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# A new intergovernmental science-policy panel on chemicals, waste and pollution (ISP-CWP)-presenting a conceptual structure for its interdisciplinary expert committee including multidisciplinary civil society scientists

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This perspectives article explores the inception, structure, functions, and anticipated impacts of the new Intergovernmental Science-Policy Panel on Chemicals, Waste and Pollution (ISP-CWP), established in Punta del Este, Uruguay on 20 June 2025. We look specifically at the role of its prospective Interdisciplinary Expert Committee (IEC) and propose a potential working structure, to ensure that the Panel has access to a sufficient breadth of multidisciplinary expertise. This will be essential to enable the design of a successful and impactful work programme. We discuss how the evidence and knowledge can be focused around three axes: (i) environmental/health impact, (ii) societal service and (iii) readiness of solutions. We look to a future where an inclusive and diverse IEC can make impactful recommendations for innovative policy and technological solutions to prioritised pollution issues.

## KEYWORDS

chemicals, waste, pollution, science-policy, multi-disciplinary, panel

## Conception and birth of a science-policy panel for pollution—the third of three planetary crises

As of the 20 June 2025, the world has a new intergovernmental science-policy panel for chemicals, waste and pollution (ISP-CWP<sup>1</sup>), akin to the existing intergovernmental panel on climate change (IPCC<sup>2</sup>) and intergovernmental platform on biodiversity loss and ecosystems services (IPBES<sup>3</sup>).

Agreements do not happen overnight. Between 15 and 19 June 2025, we observed tense intergovernmental negotiations at a United Nations Environment Programme (UNEP) meeting in Punta del Este, Uruguay. This was designed to be the culmination of a UN Open Ended Working Group (OEWG) process,<sup>4</sup> held between 2022 and 2025 in Bangkok, Nairobi, Geneva and finally in Punta del Este.<sup>5</sup> This resulted from United Nations Environment Assembly (UNEA) Resolution 5/8 agreed in March 2022<sup>6</sup> to establish a new body to strengthen the science-policy interface (SPI) and address pollution from inadequately managed chemicals and wastes. These things take time—it has been years in the making—and the establishment of the ISP-CWP is a moment to celebrate. A wide range of stakeholders have influenced this intergovernmental process positively. Scores of UN-accredited civil society organisations have contributed effectively through the nine Major Groups and Stakeholders (MGS) system.<sup>7</sup> The authors represented The Royal Society of Chemistry in this process, and it is from this perspective that we approach this paper and bring new ideas.

Governments and civil society are aware of multiple harms caused by the mismanagement of hazardous chemicals and waste in various regions of the world (UNEP GCO, 2019). The 21st century has witnessed unprecedented advances in scientific and technological innovations and industrial growth. These achievements, however, have come at a significant environmental cost, as the pace of innovation outstrips the pace of adequate national or regional chemicals and waste management regimes. Pollution has become a global environmental threat, affecting climate change and biodiversity loss (Baste and Watson, 2022), infiltrating every corner of the planet and undermining the foundations of human and ecological health (Landrigan et al., 2018; Saaristo et al., 2018; Landrigan et al., 2025; Scheringer and Schulz, 2025).

Existing international environmental policy instruments such as the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (1989), the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (1998), the Stockholm Convention on Persistent Organic Pollutants (POPs) (2001) and the Minamata Convention on Mercury (2013), each address discrete aspects of the pollution crisis. Yet, with the production and diversity of chemicals accelerating and the proliferation of novel waste streams from e-waste and textiles to nano- and micro-plastics leading to ever greater pollution (Wang et al., 2020; Scheringer and Schulz, 2025), existing frameworks have proven fragmented and inadequate to the task of developing policy to prevent growing pollution (UNEP GCO, 2019).

The lack of a sufficiently strong SPI for providing advice to governments and pollution-relevant evidence was identified during the UN Strategic Approach to International Chemicals Management (UN SAICM, 2020),<sup>8</sup> by the Swedish Ambassador and SAICM President Viveka Bohn in 2005 and by the International Panel on Chemical Pollution (IPCP) founded in 2008 (www.ipcp.ch; Scheringer, 2007; Scheringer et al., 2007).

Recently, the convergence of several alarming trends forced the issue of chemicals and waste pollution onto the global agenda with a higher priority. These included:

- The exponential increase in synthetic chemical production: Over 350,000 chemicals and mixtures registered for commercial use worldwide (Schummer, 1997; Wang et al., 2020; Persson et al., 2022).
- Proliferation of waste: Over 460 million tonnes of plastic produced in 2019, with less than 10% effectively recycled (OECD, 2022); general waste is set to rise from 2.01 (in 2018) to 3.40 billion tonnes by 2050 (Kaza et al., 2018 (World Bank)).
- Rising rates of chemical-related diseases, reduced life expectancies and mortality, with 6.7 million deaths worldwide linked to air pollution (WHO, 2024).
- The interlinkages between pollution, climate change and biodiversity loss becoming more apparent (UNEP, 2021; UNEP, 2024)

SAICM was replaced by the Global Framework on Chemicals (GFC) at the International Conference on Chemicals Management 5 (ICCM5) in Bonn in September 2023.<sup>9</sup> During SAICM meetings (UN SAICM, 2018) the RSC, together with others, notably the IPCP and Wang et al. (2021), called for a new panel, and considered the general principles for the management of chemicals in the environment (RSC, 2018) and for waste strategies (RSC, 2019).

In 2020, Professor Robert Watson (former Chair of the IPCC and IPBES) presented a report detailing options for an SPI. The RSC advocated strongly for the need for an independent platform similar to the IPCC and IPBES which, based on our scientific community engagement, was overwhelmingly favoured. This is what was agreed

1 <https://www.unep.org/isp-cwp/about/history> and <https://www.unep.org/news-and-stories/press-release/nations-come-together-establish-new-intergovernmental-science-policy>

2 <https://www.ipcc.ch/>

3 <https://www.ipbes.net/>

4 <https://www.unep.org/oewg-spp-chemicals-waste-pollution>

5 All of The Royal Society of Chemistry's written submissions and statements can be found on the OEWG website at <https://www.unep.org/oewg-spp-chemicals-waste-pollution>

6 <https://wedocs.unep.org/20.500.11822/40653>

7 <https://www.unep.org/civil-society-engagement/major-groups-modalities>

8 <https://www.saicm.org/>

9 [www.unep.org/global-framework-chemicals](https://www.unep.org/global-framework-chemicals)

in UNEA resolution 5/8. The OEWG process began and scientists came together in the RSC Burlington Consensus series of events, to inform and support the process. Meaningful and constructive engagement of civil society major groups and stakeholders in the process was, we believe, a factor in the successful outcome of agreement on the foundational document.

## The foundational decision document of the ISP-CWP

To establish the ISP-CWP legally, a foundational Decision Document had to be presented at the intergovernmental meeting (IM) for ratification.<sup>10</sup> This sets out the (i) scope, objective and functions, (ii) operating principles and approaches and (iii) institutional arrangements of The Panel. The scope remains wide, covering all chemicals and wastes. The objective is ‘to strengthen the science-policy interface to contribute to the sound management of chemicals and waste and pollution prevention’ and provide deliverables that are ‘policy-relevant, without being policy prescriptive.’

The functions of The Panel are 5-fold and are,<sup>11</sup>: (a) Undertaking “horizon scanning,” (b) Conducting assessments of current issues, (c) Providing up-to-date and relevant information, (d) Facilitating information-sharing with countries and (e) Integrating capacity-building into all functions. Twelve operating principles were agreed<sup>12</sup>: the most important principles to the chemical sciences community (RSC, 2023a) have been included in the operating principles of the Panel, namely, being scientifically independent (from political processes), ensuring impartiality and transparency, taking an interdisciplinary and multidisciplinary approach, and promoting inclusive participation.

‘The Plenary’ will be the governing and decision-making body of the Panel and will be comprised of government representatives. It will determine the balance of activities (with limited budgets) across the five functions. It is possible that accredited civil society stakeholder observers could be present at meetings of the ISP-CWP Plenary, as they have in the OEWG.

The Panel will be supported by an administrative Bureau, and a Secretariat provided by UNEP. The Panel will be funded via a voluntary Trust Fund, which will rely on the good will of governments to make donations into the Fund. While The Plenary will be the governing body, subsidiary bodies will be established to inform decision-making; the most significant of which is the Interdisciplinary Expert Committee (IEC), a body of scientists that will be expected to make recommendations to The Plenary on the work programme and selection of experts, who will take part in the production of deliverables across all functions. This

pivotal group will be explored in this article as, currently, many details of the functions, the IEC’s role and composition remain to be negotiated at the first meeting of The Plenary, which is expected in early 2026. The success of the ISP-CWP will depend on getting an efficient and effective structure for the IEC that is inclusive of diverse scientific expertise, including the social sciences, and other knowledge forms—especially Indigenous peoples’ and local communities’ knowledge—to deliver solutions in the extremely broad scope of chemicals, waste and pollution issues, without duplication and following agreed principles (Ågerstrand et al., 2023; Diamond et al., 2024). Whether horizon scanning, conducting assessments or providing evidence-based options, the breadth of knowledge and expertise required to address issues of chemicals, waste and pollution is huge. These can be conceived as three axes of knowledge (Table 1).

## Axis 1 - impacts

What are the environmental/health impacts - are impacts slight or severe, immediate or predicted future concerns? What are the risks following exposure to hazards? Are these greater for local communities, nations or regions? To answer these questions requires knowledge such as toxicology (both human and ecological), monitoring of ‘chemicals, waste and pollution’ in the environment, exposure metrics, risk analysis methods, for example. However, if we are to break out from ‘admiring the problem’ to give potential solutions to this environmental crisis, we need much more than this.

## Axis 2 - societal service

We need to understand what services and benefits the chemicals and materials of concern provide - are these frivolous or vital? We need to go far beyond the merely technical to encompass economics, sociology, anthropology and other social sciences, if we are to understand the complex ways that individuals and societies interact with chemical products and materials (Niewöhner and Bieler, 2024), so producing wastes and pollution.

## Axis 3 - readiness

If both the adverse impacts and the societal benefits are sufficiently great, we need to understand how close we are to being able to provide the service without causing the environmental damage - is there an off-the-shelf solution ready, or is this unknown? Is society prepared to accept constraints that this may require? Are there trade-offs between differing impacts on different populations? To answer this requires the input of green/sustainable chemists and engineers, and innovators in industry, as well as experts across the social sciences.

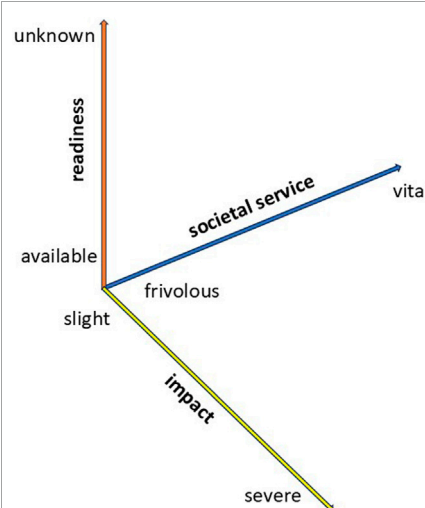
Table 1 contains a lengthy, and non-exhaustive, list of disciplines that could be called upon to contribute to the work of the panel. Of course, across all functions, but particularly in complex information sharing and capacity building, great science communicators will be required.

10 <https://www.unep.org/events/conference/intergovernmental-meeting-consider-establishment-new-science-policy-panel>

11 Full text relating to the Functions can be read in the ISP-CWP Decision Document on the IM webpage

12 Full text relating to the Operating Principles can be read in the ISP-CWP Decision Document on the IM webpage

TABLE 1 A non-exhaustive list of non-overlapping scientific and technological disciplines relevant to chemicals, waste and pollution.

	
<ul style="list-style-type: none"><li>• Agricultural specialists</li><li>• Allergy specialists</li><li>• Analytical chemistry techniques</li><li>• Artificial intelligence and machine learning</li><li>• Behavioural and psychological sciences</li><li>• Bioinformatics</li><li>• Biological monitoring – in humans, plants and animals</li><li>• Chemical sciences – physico-chemical properties, mechanisms</li><li>• Cheminformatics</li><li>• Chemical engineering</li><li>• Citizen science data</li><li>• Clinical scientists</li><li>• Computational exposure estimation</li><li>• Computational toxicology</li><li>• Data sciences</li><li>• Econometrics and socioeconomics</li><li>• Ecotoxicology classical – animal studies, <i>in vitro</i> new approach methods (NAMs)</li><li>• Toxicity in the 21st century</li><li>• Environmental monitoring – air, soil, water, waste, chemicals in products.</li><li>• Epidemiologists</li><li>• Exposure sciences (modelling estimation and measurement)</li><li>• Geological sciences</li><li>• Gene editing and CRISPR technology</li><li>• Green chemistry</li><li>• Informatics</li></ul>	<ul style="list-style-type: none"><li>• Human health toxicology classical – animal studies, <i>in vitro</i> new approach methods (NAMs) – Toxicity in the 21st century</li><li>• Indigenous evidence of exposures, safe use and harm</li><li>• Marine sciences</li><li>• Materials science – advanced materials</li><li>• Mathematical modelling</li><li>• Microbiological sciences</li><li>• Nanoscience</li><li>• Nutritional sciences</li><li>• Occupational hygiene</li><li>• Omics technologies - transcriptomics, proteomics, metabolomics</li><li>• Paediatric endocrinology and toxicology</li><li>• Political sciences</li><li>• Probabilistic exposure modelling</li><li>• Psychological sciences</li><li>• Radiological sciences</li><li>• Remediation technologies</li><li>• Risk assessment methods</li><li>• Social sciences</li><li>• Soil sciences</li><li>• Statistics</li><li>• Sustainable chemistry</li><li>• Systematic review techniques</li><li>• Systems biology</li><li>• Water sciences</li><li>• Zoology</li></ul>

Diverse fields of sciences, such as those listed, will need to be brought together in the Interdisciplinary Expert Committee and Assessment Groups of the ISP-CWP. Scientists and knowledge holders can have insights around three axes: the readiness of innovative solutions, the impacts to human health and environment, and the societal service to which their science contributes. To bring all of this expertise together require cross-disciplinarians and network coordinators.

### A conceptual structure for the interdisciplinary expert committee including civil society scientists and taking a multidisciplinary ‘networks of networks’ approach

The Interdisciplinary Expert Committee (IEC) is set to comprise experts from each of the five United Nations regions.<sup>13</sup> Experts will be nominated by governments and elected by The Plenary. The need for interdisciplinarity and inclusivity was recognised, and members of the IEC should be selected based on their expertise, ideally cross-

disciplinary and multi-sector experience. However, with such a range of knowledge required, it is important that there should be mechanisms for calling upon the widest possible range of expertise to help in prioritising the work programme (Bloor et al., 2025).

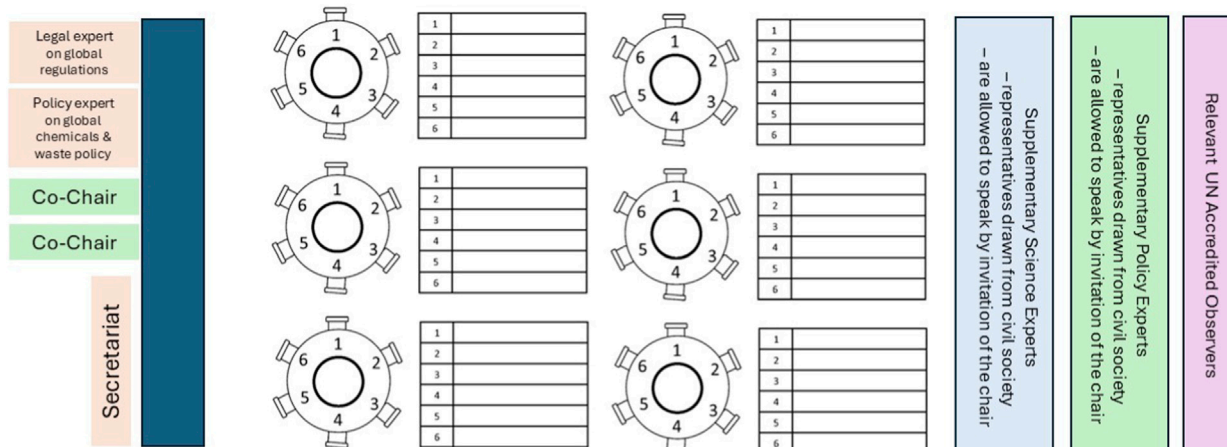
The functions of the IEC include coordinating the delivery of a work programme, providing advice to The Plenary and Bureau, ensuring high levels of scientific quality, independence, inclusivity, integrity and credibility of The Panel’s deliverables, and selecting experts via credible and approved networks for the work of The Panel. This committee is therefore responsible for oversight, prioritisation and recommendations of most of the technical work.

The set-up of the IEC is effectively a type of science-policy advisory function, but it will have some decision-making powers in how to make recommendations and what to advise The Plenary.

13 <https://www.un.org/dgacm/en/content/regional-groups>

## Interdisciplinary Expert Committee – ideas from scientists on how this could work?

**AIM: strengthen the science-policy interface, supporting policy relevant recommendations through the best science**



5 Regions – X number of technical expert scientists per region  
Plus X number of seats for strategic partners

**Civil Society Experts** → seats on **Supplementary Expert Group(s)** drawn from an IEC pre-approved **Register of Specialists** – to strengthen the science-policy interface, purposefully to ensure technical coverage

FIGURE 1

A conceptual structure of an Interdisciplinary Expert Committee of the ISP-CWP that would allow for wider access to multidisciplinary civil society expertise from scientists and knowledge holders, via a 'networks of networks' approach. The IEC could have aspects of 'policy relevance' within it, to strengthen the science-policy interface. In the interests of transparency, accredited Observers could be allowed to observe the work of the IEC in its meetings. NB. In this figure there are six places shown at each conceptual table for each of 5 regions and a sixth potential Partners table: however, it is recognised that in the Decision Document, there is intended to be an equal number of representatives that is yet to be decided upon by The Plenary, so this number may be more or less than 6. The main novelty of the proposal is to have access to both Science and Policy experts in one forum, who can supplement the core IEC with expertise upon invitation by the Chair(s).

Strong chairing with integrity, transparent ways of working, knowledgeable experts and access to wider advice and expertise by the IEC are crucial for the success of the whole Panel. Scientists working on the IEC should be impartial arbiters of evidence and honest brokers (Pielke, 2007; Gluckman et al., 2021; Bloor et al., 2025); they should not be biased campaigners on issues and should certainly not be political advocates or, as discussed by Oreskes and Conway (2011), bad actor 'merchants of doubt'. Pielke (2007) described the honest broker as a person or group of persons who put personal biases and values aside to assist policymakers in making choices between options, generally by providing clarity on the evidence. Part of capacity building is training scientists to be good arbiters and honest broker advisers (Pielke, 2023; Nature, 2024).

From collective experience on various science advisory committees (SACs), the type of structure as shown in Figure 1 could work well in principle for the IEC. It would be advisable to have two Co-Chairs for this forum, one from the Global North and one from the Global South, to provide geographic and economic balance. As Chairs of the IEC, it would help to be supported by a specific Secretariat team for the IEC, and have a legal expert on hand, who can advise on various national and regional chemicals and waste regulations, and a policy representative to ensure the work of the IEC remains policy relevant without being policy prescriptive. It is expected that equal numbers of members of each UN region would be full voting members of the committee, and a number of seats could be dedicated to any future partners of the ISP-CWP. Given the unusually extensive

multidisciplinary nature of work in chemicals, waste and pollution (see Table 1), it is challenging to see how all areas of expertise can be covered in a group of say 30–40 members. These individuals should ideally be cross-disciplinarians who can ask the right questions at the right time and seek the right knowledge from a broader network. The IEC will have responsibility for establishing expert working groups to deliver specific reports, as is done with the IPCC and IPBES. It could therefore be very useful for the IEC to have access to a much wider network of technical talent and knowledge held within civil society groups to help independently inform the process as much as possible. UN accredited observers via the Major Groups and Stakeholders (MGS) can connect governments to experts in their networks. There could be a Register of Specialists set up (approved by the IEC/The Plenary) to ensure coverage of and access to authoritative specialists of all relevant areas of science and policy knowledge.

Participation of non-government observers in the IEC, created a great deal of discussion and differences of opinion between governments during the OEWG negotiations that at the time of writing remains unresolved. Throughout the OEWG process, civil society input has been positively influential in this process to ensure success. It appears that some governments anticipate that The Panel may be lobbied by industry and Non-Governmental Organisations (NGOs). The credibility of the science outputs must not be tainted by financial, political or campaign influences and insider lobbying in the Panel. It is so important that the whole Panel has an effective conflict of interest policy from the start (RSC, 2023b).



In these negotiations, and as written in the ISP-CWP Foundational Decision Document, the spirit here is to enable as much inclusive and useful participation of knowledge holders as possible, but this will need to be further defined in detail in the Rules of Procedure that will be discussed at the first Plenary meeting, due in 2026. Paragraphs 17 and 18 in the Foundational Decision Document are pertinent to this point and read:

Paragraph 17 - The chair of the Interdisciplinary Expert Committee may invite the Bureau members to participate as observers to a meeting of the Committee. The chair of the Interdisciplinary Expert Committee may invite representatives of the IPCC and IPBES to participate as observers to a meeting of Committee. The invitation of the chair of the Interdisciplinary Expert Committee is subject to the rules of procedure, noting that the Plenary is to be informed.

Paragraph 18 - The Plenary may further decide on the procedures for which the chair of the Interdisciplinary Expert Committee may invite members of the Panel and observers of the Panel to participate as observers to a meeting of the Committee, noting that the Plenary is to be informed.

As things stand, this leaves the door open for further discussion on the procedure the Chair(s) of the IEC can use to invite relevant expert Observers to IEC meetings. It remains to be determined, whether civil society experts will be able to participate in the ISP-CWP; that includes scientists and knowledge holders from all sectors, including Indigenous peoples, and local communities affected by pollution. All participants in the UNEP MGS system are from international organisations that have been UNEP accredited through a detailed and rigorous application process. At the time of writing, there are reported to be approximately 90 organisations accredited to the UNEP Science and Technology Major Group, and for example the RSC is one of these professional body organisations. Such civil society organisations typically have access to networks of highly experienced, qualified and, often chartered, professional scientists.

When the IEC is established, thought is likely to turn quite quickly to work programme prioritisation mechanisms. Hence, as a next step, it is not too early to begin considering how this might best be done, from a scientific point of view, when there are likely to be numerous potential requests to the ISP-CWP from the many chemicals and waste conventions.

## Conclusion

The establishment of the ISP-CWP on 20 June 2025 marks a historic moment in global chemicals and waste policy. In an era defined by significant and rapid geopolitical change and interconnected global risks, it is only through integrated, inclusive, and innovative approaches that the world can hope to secure a sustainable and healthy future. The ISP-CWP, through evidence synthesis and clearly communicated facts and options, can significantly strengthen the science-policy interface, to find innovative solutions and new collaborative opportunities to act on the world's biggest pollution challenges. Scientists and

knowledge holders stand ready to support through well designed implementation structures in the IEC and its Working Groups.

## Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

## Author contributions

CA-W: Conceptualization, Project administration, Resources, Writing – original draft, Writing – review and editing. TW: Writing – original draft, Writing – review and editing.

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