

A chara

Natural Capital Ireland (NCI) welcomes the opportunity to input into the Public Consultation on the *sourcing of science advice*. NCI is a not-for-profit organisation leading the national conversation on natural capital (view our website [here](#)).

NCI is a group of organisations and individuals from academia and public, private and NGO sectors. We are committed to the development and application of the natural capital approach to policy and decision making, which considers the value of the natural environment for people and the economy.

Natural capital is an economic metaphor for nature; a concept that frames the world's resources like plants, animals, water, and minerals as assets or stocks that yield a flow of benefits to people. The Natural Capital Approach involves measuring and valuing natural capital assets and requires consideration of evidence across a very broad range of scientific disciplines. This approach helps to reveal the often hidden social and economic costs of environmental damage and the benefits related to the conservation and wise use of natural assets, and thereby provides critical information for a wide spectrum of national and local policies across all sectors in Ireland.

Appendix 1 includes definition of the natural capital approach, including *biodiversity, ecosystem and ecosystem services*, as these are central to understanding our natural capital.

The natural capital approach presents a means to support policy and decision-making with a much wider range of analysis/data than that offered by conventional approaches, because it builds in the fullest possible range of environmental – and cultural – costs and benefits through the policy cycle. It is also valuable because it can be used continuously to monitor the full cost-benefit performance of policies into the future.

We set out below our response to the questions set out in the public consultation portal:

**Question 1:** *How should science advice fit into the overall policy process, including the broad reform agenda (such as the generation of evidence for policy, and strengthening policy development and foresight in the public service)?*

Ireland, along with its European partners and the wider global community, faces a range of complex challenges which are greatly interconnected in their causes, impacts, and required solutions. Issues of energy security, the climate and biodiversity emergencies, security of clean water and of food and nutrition, economic uncertainty, regional conflicts, refugee crises and migrant flows, pandemic recovery and the emergence of new infectious disease threats – at UN and EU level all of these issues are recognised as being inter-related, requiring concerted and coherent solutions.

This means moving away from traditional silo-based approaches to policy development, and instead embracing cross-sector, cross-disciplinary approaches to societal challenges. The Covid-19 pandemic has vividly illustrated several of these interconnections: the emergence of the disease is widely recognised as being linked to patterns of ecological change and the unsustainability of local and regional food systems; the impact of the disease on community health, well-being and livelihoods has



been greatest in areas already suffering from economic insecurity and environmental degradation; air pollution and climate-induced heat stress are known to increase the likelihood of severe Covid illness; whilst easy access to high quality natural spaces has proved to be key to supporting and maintaining social, mental and physical well-being for billions of people during periods of severe social restrictions. These interconnections clearly highlight the importance of integrating several scientific disciplines in dealing with complex societal challenges.

This perspective is explicit in the [UN's 2030 Agenda](#) and the global Sustainable Development Goals (SDGs), which NCI proposes as an important model for the use of science in the policy process.

The importance of cross-sector approaches has already been recognised by the Irish Government in its Climate Action Plan and related policies. All sectors of government recognise the potential impacts which the climate crisis is having and will continue to have on their relevant sectors of operation, and also recognise that the science of climate change requires their input and perspectives.

The Government's next National Biodiversity Action Plan (NBAP) – a draft of which is currently out for [public consultation](#), and for which NCI provided scientific support – again highlights the importance of breaking down traditional silo-based approaches when dealing with the biodiversity emergency, recognising that the loss of biodiversity poses a severe threat to jobs, economic security and human health and well-being in this country and overseas.

The consultation paper on the sourcing of science advice states that '*science advice can help to anticipate future challenges and assist in designing mitigation strategies or interventions*' – NCI cautions that this is only true where the advice is fully informed by the full range of relevant scientific evidence and perspectives, thereby ensuring that it is robust enough to address, anticipate, avoid and mitigate (where negative) or embrace and enhance (where positive) the impacts across all sectors.

We propose that the Natural Capital Approach is a very pertinent example of how an holistic approach works in practice. Access to information and data on natural capital concepts and approaches are available through the NCI [website](#). Data and information gathered through the many projects NCI have been involved in provide important background and exemplars for policy makers.

#### *NCI recommendations:*

*NCI recommends that the sourcing of science advice for specific societal challenges or for specific government policies, however discrete they may seem, must move away from silo-based thinking and be based on a multi-disciplinary approach that seeks to identify and address the potential implications across society and the economy.*

*NCI also recommends that this holistic approach be factored into all pertinent stages of the policy cycle – from agenda setting and selection of priorities, through policy formulation and implementation, and in policy evaluation.*

**Question 2:** *What examples and experience do you have where advice has been effectively sourced and applied?*

At the global level, two models for effective multi-sector approaches to the sourcing and application of science are the Intergovernmental Panel on Climate Change (IPCC) and the Intergovernmental Panel on Biodiversity and Ecosystem Services (IPBES). Both of these UN-backed multi-lateral processes are based on the integration of multiple sources of scientific evidence and other forms of knowledge, and review and interpretation of that evidence by diverse panels of experts representing all major disciplines and sectors of society. Whilst neither process is perfect, both the IPCC and IPBES have been vital to the development of global partnerships for addressing the climate and biodiversity



emergencies and their impacts on societies and economies worldwide. Irish scientists regularly participate in these processes and their expertise has often been instrumental to the findings and recommendations of both panels.

The scientific outputs from the IPCC have had a great impact in Ireland's climate policy, and as a result the Government's Climate Action Plan has been widely accepted by society and adopted across government. The draft of the next NBAP similarly learns from the IPBES and IPCC processes, and is based on a comprehensive assessment (aligned with the natural capital approach) of the potential costs, benefits, risks and opportunities associated with biodiversity loss to all sectors.

This integrated approach has similarly been adopted by the Central Statistics Office's Ecosystem Accounts Division, which is developing accounts of Ireland's natural capital based on the UN [SEEA-EA](#) (System of Environmental Economic Accounting – Ecosystem Accounting).

Another example of this approach to sourcing of scientific data is the work of the Marine Protected Area Advisory Group of the Department of Housing, Local Government and Heritage. The advisory group's [report](#) from October 2020 considers evidence from biological, social, economic and earth sciences, combined with an assessment of relevant cultural and political issues, to propose policy options for protection of Ireland's living marine resources and natural capital.

As an example of an ongoing project which has the potential to effectively inform future policy making, the pioneering EPA-funded [INCASE project](#), in which NCA is a partner, is the first research project to apply Natural Capital Accounting principles to river catchment areas in Ireland using the UN [SEEA-EA](#). The resulting Natural Capital Accounts (NCAs) will detail the extent and condition of natural capital stocks (including biodiversity) and the flow of services and benefits to society, and enable tracking of each over time. The NCAs can subsequently be linked to national accounts, making visible the previously hidden value of nature and the full range of costs and benefits of policies in every area. The INCASE report, due early in 2023, will promote better understanding of biodiversity to inform creation of accounts, and focused research on ecosystem service assessment.

**NCI recommendation:**

*NCI notes with concern that the above examples remain the exception, and there is an urgent need, given the scale and acute nature of the challenges Ireland faces, to develop an aligned approach to the generation and management of scientific evidence to fill the gaps and discrepancies that currently hamper integrated decision-making.*

**Question 3:** *What examples and experience do you have where advice could be more effectively sourced and applied?*

Whilst the draft of Ireland's next NBAP has a much greater focus on whole-of-government and whole-of-society approach than previous NBAPs and is based on the broad scientific assessment to support this, the NBAP is still in development and there is no guarantee that this kind of multi-disciplinary approach will be endorsed by all sectors of government; the failure to fully adopt such a multi-disciplinary approach is one of the reasons which has been cited for the failure of previous NBAPs to halt the biodiversity emergency in Ireland. [A review of the third NBAP \(2017 – 2021\) by the National Biodiversity Forum](#) highlighted the risks of failing to effectively include biodiversity science into other policy areas.

Also, although Irish natural capital accounts are being developed by the Ecosystem Accounts Division ([EAD](#)) of the Central Statistics Office (CSO) based on the [SEEA-EA](#) framework, this process needs to be



accelerated in order to deliver meaningful comprehensive national accounts and to provide data that will allow for informed policy development and decision-making.

NCI recommendation:

*In line with our responses to Questions 1 and 2, NCI recommends that a much greater effort must be made to break down silo-based approaches to the sourcing and application of science in policy development and implementation, and in policy evaluation.*

**Question 4: How could existing sources be better mobilised?**

Some of the major challenges to the adoption of multi-sector and multi-disciplinary approaches to the sourcing and use of science for policy development include:

- a lack of access to the type, range or quality of data required to inform decision-making;
- a lack of appropriate data standardisation to ensure scientific evidence is reliable; and
- a lack of awareness of the value of scientific data across disciplines.

For example, the importance of air quality data, linked to ground cover and vegetation indices, in dealing with pandemic impacts has only started to inform public health strategies in Europe very recently, two years after the Covid-19 emergency began. Yet addressing this issue is complicated by a lack of easy access to data, a lack of understanding within distinct disciplines of the relevance of data from other scientific sources, and insufficient capacity for understanding and using wider data sources.

It is therefore important to ensure that scientific data is freely accessible to all scientists who may need to use it, that the value of cross-sectoral collaboration is promoted and that capacity for multi-disciplinary approaches is strengthened.

Natural Capital Ireland hosted the first national *Data 4 Nature* Workshop in 2021, Workshop on May 11th, 2021, supported by the Open Data Engagement Fund of the Department of Public Expenditure and Reform with additional funding from the Office of Public Works. The purpose of the workshop was to assess the state-of-play for nature-related scientific data in Ireland. This workshop brought together policy makers, state agencies, data holders and academics to discuss ways in which the collection and publication of environmental, land and water data can be harmonised to facilitate the preparation of Ireland's first natural capital accounts (i.e. the [INCASE](#) project). Recommendations for improving the mobilisation of scientific nature-related data included: development of a centralised dashboard for Irish nature data; establishment of robust data gathering protocols; development of protocols to ensure harmonisation of formats; establishment of methods to publicise and promote Irish nature data; and to ensure open and equal access to data for all. The final report from this workshop can be viewed [here](#). Full implementation of these recommendations would allow for open access to relevant and comparable scientific data to enable research and inform on policy and decision-making.

NCI recommendation

*NCI recommends that the recommendations of the Data 4 Nature workshop are given due consideration and adapted for the development of policies for the sharing and management of scientific data across all disciplines.*

*NCI also recommends that Government should ensure that outputs and data from all scientific research projects that are funded by the taxpayer are made freely available to all through open access mechanisms. Such free access to information and data will enhance the availability and use of*



*knowledge across difference research areas, helping to open up silos and promoting further research and more informed policy and decision-making.*

**Question 5:** *What kind of individual skills and competencies do science advisors, scientists, and government officials need to develop to effectively populate or engage with science advisory structures?*

As stated above, the value of science to effective policy development to address societal challenges is hampered by silo-based approaches in government departments and scientific disciplines, and by issues in data access and usability.

A further issue is the difficulty associated with translating scientific research into formats or guidelines that are both sufficiently detailed to appropriately inform policy and yet non-technical and succinct enough to meet the needs of non-expert decision makers, while acknowledging the uncertainties inherent in all scientific analyses. Meanwhile, scientists, science advisors and policy makers should be able to explain the science and processes behind policies clearly and concisely to all stakeholders and the public at large. However, public and policy communication are not skills most scientists gain through their graduate or post-graduate training.

We respectfully offer that the increasing use and importance of natural capital approaches to societal challenges across Europe can serve as a useful model on which to base some of this work (see [here](#) for more details on *Science for Environment Policy*, an EU Commission initiative).

*NCI recommendations:*

*In line with the comments to other questions above, NCI recommends that greater effort is made by Government to ensure that silo-based approaches are removed from the sourcing of scientific evidence and expertise, and from their application in policy development, implementation and valuation contexts. Scientists should be encouraged and supported to engage in multi-disciplinary partnerships in producing policy-relevant research in response to societal challenges, through appropriately funded and independent science-policy fora and communities of practice.*

*NCI further recommends that Government should seek to significantly increase the capacity of Irish scientists to translate their work for use in policy contexts, and work with academic institutions and professional science organisations to provide appropriate training for policy and public communications. Working to address these issues should be part of the mandate of the Chief Science Advisor(s) to Government.*

**Question 6:** *How can we make sure that citizen involvement, public trust and experience-based knowledge is included in any science advisory structure?*

The growing public awareness of the current and potential future implications of the climate crisis and the biodiversity emergency, and recent experiences related to the Covid-19 pandemic, have highlighted the need for reliability in the sources of scientific advice and the public expectation of transparency in how that science is selected, interpreted, and applied. NCI broadly agrees with the statement from the [Royal Irish Academy of 29<sup>th</sup> September 2021](#), and welcomes the decision by Minister Simon Harris to separate the role of Chief Science Advisor to the Irish Government from the role of Director General of Science Foundation Ireland.

A persistent issue which gains regular public attention is the lack of certainty or clarity surrounding various scientific statements or claims made in the public sphere, particularly those relating to



commercial interests and consumer products or services. For example, claims of “environmentally sustainable” consumer goods which are not supported by scientific evidence, or claims that packaging is recycled, compostable or recyclable without appropriate certification, frequently enter the public discourse and give rise to fears of greenwashing (seeking public relations benefit from unsubstantiated claims of environmental or social responsibility), which has a significant negative impact on public confidence in, and understanding of, science.

*NCI recommendations:*

*Regarding the role of the Chief Science Advisor (CSA), NCI recommends that a further positive step would be to ensure that the position of CSA explicitly include a focus on addressing Ireland’s most pressing social and environmental challenges, promoting a holistic whole-of-government approach to the SDGs as a priority. NCI also urges that efforts are made to ensure that commercial considerations should not enter into the CSA’s purview, and that definitive steps are taken to ensure and demonstrate that the sourcing and application of science to policy should be free from private sector influence, lobbying or interference.*

*NCI also recommends that Government takes steps to increase and support the public understanding of science through a continuous public education programme using all available media resources; that public scrutiny of scientific claims should be encouraged; and that concerns regarding the use of scientific claims in commercial contexts be addressed through legislation, in line with EU initiative on [substantiating green claims](#).*

**Question 7: How can the Irish system be better-connected to EU and EU-27 science advice processes?**

Ireland has benefited from very significant amounts of funding from the EU across many areas, including infrastructure, agriculture, biodiversity, business, climate change and health. Irish scientists contribute significantly to EU research project and their outputs, and [EU Research and Innovation](#) funding has resulted in research that is making breakthrough discoveries in science, health, transport, climate change and digital technologies.

[Horizon Europe](#) is the EU’s key funding programme for research and innovation over the 2021-2027 period. EU support for research and innovation encourages cooperation between research teams across countries and disciplines, which is vital in making breakthrough discoveries. Ireland has a strong track record, winning €1.2 billion in funding through Horizon 2020 (2014-2020). However, such European Framework Programmes as Horizon Europe are not widely known across many sectors in Ireland, including within some government departments and agencies. The funding Ireland receives from such European programmes hugely benefits the Irish economy, society and knowledge pool; however, there is a need for greater public awareness of the amount of funding Ireland receives via programmes like Horizon Europe and to celebrate the achievements from research teams that benefit from this funding.

Furthermore, NCI’s recent experience and communications with Irish scientists have indicated that many recipients of Horizon funding for individual projects are unaware of similar or related projects which have also received Horizon funding in Ireland, or which have been funded directly by state or semi-state agencies (such as the Environmental Protection Agency or Health Research Board). This includes ongoing projects aimed at developing better scientific resources for policy makers.



NCI recommendations:

*NCI urges Government to ensure that the value (in terms of financial input and societal impact) of EU and Irish Government funding for science in Ireland is more effectively communicated to the Irish public, and that the engagement of the public with the outputs of that research is encouraged and supported.*

*Further, NCI recommends that Government should take steps to support the development and work of cross-disciplinary communities of practice to bring scientists and stakeholders together to promote engagement and understanding and facilitate work to remove the barriers at the science-policy interface.*

We hope that the above commentary is helpful in the development of further policy initiatives on the sourcing and use of science for policy in Ireland. With our particular expertise and detailed experience in multi-disciplinary approaches to developing and translating scientific evidence for policy applications in Ireland and the EU, through natural capital approaches, NCI would welcome the opportunity to provide further information on our work to the Department. Please contact us at [researchteam@naturalcapitalireland.com](mailto:researchteam@naturalcapitalireland.com).

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**Natural Capital Ireland**



**APPENDIX 1 – Natural capital concepts and definitions**

We outline below what the natural capital concept is about and why we consider that viewing our biodiversity and ecosystem services through the lens of natural capital enables us to understand much better its importance to our lives, health and economies. We include a definition of *biodiversity*, *ecosystem* and *ecosystem services*, as these are central to understanding our natural capital.

**What is natural capital and the natural capital approach?**

<b>What is natural capital?</b>	<b>What is the natural capital approach?</b>	<b>What is natural capital accounting?</b>
It is an economic metaphor for nature. A way of framing the world's ecosystems including biodiversity, water and minerals as stocks of assets that yield flows of benefits to biodiversity and people. Biodiversity is one element our natural capital, the other being ecosystem services.	This approach involves measuring our natural capital to reveal how it is delivering important benefits to society and the economy. The concept of natural capital provides a way to understand the value nature provides and our dependence on it, and enables the public and policy makers to avoid unintended losses.	This is a system for organising information about natural capital stocks and ecosystem service flows. Natural Capital Accounts (NCA) detail the <i>extent</i> and <i>condition</i> of natural capital stocks (including biodiversity) and the flow of <i>services</i> and <i>benefits</i> , and enable tracking of each over time. NCAs can be linked to national accounts, making visible the previously hidden value of nature and its impact on the costs and benefits of policies in every area.

<b>Biodiversity</b>	<b>Ecosystem</b>	<b>Ecosystem services</b>
Biodiversity refers to the variety all life forms on earth, including humans. In most cases, the more biodiverse ecosystems have higher rates of ecological functioning, and more resilience to environmental change.	An ecosystem is a biological community of interacting organisms and their physical environment, e.g. woodlands, peatlands, dune systems, oceans, rivers, hedgerows, soils, etc. Healthy ecosystems are vital to our survival, well-being and prosperity.	Ecosystem services are the result of processes that ecosystems perform, resulting in benefits such as air purification, which make human life both possible and more enjoyable.

