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Unlocking institutional imagination: Building institutional capacity to address societal challenges – the case of European missions

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Introduction

This article contains the keynote address given by Wolfgang Polt at the Futures Forum conference on ‘Transformative Change: Unlocking Institutional Imagination’ that took place at Maynooth University on 4 April 2024, with responses from Maggie O’Neill, and Seán Ó Riain, and reflections from Ruth Freeman, Gerry Clabby, and Seán Ó Foghlú. The session was chaired by Ian Hughes.

Keynote address

Ian Hughes, one of the conference organisers and the session Chairperson, introduced Wolfgang Polt, Director of Policies at the Institute for Economic, Social and Innovation Research of Joanneum Research in Austria and described his objective: to talk about

European missions and challenge-driven innovation. The Chair spoke about how this issue is very live in Ireland at the moment, where we are currently seeing an evolution of innovation policy from being a 'national innovation picture', where investment is focused on achieving economic outputs, jobs, and productivity and efficiency. This framing has now been supplemented by an equally important framing around 'system transition', the transformation of systems like the energy system, transport system, and agriculture system. You need an entirely different innovation system for 'system innovation' than you do for the 'national innovation picture'. The European Union (EU) missions are a new feature of Horizon Europe, the European Commission's largest research and innovation programme. The five EU missions – Climate Adaptation, Cancer, Restoring Oceans and Waters, Climate-Neutral and Smart Cities, and Healthy Soils – each focus on a specific societal challenge and aim to mobilise all relevant stakeholders to address that challenge. Missions fall into the category of system innovation, and Wolfgang Polt focuses on challenges that such an approach brings.

Wolfgang Polt:

I am tempted to jump into discussing the presentation we just heard from Kim Stanley Robinson. It was very inspiring. There is one very important bridge from his presentation to what I'm going to say. Kim, at one point said, we are today redesigning our institutions to cope with the challenges of the future. What we do in the next year or in the next two years will very much determine what happens over the next twenty or fifty years even. I want to discuss some examples of real-world practices, where different countries have tried to transform institutions, or establish new ones, to cope with the type of policies that we are talking about – transformative policies. I will briefly outline the background that I'm coming from and my main perspective on these issues.

At Joanneum Research, we did some preparatory studies for the Missions in Horizon Europe, so, jokingly, we are partly to blame for the outcome. We carried out a lot of country studies, also for the OECD [Organisation for Economic Co-operation and Development], and we supported the OECD in an initiative that I can also highly recommend for Ireland to participate in. In this initiative [called 'Mission Action Lab'], the OECD comes into a country and with the support of national actors, works with

all the people concerned to understand how the implementation of the missions is working. I also had in the past two years the pleasure of working with the European Commission to coordinate a large project on transnational cooperation on missions, the TRAMI project [<https://www.trami5missions.eu/>]. Joanneum Research has also been given the contract for the next five years to support the Austrian implementation of missions by means of a mission-support facility. Through this we will support the implementation of all the different EU missions in Austria providing foresight, monitoring and evaluation, citizen involvement in the development of methodology, and so on.

Regarding challenges, I want to highlight a few of the things that are relevant for redesigning institutions. The challenges we are facing are all very complex – climate change, technological revolutions like artificial intelligence, or demographic changes. They are all of a transformative nature that will, and are already, changing our societies, our ways of production and living. The important thing is that these challenges are meeting state capacities that are apparently limited in their ability to cope with them. And there are two reasons why these state capacities are currently limited. The first is, of course, the novelty of the problems. If challenges of this nature had been around for longer, we would have already developed institutions that are better able to address them. But we have also seen the capacity of governments reduced significantly throughout the world. I would say this started some forty years ago with the advent of an ideology that deliberately reduced state intervention, not only in the economy but also right across society, to the absolute minimum. By doing so, a lot of the capacity that states had has been lost.

One example, a very recent one, is given by the World Health Organization (WHO). The WHO provides a ranking of countries with respect to the preparedness for pandemics. In 2020, the US was leading in this ranking, but this 2020 ranking did not take into account that the whole procedure, a very well thought out procedure on how the public should react to a pandemic – it was a complete handbook and a playbook for all civil-society actors – was shed just the year before. The dismantling of state capacities then is certainly playing a role in the current difficulties we are having in responding to societal challenges.

However, a few years ago the famous book *The Entrepreneurial State* by Mariana Mazzucato was quite influential in prompting change [Mazzucato, 2011]. So too was the ‘Lamy Report’, the interim assessment of the previous Framework Programme [European Commission & Directorate-General for Research and Innovation, 2017]. Both of these pointed to the need for government intervention, not only to increase the rate of technological change, but also the direction of change. Whatever the concrete formulation, this more normative or directional turn in science, technology, and innovation policy has subsequently proliferated, not only on the EU level but also at the OECD and within individual member states. But what this implies, and this is the novelty of the challenge, is that such directionality requires multilateral, multisector governance and very often a ‘whole-of-government’ or even the ‘whole-of-society’ approach. These are huge concepts that are easily said but very difficult to implement in terms of concrete government action. In fact, there are many ways to conceptualise these new policy approaches, and one way is the new mission-oriented policy approach which I will now address.

Mission-oriented policy was already around in the 1970s. You may remember the famous title of the book by Richard Nelson, *The Moon and the Ghetto* [1977], which starts with the sentence, ‘We can bring a man to the moon, but why can’t we solve the problem of the ghetto?’ And that’s basically the same problem that we are still facing today. The large societal problems requiring systems transformations we find difficult to address, while those (more narrow scientific or technological) problems that can be broken down into very clear targets, where there is a limited set of actors, and where there can be straightforward intervention logics, are still hard to tackle, but they are manageable.

I would say that the recent pandemic is a good example of that, because science did, of course, play positive roles. Operation Warp Speed, for example, was a [US] government-led initiative. The development and rollout of vaccines, the investment of huge public monies to support them, and huge organisational effort to get this done, were all part of that success.

Turning back again to transformative policies, the academic literature is full of descriptions of the policy approaches needed

to successfully address large transformations, involving multilevel and multi-actor constellations, where there is certainly a need for co-creation. Neither the government nor any other actor is able to design a vision, set the goals, and implement it single handedly. There needs to be buy-in from other sectors, including the business sector, society, and science, to cooperate. Currently, we can observe different configurations in different countries where this co-creation is happening, either at the level of visions, goal-setting, or implementation, or at all these levels. Countries are different in which constellations they choose, given the transformations are addressing different long-term developments.

There is also a need for a long-term orientation in policy, and countries are experimenting with how to get there. Political cycles, election cycles, are far too short to address the long time spans that such policies need. Getting some stability into the system, and stability into the policy process, is of paramount importance. If things change, if one government subscribes to the Paris Agreement [international climate change treaty] and the next government drops out, this is not helpful in addressing the goal. At the same time, there needs to be agility and reflexivity built into these types of policy approaches since, because they are addressing long-term goals, a lot of the parameters that were in place when we started the initiative might change.

Take, for example, the German *Energiewende*, which is Germany's attempt to change the composition of its primary energy sources. The policy started some twenty years ago. In these twenty years, the relative prices of technologies have changed, the availability of technologies has changed, and there have been some wars in between. Policies have to react to that without losing sight of the goal. The German Government has had to react, sometimes to redefine the goals, sometimes to adopt a different portfolio of instruments, to get there. You have to build in agility and reflexivity. It will hamper your goal if you just stick to the plan that you made twenty years ago. And in short, that requires good governance.

There are now a lot of technologies available, and there is a lot of experimentation going on, for example, on how to deal with climate change. But the availability of technologies is not sufficient, if we are not able to roll them out, to make them

socially acceptable, and to have the buy-in from larger parts of society. And for that we need good governance. With that, I would like to lead you through some examples of transformative policies in action that I have encountered. I have picked these examples because they address different aspects of the process in different ways, which I hope will be interesting, and which can be used as role models or good-practice examples. There is, of course, always a need to adapt such examples to the respective political system.

I will start with my own country, Austria, which has been labelled as a role model in setting up governance structures for the implementation of EU missions. I think to a certain extent this is a justified label, but there are some flaws, as we will see too with the other examples. Austria is a small, R&D [research and development] intensive country with a research intensity ratio of more than 3% of GDP [gross domestic product]. When missions were adopted as part of the Horizon Europe Framework Programme, the governance structures were not at all geared towards the type of directionality that is needed in transformative policies. Basically, the research system was geared at institutional funding of universities and higher-education institutions, or funding of individual researchers, based on excellence, and was (and still is) not centrally guided. Similarly, funding to the enterprise system was not aimed at defining outcomes or applying directionality, but rather to give a rough thematic orientation and otherwise raise the rate of innovative activity. So, the system at the beginning was very much bottom-up and not very directional.

Recently, though, Austria has managed to put together new governance structures in response to the EU missions. And, as is often the case, the impetus has come from outside. When an overarching entity, an international body, sets a binding goal, that can have an orientation effect on a national research and innovation system. This is, by the way, not only true for Austria, but also for most Eastern European EU member countries, which depend much more than the Austrian system on money that is coming from the EU. The governance structure that has been developed for the first time in Austria is a whole-of-government approach to defining mission topics in research and innovation, including the establishment of mirror groups for each of the five EU missions. These mirror groups have representatives from various ministries, some of which are

participating for the first time in such efforts. In Austria, research funding is very much concentrated in two ministries, so other ministries did not see themselves as having a stake in research and had to be convinced to be part of the process.

Eventually a wide range of ministries, agencies – not only research-funding agencies but also agencies for regional funding – were brought together in a process that resulted in the formulation of work plans, which in turn resulted in a strategy document that was the basis for allocating a joint budget. This joint budget is an essential tool for bringing coherence to the whole process. That has worked very well and has really resulted in a step forward for mission-oriented governance structures in Austria. Unfortunately, though, less than half of the monies requested were provided, so there is still a problem with financing, but in terms of institutional innovation this has been quite an achievement.

Another interesting development, which can be seen in other countries as well, is that in Austria we have tried to define policy priorities through a so-called ‘Climate Council’. This council comprised 100 randomly selected people who were given support in terms of process and scientific input. Their task was to agree on inputs to a strategy document and a list of concrete recommendations. That process worked very well. The whole process happened in the time span of roughly half a year, so the learning curve was very rapid, and the outcomes were stunningly good. The scientists involved were themselves surprised by what could be achieved through such a process. The buy-in from the people who were selected was also huge. On the downside, however, even before the process started, one of the coalition partners said that whatever the outcome will be, we will not use it or listen to it. This points to the possible limits of such processes, but in all other aspects, save for that one very important one, it can be seen as a very good practice.

The second country I will consider is Sweden, and I will point to two examples from there. The first is a good example of how to implement the mission when you are not (at least not very strongly) supported by a national government. This happened for one of the smallest Swedish regions, which said they would like to be participants in the Horizon Europe missions on the oceans, the cities, and soil. They had experience in bringing together all the relevant stakeholders through their smart specialisation strategy, so they decided to incorporate the

mission topics into their smart specialisation strategies. In this small region, Blekinge, the business sector, science sector, and society were used to working with each other, and their mission programme had a stunning success in terms of selection of projects, and selection of cities and communes. This was an institutional innovation insofar as it went directly to the European level without support at the national level. This makes some sense in Sweden though because, contrary to my own preconception, it is not a very strong centralised state. A lot of competences lie with regions, or with agencies.

My second example from Sweden is also very interesting. Once again, if it is the case that the central government only gives broad direction in the form of a strategy, how do you select mission topics? In their new generation of innovation programmes [<https://www.impactinnovation.se/en/>], three main agencies – for science and technology, for the environment, and for agriculture – teamed up and said, ‘We will not be the ones who define the mission topics’. Instead, they set up a process to select bottom-up proposals for which topics should be mission topics in Sweden. The agencies then supported the preparation phase and brought together all the relevant stakeholders. I was on the panel for the evaluation of proposals and it was really fascinating to see which topics emerged, and which actor constellations emerged. One of those finally selected focused solely on government (‘SustainGov’). It did not have any topic in terms of a scientific area or a specific technology or a societal challenge. It said we need, on the communal level and on the regional level, to get our governance structures right to be able to tackle these problems. And that was among the selected topics. I think this is a very promising example. But the other proposals also brought together a huge range of stakeholders. It was not big industry alone. For example, the mining industry had to team up with the communes where they had the mines (‘Metals & Minerals’). They aim among other things to develop transition plans for where mines are closing, or where mining is to be expanded, in terms of environmental effects.

The final example I would like to give, which also relates to the question of how topics are chosen, is from Finland, which I saw in the recent mutual learning exercise at the European Commission [see: <https://projects.research-and-innovation.ec.europa.eu/en/statistics/policy-support-facility/psf-challenge/mutual-learning-exercise-whole-government->

approach-research-and-innovation]. The example presented by Finland is an initiative whereby the Prime Minister commissions a foresight study each parliamentary cycle, where major topics are explored on the future of Finnish society, the Finnish economy, and so on. This is carried out by cross-party working groups, mainly in parliament, but also supported through the ministries. The bit of the idea that I found quite fascinating is that the work should be completed at the end of a parliamentary cycle, so it would be a foresight for the next government. This process reflects other parts of the Finnish parliamentary culture, which is very consensus-oriented, and in this respect is probably different from other parliamentary systems. But also all actors in the process have an incentive to agree on the output, because they might be the ones who would have to implement it in the next term. In terms of incentives to come to a joint vision, I think this is a very intelligent system. Like the other examples, it has limits, of course. In this case, the implementation of the joint vision is subject to the usual parliamentary hurdles. For example, a very consensually formulated, circular economy strategy took two-and-a-half years to get to an operational programme, which was twice what was envisaged in the foresight process. The joint vision was eroded and diluted, but still a lot survived. There is really a lesson to be learned when we see parliaments being so divided and when we cannot agree on anything. This idea of forming a joint vision to present to the next government at the end of a parliamentary cycle, I think, has real merit. Doing this depends, of course, on knowing when the parliamentary cycle ends and that there are no snap elections, but it is a kind of more binding joint vision than you would get otherwise.

There are many more examples, but these are some of the most interesting ones from which, I think, many European countries would profit by looking at. Every country has its own challenges and institutional settings, which are important in considering whether these examples can be adopted or scaled up, and what type of adoption capacities or knowledge infrastructures would need to be developed.

Finally, I would cite the example of the Austrian Mission Support facility [see: <https://era.gv.at/horizon-europe/missions/missions-in-austria/>], which is having its kick-off meeting today. This aims to support the various mission action groups in how to bring together all the different societal actors, to define concrete targets, to set up evaluation and monitoring schemes, and to

advise them on how to best involve civil society, where possible. The facility will run for four years, so it provides a long-term frame on which one can rely. One of the tasks this support facility has been assigned is international learning. So, I will be listening to you and to your Irish experiences, to feed them back into the Austrian discussions.

Discussion and responses

Ian Hughes thanked the keynote speaker, Wolfgang Polt, and introduced two respondents: Prof. Maggie O'Neill (Professor of Sociology and Criminology at University College Cork), and Prof. Seán Ó Riain (Professor of Sociology at Maynooth University). He then initiated the discussion by asking:

Implicit in what Wolfgang has been saying is a narrative of techno-social transformation, namely that technology is the key issue. Can I ask both Maggie and Seán whether they have an alternative vision for what the transformation is? Is it as simple as a techno-social transition or, with regard to what Kim Stanley Robinson was saying, are there other narratives in competition for what the transformation is?

Maggie O'Neill responded that she was really interested in citizen involvement in the development of EU missions and referred to how:

Wolfgang discussed good governance (for example, he describes Austria's new governance structures in response to the EU missions), which is really important, particularly in the context of global turbulence, marked also by geopolitical global realignment. Thinking as a sociologist and stepping back and looking at the broader picture that we're situated in, I am interested in narratives in terms of crisis, conflict, and policy development, and how we deal with what we are doing on a planetary level, and also from an institutional perspective. For me, the focus should be on the role of the universities in building institutional capacity to address societal challenges, as well as unlocking institutional imagination in relation to EU missions, especially in the creation of narratives of transformation. Currently, policy-making engages the university as a system, and

the university intersects with EU funding as a system, which impacts the kind of missions that are developed. This begs the question: who decides? Who is involved in the development of missions, and also at an institutional level? We have a real crisis in our institutions and our universities, with the impacts of neoliberalism, managerialism, marketisation, and academic precarity, which are massive issues. These crises impact on the kinds of chrono-normativity of academic ‘timescapes’ that emerge, and the ensuing resistance in terms of chrono-reflexivity and chrono-solidarity; for example, the solidarity and activism around precarity, including support from the unions.

So, we have these tensions between broader narratives, broader brushstrokes, of what good governance looks like, the crisis in our universities, and then a resistance to that. The project at UCC [University College Cork] on Deep Societal Innovation for Sustainability and Human Flourishing (DSIS) led by Ian, is one response to these debates by bringing a different narrative and approach rooted in creativity, imagination, and democratic governance, and for me asks, “What does a more participatory democracy in action look like towards deep institutional change?”

The university is one strand, obviously, because you might say that the university as an institution mediates that relationship between ideas and societal outcomes in terms of action, social change, social transformation. But coming back to funding bodies, the EU Framework Programme, including the missions, shapes the landscape for research, and it shapes the landscape of social science research. It would be great to have a discussion about unpacking that in relation to social science, not just economics and politics, but the social sciences more broadly, including geography, social psychology, sociology, criminology. There is a fragile relationship between the social sciences and EU funding.

Seán Ó Riain went back to where Polt had begun, which was the dismantling of state and public institutional capacity over the last forty years. He always saw the mission approach as being interesting with its focus on the techno-social solutions to key challenges but also sees missions sneaking in which ‘cannot speak their names’, which is basically the rebuilding of public sector capacity:

This shouldn't be that controversial, but it is outside of the realm of the decent and respectable thing to say, although the pandemic has shifted the discussion. At the same time, this lack of capacity is being exposed by the new challenges we face. Possibly the dominant approach to current challenges is tech solution-ism. I believe the missions are interesting because they incorporate the tech solution-ism, because there is a technological scientific part to it, but they also highlight that it is really important to build the institutional and political capacity around that. I thought that was a particularly interesting and important element in mission approaches. However, one could see in the examples that Wolfgang gave, that they could all go either way. They could settle into narrower versions of themselves, thinner versions that veer back towards tech solutionism. But the bigger thing will be actually building the capacity.

One can see that with the Climate Council and with the National Economic and Social Council (NESC) here in Ireland, for example, because everything they deal with has a solution part and a coalition-building part as well. I think that is vitally important because the whole far-right and populism surge is really just filling a vacuum. It's like the future has disappeared. It's not that the future necessarily looks terrible. It's just there is no concept of where we are going to be in thirty years' time. There has to be some kind of building of a vision for the future in a concrete way. Otherwise, something bad will fill that void. I thought that Wolfgang's examples were really good but that they could go to a thinner, technical, problem-focused version, or they could broaden out and build public and social capacity. The big promise, of course, is to build capacity through addressing the problem. Both have to be kept in mind.

Wolfgang Polt replied that:

both respondents were spot-on because most countries are trying to do both at the same time. They have to, because they realise that they don't have the structures, the governance in place, so they are having to develop these along the way. That's why the Swedish example is interesting. They have a gate-stop after a few years where they will look at how far they have come as a consortium, and do they have to change the structures for the

next five years or so? Institutional learning is also built into these consortia. And the programme is not funding the research. They are funding the building of coordinating units that bring all the actors together. That differentiates it very much from the European Union missions, which are still very much designed in terms of instruments, very traditionally oriented. They are realising that if we really want to solve the problem of the oceans and the waters and the soil, R&D funding is simply not enough. It is not even in some instances the biggest part of the problem solution. I would even say that the next round of the EU missions would need a completely different governance structure with other DGs [Director Generals] in the driver's seat and R&D playing its part, but not being the starting point.

Also, what was said about universities, we have had very interesting discussions about that too. We had several mutual learning events where we invited European university associations, and individual universities, and we found a huge gap in perception of the missions. Universities of applied sciences and public research organisations found it very easy to relate to the mission agendas. But research-intensive universities sometimes were very hesitant. They said, 'No, this is against the freedom of science!' 'This directs funding where only excellence should decide. This runs the risk of funding mediocre research', which is a very bizarre misconception of what missions are about. I wonder if these people ever read *Pasteur's Quadrant* – the quadrant classifies scientific research on whether it advances human knowledge by seeking a fundamental understanding of nature, and, on a second dimension, whether it is primarily motivated by the need to solve immediate problems [Stokes, 1997] – which makes a very convincing case for challenge-driven basic research. And that is exactly the sort of research that could happen in missions and that no university should shy away from.

But there will also be a discussion on how to incentivise these universities, which, by the way, have all been busy formulating admissions strategies in the past couple of decades. In Austria, we have the idea of making this part of their performance-based funding contract, which again raises the question of how do you measure whether they contribute to missions or not? Likewise with incentive structures for individual researchers. If you are only measured by the number of publications, you don't have a very high incentive to engage in missions. So, there is definitely a need to change individual performance metrics.

Maggie O'Neill replied that at the level of the university there is a kind of tension between academic freedom, institutional freedoms, and then the kind of goal-oriented, incentivised approach to 'performance' that can create concern:

And that's connected to what I like in Ireland. I was really happy when I arrived six years ago to find that there was no research assessment exercise. I thought I'd died and gone to heaven, and people were still doing brilliant research. As we know from the implosion of universities in the UK, the drive to produce more and more to ensure funding follows, more publications and writings and so on. This has been a kind of death of the university for many academics. And we have seen the hollowing out of the social sciences and humanities, the very disciplines that are interdisciplinary, that really give us hope, active hope, I think, for creative imaginaries for action and creative imaginaries in collaboration with other disciplines. Trans-disciplinarity, interdisciplinarity has to be the way we go. So, it's tragic to see people feeling that they just have to produce and produce and produce, but with a reduction in quality. That does lead to discontent in relation to what is possible. So people leave, they get sick, they exit, or they're sacked, they're made redundant.

Wolfgang Polt replied:

Yes. But on the other hand, I recently met the new rector of the Technical University of Eindhoven, and she's a firm believer in missions. She said this is a way of sense-making for their students. You are not only studying microelectronics for the sake of improving integrated circuits, but if you do so, you raise energy efficiency. You are doing something for the digital transformation but also for the ecological transformation.

Maggie O'Neill replied: 'And social justice has to be at the heart of that'.

Ian Hughes:

If we go back to the idea of narrative, if you look at different parts of the [European] Commission and what they're saying, you have the missions that are largely techno-social, but there

are other narratives that allude to what is happening within a larger context. One of last year's foresight reports from within the Commission, for example, situated the narrative at three levels. The first is the level of the nation state where the big part of the activity is about industrial restructuring. It's about techno-social transitions in energy, in transport, in agriculture. The second level is geopolitical, where they talk about the context of geopolitical fracturing, about reshoring for green reasons as well as for other political reasons. The third level it talks about is in terms of a new social contract, where the narrative is that the social contract is broken between citizens and the state. It may sound like a narrow concept, but a new social contract actually entails a deep restructuring of existing economic, political, environmental, and technological systems. I think those narratives are there within the Commission, but they don't connect up. And they don't filter down to the national level in a connected way.

Wolfgang Polt replied that 'that is true, and that some member states are way ahead of the Commission in terms of their thinking. And I've given some examples where I think institution-building is much more advanced than it is on the European level'.

Reflections

The Chair then invited some policy-makers to comment in response to what they had been hearing. First he called on Ruth Freeman from Science Foundation Ireland who, together with Lisa Higgins, is driving the National Challenge Fund, a specific challenge-driven funding instrument.

Ruth Freeman described the National Challenge Fund, which is an EU-funded programme that invites research teams to come together in a transdisciplinary, interdisciplinary way and to bring those who are not active researchers into those teams to look at specific missions. Some of those are quite specific, some of them are quite broad, but they all fall under digital transformation and the green transition. Freeman sees challenge-driven research as being very firmly built on deep disciplinary expertise:

They can't exist in isolation and require a huge breadth of inputs. And that's really what we're trying to do. It's one thing to ask the government for money for specific challenges and problems

you're hoping to try and address. But for us, the other side is that doesn't work if you don't have the people in the system that have the deep expertise to address the problem. And you then need to bring those people together with a broader group of stakeholders so that you really understand the problem, hopefully, that you're trying to solve or the challenge that you're trying to create a solution for. So, we're at the stage at the moment where we have almost 100 teams working on a whole range of different topics. Lisa and I, and the team, will be working with them over the course of the next three to four years and to hopefully see some really exciting and important outputs that will be centred here in Ireland. Also, the solutions in the Challenge Fund are being developed in a cross-disciplinary way. A lot of the teams are pulling in other government departments and agencies, and we hope to even see more of that as the teams develop. So, we can relate to the discussion on building capacity and building the system. I think that's very much what we've been doing over the past couple of years. This wasn't a capacity that we had a few years ago.

Gerry Clabby from the Department of Environment, Climate and Communications, who is very active in Horizon Europe missions, then contributed:

Some of the conversation has been around universities and the third-level sector. To speak to something that we've been trying to do, if you're working in an area like climate and environment, we need to look into the future in a way that perhaps we haven't done previously. We're automatically talking about longer time horizons. We're talking about, for instance, climate neutrality by 2050, which is a long-time horizon from a government perspective. But it's one that is now in law and that we're obliged to keep. Over the last couple of years, we've been trying to think about how we get evidence to support the policies we're putting in place across a huge range of issues. Our department deals not just with climate but with environment, and also with biodiversity and pollution. Broadly those things integrate with one another. And we have other challenges in our department, like cyber security, and the circular economy. So just to mention one or two things that resonated with me.

One is that we are about to publish a research and innovation strategy. When I started out on the journey of leading that process, I thought we would be very outward-focused in doing this, but actually a lot of it came around to thinking, how do we structure ourselves as a department with our agencies to actually interact with the research system effectively? And how do we build our capacity to do that? So, our own capacity is really important. It's not all about just looking to universities and saying, what can you do and how can you deliver the answer? It's also about how do we position ourselves to intelligently use those outputs and to be able to interrogate them and use them to formulate public policy. That's a whole issue all on its own – building that capacity internally. Another thing that's come into our thinking is using the capacity not just in universities, and not just seeing research as university driven, but acknowledging that the government system itself does some research – Geological Survey Ireland is part of our department. We have staff who are tasked every day with doing research. That's an important capacity for the government to have. We have to plan not only how do we not lose that in the first instance, but also how do we intelligently grow that? It is probably something that we've lost over the last forty or fifty years.

Seán Ó Foghlú is based at Maynooth University's Social Science Institute and is very active in research for policy. He also headed up the Department of Education for ten years, until two years ago. As well as working at Maynooth University, he works within government to support the work of the Department of Further and Higher Education, Research, Innovation and Science (DFHERIS) on ecosystem change in terms of how research for policy works:

...with a view to the long-term agendas that we've been talking about, you've just had a really good example from Gerry about the steps underway, and his department is probably one of the two or three leading departments in terms of rethinking how they ensure that their policy approaches and implementation plans build upon research evidence. In fact, every department is rethinking how to do this. There is a framework for engagement that DFHERIS is developing, and how government departments will engage with higher-education institutions is really the key part of that.

Within universities, I think there are a lot of reflections about how to engage. In fact, there's nearly a new science in all of this about the nature of research for policy. There's a new scientific field emerging about how to do it. And one of the things that's really been hammered home to me, within Maynooth but also nationally, is that it's not just about universities and government; it's about the much broader nature of engagement with society as a whole. The university-government part of that engagement needs to be enhanced and developed, and it's all about systemic connections at all levels and not only about people operating individually or in small groups in either of the two areas of government or academia. That's really easy to say and really hard to change.

I would also include the political system. We have one deputy [TD] here with us today, which is really great. The political system needs to be part of this as well. We need to have the political system embedded in these changes as well. We need to open up the opportunities for longer run discussions, longer run foresight exercises. They're much easier done by departments on a solo or silo basis, but what Gerry has highlighted is that actually very little is achieved by that. We need to find ways of having dialogue which is long run on a cross-disciplinary, cross-field, cross-departmental basis. And that's really, really hard to do. As a society we've begun to work on some ways of doing that in terms of citizen engagement and so on. But we need to keep on refiguring and rethinking.

Political cycles are part of it, but I think there's a lot of room for longer run thinking which can run in parallel with political cycles. We shouldn't assume just because there are political cycles that we can't do this, because most of the change that I've been involved with, for example, in schooling and curricular change, has passed between three and four or five ministers, and while there have been tweaks and changes, the direction of change and the embeddedness of change has advanced. Very little is done in a five-year cycle in terms of real embedded change.

Wolfgang Polt's closing thoughts underlined what had been said by Gerry Clabby:

So much depends on capacity. I think we have to rebuild state competence and state capacity. We have a running joke in the

Austrian exercise, in the action groups aimed at building capacity for the nation, there have been people sitting in who have five hours per week to work on missions. And we were joking that you will not solve the problems of the Earth with a sixth of a full time equivalent. That is really a serious issue, even in countries which have very thoughtfully designed governance structures. Capacity-building is a challenge, not only in man or woman power quantitatively, but also in terms of knowledge and expertise. Part of the Mission Support Facility is to build capacity through courses, training, and knowledge dissemination also from international sources to bring to Austrian civil servants and have their ideas based on this international comparison. And I think that's of utmost importance. We have to re-empower ourselves and our societies by strengthening the capacity of the state to give direction and to implement change.

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