

Science, Precaution, Innovation: towards the integrated governance of new technologies

October 14 – 15, 2019

Centre for Interdisciplinary Research, Bielefeld (Germany)

A Conference organized by:

European Network of Scientists for Social and Environmental Responsibility
(ENSSER)

Ökologie Referat AStA Universität Bielefeld

Heinrich Böll Foundation NRW

Mariolopoulos Kanaginis Foundation for Environmental Sciences



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Link to the conference programme: <https://ensser.org/events/2019/pp-conference/>

Summary

The Precautionary Principle (PP), now 45 years old (German Clean Air Act, 1974), concerns situations where the available scientific information about possible harm from human-made innovations gives decision-makers reasonable grounds to suspect possible harm to human health, the environment or biodiversity, but where scientific certainty is lacking. The PP in such situations lawfully justifies decision makers taking precautionary measures to avoid such harm.

Although enshrined in the EU treaty and formally a pillar of EU policy, the PP is often ignored, misinterpreted or violated by the EU Commission and member states. Furthermore, corporate lobbyists and some scientific interests continuously attempt to undermine and erode the PP, mistakenly portraying it as if it was a hindrance to innovation, and even as "anti-scientific". Their introduction in recent years of a so called "innovation principle" (which is already enshrined in the EU legislation and Action programmes) may well erode this science-based standard and prioritize particularly powerful incumbent economic interests over the high level of protection provided in the EU Treaty. Truly sustainable innovations, however, require conformity with the PP, and a more comprehensive assessment of what (if any) social benefits, and which social needs, may be met.

In this conference we will present and critically appraise examples which illustrate the importance of the PP and discuss what is required to ensure that it will be used wisely and more frequently. Speakers will take into account the scientific, legal and social challenges and their real-life implications for the effective implementation of the PP.

Discussions will also question whether it is correct to dismiss the PP as "anti-innovation", or whether it is more accurately seen as a stimulus to innovation and to involve the more socially deliberative "steering" of innovation. Viable paths to a reasonable confidence of no harm to public health, biodiversity and the environment will be identified and explored by reference to currently available knowledge, while acknowledging that strict proof of safety is an illusory goal. Examples including pesticide use, genetically modified crops, electromagnetic fields, endocrine disrupting compounds and nanotechnology will be presented by eminent speakers and explored by the participants.

Draft Programme

Monday 14 October 2019

12:30 Registration open

13:30 **First plenary session: *The Precautionary ("Foresight") Principle 1974-2019: use, neglect & lessons learned?***

Chair: Dr. Andreas Gies, Dahlem Science Berlin and (Ret.) German Environment Agency

Prof. Erik Millstone, University of Sussex, Brighton, UK: *"The rhetorics and realities of 'precaution' and 'innovation': a cautionary tale"*

Prof. Nicolas de Sadeleer, University of Louvain, Belgium: *title t.b.a.*

Discussion

15:00 Coffee break

15:30 Second plenary session: *The Precautionary Principle: its use and neglect in five current controversies*

Chair: Dr. Emilie Gaillard, Université de Caen Normandie and Sciences Po Rennes, France

Electromagnetic fields (EMFs) – Dr. Theodore Metsis PhD, Athens, Greece

Nanotechnology – Prof. Steffen Foss Hansen, Danish Technical University, Copenhagen, Denmark

Genetically modified organisms (GMOs) – Prof. em. Brian Wynne, Lancaster University, UK

Pesticides – Dr. Angeliki Lysimachou, Pesticide Action Network Europe, Brussels, Belgium: *"Failing to apply the precautionary principle in pesticide authorisation: the costly consequences for whom?"*

Endocrine disrupting compounds (EDCs) – Tatiana Santos MSc, European Environmental Bureau (EEB), Brussels, Belgium

17:30 End

18:00 Dinner

19:30 Public Evening Event: *Better safe than sorry – precaution undermined*

A round table and public discussion with introductory presentations

Co-Chairs: Dr. Angelika Hilbeck, Swiss Federal Institute of Technology (ETH), Zurich, Switzerland & Prof. Neni Nicolopoulou-Stamati, University of Athens and Secretary of Board of Directors of Mariolopoulos Kanaginis Foundation for Environmental Sciences, Greece

Member of committee 'Pesticide-free Mals', Italy: *"The fate of the pesticide ban of Mals" – t.b.c.*

Dr. Emilie Gaillard, Université de Caen Normandie and Sciences Po Rennes, France: *"Precautionary Principle: Overview and prospects"*

Prof. Andreas Fisahn, University of Bielefeld, Germany: *"Legal challenges to the Precautionary Principle"*

Axel Singhofen, Advisor on Health and Environment Policy: *"An old Precautionary Principle in a new European Parliament?"*

21:30 End

Tuesday 15 October 2019

9:00 Third plenary session: *Myths and threats to the Precautionary Principle in EU governance*

Chair: Christine von Weizsäcker, Ecoropa, Germany

David Gee, Brunel University, London, UK: *"The Foresight (Precautionary) Principle 1974-2019: some common myths and barriers to its wise and wider use"*

Nina Holland, Corporate Europe Observatory, Brussels, Belgium – t.b.c.

Discussion

10:00 Coffee break

10:30 Parallel workshops on current controversies

With introductory statements by speakers and discussion among participants

Electromagnetic fields (EMFs) and health: Dr. Theodore Metsis PhD, Athens, Greece & David Gee, Brunel University, London, UK

Genetically modified organisms (GMOs): Dr. Angelika Hilbeck, Swiss Federal Institute of Technology (ETH), Zurich, Switzerland & Prof. em. Brian Wynne, Lancaster University, UK & Mareike Imken, Save Our Seeds, Germany

Pesticides: Dr. Robin Mesnage, King's College, UK: *"New scientific approaches to improve the regulatory assessment of pesticide toxicity"* & Hans Joachim Bannier, horticulturist, Bielefeld, Germany: *"Genetic pauperization of apple varieties in modern horticulture and the value of traditional varieties"*

Endocrine disrupting compounds (EDCs): Tatiana Santos MSc, European Environmental Bureau (EEB), Brussels, Belgium & Prof. George Chrousos MD, ScD, University of Athens, Greece

Nanotechnology: Prof. Steffen Foss Hansen, Danish Technical University, Copenhagen, Denmark & Dr. Qamar Rahman PhD, Amity University, Lucknow, India (t.b.c.)

12:30 Lunch

14:00 Plenary presentation and discussion of the outcomes of the workshops

15:00 Final plenary session: *What needs to be done?*

Chair: Prof. em. Brian Wynne, Lancaster University, UK

Dr. Dr. Rene von Schomberg, EC Directorate General Research & Innovation, Brussels - *"The Governance of responsible innovation: towards an interdisciplinary and inclusive approach?"*

16:00 End

16:30 Reception

18:00 End of conference

Wed. 16 October 2019

18:00 **Excursion to apple orchard, led by Hans Joachim Bannier, horticulturist, Bielefeld**

Registration

Regular participation fee*: € 30

Supporter fee**: € 50

Student fee***: free

*If you cannot afford the regular fee, please indicate this in your registration email (see below).

**The supporter fee allows us to reduce the regular fee for those who cannot afford this.

***Upon indication of title of study course and institute where it is taken.

To register for participation and pay your fee:

Please send an email to registration@ensser.org including:

- which fee you will pay;
- for students: the title of your study course and the institute where it is taken;
- the workshop you would like to participate in on Tuesday afternoon: EMFs, GMOs, Gene Drives, Pesticides, EDCs, Nanotechnology, Stress & Health (see programme);

simultaneously with sending us your registration email, please make a bank transfer of your fee to ENSSER e.V. - GLS Bank - IBAN: DE21 4306 0967 4030 7947 00 - Swift/BIC: GENODEM1GLS.

We will send you a few questions about the topic of your preferred workshop before the conference. These questions and your answers will be used in the interactive workshop.

Venue

Center for Interdisciplinary Research of Bielefeld University
Methoden 1
33615 Bielefeld
Germany

Accommodation

For participants registering **before 19 August 2019**, a limited number of hotel rooms are available at € 79 (single room) or € 95 (double room) per night including breakfast. We shall inform you about the details and availability of this offer as soon as we receive your registration.

Otherwise, hotels in Bielefeld can be found and booked via <http://www.booking.com>.

Accommodation expenses should not prevent anyone from participating in the conference. If this would be the case, please let us know in your registration email: in this case we may be able to find you some private accommodation.

Sponsors

This conference is sponsored by the Gen-ethische Stiftung and the Altner-Combecher Stiftung für Ökologie und Frieden.



ÖKOLOGIE & FRIEDEN

Altner-Combecher Stiftung

Background

The Precautionary Principle (PP), or "Vorsorgeprinzip" after its original author of the 1970s, Konrad von Moltke, and its legal origin in the German Clean Air Act (1974), concerns situations where the available scientific information about

technological-scientific innovations gives decision makers reasonable grounds to suspect possible harm to human health, the environment or biodiversity from such innovations, but where scientific certainty is lacking. The PP in such situations lawfully justifies decision makers taking precautionary measures to avoid such harm. It can be invoked in policy decisions on subject matters such as environmental degradation or it can be applied in a particular regulation such as laws regulating genetically modified organisms. As such the PP is now established in Article 191 of the EU Treaty as a central principle of EU law.

It is also enshrined in over 60 International Treaties or Declarations, e.g. as Principle 15 of the 1992 UN Rio Summit Declaration on Environment and Development, which states that a 'precautionary approach' shall be applied to protect the environment: "*Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.*"

After the PP was enshrined in Article 191 of the Treaty on the Functioning of the EU, there was considerable confusion regarding its scope, so the EU Commission issued a Communication establishing common guidelines on the implementation of the PP in 2000. There it was made explicit that apart from environmental protection, it also covers consumer policy and human, animal and plant health. Furthermore, it was stressed that the PP may only be invoked in the event of a potential risk and can never justify arbitrary decisions, such as protectionist measures to prevent the import of goods which might compete with domestic industries. It has to be based on "the fullest possible scientific evaluation" and on a determination of the nature and degree of scientific uncertainties.

Article 11(10) of the 2000 Cartagena Protocol on Biosafety for Living Modified Organisms (i.e. genetically modified organisms, GMOs) states: "...lack of scientific certainty due to insufficient relevant scientific information and knowledge regarding the extent of the potential adverse effects of a living modified organism [...] shall not prevent that Party from taking a decision, as appropriate, with regard to the import of that living modified organism [...] in order to avoid or minimize such potential adverse effects." Furthermore, the PP is invoked in a considerable number of international treaties, including the 1992 UN Framework Convention on Climate Change, the 1993 UN Convention on Biological Diversity, the 1992/1998 OSPAR Convention on North Sea Marine Pollution, the 1990 EU Directive on deliberate release of GMOs, the Regulation (EC) No 178/2002 establishing the European Food Safety Authority and procedures in matters of food safety.

The US Wingspread Conference Statement on the Precautionary Principle issued in 1998 emphasised that "open, informed and democratic" processes should be involved in the application of the PP and "must include potentially affected parties".

René von Schomberg of the European Commission, Directorate General for Research and Innovation, has stressed that "responsible research and innovation is a transparent, interactive process by which societal actors and innovators become mutually responsive to each other regarding the ethical acceptability, sustainability and social desirability of the innovation process and its marketable products". Inspired originally by the 1995 Norwegian Gene Technology Act, which unusually required that biotechnology innovations intended for environmental

release be subject to questions concerning social benefits and needs, sustainability, and inclusive ethics, as well as to normal reductionist risk assessment, scholars such as Wickson, Herrero, and Binimelis (2017) have developed a more complete framework for government regulatory decisions. This includes questions concerning social benefits and needs, long-term sustainability, and inclusive ethics, as well as a normal risk assessment. Other research (e.g. by Marris, Wynne, Weldon and Simmons in 2001) on public attitudes to agricultural innovation in Europe has shown how such questions of a precautionary kind also correspond with typical public concerns and questions over the direction of technological innovation – concerns which are usually left unaddressed in normal “democratic governance”.

The PP, though enshrined in EU law and formally a pillar of EU policy, is often ignored, misinterpreted and violated by the European Commission and many EU member-states. It is also under continuous threat of further undermining and erosion by corporate lobbyists, who are currently attempting to replace it by a so-called “innovation principle”, which would prioritize commercial benefits over the protection of citizens and nature. This is a serious danger to the PP and to public interests in European and global policy making. Examples of violations of the PP can be found in many different fields of technology, e.g. genetically modified (GM) crops, pesticides, food additives, endocrine disrupting compounds (EDCs), electromagnetic fields (EMFs), nanotechnology and anti-microbial resistance. The European Environment Agency’s two-volume study of *Late Lessons from Early Warnings* (EEA, Copenhagen, 2002 and 2014: Vols. I and II) provided chapter-and-verse on many such empirical cases in recent history.

Why has it been so difficult to implement the PP in these fields? One reason may be that the PP is mistakenly portrayed as if it is an obstacle to innovation. This has led to a tendency of the European Commission and national governments to implement the PP in an extremely reductionistic and thus limited manner. For some technologies (like GM crops), EU legislation explicitly includes references to precaution, but the legislation is interpreted and then implemented poorly (an administrative as well as a scientific advisory failure).

In other cases (like EMFs and EDCs), the standards for exposure are based on reductionist science that undermines implementation of the PP. In some cases (like pesticides), legislation needs to be improved to reflect the PP. The tension between process-based and product-based regulation is one of the symptoms of the problem. The EU's GM legislation, for instance, is partly process-based, as it is about GM as a process, investigation of which shows scientific lack of control of those processes; but it is partly also product-based in that it only considers GM crops on a case-by-case basis, which by definition cannot include questions concerning possible cumulative effects from multiple independent varieties, nor indirect effects – both of which are expressly included in the salient EU legislation. This limits the assessment of the underlying technology and the framing of assessments for potential risks. To portray such regulatory assessments as if consistent with the PP, and thus with European law, is misleading and dangerous. Such profound interpretive dislocations within scientific, commercial and policy domains call for the kind of informed presentations and discussion that ENSSER is proposing.

At this conference, we will discuss these challenges to the evidence-based implementation of the PP from an interdisciplinary perspective. ENSSER wishes to explore how, rather than hindering innovation and economic welfare, implementing the PP would actively support *sustainable innovation*. In particular, discussions will test the conditions under which the more deliberate social steering of innovation facilitated by precaution under uncertainty can offer to better address the multiple complex challenges of sustainability which are otherwise side-lined by incumbent economic interests and structures (Stirling, A. (2017) 'Precaution in the Governance of Technology', in Brownsword, R., Scotford, E., and Yeung, K. (eds) *Oxford Handbook on the Law and Regulation of Technology*. Oxford: Oxford University Press).

We shall present and critically assess cases illustrating the importance of the PP and discuss what is required for its proper implementation. We shall take into account scientific, legal and social challenges and their real-life implications for an effective implementation of the precautionary principle.

One key challenge is to explore different options from the existing (rarely debated) assumption that the burden of proof of harm naturally lies with those who support regulatory measures that may constrain innovations. Another entrenched policy assumption, which is that scientific risk assessment (RA) is naturally precautionary, i.e. the PP is only needed if risk assessors highlight key policy-relevant uncertainties and recommend "uncertainty factors" and some precautionary measures, will be carefully scrutinised through real-world cases. The conference will also explore the role of risk assessment policies in influencing the extent to which risk assessments may be more or less precautionary. Viable paths to a reasonable confidence of no harm to public health, biodiversity and the environment will be identified on the basis of currently available knowledge. More specifically, the cases of pesticide use, genetically modified crops, electromagnetic fields and endocrine disrupting compounds will be presented by eminent speakers.

We have invited scholarly speakers to present the overall theme. In the case of GM crops, the recent judgment of the European Court of Justice stating that the new GM techniques like CRISPR/CAS also fall within the provisions of the current GM legislation of the EU, has elicited attacks on this legislation from commercial interests, aiming to change the GM legislation in order to weaken or completely discard the PP. The scientific and policy case for defending precautionary approaches against such attacks will be explored. For the other technologies, correspondingly different challenges to the PP will be discussed.

Independent, critical science is the basis of the PP. ENSSER focuses on critical science for the protection of the environment, biodiversity and human health against inadequate science and potentially unseen negative impacts of particular new technologies and their products. A key issue related to the potential steering function of the PP concerns what the 1970s environmentalist Amory Lovins referred to as "Roads not Taken", a term originally coined to describe renewable energy technologies in the face of attempted nuclear monopoly. Vanloqueren and Baret, in 2009, have analysed a strikingly similar situation with respect to an institutional "lock-in" syndrome of GM and related agro-biotechnologies, with corresponding "lock-out" of less commercially interesting and less easily globally

monopolised, and therefore less scientifically fashionable technologies like agroecology.

Consequently, ENSSER promotes the application of the PP in the context of a lack of knowledge, scientific ignorance and scientific uncertainty where there may be serious or irreversible threats to health, social integrity and the environment from new or existing technologies. As ENSSER members have explained¹, this also involves influencing innovation trajectories that support the development of sustainable, responsible and equitable technological options and trajectories, thus refuting the familiar misrepresentation of the PP as anti-innovation. The 34 case studies in the "Late Lessons from Early Warnings" reports from the EEA and the work of Nicholas Ashford at MIT comprehensively demonstrate that the timely application of the PP brings forward, often by decades, the smarter innovations needed to meet needs. Where it has not been applied e.g. on asbestos, leaded petrol, PCBs etc., these dominant yet harmful and "cheap" technological monopolies have blocked innovations for many years.

As for pesticide use, the case of the pesticide-free municipality of Mals in South Tyrol, Italy will be presented. This case includes the lifting of the ban on chemical-synthetic pesticides by the administrative court of Bolzano on the basis of the proportionality principle. This court ruled that it would pose an "unreasonable economic loss" considering that "there is no alternative to the application of chemical-synthetic pesticides" in apple horticulture. The court's ruling will be critically appraised.

1 E.g. "Late Lessons from Early Warnings: the Precautionary Principle 1896-2000", European Environment Agency, 2001, https://www.eea.europa.eu/publications/environmental_issue_report_2001_22 and "Late Lessons from Early Warnings: Science, Precaution, Innovation", EEA, 2013, <https://www.eea.europa.eu/publications/late-lessons-2>