INTERNATIONAL CONFERENCE

Science and policy in times of multicrisis and dissent: Issues of framing, authority, evidence – and political-economic power

15-17 May 2025, Athens and online

Abstract

Under what conditions can the interactions of scientific and political considerations in policy-making be both scientifically and democratically legitimate?

By Erik Millstone
Science Policy Research Unit, University of Sussex, England

This presentation will begin by explaining why and how the role of scientific advisors in official policy-making institutions is markedly different from those of many academic scientists. Policy-makers want scientific advisory bodies to provide advice that closes down debates, not continue or extend them. Risk-management policy-makers want scientific advisors to provide singular prescriptive advice recommending a particular course of action. Policy-makers like to claim: 'we are (just) following the science', but that is always misleading; but you cannot derive an 'ought' from an 'is'.

A chronological sequence of analytical models that were intended to represent to role of science advice in policy-making will be presented and critically appraised. Reasons will be given for why the most recent model is the most comprehensive and accurate, and its implications for both scientific advisors and policy-makers will be discussed. The argument will be that if the contemporary model were properly applied then science-based policy-making could achieve and reconcile both scientific and democratic legitimacy.

INTERNATIONAL CONFERENCE

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Abstract

Reproducible and trustworthy science: challenges and solutions

By Prof. John Ioannidis
Professor of Medicine, Stanford University, USA

Most scientific research across diverse areas of scientific investigation does not meet standards of reproducibility and transparency. This creates challenges and a large waste of effort and even of trust in science. There are many ongoing efforts to improve the reproducibility, transparency, and eventually the credibility and usefulness of scientific evidence. More than 7 million papers are published every year and the system is largely driven by publish or perish incentives. Proper incentives and research assessment may help in enhancing research design, conduct, and outcomes. Many ideas are proposed in this regard, but few of them have solid evidence.

INTERNATIONAL CONFERENCE

Science and policy in times of multicrisis and dissent: Issues of framing, authority, evidence – and political-economic power

15-17 May 2025, Athens and online

Abstract

Ignorant by design: Regulatory science, comitology and the agrochemical industry

By Dr Barbara Berardi Tadié
Director of Research and Advocacy, Pollinis, France

This paper considers the agrochemical industry's strategies in shaping regulatory science. It presents preliminary results of an ethnographic research on the production and validation of guidance documents to assess the risk of pesticides on pollinators in the EU.
The pesticide registration process is based on a combination of regulations (hard law) and administrative and technical directives (soft law). Among the latter, regulatory science procedures, set out in guidance documents detailing the scientific and methodological criteria for the test protocols used to assess risk, represent a key element. However, some of these guidance documents, which are crucial to appraise the hazards of a pesticide, have not been updated, approved or even produced at all.
In particular, I look at the case history of the Bee Guidance Document, published by EFSA in 2013 but never adopted at European level due to the lack of approval by the Standing Committee on Plants, Animals, Food and Feed (SCoPAFF), a crucial but little-known component of the EU decision-making chain.
My analysis focuses on the industry's role in deconstructing the scientific and political consensus around this document, which has led to the stalling of its adoption by SCoPAFF for ten years. Through the case study of the EFSA Bee Guidance Document, it reveals certain mechanisms through which the industry attempts to maintain its hegemony over pesticide risk assessment and, more generally, over the epistemic form of regulatory science in the EU system.

INTERNATIONAL CONFERENCE

Science and policy in times of multicrisis and dissent: Issues of framing, authority, evidence – and political-economic power

15-17 May 2025, Athens and online

Abstract

What is the role of the economy in regulating the relationships between science and political decision-making?

By Dr. Irina Castro, University of Coimbra, Portugal

In an era marked by overlapping global crises, the relationship between science and political decision-making is increasingly mediated, and often distorted, by economic forces. Considering the critical approach, science is historically situated and socially constructed by practices embedded with economical and political interests. Therefore, this presentation investigates how funding mechanisms, market logics, and financial interests have changed and shaped research agendas, epistemic authority, and policy outcomes. These days, research priorities are increasingly determined by market expectations. Methodologies and project outcomes are adapted to fit commercial goals, and success is measured through metrics aligned with competitive advantage perspectives.

Based on these accounts, it is argued that reclaiming a democratic and socially responsive science requires challenging the commercial pressures that constrain scientific debate, promoting epistemic diversity, and applying precaution more systematically. Only then can we begin to rebuild the relationship between science, policy, and society around the principles of public interest, democratic accountability, and ecological sustainability.

INTERNATIONAL CONFERENCE

Science and policy in times of multicrisis and dissent: Issues of framing, authority, evidence – and political-economic power

15-17 May 2025, Athens and online

Abstract

The change to a Convivial Science

By Dr. Ulrich Loening, Centre for Human Ecology, University of Edinburgh, Scotland

Science still operates with the 'Baconian project', the revolution in science initiated by Galileo, Descartes, Francis Bacon and others in the 17th century. As was made clear then, this allows us to become 'lords and masters over nature'. That has become its motivation. The project was so successful that the whole earth is now threatened. So now, the purpose of the scientific endeavour must move from domination and conquest of nature, to working with nature as our greatest cooperative asset. That is, science has to change its function from countering nature to protecting nature. It has to work *con vivo*, the adjective of which is *convivial*. I propose therefore, that this happy adjective be applied, and guide science into its fundamental change of direction.

INTERNATIONAL CONFERENCE

Science and policy in times of multicrisis and dissent: Issues of framing, authority, evidence – and political-economic power

15-17 May 2025, Athens and online

Abstract

Why 'science' as currently conceived is often part of the problem, and how it could become part of the solution

Dr. Ephraim Pörtner, Critical Scientists Switzerland, Affiliated Researcher, Political Geography, University of Zurich, Switzerland

Western science is two-sided. It fosters critical thinking, curiosity, and sustained inquiry. But its dominant worldview of control over "nature" and "inferior humans" has also led to the breakdown of our socio-ecological bonds and justified colonialism, imperialism, and extractivism. The belief that humans stand outside and above "nature" has shaped our relationships with each other and the Earth. More recently, the rise of neoliberalism has undermined universities as places for independent thinking and pushed for a so-called value-neutral science. To make science a positive force for change, we must critically reflect on the worldview and values of science and counter the neoliberal reshaping of scientific knowledge production. For this purpose, we propose the term "convivial sciences" to encompass forms of science grounded in mutual responsibility and civilised disagreement (*convivenza*, EP) and allowing us to fit into nature's patterns (*con vivo*, UL). Convivial sciences foster democratic politics of knowledge production and responsible critical inquiry to meet the needs of present and future generations and their socio-ecological relations.

INTERNATIONAL CONFERENCE

Science and policy in times of multicrisis and dissent: Issues of framing, authority, evidence – and political-economic power

15-17 May 2025, Athens and online

Abstract

How Governments and the Agroindustry Obstruct Critical Science: The Bonus Eventus Files

By Elena DeBre, investigative journalist, Lighthouse Reports, Athens, Greece

Agroecology, a non-chemical approach to agriculture, is proven to be an effective way to farm without damaging the environment. Yet, efforts to fund and implement agroecological techniques have been continually thwarted despite the promise of their potential. With a coalition of international investigative journalists, my colleagues and I set out to reveal the forces blocking agroecology around the world—and ended up uncovering a secret U.S. government and industry campaign to suppress environmental solutions, and discredit the scientists working on them. At the heart of this effort, we discovered, is BonusEventus, a private online social network, developed by a public relations company cozy with the chemical industry, and built with the support of U.S. government funding. Access to the BonusEventus network is granted to a list of approved members—which includes government regulators and agrochemical industry lobbyists The BonusEventus platform members can access a library of intelligence profiles on people deemed anti-pesticide or anti-GMO by the network. These profiles--which targeted prominent academics, academic advocates, and scientists (some even at this conference)-- held personal information about its subjects and spotlighted criticisms of their career and character. In this talk, I will share the methods used to uncover this secret scheme and the implications of having governments and industry work together to discredit scientists and their research. I will also discuss the afterlife of our investigation—and the impact of our findings in the larger context of scientific suppression.

INTERNATIONAL CONFERENCE

Science and policy in times of multicrisis and dissent: Issues of framing, authority, evidence – and political-economic power

15-17 May 2025, Athens and online

Abstract

How has science come to be recognised and institutionalised as a policy resource in the past 80 years?

Prof. (Em) Brian Wynne, University of Lancaster, UK

The defining account of the relations of science and policy since scientific knowledge became involved in policy after the second world-war, is that: policy decides; science informs. Thus 'policy influences' of any kind are forbidden in scientific knowledge-making. The intensified and long-continuing post-war growth of technological developments on many new fronts, from nuclear technologies to chemical pesticides to novel foods and drugs, latterly extended into pervasive AI 'promises', require scientific insight on health and environmental risks from all of this innovation-frenzy, with science both producer and (assumed) regulator. Consequently proliferating environmental issues-controversies of many kinds, also reshaped 'policy' as meaningful responses. One key but neglected aspect of this has been the domination of an instrumentalist and reductionist epistemic frame in science, in which control and precision have become sovereign, not only but primarily from science.

The conventional framing of the proper science-policy relationship has remained unchanged through enormous developments over these decades, which have reshaped the whole domain and the economic world whose mushrooming inflation science both fueled, and came to be shaped by. However the forces lying beneath these 'science-policy' dynamics remain unnoticed and unquestioned by the rigid conceptual language of *independent* scientific facts objectively informing policy decisions whose wider authority is supposedly guaranteed by their purely scientific basis. The political faith in the supposedly strict distinction between

INTERNATIONAL CONFERENCE

Science and policy in times of multicrisis and dissent: Issues of framing, authority, evidence – and political-economic power

15-17 May 2025, Athens and online

Abstract

scientific facts, and the values which engender political issues and questions, remains sovereign in political discourse even while being routinely abused in practice.

Substantial scholarly research developed since the late 1960s has shown that model to be deeply false, yet this has largely been ignored. In this sense it qualifies as another example of what Ezrahi (2014) aptly called a "functional myth" (explained in paper). A further fundamental change has occurred which is connected, and which has been profoundly neglected, even denied, in mainstream policy and politics. This is the contradiction between the official public discourse of "the independence of science (from any private interests or influences which might interfere with scientific objectivity)", and the reality which has grown hugely and inexorably since the mid-20th century, that what is thought of as *public independent* science, has for decades increasingly become majority-owned, -controlled, and -directed by *private corporate actors and interests.* Worse, those major private interest owners of science have global power over 'democratic' and other governments competing for their private-interest investments - thus obscuring them from social accountability.

Dealing centrally with the period from mid-20th century to the present, this paper also gives a longer-term historical glimpse of the ways in which this modern political irrationality has come to define modernity's global technological unsustainability and injustice. Those deeper historical ambiguities in the meanings of "science" or natural knowledge have now been allowed to grow into contemporary hubris-driven, private corporately owned technoscientific knowledge and innovation, all in the name of "science and policy". This has rendered moribund the public interest regulation of *upstream* innovation. As this paper will show, under the corporate neoliberal modernity paradigm science has not only come to (mis)*inform* policy, but has in the process, under that neoliberal corporate power, come to define *its meaning*, in (mis)defining what the 'democratic' policy issues are.

INTERNATIONAL CONFERENCE

Science and policy in times of multicrisis and dissent: Issues of framing, authority, evidence – and political-economic power

15-17 May 2025, Athens and online

Abstract

Long debate, little movement: the case of soil science and policy

Dr. Andrea Beste, Agricultural scientist, graduate geographer and soil expert, Mainz, Germany

Soil is not as directly linked to human health as air and water and is therefore not such a sensitive environmental medium. Furthermore, apart from the dirt that sticks to potatoes, most people don't really come into contact with it, so there is no particular sensitivity to soil quality in society.

It has to be said that the EU Commission has been very progressive and made an initial regulatory proposal in 2002 without any particular pressure from outside. The EU Commission also has a very progressive research institute in ISPRA, Italy. The situation is completely different in the individual member states. Many have no soil protection legislation at all. Some only deal with certain areas. A soil protection law like the one in Germany is the exception.

Unlike today, when lobbying pressure is exerted on the EU Commission as early as the drafting of legislative proposals, in 2002 the EU Commission proposed its soil protection strategy largely independently of lobbying influences. The wrangling between interest groups only began afterwards. Firstly, the Member States invoked the principle of subsidiarity because soil is not an environmental element that moves between Member States. And secondly, the agricultural lobby exerted massive influence, concerned that soil protection regulations could have interfered with the freedom of agricultural management.

INTERNATIONAL CONFERENCE

Science and policy in times of multicrisis and dissent: Issues of framing, authority, evidence – and political-economic power

15-17 May 2025, Athens and online

Abstract

In the area of soil protection, scientific expertise lies more at European level than at Member State level, with some exceptions of course. At European level, the Lucas soil research programme and the European research programme Horizon plus indirectly related to soil activities spend around €500 million on soil research and soil monitoring. That doesn't sound like much, but it does produce impressive results and provides us with information about the state of the soil that is not collected by the member states.

In any case, it is primarily the Member States that always have a problem with environmental regulations, which they then have to implement themselves, especially if they have already developed national regulations and would then have to make changes. On the other hand, when it comes to soil, it is the agricultural industry in particular that is putting up massive resistance. After all, if standardised monitoring rules were first established, it would very quickly become clear that the agriculture predominantly practised today is not at all sustainable for soil resources and that management has to be changed.

But local authorities are not interested in it either, because they would then not be able to plan new development areas for additional residents or industrial areas with trade tax, because of soil sealing regulation.

All this resistance has meant that we have not made any progress in the area of soil protection in Europe since 2002. And it is by no means certain that the Soil Monitoring Directive, which is now being finalised, will be adopted in the final vote in the European Parliament.

See also Beste, A. (2023): Soil protection-related legislation and strategies in the European Union

INTERNATIONAL CONFERENCE

Science and policy in times of multicrisis and dissent: Issues of framing, authority, evidence – and political-economic power

15-17 May 2025, Athens and online

Abstract

Aspiring to consensus: The case of climate change

By Prof. James Skea, International Institute for Environment and Development

This lecture will set out IPCC's formal approach in terms of working towards consensus, both at the scientific authoring level and the intergovernmental level. It will cover mechanisms used to secure consensus, as well as the steps to be followed if consensus is not achieved. It will place these approaches in the context of IPCC's 35 year history, as well as the role of bodies such as the Advisory Group on Greenhouse Gases which preceded IPCC, and the UN Framework Convention on Climate Change's (UNFCCC's) Subsidiary Body for Scientific and Technological Advice which was established after IPCC had produced its first report. Mention will be made of the recognition of IPCC reports in the UNFCCC. It will illustrate the general points with specific examples covering, for example, references to Nationally Determined Contributions and approaches to characterising emissions scenarios. It will conclude with a summary of the degree of consensus which has, and has not, been achieved with respect to the IPCC's Seventh Assessment Cycle which began in 2023.

INTERNATIONAL CONFERENCE

Science and policy in times of multicrisis and dissent: Issues of framing, authority, evidence – and political-economic power

15-17 May 2025, Athens and online

Abstract

Court ruling demands the South African government to apply the precautionary principle in GMO approval requests

By Angelika Hilbeck, Agroecologist (ret.), Swiss Federal Institute of Technology, Zurich, Switzerland and Mariam Mayet, Director, African Centre for Biodiversity, South Africa

Exploring the role of science in legal proceedings, we will report about a significant court case in South Africa brought before the Supreme Court of Appeals (SCA), sitting in Bloemfontein, South Africa. After nine years of arduous litigation by the African Centre for Biodiversity (ACB), a full bench consisting of five judges of the SCA, has set aside several layers of decision-making regarding the approval of the application by Monsanto, now Bayer, for commercial release of its drought-tolerant genetically modified maize, MON87460. In its precedent-setting ruling, the SCA said that previous lower court rulings disregarded the fundamental role of the precautionary principle in directing decision-makers. Further, the court found that in view of the current state of knowledge and uncertainty regarding the potential for serious and irreversible harm, the adoption of a cautious approach is consistent with the subject matter, scope, and purpose of the GMO Act. Thus, the five judges unanimously ruled that many of the noted fundamental scientific concerns of the MON 87460 maize dossier have triggered the precautionary principle and the need for a determination to be made whether, in addition to a desktop biosafety assessment, an environmental impact assessment is also necessary. This also applies to other dossiers of GM crops. Further, it needs to be determined to what degree this also applies to other jurisdictions, since biotech companies typically submit the same data of the same experiments for a particular GM crop to all regulators in different jurisdictions where they seek approval, including the EU and its member states, which are also legally obliged to apply the precautionary principle.

INTERNATIONAL CONFERENCE

Science and policy in times of multicrisis and dissent: Issues of framing, authority, evidence – and political-economic power

15-17 May 2025, Athens and online

Abstract

Disagreements and dissent: The case of genetically modified organisms (GMOs) and New Genomic Techniques (NGTs)

Dr. Ricarda Steinbrecher, EcoNexus, Oxford/Bristol, UK

When looking at science-policy interactions and their outcomes in the context of genetic engineering and modern biotechnology, not much is straight forward, and everything is - by definition - controversial and contrary. This is, however, not to the benefit of an open scientific debate or quest for an - albeit at times fleeting – scientific truth in a constantly developing and expanding field. Instead, we can find a closing down of real debate, a circumventing and silencing of unavoidable and fundamental uncertainties and risks, for example by claiming equivalence and familiarity where there are – so I argue - none.

This presentation also argues, that the need for risk assessment becomes deniable with a constant and constantly echoed claim of precision and predictability, and this being mentally equalled with safety. Furthermore, redefining new GM for example as 'conventional breeding' or new GMOs as 'conventional plants' does serve the same purpose, namely to avoid assessment and obtain easy clearance for environmental or market release - yet neither of these will make them safe, nor predictable. I will give examples how scientific or general terms and concepts are being purposefully misused, redefined or degraded to obfuscate the picture, take away clarity and language necessary for meaningful debate, but importantly also, to confuse or mislead the public, who will no longer be able to distinguish and form an informed opinion. With universities press-releasing every new publication or potentially note-worthy finding through a well-trained PR office, this further enhances the misconceptions of what is doable or real and adds to a narrative of progress and innovation in the absence of awareness of risks and precaution.

INTERNATIONAL CONFERENCE

Science and policy in times of multicrisis and dissent: Issues of framing, authority, evidence – and political-economic power

15-17 May 2025, Athens and online

Abstract

This presentation will draw on experience and give examples from the negotiations and processes of the Cartagena Protocol on Biosafety (under the UN Convention on Biological Diversity, CBD); the Revision of EU GMO regulation in the early 2000s; the current proposal for deregulation of GMOs resulting from the use of New Genomic Techniques in the EU; and those of current IUCN policy development on synthetic biology.

The talk will also include a broad overview of current developments and trends as well as reflections on the science.