International Network for Government Science Advice

The Role of National Academies in Science Advice to Governments

Introduction

On the occasion of the 150th anniversary of the Royal Society of New Zealand, INGSA hosted a workshop on the role of National Academies in providing scientific advice to governments. The workshop took place in Auckland New Zealand on April 4th 2017. All confirmed participants to the Royal Society NZ's sesquicentennial conference were invited also to participate in the INGSA event, though not all were able to commit to the additional day. A list of participants is appended to this report.

The topic of academies' role was motivated by multiple factors. Global interest in assuring evidence-informed public policy has grown in recent years and it is widely understood that National Academies have long held a central position in providing academic expertise to government decision making. Yet the recent troubling trend toward 'anti-expert' and 'anti-elite' politics and populism risks preventing the benefit that Academies can bring to public discourse and good governance.

What's more, there seems to be a sense of urgency to act in the face of the three defining features of our time: climate change; profound geopolitical shifting and digitalisation of everyday life, with the populism that comes with it. This global context prompted INGSA to host a workshop on the evolving role of academies.

There is a wide range of academies – some are discipline based, some are broadly based. Some are closely linked to government and some manage research funding or directly undertake research and operate research institutes. Most academies are built around the selection and appointment of distinguished scientists as academicians, but they also undertake public policy-related activities, either directly or via their staff. Given this diversity of structure, culture and context, this report is necessarily at a high level and is focused solely on the potential and actual roles of academies in the science advisory ecosystem. It is important at the outset to recognise that academies in these roles

are but part of a broader advisory ecosystem. Indeed, a focus of the discussion was on identifying their particular role within it.

However, the role of the academy in public life and democratic governance may not be generally understood or accepted. This is particularly so in the face of the growing popular belief that access to information via the internet is sufficient, with no need for expert interpretation. The issue merits consideration and self-reflection on the part of Academies if they are to remain publicly relevant into the 21st Century. Part of the issues is that academies, by their very nature, are generally conservative institutions comprising "elite experts" and they therefore are at risk, in the current climate that is actively marginalising such voices.

In reflecting on the issues, workshop participants engaged in a structured conversation that brought to bear their own experiences and enabled the sharing of promising approaches for knowledge brokerage and public engagement. This report highlights the high level themes of that conversation.

Participants at INGSA workshop on the role of National Academies in providing scientific advice to governments, held in Auckland, New Zealand on April 4th 2017.

1. The role of academies in a post truth / post expert world

Academies worldwide – and particularly through the Inter-academies Panel (IAP) – are now starting to turn the microscopes on themselves to think about how to adapt to contemporary needs and troubling (as well as promising) societal trends. Workshop participants discussed the need for

academies to move beyond recognising the scientific elite towards making better use of their grounding in expertise, thereby avoiding marginalisation. It was noted that in surveys of academicians, there is a demonstrable willingness to engage with the public and policy makers on issues of the day. What is missing is the necessary self-reflexivity to know (indeed to learn) how best to do it.

There is an important pay-off in academies better developing their engagement strategies, as this also raises their profile. As one participant put it, "once you become relevant to the public, then you become relevant to governments." However, it was recognised that public engagement cannot be considered through the lens of the 'deficit model' and as simply lifting public's science literacy. Particularly with the rise of deliberately misconstrued science, rapid communication and public/political scepticism, academies need to be more pro-active, interactive and humble in their approach.

Advocacy vs Advice

But what does engagement mean? Certainly it requires academies to look outside themselves and the concerns of their membership, but there are many questions surrounding how best to do that. Most would say that academies have a role to influence policy according to the evidence. However, the extent and nature of 'influence' is still contested. Not everyone was in agreement as to the proper role of the academy vis a vis brokering advice vs advocating for a particular policy position that the evidence clearly points to.

A few participants felt strongly that academies should undertake advocacy, in the spirit of "if not us, then who?" Most however, believed that explicit advocacy would jeopardise any chance by the academies to influence government, suggesting instead that a dual approach is needed. This includes developing the public consciousness and understanding through more refined engagement techniques, while at the same time working more closely with governments to better identify and frame policy-relevant issues to analyse in a rigorous way, bringing to bear the multidisciplinary expertise of the academy. As the theory goes, if the public comes to recognise the need for change, then the politicians are not far behind. Academies can influence both sides.

Influence vs independence

While seeking to bolster policy-relevance and meaningfully deploy the wealth of expertise at their disposal, most academies continue to be protective of their independence from political interference. This prompts the question of whether some may compromise their independence, overlooking some issues to gain traction on others? There is reason to be optimistic and less cynical about academies forging productive relationships with governments however. Participants cited many promising models and practices that were engaging for policy makers without compromising the independence of thought and the procedural rigor of the study.

Domestic science advice

Within the science advisory ecosystem, national academies are generally external to the policy community and process. They tend to be most effective when well-linked to (but independent of), other components of the science advisory ecosystem including those components embedded within the executive branch of government. Academies have an obvious role in convening the academic

power of a country to address relevant topics. Most often, it is academicians who, through their academy's established processes, will decide on the studies and reports they will undertake. In some (and perhaps a growing number) of cases, academies are requested by governments to study certain problems to support public policy making. Either way, these studies generally require several months or longer of deliberative enquiry before they are published. Such reviews are rigorous and can be seen as the scientific consensus of the moment. They are a welcome addition to the stock of knowledge on public policy issues, but the time required can inhibit their value to decisions that are required quickly. For this reason, national academies are often considered to be most valuable in addressing chronic longer-term issues rather than in feeding the day-to-day deliberations of policy-making for the government of the day, which may be more suited to other parts of the science advisory ecosystem, such as those that are more internal to governments.

Workshop participants noted this difference and made the further distinction between 'Parliament' and executive 'Government' with respect to access to the science advice machinery – the latter being more directly related to policy development. The Academy fills a particular niche that is very clearly non-partisan and not linked to the bureaucracy of government. By being knowledge-holding 'outsiders', they have managed to make themselves heard, particularly because they maintain the trust of the public.

Workshop participants discuss domestic science advice

At the same time, participants noted that some Academies also are viewed by governments as a source of science advice that is independent of professional bodies (e.g. medical or engineering), which are sometimes seen as interested parties. In this role, they directly serve government, and must balance this with maintaining their independence.

But Academies by their very nature cannot generally be engaged at the earliest stages of policy brainstorming nor the final stages of policy decision making, which might limit their relative impact. Hence the importance of their connectivity to other aspects of any advisory ecosystem

International science advice (i.e. between nations)

In the context of science advice beyond national borders, the distinction was made between a state's need to engage on global issues in an evidence-based way (climate change, biodiversity, oceans…) and the need for scientific advice to for engagement between nations (trade negotiations, regulatory matters of sovereign states). It was suggested that Academies perhaps fail to realise that science is at the core of regulatory and trade questions and they should be engaging more proactively. In many respects, science provides the common language and understanding that are the foundation on which to then begin negotiations. If the scientists from the nations concerned can first agree on the science, then the values and economically based negotiations can proceed on clear terms. Too often differing views of the evidence are invoked as the basis on which to contest trade or regulatory decisions on one side or another.

One helpful proposal is for National Academies to share proactively their studies and reports with one another. All academies publish their findings, but a proactive sharing (through a platform like

www.ingsa.org) and even early discussion of the framing of national studies would be a welcome step toward 'open science advice' in the international arena. Furthermore, it was suggested that maintaining a space for more informal communication between national academies (through INGSA and the IAP for instance), would allow the sharing of any pertinent elements that may not be included in formal published reports.

Global science advice (i.e. on global issues)

Some workshop participants observed that academies tend to have more gravitas and influence on policy discourse when they operate on the international stage than they do in their home countries.

Indeed, it was noted that the space for international science advice is becoming crowded, not least with organisations involving national academies such as ICSU, the IAP, the GSF and WSF. These groups convene academies, including those in the developing world, and support institutional capacity building for academies internationally. As a united voice of academies internationally, they have the authority and ability to pronounce on major global challenges with direct channels to global policy agenda setters such as the UN, the OECD, and the WEF. Independently, the larger national academies are active in the G7 and G20 groupings, where they can voice the scientific consensus on arising policy issues and indeed can significantly influence global science policy settings (e.g. over open access). However those from smaller countries noted that their exclusion from such discourse created both disadvantage and bias in recommendations that emerge.

It was agreed by participants that to be most effective on the world stage, national academies should engage more directly with their national ministries of foreign affairs, which are the key duty-bearers of foreign policy making as well as national policy having international significance. Academies, together with government science advisors (where they exist) need to ensure that government representatives abroad have the best evidence to support their negotiations internationally.

The UNESCO Deputy Director General for Natural Sciences, Flavia Schlegel, noted that achieving the SDG 2013 agenda will require strong organisational action, knowledge generation and advocacy for its use. However, this means that academies must be willing to engage, which is not always obvious when they are occupied with their own agenda domestically. Where this agenda is geared toward celebrating successes and accolades within the national scientific community, it will need to adapt to suit pressing international challenges.

In this, academies must ask themselves how prepared they are to be engaged in developing the global science advice ecosystem, acknowledging that the cost of membership by national academies in international organisations can be a major factor in low participation globally. In addition, there are the practical challenges for academies of how to fund greater international work and still maintain integrity and independence. The perception that all funding comes with an agenda is an important consideration in how academies can become involved.

Some participants expressed optimism about organisational issues internationally, as, unlike with domestic issues, global challenges are most often captured more broadly under the umbrella of 'diplomacy'. When issues are expressed in terms of 'diplomacy' the first instinct for most countries' academies is to be helpful in both national and global interests.

However in helping, academies must be attuned to the 'problem that needs solving' rather than providing solutions in search of problems (and audiences). Equally, policy makers should avoid the urge to relegate the 'too-hard' problems until they seem to disappear into a bureaucracy. Indeed, it has been observed that certain topics are often channelled to "organisations behind organisations

behind organisations, through an invisible hand allocating the question". In many cases, a lot of energy seems to go into coordinating the gathering of advice rather than advising. Whether this might be by design (in some instances) or simply through a poorly managed advisory ecosystem, is a matter of speculation. The question may apply equally to some national ecosystems as it does on the international level. There is no deliberate mechanism for allocating topics of study and advice. Should there be? Participants suggested that the SDGs could provide a useful framework. Indeed, never before has there been a global agenda such as the SDGs that relies on Science Technology and Innovation. Yet, at the same time, we continue to have national governments openly questioning the science. Academies need to consider if this situation is due to a failure in their roles domestically and how they can remedy the situation.

Workshop participants consider the SDGs

For her part, Flavia Schlegel (UNESCO ADG) committed to requesting the various national commissions for UNESCO to reach out to their national commissions to ensure a more linked up discourse and approach, but acknowledged that is up to the member state how they organise and operate their national commission. Further to this, it was noted that there is now a consultation process underway to update UNESCO's 1974 Recommendation on the Status of Scientific Researchers to refresh the now-dated cold war paradigm from a generation ago. Individual researchers and academies are invited to see http://www.unesco.org/new/en/social-and-human-sciences/themes/bioethics/call-for-advice-revision-of-unesco-recommendation-on-the-status-of-scientific-researchers/

Finally, the process to renew and replace the UN Scientific Advisory Board is also an important opportunity for Academies to become more proactively engaged in the global discourse, particularly if we are to successfully address the SDGs. The new UN SAB can foster (and require) member states to operationally link global and national science advice. This will mean that member states should have an identifiable science advice mechanism in place, whether through the national academy or elsewhere in the ecosystem. Indeed, how can we talk about science advice globally with countries that don't even have a national science advisory system? Academies (and others) need to think about how we can convince governments that investing in STI is necessary for advice, while acknowledging the challenges that this entails – ranging from loss of trust of governments (seen as lobbyists) to loss of public trust by appearing to wade into political territory.

2. Operationalising the role of academies: modalities of advice

A thorough consideration of the role(s) of Academies is incomplete if it does not also consider how to operationalise them. Workshop participants engaged in wide ranging discussion of the central activities and promising practices of academies in their respective countries and within global representative bodies. The discussion is summarised below by grouping into two types of tactical approaches: those that aim to influence decision makers and those that aim to shape the overall context of decision making, thereby influencing it in a certain way.

Influencing decision making

- Create effective linkages to all other components of a country's science advisory ecosystem

- Create opportunities such as seminars for government and academics in the room together and define the question together and address the customer's need;

- Structure reports that may not make explicit recommendations, but that imply best options without usurping the space of the decision-maker;

- Prioritise studies and reports on 'tractable' issues that actually have potential policy responses that could be operationalised. Anything otherwise will likely be seen by government simply as more unhelpful critique;

- Adopting a more proactive approach to studies that anticipate policy questions rather than attempting to respond to them after they gain attention from policy maker who have probably formed opinions on the issue by then;

- Seize opportunities to put academy fellows in key positions such as Departmental Science Advisors;

- Be a 'critical friend' to decision-makers; that is neither a critic nor a friend uniquely. This is difficult in today's environment of adversarial politics;

- Engage the right people at the right time: do not overlook the junior analysts as they are most often the ones whose job it is to collect the evidence;

- Make the most strategic use of unique attributes of academies: multidisciplinary; expertise; convening power; safe space for discussion.

Influencing the broader context of decision making

- Academies should promote a 'permeability' between science and policy worlds and get beyond the stigma of the 'failed scientist' who works in policy instead of in the lab or the field;

- Academies need to 'inform and educate our fellowship' about policy making and to be more daring when it comes to stepping outside academic conventions (without jeopardising scientific integrity);

- Engage parliamentarians as much as governments and publics.

Studies and reports: the traditional vehicle for academies' advice

Part of the workshop time was devoted to a structured discussion of Academies' principal vehicle for advice – the academy report. While national academy studies and subsequent reports strive to meet the highest standards of scientific excellence and peer review, they can often miss their mark when the goal is to inform (and eventually influence) the work of public policy makers. The challenges are well known:

- Timing: Robust and comprehensive reports take time to develop, while most policy decisions must move quickly;

- Relevance: The independence of national academies means that they hold strongly to the model of developing their own research agenda, seeking to provide information where they perceive a public policy failure or a significant knowledge gap on the part of the public or policy makers. But this independent approach also isolates them from the central policy problems of the day. To be relevant, academies must be more attuned to current policy needs and operational constraints;

- Business model: Quality reports take time and resources to produce; they do not come for free. The overarching business model of academies relies on volunteer support of their expert members, but convening those members, researching, writing, editing and publishing all require resources. If the resources come from government, to what extent can government steer the product? Academies must carefully negotiate their positions in order to work closely with the policy sector, while protecting the integrity of their process and the independence of their thought from political interference;

- The question of whether to make recommendations: Many academies struggle with the issue of whether or not to make policy recommendations or to support one policy approach over another. Academy membership will often coalesce around a clear policy direction that the evidence is pointing towards, and may feel that to not be explicit about this is a failure of their public duties. Others had come to see that to express opinions and make recommendations on policy was the fastest way to be ignored by the governments and the policy community. Domestic contexts and Academies' mandates and structural arrangements will differ, but in general it was thought that the role of the academy report is not to make specific recommendations but rather to fully discuss the available knowledge. In discussing the implications of policy options, writers can often find ways of highlighting those that address the identified public interests, without being seen to endorse any.

- Transparency and trust: Academies by their nature adhere to high standards of scientific integrity making their reports highly trustworthy. However, on contentious policy-relevant issues such as vaccination or fracking for instance, the public and some politicians might seek to question the evidence regardless of the source of the report. For this reason, academies must be scrupulous about using peer-reviewed work. But is it enough to show the work used or should academies also detail the relative weight they give to the evidence and why. Techniques from meta-analysis such as the Cochrane or Campbell Collaborations can be usefully applied in this regard. Being as transparent as possible is essential to maintaining trust.

Further practical measures in addressing the challenges associated with traditional academy reports were canvassed by the group. Many participants had useful examples from their own national academies to share. These were explored by the group and included:

- Knowing the interests for the audience before taking on a study to increase the potential receptivity of the document within the policy community. It was generally agreed that it is important to engage with government (at minimum) before embarking on a study that is intended to be policy relevant. However to engage government knowledge-users throughout the process is often results in a more useable product. The concept of co-design is often met with scepticism by academicians, but it is increasingly a model to consider and can be done in ways that protect scientific integrity. For instance, the Royal Society of New Zealand related

that an emergent model that they have developed for some studies is to work closely with the Office of the Prime Minister's Chief Science Advisor who can act as an impartial broker to the policy community and convene both scientists and policy makers in the co-production of policy relevant reports that will have a ready audience.

- Adopt the level and tone that is appropriate to the audience. Colleagues from the UK described the example of 'science primers' developed for the Chief Justice on new and emerging aspect of scientific evidence (e.g. DNA profiling). What is important is to keep these short and accessible, with direct reference to real-world circumstances of the audience. In the context of academy reports to policy makers, these need also to be easily understood by a general audience. They need to refrain from either scientific or policy jargon and should not be emotionally evocative. Reports that are perceived to admonish government or usurp the role of the policy maker are unlikely to find traction with their intended readers. Reports should be a compelling read that provides an overview of the evidence – what is known and not known about an issue;

- Studies and reports should not be viewed as an end in themselves. Academies should put effort into developing and rolling out a suite of activities around the report – from expert Q&A to (publicly and in camera) to webinars, practice guides, dedicated websites etc. Activities should include identifying and meeting personally with policy makers and influencers to present the report and answer questions in a safe and discrete environment.

3. Academies' relationship to other parts of the science advisory ecosystem

In most countries today, the role of national academies in science advice must necessarily be seen as part of a greater ecosystem of policy and scientific actors involved at the interface of these domains. Scientific advising is truly an ecosystem approach and academies must understand their place and potential within that ecosystem, which likely will differ according to jurisdiction and discipline.

The workshop provided the opportunity for participating academy representatives to reflect on where academies have come from, where we are, where we are going. Academies' future-scoping in particular must take into account the roles and relative strength of others in the ecosystem. Academies that actively build relationships with other parts of the ecosystem (e.g. Scientific and Innovation Councils, Chief Science Advisors, Departmental Science Advisors, analysts assigned to select committees, etc.) can leverage their reach and impact into the policy community. By the same logic, as one participant noted, "The worst thing we could do is to have the academies in competition with the science advisors."

There is also an ecosystem model that can be seen at the global level for science advice. Although the UN science advisory mechanism was not considered sufficiently connected to domestic systems, it is nonetheless part of a growing set of international actors with which academies can engage though global bodies such as INGSA, ICSU and the IAP.

One particularly innovative organisation in this ecosystem is the Global Young Academy (GYA), with representatives from various nations, though they are not necessarily members of their own national young academies, where these exist. The GYA partners strategically with international organisations and programs to ensure that the voice and experience of emerging scientists is taken into account. In

many ways, the GYA can accomplish the very type of engagement that national academies are wanting to do, but their conventions and traditional way of thinking may be preventing.

For instance, the GYA has embraced diversity from the outset in ways that national academies are still struggling to do. With more age, gender and regional balance, and with inherently networked approaches, the GYA can bring fresh thinking to providing scientific advice on global challenges. UNESCO and INGSA have echoed their call for capacity building for scientific advice in the developing world, for instance, noting that national academies have a central role in advocating for the development of a global science advice ecosystem itself.

4. What does the future hold?

Scientific knowledge production and policy making alike are adapting to new technological possibilities and societal expectations. Yet the culture of national academies has largely kept with tradition. Certainly, upholding the conventions and integrity of science (across all disciplines) is paramount, but academies can and must rid themselves of practices and attitudes that maintain the image of an "elitist club of experts". They need to experiment with different roles and models of engagement. Failure to adapt to the current societal contexts will only lead academies toward irrelevance in a world of rapid change and increasingly adversarial entrenched positions on the central policy issues of our time. There is increasing concern that populism rather than informed public debate is fuelled and exacerbated by social media, even if this is not the ultimate driver of the sentiment. As populist politics continues to devalue the role of sound and incisive media, there is a gaping void left in how best to foster and inform public.

Academies have not traditionally seen themselves as communicators and agents of engagement and change, but there is a need to step into a new role and shape it responsibly for the future. This will require new sets of skills that make better use of digital and platform communication. Academies need to see that their audience is increasingly external and not just the science community. In engaging new audiences, academies can be instrumental in (re)building trust in scientific evidence and expertise.

In envisioning the future of national academies, workshop participants identified a number of key themes that require urgent attention:

(Re) building trust in experts

With the financial and political stakes ever higher, there seems to be increasing incentive to promote debate around scientific evidence that is deemed uncomfortable or inconvenient, even when the scientific consensus is clear (e.g. vaccination or climate change). One way to do this has been to undermine the expertise of the researcher. This has been done to great effect, especially in the USA, seizing on a growing mistrust of 'elites' more generally.

National academies are central actors in the necessary project to rebuild that trust. To do this, academies must satisfy a number of conditions. For instance, they must:

- Clearly define and demonstrate expertise with humility and rigour. Academies don't have any authority with the public because they are unelected. So the only way we derive authority is if the public has greater clarity on what constitutes an expert. An appropriate way to do this is to engage with the public and demonstrate expertise by applying it in areas of publicly identified relevance. In practice there will always be the issue of making it clear whether a Fellow is speaking from a personal perspective or as a spokesperson of the academy in

making expert pronouncements. Academies should have appropriate communication guidelines for their Fellows.

- Ensure a diversity of inputs into their expert reviews and published opinions. Trust of the public and the policy community is gained and maintained if academies show they have canvassed representative scientific views. Too often, the unconscious biases of gender and social class can make their way into how researchers structure their studies. Building cultural, gender, economic, and regional diversity into the system of academies can help them to identify and challenge any hidden biases. Existing academies have an opportunity and a responsibility to diversify, while also supporting the establishment and capacity building of academies in the developing world.

- Be alert to unintended consequences of promoting science, especially where this can be construed as 'lobbying'. It can be a surprise for scientists to know that not everyone shares their enthusiasm for new knowledge or for the scientific 'way of knowing'. Public support to the scientific enterprise cannot be taken for granted, and attempts to defend it can appear especially smug to non-supporters. Similarly, scientists should be aware when a proposed scientific solution might be diverting a different kind of solution such as a social innovation. Thus there is a need to be prepared for the unintended consequences in lobbying for science, which can create perverse responses by some politicians and parts of the general public.

Fostering relevance

The challenges for academies to be publicly relevant through their reports and engagement activities have been discussed. In looking toward the future, academies are well positioned to maintain relevance, as the ability to convene expertise and relate the science becomes central to addressing so many of the global challenges we face. However, as Sir Venki Ramakrishnan, President of the Royal Society London put it: "Academies' strength is also their greatest weakness, how can we be both robust in our science and rapid in our response?" One answer is to foster new ways of operating; Academies should consider when they are best placed to operate in a 'predictive' or a 'responsive' mode.

By complementing the 'ecosystem' approach with a 'lifecycle' model, both predictive and responsive modes are built into academies' work such that they can choose to focus variously on:

- Anticipating new and emerging issues with comprehensive analysis and horizon-scanning
- Respond to identified issues, independently or at the request of government
- Support the implementation of scientific advice as an actor in the advisory ecosystem

Some participants expressed the reluctance they perceived from their Academies' fellows about operating in a responsive mode, which would require considerably different approaches to be timely and relevant. However, they could see a more apt role in exploring emerging issues in a deliberative way. It was generally agreed that academies are well placed to help envisage future consequences of technologies, of actions (and inactions) and to open up the required public discourse on contentious and sensitive topics, particularly where social acceptance of technology is an issue.

The ongoing relevance of academies, assuming they can continue to foster public trust, lies in their convening power and the safe spaces they provide to have difficult conversations about our shared future.

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