



Acadamh Ríoga na hÉireann  
Royal Irish Academy



**International  
Delegates Report  
2017**

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# Foreword

*“The Academy is ‘punching above its weight’ on the European and broader international stage.”*



**Professor Peter McHugh, MRIA,**

Policy and International Relations Secretary

The Royal Irish Academy is very actively engaged with a number of international associations of academies, in particular the European Academies Science Advisory Council (EASAC), the Federation of All European Academies (ALLEA) and the International Council for Science (ICSU). These are highly active associations focused on promoting the academic mission for the betterment of humanity, society and the natural world. They do so through engaging in high level policy-generation projects, such as pan-disciplinary projects concerned with the development of science education policy and the establishment of a code of conduct for research integrity, and specific sector-focused projects such as the development of policies for energy storage, food and nutrition security, and genome editing for human healthcare. In all such activities, a truly inter- and multi-disciplinary approach is taken, harnessing the talents of the key opinion leaders in the relevant areas through the membership of the constituent national academies and their external contacts.

As is clearly evidenced by the contents of this report, the Royal Irish Academy is

heavily involved in a broad range of activities within these associations, in many cases through project leadership roles, and consequently is making key contributions to the development of future European and international policy in the relevant domains. This is something we should be very proud of; from what I have seen from my own participation at ALLEA and EASAC generally assemblies, for example, since taking up the role of Policy and International Relations Secretary in 2016, I can directly attest to the high profile and hugely positive contribution that the Academy is making to these efforts, and the high esteem and respect that is afforded to us on the European and international stage, all the result of significant positive efforts made by our membership, officers, staff and external nominees over many years. We are certainly “punching above our weight”!

I wish therefore to express my sincere thanks to those who represent the Academy and Ireland in these international working groups and associated projects. Significant time and energy is demanded, but it is clearly evident this is given generously and enthusiastically, and for this the Academy is extremely appreciative. I

should express a special word of thanks to our former President, Luke Drury, for his positive and continued engagement with ICSU on behalf of the Academy. Finally, I

need to express my thanks to the hard-working and always positive and helpful Academy staff for making it all happen.

# RIA membership of European and International Scientific and Scholarly Alliances, 2017

European Academies Science Advisory Council (EASAC)

Federation of All European Academies (ALLEA)

Future Earth Global

InterAcademy Panel (IAP) – global network of science, medical and engineering academies

International Astronomical Union (IAU)

International Council of Scientific Unions (ICSU)

International Federation of Associations of Classical Studies (FIEC)

International Federation of Philosophical Societies (FISP)

International Geographical Union (IGU)

International Mathematical Union (IMU)

International Union of Biochemistry and Molecular Biology (IUBMB)

International Union for Quaternary Research (INQUA)

International Union of Academies (UAI)

International Union of Biological Sciences (IUBS)

International Union of Geodesy and Geophysics (IUGG)

International Union of History and Philosophy of Science and Technology/Division of History of Science and Technology (IUHPS-DHST)

International Union of History and Philosophy of Science and Technology/Division of Logic, Methodology, and Philosophy of Science and Technology (IUHPST-DLMPST)

International Union of Pure and Applied Chemistry (IUPAC)

International Union of Radio Science (URSI)

International Union of Theoretical and Applied Mechanics (IUTAM)

Thesaurus linguae Latinae (TLL)

# The European Academies Science Advisory Council

[www.easac.eu](http://www.easac.eu)

European Academies



**EASAC** - the European Academies' Science Advisory Council - is formed by the national science academies of the EU Member States to enable them to collaborate with each other in providing independent science advice to European policy-makers. It thus provides a means for the collective voice of European science to be heard. EASAC was founded in 2001 at the Royal Swedish Academy of Sciences.

With the growing importance of the European Union as an arena for policy, national science academies recognise that the scope of their advisory functions needs to extend beyond the national to cover also the European level. Through EASAC, the academies work together to provide independent, expert, evidence-based advice about the scientific aspects of public policy to those who make or influence policy within the European institutions. Drawing on the memberships and networks of the academies, EASAC accesses the best of European science in carrying out its work. Its views are vigorously independent of commercial or political bias, and it is open and transparent in its processes.

EASAC activities include:

- substantive studies of the scientific aspects of European policy issues
- reviews and advice about policy documents
- workshops aimed at identifying current scientific thinking about major European policy issues
- workshops aimed at briefing policy-makers
- short, timely statements on topical subjects
- lay summaries aimed at communicating with non-expert audiences.

# Report of the Academy's Nominee to the EASAC Environment Steering Panel



**Professor Michael B. Jones, MRIA**  
Trinity College Dublin

*Professor Mike Jones was elected as a Member of the Royal Irish Academy in 2003. He is Emeritus Professor of Botany at Trinity College Dublin. His main research interests are in plant ecophysiology which involves the study of climate-plant interactions, particularly the effects of changing climate, and the direct effects of rising CO<sub>2</sub> on agricultural and natural grasslands. He is internationally recognised for his research on plants with C<sub>4</sub> photosynthesis, their adaptation to temperate climates and their potential uses as energy crops. He is currently subject editor of Global Change Biology and GCB-Bioenergy and has published over 120 refereed research papers in lead international journals as well as four books and many book chapters. He was appointed a member of the EASAC Environment Steering Panel in November 2016.*

The EASAC Environment Steering Panel is chaired by Lars Walloe (Norway). Environment Programme Director Mike Norton (Japan / UK) is responsible for the Panel's general organisation and day-to-day business. The Panel meets normally twice



yearly to discuss the latest issues of concern to the Environment science community, general strategy and decisions on project proposals.

The EASAC Environment Programme provides independent and leading edge scientific assessments and advice to EU environment policy communities, drawing together experts from across the science academies of the EU. Topics are selected by EASAC Council on the basis of advice from the Environment Steering Panel and can encompass a wide range of environmental issues of priority interest to the EU (such as climate change, air and water quality, wastes and resources, biodiversity, ecosystems and sustainability).

During 2017 the EASAC Environment Steering Panel met on two occasions. In April, it met in Lisbon and was hosted by the Portuguese Academia de Ciencias de Lisboa and in September it met Warsaw and was hosted by the Polish Academy of Sciences. In Lisbon, the steering panel reviewed progress on a major report on sustainable and multifunctional forestry. This had involved a large expert group which had decided to focus on biodiversity

and climate related issues and they had completed a science based analysis in November 2016. The report was launched in Brussels in May 2017 followed by a panel discussion in which members of the European Forestry Institute, forest owner organisations and environmental groups participated. In Warsaw reports were received on work in progress on projects on negative emissions technologies and sustainability in soils and proposals were received for future projects on Extreme Weather and Peatlands and Wetlands. Other topics which may be of future interest are climate change impacts of livestock production and the impacts of plastics, not only on marine life but also on ecosystems more widely. All of the above projects are relevant in the Irish context and in particular it is anticipated that there will be a strong Irish contribution to the future project on Peatlands and Wetlands. Reports on the EASAC Environment Steering Panel proceedings were provided for the Academy Committee on Climate Change and Environmental Sciences.

Professor Jones was nominated by the RIA for membership of the expert group preparing the report on *Negative Emissions Technologies: What Role in Meeting Paris Agreement Targets?* The expert group have communicated mainly by e-mail and there was a one-day meeting hosted by the Royal Society in London on Tuesday 29th August 2017. Under the leadership of the Environment Programme Director Mike Norton, the group has now completed the report and it is currently under review by reviewers nominated by EASAC academies and then circulated to EASAC member academies for their endorsement. Timing is still waiting to be clarified, but the launch is expected to be early in the New Year. The report will be of particular interest to the Environmental Protection Agency which has recently funded a project on *The Potential for Negative Carbon Emissions in Ireland*. Professor Jones is a participant in this project.



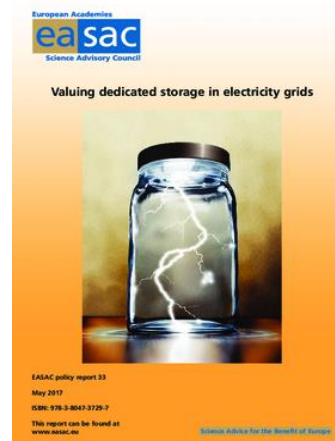
# Report of the Academy's nominee to the European Academies Science Advisory Council Steering Panel on Energy



**Professor Mark J. O'Malley, MRIA**

University College Dublin

*Professor Mark O'Malley was elected a Member of the Royal Irish Academy in 2008 and is a Fellow of the Institute of Electrical and Electronic Engineers. He is the Professor of Electrical Engineering at University College Dublin (UCD) and founding Director of the Electricity Research Centre, a multidisciplinary, multi-institutional, industry-supported research activity. Mark is also co-founder of the International Institute for Energy Systems Integration (iiESI), a global community of scholars and practitioners engaged in developing an efficient world energy system, and coordinator of the European Energy Research Alliance Joint Programme in Energy Systems Integration. He is recognised as a world authority on grid integration of renewable energy and has active research collaborations in Europe, China (Tsinghua University and State Grid China), and the United States (Department of Energy National Renewable Energy Laboratory). Mark was appointed to the EASAC Energy Steering Panel in 2010 following his participation in the study on Transforming Europe's Electricity Supply - An Infrastructure*



Strategy for a Reliable, Renewable and Secure Power System.

The EASAC Policy Report no. 33, 'Valuing Dedicated Storage in Electricity Grids', was formally launched at a series of events in the Palace of the Academies, Brussels on 19 and 21 June 2017.

This report was prepared under the auspices of the EASAC Energy Steering Panel with the Royal Irish Academy acting as the lead academy for the project. The project's working group was composed of 17 expert scientists nominated by EASAC member academies and chaired by Professor Mark O'Malley, MRIA (University College Dublin). The group met on four occasions to consider the report and to receive input from invited experts. The final meeting of this group was hosted by the RIA on 23/24 March 2016, and included an open workshop with presentations from a series of invited speakers.

The report provides an independent perspective, for EU policy makers on the value of dedicated storage in electricity grids from a scientific perspective. It concludes that the value of storage is system dependent and that it can contribute to balancing, reserves, capacity and generation adequacy as well as congestion management. However, in electricity markets, it must compete with flexible generation, demand response, interconnections and curtailment.

To mark the Irish launch of the report, the Policy and International Relations unit, in conjunction with the Electricity Research Centre, UCD, arranged a high-level technical breakfast briefing on the report on 7th September 2017.

Presentations were delivered by

- Professor Mark O'Malley (UCD)
- Dr William Gillet (Programme Director, EASAC Energy Steering Panel)
- Mr Paul Denholm (US National Renewable Energy Laboratory).

The audience of 35 was composed of academic and industrial stakeholders, with representatives from organisations such as the Economic and Social Research Institute, the Irish Academy of Engineering, ESB (Electricity Supply Board) International, the Commission for Energy Regulation and a broad range of private sector energy companies and start-ups.

# Report of the Academy's Nominee to the EASAC Working Group: Food, Nutrition, Security and Agriculture



**Dr Aifric O'Sullivan**  
University College Dublin

*Dr Aifric O'Sullivan is a Principal Investigator in the UCD Institute of Food and Health and member of faculty in the UCD School of Agriculture and Food Science. She joined UCD as an Assistant Professor in Human Nutrition in 2012 from University California, Davis. Her research focuses on early origins of malnutrition and the major global challenge of providing food and nutrition security for all. She is a member of the Board of Trustees for UCD Volunteers Overseas and is a Deputy Director of the UCD Childhood and Human Development Research Centre.*

## **Working Group on “Food, Nutrition, Security and Agriculture”**

Global food systems present complex challenges for the science community. Demands on global food systems such as climate change, population growth, economic equality and instability make it even more difficult to deliver food and nutrition security for all. The Sustainable Development Goals (2015) provide a framework for meeting the challenges

posed, but require engagement from science to address the complexities of evidence-based policies and programmes, so that goals can be realised.

The EASAC Working Group on “Food, Nutrition, Security and Agriculture” is contributing to a larger project organised by the InterAcademy Partnership (IAP) to provide scientific recommendations on the topic of "Food and Nutrition Security and Agriculture" (FNSA) to policy-makers and the public at a global level. The IAP initiative calls on regional academy networks in Europe (EASAC), Africa (NASAC), Asia (AASSA) and Americas (IANAS) to present the opportunities and challenges for the science-policy interface, advise on ways to increase food and nutrition security and identify how inter and trans-disciplinary research can contribute to resolving issues for agriculture and food systems. Reports from the four regional networks will form the basis of a global report. The FNSA initiative represents the first time that this parallel



regional-global approach is taken, and it aims to establish a novel model of delivering science policy advice that may be used in the future.

The EASAC Working Group is Chaired by Prof Joachim von Braun, Director of the Centre for Development Research (ZEF) at University of Bonn, and Prof Volker ter Meulen, Co-Chair of the IAP.

### **Working Group Report 2017**

The EASAC Working Group on “Food, Nutrition, Security and Agriculture” includes experts from a range of disciplines, nominated by national academies of science across Europe. The group started work in early 2016, they held two meetings in Brussels, the first in April and the second in October 2016. Following email correspondence and a final meeting in Halle, Germany in April 2017, the final draft was sent for peer-review and academy endorsement. The EASAC FNSA report was published on the 5th of December 2017. The report identifies many opportunities to generate, connect and use research, all of which are relevant to Ireland given the importance of the agri-food sector and Ireland’s specific strengths in agriculture, food and health research nationally. Some of the top line findings of relevance for Ireland include:

#### **Food consumption will need to change to improve consumer health:**

Food consumption patterns will need to change to improve health and to move towards sustainable food intake patterns. Although a better definition of a sustainable diet and how best to measure sustainability related to consumption is required.

Research is also needed on how to increase consumer acceptance of innovative foods and diets, and policy makers will need to consider incentives to support behaviour change. In connection with food and health outcomes, it is important to consider individual responsiveness and the particular needs of vulnerable groups. Europe must commit to collecting robust data on food waste and consider novel approaches to reducing waste if the Circular Economy and Bioeconomy policy objectives are to be met. Food contamination must be characterised and monitored to reduce food safety concerns.

#### **Farming and agriculture have significant impacts on human health and the environment:**

European policy must reflect the key role agriculture plays in European competitiveness. A revised Common Agricultural Policy should focus on innovation. Europe must examine and improve resilience to market and trade volatility in the agricultural sector. The role of livestock in greenhouse gas production and changes in demand pending increased production and consumption of alternative dietary protein sources need to be considered. There are significant opportunities to increase food from the oceans by improving the knowledge base for sustainable harvesting, as well as other alternatives such as meat that is cultured in vitro and insects. Next generation biofuels will likely include cellulosic raw materials. Soil science research should look to improve understandings of the functions of soil in carbon sequestration and in biodiversity, and for the bioeconomy.

**Europe must support innovation:**

Breakthroughs in genome editing and other genetic research will be crucial to the future of food and agriculture in Europe. Policy makers should capitalise on the scientific advances in genomics right through the chain from crops, to animal and human health. Precision agriculture offers many opportunities to improve productivity with reduced environmental impact. Large data sets are a vital tool to support innovation throughout the food system and prepare for risk and uncertainty.

in July 2018.

**Working Group Agenda 2018**

The April 2017 meeting was the first step towards the IAP Global FNSA report. Dr O'Sullivan was invited to represent the EASAC as part of a small editorial team that will meet in February to review the first draft of the global report. She was also invited as a panellist at the IAP/EASAC led session on the Food and nutrition security and agriculture during the EuroScience Open Forum (ESOF) meeting in Toulouse

# Report of the Academy's Nominee to the EASAC Working Group: Genome Editing – Scientific Opportunities, Public Interests and Policy Options in the EU



**Professor Bert Rima, MRIA**  
Queen's University Belfast

*Bert Rima was appointed Professor of Molecular Biology in 1993. His main research interest is to use techniques to genetically modify human pathogenic viruses such as mumps and measles virus and the evaluation of the mutant viruses in animal model systems including ferrets and macaques. His work now centres primarily on viral evolution and how viruses are attenuated for vaccines and what barriers prevent animal viruses from infecting humans and vice versa*

## **The importance of Genome editing and the problem the group addressed**

Genome editing, the deliberate alteration of a selected DNA sequence in a cell using site-specific DNA nucleases, has become an important tool in basic research. Genome editing has been described by some as a transformative technology and, certainly, in some areas of research and innovation, it is transforming expectations and ambitions. Genome editing has the potential to specifically modify individual nucleotides in the genome of living cells,



and together with a growing ability to monitor and reduce off-target effects, it brings new opportunities within range. Because of its general applicability (in microbial, plant, animal and human cells) it has a very wide range of potential uses to tackle societal objectives.

## **The group recommended in the area of control, EU regulation and mitigation:**

Present knowledge gaps and uncertainties emphasise the need for more basic research. It is expected that research advances will fill many of the current knowledge gaps and that progressive refinement of genome editing tools will further increase their efficiency and specificity, thereby reducing off-target effects. EASAC anticipates that the fast pace of change in research and innovation will continue and is willing to return to the subject of this report in due course to review the group's assessments.

EASAC concludes that policy considerations should focus on the

applications in prospect rather than the genome editing procedure itself as an emerging technology. It is important to ensure that regulation of applications is evidence-based, considers likely benefits as well as hypothetical risks, and is proportionate and sufficiently flexible to cope with future advances in the science. A number of recommendations have been made specific to the area of genome editing in plants, animals and microbes as well as the clinical use of the technology in human medicine. In the latter area, the group has not made any new observations or recommendations that have already not been made by other academies and the Federation of European Medical Societies.

**Many general recommendations for cross-cutting issues have been identified as:**

Public engagement – There must be trust between researchers and the public and, to build trust, there must be public engagement. Stakeholders, including patients, clinicians, farmers, consumers and NGOs, need to be involved in discussions about risk and benefit and scientists need to articulate the objectives for their research, potential benefits and risk management practices adopted. There is need for additional social sciences and humanities research to improve public engagement strategies.

Enhancing global justice – There may be a risk of increasing inequity and tension between those who have access to the benefits of genome editing applications and

those who do not, although the widespread adoption of the technique might facilitate the sharing of benefits. The scientific community must work with others on the determinants to narrow the societal gap: for example, by active knowledge transfer, collaboration between researchers worldwide, open access to tools and education, and education efforts

EASAC has produced the working group's report in the spring of 2017. A further meeting between the National Academies of Sciences and EASAC took place in October 2017 in the Herrenhausen Conference Centre in Hannover facilitated by the Volkswagenstiftung which discussed specifically the Biosecurity implications of the Genome Editing technology. The Inter Academies Panel (IAP) will produce a report of the meeting.

**The relevance of this work in the Irish context**

Regulation around several aspects of human reproductive technology and other aspects of research on stem cells, embryos etc. is lacking in the Republic of Ireland. The Royal Irish Academy should play a leading role in pointing out the need for proper regulation, the development of such regulation and more specifically in promoting a wider societal debate on the moral and ethical implications of research using genome editing and its applications.

To this effect RIA is organising a one-day Conference on this topic on 26 April 2018.

# All European Academies

[www.allea.org](http://www.allea.org)



**ALLEA** - the European Federation of Academies of Sciences and Humanities - was founded in 1994 and currently brings together 59 Academies in more than 40 countries from the Council of Europe region. Member Academies operate as learned societies, think tanks and research performing organisations. They are self-governing communities of leaders of scholarly enquiry across all fields of the natural sciences, the social sciences and the humanities. ALLEA therefore provides access to an unparalleled human resource of intellectual excellence, experience and expertise.

Independent from political, commercial and ideological interests, ALLEA's policy work seeks to contribute to improving the framework conditions under which science and scholarship can excel. Jointly with its Member Academies, ALLEA is in a position to address the full range of structural and policy issues facing Europe in science, research and innovation. In doing so, it is guided by a common understanding of Europe bound together by historical, social and political factors as well as for scientific and economic reasons.



## Report on ALLEA–British Academy Working Group On “Truth, Trust & Expertise”



**Professor Maria Baghramian, MRIA**  
University College Dublin

*Maria Baghramian is a Professor in the School of Philosophy at University College Dublin. she graduated from Queen's University Belfast in Philosophy and Social Anthropology (1983) with a Double First and received a PhD from Trinity College Dublin (TCD) in Philosophy of Logic under the supervision of Timothy Williamson (1990). She has taught in TCD (1986-1990) and in UCD and since 1990, including being the Head of UCD School of Philosophy (2011-2013). Professor Baghramian has also held visiting posts in Harvard, MIT, University of Yerevan, the Department of Philosophy, Harvard (February-July 2014), Institut Jean Nicod, École normale supérieure, Paris and various universities in China. She was elected a member of the Royal Irish Academy in 2010 and was awarded a Fulbright senior scholarship in 2013.*

### **Project Aim:**

The objectives of the Working Group are to investigate the roles and values of expertise and research in a changing world, as well as to promote the value of reasoning in public discourse. It further aims at bringing together a pan-European, and potentially global, initiative on the overall questions arising from the changing social and political context in relation to truth, trust and expertise



**Professor Luke Drury, MRIA**  
Dublin Institute for Advanced Studies

*Luke Drury graduated from TCD in pure mathematics and experimental physics in 1975 and went on to study astrophysics at the Institute of Astronomy, Cambridge, UK obtaining his PhD in 1979 under the supervision of Dr John M. Stewart. He then worked in the Max-Planck-Institut fuer Kernphysik in Heidelberg with Prof H. J. Voelk before returning to Ireland as Senior Professor in the then Cosmic Ray Section in 1986. He was President of the Royal Irish Academy from 2011 to 2014.*

### ***The Function of the Working Group:***

This Working Group serves as a transnational platform for perspectives on the nature of and relationship between Truth, Trust & Expertise in the field of research and knowledge. It aims at an interrogation and exploration of the current and past dynamics of public trust in expertise and the challenges it faces in times of contested norms regarding what counts as truth, facts and evidence. The alleged loss of trust in research and evidence, its underlying causes, questions on how valid knowledge can and should be acquired and communicated, and how different academic disciplines are dealing with it, will be the central themes of this group.

### ***The Composition of the Working Group:***

The Working Group currently consists of nine members from a wide range of disciplines and representing academies from Germany, Ireland, Italy, the Netherlands, Sweden and the United Kingdom. It is co- chaired by Baroness Prof Dr Onora O'Neill, former President of the British Academy and Fellow of the Royal Society, and ALLEA Vice President Prof Dr Ed Noort from the Royal Netherlands Academy of Arts and Sciences.

### ***The Plan:***

During the next 12 months, the group plans to conduct three thematic Workshops in three European cities, a public scientific symposium in Sofia in May 2018 and a concluding public forum at the end of 2018. The work of the group will be divided into three thematic clusters. Each of the clusters will provide the guiding

theme for one of three thematic workshops. They are not open to the public and each participant will prepare and present extended abstracts (approximately 2 pages) to be circulated beforehand and critically discussed by the other participants during the workshop. The internal workshops are accompanied by two public events: (1) A Symposium with keynotes and panel discussions on the main issues debated in the working group. (2) A conclusive open forum to present the major findings of the Working Group. These events are preceded by a kick-off meeting in October 2017 to launch the Working Group and define its objectives.

- Workshop in London (19 February 2018) on the alleged loss of trust in expertise in a changing world. (Cluster 1).
- Workshop in Sofia (15 May 2018) on the different disciplinary perspectives how knowledge and evidence are produced and how they interrelate (Cluster 2).
- Public Symposium in Sofia (16 May 2018) as a showcase with keynotes and panel discussions on the main issues debated in the working group (Cluster 1 – 3).
- Workshop in Amsterdam (late August 2018) on the changing landscape of communication and its impact on the communication of scientific evidence (Cluster 3).
- Presentation of results and open forum (November 2018) on the possibilities and responsibility of public engagement of science in the world today.

**The practical aim of these meetings is to produce an ALLEA publication on the topic, including a section of**

**“conclusions”. Contributions to the publications are expected to be compiled through three thematic workshops held by the working group, and a public symposium in the context of ALLEA’s 2018 General Assembly.**

## **Lines of Inquiry**

### ***Cluster 1: The Loss of Trust(worthiness)?***

This cluster will start by questioning the claim that science in the *Wissenschaft* sense of the word is losing its role as a source of trust. Evidence and views about trust in experts vary widely. Therefore, as a primary step, the WG will inquire into the nature of trust and trustworthiness in relation to social institutions. It will also debate the existence and alleged connections between the transformation of research and society (e.g. a growing horizontality of plural knowledges) and a loss of trust or trustworthiness. Most of the existing work that claims a loss of trust in expertise seems to be hampered by a narrow methodological approach. Reported perceptions about trust are not mirrored in the ways which people place their trust, and therefore do not serve as a useful indicator for the loss of it. In this respect, the use of principles like accountability and transparency to establish trust in academic research will be critically examined. Hence, the working group does not take the general statement for granted that there is a potential loss of ‘trust in expertise’, but will rather focus on the trustworthiness of experts and institutions in specific areas. It will try to focus the de- bate on what the major challenges are for the trustworthiness of

academic scholars and institutions and how to make sure that experts are and are seen to be trustworthy, by strongly considering what has changed socially, politically, economically and culturally in different geographic and academic contexts.

- What is meant by ‘Trust’ and what are the conditions of trustworthiness? Are there recognised and accepted markers and conditions in ascriptions of trustworthiness?
- What is the role and function of trust in society? Are expertise and trust bounded to people and/or institutions?
- Is there good evidence of a loss of trust(worthiness) in expertise and/or scientific evidence? In what way are the conditions of trustworthiness subject to change? What factors contribute to strengthening or weakening them? (Affective vs. cognitive judgements; motivated irrationality; mistrust as resistance; trustworthiness as a value judgement; vulnerability; experience)
- In what way do the social, political, economic, geographical and cultural contexts impact conditions of trust and trustworthiness? Are there general conditions and features of trustworthiness or are judgments always context-specific? How is ‘truth’ generated in different societies (e.g. legally)?
- What are valid instruments to maintain or (re-)gain trust?
- How do principles of open science, accountability and transparency influence scientific results and thus trust therein?

### ***Cluster 2: Spectres of Science and***

### **Knowledge Production**

This cluster aims at a (self-)critical examination of how evidence and expertise are generated in the 21st century and how this affects public trust under the present cultural and political conditions in Europe. The aim is to initiate a debate and foster communication on the changing conceptions of how to generate valid knowledge across various disciplines. Academic disciplines rely on differing structures (methodologies, sources and varieties of data, evidence biases, tools) in their attempts at producing knowledge. At the same time, a growing plurality and visibility of incompatible truth claims within and beyond traditional academic institutions poses new challenges to the trust in traditional sources of expertise. This is reflected in a debate on what counts as legitimate research and how to guarantee integrity and prevent misconduct and fraud in research. There seems to be an especially strong divide between the social sciences/ humanities, and the so called 'hard' science. Thus, short presentations from each participant, summarizing the different academic claims on how to generate valid knowledge, and the changes that their respective academic disciplines and communities are undergoing, would be a promising foundation for an interdisciplinary debate. The aim is to clarify with which methodical steps different disciplines gather and develop their knowledge and try to appear as trustworthy and thus legitimate bearers of trust. Finally, leading over to Cluster 3, the mentioned plurality gives rise to the question of how to manage and communicate often competing results without being misinterpreted and/or losing integrity and trustworthiness.

- How can valid knowledge be generated across and within different disciplines to retain, renew or gain trust?
- How is a growing plurality and visibility of oftentimes competing truth claims affecting levels of trust in scientific evidence today?
- What are the constraints, hurdles and enablers of trust between and within academic disciplines?
- What counts as 'Expertise' in general and in specific areas? What kinds of expertise can be distinguished? Are experts from certain disciplines heard and listened to more than others and why? Does that mean they are trusted more/ considered more trustworthy?

### **Cluster 3: Changing Landscapes of Communication**

This cluster will address the problem of communication of evidence and the role of (digital) media. Many people expect academic research to offer authoritative conclusions. However, when its integrity becomes jeopardised by incomplete information, an overwhelming amount of data, imperfect knowledge, changing advice and sometimes even outright fraud or deception, its authority will be undermined. Moreover, competing sources of trust arise (e.g. in the form of political power centres and interest groups) that actively engage in the creation of compelling narratives ('nudging'), the interpretation of research or even the undetermining of trust through modern forms of (digital) disinformation and

deception ('fake news'). Therefore, it will be crucial to understand how digitalisation and the use of Social Media are affecting means and patterns of communication in various and often contradicting ways (e.g. effects of anonymity on authority structures and public deliberation; the loss of context through insulated articles or personalized media items; growing autonomy and democratization of knowledge; prevalence of trust in 'friends' over 'experts' due to 'sharing' mechanisms). Simultaneously, a lot of criticism has been raised towards researchers' alleged lack of willingness and/or competence to communicate the results to the public in a differentiated way and engage with new online communication tools. Finally, discursive, legal and political measures to deal with these challenges will be debated (e.g. legislative and regulatory safeguards that apply to print or broadcast publishing; regulation of digital companies as publishers rather than platforms).

- What is and has been the role of (social) media in communicating scientific evidence?
- How is digital media (mis)used to sow (false) beliefs and distrust in democratic institutions?
- How do new tools for and patterns of communication challenge trust and trustworthiness?
- Shall and can online communication tools and new technology platforms be held accountable for fair, accurate and transparent reporting of scientific knowledge?

### **Conclusion: Credibility, Responsibility and Public Engagement**

In the final event, the WG will present its

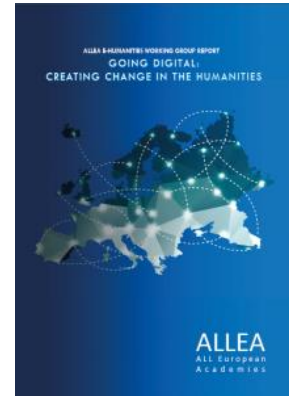
results and unresolved questions from the Workshops and try to discuss public engagement strategies for researchers to raise their relevance in public and policy discourse through a more pro-and interactive approach with due consideration to the need for intellectual humility. It is hoped that this approach will allow for the distinction of intelligent and valid concerns about innovations (e.g. ethical) from wholesale, irrational rejections of expertise and scientific evidence. The debates and insights from the preceding clusters will inspire the search for concrete steps towards better public engagement that builds on trustworthiness, credibility and social responsibility. This will include an assessment of the possibilities and limits of public engagement for the research community with highly diverse target groups and varying purposes. It will debate how to enhance trustworthiness, while trying to avoid an excessively narrow focus on best practices of Research Integrity. The relation of academic research and policy will play an important part in this debate, as well as context sensitivity in different cultural, social and political settings.

- What defines and divides 'experts' and 'non-experts' in any given area?
- What are the tools for academic research and research to (re-)gain trustworthiness and credibility?
- What are the opportunities and limits of Public Engagement? What are strategies to make academic research easier to access and understand for non-experts from different areas?
- What can 'experts', particularly from academia, learn from other communities of knowledge?

# Report of the Academy's Nominee to the ALLEA e-Humanities Working Group



**Dr Natalie Harrower**  
Digital Repository of Ireland



*Dr. Natalie Harrower is Director of the Digital Repository of Ireland. Appointed Chair of the ALLEA E-Humanities working group in 2015, Dr. Harrower is also a member of the OECD Global Science Forum High Level Expert Group on Sustainable Business Models for Data Repositories, on the Board of Directors for the Research Data Alliance Europe project, a member of the National Open Access Committee, and a member of the DARIAH Ireland Steering Committee.*

The ALLEA E-Humanities Working Group was established in 2014, and charged with identifying and raising awareness for priorities and concerns of the Digital Humanities, contributing to the Open Access agenda from a Humanities and Social Sciences perspective, and building consensus for common standards and best practices in E-Humanities scholarship and digitisation. Humanities data can be rich and complex, non-standardised in format, without common or consistent metadata and ontologies, and can be subject to complex rights issues. Consensus and best

practice regarding digitisation and metadata standards for common usage, that still retain the richness of different disciplines and data types, can enable open access to Humanities data, and facilitate data exchange and sharing between the wealth of archives, repositories and libraries across Europe. In 2015, the group published *Going Digital: Creating Change in the Humanities*, (ed. Natalie Harrower) which was launched at a special meeting to representatives of the EC and stakeholders of the European scientific community in Brussels.

In 2016, the group shifted its focus to the European Open Science agenda, and the role that Humanities disciplines can play in that agenda. The first event hosted by the group in June 2016, in collaboration with Ireland's Health Research Board, was a two-day conference on 'Open Science and Ireland' at Academy House. This conference marked the first visit of the Chair of the High-Level Expert Group for

the European Open Science Cloud (EOSC) to a member state.

In 2017, the working group has refreshed its membership and set out a new focus of activity. As Chair of the group, Dr. Harrower was invited to join the Scientific Advisory Committee AGATE, a project to build an internet gateway for academy research in Europe. The advisory committee met in Berlin in January 2017, and Dr. Harrower chaired a panel at the symposium. In June 2017 Dr. Lisa Marie Griffith, Programme Manager at DRI, was appointed Secretariat of the working group and joined Dr. Harrower at the ALLEA AGM in September 2017 at the Hungarian Academy of Sciences to update ALLEA delegates on the group's work. Following the publication of the EOSC Declaration in October 2017, the Royal Irish Academy hosted the working group on 5th December 2017. This was an opportunity for the group to review new publications around the European Open Science agenda and to agree a new phase of work for the next three years. The group agreed that it would focus on the value and re-use of academy research data, and make recommendations around metadata creation, preservation and reuse. A full programme of activities will be set in 2018.

ALLEA – the federation of All European Academies – was founded in 1994 and currently brings together 57 Academies in more than 40 countries from the Council of Europe region. Member Academies operate as learned societies, think tanks and research-performing organisations. They are self-governing communities of leaders of scholarly enquiry across all fields of the natural sciences, the social sciences and the humanities. ALLEA therefore provides access to an unparalleled human resource of intellectual excellence, experience and expertise. Independent from political, commercial and ideological interests, ALLEA's policy work seeks to contribute to improving the framework conditions under which science and scholarship can excel. Jointly with its Member Academies, ALLEA is in a position to address the full range of structural and policy issues facing Europe in science, research and innovation. In doing so, it is guided by a common understanding of Europe bound together by historical, social and political factors as well as for scientific and economic reasons.

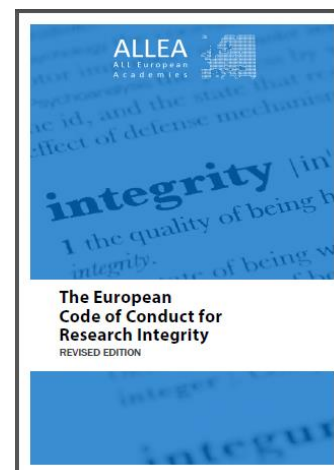
# Report of the Academy's Nominee to the ALLEA Permanent Working Group on Science and Ethics



**Dr Maura Hiney,**

Health Research Board

*Dr Maura Hiney has a PhD in Molecular Diagnostics and Epizootology from the National University of Ireland Galway. She is currently Head of Post-Award and Evaluation with the Health Research Board, Ireland. From 1990-1999 she worked as a senior researcher and managed a disease diagnostics service for the Irish fisheries industry and from 2000-2007 Maura was Head of Research Support Services for NUI Galway. She has been influential in raising awareness of research integrity (RI) issues in Ireland since 2007 and was instrumental in establishing a National RI Forum of key stakeholders and developing a national RI framework for broad adoption. Internationally, Maura chaired a Working Group of ESF Forum on RI, is a member of the European Network of RI Offices (ENRIO) and chairs the Science Europe Working Group on RI. With ALLEA she coordinated a revision of the European Code of Conduct on RI, which was launched by Commissioner Moedas in March 2017. She sits on the European Advisory*



*Committee for the 5<sup>th</sup> World Congress on RI and the Oversight Board of the EU-funded PRINTEGER and ENTiRE projects on research climate. She was a key contributor to the European Competitiveness Council conclusions on RI in 201*

## **2017 Activities**

### **Revised ALLEA European Code of Conduct for Research Integrity**

Research Integrity was primary policy focus of the ALLEA Permanent Working Group on Science and Ethics (PWGSE) in 2017. A small Drafting Group of the PWGSE, chaired by Dr Maura Hiney (Royal Irish Academy International Delegate) worked intensively in Q2-Q4 2016 and in Q1-Q2 2017 to produce a Revised European Code of Conduct for Research Integrity. The revised Code builds on the original European Code of Conduct for Research Integrity



published by ALLEA and the European Science Foundation in 2010, but takes into account developments that have taken place in the research environment since then. Proposed revisions were subject to scrutiny and validation by a wide array of stakeholder, including academies, university associations, research associations, policy associations, industry representative associations and the European Commission.

A number of important innovations were included in the revised Code, namely:

- The Code elevates Research Environments as first among good research practices, to emphasise the key role research institutions and organisations play in establishing an environment of good research practices
- The section on Training, Supervision, and Mentoring was expanded to recognise the importance of improving the skills of researchers in research integrity and ethics as well as in research design, methodology and analysis
- The revised Code now contains a new section on Collaboration, which reflects these changes and provides guidance on best practices
- Open access, dissemination of research data through repositories and social media interaction are now included
- A number of unacceptable practices, not captured in the original Code, are described, e.g. the practice of withholding data and materials of research which

could make reproducibility and replicability of research more difficult for similar projects is now included

- The Code highlights the importance of allowing researchers the independence to conduct their studies unimpeded by outside influences from funders and sponsors, who might wish to suppress, bias or overstate findings

The new ALLEA CoC was launched by Commissioner Moedas and Director of Research Dr Robert-Jan Smits in Brussels on the 24 March 2017, with Prof Göran Hermerén (Chair of ALLEA PWGSE), Prof Gunter Stock (ALLEA President) and Dr Maura Hiney (Chair, ALLEA Drafting Group) in attendance.

### **Ethical implications of Open Access**

Dr Maura Hiney has worked with other members of the PWGSE in Q3-Q4 to develop a programme for a one-day workshop entitled: Open Access problems and possibilities. The workshop will be held in Brussels on 1 February 2018, to compliment a workshop on Research Data being held on the 31 Jan 2018 in Brussels, organised by the Swiss Academy.

Obviously, open access to scientific publications has many advantages for researchers who want to be able to present their results and make them easily accessible, and for researchers and institutions who cannot afford to subscribe to scientific journals – as well

as for students and teachers, who can use the published scientific papers freely in teaching. But there are also problems, apart from the costs that have to be paid by individual researchers or their institutions, including the increase of predatory journals, of retractions, and of fake editors. How they will be dealt with, or perhaps: how the opportunities will be maximized and the threats minimized, will be discussed at this workshop, involving many eminent experts from different parts of the world and from all relevant sectors involved in or affected by the on-going debate on open access publishing. The Workshop will hear from experts in the field and also host two panel discussions to tease out the perspectives of academic stakeholders and publishers. It is planned to publish a report from the workshop later in 2018.

### **Other activities in which the International Delegate was involved**

Several topics for future work of the PWGSE were discussed at their meeting on 9 June 2017. Among them were the ethics of research collaboration between academia and industry, particularly touching on interests of private companies as well as touching on policy issues. Similarly, the responsibilities of researchers participating in public debates and their respective quality assurance were identified as a topic worth examining. The PWGSE agreed that as a next step a short paper will be drafted on the role and ethics of researchers in the public sphere and the ethics of experts, to be presented to the

group at its next meeting on the 2 February 2018 in Brussels. Martin van Hees and Maura Hiney will author the draft and Zbigniew Szawarski will complement before presenting to the whole group.

### **Impact of 2017 activities**

There has been considerable media and academic interest in the revised European Code of Conduct that has had many impacts:

- The European Commission sponsored inclusion of hard copies of the CoC in delegate packs (800) for the 5th World Congress on Research Integrity, held in Amsterdam on 29 May – 1 June 2017, thus ensuring broad dissemination to a wide audience of interested stakeholders.
- Currently, together with the European Commission, ALLEA is working on translating the Code to all official languages of the European Union. These translations will be verified by Academy members in advance of their more general release
- ALLEA are also working together with colleagues from Turkey on a translation and the Japanese have sought permission to translate the Code into Japanese and publish this in the Journal of Science and Technology Studies.
- The European Commission is committed to supporting the integration of the Code into national policy and processes, and has implemented it as the required standard of research

integrity for projects funded by Horizon 2020, the EU's research and innovation funding programme.

- At this year's Joint Research Center annual conference, European Commissioner for Science, Research and Innovation Carlos Moedas reaffirmed the importance of the Code as a reference document for Horizon 2020 grant agreements.
- The Estonian Research Council has recently published an Estonian Code of Conduct for Research Integrity, based heavily on the ALLEA Code.
- Members of the PWGSE received several keynote invitations to talk about the revised Code throughout 2017 – to this end the Chair of the Drafting Group developed a presentation which could be used in whole or part to ensure consistency across these different events.
- The PWGSE have proposed to the ALLEA Board that they include a session on the Code of Conduct at the ALLEA 2018 General Assembly.

### **Relevance for Ireland**

Research integrity has become increasingly important in recent years for the academic, policy, publisher, funding and enterprise community. It speaks to improving the quality and trustworthiness of research, while at the same time striving to reduce research waste through poor research practices, methodologies and design, which lead to lack of reproducibility and replicability.

Ireland came later than many other European countries to understanding the importance of having in place strong policies and processes to promote good research practices and protect the academic system from the damage caused by misconduct.

However, since the 2015 publication of the National Policy for Ensuring Integrity in Ireland Research, there has been a great deal of momentum in the Irish research system. The National Forum for Research Integrity was established as a primary recommendation of the Policy and has been very active in helping both research performing and funding organisations to develop robust research integrity policies and processes. The Royal Irish Academy has played an important role in the development of the National Policy and in supporting the activities of the Forum:

- It is an active member of the Forum, contributing expertise to their discussions
- It has co-hosted two national seminars on the topic, the latest seminar being on the theme of 'fostering a climate of research integrity' in February 2017 at the RIA
- The RIA supports an international delegate to participate in the ALLEA PWGSE, and in particular, facilitated her to act as Chair of the Drafting Group for the revised European Code of Conduct on Research Integrity

Having a member on the National Forum for Research Integrity who is knowledgeable about, and influential on, research integrity policy and issues as

they emerge in Europe greatly benefits the work of the Forum and ensures that it is in line with best practice. As an example, Maura Hiney is chairing a sub-group of the Forum to map the revised European CoC to the Irish policy and propose any necessary revisions that bring the two in line.

As other issues emerge from the work of the PWGSE, these will be

disseminated back into the Irish system. For example, the unintended consequences of the Open Science Agenda, which is a key theme of the PWGSE, will need to be carefully monitored and brought back to inform national deliberations.

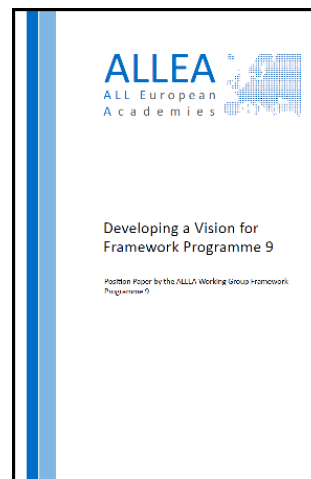
# Report of the Academy's Nominee to the ALLEA Framework Programme 9 Working Group



**Professor Imelda Maher, MRIA**  
University College Dublin

*Professor Imelda Maher MRIA was elected to the Academy in 2011 and is Polite Literature and Antiquities Secretary. She became the Academy representative on ALLEA in autumn 2016. She is the Sutherland Full Professor of European Law in the UCD Sutherland School of Law. She has published extensively on EU Law and Governance in both law and politics journals. She a founding member of the European Law Institute, Vienna and is former general editor of Legal Studies. She is currently President of the Society of Legal Scholars in the UK and Ireland.*

Professor Maher, as Polite Literature and Antiquities Secretary for the Humanities and Social Sciences is the Royal Irish Academy representative on the ALLEA Working Group on Framework Programme 9. Professor John Bell FBA is chair and 18 Academies are represented in the Group. The aim of the Working Group is to build on the work of the EASAC/ALLEA Social Sciences and Humanities Working Group to highlight



the importance of social sciences and humanities for the next Horizon 2020 (H2020) programme. The Group produced its Position Paper in July 2017, Developing a Vision for Framework Programme 9. The Group emphasised the need for the EU to be a world leader in research and innovation with originality and creativity central to this ambition. It noted the need for adequate resourcing especially for the most successful initiatives such the European Research Council and the Marie Skłodowska-Curie Actions. It sees the EU as adding value to rather than replacing or replicating national research systems and argues that the successor to H2020 should create incentives for interdisciplinarity, mobility, internationalism, excellence and impact for European societies for the long-term. In other words, economic or industrial benefit should not be the only incentive for research.

The Working Group in conjunction with HERA (Humanities in the European

Research Area) jointly prepared a statement, signed by several European organisations in November 2017. The statement was in response to a call by the Lamy group (the High-Level Group on maximising the impact of EU Research & Innovation Programmes) and was presented to them in December. The statement reflects on the type and scope of missions needed to adequately respond to future societal challenges in Europe. It explores what is meant by mission-orientated research noting that it should (1) be transformative; (2) see innovation as more than technology, (3) not be too constrained by specific end-products and “a premature identification of indicators of success or failure”, (4) facilitate projects of all sizes with innovative ideas in a bottom-up approach, and (5) both integrate all countries and regions and be open to collaboration with non-EU countries. The four missions identified by the statement

are: Living Together: Building Sustainable, Open and Democratic Societies for the Future; Catching up with Innovation: Preparing for Social Consequences and Embracing Opportunities; Growing up and Ageing in Europe: A Good Life and a Dignified Death; and Truth, Trust and Expertise: Establishing and Securing Trust as a Basis for Sustainable and Legitimate Governance. Most recently in February 2018 the Working Group responded to the Public consultation on EU funds in investment, research & innovation, SMEs and single market.

Through the participation in its Working Group the Academy continues to both gain insights into thinking across Europe as to how research policy should develop at the EU level and to help shape those debates both within the Working Group itself and through its participation in the wider EU level discussions.

# Report of the Academy's Nominee to the ALLEA Working Group on Science Education



**Dr Cliona Murphy**  
Dublin City University

*Dr Cliona Murphy is been lecturing in the area of science education at tertiary level for 17 years. Currently, her principle work focuses on the research, development and facilitation of pre-service, post-graduate and continuing professional development programmes in science education. She has conducted and published research in the area of the Nature of Science, Inquiry- Based Science Education and Education for Sustainability. She has developed a range of innovative educational resources to support the teaching and learning of science. Dr. Murphy was the Irish co-ordinator and principal investigator for Ireland in the European Fibonacci and SUSTAIN projects. She is currently one of the principal investigators on the Educating School Teachers and Faculty for Sustainability through Continuing Professional Development project, being funded by the Global Consortium for Sustainability Outcomes (GCSO)*

## **Activities for 2017** **AEMASE and CESAME**

The main foci of the Working Group's activities for 2017 were organising a third iteration of the AEMASE (African European

Mediterranean Academies for Science Education) conference and the setting up of the initial phase of the CESAME (Centres for Education to Science in Africa, the Mediterranean and Europe) project. A number of face to face and online meetings were held throughout the year to organize the AEMASE conference and the launch of the CESAME project.

The overall aim of the AEMASE network is to improve science education in schools in the African, Mediterranean and European (AME) regions. The 3rd AEMASE conference was held in Paris on 3-4 October 2017, hosted by the Académie des Sciences and supported inter alia by ALLEA, NASAC and IAP. The conference addressed politicians, decision-makers and funding agencies in order to stress the importance and benefits resulting from the reaffirmation of science education in Africa and Europe, to gain support for this endeavour, to disseminate the work and results of AEMASE, and, to raise funding for AEMASE field projects. Dr Cliona Murphy was invited to give an oral presentation on

Inquiry-Based Science Education (IBSE) initiatives in Ireland. The opening plenary and first five talks from the conference were recorded. These videos and all of the conference presentations are available at: <http://www.academie-sciences.fr/fr/Reseaux-pour-l-enseignement/aemase-videos.html> . The French Minister of education opened the conference and reaffirmed his support to Inquiry Based Science Education (IBSE) pedagogy and in particular to the nine French Houses for Science that educate in-service school teachers.

The final objective of the conference was the launch of the CESAME “Centres for Education to Science in Africa, the Mediterranean and Europe” project. The aim of the CESAME network is to support the renewal of school science education (education in mathematics, natural science, technology and engineering) in the African, Mediterranean and European regions. The initial two year phase of the project will see the establishment of three CESAME centres (one of which is in Trieste). It is anticipated that additional centres will follow when conditions permit, ultimately leading to the establishment of CESAME networks in all regions of Africa. A statement supporting the project was adopted at the final session with an overwhelming majority.

### **Further activities**

The Working Group (WG) was involved in submitting a response to the Horizon 2020 call for Open Schooling and collaboration on science education and it aims to address the problems with science education effectiveness at EU wide level.

Proposed Activities for 2018

During the WG meeting that took place in Paris on October 5, 2017, the 17 Sustainable Development Goals (SDGs) (United Nation, 2015) and the necessity for sustained efforts to ensure that young generations develop the requisite skills and knowledge to make informed decisions and act in an ever-changing world were discussed. About the SDGs, the importance of ensuring high quality Climate Change Education programmes at primary, secondary and tertiary levels throughout Europe was highlighted.

It was acknowledged by the WG that effective Climate Change Education programmes require the adoption of multidisciplinary approaches in order to effectively address the multifaceted issues surrounding Climate Change. Such approaches should therefore be informed by the traditional scientific disciplines as well as the humanities and social sciences. As a starting point the WG is therefore looking into the work being done on Climate Change by the different working groups of ALLEA and is gathering information on Climate Change Education initiatives that are being carried out in different European countries. The next face to face meeting of the SE WG will be held in Copenhagen in the middle of September 2018. It will focus on how ALLEA’s working groups can support and promote Climate Change Education initiatives throughout Europe.

The SE WG’s intention to focus on Climate Change Education is important in supporting Irish Educational efforts in ensuring that the younger generations of Irish citizens develop the requisite knowledge and skills that will enable them



to make informed decisions and to take the necessary actions to address Climate Change at both a local and global level. It is important that current and future Climate Change Education programmes and initiatives that are rolled out in Ireland adopt innovative, inquiry-based, multi-disciplinary approaches to learning about

climate change to ensure they have a positive impact on the younger generation. ALLEA and in particular the RIA academy could be instrumental in supporting the development and implementation of high quality Climate Change Education programmes at primary, secondary and tertiary levels throughout Ireland.

# The International Council for Science

[www.icsu.org](http://www.icsu.org)



**ICSU** - The International Council for Science - is a non-governmental organisation with a global membership of national scientific bodies and International Scientific Unions.

ICSU's mission is to strengthen international science for the benefit of society. To do this, ICSU mobilises the knowledge and resources of the international science community to:

- Identify and address major issues of importance to science and society.
- Facilitate interaction amongst scientists across all disciplines and from all countries.
- Promote the participation of all scientists—regardless of race, citizenship, language, political stance, or gender—in the international scientific endeavour.
- Provide independent, authoritative advice to stimulate constructive dialogue between the scientific community and governments, civil society, and the private sector.

The long-term strategic vision is for a world where science is used for the benefit of all, excellence in science is valued and scientific knowledge is effectively linked to policy making. In order to achieve this vision, ICSU developed a Second Strategic Plan, 2012–2017 which identifies key priorities and associated activities. These activities focus on three areas:

- International Research Collaboration
- Science for Policy
- Universality of Science

# Report of the Academy's Nominee to the Management Board of the European Group of ICSU Members (EURO-ICSU)



## **Professor Luke Drury, MRIA**

Dublin Institute for Advanced Studies

*Luke Drury graduated from TCD in pure mathematics and experimental physics in 1975 and went on to study astrophysics at the Institute of Astronomy, Cambridge, UK obtaining his PhD in 1979 under the supervision of Dr John M. Stewart. He then worked in the Max-Planck-Institut fuer Kernphysik in Heidelberg with Prof H. J. Voelk before returning to Ireland as Senior Professor in the then Cosmic Ray Section in 1986. He was President of the Royal Irish Academy from 2011 to 2014.*

The Euro-ICSU group is a relatively informal association of the 43 European national academies that are members of the International Council for Science, ICSU. Its aim is to give Europe a coherent voice within ICSU and to maximise the benefit of ICSU membership for the European academies. The association is run by a small management group which meets, either virtually or in person, a few times a year and a secretariat hosted by one of the members. There is a general

assembly of all members held once a year (2016 in Dublin, 2017 in Riga).

At the Riga meeting Professor Drury was re-elected for a second term on the management committee. The main business of the group during 2017 was engagement with the strategic planning process around the proposal to merge ICSU with the International Social Science Council (ISSC) to form a new global voice for science as agreed in principle by both bodies in Oslo in 2016. The European group was generally supportive of this move, but emphasised that the new merged body would have to be “fit for purpose” and able to respond effectively and in a timely manner to emerging issues, a point that Professor Drury and others emphasised. The merger has just been approved at the joint General Assembly of both bodies in Taipei and the two bodies will form a single “International Science Council” at a founding general assembly to be held in France in 2018.

Other issues discussed were the governance of the ICSU flag-ship project

“Future Earth” where the group felt that there was some lack of clarity, and the questions raised by the move towards “open science” where the group decided to organise a high-level meeting in Brussels

in early 2018 (at my suggestion Natalie Harrower from the RIA’s Digital Repository of Ireland is a member of the organising committee).

# Science Advice for Policy by European Academies

[www.sapea.info](http://www.sapea.info)



**Spanning the disciplines of engineering, humanities, medicine, natural sciences and social sciences, SAPEA brings together the outstanding knowledge and expertise of Fellows from over 100 academies and learned societies in over 40 countries across Europe.**

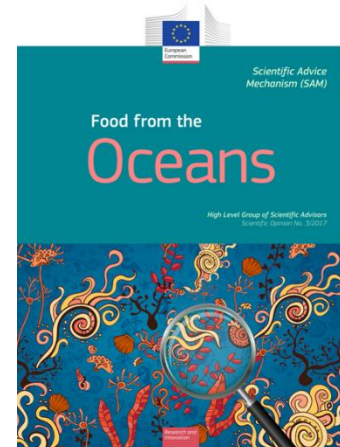
SAPEA (“Science Advice for Policy by European Academies”) works within the European Scientific Advice Mechanism (SAM) and is carried out by the five European academy networks (Academia Europaea, ALLEA, EASAC, Euro-CASE, and FEAM). The overall objective of the project is to pull together timely, independent and evidence-based scientific expertise from more than 100 European academies from over 40 countries for the highest policy level in Europe and for the wider public.

# Scientific Advice Mechanism (SAM)/Science Advice for Policy by European Academies (SAPEA) Food from the Oceans Working Group



**Dr Stephen Hynes**  
NUI Galway

*Dr Stephen Hynes is a lecturer in the Discipline of Economics at NUI Galway. He is also the director of the Socio-Economic Marine Research Unit. He has a PhD in Environmental Economics from Stirling University, Scotland. He is currently the Principle Investigator on a number of large multi-disciplinary projects including the Irish Department of Agriculture, Fisheries and the Marine funded “Economic & Social Research related to the Development of the Dynamics of the Marine Sector in Ireland”, the EU FP7 funded SOCIOEC project and the EU INTERREG funded MARNET. Stephen has a strong background in applied environmental/natural resource economic research and extensive work experience in econometric modelling. He has previously worked as an environmental economist in the Rural Economy Research Centre, Teagasc. Stephen’s main research interest is in microeconomic behaviour analysis, related to marine/agriculture and rural development policy and his work has been published by a number of the top-ranked journals in the fields of marine, environmental and natural resource economics.*



SAPEA set up two international and interdisciplinary working groups, both to examine the question “How can more food and biomass be obtained from the oceans in a way that does not deprive future generations of their benefits?” The first working group were to examine the question from a biological perspective and the second was to examine it from the perspectives of the humanities and social sciences. Dr, Hynes was nominated by the RIA to be an expert on the second working group. Both groups worked side by side to produce a final evidence review report.

The expert groups examined the question of how the ocean can help satisfy the global demand for food either through the direct production of food or through the harvesting of biomass (wild or cultivated) that can be used as feed in food production. The evidence review report puts forward a number of options for how more food and biomass could be obtained from the ocean. These options group into four main

categories: (1) improvements in management and increased utilisation of wastes in the traditional capture fisheries, (2) fishing on new wild species that are not, or only marginally, exploited today, (3) mariculture of organisms that extract their nutrients directly from the water, and (4) mariculture of organisms that require feed. This evidence review report was scrutinised at a scientific expert workshop held in September 2017, focusing on the feasibility of the options put forward. It was also peer-reviewed by experts in October 2017, with further revisions made in response to the feedback.

The policy recommendations of the evidence-based options set out in the evidence review report were examined at a stakeholder workshop of representatives from industry, policy and civil society in early November 2017. The report was handed over to the European Commission at the end of November 2017. For the full report see [http://ec.europa.eu/research/sam/pdf/sam\\_food-from-oceans\\_report.pdf](http://ec.europa.eu/research/sam/pdf/sam_food-from-oceans_report.pdf). The intention is that the report will be used in the planning of the EU's future political priorities and resource allocation. These

include the preparation of the Commission's post-2020 Multi-Annual Financial Framework (MFF), the successor to the European Maritime and Fisheries Fund, and a range of other policy areas such as the implementation of the Blue Growth Strategy.

The work of this expert group is of importance to Ireland given the fact that Ireland's extensive ocean and coastal territories (with jurisdiction over a continental shelf nine times its landmass) are home to some of the most productive fishing grounds in the world as well as been ideally located for mariculture production. Use of Irish waters will be key if the EU is to achieve its goal of increasing the output of food from the oceans. Indeed, the importance of the seafood sector and its potential for expansion has already been recognised by the Irish Government in *Harnessing Our Ocean Wealth – an Integrated Marine Plan (IMP) for Ireland*. Published in 2012, the IMP presents “the Government's vision, high-level goals and integrated actions across policy, governance and business to enable Ireland's marine potential to be realised”.

## **Other International Activities**



# Meetings of the Learned Societies/National Academies in Ireland & the United Kingdom



## **Professor Patrick Gerald McKenna, MRIA**

*Professor McKenna is a former Dean of Science, Pro Vice Chancellor (Research) and Vice Chancellor and President of Ulster University. He is an internationally distinguished researcher in the areas of DNA repair and mutagenesis. He served as the founding chair of Universities Ireland, and is the co-founder of the Heads of University Centres of Biomedical Research (HUCBMS), the US-Ireland R&D Partnership and the Irish Universities Nutrition Alliance (IUNA). Professor McKenna is the lead author of the Academy's recent Advice Paper, 'The Sustainability of the Northern Ireland Higher Education Sector', and the Academy's submission to a UK House of Commons Select Committee on Science and Technology Inquiry: Leaving the EU: Implications and Opportunities for Science and Research. Professor McKenna, is a Member of the Academy's Council, and he also serves on the Academy's North-South Committee, and Life and Medical Sciences Committee.*

I represented the Royal Irish Academy at two meetings during 2017 involving the 7

Learned Societies/ National Academies in Ireland and the UK (Royal Society, British Academy, Royal Society of Edinburgh, Learned Society of Wales, Royal Academy of Engineering, Academy of Medical Sciences and the RIA). The predominant theme was Brexit and how to influence the negotiations such that UK academic research would have continued involvement in Horizon 2020 and its successor programmes. The Academies (with no financial input from the RIA) commissioned Technopolis to carry out a review of the dependency of universities and disciplines on EU funding as a % of total research funding. Technopolis produced a very valuable report which included Northern Ireland and demonstrated that, in relative but not absolute terms, the humanities were more dependent on EU funding than the sciences, although the latter receive the 'lion's share' of funding in volume terms. They provided case studies which also demonstrated that Northern Ireland was even more dependent on

European Regional Development funding than framework funding and provided examples to demonstrate the 'elevator effect' of ERDF funding in building research capability. This information has been very useful in providing background information for the RIA NI Taskforce report which has just been published.

RIA participation in the group of 7 Learned Societies/ National Academies has been extremely useful and beneficial. All of the Academies have agreed to support the academy's views on Brexit and to promote greater cooperation between the UK and Ireland (North and South) and between Ireland and Northern Ireland. The reputation and influence of the RIA has been enhanced by this involvement.

# Attendance at the URSI (Union Radio-Scientifique Internationale / International Union of Radio Science) General Assembly on behalf of the Academy Committee for Engineering



**Professor Mairtin O Droma**

University of Limerick

*Mairtin O Droma has been an electronics and telecommunications engineering academic in the*

*University of Limerick since 1984, and has held positions of Senior Lecturer and Director. He has also previously served as a lecturer in UCD and NUIG. He has been the author and co-author of over 250 research publications covering books and book chapters, learned journal papers, and papers in proceedings books of international and national conferences.*

## **The aims and impacts of the work**

The aim was to actively promote participation within URSI, within its global research network in radio science, a network which spans some 80 member countries. As in Ireland, each of these countries has a national/regional committee of 10 or more 'official commission' members, corresponding to each of the 10 URSI commissions, who are experts drawn from the foremost relevant

research entities active in the commission-specific radio research field in their countries. Their presence leads to many others in their countries to participate in the research fields and networks within URSI's ambit, and in URSI organised research dissemination events such as URSI international scientific symposia (e.g., GASS and AT-RASC) and research journals (e.g., Radio Science and the URSI Radio Science Bulletin). This is the case also in Ireland and can be regarded as an impact of the work of the Irish Official Members. These Irish Official Members, in particular, take responsibility for Ireland's input towards setting the terms of reference, and research agenda, and themes, within each commission, and for electing the global officers of these commissions every three years. This was an ongoing activity for them over 2016-2017, culminating in final voting and decisions being made at the URSI General Assembly (GASS 2017) in August

in Montreal. As president of this group of Ireland's Official Commission Members, Professor O Droma was the All-Ireland Delegate at the URSI Council meetings at the GASS 2017. A detailed report on this was submitted to the RIA and its ECS Committee in September 2017. As an example of Irish contributions to URSI at a global level, three proposals were submitted by Ireland in relation to the development of URSI and improvement of its presence in Member States. One of these, 'The URSI Travelling Distinguished Speakers Programme,' was adopted and will be studied for budget implications, sustainable structure, and logistical planning. The other two have been put forward to the URSI Board for further study.

### **The relevance of this work in the Irish context**

Researchers from Ireland participate in URSI global events, such as the very prestigious triennial Scientific Symposium, which runs in parallel with the URSI General Assembly (this year in Montreal in August) and which attracts over 1200 research papers being presented in 10 parallel sessions over five days, over 1400 participants; and the newly constituted triennial Atlantic Radio Science Conference, the second of which takes place in May 2018, and which is being promoting widely among Irish researchers. Apart from these being highly regarded fora for disseminating advanced research results, they are immensely successful as networking events and for their potential for broad-based learning by foremost global experts. There is a generous URSI Young Scientists Programme, through

which Irish young scientists have benefited this year as they have in past GASSs; and a highly competitive and generous student paper competition.

In Ireland, in particular, we, the 'URSI-people,' run All-Ireland biennial research colloquia covering wireless communications, radio science and ICT fields. The most recent was held in Mar 2017. The theme was 'Communications and Radio Science for a Smarter World.' It comprised four sessions entitled, I. Wireless Systems and Subsystems I (Chair: Dr J. King, UCD), II. Wireless Innovation, Development and Application Trends (Chair: Dr M. O' Droma, UL), III. Antennas and Propagation (Chair: V. Fusco, MRIA, QUB), and IV. Wireless Systems and Subsystems II (Chair: Dr K. McCarthy, UCC). Research papers were submitted and peer reviewed by a TPC of some twenty experienced researchers, and those papers accepted were presented at the event and published by the RIA in a proceedings book. These events show-case the leading-edge research in these fields being carried out by PhD students and young researchers working in Irish HEIs and advanced engineering industry in radio science, telecommunications and ICT fields. Through it, also, an All-Ireland research network is cultivated and sustained across academia, industry and relevant government bodies; and this network in turn can benefit from the global URSI research network. This context also has other benefits, e.g., in contributing substantially towards Irish researchers raising their research goals and aims, having access to and drawing on a wide range of highly skilled and knowledgeable peers found within the URSI network.

# Report of the International Union of Pure and Applied Chemistry (IUPAC) 2017 General Assembly, Sao Paolo, Brazil



## Professor Earle Waghorne

University College Dublin

### Background

IUPAC is a largely volunteer organization that has responsibility for a number of key initiatives affecting chemistry worldwide; among these, perhaps the best known are the development of the conventions used in the unambiguous naming of chemical substances, the acceptance of names for new elements and the constant revision of tables of isotopic abundances in light of new experimental results. Other projects undertaken within IUPAC have involved the development of standards for various analyses, the compilation and critical evaluation of thermodynamic data (the IUPAC Solubility Data Series now has over 100 volumes), definitions of terms used in chemistry and the standardisation of the symbols used in reporting thermodynamic data, among numerous others.

Structurally IUPAC is divided into several Divisions with responsibility for particular areas of chemistry; my current role within IUPAC is as the Irish National

Representative to the Analytical Chemistry Division, Division V; additionally, for some years Professor Waghorne has been the secretary of the Division's Subcommittee on Solubility and Equilibrium Data.

### Sao Paolo

Division V met over two days in Sao Paolo. The most significant project that the Division is currently involved in is a complete rewrite of the IUPAC book on definitions of terms used in Analytical Chemistry, the so-called "Orange Book". This is an ongoing project which will result in definitions of terms used across analytical chemistry that are consistent with current practice. Initially the new Orange Book will be in English and subsequently will be translated into other languages, which is current practice for the colour books. In addition, the Division considered a number of new projects. (The agenda of the meeting is appended for information.)

In addition to the Division V meeting, Professor Waghorne also attended a meeting of members of several divisions to consider the methodology for the critical evaluation of experimental data. Several groups within IUPAC undertake such evaluations, leading to publication of recommended values, and the meeting provided an interesting exchange. This will lead to an IUPAC project considering best practice for such evaluations.

### **Irish Dimension**

Chemistry is a worldwide endeavour and the actions of IUPAC are directed at the global community. Thus, in a narrow sense, there is no direct Irish aspect to its work. However, chemicals and pharmaceuticals comprise a major component of Ireland's economy and have done so for many years. Ireland also has regularly contributed to IUPAC, notably through Professor Corish who held senior positions within IUPAC. Withdrawing from IUPAC would, according to Professor Waghorne, send the wrong message to the scientific community.