JR) for each of the five H2020 areas above and below the threshold:

- The five areas with targets set substantially ahead of Juste Retour (JR) are:
  - MCSA (+€172M and 333% of its JR);
  - Innovation in SMEs (+€49M and 757% of JR);
  - Leadership in Emerging and Industrial Technologies (+€35M, 122% of JR);
  - Food Security, etc. (+€30M, 164% of JR); and
  - Inclusive Societies (+€5M, 134% of JR)
- The five areas with targets set below Juste Retour (JR) are:
  - ERC (-€57M and 64% of JR);
  - Smart, Green and Integrated Transport (-€32M, 58% of JR);
  - European Institute for Innovation and Technology (-€25M, 25% of JR);
  - Health, Demographic Change and Wellbeing (-€18M, 80% of JR); and
  - Future and Emerging Technologies (-€7M, 77% of JR)

In practice, the scale of the planned increase in drawdown from the €614M realised in FP7 to more than €1 billion in the original target for Horizon 2020, means the strategy foresees an increase in every programme area that can be reconciled with FP7, bar three (Health; Secure Societies; and Science for and with Society). Table 19 compares those H2020 targets with the FP7 drawdown, which presents a

somewhat different picture, in terms of ambition levels, to the analysis of targets against Juste Retour. The ERC is the most obvious point of difference between the two perspectives, with the current target amounting to a doubling of the drawdown achieved within FP7 even though the H2020 target is still only around 64% of the arithmetic Juste Retour figure. MCSA remains the single most ambitious focal point, albeit building from a strong base (Ireland's FP7 drawdown for MCSA was already greater than the calculated Juste Retour figure for H2020). The most ambitious targets proportionately relate to areas where Ireland had been less active previously, notably in the fields of energy and transport.

Taken together, these two analyses show Ireland has allocated its H2020 targets in line with several of its key strengths (e.g. innovative SMEs) and priorities (e.g. ERC).

Table 19 - Allocation of Ireland's H2020 target income by programme and in comparison with FP7 drawdown

Areas	H2020 Target	FP7 drawdown	Target – FP7	Target – H2020 versus FP7
	€Ks	€Ks	€Ks	% change
I Excellent Science	401,000	178,860	222,140	224%
European Research Council	100,000	50,467	49,533	198%
Future & Emerging Technologies	25,000	--	--	--
Marie Curie Actions	246,000	112,713	133,287	218%
Research Infrastructures	30,000	15,680	14,320	191%
II Industrial Leadership	254,000	220,196	33,804	115%
LEIT	198,000	184,540	13,460	107%
Access to Risk Finance	--	--	--	--
Innovation in SMEs	56,000	35,656	20,344	157%
III Societal Challenges	331,000	215,221	115,779	154%
Health, demographic change etc.	72,000	77,960	-5,960	92%
Food security; etc.	76,000	40,869	35,131	186%
Secure, clean, efficient Energy	65,000	19,842	45,158	328%
Smart, green & integrated Transport	44,000	16,063	27,937	274%
Climate action, resource efficiency, etc.	33,000	18,210	14,790	181%
Inclusive Societies	21,000	5,641	15,359	372%
Secure Societies	20,000	28,015	-8,015	71%
IV Widening participation	10,000	--	--	--
V Science for and with society	6,000	8,239	-2,239	73%
EIT	8,000	--	--	--
JRC Non-nuclear direct actions	--	382	--	--
Total	1,010,000	614,277	395,723	164%

The rationale for each target is not expanded upon in the national strategy. We understand the targets were set in discussion with the research base and reflect the community's views on the size of the research base and the extent to which its engagement with the FP might be expanded. They also reflect certain structural factors, they do not include a view of any competing priorities or alternative funding opportunities (e.g. agri-food businesses focusing on development opportunities financed through other national schemes or even national drawdown from other EU schemes, like CAP).

Our analysis suggests there are several areas of national strength where Ireland could look to target greater participation across the life of Horizon 2020. Our methodology (elaborated at some length in the next several paragraphs) compares a Juste Retour figure for each specific programme with Ireland's current target and its actual performance in FP7 and H2020. Ireland will want to employ a less mechanistic approach than we have had to use, however we trust our analysis will serve (i) to underline the need to think carefully about where to further increase targets and (ii) to inform debate with relevant stakeholders. We believe Ireland should be looking to increase its targets substantially in several specific programmes, including FET, Industrial Technology (LEIT), Health and the EIT. The strong early performance in the ERC suggests it may be possible to further stretch that particular target, although we note the current target is already quite ambitious and amounts to a doubling of the levels achieved within FP7. We have similarly suggested substantial increases in areas where that may be impractical (e.g. research infrastructure, access to finance) or even undesirable.

The evaluation team has a limited view of national capacities, however, we have done an analysis to compare the current targets with a list of revised targets based on a uniform application of 140% of Juste Retour to every H2020 pillar and programme area (see Table 20). We used a multiplier of 1.4 because Ireland's overall target of €1.25 billion amounts to around 140% of Ireland's overall Juste Retour of €0.9 billion, which is itself estimated based on Ireland's 1.2% contribution to the EU budget. We looked at each of the targets, from the national strategy and from our application of the 1.4JR, and compared them with the FP7 drawdown (where that exists). We then chose one or other of those two targets as our suggested new national target, attempting to take a view on which seems to be the best compromise between achieving the overall stretch (to €1.25 billion) and being a realistic challenge for the research base, given the performance under FP7. By way of example, the current H2020 strategy includes a target for the ERC of €100M, however, the 1.4JR target would be closer to €220M, which is substantially higher (+€110M). Increasing the ERC target to this new level would cover off almost 45% of the additional €250M. However, as the current target is already set at 200% of what was achieved in FP7, and given the challenging and highly competitive nature of this part of the programme, we took the view that a revised target of €220M would not be feasible. Ireland has enjoyed substantial ERC success in the first two years, and contributors believe there is an opportunity to do more going forward, particularly on Advanced Grants, which receive higher levels of funding. Therefore we suggest increasing the original target to €150M, which is in line with the JR figure.

Using the same logic, we suggested the LEIT target should be increased. The industrial technology programmes encompass areas of substantial national capability, in both science *and* innovation. The original LEIT target is similar to that for FP7 (107%), which given the 140% expansion in Horizon 2020 amounts to a reduction in the targeted share of income, in proportionate terms. The original target is around 124% of Ireland's juste retour, but we concluded it could be increased given the substantial existing capacity nationally and in particular the very substantial efforts of the Research and Technology Centres to mobilise national interests in these different arenas. The Horizon 2020 target for Health is around €6M lower than the drawdown achieved in FP7 (92%) and just 80% of the JR figure. Transport is the other area where Ireland's H2020 target is substantially lower than its JR figure (58%), however, the new target is almost three times the drawdown achieved in FP7. The current target may already be at the limits of what Ireland might reasonably achieve in terms of expansion of engagement within the course of a single framework programme.

Table 20 - Ireland's H2020 income by programme, showing original and possible new targets

Areas	FP7 drawdown	Ireland's Target	New Target	Ireland's juste retour	1.4JR	Hold / Increase
	€Ks	€Ks	€Ks	€Ks	€Ks	
I Excellent Science	178,860	401,000	432,255	293,293	406,670	--
European Research Council	50,467	100,000	150,000	157,138	217,882	Increase
FET	--	25,000	44,858	32,352	44,858	Increase
Marie Curie Actions	112,713	246,000	246,000	73,947	102,532	Hold
Research Infrastructures	15,680	30,000	41,397	29,856	41,397	Increase
II Industrial Leadership	220,196	254,000	328,865	204,187	283,119	--
LEIT	184,540	198,000	225,572	162,684	225,572	Increase
Access to Risk Finance	--		47,293	34,108	47,293	Increase
Innovation in SMEs	35,656	56,000	56,000	7,395	10,254	Hold
III Societal Challenges	215,221	331,000	476,174	356,148	493,823	--
Health, …	77,960	72,000	124,321	89,661	124,321	Increase
Food security, …	40,869	76,000	76,000	46,217	64,083	Hold
Secure, clean, efficient Energy	19,842	65,000	65,000	71,174	98,687	Hold
Smart Transport	16,063	44,000	44,000	76,073	105,480	Hold
Climate action, …	18,210	33,000	51,267	36,974	51,267	Increase
Inclusive Societies	5,641	21,000	21,000	15,714	21,788	Hold
Secure Societies	28,015	20,000	28,196	20,335	28,196	Increase
IV Widening participation	--	10,000	13,586	9,798	13,586	Increase
V Science for and with society	8,239	6,000	7,690	5,546	7,690	Increase
EIT	--	8,000	45,115	32,537	45,115	Increase
JRC Non-nuclear	382	N/A	--	N/A	- -	--
Total	614277	1,010,000	1,247,139[29]	901,508	1,250,000	--

We ran through the entire list of programme areas, applying the same logic, and have suggested 11 areas where Ireland might consider increasing its target to the 1.4JR level and six where we judge the current target to be sufficient. This approach produced a revised overall target of €1.25 billion, with most of the additional income linked with Pillars II and III. The biggest increases, at the level of individual programmes, relate to Health, Access to Risk Finance and the EIT. The last two programme

[29] This total does not include our suggested target for Access to Risk Finance (ATRF) as these awards are loans and investments, rather than grants, so cannot strictly contribute to Ireland's total drawdown figure. We understand that organisations based in Ireland have secured more than €60M in ATRF funding in the period to the end of March 2016. However, these data are not collated in ECORDA so it has not been possible for the evaluation team to carry out any separate analysis on this funding stream.

areas are challenging areas to grow, as they require substantial co-investment and high levels of industrial engagement, as compared with Pillar I.

The EIT is investing heavily supporting technology and innovation networks (KICs) in a range of areas of strategic importance for Ireland, from food to climate change and health. Ireland achieved limited engagement with the EIT KICs, prior to the launch of Horizon 2020 (Ireland was involved in two initiatives, the EIT Health KIC, which include the participation from Trinity College and IBM Ireland; and the EIT Raw Materials KIC). However, there are opportunities to increase national engagement with the EIT programme overall (and its €2.7 billion budget). The 2016 KIC calls for proposals (Food for the Future; Advanced Manufacturing) are both of great relevance to Ireland. Enterprise Ireland has piloted an EIT support scheme, which covered the cost for a year of a national 'champion' to bring together a strong consortium of industrial and academic interests with the capacity to secure one of the hubs within a successful KIC.

6.1.2 Recommendations

We recommend the High Level Group request the National Director for Horizon 2020 lead a process to update the original drawdown targets, allocating the missing €250M across the various programme areas, sufficient to reach the €1.25 billion headline target. The revised targets may need to be drawn up in consultation with the community, to ensure they are credible and that there is buy in.

We recommend the accompanying argumentation is developed within the High Level Group and written down for each of the targets. This is a necessary task for the immediate future, which could usefully be carried out in the next several months. However, it would also be a worthwhile exercise to re-run as part of the preparatory work for any future edition of Ireland's national EU RTD strategy.

	Recommendation	Description	Lead responsibility	Timeline
1	Update programme-level targets, to reach €1.25 billion target	Review current targets and the extent to which they need to be held where they are or may be expanded, to reflect the overall ambition of reaching €1.25 billion	DJEI, National Director and Support Structure	Summer 2016
2	Create an addendum for current H2020 strategy	Publish the revised targets, along with accompanying argumentation	HLG	Summer 2016

6.2 Strengthening the national support system around STI priorities

6.2.1 Analysis

Our review of the distribution of Ireland's 23 NCPs across the H2020 pillars reveals a conscious decision to invest more heavily in some areas as compared with others, including LEIT (4 NCPs), agri-food (2 NCPs), SMEs (2 NCPs) and climate (2 NCPs) (see Appendix C2). The decision on what is the best distribution takes into account several dimensions, including for example, the size of the drawdown foreseen and the degree to which the community is already aware of and committed to participation at that scale. On the first point, we divided Ireland's target drawdown by the number of NCPs. Overall, each NCP can be associated with a drawdown target of around €45M across the life of the programme. Taking this average as a reference for the individual allocations, we can see several specific programmes have two or three times the average NCP resource (e.g. Science for and with Society; Climate Action), while others have a little less (e.g. ERC and energy efficiency).

The outlier in this analysis is Marie Curie, which has one NCP and a target of close to €250M. This may be a sensible level of resourcing given the well-established and high level of interest among universities and colleges, whose research offices and senior academics work closely with the IUA and MCSA NCP to promote opportunities in this space. There is also something of a size effect here, with any engagement by the national network with a specific programme requiring a minimum level of engagement, which from a mechanistic point of view offers rather less potential for drawdown than equivalent investment in a larger fund. It is conceivable that a future strategy would further concentrate the network on those larger programmes that intersect best with Ireland's national priorities, and leave the smaller programmes to be covered indirectly by all NCPs. The absence of any specific nominated NCP support for opportunities coming through EIT may also be a point for further discussion, albeit the relevant networks (KICs) and calls for proposals may very well be on the radar of each of the NCPs that lead on climate, energy, ICT, health, etc. and as such are being dealt with transversally.

There could be a similar discussion about the programme's support for several new types of instrument, including innovative procurement and access to finance: are these dealt with most effectively through targeted support (e.g. a named NCP) or transversally. From our perspective, we would argue that the introduction of new programmes or instruments, where they are self-evidently of strategic interest, should be allocated a dedicated resource in the first one or two cycles of the programme, so the support system and the wider community can build up its understanding of where and how to maximise their engagement with and use of those developments. In the fullness of time, however, it may be appropriate to switch to a transversal strategy, supporting engagement through most if not all areas of the national support system. This mainstreaming approach works to some extent already in areas like Marie Curie.

This analysis of the distribution of NCPs suggests there may be another gap in the national support system, which relates to the increasingly important portfolio of Commission co-financed initiatives, from ERA-NETs to JPIs.[30] These initiatives sit to one side of Horizon's main pillars, however, they attract substantial EU funding, influence policy and work programmes and can deliver substantial social and economic value. Ireland's national priorities intersect with many of these platforms, and there would appear to be a prima facie case for having an NCP resource, and possibly a support fund, earmarked for such co-funding and strategic initiatives.

Ireland's national support system includes various financial supports as well as the NCP network and research officers within individual universities, colleges and institutes. One needs a view of each of these elements to determine whether a priority area is being supported at an optimal level. The ERC is a case in point. Ireland's Horizon 2020 strategy commits to double the drawdown, as compared with FP7, within what is one of the most difficult programme areas in which to succeed, with exceptionally high expectations in terms of quality and some of the highest levels of oversubscription. The support system has increased the capacity of the NCP network, but not hugely. Ireland has, however, created several new financial support measures that work in tandem with the NCP resource, and together these two elements have helped turn round Ireland's limited success within the Ideas Programme under FP7.

Our mapping of financial support measures shows the focus is on the academic community and that there is no dedicated Horizon 2020 funding available to encourage Ireland's businesses to deepen their engagement with the programme, albeit we understand that both EI and IDA will consider supporting firms on a case-by-case basis through the R&D Fund or Feasibility Grants respectively. Given the high cost of bidding and the low success rate, we believe there is a higher level of market failure and that some limited additional financial incentives from government could expand the pool of companies prepared to apply for funding and thereby encourage increased private sector investment in R&D. We recommend Ireland consider ways in which it might provide increased direct support to

[30] Joint Programming is not a co-funding mechanism in a strict sense. It is an EU-supported process by which member states pool their respective national research monies in order to tackle common (European) challenges at a scale and in a manner that could not be managed unilaterally, and which often make use of the Commission's ERA-NET instrument as a means by which to realise a level of EU co-funding.

businesses that would extend and deepen company engagement while staying within the provisions of the Commission's rules on state aid to industry.

Our interviews and surveys produced several suggestions for new measures to increase further the focus of the national support system on areas of strength

- Various contributors remarked on the need to encourage government departments, national agencies and leading firms to get more involved with the growing number of strategic initiatives being supported by the Commission. Participation in many of these so-called strategic initiatives, like European Technology Partnerships (ETPs), costs money and time (crucially, the involvement of sufficiently senior people in the relevant governing bodies and working groups). There may be a greater appetite for engagement if some of those costs could be met through a national fund, which could be made available on a competitive basis, with decisions on support judged against the demonstrable strategic opportunity for Ireland
- IDA argued there is untapped potential within the MNC community and suggested that additional support to help these international businesses engage with the programme would be welcome. The majority of Ireland's MNCs are manufacturers or service operations with limited local research capacity, so they are often not well placed to lead bids. Participation would be more attractive and more feasible where these firms can get involved through collaboration with Ireland's universities or research institutes

Several people counselled caution in response to the suggestion that one ought to further concentrate the support network on areas of national priority. They argued that the value of the FP is at least in part its breadth and ability to support research and innovation projects in interesting areas that don't have the scale or criticality to constitute a national priority. The FP can help to sustain national capability – and international networks – in a diversity of niche topics. From this perspective, balance is required between increasing concentration on national strengths and ensuring national access to smaller fields and a wider range of subjects.

6.2.2 Recommendations

On balance, we concluded there are several H2020 areas that coincide with national STI strengths and priorities that could be promoted to a greater extent and in a more determined fashion. Given the scale of the overall drawdown target, we recommend Ireland add those particular programme areas to its list of Horizon 2020 strategic priorities.

We further recommend Ireland broaden its range of dedicated supports for Horizon 2020 programme areas, working harder across the spectrum of funding opportunities. We see no grounds for concentrating support on a narrower segment of the overall portfolio: the programme has wide-ranging strategic relevance, as well as providing an important means by which non-priority (nationally) research may get funded.

Moreover, given the clear added value of the existing H2020 support system to applicant success, we recommend Ireland consider expanding the national support network (possibly additional NCPs) to address three or four important areas that are currently tackled on an ad hoc basis by the network in general, specifically to champion and coordinate Ireland's involvement with the growing number of strategic initiatives (JPIs, JTIs, ERA-NETs, etc.). Other areas where additional national promotion may pay dividends, include innovative procurement (PCP, PPI) instruments and the Future and Emerging Technologies (FET) within the Excellence Pillar.

We recommend the High Level Group invite Enterprise Ireland to revisit its EIT pilot, updating its impact assessment and business case analysis, with a view to determining whether a new national support package for the EIT would be worthwhile and affordable. The KICs have been dominated by several countries, however, there are new calls anticipated and the existing KICs remain open to new affiliates, where partners have something to bring to the respective networks. Ireland needs to ensure it is participating strategically.

We recommend the High Level Group invite SFI to meet with each Research Centre to review the extent to which additional capacity might accelerate / augment engagement with Horizon 2020 and increase drawdown for Ireland. Given SFI is already funding EU coordinators, this review would need to have a sharp focus on added value and the avoidance of deadweight.

We recommend Ireland create an Horizon 2020 fund for business, open to firms of all sizes if possible, indigenous and foreign-owned, covering both travel grants and project definition awards. The latter support could be done on a cost-shared basis and possibly even using a convertible loan mechanism, to strengthen incentives and limit the likely total cost of such a new fund. One individual suggested that these awards could be made as repayable loans, chargeable against future success in winning grants, and simply written off where applicants exceed the quality threshold but the direct financial benefit does not materialise. Repayable loans may be more applicable to the private sector than for the university and public sectors, however, such an instrument could be an economical means by which to improve incentives for firms.

	Recommendation	Description	Lead responsibility	Timeline
3	Ensure national support network has capacity to support Ireland's ambitions in strategic initiatives	Review and possibly expand the capacity of network to ensure there is active promotion and coordination of Ireland's engagement with the growing number of Strategic Initiatives (e.g. ERA-NETs, ETPs, JTIs, PCPs)	National Director and Support Structure	By end 2016
4	Consider the merits of creating a support package for the EIT	Carry out an impact assessment (business case) to determine whether a national support package would enable Ireland to increase its engagement with the EIT and its strategic participation therein	National Director and Enterprise Ireland	By early 2017
5	Review the capacity of Research and Technology Centres to deliver on their H2020 targets	Review the extent to which extra support capacity within Ireland's Research and Technology Centres might increase the likelihood that the centres will meet or exceed their targets (and bring in enterprise partners)	Science Foundation Ireland, Enterprise Ireland	Summer 2016
6	Consider creating a H2020 fund to support businesses	Consider creating a dedicated H2020 support fund for business, designed to expand company engagement in the FP and increase private investment in R&D	National Director and Enterprise Ireland	By autumn 2016

6.3 Strategic engagement

6.3.1 Analysis

We envisage several ways in which Ireland can become *more* strategic in its engagement with Horizon 2020, and particularly with regard to capitalising on the potential synergies that exist between national interests and those of the programme.

In terms of advocating greater engagement by key stakeholders, Horizon 2020 is investing in very many areas of policy and strategic interest to Ireland, some of which sit outside the realm of higher education or industry. There are for example numerous topics within the societal challenges pillar where Ireland may have a strong interest in the kinds of organisational and technological innovations being developed. There are also a growing number of strategic initiatives that sit outside the mainstream Framework Programme, which benefit from the Commission's financial support in some degree and which combine member states' national research capacity and funding in pursuit of answers to questions that range from the better protection of the marine environment through to living well with dementia. Our stakeholder interviews suggest Ireland has taken too much of an ad hoc approach to these strategic initiatives, relying on individual organisations to identify opportunities and recognise the potential benefits of engagement. There is a general sense that a more coordinated national approach would increase Ireland's engagement in these strategic initiatives and improve the country's influence within them and its ability to capture a larger fraction of the benefits that flow from those actions. This more coordinated approach is evident in Austria and the Netherlands.

The ERA-NETs are an example of a mechanism with strategic potential where Ireland has been involved, but on a rather ad hoc basis, and where a more coordinated approach could yield substantial additional benefits. The mechanism was retained for Horizon 2020, but with a few important tweaks to the instrument design. Where FP7 ERA-NETs were able to recover the full cost of coordination and management, the Horizon 2020 mechanism follows the ERA-NET Plus model and provides top-up funding for calls for proposals and no substantial reimbursement of coordination or management costs. This is part of the broader ERA agenda, whereby the Commission is seeking to increase the total volume of public funding of research in Europe that is pursued through what are de facto, multilateral European programmes (even outside the FP). The ERA-NET mechanism is also linked with the Joint Programming Initiatives, through the possibility of ERA-NET co-funding and as a platform from which to persuade the High Level Group for Joint Programming (GPC) that a given ERA-NET is suitable for 'promotion' to the status of a JPI (e.g. the metrology ERA-NET, which evolved through several generations to become the European Metrology Programme for Innovation and Research [EMPIR]). The JPIs are substantial programmes in their own right, with AAL having a €700M indicative budget across the life of Horizon 2020.

6.3.2 Recommendations

Our first recommendation is for the High Level Group to deepen the data and information underpinning Ireland's Horizon 2020 strategy, improving transparency so as to enable the different actors in the system to be more strategic in their behaviour, naturally. In practical terms, we believe Ireland should develop three accompanying annexes (to the Horizon 2020 strategy) to facilitate more informed discussions about strategic opportunities and synergies, both among the members of the H2020 High Level group, but also within individual organisations, when they are looking at their wider strategies and investment priorities:

- Actors. The first annexe would present a more comprehensive list of Ireland's key actors with a policy, scientific or innovation-related interest in Horizon 2020. For each of the key actors, it would be helpful to have an overview of any relevant interests related to the programme, and for those with the strongest interests, a profile of their capacities relating to each specific element of Horizon 2020, whether that is a list of regulatory responsibilities or research institutes or their membership of one or other EU committees or innovation platforms. This kind of catalogue can

be somewhat time-consuming to create (and keep up to date), so we would suggest it should focus in the first instance on recording top-line priorities and capacities. The creation of a series of agency-level overviews H2020 interests would be a good starting point for agency-specific H2020 strategies, which we have also recommended (R8). If this database proves to be useful, the individual presentations could be deepened by the actors, in discussion with a central coordinator to ensure consistency of the presentations, and possibly logged through an online form, so the HLG would effectively create a mini-database. The individual records could be updated at least once a year by each actor, perhaps around the time the HLG holds its annual review, and with ad hoc updates where major new developments occur in between the regular check / update. It would be helpful if this information were available online with public access to most if not all of the fields in the different records, to facilitate information exchange within the HLG and beyond

- Horizon 2020 programmes and strategic initiatives. The second annexe would effectively turn the first annexe on its side and attempt to itemise Ireland's commercial, policy and scientific interests in each Horizon 2020 specific programme and associated strategic initiative (e.g. European Technology Platforms). Again, this would be developed in a format that would allow the material to be shared in report form with the HLG but also presented more dynamically through an online platform, possibly the national Horizon 2020 web site, to allow public access and targeted searches
- The third volume would present a quantitative overview of Ireland's capacities and strengths, using data from EI, IDA, SFI and the other key actors. It could be organised in two parts, one arranged by actor and presenting an itemised list of advisory and support structures with an indication of available resources and funding; the second part could present a view of national strengths, organised by specific programme and counting for example national centres of excellence and researchers or the number / turnover / BERD of companies. Where the first annexe would need to be updated by each actor every year, the second and third volumes could be revised centrally following each update of volume 1

Our second recommendation follows on from the first, and would involve each government department or executive agency (in the list of key Actors) creating its own Horizon 2020 strategy. This would need to dovetail with the national Horizon 2020 strategy (as well as its own broader remit). These agency-level strategies would provide a better platform for the respective H2020 champions, when looking to drive forward their organisation's own engagement and coordination with others, while also enabling Ireland's Horizon 2020 High Level Group to form a clearer view of the opportunities for inter-departmental synergy and improved strategic engagement more generally. There is a downside to such individual strategies inasmuch as they can be quite demanding to devise and maintain and can lead to organisations being invited by their peers to increase investment and otherwise take a more active role in the delivery of a specific part of a national strategy. In some cases, it may even result in organisations being invited to take responsibility for the realisation of a specific part of that strategy, and a quantum of benefits, which may paradoxically dampen rather than encourage certain actor's commitment to the strategy overall.

To encourage greater openness and a higher degree of serious engagement among these many additional actors, we recommend Ireland develop a fuller set of KPIs, focusing on programme benefits (social and economic impacts), to complement the single, drawdown KPI. We believe that both the national and actor-specific H2020 strategies should have targets that go beyond financial metrics. Drawdown is clearly a relevant metric nationally – and for many individual actors – however, it would be helpful if the strategy's KPIs were also able to capture the kinds of benefits that derive from participation, whether that is insights about competitors, improved access to European or international markets or new IP, or the wider impacts of such achievements. This would be helpful to the various actors' in-house reflections and would also provide the kind of evidence to help persuade others of the potential value of engaging in Horizon 2020. It would also help policy makers in their efforts to maximise the economic and social value derived from participation in the programme. Those KPIs should of course reflect the spectrum of objectives set out in the national strategy, whether that is researcher training, excellent science or jobs and growth. We would also like to flag a risk with the creation of a greater number of more specific targets, which relates to the possible negative effect

on the mood and confidence of individual NCPs. It is not within the gift of a single person to increase Ireland's engagement with the EIT or FET and as such these specific targets are for the community to deliver on and not an individual NCP.

On the broader subject of metrics, it would be helpful if Ireland were to develop a Logic Model to underpin the national H2020 strategy, which elaborates the country's specific scientific, social and economic objectives for the programme overall and for the individual pillars and accompanying strategic initiatives. This detailing of objectives would provide a valuable reference point to ensure Ireland has the right amount and composition of advisory and financial support measures necessary to realise those objectives. This kind of Logic Model also provides a framework for drawing up a small list of additional KPIs, focusing on outcomes, which go beyond the current principal performance target, financial drawdown. As an aside, our final evaluation of Ireland's experience with FP7 – carried out in parallel with this mid-term review of Horizon 2020 – ran into difficulties in trying to determine the economic impact of the programme on firms in Ireland. This is clearly of central interest, and some further preparatory work will need to be done with firm-level data sources, in order to facilitate this analysis for Horizon 2020. In essence, we see two options. The first is to re-run the econometric analysis using ABSEI data in two or three years time (e.g. 2018), which would allow a test of net impact among participants for the period up to the end of 2015. There will still be shortcomings with regard to the degree of overlap with participants and the time-lag issue means one can only really look at interim results towards the end of the programme. The second option would be to work with Ireland's Central Statistics Office to gain access to company-level data for the whole economy (e.g. census of industrial production) and to possibly use other data sets (BERD, Patents) as a means by which to create matching samples to feed into the econometrics. This second option would be more robust, but more challenging to reach an agreement on and possible more costly to operationalise.

Recommendations 7, 8 and 9 might reasonably be combined with recommendations 1 and 2 as part of a broader commitment to update the current Horizon 2020 strategy, with R7 and R8 – profiling H2020 interests of key actors and outlining departmental priorities for Horizon – feeding in to the decision about an updated set of national targets for the pillars and programmes (Recommendation 1) to reflect the overall commitment to deliver €1.25 billion in income over the life of the programme. Refreshing the national strategy's detailed financial targets – in part through consideration of department- / agency-level priorities – also provides a good trigger to develop a series of more specific KPIs, which ought to be both financial and qualitative (Recommendation 9).

	Recommendation	Description	Lead responsibility	Timeline
7	Create a catalogue of key actors and their interests in H2020	Add annexes to H2020 Strategy with a mapping of actors, strategic initiatives and national capacities	HLG	By end 2016
8	Develop department-level H2020 strategies and rolling annual action plans	Develop departmental and agency level strategies, which connect H2020 to agency mandate and also dovetail with overarching national H2020 strategy	All HLG members	By end 2016
9	Develop a Logic Model with KPIs to underpin the H2020 strategy	Develop a Logic Model to underpin the national H2020 strategy, which details the link between country's scientific, social and economic objectives for the	HLG	By end 2016

	programme and the various advisory and financial inputs and related KPIs

6.4 Synergies

6.4.1 Analysis

Our ICT case study (presented in our ex-post evaluation of Ireland's participation in FP7) suggests there may be opportunities to make greater use of the Research and Technology Centres to search out and exploit synergies within the national research base, bringing together technologists with commercial applications developers, distributors, end users and so on. We understand this is happening already, as a result of SFI's decision to improve the alignment between the country's strategic research centres and Horizon 2020, and their requirement (as a condition of centre status) that centres must secure a level of EU contributions that at least match their income from SFI. To that end, each centre has a specific Horizon 2020 schedule of funding targets, broken down by pillar and specific programme (e.g. Competitive Industries; Nanotech, etc.). These organisations sit centrally within their respective national innovation ecosystems, and together have Horizon 2020 targets exceeding €350M. While they are large and well resourced, our interviewees did suggest the SFI research centres would be more confident about meeting or exceeding their ambitious targets were they able to access a little more funding so they could appoint additional Horizon 2020 support staff.[31]

Other contributors suggested there could be value in looking more closely at Ireland's national STI ambitions and then looking more creatively at the opportunities presented by Horizon 2020. For example, higher education institutions in Ireland (and across Europe) are increasingly concerned with internationalisation, whether that concerns the recruitment of overseas students or the development of strategic alliances addressing global challenges like poverty-related diseases or hunger. Horizon 2020, and the Commission more generally, has a similarly growing commitment to international cooperation and global issues (e.g. Millennium Development Goals), and could provide a platform for new bilateral partnerships with third countries or entry points to global networks. It may be helpful if there was a forum where such insights could be debated and refined, and where the proponents of those ideas that withstand the scrutiny and cross-examination of the wider community might be invited to prepare a position paper of some sort for submission to the High Level Group, for consideration in its ongoing reflections about strategic opportunities. Ultimately, the strongest ideas could possibly be developed into specific strategies, which would be added into the overarching Horizon 2020 strategy.

Our interviews produced several other observations, which may be of note here, including a suggestion that Ireland should do more to strengthen the links between its use of European Structural and Investment Funds (ESIF) and Horizon 2020. Ireland's Smart Specialisation Strategies (RIS3) cross-reference Horizon 2020 and the national Horizon 2020 strategy similarly makes reference to the strategic use of structural funds. There are points where regional and EU interests coincide (e.g. a medical technology cluster in the west of Ireland, or marine renewable energy in the North West or agri-food innovation as a means by which to support rural employment), there is however no concrete explanation of what and how such synergies might be developed.

There were also suggestions that Ireland's national support system could do more to raise awareness of Horizon 2020's increased interest in supporting Pre-Commercial Procurement (PCP) and Public Procurement of Innovative solutions (PPI). These novel procurement instruments were assigned a budget of around €130 million in the 2014/15 calls and were allocated to projects in areas ranging from traffic management to independent living and better lighting solutions for cities. This work is co-funded, but covers most areas of the programme, and is led by public sector customers; we understand

[31] Each Research Centre has a dedicated EU Coordinator, paid for by SFI. Insight has two.

that the level of competition for these funds has yet to build to the levels seen with other instruments or in the programme more generally.

6.4.2 Recommendations

We recommend the High Level Group consider whether and how it might create a forum for people to propose and debate new ideas for strengthening Ireland's performance in Horizon 2020. This kind of forum could be run by the NCP network as an extension of its more general market surveillance activities, which would keep it grounded, or it could be managed by a working group of the HLG, which would give it a little more weight, and possibly becoming part of a more regularised approach (annual?) to checking progress against the national strategy and fine-tuning that strategy as necessary.

We recommend the High Level Group map the points of mutual interest between Horizon 2020 and Ireland's ESIF strategy, with a view to increasing Ireland's ability to identify and exploit potential synergies.

We recommend the High Level Group invite Enterprise Ireland's public procurement specialists to consider the potential for strengthening the link between Ireland's new Small Business Innovation Research (SBIR) scheme and the analogous PCP instrument within Horizon 2020. This may be a question of improved transparency in the first instance, however, the early SBIR competitions (e.g. smart electric vehicle charging solutions in communal residential areas) have a resonance with broader EU challenges and future competitions may benefit from a link into Horizon 2020.

We also recommend the High Level Group take a more determined and coordinated position as regards getting involved with the various Advisory Groups and ETPs, in order to ensure Ireland can play a more central role in influencing strategic research agendas (SRAs) and work programmes and that this influence has the necessary strategic inflexion. Ireland does have reasonable levels of engagement with these groups, however, our analysis suggests that in many cases this happens at the level of individual experts (by design in the case of the Advisory Groups). There are fewer instances of organisations engaging with these platforms, and thereby bringing in a more strategic perspective. This links back to questions about the scale of Ireland's involvement too. It also has a resonance with our earlier remarks and recommendations about the potential benefit of taking a more coordinated approach to tracking and encouraging engagement in these many and various strategic initiatives.

	Recommendation	Description	Lead responsibility	Timeline
10	Create a forum for debating new ideas for strengthening future participation	Consider whether and how it might create a forum for people to propose and debate new ideas for strengthening Ireland's performance in Horizon 2020.	HLG, National Director and Support Structure	By autumn 2016
11	Map points of intersection between H2020 and ESIF	Identify areas of common interest between H2020 and Ireland's ESIF strategy and investments	DJEI	By autumn 2016
12	Promote awareness of the PCP / PPI instruments	Increase awareness of H2020's procurement instruments, exploring the potential for a link between Ireland's Small Business	HLG and Enterprise Ireland	Summer 2016

	Recommendation	Description	Lead responsibility	Timeline
		Innovation Research (SBIR) scheme and the analogous instrument within Horizon 2020		
13	Coordinate involvement in Advisory Groups and ETPs, nationally	Take a more coordinated approach to Ireland's involvement in various Advisory Groups and ETPs in order to strengthen Ireland's influence on programme's research priorities and work programmes	National Director and Support Structure	By autumn 2016

6.5 Maximising success in calls for proposals

6.5.1 Analysis

Horizon 2020 applications success rates have fallen substantially as compared with FP7, even with the 40% increase in available funding, reflecting growing interest throughout Europe. The overall success rate (numbers of proposals, rather than funding) has declined from 19% to 11%, with several parts of the programme registering substantially worse average success rates. Our review of selected other EU member states' Horizon 2020 strategies makes clear that most countries have set substantially higher targets for their national drawdown from Horizon 2020, as compared with FP7. Ireland is not alone in committing to double its drawdown. Given this situation, the success rates seen in the first calls of Horizon 2020 are unlikely to have been anomalous. They may in part be a reflection of continuing pressure on national R&D budgets, but member states are investing in their national support networks to help make their ambitions a reality, through increasing the number and quality of their applications, and one might reasonably expect to see a further increase in application volumes in the second half of Horizon 2020 and an intensification of competition. In simple terms, this means it is harder to win grants. The consequences of worsening success rates can be grave, with rising social costs on the one hand and weakening attractiveness for applicants on the other. As the programme approaches hit rates of 1 in 10, the combined cost to the national innovation ecosystem of winning each grant may come to approach the monetary value of the EU contribution secured. Under this scenario, the remaining social value would be positive effects on quality engendered by such fierce competition and the access to pan-EU networks and markets that national funds cannot deliver to anything like the same degree.

Ireland has improved its relative performance, in terms of success rates, recording a less dramatic reversal in success rates as compared with Horizon 2020 overall (from 14% in FP7 to 11% in Horizon 2020, in terms of EC Contribution). This may reflect the investment in the support system and the growing experience of Ireland's research base. Ireland has expanded its NCP team and introduced several new measures with the explicit aim of improving its success rates in the move from FP7 to Horizon 2020, in key areas, including three rather high-value schemes:

- Enterprise Ireland coordination grants, which provide grants (up to €12,500) to academic coordinators to cover the costs associated with their work to develop a proposal for submission to Horizon 2020 (there is a second element to the fund, which provides a slightly smaller amount of financial support for applicants to ERC, and as such is not strictly a grant for coordinators). The fund has sufficient capacity to support around 200 applications a year. This support was available in FP7, so is not new for H2020, however, its scale is hugely significant

- ERC Support Programme, which provides an additional overhead payment linked to an ERC award to encourage host institutions to actively pursue ERC awards and to ensure they provide grant holders with the level of support necessary to carry out their research successfully. This programme also has a separate strand designed to enable Irish institutions to attract ERC grant holders from other institutions outside Ireland
- ERC Development Programme, which provides short-listed but unfunded ERC applicants with a national grant amounting to up to 50% of the value of the ERC proposal, capped at €500,000. The intention is to increase the numbers of people willing to prepare applications against the backdrop of very low success rates

Feedback from our surveys suggests these measures are well regarded. There are various other small schemes, including travel grants, however, these have been in operation for some number of years, and don't quite promise the benefits of the three schemes listed above.

Given the likelihood that Horizon 2020 success rates (across all participants) will remain low, it makes sense for Ireland to continue to look at ways in which it can maximise applicants' chances of success, to help ensure risk and reward remain in balance and to help achieve its drawdown target. There are essentially two options here, the first is to increase the support system's ability to reach more of the total population of prospective applicants that would benefit from the advice and support on offer. The second approach is to improve the effectiveness of the support available, whether that is tactical refinements to the advice that is available already (e.g. improving the ability of all NCPs to explain / demonstrate what a good impact statement looks like) or the creation of new advisory or support services.

On the first point, there remain substantial numbers of applicants that choose not to use the support available, for whatever reason, and their success rates are markedly worse on average than are those for applicants that have sought advice from the national support system. This positive association is borne out in other countries and regions too. It suggests there may be value in increasing further the level of marketing and communications, looking to reach a larger proportion of prospective applicants with a view to encouraging them to take a little advice on programme relevance, partnerships, impact statements and bidding tactics more generally.

Our discussions with NCPs and research officers suggest that there is a pretty clear view on where individual applicants need to improve, and for Pillars II and III, that relates to taking more seriously the issues of partnerships, management and impact.

There is also an argument for doing more PR and showcasing the benefits realised by past applicants, particularly within the business community. It's not just about money, and the case studies should explain the effect of participation on a range of different dimensions, from improvements in internal capabilities to laying the foundation for new strategic partnerships or providing the platform for access to new markets and of course improving sales and employment.

On a cautionary note, the feedback from the Horizon 2020 appraisal process was felt to have become more generic, with the move from FP7 to Horizon 2020, such that it is less informative and less helpful to applicants in determining if and how to resubmit unsuccessful proposals. The Commission has elected to create a very much larger pool of evaluators through open calls, rather than relying on hand-picked experts as was more typical historically. The employment of larger numbers of more independent but less experienced – and possibly less specialised – evaluators has changed the evaluation process somewhat. The bland explanations however are reportedly more a result of a decision by the Commission to better manage the risk / cost to them of fulsome feedback generating challenges from applicants. This rather more cautious approach is unlikely to change within the life of the current programme, and it we would therefore suggest that applicants will benefit to an even greater extent from more critical appraisal ahead of submission, by their own peers or by Horizon 2020 officers or NCPs.

Turning to the second development option, new advisory or support measures, feedback from our interviews and surveys produced a number of suggestions for new or reinforced strategies, which

Ireland could implement in order to increase the average success rates within the Horizon 2020 application process

- Several people argued for an increase in the funds available for networking and travel, with a single pot that is readily accessible (quickly), and which would allow very many more people to get involved in fledgling consortia and brokerage events. As one person put it, "we have to help people get off the island"
- The InterTradeIreland Competitive Partnerships Scheme was commented upon as a good initiative, inasmuch as it recognises past applicants as an asset in their own right, and worthy of maintaining contact with on an ongoing basis. Targeting additional support on unsuccessful proposals that passed the quality threshold was thought to be a particularly good way to improve success rates. Competition is tough, the appraisal can be exacting, and success often follows several attempts. This is more than simple perseverance, however, with important learning effects accumulating over time
- New training initiatives. Several contributors wondered whether Ireland might be able to expand the specialist training available nationally, which would allow a greater number of prospective applicants to attend courses. Currently, many of the leading training providers are located overseas (benefiting from higher client volumes and more central locations), and the cost and disruption of these more distant service providers may be off-putting. One contributor wondered if this service might be something Ireland's Skillnets could take on, possibly in conjunction with one or other trade bodies or industry associations (e.g. IBEC, Engineering Ireland, The Royal Institute of the Architects of Ireland)
- More sharing of examples of success. There was a suggestion that Ireland might try to create a repository of proposals (those above threshold) that could be used by third parties as a source of insight and learning. Clearly there will be issues of confidentiality to deal with, inasmuch as proposals 'belong' to multiple organisations, many outside Ireland, and would not automatically be considered suitable for open publication. There will be sensitivities over 'ownership,' but perhaps the proprietary elements could be redacted, leaving behind the more generic sections on for example management

There were numerous other suggestions put forward for refinements to the support system, with a view to encouraging increasing participation going forward. These were mentioned by one or two people and as such do not constitute a recommendation. In several cases, such work is in hand already and in other cases there were evident counter arguments. They are presented here for completeness and to facilitate discussion. They include, in no particular order:

- The expansion of the non-targeted element of the central NCP operation and infrastructure, to act as a shared EU programme office, to the benefit of smaller HE institutions and SMEs
- The expansion of the Enterprise Ireland team in Brussels. A well-functioning Irish FP team in Brussels would improve the early acquisition of strategic intelligence on trends in the EC policy thinking, especially important in a fast-changing field such as ICT, but also to understand faster which initiatives are likely to be launched and in what form. Ireland should lobby more to know where new initiatives such as the Brain Flagship and the Manufacturing funding lines are going. The communication should also go in the other direction, exposing the Irish ICT R&D capabilities in a unified manner, how Ireland wants to put them in place, and work out together with the EC how this can come about
- Encouragement of applicants to consider applying to become a member of the register of evaluators, to increase the likelihood of Ireland's experts being called to evaluate proposals and thereby gaining first-hand experience of the review process in the EC, which gives a unique insight into critical success factors
- NCPs taking a more pro-active approach in their work, flagging opportunities to specific organisations as early as possible and before calls are issued where possible and also suggesting consortia that one might approach or specific universities or companies to work with

- Several interviewees suggested funding improved communication and networking, with for example, more informal events and seminars, or 'arenas,' for researchers in research / industry / policy to come together, thus creating opportunities for networking in emerging interdisciplinary fields

6.5.2 Recommendations

Overall, we recommend the High Level Group consider implementing a number of measures to ensure a greater proportion of all prospective applicants get involved with the national support network (and thereby increase success rates). These recommendations will complement the earlier suggestions for expanding the NCP team, and include:

- Expansion in the numbers of information days with a view to deepening the pool of potential applicants, with increased efforts devoted to marketing and communication, and the addition of parallel sessions tackling more developmental questions through master-classes with successful applicants, peer-learning seminars or more formal training exercises (charged) with experienced consultants. Our analysis of FP7 and Horizon 2020 applications found that more than half of firms involved with those applications are not listed in the Enterprise Ireland or IDA client databases. This suggests there may be significant numbers of research and innovation-active businesses in Ireland that the principal business support agencies are not working with currently, and where, by implication, a targeted marketing campaign might both further expand this pool of Horizon-ready applicants and improve those bidders' understanding of critical success factors and their resulting chances of success
- Creation of a more extensive network of people and mentors with knowledge of the programme, going beyond the NCPs and university research officers to include other experts, whether that is EU coordinators at SFI research centres or individual project coordinators or other experienced participants or proposal evaluators. This kind of network would expand the effective capacity of the national support system for Horizon 2020, without greatly adding to the cost of that system. It would also provide the basis for improved peer-learning (what works best), and essentially the training of the trainers
- Creation of additional guidance material (e.g. top tips for a successful application), which might be accessed directly by prospective bidders but crucially would help university research officers and other in-house 'experts' provide better and more confident advice to their colleagues
- Monitor the Commission's 'seal of excellence' pilot, whereby fundable but unfunded applications to the H2020 SME Instrument are being labelled as 'excellent' in anticipation that other EU research and innovation investment programmes may choose to support the project. This is an initiative where the Commission is championing synergies among EU instruments and specifically funding through alternative routes, including European Structural and Investment Funds.[32] If it works for the SME Instrument, it may be extended to other parts of the Horizon 2020 programme, and could potentially help national and regional agencies identify and invest in stronger proposals. This methodology has been used for other programmes, such as Eureka, however there are practical difficulties, ranging from the degree of alignment between European and local priorities and possibly even state aid issues. It will be important for Ireland to follow these developments, in order to be able to capitalise on any opportunities

	Recommendation	Description	Lead responsibility	Timeline
14	Intensify marketing and communication	Expand numbers of information days and awareness raising events with a view to	National Director and Support Structure	From summer 2016

[32] The seal of excellence is a new development and as yet there is no substantive experience of how it might work in practice, and in particular the potential for finding national added value in multilateral project applications with an explicit focus on European added value.

	Recommendation	Description	Lead responsibility	Timeline
		expanding the pool of potential applicants		
15	Set up a network of mentors	Create a more extensive network of people and mentors with knowledge of the programme	National Director and Support Structure	By early 2017
16	Develop additional guidance material	Create additional guidance material for applicants	National Director and Support Structure	From summer 2016
17	Monitor the Commission's piloting of its 'seal of excellence'	Monitor the Commission's 'seal of excellence' pilot to ensure Ireland can capitalise on any opportunities it may present	Enterprise Ireland	By early 2017

6.6 Increasing the scale of Ireland's participations in the framework programme

6.6.1 Analysis

All things being equal, larger grants are generally accepted as being of greater potential social value than smaller grants. They may also be more efficient to win and to implement, providing useful scale economies for both applicants and national support systems. These views are not without their antagonists, but notwithstanding this cautionary note, Ireland's High Level Group has committed to winning a larger number of very much larger grants, in an attempt to increase the return on its investment (cost of bidding / support).

There is evidence of movement in this direction already. In the move from FP7 to Horizon 2020, Ireland has recorded a substantial increase in the average size of its applications and an increase in the average size of its successful participations. There has also been an increase in the proportion of all applications and participations where Ireland hosts the project coordinator.

There are basically two routes through which one can increase the average scale of participations, with the first being about taking a more central role within project consortia, including taking on the role of project coordinator. The second is to pursue an involvement with larger, more strategic projects. This second tactic does not automatically produce larger individual grants, as mega projects will tend to operate as programmes with a proportionate increase in the numbers of partners and with average work packages that look similar to those of smaller projects (with fewer consortia members). There is however a greater opportunity for any one country to secure multiple participations within those larger strategic initiatives, thereby increasing total drawdown to a much greater degree than may be possible for any individual participant. The Research and Technology Centres could have an especially important role to play here, with both the capacity to lead big consortia and a central position within the innovation landscape that would allow them to bring into those large consortia multiple other Irish actors, from MNCs to indigenous SMEs and through to government-based user organisations.

The view of many interviewees was that Ireland should be tracking larger strategic initiatives with a view to encouraging and supporting national actors to get involved with or even lead strong consortia. People did sound a note of caution and several argued that there are relatively few ultra large projects, and that those that do arise will often have a strong commitment to support a pre-existing partnership. Ireland may need to be more proactive in its participation in various advisory groups and innovation platforms, in order to help encourage the Commission to fund more mega projects and crucially to be in the room when the strategic alliances are being forged. There is a general sense that the advisory

groups now wield rather more influence in priority setting and work programmes than do member states through their delegations and official membership of programme committees.

There is a keen interest among the wider community to hear more about the work of the Strategic Research Proposals group.

One of the best ways to increase the numbers of project coordinators is to track participants over time with a view to encouraging people to increase their ambition level with each successive bid, progressing from minor to major partner all the way through to coordinator and initiator. There may also be an argument for providing some level of financial support to coordinators over the life of their project, as the coordination role requires substantial administrative capacity as well as technical leadership skills. That administrative expertise is missing in many organisations, public and private, and the challenge of trying to manage both technical and administrative functions is off-putting. A small, cost-shared fund for administrative support would help to overcome headcount constraints in the public sector, and would almost certainly encourage more of Ireland's leading scientists to push for the role of project coordinator.

6.6.2 Recommendations

We recommend

- Creating a national fund to support (on a cost-shared basis) Ireland's active participation in various strategic initiatives, like European Technology Programmes, with the funding being used to buy-out the time of suitably senior people (e.g. quarter time) over the lifetime of each strategic initiative judged to be of especial national interest. The awards could be made available on a competitive basis in the first instance, with success judged against strategic relevance and wider support, and with a clear intention of helping Ireland influence research agendas and get more centrally involved in strategic funding initiatives
- Extending the ERC overhead mechanism to project coordinators involved in any part of the Horizon 2020 programme
- Creating an alumni network, whereby all participants, past and present would be kept appraised of calls for proposals as well as any other news or early warning about upcoming events. The network could also serve as a panel for consultations and strategic debate and should also dovetail with the wider national support system, thereby expanding its effective capacity. The network could also provide a platform for CPD style events and the visible progression of individuals through levels of FP-related expertise, moving from, for example, an affiliate through junior partner to core partner and on to project coordinator. This kind of network would need to be developed in conjunction with employers, in particular universities, as their staff are key assets in the competition with other organisations, in Ireland and elsewhere in Europe

	Recommendation	Description	Lead responsibility	Timeline
18	Create a national fund for strategic and COFUND initiatives	Create a national fund (competitive) to help national agencies participate more fully in various strategic initiatives and co-funding projects	National Director and Enterprise Ireland	By early 2017
19	Create an expanded fund for Coordinators	Extend the ERC overhead mechanism to project coordinators involved in any part of the	National Director and Enterprise Ireland	By early 2017

	Recommendation	Description	Lead responsibility	Timeline
		programme		
20	Create an alumni network for participants	Create an alumni network and platform to share experiences / material / advice that will allow Ireland to track careers and encourage progression to higher levels (e.g. coordinators	National Director and Support Structure	By early 2017

Appendix A Methodology

A.1 Desk research

Early in the study a large amount of background information and documentation was provided by DJEI. This included strategy and policy documents, monitoring data and reports, and FP/Horizon 2020 participation and award data.

The desk research has also included a rapid identification and meta-analysis of existing studies and evaluations in this field. This informed the design of data collection tools (e.g. proven questions sets, potential drivers and barriers to participation).

A.2 Composition analysis

The study has made extensive use data on projects and participants provided by two main sources of information:

CORDA data

CORDA is the official European Commission data on FP7 and Horizon 2020 applications, projects and participants, The study has undertaken an in-depth review of application and participation data, covering IE, and comparator countries.

Full datasets of application, project and participant data for the whole of FP7 and the first calls of Horizon 2020 (to November 2015), covering all countries, were requested and obtained from DJEI in January 2016. A further update to Horizon 2020 proposal data (to March 2016) was provided in March.

Contact information for the participant survey was initially extracted. A more thorough analysis of the data was then conducted – the results of which are presented in the report.

A.3 Survey

A.3.1 Sampling strategy

To maximise responses the survey was target to all IE successful and unsuccessful participants. Potential participants have had different patterns of application across both programmes (FP7 and Horizon 2020) as shown in the table below. This included, for instance, participants that were successful in FP7 and successful in Horizon 2020 (55 in total).

We identified a total of 5,907 (unique[33]) IE applicants (extracted from eCORDA, November 2015) and divided them in **four groups** according to two criteria: their success status in FP7 and their success status in Horizon 2020 (only for those that did apply to FP7):

1. FP7 Successful
2. FP7 Unsuccessful
3. Horizon 2020 Successful (that did not apply to FP7)
4. Horizon 2020 Unsuccessful (that did not apply to FP7)

Table 21 – Type of participants

FP7		Horizon 2020	
	Number		**Number**
FP7 Successful	1,100	Successful	55

[33] Unique contacts, based on recorded email address

		Never successful	174
		Have not applied to Horizon 2020 yet	871
FP7 Unsuccessful	4,414	Successful	108
		Never successful	1,154
		Have not applied to Horizon 2020 yet	3,152
		Horizon 2020 Successful	56
		Horizon 2020 Unsuccessful	337
		TOTAL	**5,907**

A.3.2 Questionnaires and dissemination

A main **questionnaire** was designed, approved and placed online by mid-February. It was then tested internally, before going 'live'. The questionnaire employed a modular construction to allow all issues to be covered essentially within a single survey but with careful routing to allow respondents to move quickly through the questions, skipping those not relevant to their individual experience.

This main questionnaire was then adapted to address the four different types of respondents:

- Survey 1: Successful applicants to FP7 (including those participants that have been successful in at least one application). The questionnaire asked participants about their status concerning Horizon 2020.
- Survey 2: Unsuccessful applicants to FP7 (participants that have been unsuccessful in all their application). The questionnaire asked participants about their status concerning Horizon 2020.
- Survey 3: Successful applicants to Horizon 2020 (that did not participate in Fp7). The questionnaire verified the participants' status concerning Horizon 2020.
- Survey 4: Unsuccessful applicants to Horizon 2020 (that did not participate in Fp7). The questionnaire verified the participants' status concerning Horizon 2020.

The questionnaire for Survey 1 is provided in Appendix F.

All 5,907 unique IE applicants were contacted in mid-February and invited to participate in the survey. Auto-responses suggest that a number of the email addresses (mainly from FP7) were out of date, and so we estimate that the initial survey request is likely to have reached ~5,300 people in total.

To complement this request, we also arranged for stakeholders to promote the survey and notify their contacts of the opportunity to contribute.

Several reminders were also sent to the non-respondents and a final reminder was sent on 4th March (the original deadline) – with a note to say that the deadline had been extended by a week. The survey was then closed on 11th March.

A.3.3 Response rates

Overall, **778 individuals responded to the survey**, 276 of which are FP7 successful applicants and 200 Horizon 2020 successful applicants. This is a very good response rate, and towards the upper end of what was predicted at the time of the proposal – which set out an ambition to achieve 100+ responses in order to allow some reasonably robust analysis to be undertaken.

There was a good spread of respondents from different **organisation types** and across **successful and unsuccessful applicants** as it is shown in the tables and figures below. In order to make the analysis per type of stakeholder more tractable we have grouped them into four categories as shown in Table 23.

Table 22 - Response rate per type of survey

Type of survey	Responses	Response rate
Survey 1	276	25%
Survey 2	453	10%
Survey 3	17	30%
Survey 4	32	9%
Total	778	13%

Table 23 - Responses by type of stakeholders

	Company	HEI	Research organisations	Other	Total
Irish-owned SME (<250 employees)	130				130
Irish-owned large company (>250 employees)	7				7
Foreign-owned SME (<250 employees)	13				13
Foreign-owned large company (>250 employees)	30				30
Higher Education (e.g. university or institute of technology)		447			447
Private research and technology organisation			10		10
Public research institute (e.g. Teagasc)			40		40
Civil Society Organisations (e.g. Alzheimer Society of Ireland)				4	4
Other (please specify)				38	38
Other public sector (e.g. Geological Survey of Ireland)				37	37
Total	180	447	50	79	756

Table 24 - Overview of response rates

Type of organisations	FP7			Horizon 2020			
	Successful	Unsuccessful	Total	Successful	Unsuccessful	Other	Total
HEIs	147	280	427	99	88	193	380
Companies	73	87	160	60	30	57	147
Research organisations	19	29	48	15	7	22	44
Other	37	57	94	26	14	40	80
Total	276	453	729	200	139	312	651

Figure 16 - FP7 – successful and unsuccessful

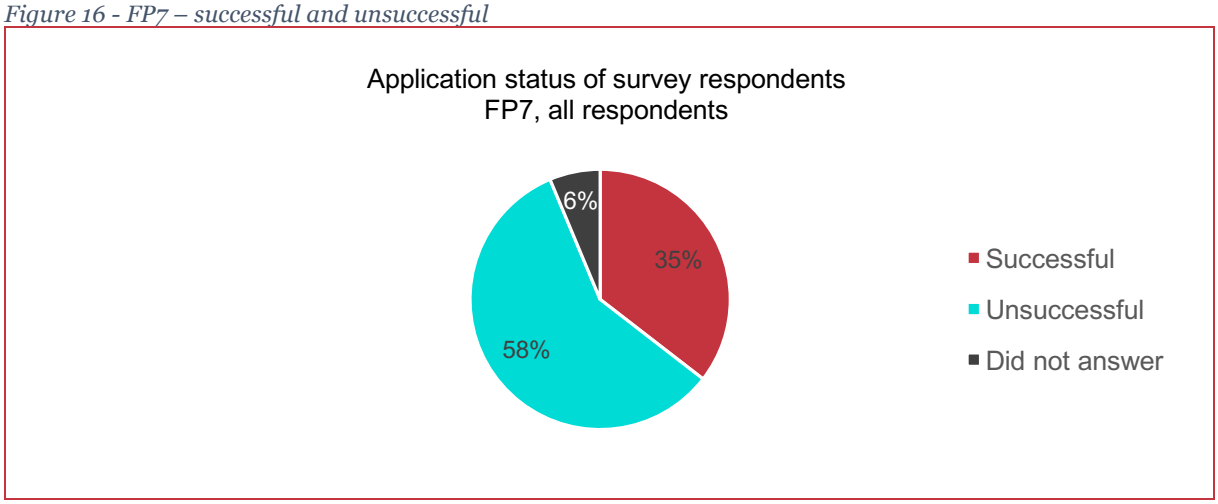


Figure 17 - FP7 – type of organisations

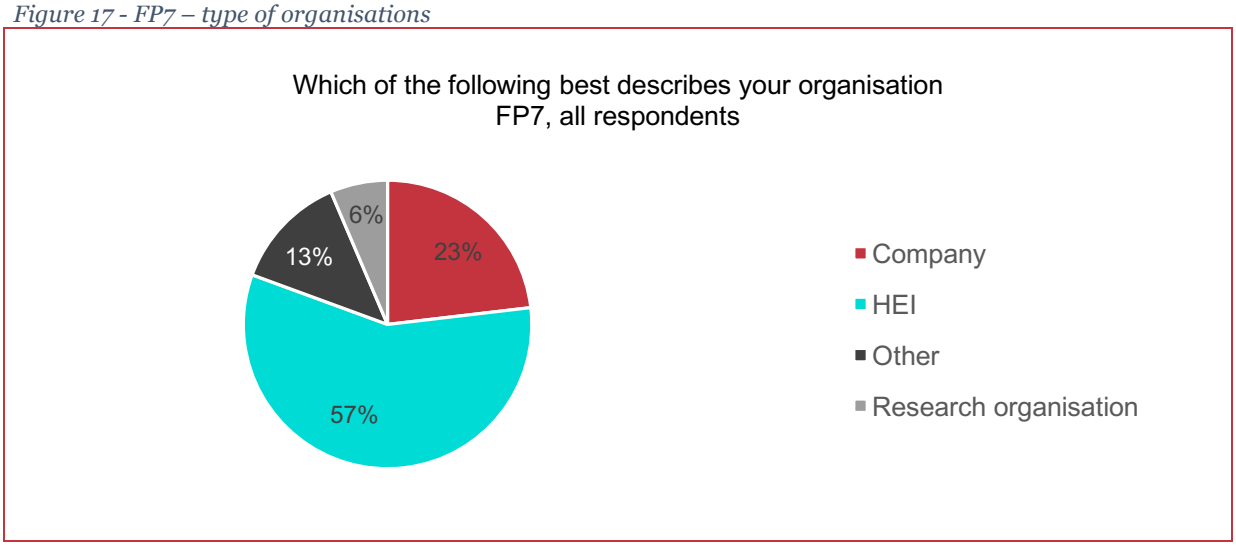


Figure 18 - Horizon 2020 – successful and unsuccessful

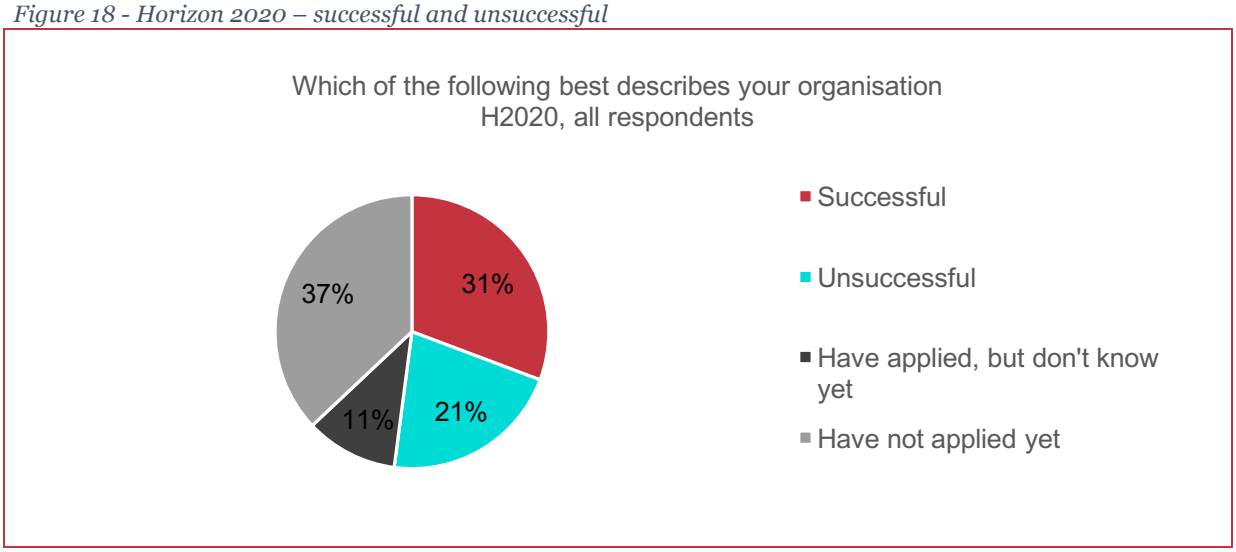
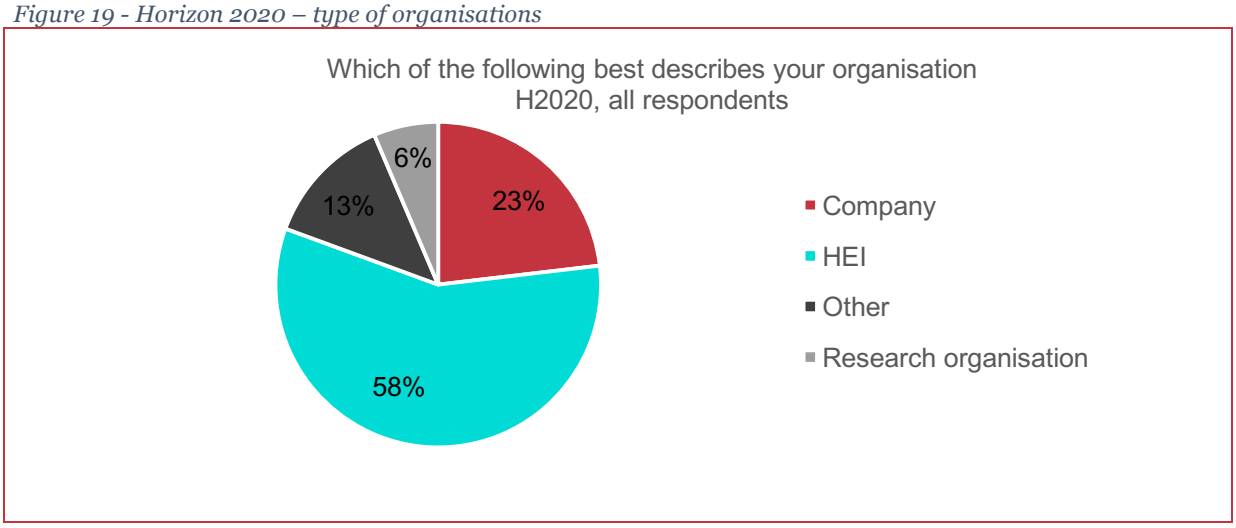


Figure 19 - Horizon 2020 – type of organisations



A.4 Interviews

A.4.1 Overview

During the inception phase of the study we proposed to undertake **25 interviews** with a range of stakeholders to gather qualitative feedback on several aspects of the evaluation.

The study team interviewed 76 people, including 57 high-level stakeholders (NCPs, High Level Group, Delegates, Research funders) and 19 FP participants. A total of 21 interviews were conducted face to face while the remaining 55 were conducted via telephone.

A.4.2 List of interviewees

The tables below show the list of interviews.

Table 25 – Summary of interviewees, by stakeholder type

Stakeholder type	Interviews conducted
Government department / agency	15

NCP / ND	18
Participant	19
Representative of university / IoT / Research Office	24
Grand Total	**76**

Table 26 - List of interviewees

Name	Organisation
Abhay Pandit	CÚRAM
Alan Davy	Waterford Institute - Telecommunications Software and Systems Group (TSSG)
Alice Wemaere	Environmental Protection Agency
Bill Lane	Analogue Devices
Bob Flynn	Enterprise Ireland
Brian Donlon	Environmental Protection Agency
Brian Quinn & Dermot Honan	Intel Labs
Catriona Ward	Enterprise Ireland
Cian O'Mahony	Creme Global
Cian O'Mathuna	Tyndall National Institute - Research Centre Microsystems
Ciaran Duffy	Enterprise Ireland
Conor Sheehan	Enterprise Ireland
David Brady	IDA Ireland
David O'Connell	University College Cork
Dietrich Rebholz-Schuhmann	Insight - Centre for Data Analytics (NUIG)
Dipti Pandya	University College Dublin
Dirk Pesch	Nimbus Centre for Embedded Systems Research at Cork Institute of Technology
Dominic O'Brien	Dept. of Environment, Community and Local Government
Edward McDonnell	Centre for Applied Data Analytics Research (CeADAR)
Eileen O'Herlihy	APC
Eucharia Meehan	Irish Research Council
Fergus Shanahan	APC

Frank O'Mara	Teagasc
Frank Smyth	PILOT PHOTONICS
Gearóid Mooney	Enterprise Ireland
Geraldine Boylan	INFANT
Giovanni Tummarello	SINDICE LTD
Imelda Lambkin	Enterprise Ireland
Ivan O'Connell	MCCI's (Microelectronic Circuits Centre Ireland), Tyndall National Institute
Jean-Christophe Desplat	ICHEC - Irish Centre for High-End Computing
Jennifer Brennan	IUA
Jennifer Craig	iCRAG
Jill Leonard	Enterprise Ireland
John Walsh	iCRAG
Jon O'Halloran	SSPC
Kate Carmody	Beal Organic Cheese
Kay Duggan-Walls	Health Research Board
Kevin Doolin	Waterford Institute of Technology
Kieran Hodnett	SSPC
Leo Clancy	IDA Ireland
Louise Kenny	INFANT
Máire Coyle	University College Dublin
Mark Ferguson	Science Foundation Ireland
Mark Sweeney	Enterprise Ireland
Michael Murphy	Enterprise Ireland
Michael Morris	AMBER
Michael Morrissey	Dept. of Transport, Tourism & Sport
Mike Hinchey	Lero - The Irish Software Engineering Research Centre
Muiris O'Connor	Dept. of Health
Ned Costello	IUA
Niall Smyth	Cork Institute of Technology

Niamh Kenny	DP Energy
Niamh O'Dowd	RCSI
Nicki O'Connor	Higher Education Authority
Nuala Bannon	Dept. of Environment, Community and Local Government
Oonagh Kinsman	Trinity College Dublin
Orla Feely	University College Dublin
Patricia Clarke	Health Research Board
Patrick Barrett	Department of Agriculture, Fisheries and Food
Patrick Murray	Limerick Institute of Technology
Paul Kilkenny	Irish Research Council
Paul Killeen	IOTI (Athlone IoT)
Paul Townsend	IPIC - Irish Photonic Integration Centre (Tyndall)
Pauline Mulligan	Department of Jobs, Enterprise and Innovation
Philip Cheasty	Enterprise Ireland
Pól Mac Aonghusa	IBM - Ireland Research Lab
Raymond Kelly	Teagasc
Ronan Flanagan	NUMA Engineering Services
Sean Burke	Enterprise Ireland
Sergio Fernandez-Ceballos	Enterprise Ireland
Siobhán Fitzpatrick	Department of Jobs, Enterprise and Innovation
Sonia Monteiro	University College Cork
Stephen O'Reilly	Enterprise Ireland
Tim Cullinane	Department of Education and Skills
Timothy Kelly	Corballis Consulting Ltd.
Valeria Angela Carpenè	University College Dublin

A.5 Validation workshop

DJEI and Technopolis hosted a validation workshop on 6th April 2016, attended by a total of 47 people. Attendees from across Ireland's government departments, agencies and higher education institutions, as well as participants in FP7 and Horizon 2020 projects (including researchers, SMEs and larger, multinational companies) all contributed to the workshop.

The workshop had a dual purpose: i) to validate the emerging findings of the report among this broad group, and ii) to further consult on key issues. The agenda was designed so that the audience could hear and respond to the emerging findings of the two evaluations, before then discussing four key topics (listed below) in roundtable groups. These discussions were then reported back to the plenary.

- Topic 1 – Targeting participation on national priorities
- Topic 2 - Being strategic in engagement with Horizon 2020
- Topic 3 - Maximising the chances of success in calls and increasing the scale of participations in Horizon 2020
- Topic 4 – Capitalising on co-funding opportunities

Appendix B Analysis of demand

Going forward, Ireland could consider taking into account the overall demand for the different programmes across Horizon 2020. It is useful being aware of those programmes that are overly subscribed and where, consequently, more effort would be required from applicants and the national support system. It is also useful being aware of those programmes were there is relatively lower demand and where Ireland could play to the capabilities of its industrial and research base.

As would be expected, some specific programmes across Horizon 2020 have more demand and / or are more difficult to win, as proposals struggle to pass the quality threshold. Examining the distribution of programmes across those two dimensions (ease to pass quality criteria and probability of actually winning projects) allows us to reach an overview of the overly subscribed programmes (those with low probability of passing threshold criteria and low probability of receiving funding).

Figure 20 shows this analysis, using the information of *all* Horizon 2020 applications to date, not only those from Irish participants, to November 2015. The size of the bubbles roughly reflects the size of the budget (in millions) committed to each specific programme.

The two quadrants to the right of the vertical red line show those programmes for which there is a relatively high-probability of winning (as a relatively high percentage of proposals become funded projects). Furthermore the bottom-right quadrant shows those programmes for which it is easier to qualify for funding, as a relatively high percentage of proposals pass the quality threshold. The programme "Innovation for SMEs" (SME) is off the chart as the probability of wining is 87% and only 7.8% proposals did not pass the quality threshold.

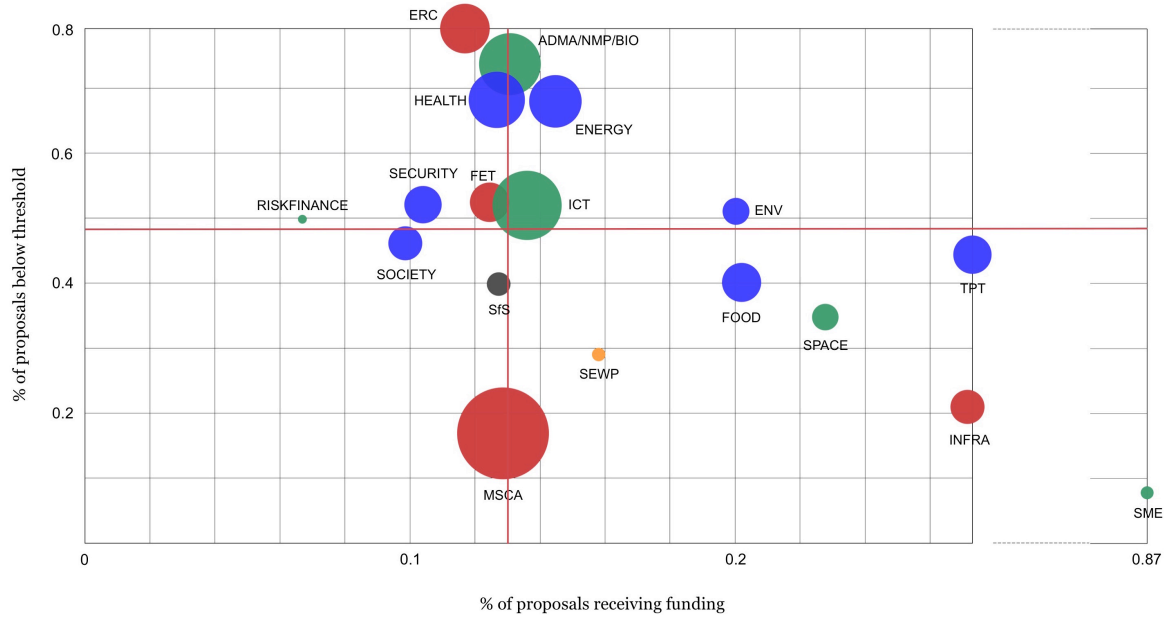
On the other hand, the two quadrants to the left of the vertical red line show those programmes for which there is a relatively low probability of winning. Programmes such as the ERC sit in this panel, being extremely hard to win (79% of proposals did not pass the quality threshold).

The analysis shows that there are four areas where Ireland could consider targeting additional efforts going forward, including:

- Space (Ireland has a relatively strong space economy and could consider leveraging resources already allocated to the European Space Agency)
- Food security; sustainable agriculture; marine and maritime research; and the bio-economy

This is not to suggest replacing Ireland's current approach with this view – Ireland has already experienced a good level of success in the first two years of Horizon 2020. This would rather be an additional or complementary focus, in order to maximise the country's exposure.

Figure 20 - Horizon 2020 applications according of probability of passing quality threshold and funding allocation (all applications)

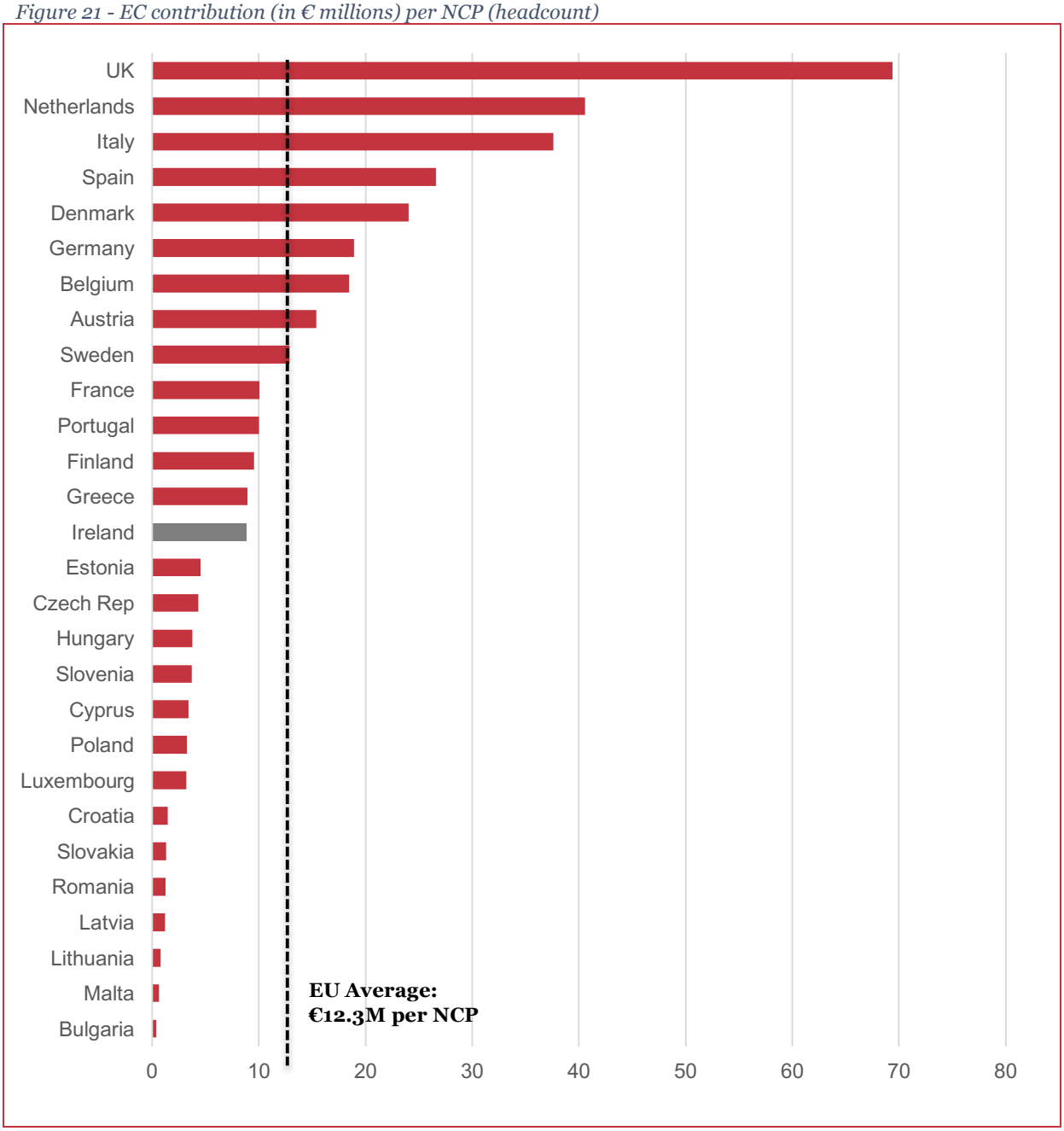


Source: Technopolis (2016). Based on CORDA data (November, 2015). Notes: The vertical and horizontal red lines correspond to the median value of the variables in the x-axis and y-axis, respectively. The colours of the markers correspond to the five pillars of Horizon 2020: Excellent Science (red); Industrial Leadership (green); Science with and for Society (black); Societal Challenges (blue); Spreading excellence and widening partnerships (orange). The analysis excludes the ERA chairs and Transnational networks of National Contact Points.

Appendix C Additional statistical analysis

C.1 NCPs and drawdown

Figure 21 - EC contribution (in € millions) per NCP (headcount)



Source: Technopolis 2016, based on CORDA (November, 2015)

C.2 NCPs and targets

Analysis of the target €Ms per NCP across the different specific programmes shows that the value of the portfolio per NCP is higher in the 'Excellent Science' pillar, including MSCA, ERC and Future and Emerging Technologies (see Table 27). To prepare this table we have assumed that an NCP that has two briefs under his or her care divides their time equally among them.

Table 27 - NCPs (FTE and targets)

Pillar	Number of NCPs (FTE)	Target: Ireland's bottom up*** €000	€ millions per NCP
Excellent Science			
European Research Council (ERC)	1.0	100,000.0	100.0
Future & Emerging Technologies	0.5	25,000.0	50.0
Marie Skłodowska-Curie Actions on skills, training & career development (MSCA)	1	246,000.0	246.0
Research Infrastructures (incl. e-Infra.)	0.2	30,000.0	150.0
Industrial leadership			
Leadership in enabling & industrial technologies	4	198,000.0	49.5
Access to Risk Finance	1.0		
Innovation in SMEs	2	56,000.0	28.0
Societal Challenges			
Health, demographic change & well-being	*1.5*	72,000.0	48.0
Food security; sustainable agriculture; marine and	2.0	76,000.0	38.0
Secure, clean, efficient Energy	1.0	65,000.0	65.0
Smart, green & integrated Transport	1.0	44,000.0	44.0
Climate action, resource efficiency & raw materials	2.0	33,000.0	16.5
Inclusive Societies	0.5	21,000.0	42.0
Secure Societies	0.5	20,000.0	40.0
Widening participation	0.5	10,000.0	20.0
Science for and with society	0.3	6,000.0	20.0
European Institute for Innovation & Technology		8,000.0	--
JRC Non-nuclear direct actions	0.5	N/A	--
Other (Legal aspects, National Coordinator)	1.5		
Total	21	1,010,000 (based on bottom-up exercise)	48.1 (based on target of €1.01bn)

Source: Technopolis 2016.

Appendix D Country comparison, overview of financial support

Austria

Austria's support to transnational EU-R&D programmes ranked the highest (3% of the 2013 R&D budget), even increasing between 2013 and 2014 from €15.5m to €27.2m due to higher financing needs for ERA-NET activities.[34]

We see from examining these benchmark countries, that there are many similarities in the kinds of support available

However, while FFG had a budget of €3m to offer financial support to universities and companies to prepare FP7 project proposals, this is not the case for Horizon 2020. FFG **decided to not continue to provide financial support to project preparation** due to the simplification of the application process for Horizon 2020.

FWF offers financial support to ERA-NET projects with the purpose to give Austrian top scientific institutions the chance to participate in research cooperation with partners from other countries. The calls are competitive and bottom-up.

In addition, the Austrian Science Fund has a specific policy towards ERC, based on the observation that the ERC has a similar framework for research support as FWF. The FWF took an approach of "clever alignment" of national programmes with ERC programmes through the Start grant programme, which had been in place already since 1996. The programme is used to give a push to projects to expose them to international competition, by forwarding all proposals received towards the ERC first. If a proposal receives both a national Start grant and an ERC grant, the proponent is obliged to choose the ERC grant. Therefore, ERC grants are considered complementary to national funded research.

FWF also supports Austrian projects that participate in COST actions or EUREKA sub-projects through its own standard research funding programmes.

Denmark

Denmark has launched a national scheme called **EUopSTART** with the aim to providing financial support to participate in Horizon 2020. The scheme offers grants for the preparatory work of Danish businesses and knowledge institutions. The aim of EUopSTART is to intensify the internationalisation of Danish research and strengthen the relations between research institutions and businesses regarding research and innovation. Grants can be allocated for applications, which benefit Danish research or innovation, and which are completed by public or private-sector businesses and knowledge institutions domiciled in Denmark. It is an organisation and not individuals that can apply for funding.

The Danish Ministry of Higher Education and Science has implemented a network, **Horizon 2020-NET[35],** with the objective to strengthen the knowledge exchange of different experiences between knowledge institutions and companies, as well as increase stakeholders' awareness of the available opportunities in the research and innovation programme. Existing networks, organisations and clusters can apply for this grant that perform networking activities encouraging greater Danish participation in Horizon 2020. Applicants must meet a number of clearly defined criteria, including the criterion for a certificate of at least bronze level according to the EU Cluster label system. The funding is provided for knowledge sharing and project maturation in relation to the specific application possibilities. The subsidy depends on the extent of the planned activities and is between 500.000 and 1.500.000 Danish kroner.

[34] See Joanneum Research, 2015

[35] http://ufm.dk/forskning-og-innovation/tilskud-til-forskning-og-innovation/find-danske-tilskudsprogrammer/horizon2020-net

A full table of each organisation's role, support and actions is included in Table 28.

Table 28 - Overview of key support instruments

Instrument	Role and tasks
NCPs	Inform, advise, train and encourage Danish researchers, enterprises and research institutions
EuroCentre	Offering advice to Danish companies, universities, research institutes and other stakeholders about participation in the research and innovation programme. EuroCenter's advisers can clarify whether the project idea fits into a call for proposals and assist with the proposal writing.
Reference Group mechanism	Providing the Programme Committee members with up-to-date information on Danish research developments and strengths and input for Danish positions and suggestions related to the particular themes and topics of the work programmes.
Horizon2020-NET	Strengthening the knowledge exchange of different experiences between knowledge institutions and companies, as well as increase stakeholders' awareness of the available opportunities in the research and innovation programme
EU-DK Support	Supporting Danish participation in EU programmes and helps companies, researchers and other relevant users to utilise the possibilities for EU funding within research, innovation, commercial development and entrepreneurship
EUopSTART	The scheme offers grants for the preparatory work of Danish businesses and knowledge institutions. The aim of EUopSTART is to intensify the internationalisation of Danish research and strengthen the relations between research institutions and businesses regarding research and innovation.

Finland

Tekes has started to offer financial support to incentivise the participation of Finnish companies and research organisations in Horizon 2020 since 1 January 2015. The support is offered to the project preparation phase. Funding is offered to the preparation of large international research cooperation projects or to already existing projects funded by Tekes that want to expand to the international level. Nevertheless, the funding is not intended for applicants to the SME Instrument. It is also offered to cluster organisations for preparing internationalisation activities, for preparing the proposal for participation in Horizon 2020 projects or in other European initiatives, such as EIT KIC calls (see Table 1 below).

The Finnish Government issued a decision to allocate 30 million euros to the Strategic Research Council funding programme of the Academy of Finland, which is funding research consortia tackling societal challenges. For 2016, the Strategic Research Council of Finland will provide matching funding for projects accepted in Horizon 2020. The goal is to encourage participation in European projects.

Table 29 - Financial support to Horizon 2020 participation

Funding instrument	Owner	Description	Costs funded
Horizon 2020 project preparation as part of a Tekes-funded project	Tekes	• Horizon 2020 project preparation activities must be clearly described and included in the appropriate Tekes-funded project's plan as its own work package • The project plan must also outline how the specific Horizon 2020 project would further the ongoing Tekes project • The project plan and budget of an ongoing Tekes project can also be amended if a related Horizon 2020 proposal becomes current. However, adding these activities to an ongoing project will not increase the original Tekes funding amount.	• Eligible preparation costs must be reasonable in comparison with the potential amount of Horizon 2020 funding

Funding for large Horizon 2020 project preparation	Tekes	• Total project budget must be at least 5 million euros and the Finnish participant's role(s) must be financially or otherwise significant (for instance, the coordinator and/or a work package leader). • An important selection criterion is the existence of a Finnish SME or company as partners in the consortium.	• Eligible costs for the project preparation phase can be max. 5 % of the Finnish partners' budget in the proposed Horizon 2020 project (for example, 1 M€ = 50 000 €).
Funding for innovation clusters in EU	Tekes	• Innovation clusters can apply to obtain funding for activities related to participating in Horizon 2020 projects • The proposed EU activities should ideally be included in an already existing Tekes-funded innovation cluster project (such as INKA clusters and SHOKs).	• Tekes will fund up to 1 million euro and a maximum of 50% of eligible costs and funding from private sources must account for the remaining 50%.
Strategic Research Council match-funding for Horizon 2020	Academy of Finland	• Match-funding for projects accepted for funding under the Horizon 2020 Societal Challenges priority. • Eligible funding recipients are research organisations who are not engaged in commercial activities	• 4 million euro allocated for 2016 • The minimum amount to be applied for is €10,000 • SRC funding is intended to compensate for up to 75% of funding shortfalls

Source: Tekes, Funding for Horizon 2020 project preparation, https://www.tekes.fi/en/funding/horizon-2020-project-preparation/; and Academy of Finland, Match-funding for Horizon 2020 http://www.aka.fi/en/funding/apply-now/our-funding-opportunities/academy-calls/src-matching-funds-for-horizon-2020/

Netherlands

Some regions have focused in encouraging the participation of SMEs to Horizon 2020 funding. Specific regional measures have been put in place on that purpose.

These include: financial support for SMEs applications (grants, innovation vouchers), development of networks of regional clusters to support SMEs and targeted awareness raising.

In the Netherlands, the regions of Gelderland and Twente have established a Network to support regional SMEs take part in Horizon 2020 programme. These networks include local Universities, companies and research institutions and in both cases they count with the support of the Enterprise Netherlands Agency (RVO).

Appendix E Ireland's participation in advisory boards and committees

E.1 Participation in advisory boards

Table 30 - Republic of Ireland participants in Horizon 2020 Advisory Groups

Group	Ireland-based Expert		Group	Ireland-based Expert
Access to risk finance	--		The Marie Curie actions on skills, training and career development	Orla FEELY, Irish Research Council (O)
Climate action, environment, resource efficiency and raw materials	Laura Burke, Environment Protection Agency Ireland (O)		Nanotechnologies, advanced materials and advanced manufacturing and processing	Kathleen MCCLEAN (P) Damian MOONEY (P)
European research infrastructures including eInfrastructures	Dr Sandra COLLINS, Digital Repository of Ireland (P)		CONNECT Advisory Forum for ICT Research and Innovation (CAF).	Martin Curley, Intel Labs (O)
Europe in a changing world – inclusive, innovative and reflective societies	--		Secure, clean and efficient energy and Euratom	Mark O'MALLEY (P)
Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy and biotechnology	Jean CAHILL, Dublin Institute of Technology (O) Catherine HALBERT, Halbert Research (O)		Secure societies – protecting freedom and security of Europe and its citizens	Eleonore TRAVERS (P)
Future and Emerging Technologies (FET) (UK participant)	Prof. Dermot DIAMOND (P)		Smart, green and integrated transport	Margaret O'MAHONY, Trinity College Dublin (P)
Gender	Jean CAHILL, Dublin Institute of Technology (O)		Space	--
Health, demographic change and wellbeing	Peggy MAGUIRE (P) Orla SHEILS (P)		Spreading excellence and widening participation	--
Innovation in small and medium-sized enterprises (SMEs)	Prof. Mark O'MALLEY (P)		Science with and for Society	Jean CAHILL, Dublin Institute of Technology (P)
International cooperation	--			

Source: http://ec.europa.eu/programmes/horizon2020/en/experts, (P) Individual expert appointed in his/her personal capacity; (I) Individual expert appointed as representative of an interest; (O) Organisation

E.2 Registered expert evaluators

Table 31 –Horizon 2020 expert evaluators – number of experts per programme (overall and Republic of Ireland)

Pillars	Horizon 2020 Programmes	Evaluators	RoI Evaluators
Excellent Science	European Research Council	1,648	19
	Future and Emerging Technologies	1,120	23
	Marie Sklodowska-Curie Actions	1,606	50
	Research Infrastructures	134	4
Industrial Leadership	Information and Communication Technologies	1,557	35
	Nanotechnologies	201	4
	Advanced materials	24	0
	Biotechnology	55	3
	Advanced manufacturing and processing	254	6
	Space	205	2
	Access to risk finance	18	1
	Innovation in SMEs	20	1
Societal challenges	Health, demographic change and wellbeing	1,673	40
	Food security, sustainable agriculture and forestry	335	12
	Secure, clean and efficient energy	574	16
	Smart, green and integrated transport	383	9
	Climate action, environment	318	7
	Europe in a changing world	241	7
	Secure societies	233	6
Spreading excellence and widening participation		124	3
Science with and for society		143	6
Euratom indirect actions		50	1
General experts list		33	0
Total		**10,949**	**255**

Source: http://ec.europa.eu/research/participants/portal/desktop/en/funding/reference_docs.html#h2020-expertslists

E.3 Participation in Joint Programming Initiatives

Table 32 - Republic of Ireland participants in Horizon 2020 Joint Programming Initiatives

Joint Programming Initiative	Irish organisations involved
JPND Joint Programming Initiative on Neurodegenerative Disease Research	Caitriona Creely, Health Research Board (Mg)
JPI FACCE Joint Programming Initiative on Agriculture, Food Security and Climate Change	Richard Howell, Dept. Agriculture, Food and Marine (Gv) Frank O'Mara, Teagasc (Gv)
JPI HDHL Joint Programming Initiative on a Healthy Diet for a Healthy Life.	Kevin Walsh, Science Foundation Ireland (Mg) James Conway, Department of Agriculture, Food & the Marine Teresa Maguire and Annalisa Montesanti, Health Research Board Paul W. O'Toole, University College Cork (Sc) Helen M. Roche, University College Dublin (Sc)
JPI on Cultural Heritage Joint Programming Initiative on Cultural Heritage and Global Change	Ian Doyle, The Heritage Council (Mg) Susan Schreibman, National University of Ireland Maynooth (Sc) William Cumming and Martin Colreavy, Department of Arts, Heritage and the Gaeltacht (Gv)
JPI Urban Europe Global Urban Challenges, Joint European Solutions	--
JPI Climate Joint Programming Initiative on Climate	Frank Mcgovern, Irish Environmental Protection Agency (Gv)
JPI More Years, Better Lives The Potential and Challenges of Demographic Change	--
JPI Antimicrobial Resistance The Microbial Challenge - An Emerging Threat to Human Health	--
Water JPI Joint Programming Initiative on Water Challenges for a Changing World	Padraic Larkin, Irish Environmental Protection Agency (Mg, Gv)
JPI OCEANS Joint Programming Initiative on Healthy and Productive Seas and Oceans	John Evans, Peter Heffernan, Caroline Bocquel, Ciaran Kelly, Marine Institute (Mg) Yvonne Shields, Commissioners of Irish Lights (Ad)

Source: European Research Area, Joint Programming Initiatives. See: http://ec.europa.eu/research/era/joint-programming-initiatives_en.html, plus individual ETP websites. (Mg) Management/executive board remit; (Sc) Scientific remit; (Ad) Advisory board remit; (Gv) Governing board remit

E.4 Participation in European Technology Platforms

Table 33 - Republic of Ireland participants in Horizon 2020 Technology Platforms

Theme	Technology Platform	Irish organisations involved
Bio-based economy	European Aquaculture Technology and Innovation Platform (EATiP)	AquaTT, Ireland Marine Institute, Ireland
	ETPGAH	--
	Farm Animal Breeding and Reproduction Technology Platform (FABRE-TP)	Teagasc Athlone Institute of Technology Irish Cattle Breeding Federation
	Food for Life	--
	Forest-based	--
	Plants	--
	TP Organics	--
Energy	European Biofuels Technology Platform (EBTP)	Ethanol Europe Renewables Ltd National University of Ireland, Galway
	European Technology and Innovation Platform Photovoltaics	Sarah McCormack, Trinity College Dublin (Gv) Athlone Institute of Technology (Sc)
	TP Ocean Ocean Energy Europe	SEAI (sponsor) CADFEM Ireland Ltd DP Energy Ireland Ltd ESB International The Marine Renewables Industry Association Ltd OpenHydro (of DCNS) Marine Renewable Energy Ireland (MaREI) (of UCC) Technology from Ideas
	European Technology Platform on Renewable Heating & Cooling	Stokes Institute Heat Pump Association of Ireland International Energy Research Centre IGBC Dublin Institute of Technology Irish Bioenergy Association Heritage Futures Ltd Kingspan Renewables Ltd. Trinity College Dublin Dublin Institute of Technology Athlone Institute of Technology GeoServ XD Sustainable Energy Consulting Ltd Geothermal Association of Ireland University College Dublin
	SmartGrids	--
	SNETP	--
	TP Wind	--
	Zero Emissions Platform	The Electricity Supply Board

Environment	WssTP	OxyMem
ICT	Artemis-IA	United Technologies Research Centre Ireland Ltd. (UTRC) Trinity College Dublin
	Eniac Joint Undertaking	Ireland were one of 13 founding member states
	European Technology Platform on Smart Systems Integration	Tyndall National Institute, University College Cork
	European Technology Platform for High Performance Computing	Irish Centre for High-End Computing (national centre, 2005) Queen's University Belfast Seagate (Ireland) Technology, Ltd IBM
	euRobotics	--
	Networked and Electronic Media Initiative	Waterford Institutes of Technology (Ad) Athlone Institute of Technology Digital Media Centre IIMC - International Information Management Corporation Ltd. University College Dublin World Association of Newspapers and News Publishers (WAN-IFRA)
	The Networked European Software and Services Initiative	IBM Intel
	Networld2020	Intel Waterford Institute of Technology, TSSG
	Photonics21	National University of Ireland, Galway (Gv) Tyndall National Institute (Gv)
Production and processes	European Construction Technology Platform (ECTP)	National University of Ireland (NUI), Galway Sustainable Energy Authority Ireland United Technologies Research Center Ireland University College Cork University of Limerick (SAUL)
	ESTEP	--
	EuMaT	--
	FTC	--
	European Technology Platform Manufuture	Johnson & Johnson (Gv) Intel Ireland (Gv) Enterprise Ireland (Gv) Irish Centre for Business Excellence (ICBE) (Ad)
	ETP Nanomedicine	Royal College of Surgeons in Ireland Tyndall National Institute Trinity College Dublin
	SMR	--
	SusChem	--
Transport	Advisory Council for Aviation Research and Innovation in Europe (ACARE)	Enterprise Ireland

	ALICE	--
	ERRAC	--
	European Road Transport Research Advisory Council (ERTRAC)	Transport Infrastructure Ireland
	European Technology Platform WATERBORNE	Marine Institute
Cross-cutting	NANOfutures	Materials Ireland
	Industrial Safety	--
	ConXEPT	--

Source: Innovation Union, European Technology Platforms. See: http://ec.europa.eu/research/innovation-union/index_en.cfm?pg=etp, plus individual ETP websites. (Mg) Management/executive board remit; (Sc) Scientific remit; (Ad) Advisory board remit; (Gv) Governing board remit

Appendix F Survey questionnaire

[INTERNAL TITLE: SURVEY FOR (FP7) SUCCESFUL APPLICANTS (INCLUDING APPLICANTS THAT HAVE BEEN 'SOMETIMES' SUCCESSFUL)]

[DISTRIBUTION EMAIL]

Evaluation of Ireland's participation in FP7 and Horizon 2020

Questionnaire Survey for those involved in FP7 and Horizon 2020 applications

The Department of Jobs, Enterprise and Innovation (DJEI) Ireland has contracted **technopolis** |group| to undertake evaluations of Ireland's participation in FP7 and Horizon 2020. You can find a presentation letter from Mr Andrew Colgan from the Strategic Policy Division at DJEI [here].

Taking part in the survey will help to improve support to applicants and enhance the benefits Ireland derives from its growing participation in European research and technology development partnerships and programmes.

A central aspect of the study is a survey-based **consultation** of those involved in FP7 or Horizon 2020. You have received this email as you appear as the main contact for at least one FP7 application that has been successful. Technopolis was provided with that information via the FP7 and Horizon 2020 application data (the eCORDA database), housed in the European Commission. Rest assure that we will keep your details confidential and only use them in connection with this survey and evaluation.

The questionnaire can be accessed at the following link:

[here]

Please share this email (and link to the survey) with any colleague if you feel he or she is in better position to answer this questionnaire. We need to hear back from as many people and organisations as possible, so we can be sure our results are robust and capture the different experiences of all stakeholders.

Your individual responses would not be published and the survey results will only be published in an aggregate and not attributable form.

Please complete the survey **by March 4th, 2016.**

Thank you in advance for your input to this important exercise. If you would like further information, please click [here]. If you have any further questions, please contact the study team at the following address: EvaluationIreland@technopolis-group.com

[FURTHER INFORMATION ON THE TECHNOPOLIS WEBSITE]

The Department of Jobs, Enterprise and Innovation (DJEI) Ireland has contracted **technopolis** |group| to undertake evaluations of Ireland's participation in FP7 and Horizon 2020.

Taking part in the survey will help to improve support to applicants and enhance the benefits Ireland derives from its growing participation in European research and technology development partnerships and programmes.

The evaluations are concerned with Ireland's participation in the Framework Programmes not only in the context of the broad European objectives, but also their role in assisting the development and advancement of Ireland's national innovation system. The evaluations place a priority on linking the lessons of FP7 with Horizon 2020 and how future participation in the Framework Programmes can be best aligned with the national STI objectives, including maximizing and increasing levels of participation, investment and scale. The conclusions will also inform future decisions on the allocation of resources and support to potential applicants.

A central aspect of the study is a survey-based **consultation** of those involved in FP7 or Horizon 2020.

All responses obtained will be treated in the strictest confidence, in line with EU legislation on data protection. Your individual responses would not be published and the survey results will only be published in an aggregate and not attributable form.

The names of the people and organisations contributing will not be attached to the results. Your responses will be published only in an aggregated and non-attributable form.

Technopolis was provided with your organisation's name and contact details via the FP7 and Horizon 2020 application data (the eCORDA database), housed in the European Commission. We will keep your details confidential and only use them in connection with this survey and evaluation.

We need to hear back from as many people and organisations as possible, so we can be sure our results are robust and capture the different experiences of all stakeholders.

Thank you in advance for your input to this important exercise.

SECTION 1 Evaluation of FP7

PLEASE ANSWER THE FOLLOWING QUESTIONS BASED ON YOUR EXPERIENCE IN FP7

ABOUT YOU AND YOUR ORGANISATION

1. Please provide the following information about yourself
   Your full name _____
   Your job title _____

2. Which of the following best describes your organisation
   Drop down menu
   - [PRC] Irish-owned SME (<250 employees)
   - [PRC] Irish-owned large company (>250 employees)
   - [PRC] Foreign-owned SME (<250 employees)
   - [PRC] Foreign-owned large company (>250 employees)
   - [PRC] Private research and technology organisation
   - [HE] Higher Education (e.g. university or institute of technology)
   - [PRO] Public research institute (e.g. Teagasc)
   - [PUB] Other public sector (e.g. Geological Survey of Ireland)
   - [CSO] Civil Society Organisations (e.g. Alzheimer Society of Ireland)
   - Other (specify)

YOUR EXPERIENCE AS A PARTICIPANT

3. To what extent did each of the following act as a driver, encouraging you to bid for an FP7 grant?

	Significant driver	Moderate driver	Not a driver
Potential access to funds	☐	☐	☐
Potential access to specialist skills	☐	☐	☐
Potential access to specialist facilities	☐	☐	☐
Potential access to other European markets	☐	☐	☐
Potential access to technology suppliers	☐	☐	☐
Potential access to end-users	☐	☐	☐
Progress career from post doc to a permanent academic post	☐	☐	☐
Develop research skills through collaboration	☐	☐	☐
Develop international scientific networks	☐	☐	☐
Enhance in-house skills	☐	☐	☐
Enhance visibility in international markets	☐	☐	☐
Enhance technological reputation	☐	☐	☐
Monitor wider technological developments	☐	☐	☐
Support strategic ambitions	☐	☐	☐
Progress development of innovations	☐	☐	☐
Internationalise locally devised innovations	☐	☐	☐
Test innovative solutions in a local context	☐	☐	☐
Enhance your research reputation	☐	☐	☐

ABOUT YOUR CONTACT WITH NATIONAL CONTACT POINTS

4. Have you interacted with one or more National Contact Points (NCPs) in the process of applying to FP7?
   ☐ Yes

☐ No

(ROUTING: YES = Q5 / NO = Q8)

(ROUTING: Yes)

5. Please indicate your level of interaction with Ireland's National Contact Point (NCP) network, by stating how much you made use of each of the network's main **support services** during your FP7 application

	Extensive use	Limited use	Not used
National FP web portal	☐	☐	☐
Information days to raise awareness in Ireland more generally	☐	☐	☐
Circulation of calls and other announcements to prospective applicants	☐	☐	☐
Specific information to selected target audiences	☐	☐	☐
Information on related programmes (e.g. Eureka) where helpful	☐	☐	☐
Training for specific target groups (e.g. SMEs)	☐	☐	☐
Advice on administrative procedures and rules	☐	☐	☐
Advice on scope of calls and funding modalities and instruments	☐	☐	☐
Advice on consortium development	☐	☐	☐
Advice on proposal writing	☐	☐	☐
Assistance with partner search in Ireland	☐	☐	☐
Assistance with partner search elsewhere in Europe	☐	☐	☐
Brokering events for prospective applicants	☐	☐	☐
Signposting of other relevant support measures	☐	☐	☐

6. Please indicate the extent to which you agree or disagree with each of the following statements. Please feel free to skip any that are not applicable to your organisation.

Our interaction with Ireland's NCP system during our application to FP7 …

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Alerted us to a specific opportunity that we had been unaware of	☐	☐	☐	☐	☐
Introduced us to the Framework Programme	☐	☐	☐	☐	☐
Increased our awareness of the programme's strategic relevance	☐	☐	☐	☐	☐
Helped us to understand what calls we should target	☐	☐	☐	☐	☐
Helped us to understand the critical success factors	☐	☐	☐	☐	☐
Helped us to obtain a briefing on our ideas from EU desk officers	☐	☐	☐	☐	☐
Helped us to introduce our ideas to the Advisory Group	☐	☐	☐	☐	☐
Persuaded us to make an application	☐	☐	☐	☐	☐
Persuaded us to be more ambitious in our application	☐	☐	☐	☐	☐
Persuaded us to submit a bid as a coordinator	☐	☐	☐	☐	☐
Introduced us to a new academic or industrial partner	☐	☐	☐	☐	☐
Brokered our inclusion in an existing consortium	☐	☐	☐	☐	☐
Improved the scientific and technical quality of our bid	☐	☐	☐	☐	☐
Improved the implementation aspects of our bid	☐	☐	☐	☐	☐
Improved the quality of our consortium	☐	☐	☐	☐	☐
Improved the impact aspects of our bid	☐	☐	☐	☐	☐
Led to an application moving from reserve to funded	☐	☐	☐	☐	☐
Led to an application being successful	☐	☐	☐	☐	☐
Helped us to understand why we had been unsuccessful	☐	☐	☐	☐	☐

Persuaded us to improve and resubmit	☐	☐	☐	☐	☐
Made no material difference to our application	☐	☐	☐	☐	☐

7. What was the single most important benefit that you derived from your engagement with the NCP network during FP7?

(ROUTING: ALL)

BENEFITS

The following questions address the potential FP7 organisational benefits. Please answer based on your successful projects.

8. Did FP7 benefit **your organisation** in any of the following ways?

	High impact	Medium impact	Low impact	No impact	Not applicable
Increased our understanding about the subject	☐	☐	☐	☐	☐
Increased our scientific capacity	☐	☐	☐	☐	☐
Increased our technological capacity	☐	☐	☐	☐	☐
Increased our awareness of technological trajectories	☐	☐	☐	☐	☐
Increased our ability to participate in higher risk R&D	☐	☐	☐	☐	☐
Increased our ability to access international experts	☐	☐	☐	☐	☐
Improved our ability to collaborate on R&D	☐	☐	☐	☐	☐
Improved our management capabilities	☐	☐	☐	☐	☐
Increased our willingness to invest in R&D	☐	☐	☐	☐	☐
Increased our willingness to invest in innovation	☐	☐	☐	☐	☐
Improved our ability to attract / retain research staff	☐	☐	☐	☐	☐
Improved our international reputation	☐	☐	☐	☐	☐
Improved our international networks	☐	☐	☐	☐	☐
Improved our product (services) portfolio	☐	☐	☐	☐	☐
Improved our resilience to the economic crisis	☐	☐	☐	☐	☐
Enabled us to increase our turnover	☐	☐	☐	☐	☐
Enabled us to increase our employment	☐	☐	☐	☐	☐
Improved our productivity	☐	☐	☐	☐	☐
Improved our commercial opportunities	☐	☐	☐	☐	☐
Improved our competitive position nationally	☐	☐	☐	☐	☐
Improved our competitive position internationally	☐	☐	☐	☐	☐
Other (please specify …)					

9. Please briefly describe the single most important benefit that your organisation derived from its participation in FP7?

10. Please briefly describe the single most important benefit that you derived personally from your participation in FP7?

11. Were you a recipient of a Marie Curie Action (MCA) award in FP7, for doctoral training or staff exchange or individual fellowship?
    - ☐ Yes, a doctoral training award
    - ☐ Yes, a staff exchange award
    - ☐ Yes, an individual fellowship award
    - ☐ No

(ROUTING: If 'Yes, doctoral training" then Q11, otherwise Q15)

(ROUTING: If 'Yes, staff exchange" then Q12, otherwise Q15)

(ROUTING: If 'Yes, individual fellowship" then Q13, otherwise Q15)

12. Please could you indicate the extent to which your project led to any of the following benefits?
    Tick all that apply

Allowed me to access better doctoral training	☐
Allowed me to work with leading overseas research groups	☐
Improved my international networks	☐
Improved my ability to win international research grants	☐
Prepared me for making an ERC application	☐
Improved my career prospects	☐
Brought forward my progression from post doc to academic	☐
Made possible my appointment to a post elsewhere in Europe	☐
Made possible my appointment to a post in Ireland	☐
Facilitated my move from academia to industry	☐
Facilitated my move from industry to academia	☐
Other (specify)	☐

13. Please could you indicate the extent to which your project led to any of the following benefits?
    Tick all that apply

Allowed me to work with leading overseas research groups	☐
Allowed me to work at major international research facilities	☐
Extended and improved my network of international contacts	☐
Increased my level of interaction with non-academic partners	☐
Improved my ability to win international research grants	☐
Improved my career prospects	☐
Brought forward my promotion	☐
Made possible my appointment to a post elsewhere in Europe	☐
Made possible my appointment to a post in Ireland	☐
Made it possible for me to move to Ireland from a post abroad	☐
Facilitated my move from academia to industry	☐
Facilitated my move from industry to academia	☐
Other (specify)	☐

14. Please could you indicate the extent to which your project led to any of the following benefits?
    Tick all that apply

Allowed me to work with leading overseas research groups	☐
Allowed me to work at major international research facilities	☐
Extended and improved my network of international contacts	☐
Increased my level of interaction with non-academic partners	☐
Improved my ability to win international research grants	☐
Prepared me for making an ERC application	☐
Improved my career prospects	☐

Brought forward my promotion to a higher academic grade	☐
Made possible my appointment to a post elsewhere in Europe	☐
Made possible my appointment to a post in Ireland	☐
Helped me to restart my research career following a break	☐
Helped me reintegrate within EU research returning from an international post	☐
Other (specify)	☐

15. Please briefly describe the single most important benefit you derived from participation in Marie Curie Actions?

IMPACTS

16. Did participation in FP7 lead to any specific commercialisation outcomes? If yes, could you please indicate the number or value below differentiating for those that are specific to Ireland.

    Please feel free to skip any that are not relevant.

	In Ireland
Number of patent applications made as a result of your participation in FP7	
Number of licence agreements made linked with FP-enabled patents or other IP	
Value of licence income linked to your FP7 IP (€m, in 2015)	
Number of external investments secured as a result of your participation in FP7 (€m)	
Combined value of external investments (e.g. angel, VC, IPO, etc.) secured following FP7 (€m)	
Number of spinout companies launched as a result of your participation in FP7	
Combined employment at those spinouts (at the end of 2015)	
Combined turnover of those spinouts (€m, in 2015)	
Estimated combined value of those spinouts (€m, in 2015)	

17. Please briefly describe the single most important commercialisation outcome that has been realised in Ireland as a result of your participation in FP7

18. Please briefly describe the single most important economic impact that has been realised in Ireland as a result of your participation in FP7

WITHOUT FP7 FUNDING

19. Please indicate which of the below scenarios would have been most likely if you had not received FP7 funding. Choose one option.

    ☐ We would have progressed with the project at the same scale, timeline and location outside of Ireland

    ☐ We would have progressed with the project at the same scale and timeline, but at a different location outside of Ireland

    ☐ We would have delayed the project, but would have progressed it later at the same scale, timeline and location outside of Ireland

    ☐ We would have progressed the project at a reduced scale

    ☐ We would have abandoned the project

LINKS BETWEEN FP7 AND NATIONAL AND INTERNATIONAL ENVIRONMENTS

20. Please indicate the extent to which you agree or disagree with **each** of the following statements, comparing FP7 to previous Framework Programmes, such as FP6.

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	No view
Downward pressure on national research budgets in Ireland during the economic crisis led us to view FP7 as a more attractive source of financial support	☐	☐	☐	☐	☐	☐
Ireland's research prioritisation exercise led us to view FP7 as a more important source of potential financial support for areas outside the 14 priority fields	☐	☐	☐	☐	☐	☐
The recession led us to decrease our R&D investments including our level of participation in FP7	☐	☐	☐	☐	☐	☐
The expansion of FP7 in budgetary terms, as compared with FP6, made the programme more attractive	☐	☐	☐	☐	☐	☐
The addition of new programmes within FP7 (e.g. ERC) made the programme more attractive	☐	☐	☐	☐	☐	☐
The increasing emphasis on international cooperation beyond Europe led us to view FP7 as a more attractive source of financial support, as compared with FP6	☐	☐	☐	☐	☐	☐
Increasing FP7 application numbers from across the EU led us to view FP7 as a more attractive source of financial support	☐	☐	☐	☐	☐	☐

21. Please indicate the extent to which you agree or disagree with **each** of the following statements, which relate to funding opportunities in FP7 and the Irish R&D system for Irish-based companies.

Please feel free to skip this question if you don't have any views

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	No view
Research funding supports available in Ireland encouraged Irish-based companies to participate in FP7	☐	☐	☐	☐	☐	☐
The absence of financial support for companies during the proposal phase hindered their levels of application in FP7	☐	☐	☐	☐	☐	☐
FP7 complemented Ireland's national research support for Irish-based companies, and was in no way duplicative	☐	☐	☐	☐	☐	☐
FP7 provided opportunities for Irish-based companies to secure much larger sums of money than were available nationally	☐	☐	☐	☐	☐	☐
FP7 provided opportunities for Irish-based companies to secure funding covering many more areas of industrial applied research than were available nationally	☐	☐	☐	☐	☐	☐
FP7 provided opportunities for Irish-based companies to improve their links with Ireland's universities or public research institutes	☐	☐	☐	☐	☐	☐
FP7 provided opportunities for Irish-based MNCs to improve their R&D links with Ireland's indigenous SMEs	☐	☐	☐	☐	☐	☐

Opportunities for engagement in strategic initiatives under FP7 (e.g. Joint Technology Initiatives such as Clean Sky or the Innovative Medicines Initiative) has greatly increased interest in the FP among Irish-based companies	☐	☐	☐	☐	☐	☐

22. Please briefly describe the single most important point of synergy between the national R&D system and the funding opportunities in FP7.

23. Do you believe that your ability to win an FP7 project was improved by your involvement with any earlier national R&D scheme?
    ☐ Yes
    ☐ No

24. Did your FP7 project benefit from any direct national R&D support?
    ☐ Yes
    ☐ No

(ROUTING, If "Yes")

25. Please name the specific programme and source(s) of national R&D funding (e.g. Enterprise Ireland's Feasibility Study grants, the Health Research Board's project grants, Science Foundation Ireland's Technology Innovation Development Awards, etc.)

(ROUTING, If "No")

26. Please indicate why not.
    Tick all that apply

☐	We applied for national funding but were turned down
☐	The project's focus did not align with Ireland's national research priorities
☐	There was no national funding available in the same research area as the project
☐	There was no national funding available for the type of activity performed in the project
☐	National schemes would not have funded our international partners
☐	The issue addressed by the project was a European rather than a national one
☐	Other (specify)

SECTION 2 Horizon 2020

PLEASE ANSWER THE FOLLOWING QUESTION BASED ON YOUR EXPERIENCE IN Horizon 2020

27. Have you applied, or are you planning to apply, to Horizon 2020?
Tick one option

☐ Yes, we have applied but do not know the result(s) yet
☐ Yes, we have applied and won at least one project
☐ Yes, we have applied and were not successful
☐ No, we have not applied yet, but we are preparing a proposal at the moment
☐ No, we have not applied but intend to do so in the future
☐ No, we have not applied and do not intend to do so in the future

(ROUTING, All "Yes" answers = Q.28, "No, we have not applied yet, but we are…"/"No, we have not applied but intend to" = 36, "No, we have not applied and do not intend to…" = Q.35)

ABOUT YOUR Horizon 2020 APPLICATION

28. Please indicate the extent to which each of the following evaluation criteria proved to be more or less challenging to satisfy when applying for Horizon 2020 projects.

	Very straightforward	Straightforward	Challenging	Very challenging
Soundness of the basic concept	☐	☐	☐	☐
Novelty of the idea / innovation	☐	☐	☐	☐
Suitability of the methodology	☐	☐	☐	☐
The presentation of 'ethical issues'	☐	☐	☐	☐
Management structure and procedures	☐	☐	☐	☐
Skills / experience of individuals	☐	☐	☐	☐
Quality of the consortium overall	☐	☐	☐	☐
Appropriateness of resourcing levels / mix	☐	☐	☐	☐
Relevance of impacts to work programme	☐	☐	☐	☐
Scale of expected EU or international impacts	☐	☐	☐	☐
Strength of dissemination / exploitation plan	☐	☐	☐	☐

29. Based on your experience of applying to and participating in Horizon 2020, please indicate your level of satisfaction with each of the following aspects of the Commission's programme management:

	Very Satisfied	Satisfied	Neither satisfied nor dissatisfied	Dissatisfied	Very dissatisfied	Don't know
Calls for proposals	☐	☐	☐	☐	☐	☐
Guidance for applicants	☐	☐	☐	☐	☐	☐
Submission of proposals	☐	☐	☐	☐	☐	☐
2-stage submission	☐	☐	☐	☐	☐	☐
Evaluation of proposals	☐	☐	☐	☐	☐	☐
Ethical review procedure	☐	☐	☐	☐	☐	☐
Feedback to applicants	☐	☐	☐	☐	☐	☐
Contract negotiation	☐	☐	☐	☐	☐	☐
Time-to-grant	☐	☐	☐	☐	☐	☐
Requirements for monitoring and reporting project progress	☐	☐	☐	☐	☐	☐
Ad hoc advice on scientific issues	☐	☐	☐	☐	☐	☐
Ad hoc advice on administrative issues	☐	☐	☐	☐	☐	☐
Support for interaction with other projects	☐	☐	☐	☐	☐	☐
End of project assessment / completion	☐	☐	☐	☐	☐	☐
Support for dissemination and exploitation	☐	☐	☐	☐	☐	☐

The EC's financial models	☐	☐	☐	☐	☐	☐
The EC's payment procedures	☐	☐	☐	☐	☐	☐

30. What single improvement to the European Commission administrative system would be most likely to increase your interest in future Framework Programmes?

ABOUT YOUR CONTACT WITH National Contact Points

31. Have you interacted with one or more National Contact Points (NCPs) in the process of applying to Horizon 2020?

☐ Yes

☐ No

(ROUTING: YES = Q.32, NO = Q.36)

32. Please indicate your level of interaction with Ireland's National Contact Point (NCP) network, by stating how much you made use of each of the network's main **support services** during your Horizon 2020 application

	Extensive use	Limited use	Not used
National FP web portal	☐	☐	☐
Information days to raise awareness in Ireland more generally	☐	☐	☐
Circulation of calls and other announcements to prospective applicants	☐	☐	☐
Specific information to selected target audiences	☐	☐	☐
Training for specific target groups (e.g. SMEs)	☐	☐	☐
Advice on administrative procedures and rules	☐	☐	☐
Advice on scope of calls and funding modalities and instruments	☐	☐	☐
Advice on consortium development	☐	☐	☐
Advice on proposal writing	☐	☐	☐
Assistance with partner search in Ireland	☐	☐	☐
Assistance with partner search elsewhere in Europe	☐	☐	☐
Brokering events for prospective applicants	☐	☐	☐
Signposting of other relevant support measures	☐	☐	☐

33. Please indicate the extent to which you agree or disagree with each of the following statements. Please feel free to skip any that are not applicable to your organisation.

During Horizon 2020, our interaction with Ireland's NCP system …

	Strongly disagree	Disagree	Neither agree not disagree	Agree	Strongly agree
Alerted us to a specific opportunity that we had been unaware of	☐	☐	☐	☐	☐
Introduced us to the Framework Programme	☐	☐	☐	☐	☐
Increased our awareness of the programme's strategic relevance	☐	☐	☐	☐	☐
Helped us to understand what calls we should target	☐	☐	☐	☐	☐
Helped us to understand the critical success factors	☐	☐	☐	☐	☐
Helped us to obtain briefing on our ideas from EU desk officers	☐	☐	☐	☐	☐
Helped us to introduce our ideas to Advisory Group	☐	☐	☐	☐	☐
Persuaded us to make an application	☐	☐	☐	☐	☐
Persuaded us to be more ambitious in our application	☐	☐	☐	☐	☐

Persuaded us to submit a bid as a coordinator	☐	☐	☐	☐	☐
Introduced us to a new academic or industrial partner	☐	☐	☐	☐	☐
Brokered our inclusion in an existing consortium	☐	☐	☐	☐	☐
Improved the scientific and technical quality of our bid	☐	☐	☐	☐	☐
Improved the implementation aspects of our bid	☐	☐	☐	☐	☐
Improved the quality of our consortium	☐	☐	☐	☐	☐
Improved the impact aspects of our bid	☐	☐	☐	☐	☐
Led to an application moving from reserve to funded	☐	☐	☐	☐	☐
Led to an application being successful	☐	☐	☐	☐	☐
Helped us to understand why we had been unsuccessful	☐	☐	☐	☐	☐
Persuaded us to improve and resubmit	☐	☐	☐	☐	☐
Made no material difference to our application	☐	☐	☐	☐	☐

34. What was the single most important benefit that you derived from your engagement with the NCP network during Horizon 2020?

(ROUTING: "No we have not applied and do not intend to do so in future")

35. Please briefly explain why you have not applied to Horizon 2020 and have no plans to do so for the foreseeable future

(ROUTING: All respondents)

SYSTEM OF SUPPORT

36. Please score each of the following types of support available for Horizon 2020 in Ireland, in terms of
(i) The **relevance** of this type of support to your organisation's needs
(ii) The **adequacy** of the levels of available resourcing, for each type of support
(iii) The **effectiveness** of that support, as delivered
Please use a scale from 1 to 5, where 1 is very low and 5 is very high.

	No view	Relevance	Adequacy	Effectiveness
General information provided by national web sites	☐	☐	☐	☐
Awareness raising events run by NCPs	☐	☐	☐	☐
Information on calls provided by NCPs	☐	☐	☐	☐
Targeted advice and support provided by NCPs	☐	☐	☐	☐
Brokerage services provided by NCPs	☐	☐	☐	☐
Advice on proposal writing	☐	☐	☐	☐
Enterprise Ireland – Coordination support for	☐	☐	☐	☐
Enterprise Ireland – Coordination support for ERC applications	☐	☐	☐	☐
Enterprise Ireland – Travel grants for academic	☐	☐	☐	☐
Irish Research Council – New Horizons (Starter	☐	☐	☐	☐
Irish Research Council – New Horizons (Interdisciplinary Grant)	☐	☐	☐	☐
Science Foundation Ireland – ERC Support Programme (overhead)	☐	☐	☐	☐
Science Foundation Ireland – ERC Support Programme (recruitment)	☐	☐	☐	☐

Science Foundation Ireland – ERC Development	☐	☐	☐	☐
InterTradeIreland – Cross-border Travel Scheme	☐	☐	☐	☐
InterTradeIreland – EU Travel Scheme	☐	☐	☐	☐

37. Please briefly describe any important missing elements in Ireland's support infrastructure, explaining why its introduction may improve Ireland's performance in Horizon 2020.

38. If your colleagues are a member of any Horizon 2020 Advisory Group or other Strategic Committee, please list them here (e.g. European Technology Platform)

LINKS BETWEEN HORIZON 2020 AND NATIONAL AND INTERNATIONAL ENVIRONMENTS

39. Please indicate the extent to which you agree or disagree with **each** of the following statements, comparing Horizon 2020 to previous Framework Programmes, such as FP7.

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	No view
The integration of the research and innovation elements within a single programme has made Horizon 2020 more attractive	☐	☐	☐	☐	☐	☐
The use of societal challenges as a key focal point led us to view Horizon 2020 as more attractive	☐	☐	☐	☐	☐	☐
The addition of new instruments (e.g. access to finance, pre-commercial public procurement) has made the programme more attractive	☐	☐	☐	☐	☐	☐
The increase in the support for strategic initiatives (e.g. the Innovative Medicines Initiative 2 and Clean Sky 2) has made the programme more attractive	☐	☐	☐	☐	☐	☐
The increase in the support for co-funding opportunities (Marie Curie Co-fund, ERA-nets, Joint Programming Initiatives) has made the programme more attractive	☐	☐	☐	☐	☐	☐
Ireland's growing interest in other international scientific organisations (e.g. CERN, ESO) will increase the numbers of organisations looking to bid into Horizon 2020	☐	☐	☐	☐	☐	☐
The simplification of various administrative processes and rules has made the programme more attractive	☐	☐	☐	☐	☐	☐
The introduction of a single financial model for indirect costs (overhead) has made the programme more attractive	☐	☐	☐	☐	☐	☐

CO-FUNDING

40. What one practical recommendation would you make to help Ireland capitalise on opportunities for co-funding (Marie Curie Co-fund, ERA-nets, Joint Programming Initiatives) of national programmes?

FUTURE PARTICIPATION

We would like to have your views on several aspects that relate to Ireland's future participation in Framework Programmes. Please feel free to answer only those questions for which you have a view.

- How to improve the effectiveness of Ireland's national support system _____

- How to improve the number and value of awards secured for Ireland through Horizon 2020_____
- How to improve engagement in Horizon 2020 by SMEs_____
- How to improve engagement in Horizon 2020 by government departments and agencies_____
- How to increase Ireland's participation in larger Horizon 2020 projects and strategic initiatives more generally. _____
- Any ideas you may have that would enable Ireland to be more strategic in its engagement with Horizon 2020 overall, capitalising on synergies and maximising leverage _____

41. The study team would like to conduct a number of short follow-up telephone interviews with individuals, based on their responses to this questionnaire. If you would be happy to be contacted for this purpose, please enter your email address below

Please press the button below to submit your answers.

DONE

Thank you very much for your time!

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